Spider - Gtv

RIGHT-HAND DRIVE VERSION

REPAIR INSTRUCTIONS

Alfa Romeo

PA500100000000

3-1996

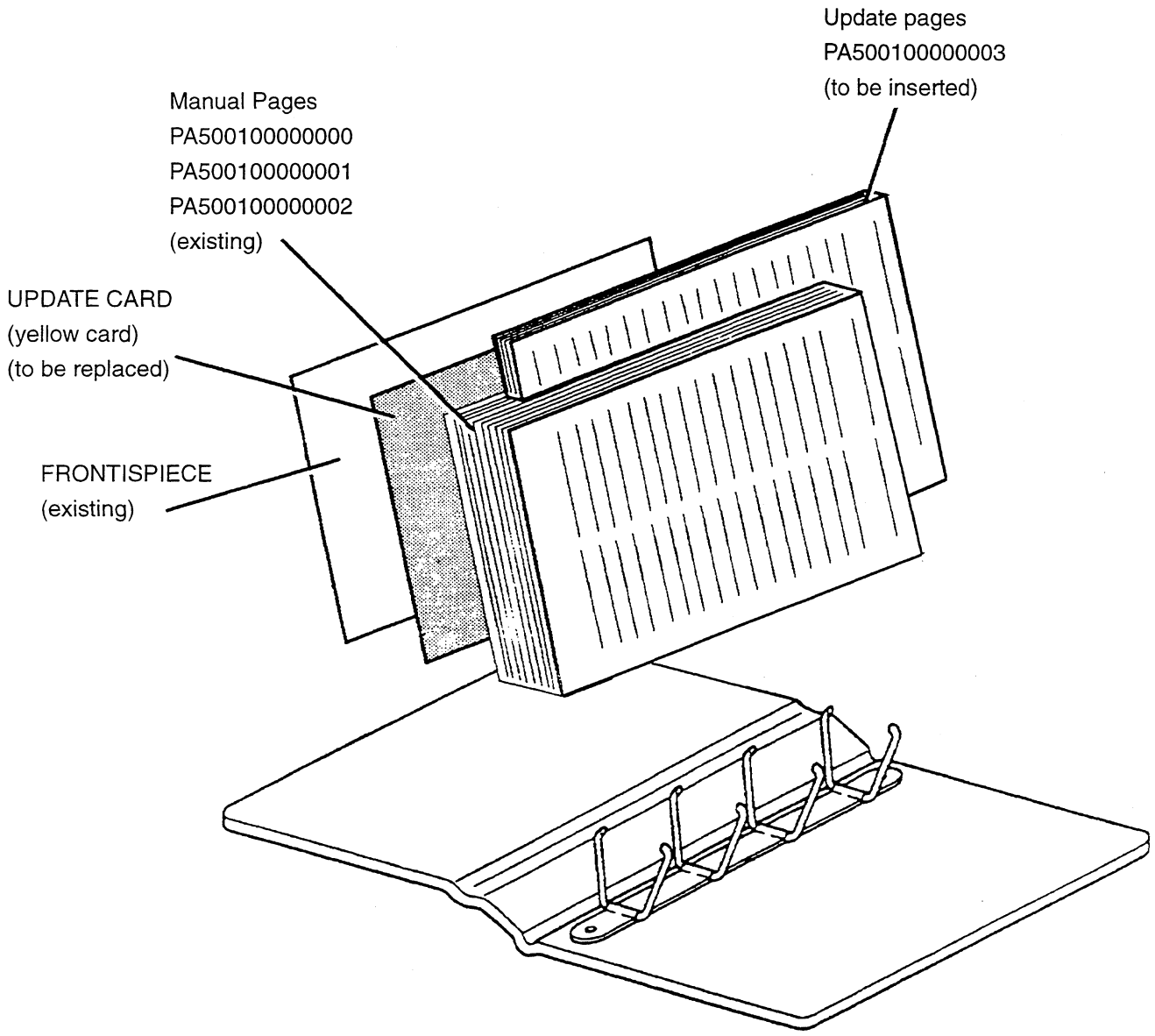
INSTRUCTIONS FOR INSERTING THE TECHNICAL DOCUMENTATION IN THE FOLDER

Spider
Gtv

RIGHT-HAND DRIVE VERSION

REPAIR INSTRUCTIONS

For placing the documentation concerning update PA500100000003 in "Spider - Gtv - R.H. DRIVE VERSION - Repair Instructions ", you are recommended to follow the instructions given in the UPDATE CARD (yellow).
The illustration below schematically shows the composition of the publication.



Spider Gtv

RIGHT-HAND DRIVE VERSION

REPAIR INSTRUCTIONS

UPDATE CARD

UPDATE CARD				
UPDATE (DATE)	MODEL	SECTION	PAGE	
			SUBST.	ADDED
2 (10/1997)	Spider-Gtv R.H. DRIVE	00	1	
3 (10/1998)	Spider-Gtv R.H. DRIVE	00	* 1 to 2	
2 (10/1997)	Spider-Gtv R.H. DRIVE	00	3	
3 (10/1998)	Spider-Gtv R.H. DRIVE	00	4 to 5	
3 (10/1998)	Spider-Gtv R.H. DRIVE	10	Index	
3 (10/1998)	Spider-Gtv R.H. DRIVE	10	1	
3 (10/1998)	Spider-Gtv R.H. DRIVE	10	5	
3 (10/1998)	Spider-Gtv R.H. DRIVE	33	2	
3 (10/1998)	Spider-Gtv R.H. DRIVE	41	2	
3 (10/1998)	Spider-Gtv R.H. DRIVE	50	Index	
3 (10/1998)	Spider-Gtv R.H. DRIVE	50	1	
3 (10/1998)	Spider-Gtv R.H. DRIVE	50		15 to 20
3 (10/1998)	Spider-Gtv R.H. DRIVE	55	Index	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55	2	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55		2/1 to 2/2
1 (4/1997)	Spider-Gtv R.H. DRIVE	55	3	
2 (10/1997)	Spider-Gtv R.H. DRIVE	55	Index	
2 (10/1997)	Spider-Gtv R.H. DRIVE	55-2	2 to 3	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-3	1 to 2	
2 (10/1997)	Spider-Gtv R.H. DRIVE	55-3		3 to 5
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-3		6 to 9
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-8	1 to 2	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-8	3 to 4	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-8		5 to 7
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-8		8 to 10
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-14	1	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-14	2	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-14		2/1
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-14	2/2	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-14	3	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-14	4	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-14		5
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-14		6
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-19	1	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-19	2 to 4	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-19		5 to 7
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-19		8 to 10
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-20	1	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-20	2 to 4	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-20		5 to 7
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-20		8 to 10
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-26	1	
2 (10/1997)	Spider-Gtv R.H. DRIVE	55-26		2 to 6
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-A1	2 to 4	
1 (4/1997)	Spider-Gtv R.H. DRIVE	55-A3	3 to 4	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-A3	5 to 45	
3 (10/1998)	Spider-Gtv R.H. DRIVE	55-A3		46 to 72

INTRODUCTION

Structure of the Manual

The present Manual is a supplement to publication "Spider-Gtv - REPAIR INSTRUCTIONS - PA497200000000.

It contains all information specific for versions with RIGHT-HAND DRIVE.

For section here not illustrated, refer to the above mentioned "base manual".

For overhauling engines and mechanical groups refere to the following manuals:

- PA493600000000 REPAIR INSTRUCTIONS - ENGINE OVERHAUL.
- PA494200000000 REPAIR INSTRUCTIONS - OVERHAULING MECHANICAL GROUPS.

In order to facilitate consultation, the structure of the manual mirrors the functional groups already defined for the "Repair Flat-rate Manual" in use by Alfa Romeo Authorized Service Network.

The "Model identification" tables should be consulted before carrying out repair work in order to identify the model of the vehicle, the engine type and the groups which form the vehicle.

How to use this manual

The aim of this manual is to supply the Alfa Romeo Service Personnel with a tool enabling them to rapidly identify faults and to render the corrective interventions precise and efficient.

The manual shows the procedures relative to the removal and refitting and dismantling operations and the checks relative to the various groups forming the vehicle.

The procedures illustrate the complete component disassembly procedures and should only be carried out in their entirety when absolutely unavoidable. The procedures for "assembly" and "refitting" are normally obtained by reversing the procedure followed for "disassembly" or "removal" in reverse and only the reassembly procedures which are significantly different are illustrated.

For information relative to the electrical systems onboard the vehicle refer to section 55 "ELECTRIC SYSTEM" and to the successive "ELECTRIC SYSTEM DIAGNOSIS" which gives the wiring diagrams and the description of each function, the connector tables, the location of the components, the tables for fault diagnosis and the technical data for checking the components.

All the information given in this manual is accurate at the time of publication.

Alfa Romeo reserves the right to make any modifications to its products that it seems necessary without warning. However the technical information and updates to this manual will be supplied as soon as possible.

Symbology

A specific symbology has been used in this manual to permit a rapid identification of the main technical information supplied.

The list of symbols is given below.


removal/disassembly


refitting/re-assembly

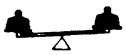

tighten to the torque


caulk nut


adjustment/regulation


visual check


lubricate


weight difference


angular value

pressure


temperature


brake system air purge


surfaces to be treated


interference


play


intake


exhaust

Lubricate only with engine oil


left-hand thread


torque for tightening in oil


engine r.p.m.


ovalization


taper


eccentricity


flatness


diameter


linear dimension


parallelism


service with grease


heating temperature


seal


service with engine oil


grease


CAUTION!


WARNING!

Warnings for the operator

All the operations must be carried out with the greatest care to prevent damage occurring to the vehicle or persons.

- The use of Alfa Romeo specific tools are indicated for some procedures. These tools must be used to ensure safety and to avoid damaging parts involved in the procedure.
- To free parts which are solidly stuck together, tap with an aluminium or lead mallet if the parts are of metal. Use a wooden or resin mallet for light alloy parts.
- When dismantling ensure parts are marked correctly if required.
- When refitting lubricate the parts, if necessary, to prevent seizing and binding during the initial period of operation.
- Using adhesive paper or clean rags cover those parts of the engine which, following disassembly, present openings which may allow dust or foreign material to enter.
- When refitting, the tightening torques and adjustment data must be respected.
- When substituting the main component(s) the seal rings, oil seals, flexible washers, safety plates, self-locking nuts and all worn parts must also be replaced.
- Avoid marking the internal coverings in the passenger compartment.

Substitution of groups or disconnected parts must be carried out using original spare parts only. Only in this way can the suitability and perfect operation of each organ be guaranteed.

- The words **CAUTION** and **WARNING** accompany those procedures where particular care should be taken to prevent damage occurring to people or vehicle parts.

CAUTION:
used when insufficient care could cause damage to people

WARNING:
used when insufficient care could cause damage to the vehicle or its component parts.

- The safety regulations applied to workshops should be respected. Where necessary the manual also lists the specific precautions to be taken to prevent dangerous situations from arising.

When using chemical products follow the safety indications given on the safety cards which the supplier is obliged to deliver to the user (in Italy in compliance with D.M. n.46/1992).

NOTE:
It is possible that for certain subjects were not completed in time for printing.
However these subjects are given and highlighted in the indices of the single groups.
It is the duty of the Technical Services to supply documentation regarding these subjects as soon as possible through updates or "Technical Bulletins".

TECHNICAL DATA 00

INDEX

VEHICLE

For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

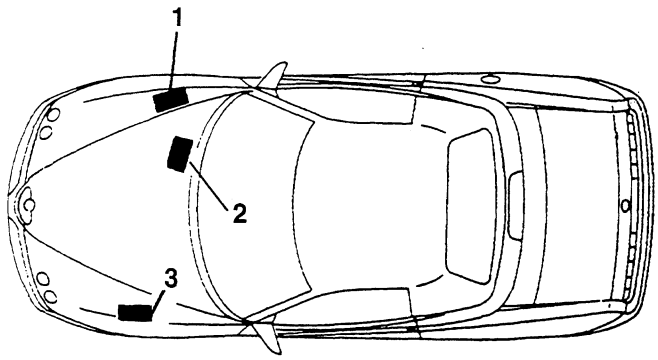
MODEL IDENTIFICATION

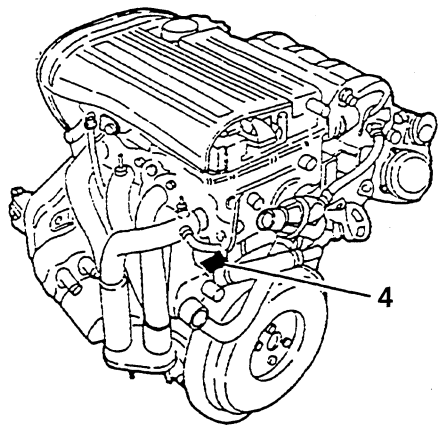
Trade name	Spider T.Spark 16V	GTV T.Spark 16V	GTV 3.0V6 24v
Trim level	Spider	Coupé	Coupé
Version (on identification label)	**916S2**	**916C2**	**916C1**
Chassis (in the engine compartment, on the right-hand shock absorber connection support)	-	-	-
Progressive chassis number	6000001	6000001	6000001
Motor (code)	AR 16201 AR 32301 (•)	AR 16201 AR 32301 (•)	AR 16102
Engine symbol	1970 **T.SPARK 16V**	1970 **T.SPARK 16V**	2959 **24V**
Gearbox (code)	C.510.5.21.17	C.510.5.21.17	C.530.5.31.09 C.530.6.XX.YY (•)

(•) from '98 Version

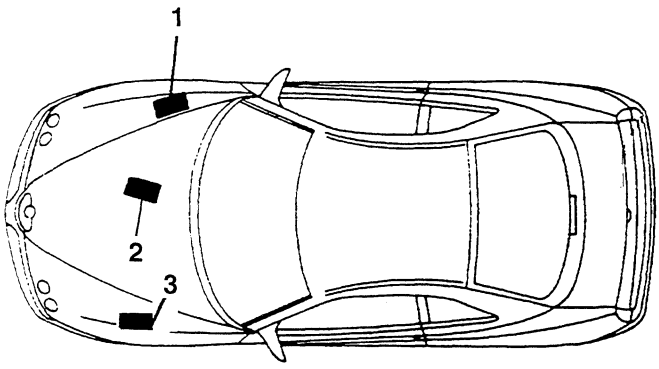
LOCATION OF IDENTIFICATION LABELS

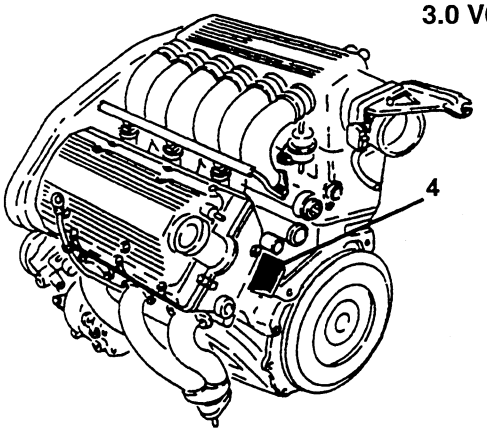
T.SPARK





3.0 V6 24V

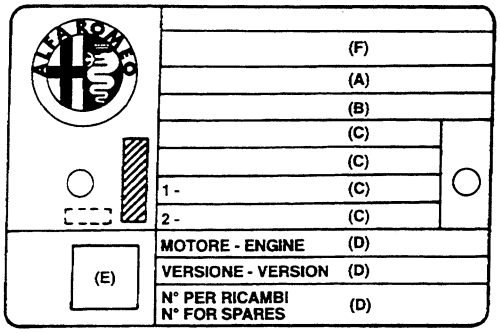




1. *Data plate*
2. *Body code*
3. *Paint identification label*
4. *Engine code*

DATA PLATE

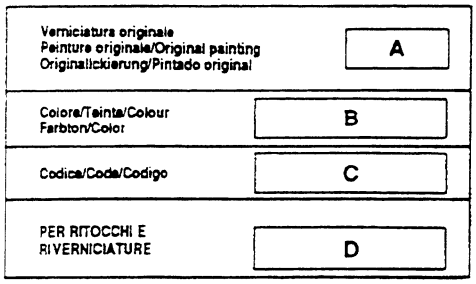
This is located in the engine compartment LH side. It contains the data listed below:



A. Space reserved for details of national homologation
B. Space for punching progressive chassis number
C. Space available for maximum weights authorised by different national regulations
D. Space reserved for version (for example 916C2A) and any additional information
E. Space reserved for smoke opacity index
F. Space reserved for punching manufacturer's name

PAINT IDENTIFICATION LABEL

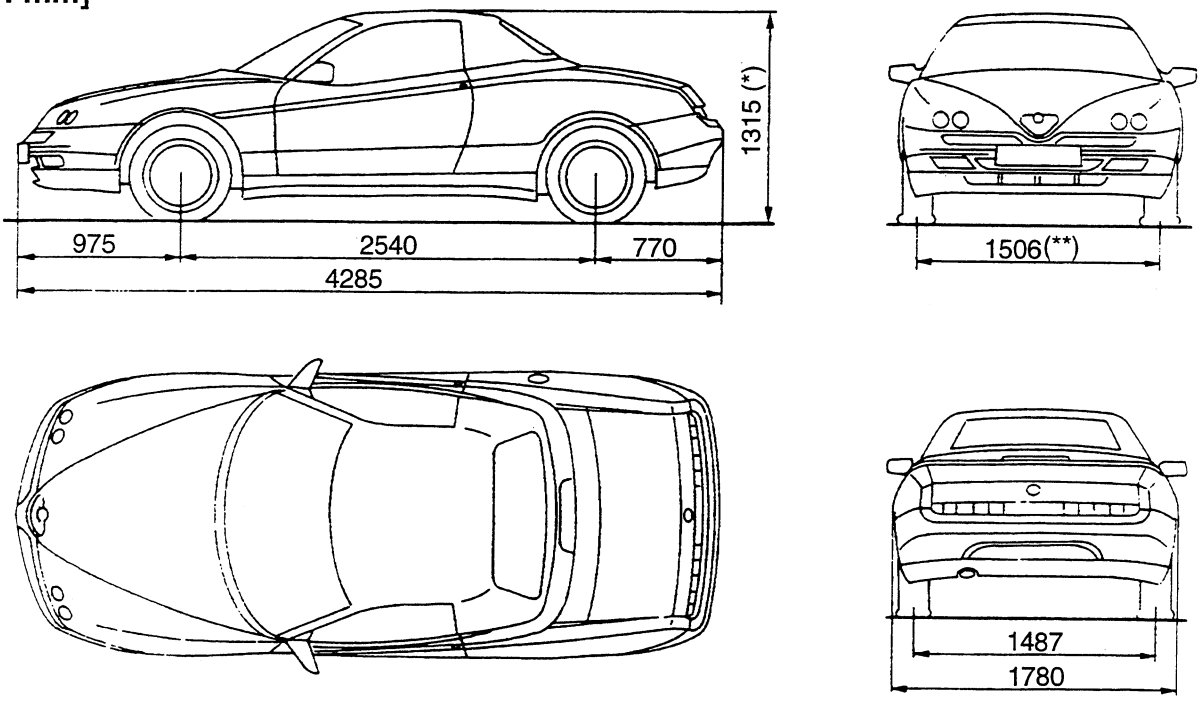
This is located on the inner part of the bonnet and carries the data given below:



A. Paint manufacturer
B. Colour name
C. Colour code
D. Colour code for touch-up and respray

DIMENSIONS (Spider)

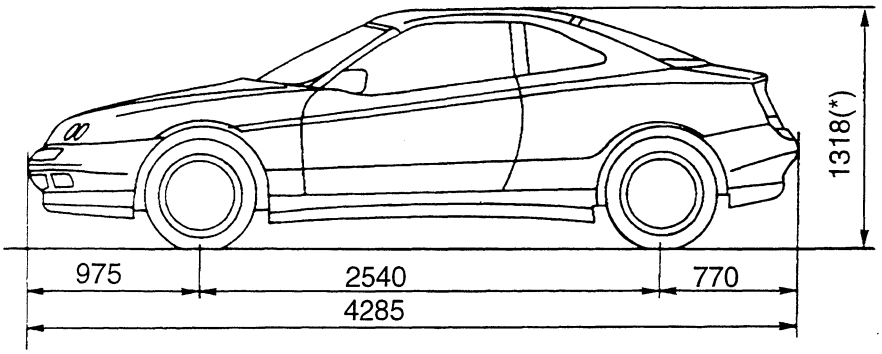
[Unit : mm]

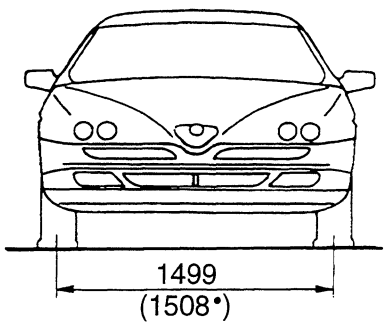


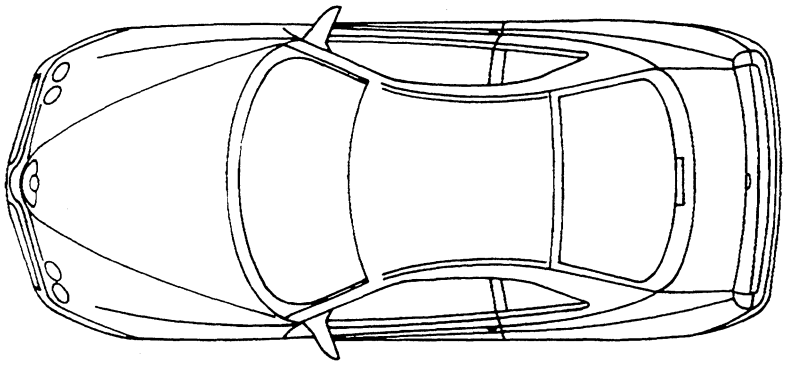
(*) Empty vehicle
(**) With alloy rims

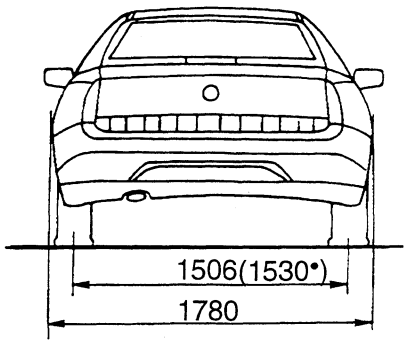
DIMENSIONS (Gtv)

[Unit: mm]









(*): Empty vehicle (•): for 3.0V624v only

WEIGHTS AND LOADS

Unit: kg

Characteristics / Versions		916S2	916C2	916C1
Kerb weight (without driver)		1370	1370	1415
Maximum allowed weight		1630	1780	1820
Useful load		260	440	405
Max. permissible weight per axle	front	974	974	1060
	rear	800	870	870
Towable weight	with braked trailer	1000	1000	1000
	with trailer without brakes	500	500	500
Maximum load on tow hook		50	50	50

WHEELS AND TYRES

Versions	RIM-TYRE SIZE	PRESSURES (bar)	
		FRONT	REAR
916S2	6J x 15" (steel) - 195/60 ZR15" 195/60 R15 88W (•)	2.3	2.1
	6.5J x 16" (alloy) - 205/50 ZR16" 205/50 R16 87Y (•)	2.7	2.5
916C2	6J x 15" (steel) - 195/60 ZR15" 205/50 R16 87Y (•)	2.3	2.1
	6.5J x 16" (alloy) - 205/50 ZR16" 205/50 R16 87Y (•)	2.7	2.5
916C1	6.5J x 16" (alloy) - 205/50 R16 87W 205/50 R16 87Y (•)	2.7	2.5
916 S2-C2	COMPACT SPARE WHEEL 4J x 15" - T125/80 R15 96M	4.2	
916 C1	COMPACT SPARE WHEEL 4J x 16" - T125/80 R15 97M	4.2	

(•) from '98 Version

WARNING:
In the event of continuous driving at top speed, the pressures should be increased by 0.3 bar.

FLUIDS AND LUBRICANTS

Type	Group ref.	Application		Classification	Name
OIL	10 - Engine	Engine (Refilling)		API SJ CCMCG5 ACEA A3-96 SAE 10W/40	SELENIA 20K SAE 10W/40(*)
	21 - Gearbox	Gearbox - differential (Refilling)		SAE75W90 API GL-5	TUTELA ZC 75 SYNTH
	50 - Auxiliary organs	T.SPARK	Compressor (Refilling)	-	NIPPONDENSO ND-9
FLUID		30V624v			SANDEN SP 10 "PAG"
	10 - Engine	Cooling circuit (Refilling)		-	ALFA ROMEO CLIMA FLUID SUPER PERMANENT - 40°C
	18 - Clutch	Brake - clutch hydraulic circuit (Refilling)		DOT 4 SAE J 1703 F	ALFA ROMEO BRAKE FLUID SUPER DOT 4
	33 - Brakes				

(*): For decidedly sportive use of the car wholly synthetic **SELENIA Racing 10W/60** engine oil is recommended.

FLUIDS AND LUBRICANTS (continues)

Type	Group ref.	Application	Classification	Name
FLUID	41 - Steering	Power steering system (Refilling)	G.M. DEXRON II	TUTELA GI/A
	50 - Auxiliary organs	Air conditioning circuit (Refilling)	-	RIVOIRA: SUVA R134a HOECHST - TAZZETTI: FRIGEN R134a ICI - TAZZETTI: KLEA R134a

APPROXIMATE SERVICING CAPACITIES

Capacity \ Versions		916S2 916C2	916C1
Fuel tank		70 litres	
Fuel reserve		~ 9 litres	
Engine oil	Sump + filter (for periodical replacement)	4.4 litres	6 litres
Gearbox - differential oil		2 litres	
Power steering system oil		1.3 kg	
Brake and clutch circuit oil		0.4 kg	
Engine cooling system fluid		8.4 litres	11.7 litres
Conditioner compressor oil		290 ± 30 cm^3	240 ± 10 cm^3
Conditioning system fluid		0.650 kg + 0.05 kg	

ENGINE 10

INDEX

For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

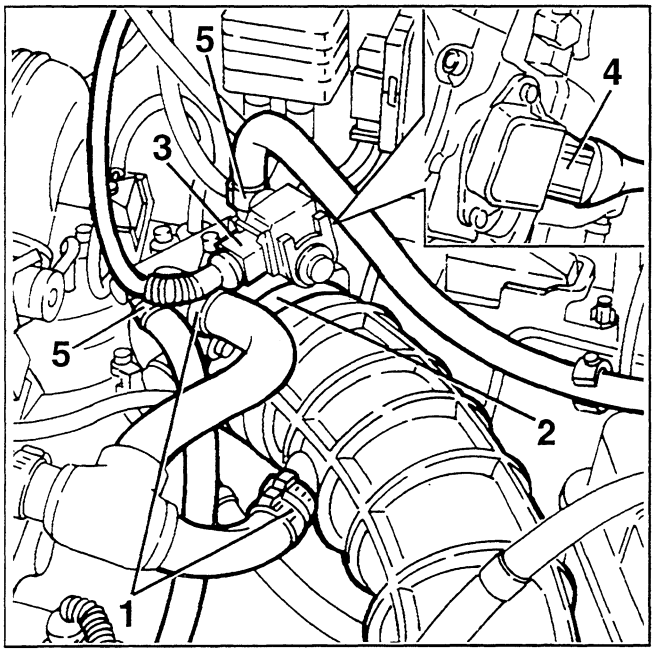
AIR INTAKE CIRCUIT (up to '97 version)

INTAKE BOX

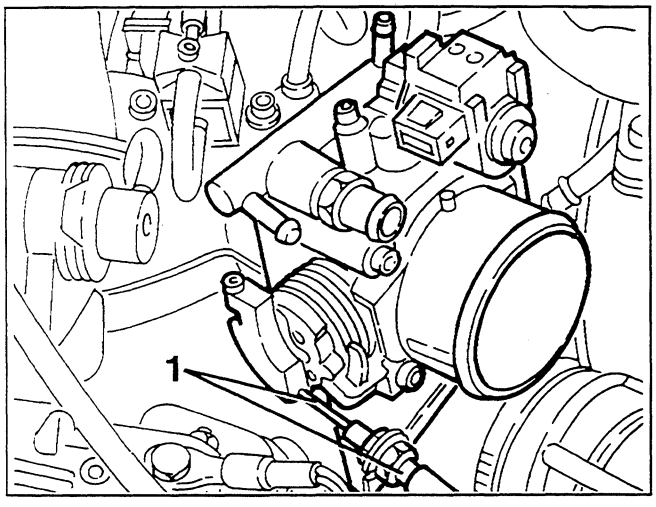
REMOVAL/REFITTING

– Set the car on a lift.
– Disconnect the battery (-) terminal.

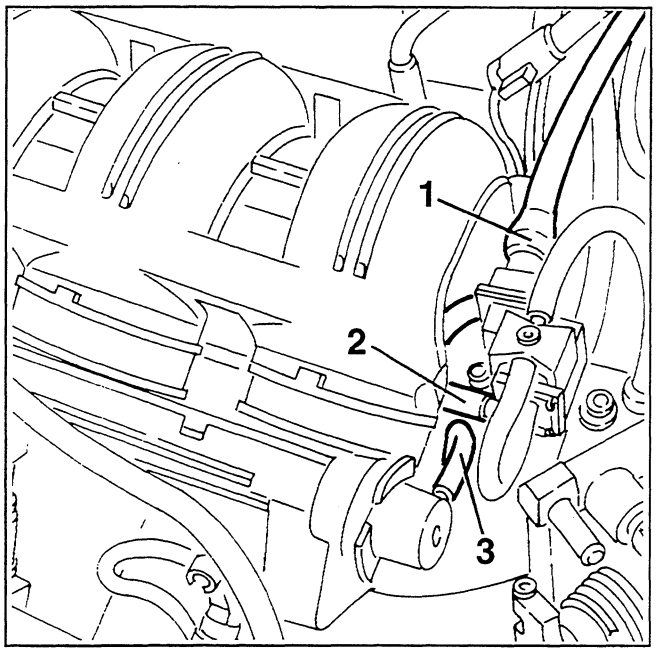
1. Disconnect the oil vapour recirculation pipe from the throttle body and from the corrugated sleeve.
2. Slacken the fastening clamp and disconnect the corrugated sleeve from the throttle body.
3. Disconnect the electrical connection from the constant idle sped actuator.
4. Disconnect the electrical connection from the throttle potentiometer.
5. Disconnect the two engine coolant fluid inlet and outlet pipes from the throttle body.



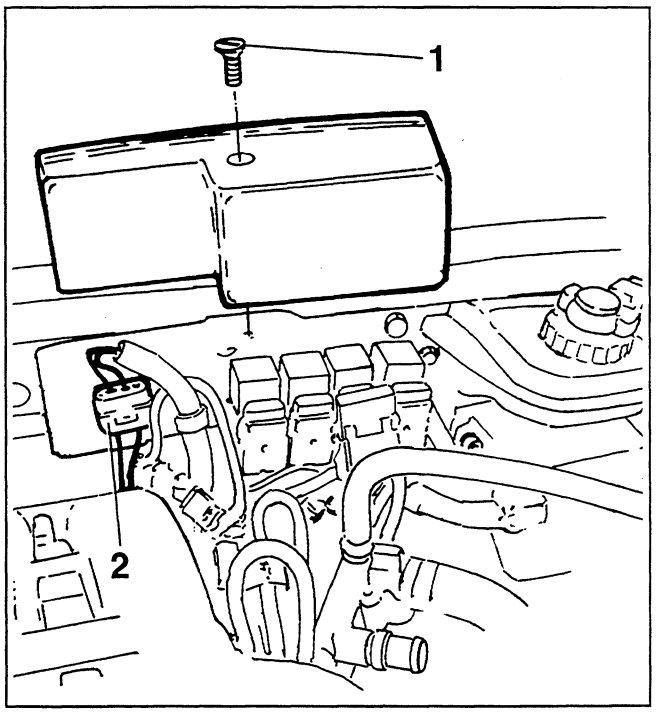
1. Disconnect the accelerator cable from the throttle.



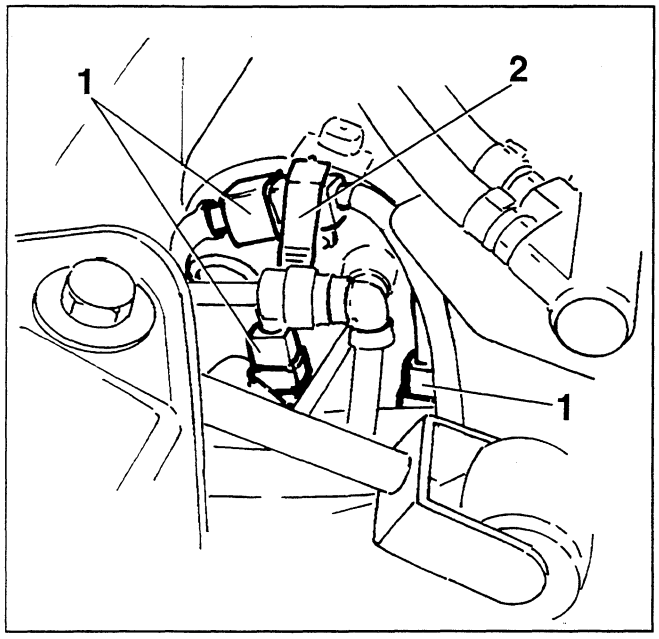
1. Disconnect the electrical connection from the E.G.R. modulation solenoid valve.
2. Disconnect the connection pipe to the E.G.R. valve from the modulation solenoid valve.
3. Disconnect the fuel pressure regulator vacuum takeoff pipe.



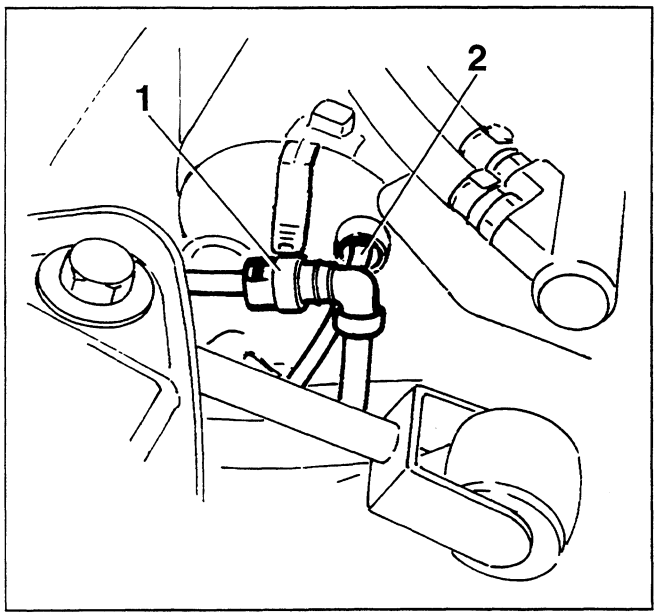
1. Slacken the screw and remove the relay unit cover.
2. Disconnect the lambda probe connection.



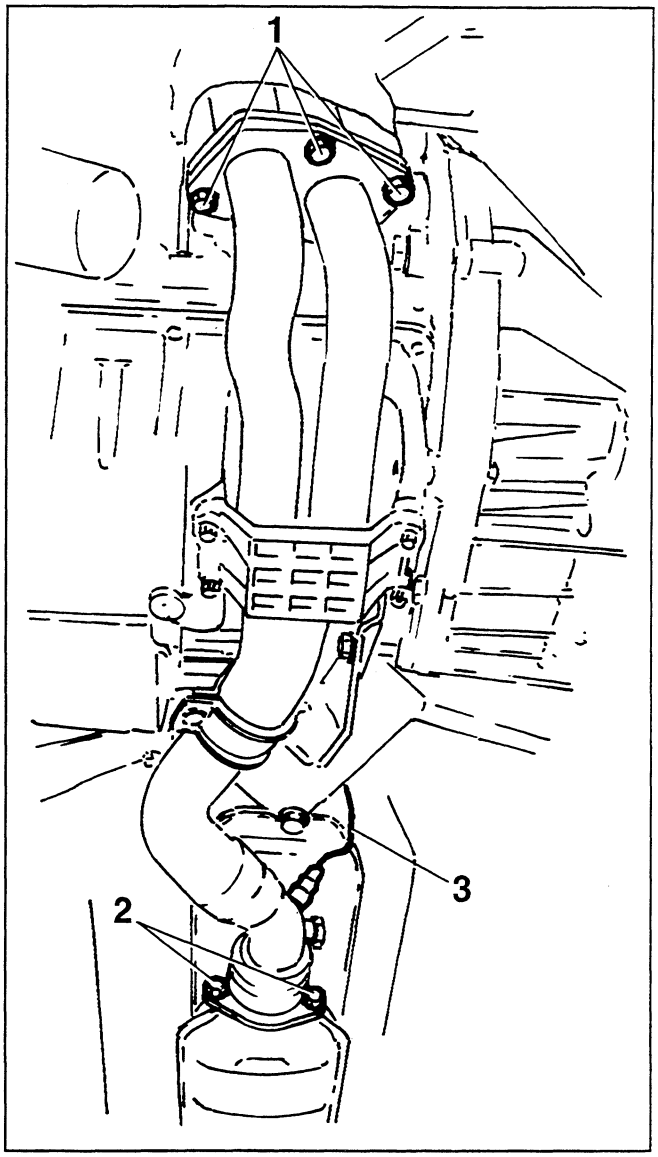
1. Disconnect the three electrical connections.
2. Prise off the connectors fastened to the intake box.



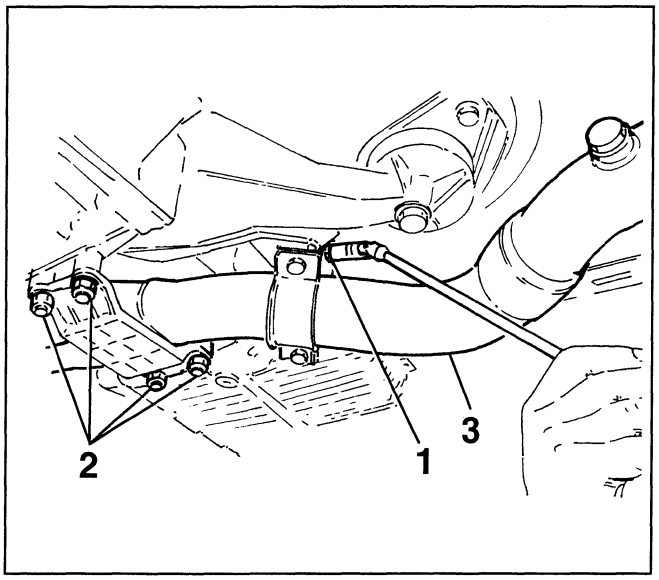
1. Disconnect the servobrake vacuum pipe union (press the tabs on the union).
2. Disconnect the fuel vapour recirculation pipe from the intake box.



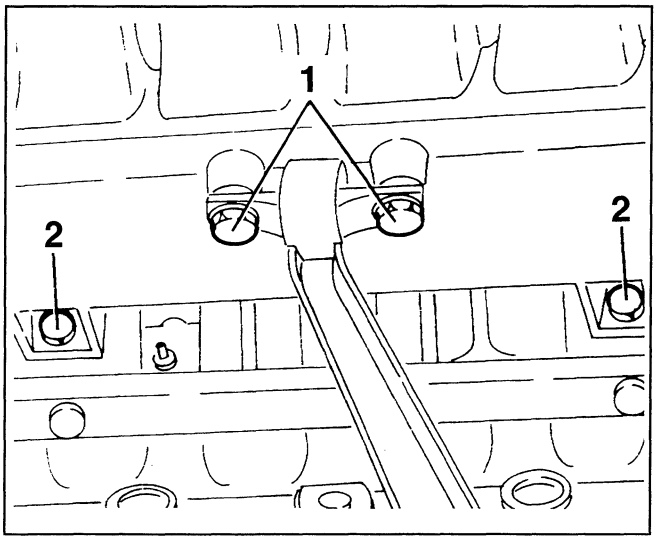
– Raise the vehicle.
1. Slacken the four screws of the front exhaust pipe.
2. Slacken the two rear bolts.
3. Withdraw the lambda probe cable.



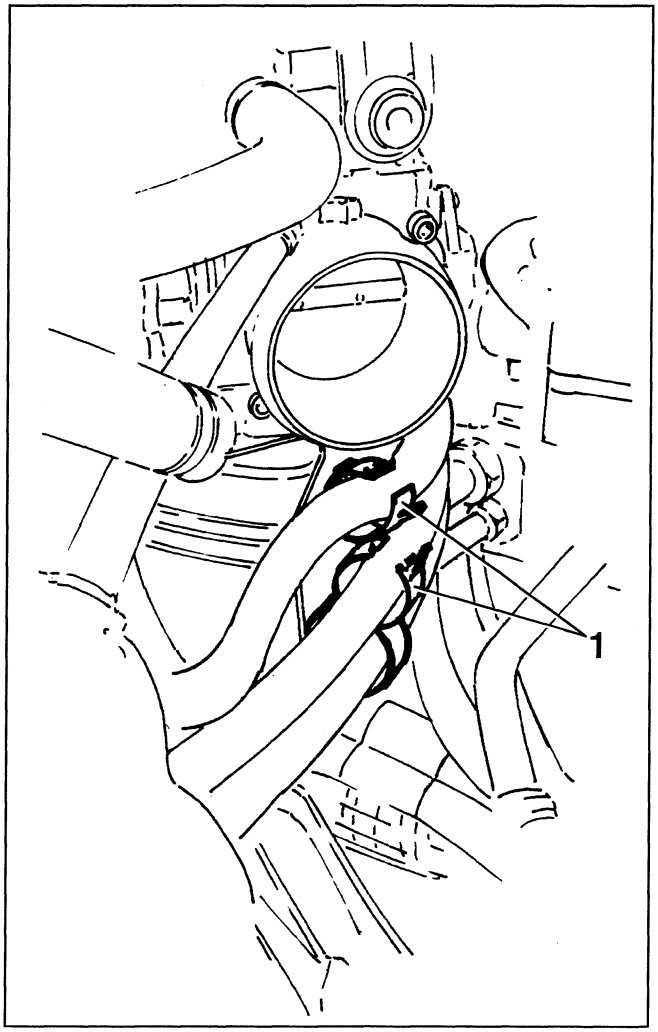
1. Slacken the intermediate support bolt.
2. Slacken the four nuts fastening the reinforcement bracket.
3. Withdraw the exhaust pipe.



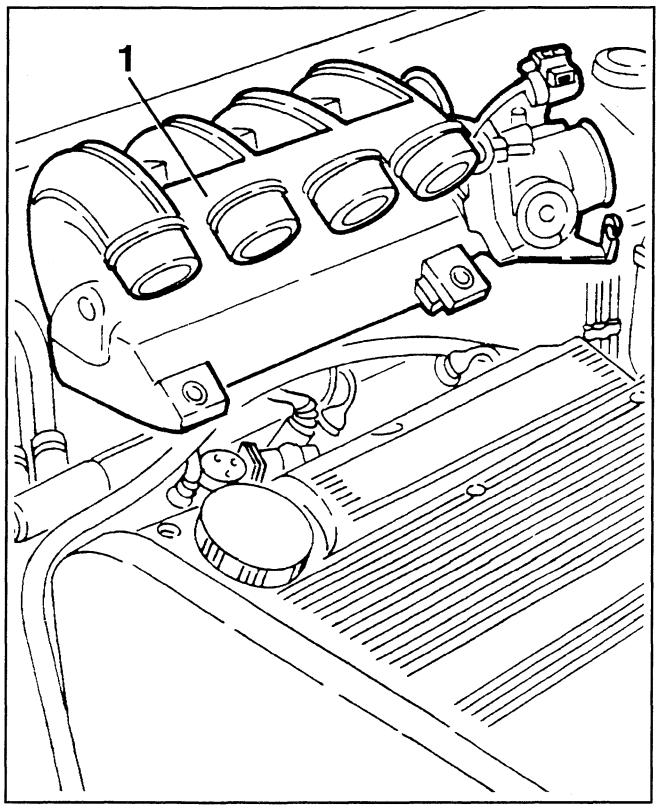
1. Slacken the two screws fastening the support to the intake box.
2. Slacken the two screws fastening the intake box to the cylinder head.



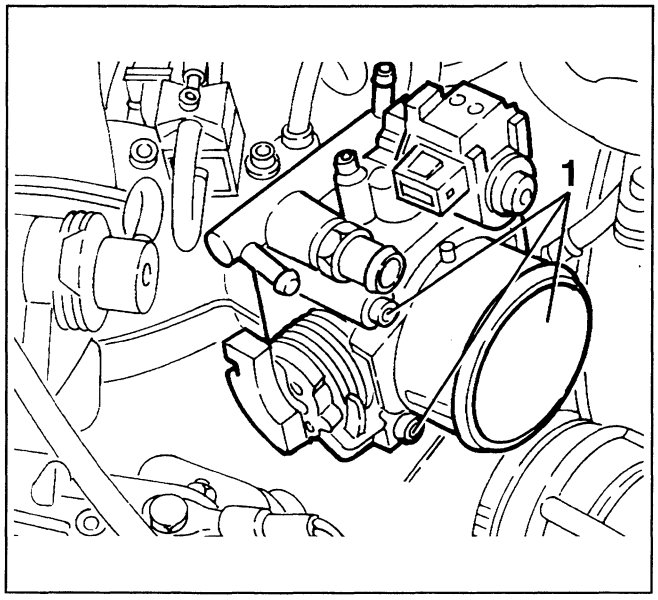
– Lower the vehicle.
1. Open the support brackets and free the pipes and cable.



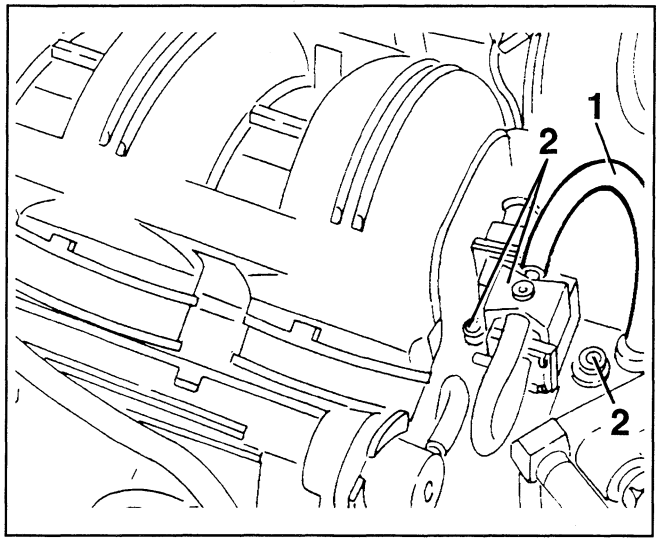
1. Slacken the fastening clamps and withdraw the complete intake box upwards.



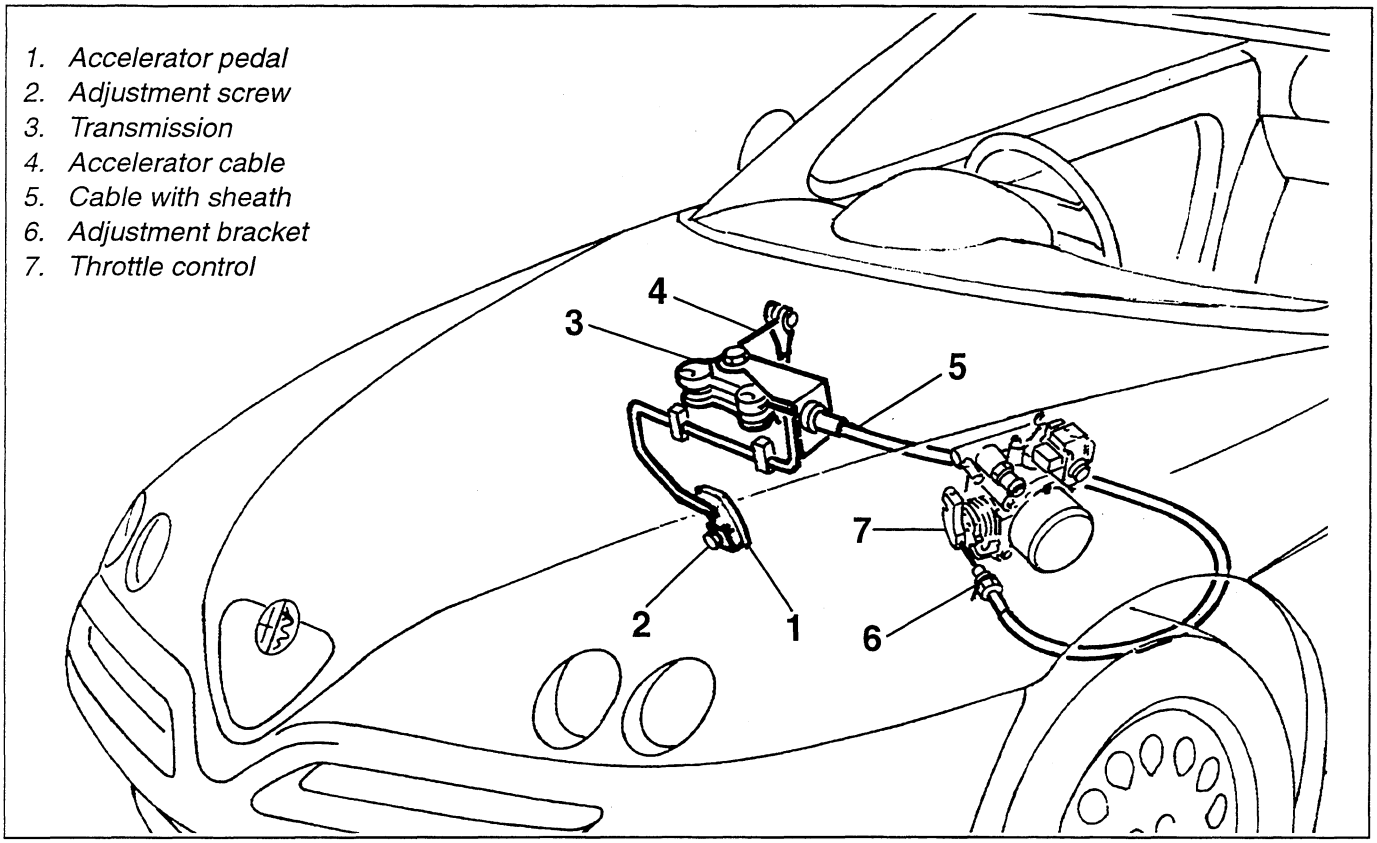
1. If necessary, slacken the four fastening screws and remove the throttle body.



1. If necessary, disconnect the E.G.R. modulating solenoid valve piping from the box.
2. Slacken the two screws and remove the solenoid valve.



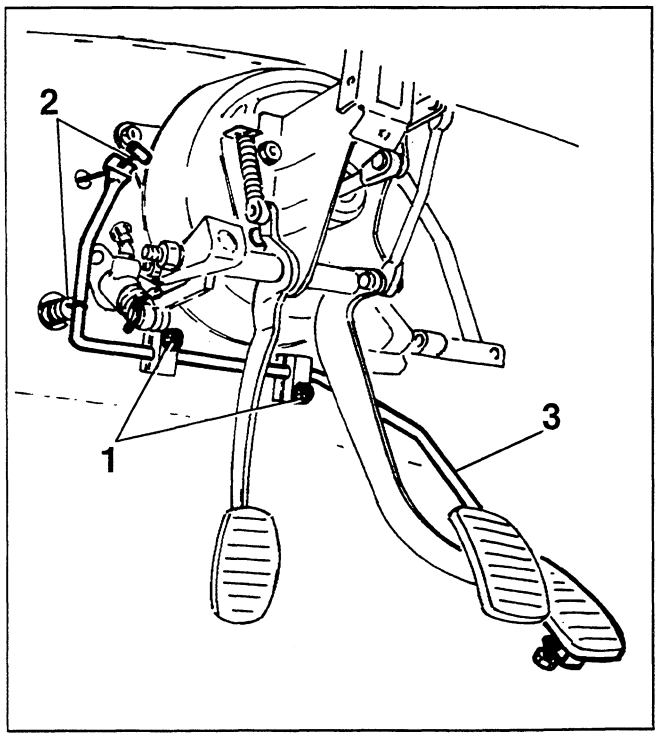
ACCELERATOR CONTROL (up to '97 version)



ACCELERATOR PEDAL

REMOVAL/REFITTING

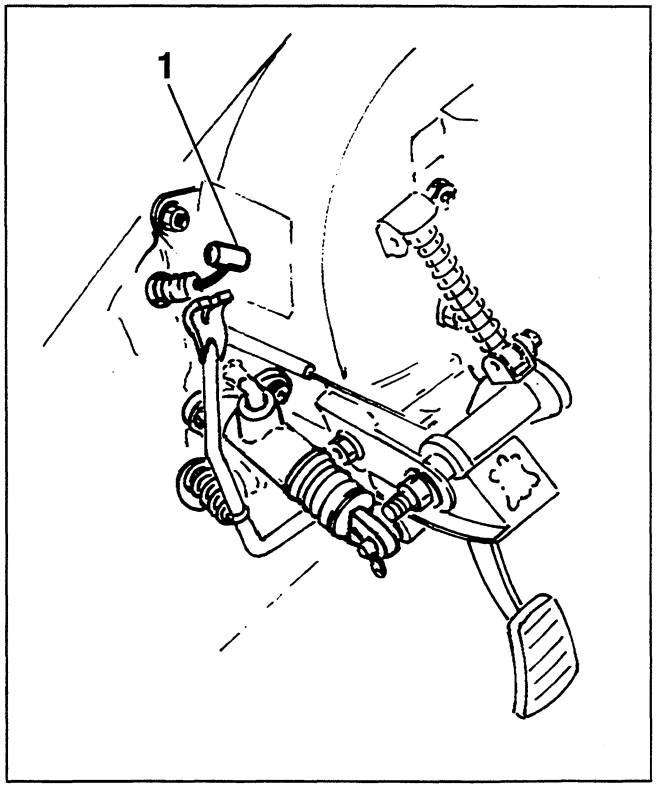
1. Working from the passenger compartment, slacken the two nuts fastening the pedal.
2. Release the pedal fork from the cable and spring.
3. Retrieve the accelerator pedal.



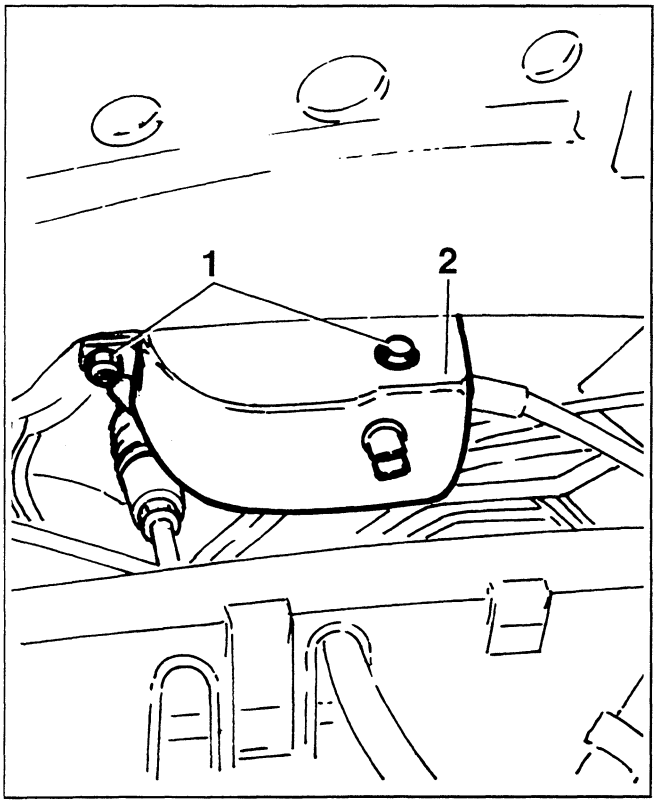
ACCELERATOR CABLE

REPLACEMENT

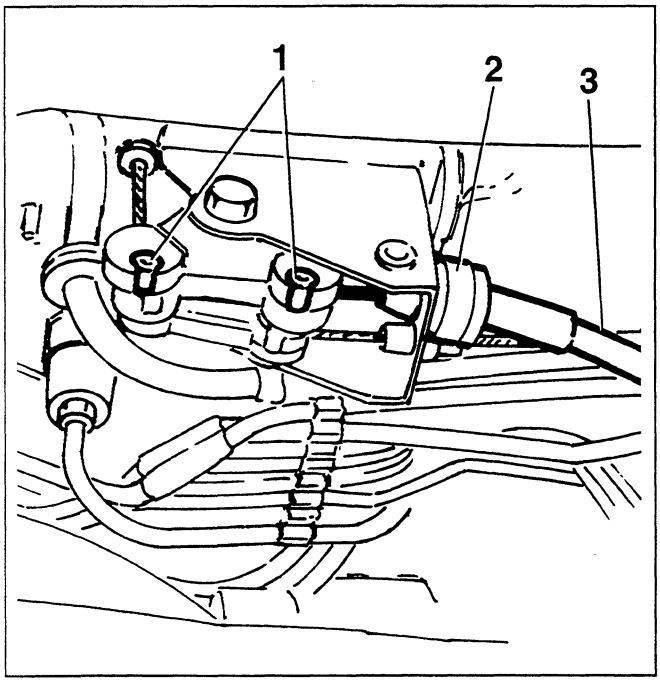
1. Working from the passenger compartment, release the fork controlled by the pedal.



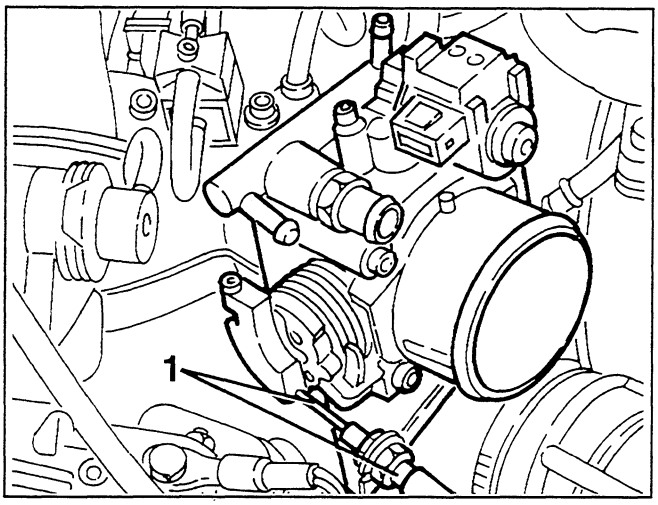
– Remove the intake box (see specific paragraph).
1. Working in the engine compartment, slacken the screw and nut fastening the transmission cover.
2. Remove the cover.



1. Free the accelerator cable pawls.
2. Free the sheath from the bracket.
3. Retrieve the sheath complete with cable.

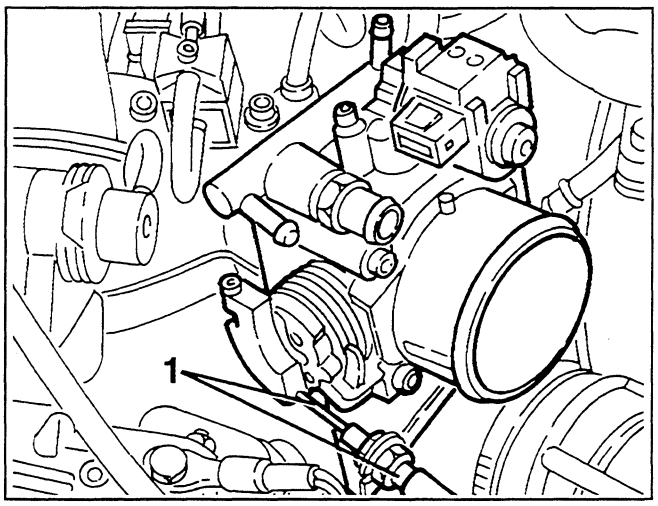


1. Disconnect the accelerator cable from the throttle.
When refitting the cable adjust the accelerator control.

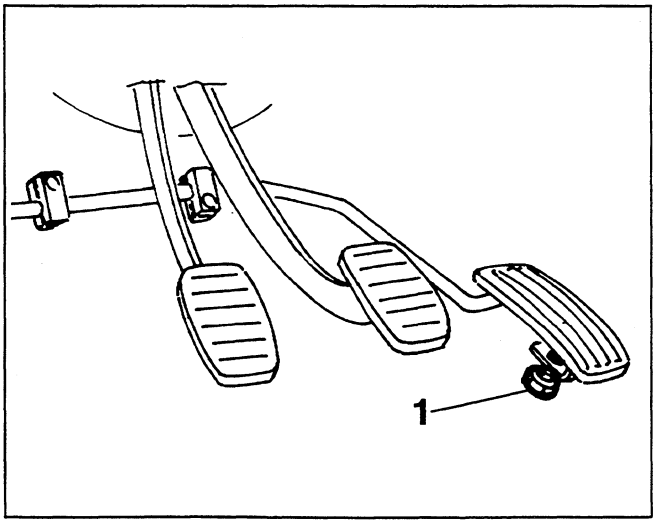


ADJUSTMENT

– Check that when the pedal is not pressed the throttle contacts against the stopper of idle speed.
1. If not, work on the adjustment nuts of the sheath on the throttle body bracket.



– Check that when the pedal is depressed completely, the throttle reaches its contact against the maximum stop, without excessively tauting the cable.
1. If not, work on the stop screw under the accelerator pedal.



CLUTCH 18

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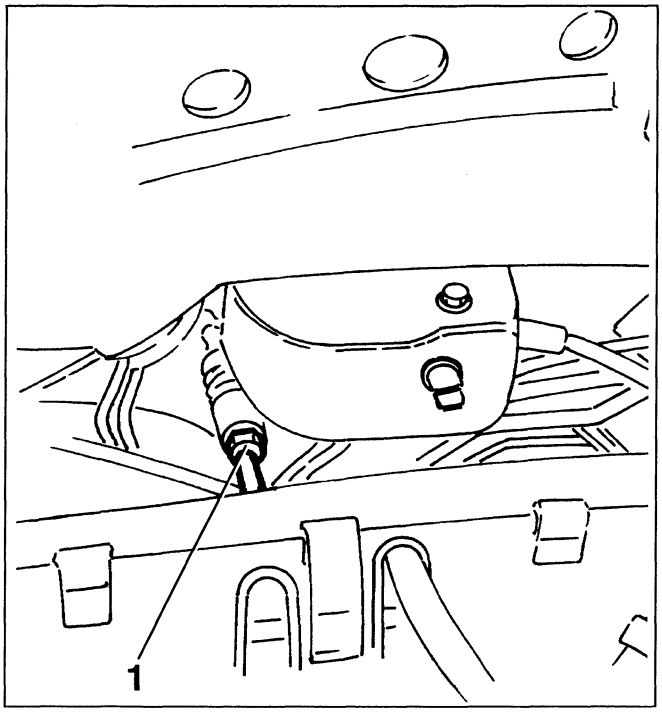
For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

CLUTCH CONTROL

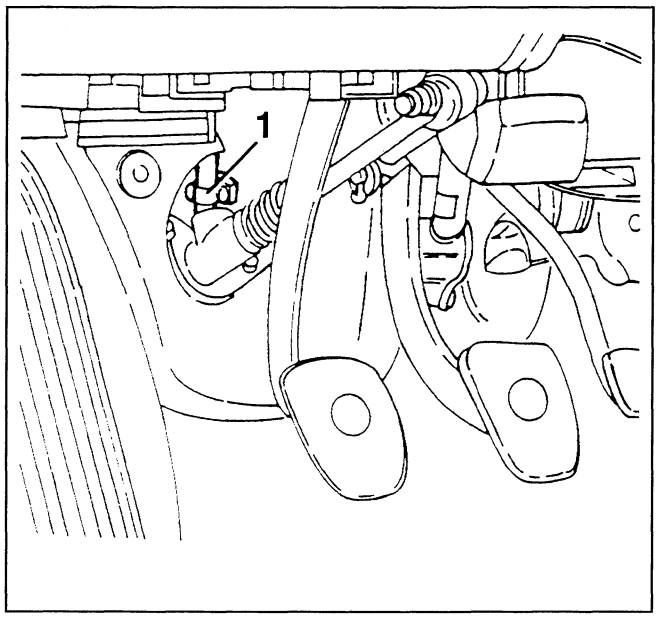
CLUTCH PUMP

REMOVAL/REFITTING

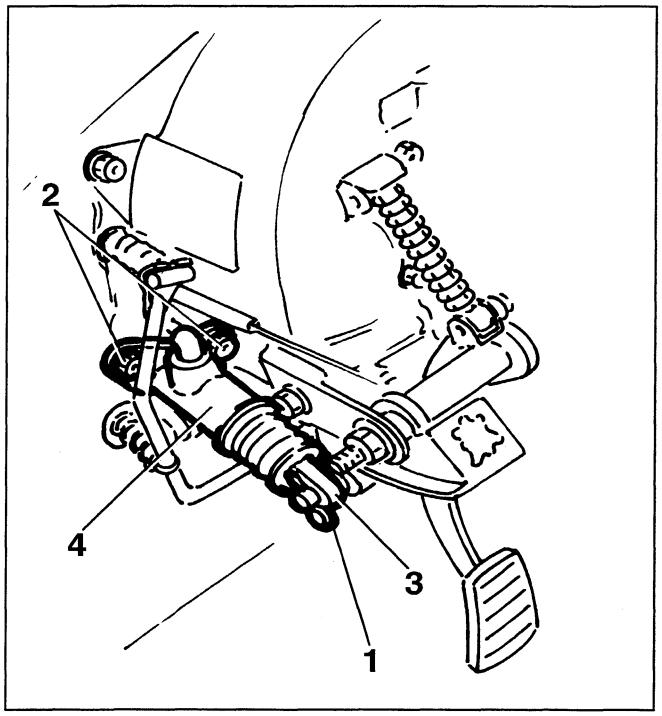
– Drain the brake-clutch fluid reservoir using a suitable syringe.
– Remove the intake box (see Group 10, specific paragraph).
1. Working from the engine compartment, remove the clutch pump fitting.



1. Working from the passenger compartment, disconnect the reservoir connection pipe from the reservoir.



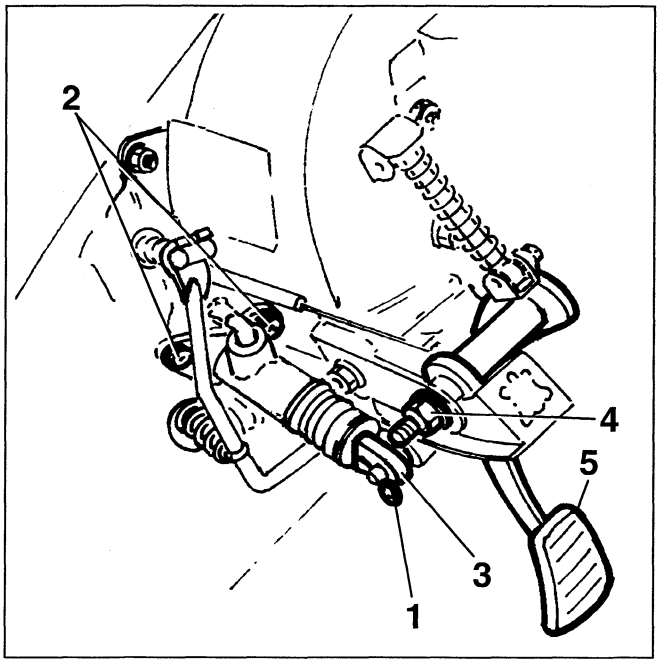
1. Remove the split pin.
2. Slacken the two nuts fastening the clutch pump.
3. Free the pump drive shaft.
4. Retrieve the clutch pump.



CLUTCH PEDAL

REMOVAL/REFITTING

1. Remove the split pin.
2. Slacken the two nuts fastening the clutch pump.
3. Free the pump drive shaft.
4. Slacken and withdraw the pedal fastening bolt.
5. Retrieve the clutch pedal.



BRAKE HYDRAULIC CYRCUIT 33

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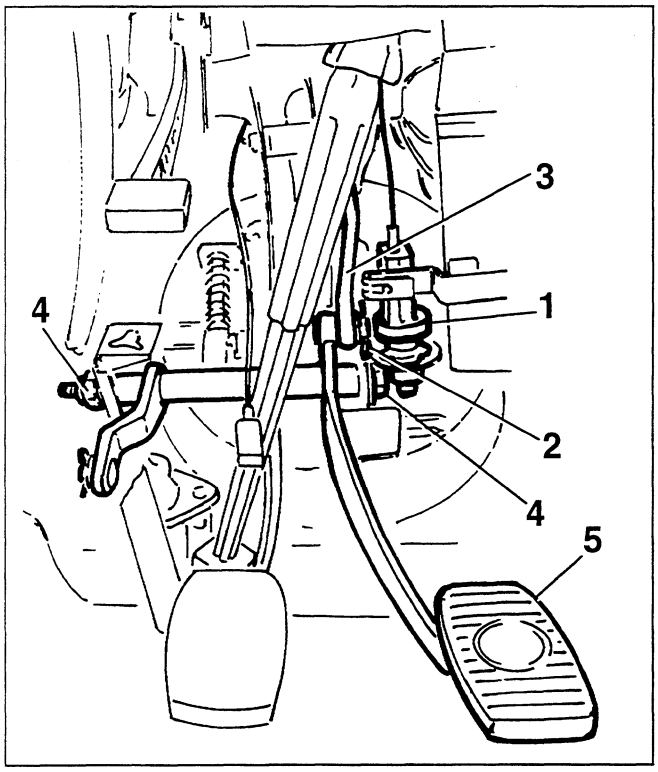
For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

BRAKE HYDRAULIC CYRCUIT

BRAKE PEDAL

REMOVAL/REFITTING

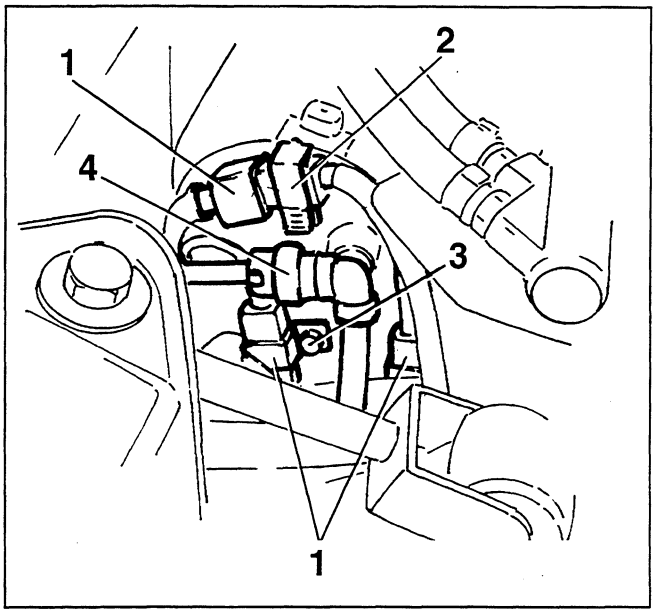
1. Turn and remove the brake light switch from its housing.
2. Remove the split pin.
3. Withdraw the connecting rod from the pin on the brake pedal.
4. Slacken and remove the pedal fastening bolt.
5. Retrieve the brake pedal.



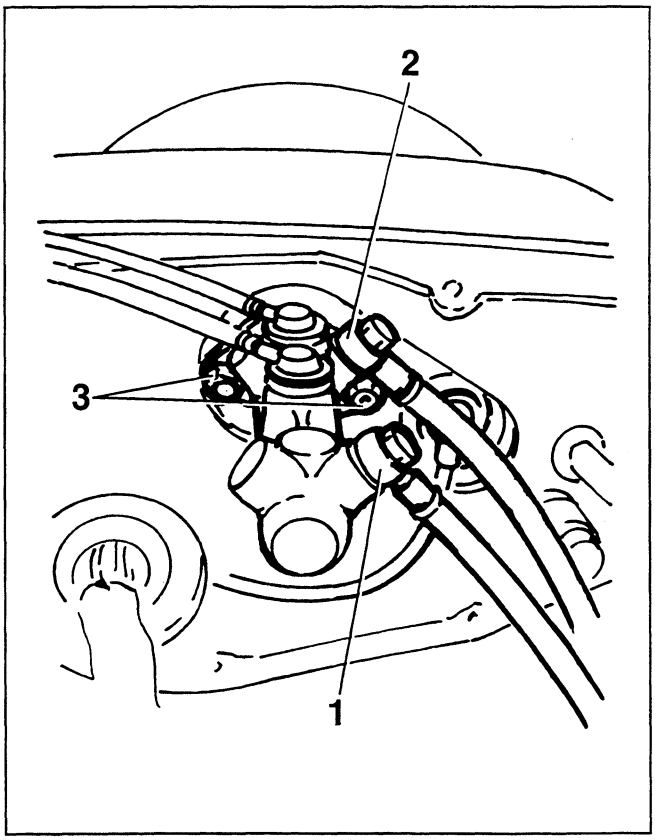
BRAKE PUMP

REMOVAL/REFITTING

– Drain the brake-clutch fluid reservoir, using a suitable syringe.
1. Disconnect the three electrical connections on the side of the intake box.
2. Prise the connectors opening the plastic clamps.
3. Slacken the screw and remove the rear clamp.
4. Disconnect the vacuum pipe fitting for the servo-brake (press the tabs on the fitting).

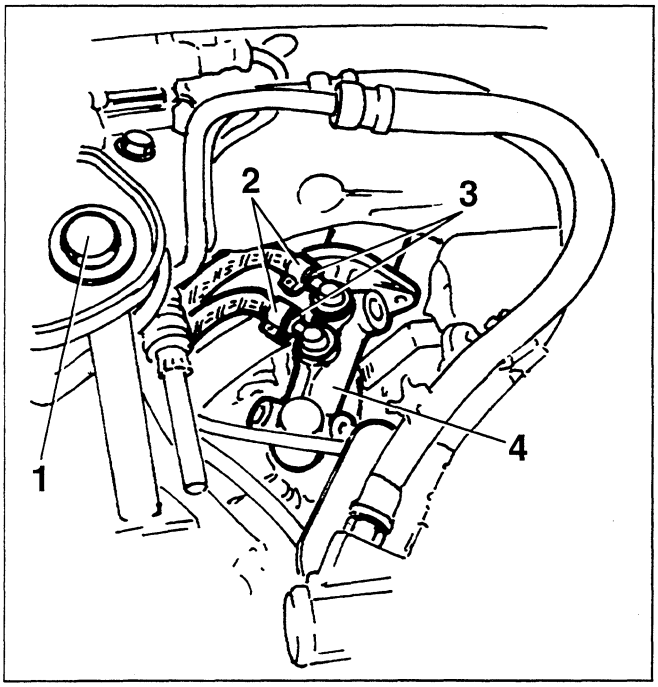


1. Slacken the front fitting on the brake pump.
2. Slacken the rear fitting.
3. Slacken the two pump fastening nuts.



1. To facilitate removal of the pump, slacken the engine mount connecting rod stay bolt and move the engine slightly forwards by levering.
– Move the pump forwards keeping it in line with the servobrake.
2. Remove the clamps.
3. Withdraw the reservoir connection hoses.
4. Retrieve the brake pump.

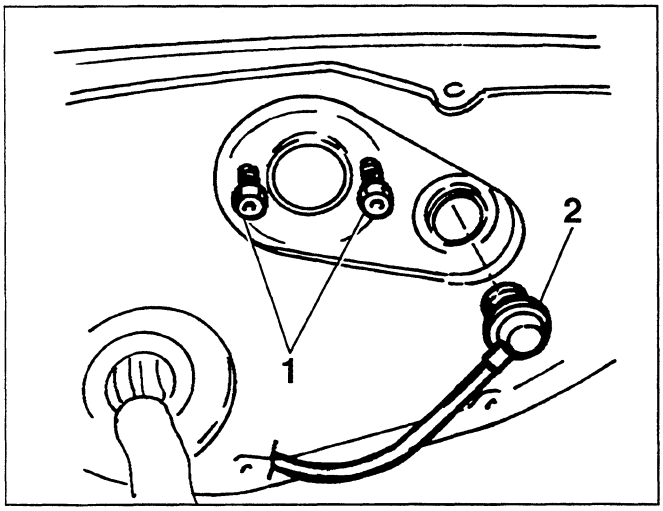
When refitting relieve the air from the system.
After this, top up the brake-clutch fluid in the reservoir to the correct level.



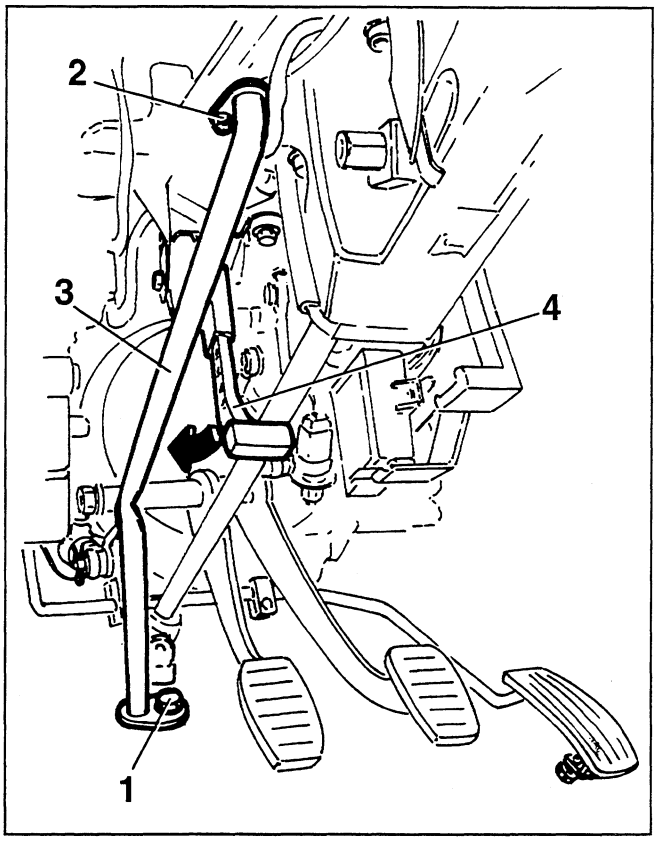
SERVOBRAKE

REMOVAL/REFITTING

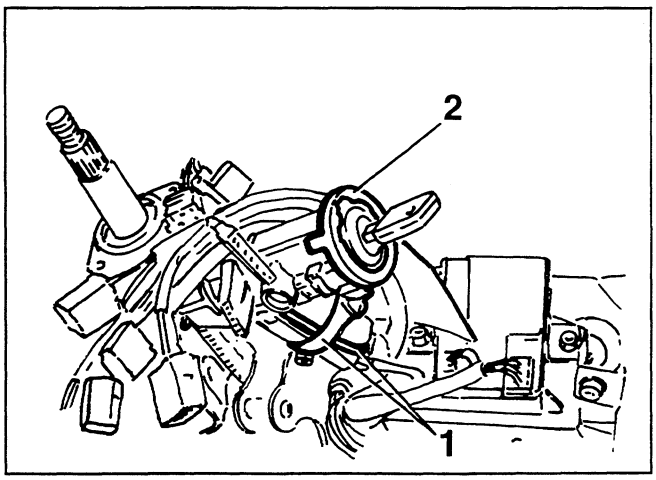
– Remove the brake pump (see specific paragraph).
1. Re-tighten the nuts on the brake pump threaded stay pins.
2. Disconnect the vacuum pipe from the servobrake.



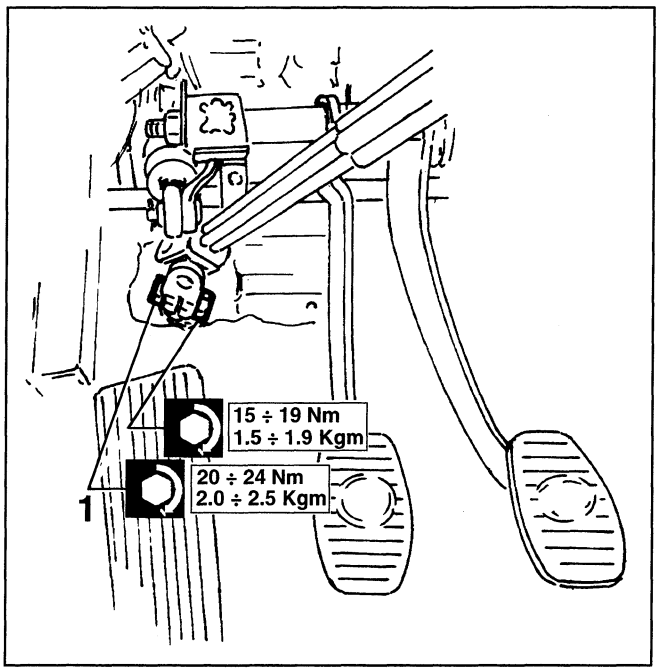
Then, working from the passenger compartment, remove the dashboard (see Group 70 - Base Manual).
(Up to '97 version only)
1. Slacken the lower screw of the reaction strut.
2. Slacken the two upper screws.
3. Remove the reaction strut.
(from '98 version)
– Remove the steering column cross member.
4. Push the bonnet opening lever down and release it.



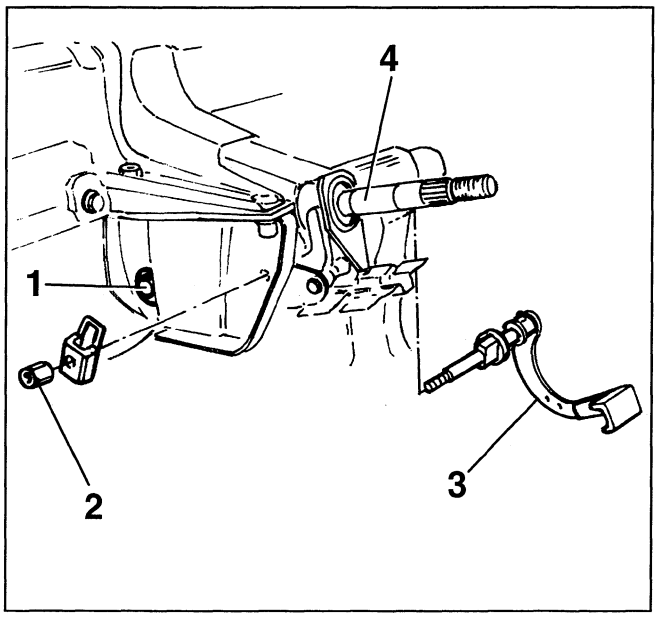
1. Remove the clamps and disconnect the ignition switch connector.
2. Withdraw the ALFA ROMEO CODE system aerial without disconnecting it.



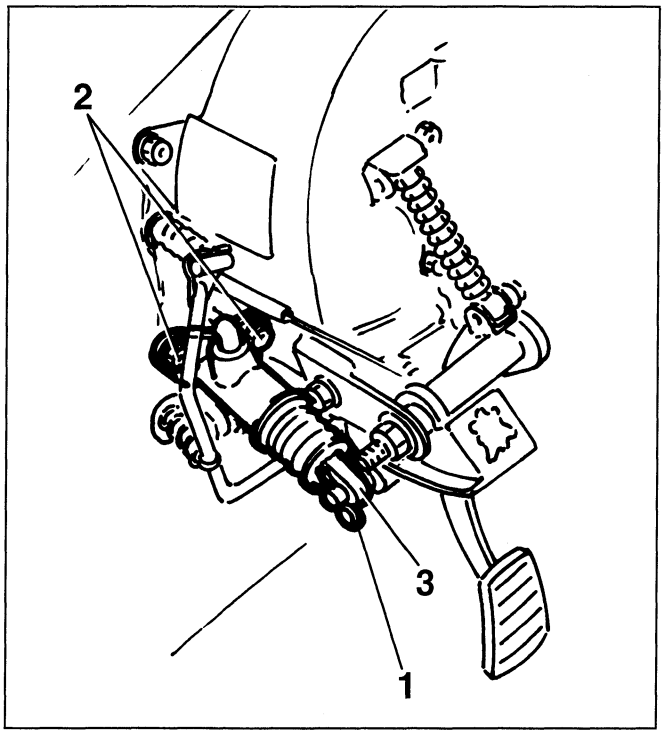
1. Slacken the bolt fastening the lower cardan joint to the steering box shaft.



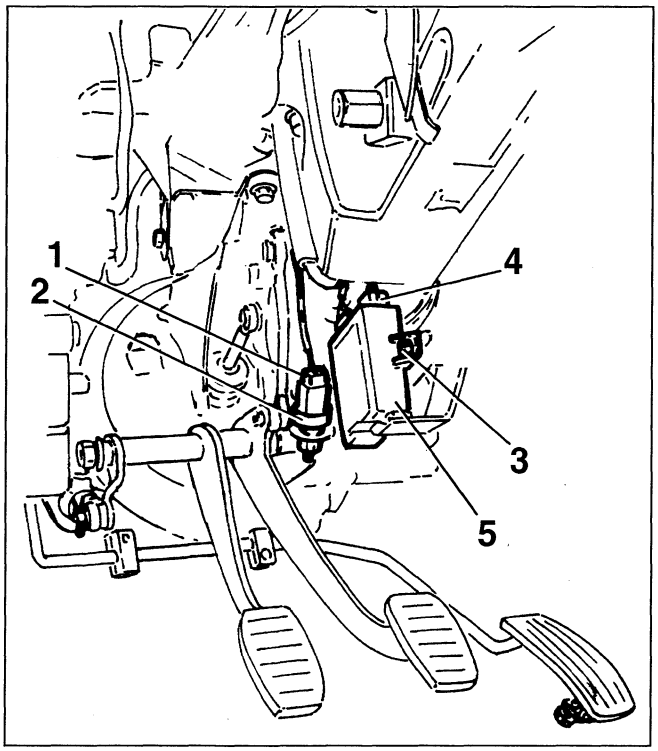
1. Slacken the steering column front connection bolt.
2. Remove the steering column adjustment lever bolt.
3. Remove the steering column adjustment lever retrieving the washers and spacers.
4. Remove the steering column.



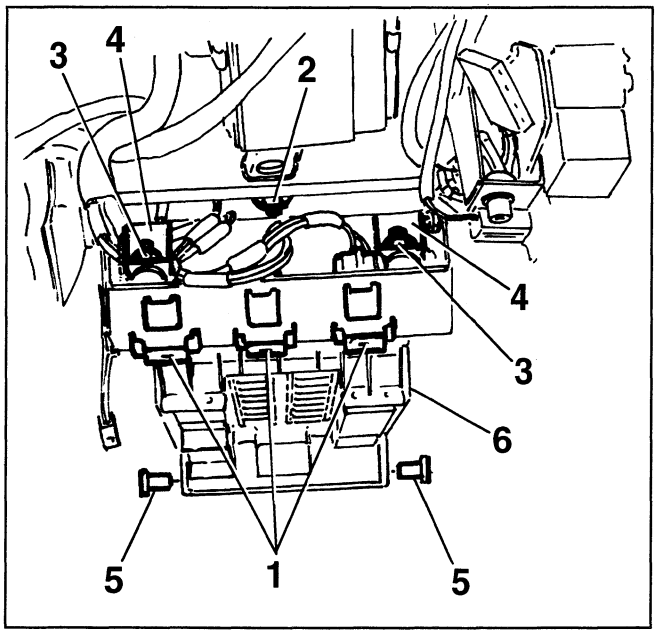
1. Withdraw the split pin and retrieve the washer.
2. Slacken the clutch pump fastening nuts.
3. Free the clutch pump spindle from the pin connected to the pedal.



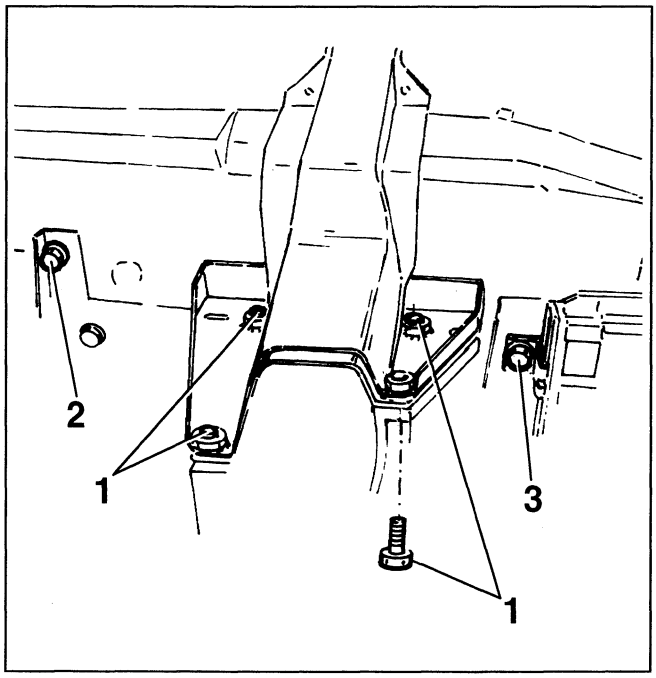
1. Disconnect the brake light switch electrical connection.
2. Turn the switch 45° clockwise and remove it.
3. Slacken the two nuts of the Alfa Romeo Code control unit.
4. Lower the control unit and disconnect the electrical connections.
5. Retrieve the control unit.



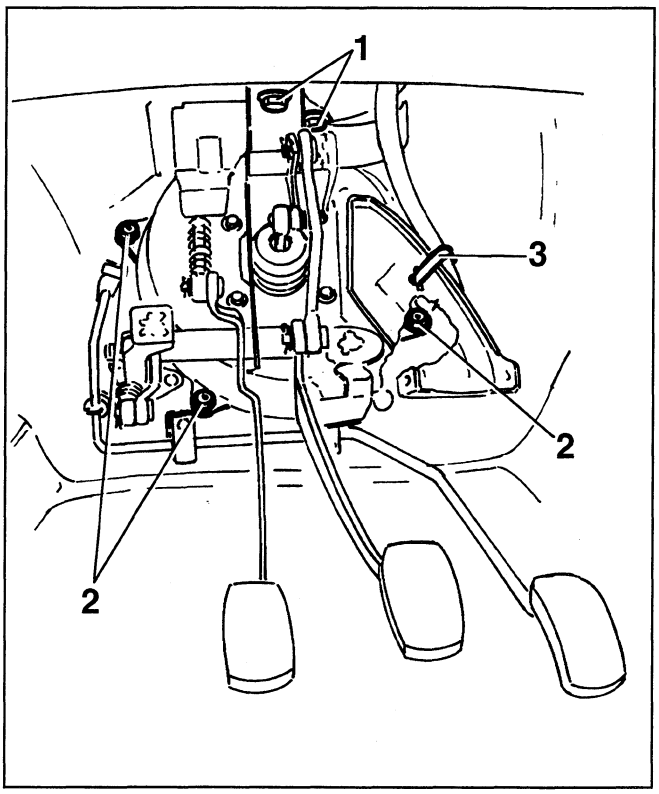
1. Disconnect and remove the fuse holders.
2. Slacken the centre nut and lower the fusebox.
3. Slacken the two small side nuts.
4. Release the two fusebox retaining springs.
5. Release the two pins of the fusebox bracket.
6. Move the fusebox aside.



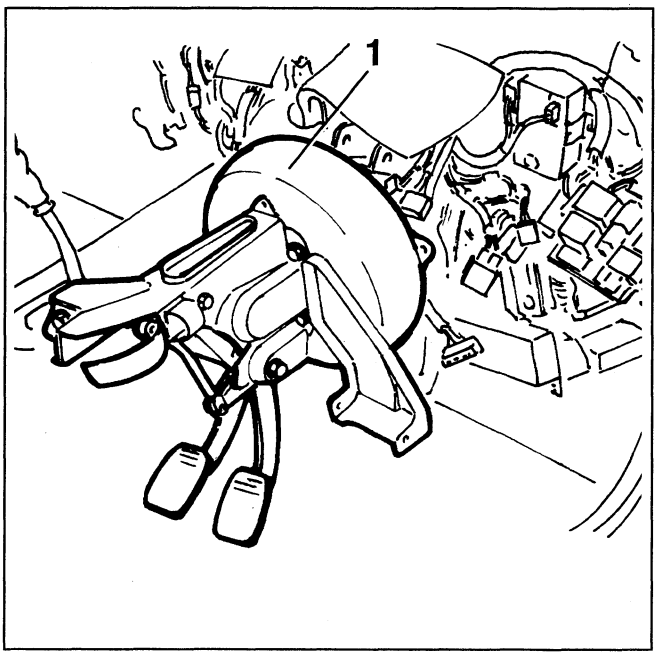
1. Slacken the four screws fastening the steering column support.
2. Slacken the heater unit stay screw.
3. Slacken the fastening screw of the fusebox support bracket.



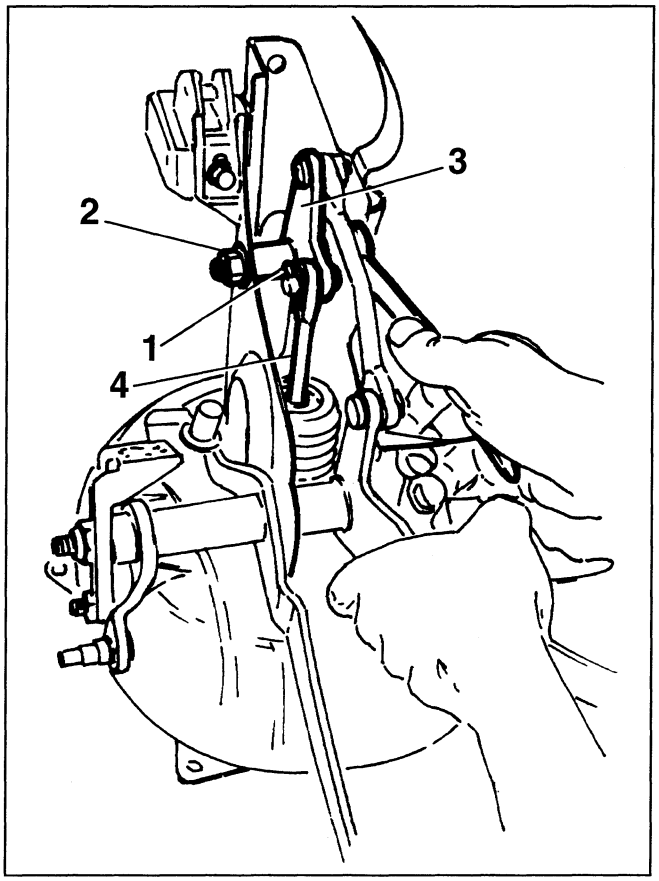
1. Slacken the two upper screws.
2. Slacken the three nuts fastening the servobrake cover.
3. Cut the clamp and free the wiring.



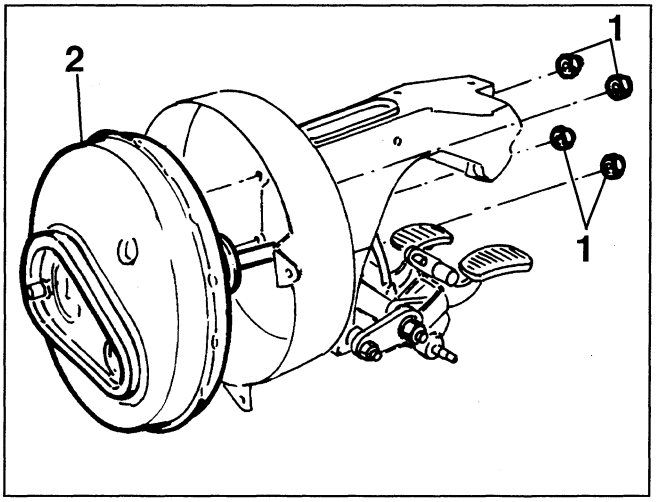
1. Remove the servobrake cover complete with pedal unit.



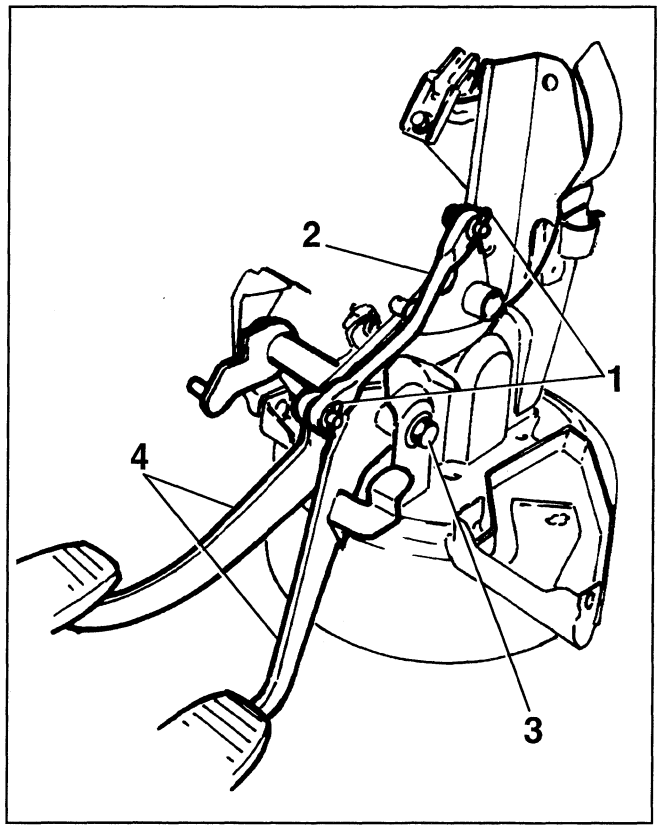
– Set the unit on the bench.
1. Remove the split pin and retrieve the washer.
2. Slacken the brake transmission bolt.
3. Release the transmission.
4. Free the servobrake control rod from the pin on the transmission.



1. Slacken the four nuts.
2. Remove the servobrake.



If necessary, disassemble the servobrake cover.
1. Remove the split pins and retrieve the washers.
2. Remove the brake control connecting rod.
3. Slacken the bolt.
4. Retrieve the pedals with their spacers.



STEERING 41

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For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

STEERING CONTROL

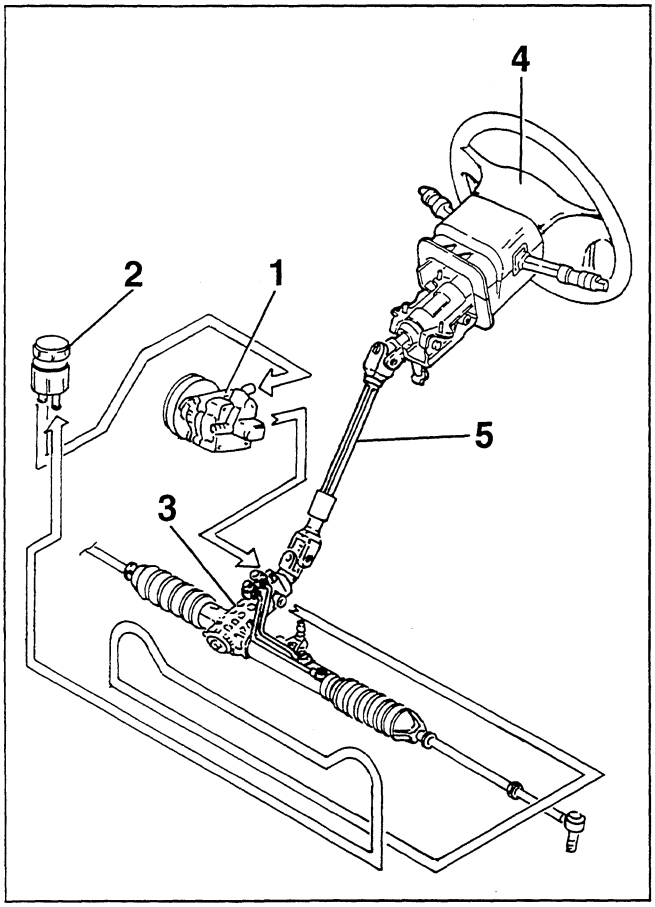
DESCRIPTION

The power steering system reduces the effort at the steering wheel in manoeuvres at a standstill and keeps steering precise at high speeds.

The system comprises a pump (1) operated directly by the engine through a belt. The pump withdraws oil from the reservoir (2) in the engine compartment through the inlet pipe and sends it under pressure through the delivery pipe to the distributor valve on the power steering box (3).

The distributor valve, which is controlled by the turning of the steering wheel, sends the oil under pressure from one side or the other of the hydraulic cylinder which is integral with the rack and pinion, inside the steering box.

A section of the return pipe to the reservoir is positioned in front of the radiator and it is struck by the cooling air to remove heat and keep the hydraulic fluid at the correct temperature level.



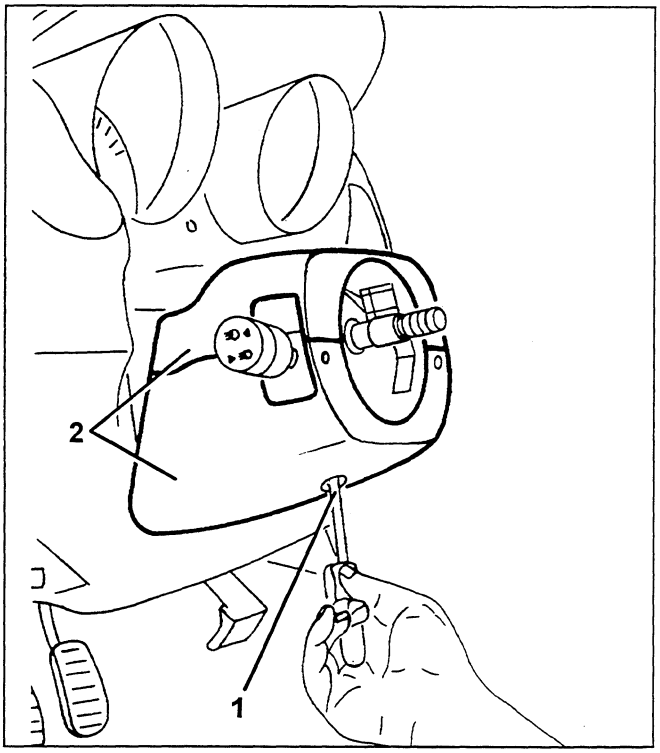
1. *Pump*
2. *Reservoir*
3. *Steering box*
4. *Steering wheel*
5. *Sterring column*

STEERING COLUMN

REMOVAL/REFITTING

– Remove the steering wheel (see Base Manual).

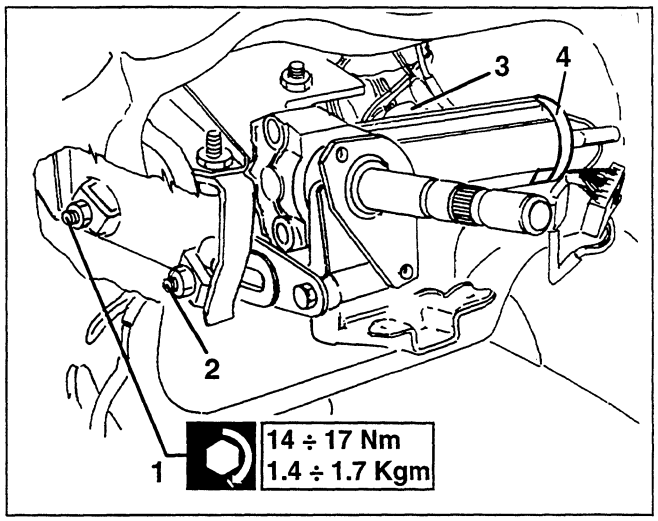
1. Slacken the steering column half cover fastening screws from below.
2. Retrieve the half covers.



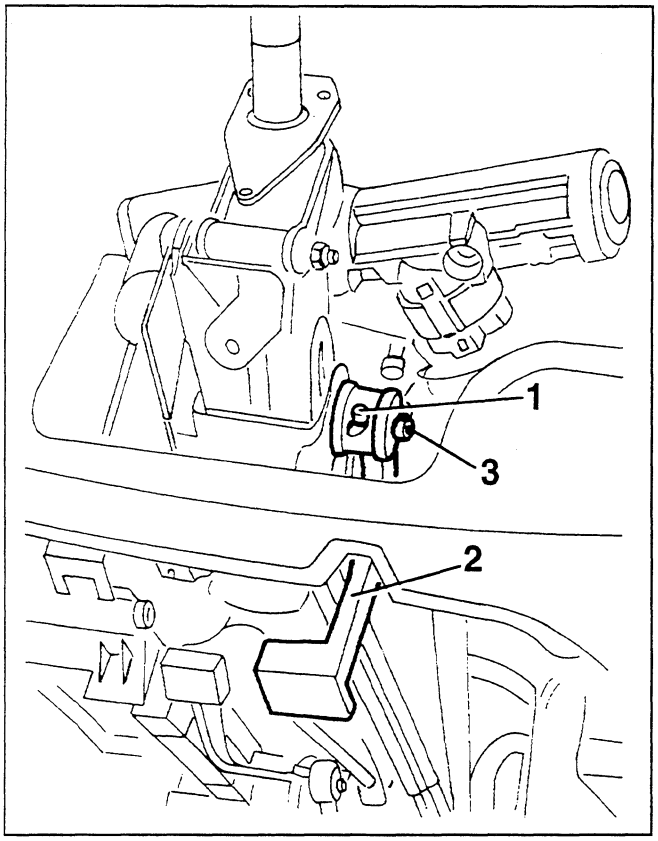
– Remove the steering column lever unit (see GROUP 55, Base Manual).

– Remove the fusebox cover from the dashboard front panel (see GROUP 70, Base Manual).

1. Slacken and remove the bolt of the lower slotted bracket for steering column axial adjustment.
2. Slacken the nuts of the upper slotted bracket.
3. Disconnect the connection from the ignition switch.
4. Withdraw the ALFA ROMEO CODE system aerial.

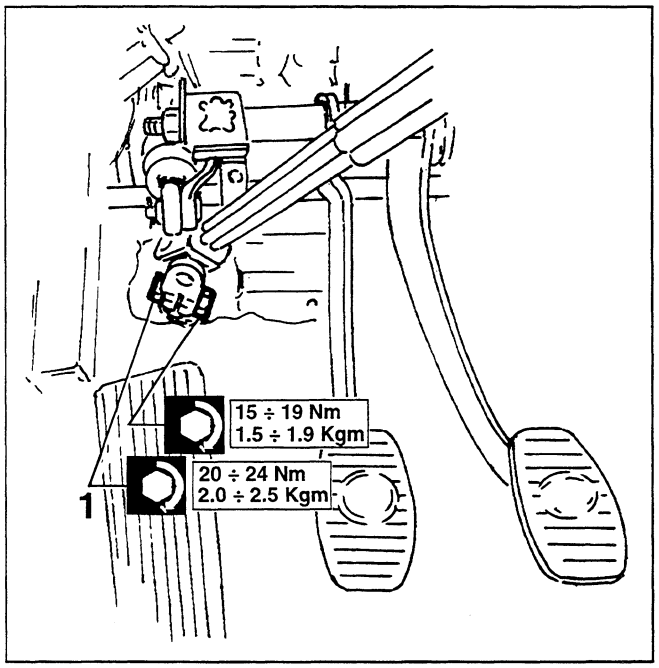


1. Withdraw the retainer pin.
2. Withdraw the steering wheel adjustment lever.
3. Remove the pin of the upper slotted bracket.



1. Slacken the bolt fastening the lower cardan joint to the steering box shaft

– Remove the steering column complete.

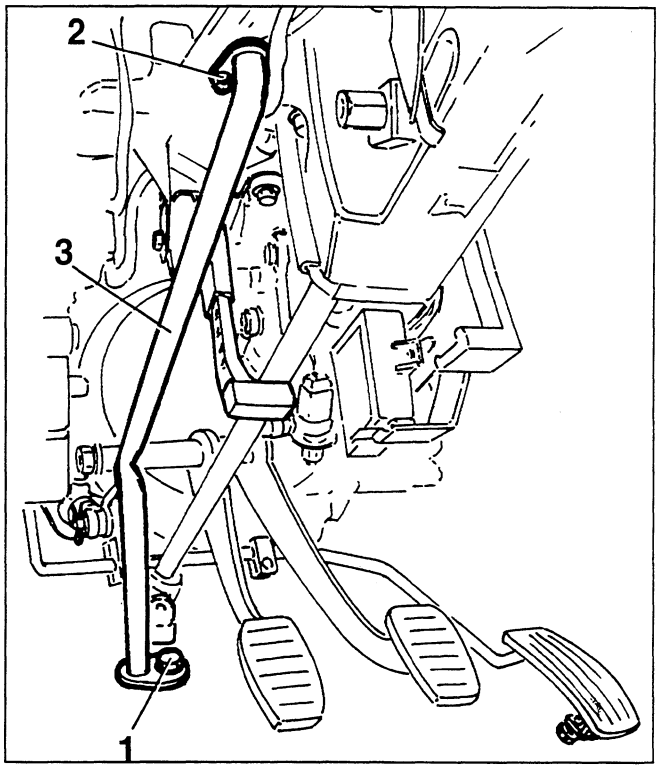


(Up to '97 version only)

1. If necessary, slacken the lower screw of the reaction pin.
2. Slacken the two upper screws.
3. Remove the reaction pin.

(From '98 version)

– Remove the steering column crossmember.

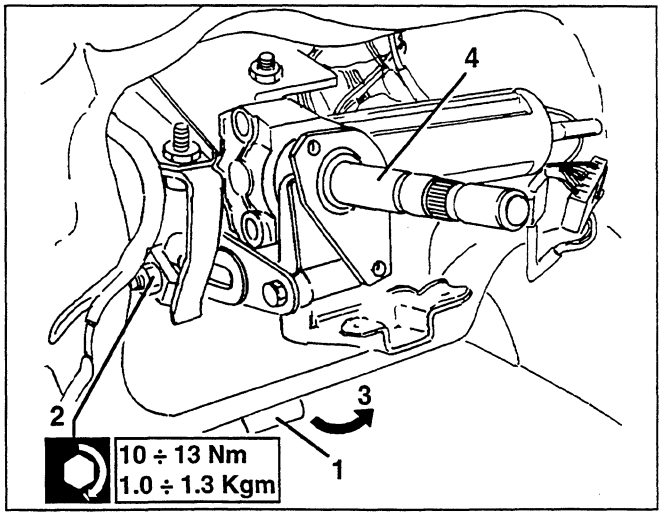


When refitting, reverse the sequence described for removal following the instructions given below.

– Check the steering wheel adjustment device as follows:

1. Move the lever to the locking position.
2. Tighten the nut and lock it to the specified torque.
3. Move the lever to the release position.
4. Check that steering column adjustment takes place correctly.

– Return the lever to the locking position.

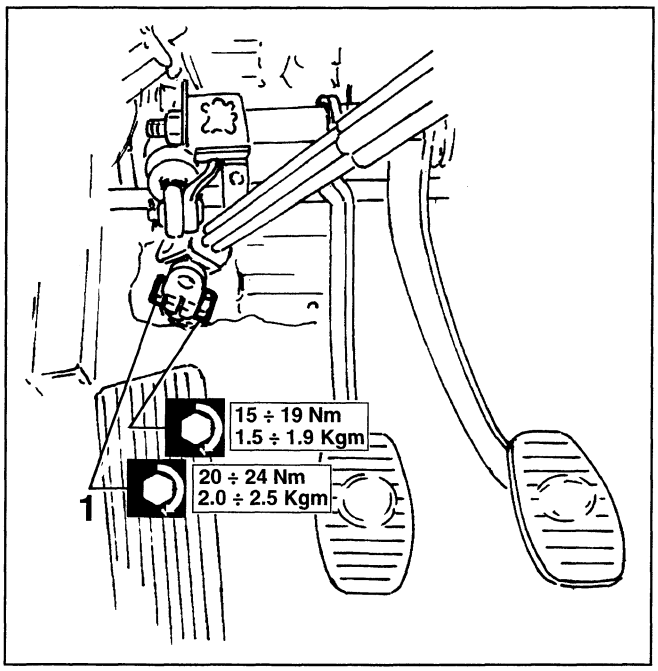


POWER STEERING

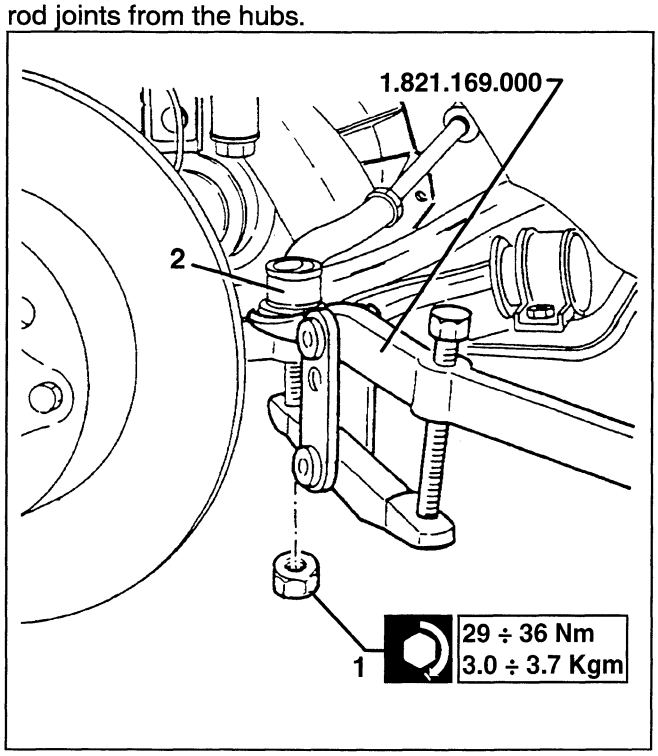
STEERING BOX

REMOVAL/REFITTING

– Using a suitable syringe, drain the power steering system tank.
– Remove the front wheels.
1. Working from inside the car, slacken the bolt fastening the steering column to the steering box pinion.



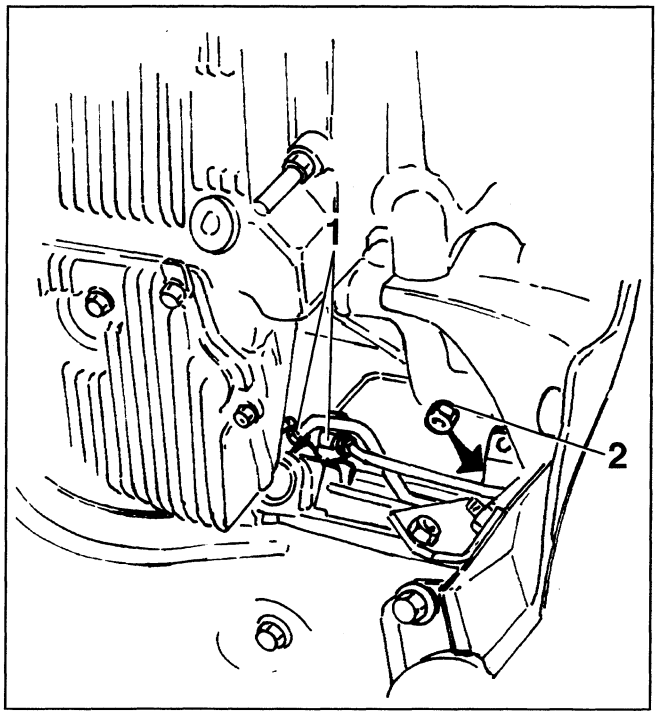
1. Slacken the nuts fastening the track rod ball joints to the wheel hubs.
2. Using tool no. 1.821.169.000 disconnect the track rod joints from the hubs.



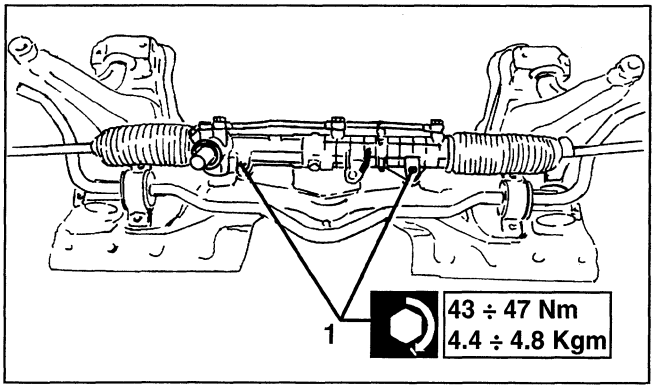
– Remove the front crossmember (see GROUP 44, Base Manual).

WARNING
Before lowering the crossmember, proceed as follows:

1. Disconnect the oil inlet and outlet pipes from the power steering box.
2. Disconnect the gear engagement transmission from the pin on the steering box.



1. Slacken the two screws and separate the steering box from the crossmember.



When refitting, if necessary, adjust the track rods to the correct toe-in value as described in GROUP 44, Base Manual.

AUXILIARY ORGANS 50

INDEX

CLIMATE CONTROL (up to '97 version)

AUTOMATIC TEMPERATURE CLIMATE CONTROL

For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

CLIMATE CONTROL (up to '97 version)

DESCRIPTION

Foreword

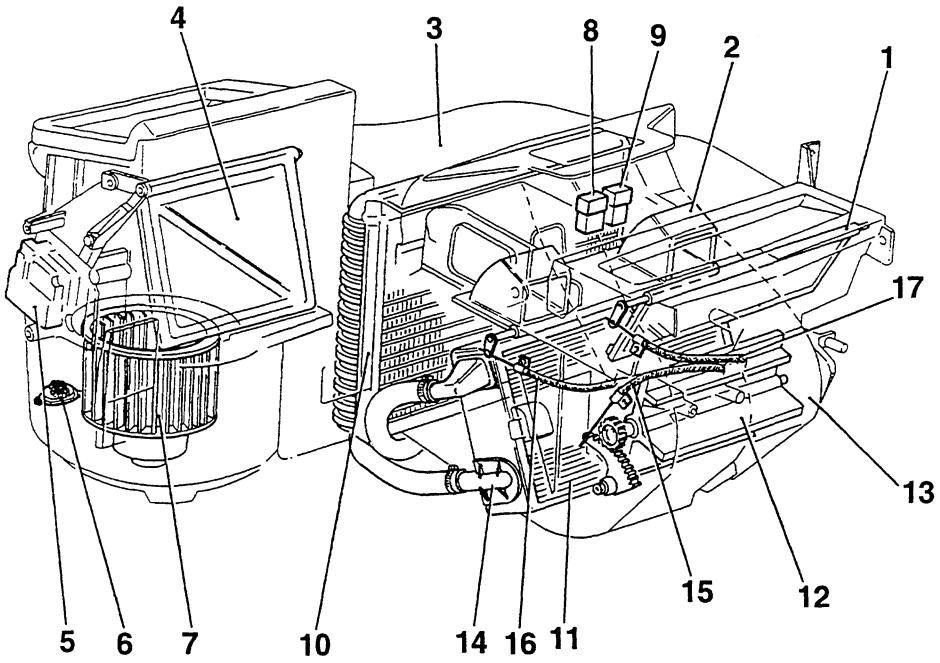
The manually-operated climate control system makes it possible to completely control the air admitted to the car: in fact, it cools the air in hot weather but also dehumidifies and recirculates it.

The system may be considered as split into two sections:

- unit comprising the air duct and distributor;
- closed loop system which generates cold.

NOTE
While the cooling system located in the passenger compartment is identical to that of cars with left-hand drive with regard to the location of the components, the ducting/distributor unit is different as described below.

DUCTING/DISTRIBUTOR UNIT



1. *Upper distribution port*
2. *Mixing port*
3. *Ducting unit*
4. *Outside air flow adjustment and recirculation port*
5. *Outside air flow adjustment and recirculation port control motor*
6. *Electric fan resistance*
7. *Electric fan*
8. *1st fan speed relay*
9. *Electric fan relay*
10. *Evaporator*
11. *Heater radiator*
12. *Lower distribution port*
13. *Heater-distributor unit*
14. *Radiator adjustment tap*
15. *Lower distribution port control cable*
16. *Mixing port control cable*
17. *Upper distribution port control cable*

NOTE:

Differences for version with heater

- the evaporator is not present;
- the wiring is specific: it is without the two relays (for further details see Group 55 - ELECTRIC SYSTEM DIAGNOSIS in base manual);
- the front box (upper and lower) differs in shape;
- the shape and ohm rating of the electric fan resistance differs (for further details see Group 55 - ELECTRIC SYSTEM DIAGNOSIS in base manual);

N.B. The servicing procedures described below refer to the version with air conditioner: for the version with heater, omit the operations involving the components that are not present.

SERVICE PROCEDURES

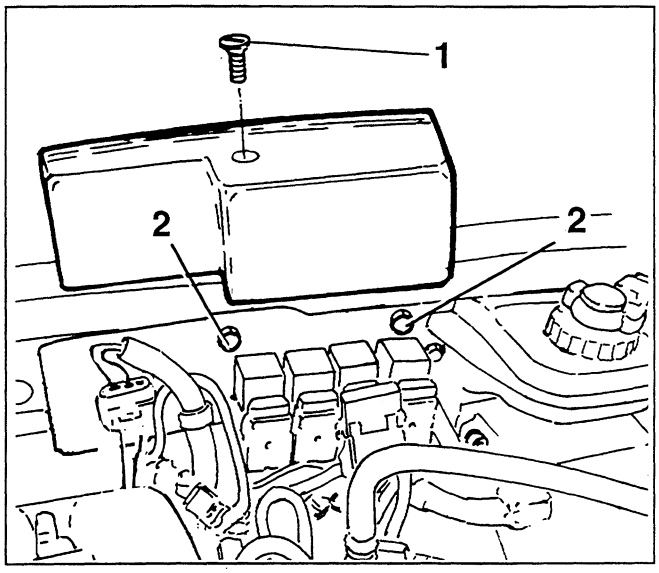
GENERAL WARNINGS FOR OPERATIONS ON THE CLIMATE CONTROL UNIT

- **Before doing any maintenance and repair work, you are advised to disconnect the battery.**
- **Before disassembling the system, it is necessary to drain the system recovering the coolant fluid.**
- **During servicing operations, when the system components are disconnected, plug the disconnected fittings appropriately to prevent damp and impurities from getting into the system.**
- **When reassembling the pipe fittings, replace the O-rings on the fittings themselves.**
- **Lubricate the threads of the pipe fittings with the specified antifreeze oil and tighten the fittings to the specified torque.**

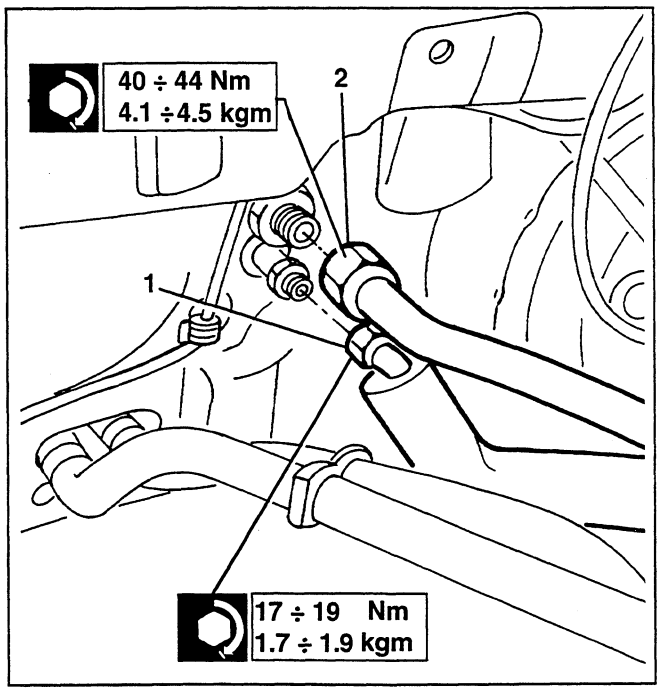
DUCTING/DISTRIBUTOR UNIT

REMOVAL

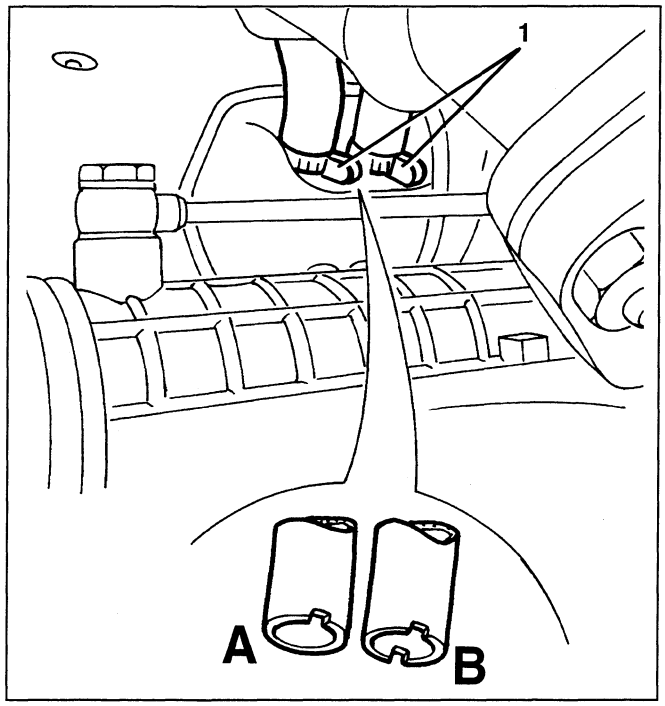
– Disconnect the battery.
– Remove the dashboard (see GROUP 70, base manual).
– Drain the coolant fluid.
1. Working in the engine compartment, slacken the screw and remove the relay cover.
2. Slacken the two screws and disconnect the fastening bracket of the injection relays and fuses.
– Remove the intake box (see GROUP 10)



1. Using wrenches 1.822.111.000 and 1.822.113.000 disconnect the pipe leading from the evaporator to the condenser.
2. Using wrenches 1.822.111.000 and 1.822.113.000 disconnect the pipe leading from the evaporator to the drier filter.



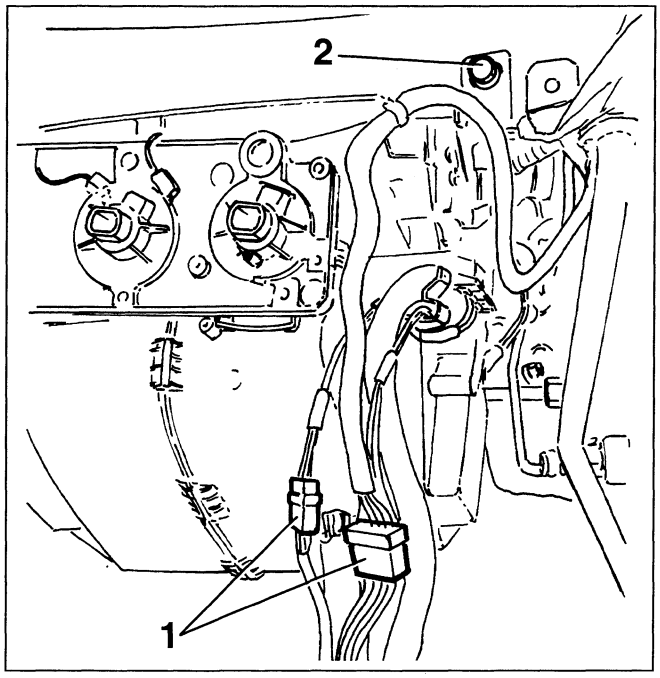
1. Open the clamps and disconnect the two engine coolant fluid delivery and return pipes in the heater: N.B. recover the fluid.



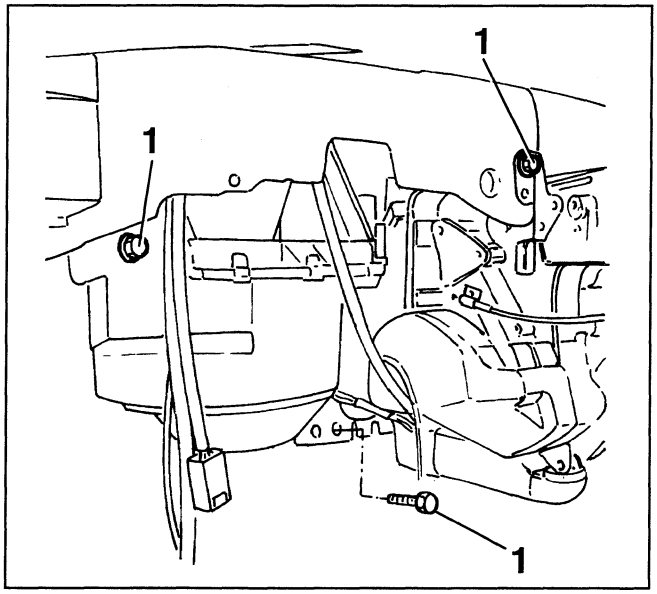
NOTE: The two pipes are marked by one notch (A) and two notches (B) to prevent them from being inverted.

When refitting use screw clamps.

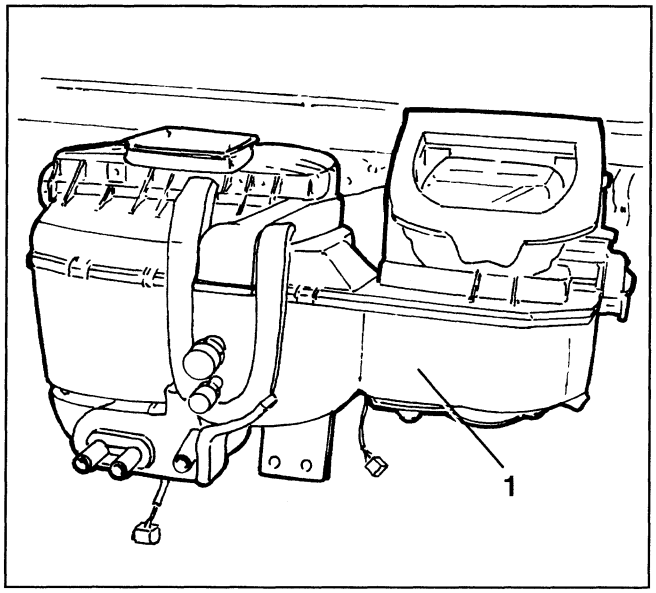
1. Working in the passenger compartment, disconnect the two electrical connections of the climate unit (connections between dashboard and dashboard cable loom).
2. Slacken the screw fastening the right hand side climate unit.



1. Slacken the screws fastening the left-hand side climate control unit.



1. Remove the climate unit.

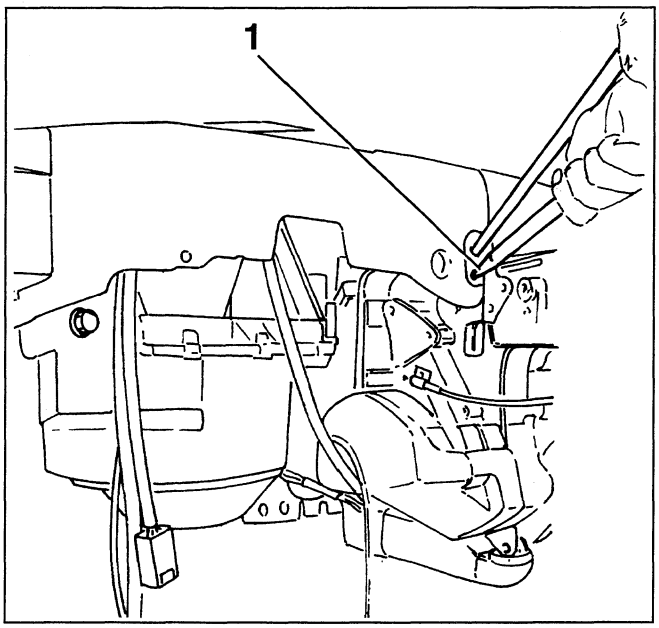


REFITTING

Refit the climate control unit reversing the sequence followed for removal and following the instructions given below:

- Coat the end of the heater, water drain and freon pipes with vaseline.
- Assemble the unit taking care to insert the above-mentioned pipes correctly in the passage holes.

1. Using two special centering pins, positioned as illustrated, centre the position of the unit before fastening it.

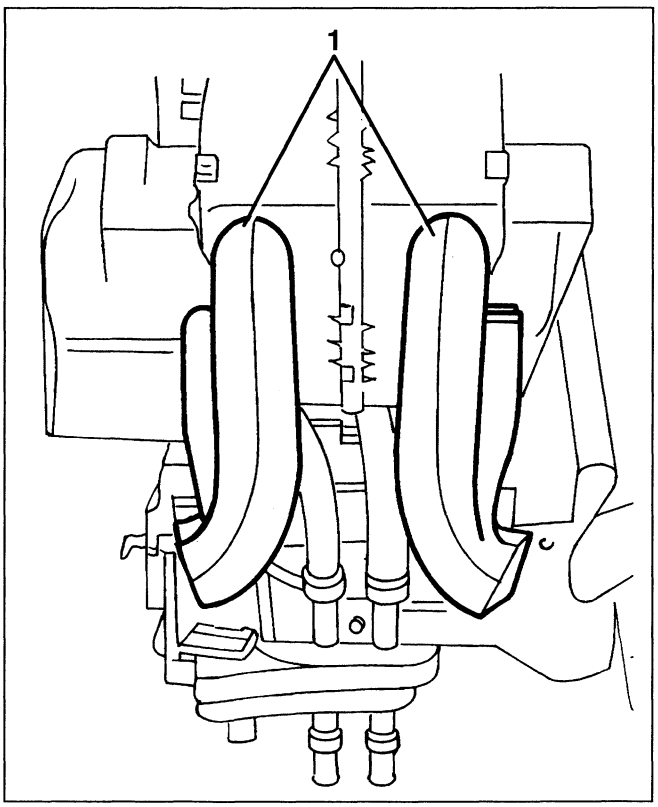


DISASSEMBLY

NOTE: The following description is of disassembly of the unit to replace single components.
However, some of them may be replaced without removing the unit, as shown in the following paragraphs.

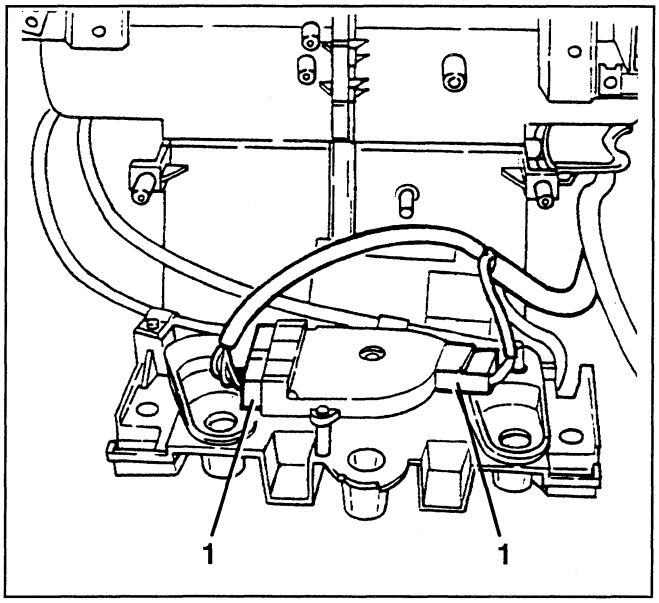
Air duct

1. Remove the two lower air ducts.

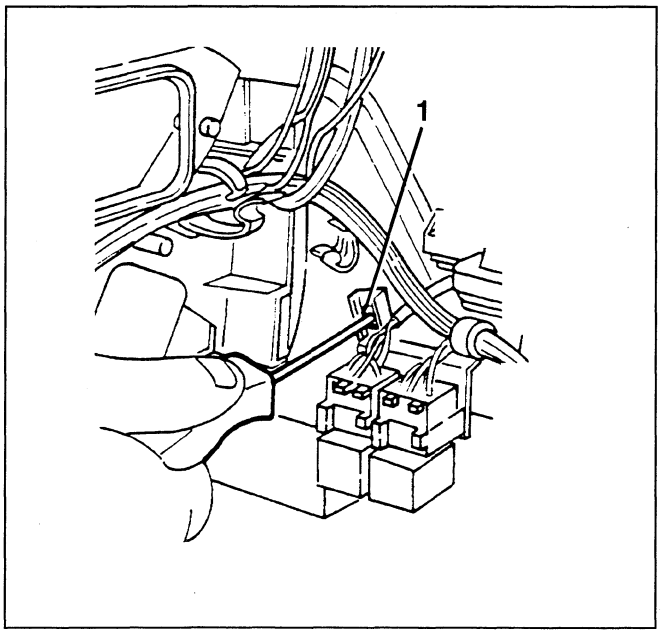


Wiring

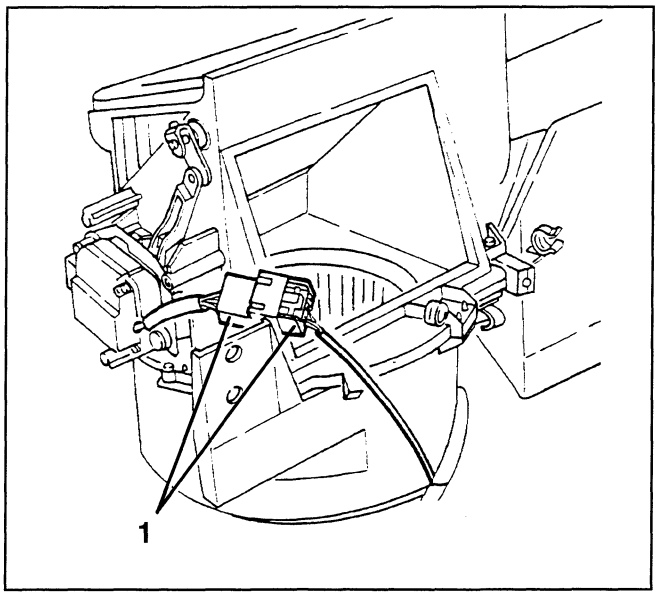
1. Disconnect the two electrical connections from the climate controls.



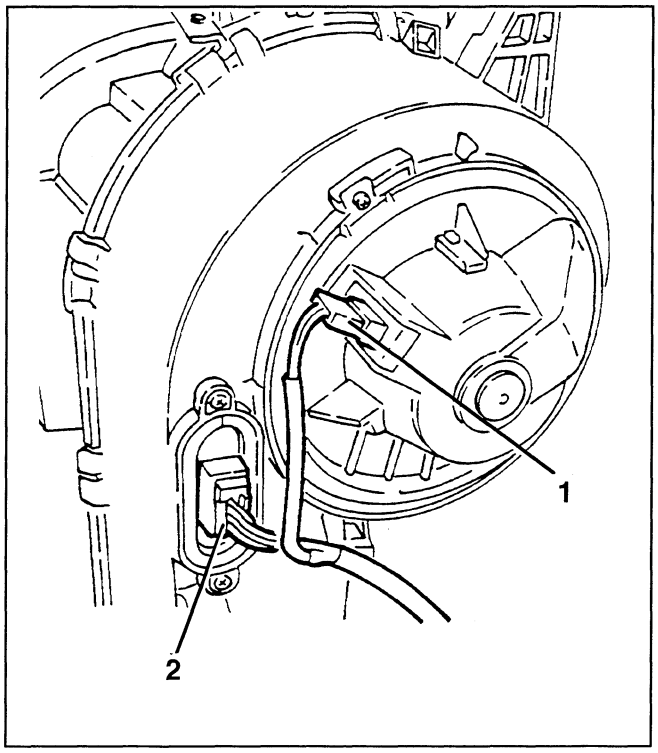
1. Slacken the screw fastening the relay support bracket.



1. Disconnect the electrical connection of the recirculation control motor.

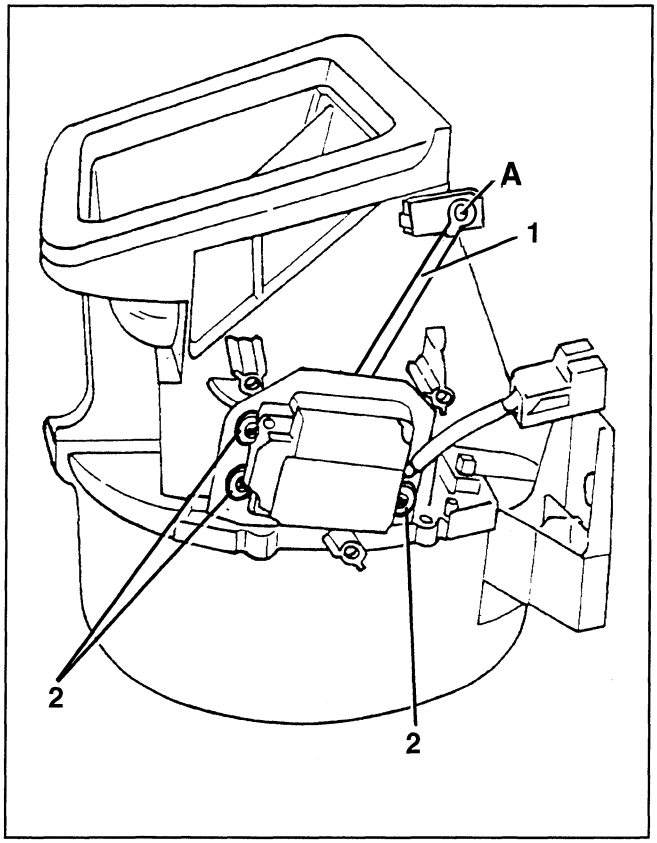


1. Disconnect the electrical connection from the fan.
2. Disconnect the electrical connection from the electric fan resistance, then remove the cable freeing it from the clamps.

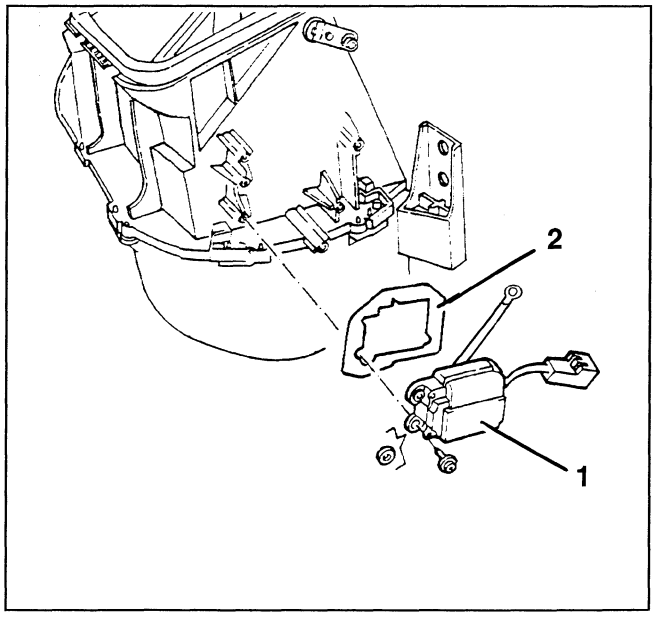


Recirculation control motor

1. Release the rod from the catch A.
2. Slacken the three screws fastening the recirculation control motor.

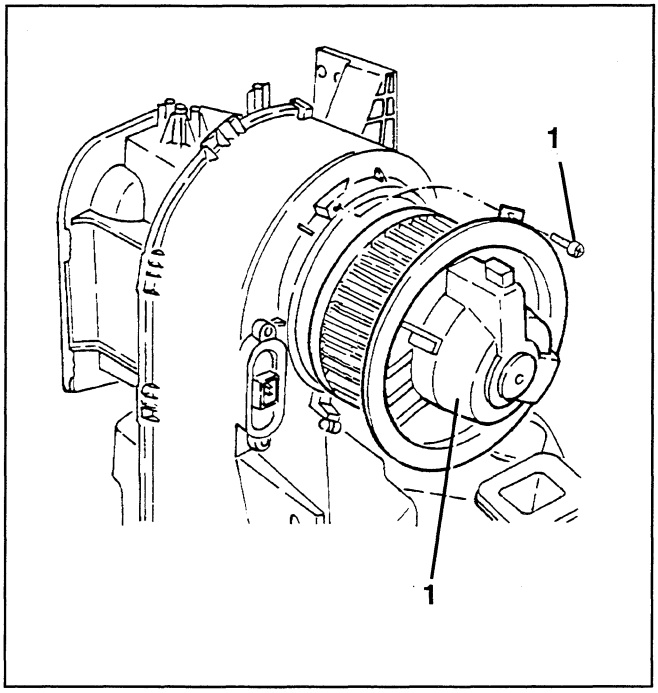


1. Remove the recirculation control motor complete with grommets on the fastening holes.
2. Retrieve the rear plate.

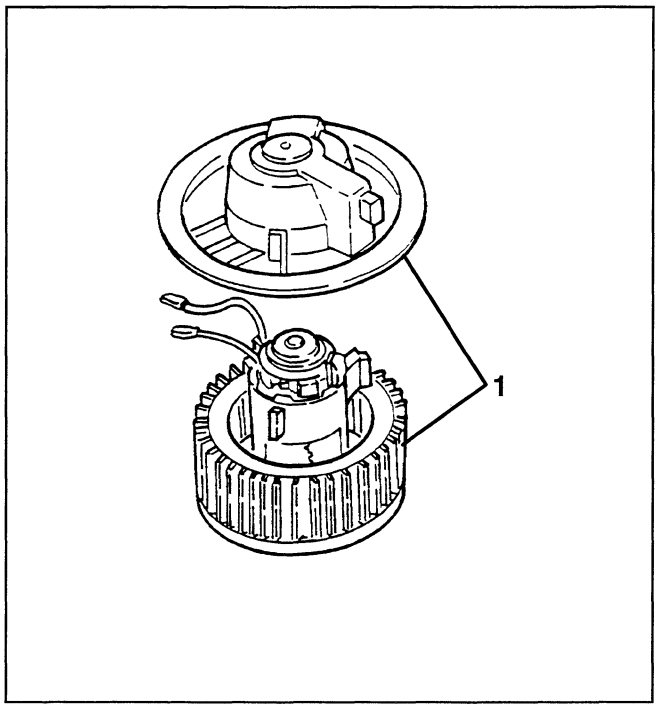


Electric fan

1. Slacken the screw fastening the electric fan, turn it, then remove it.

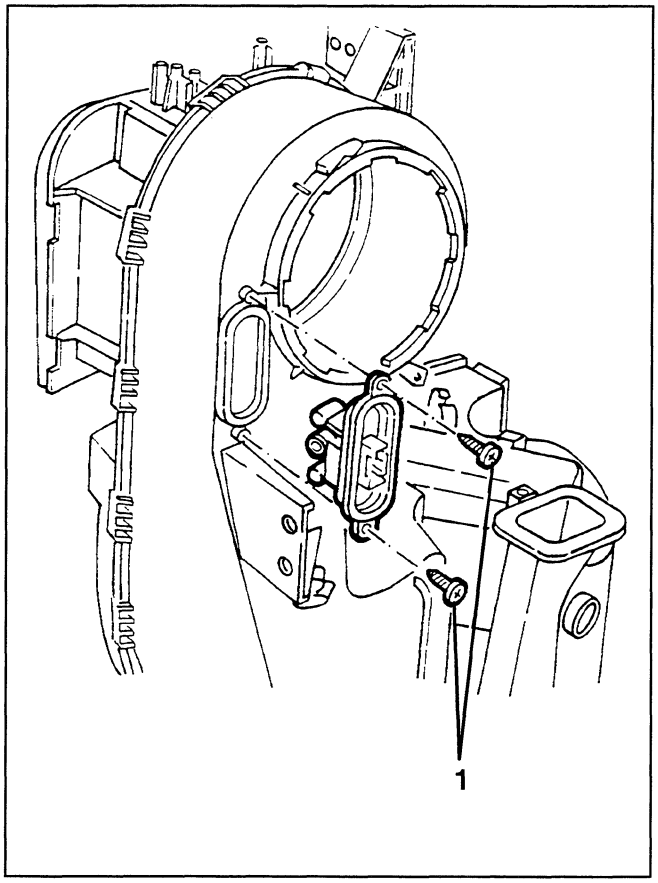


1. Separate the electric fan from the cover, releasing the three rubber fastening teeth and withdrawing the two electric cables.



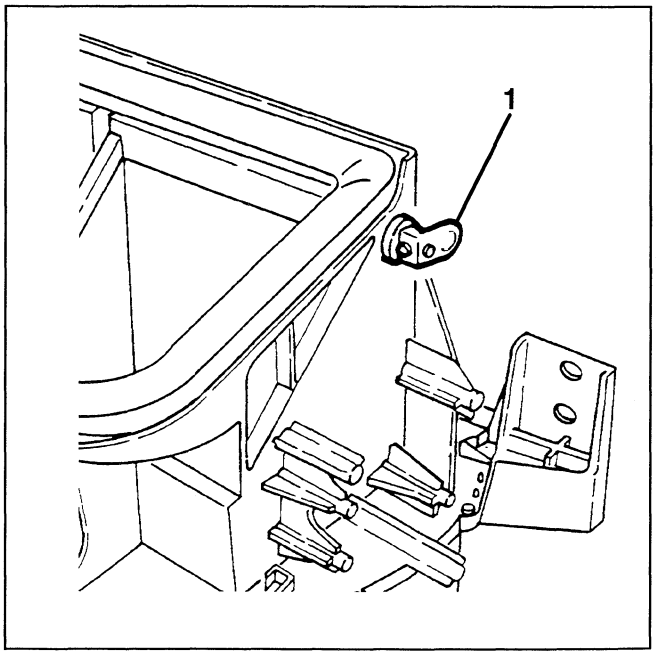
Electric fan resistance

1. Slacken the two fastening screws and remove the electric fan resistance.

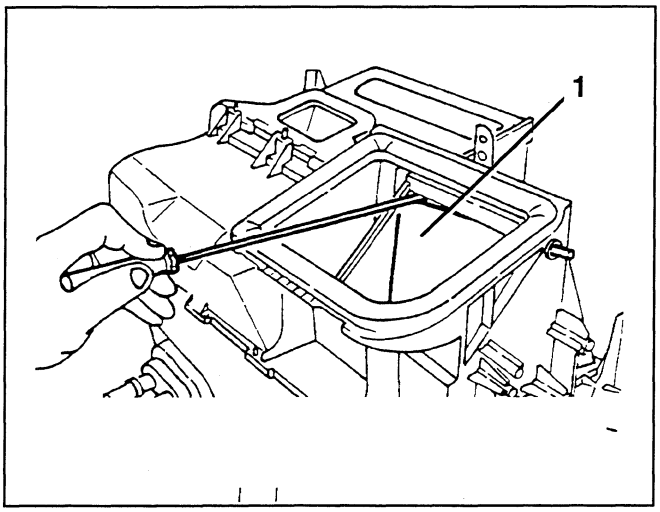


Outside air port

1. Slacken the fastening screw and remove the hook connecting the outside air/recirculation port control rod.

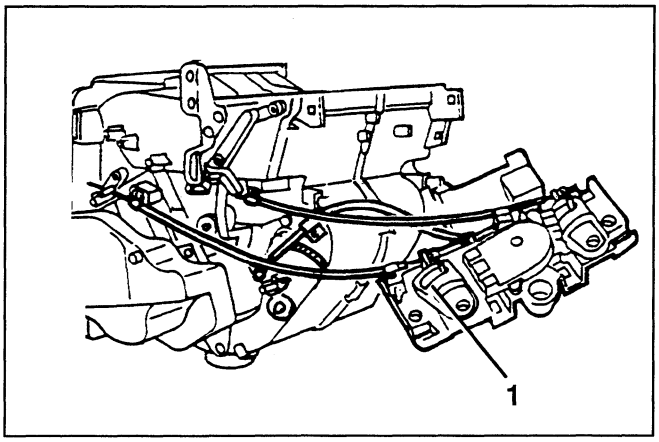


1. Release the outside air/recirculation port from the two fastening clips and remove it.



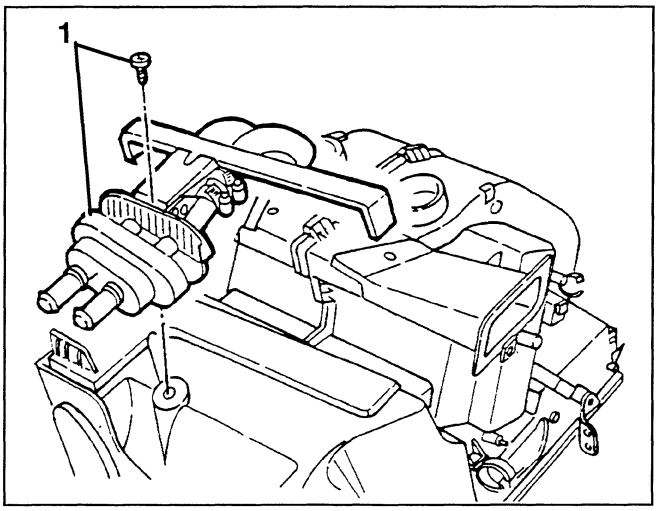
Controls unit

1. Disconnect the three bowden cables from the climate unit, then remove them complete with the controls unit.

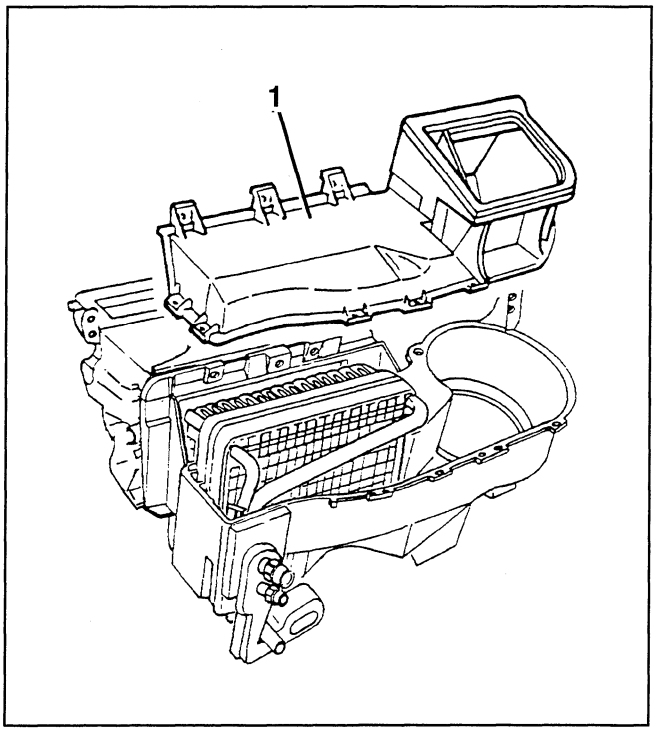


Evaporator

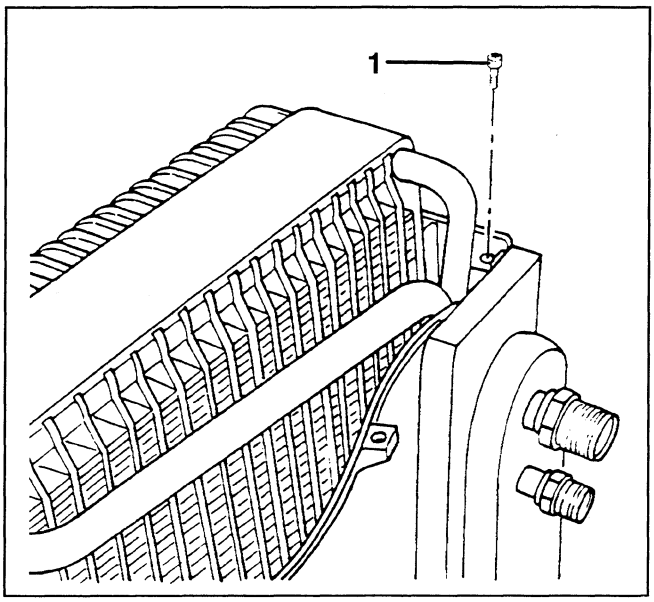
1. Slacken the fastening screw and remove the coolant fluid delivery and return pipes.



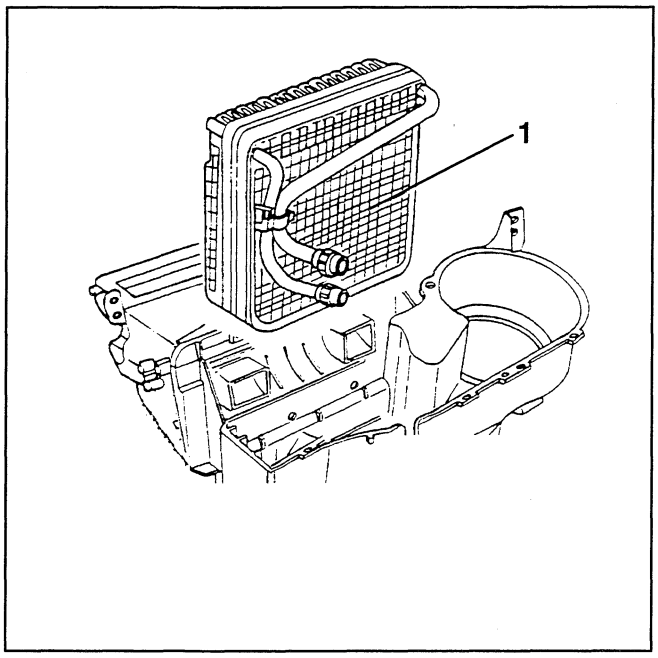
1. Slacken the fastening screws and remove the heater upper half box releasing it from the fastening clips.



1. Slacken the evaporator fastening screw.

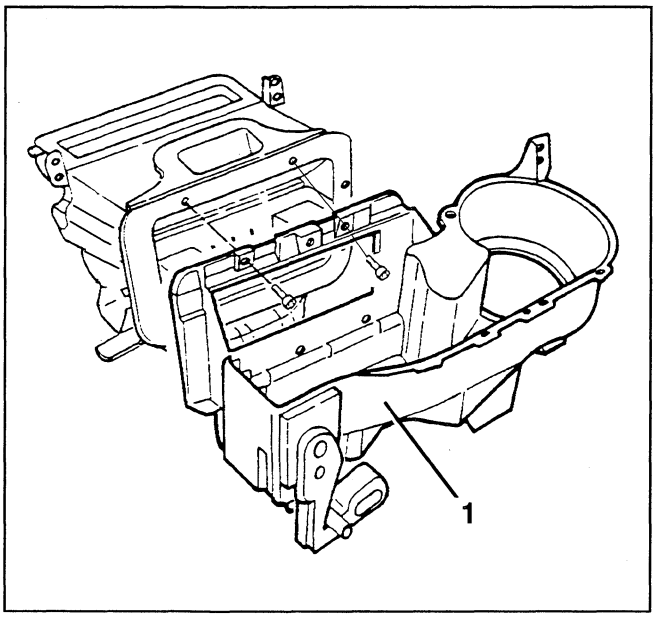


1. Remove the evaporator removing the pipes from the seals.

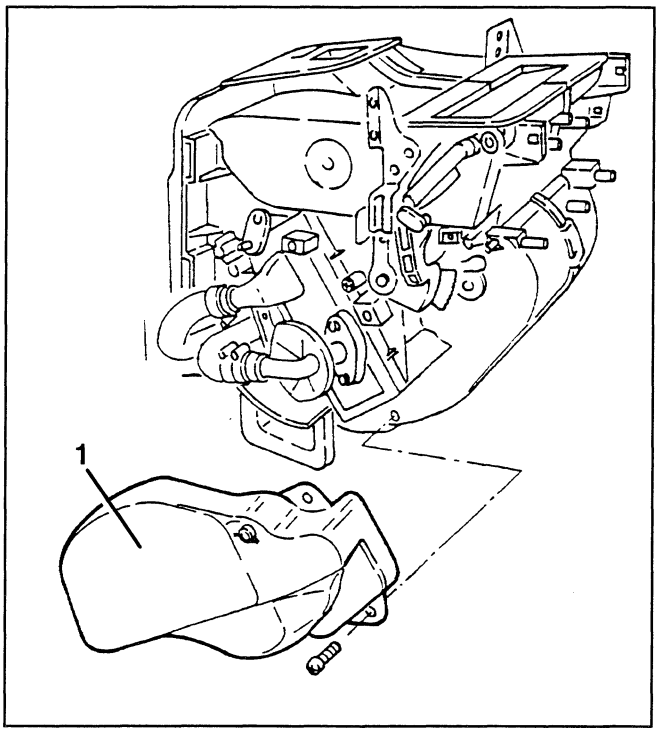


Heater radiator

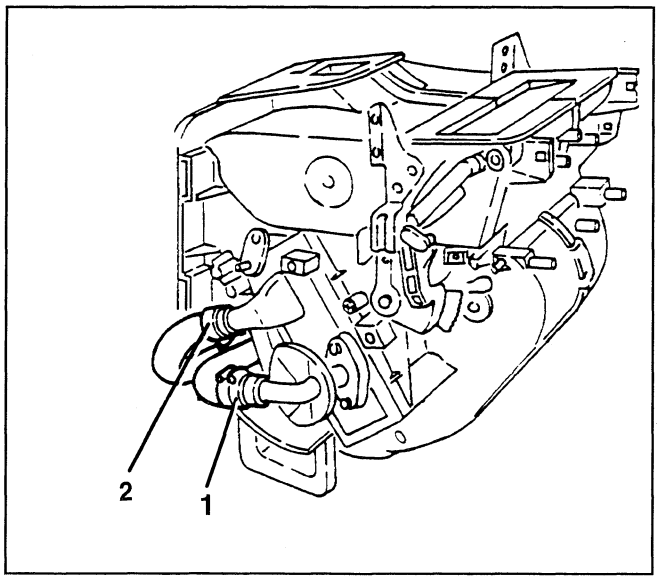
1. Slacken the fastening screws and remove the heater lower half box releasing it from the fastening clips.



1. Slacken the two fastening screws and remove the radiator water pipes guard.

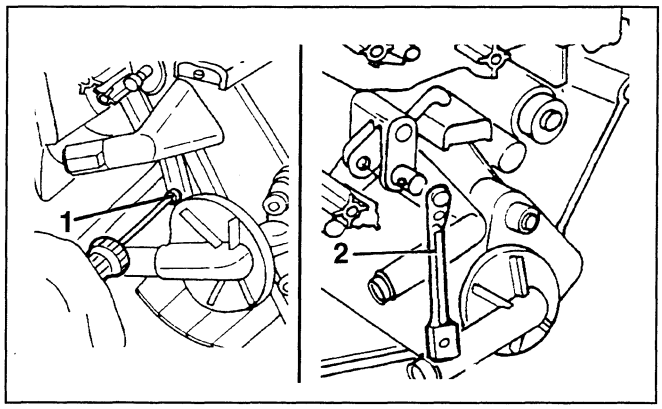


1. Open the clamp and disconnect the water inlet pipe from the tap.
2. Open the clamp and disconnect the water outlet pipe.

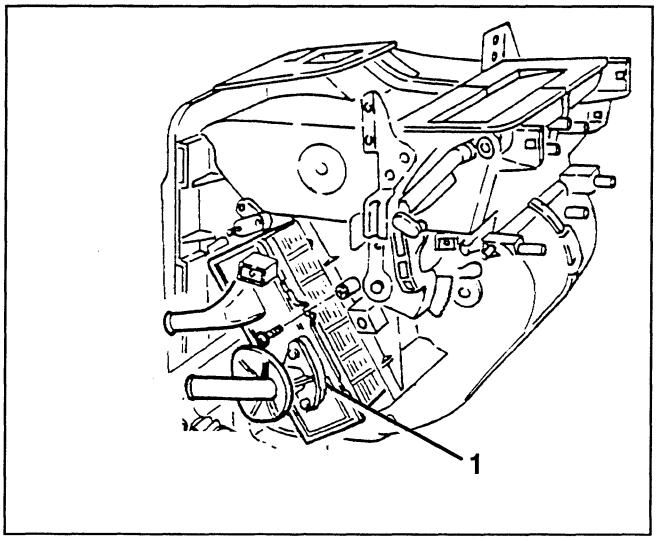


When reassembling use screw clamps.

1. Slacken the fastening screw of the radiator water inlet tap control rod.
2. Disconnect and remove the rod.

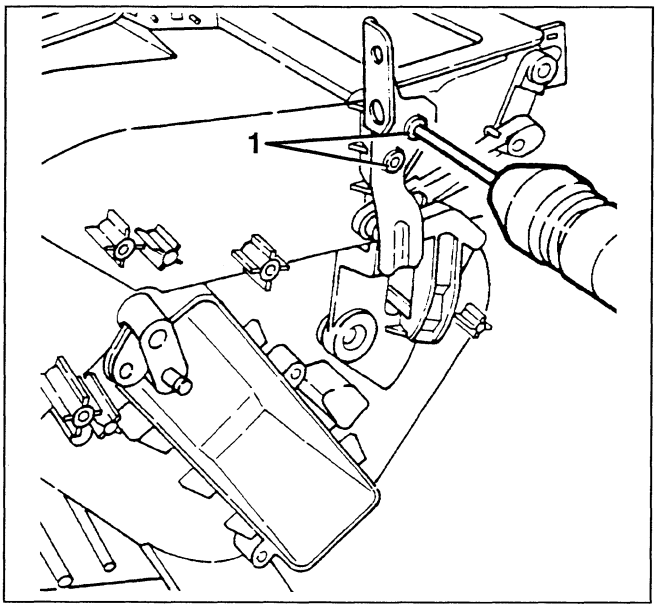


1. Slacken the two fastening screws and remove the radiator.

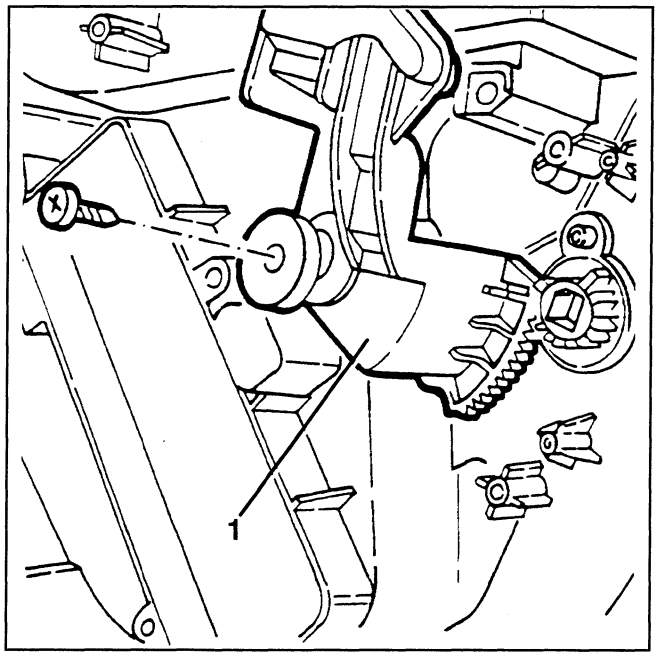


Lower distribution port

1. Using a drill remove the two rivets fastening the unit support bracket.

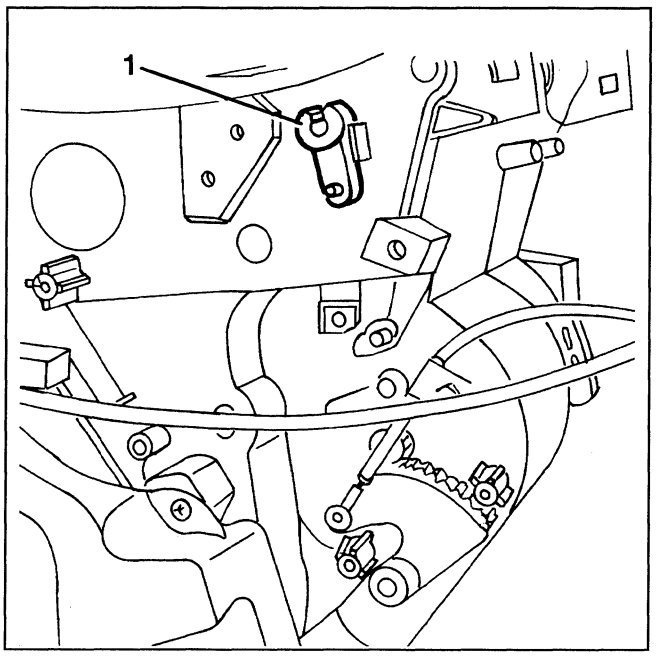


1. Slacken the fastening screw and remove the air distribution lower port control linkage

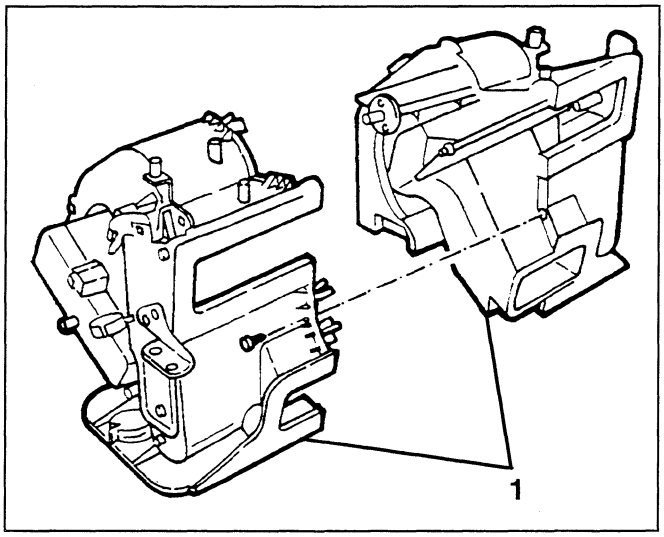


When reassembling the linkage, make the two notches stamped on the gears coincide.

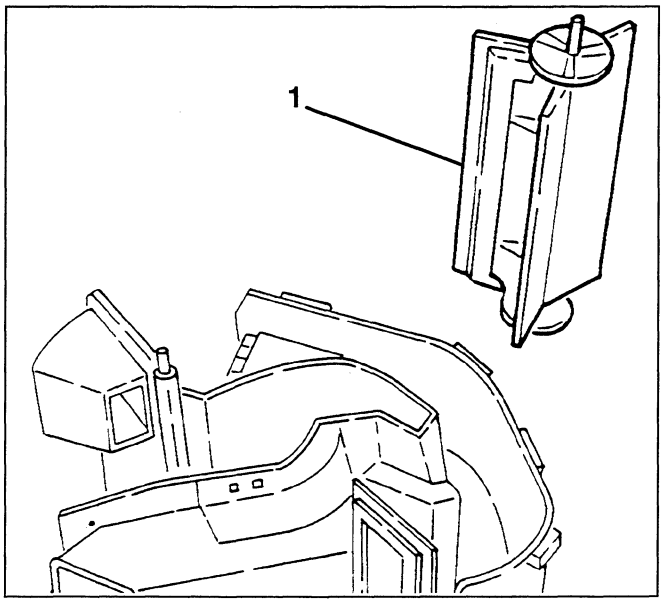
1. Release and remove the air distribution upper port control linkage.



1. Slacken the fastening screws and disassemble the two half boxes releasing the fastening clips.

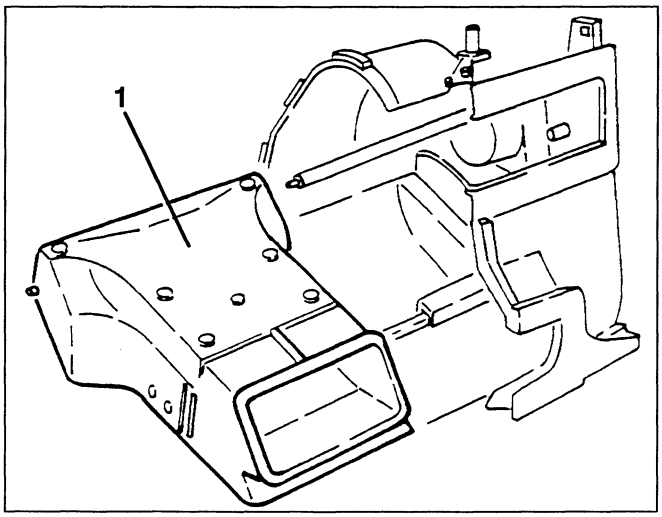


1. Withdraw and remove the lower distribution port.

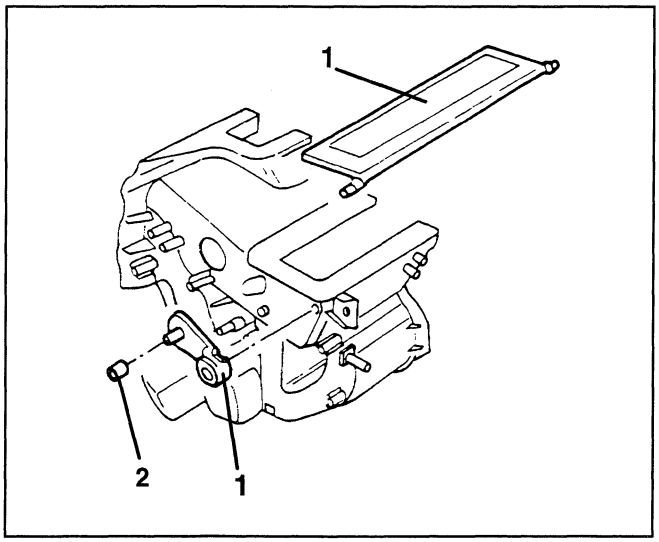


Upper distribution port

1. Withdraw and remove the air duct.

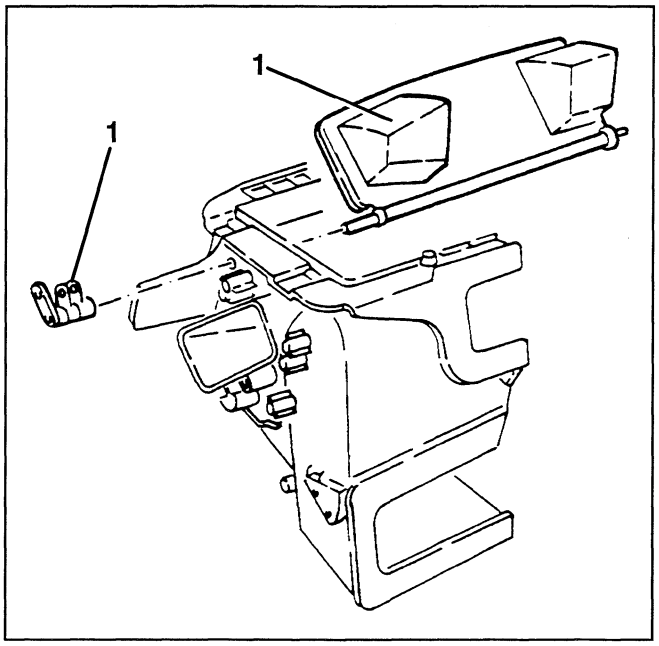


1. Remove the fastening linkage and retrieve the upper distribution port.
2. Retrieve the spacer.



Mixing port

1. Remove the fastening linkage and retrieve the air mixing port.



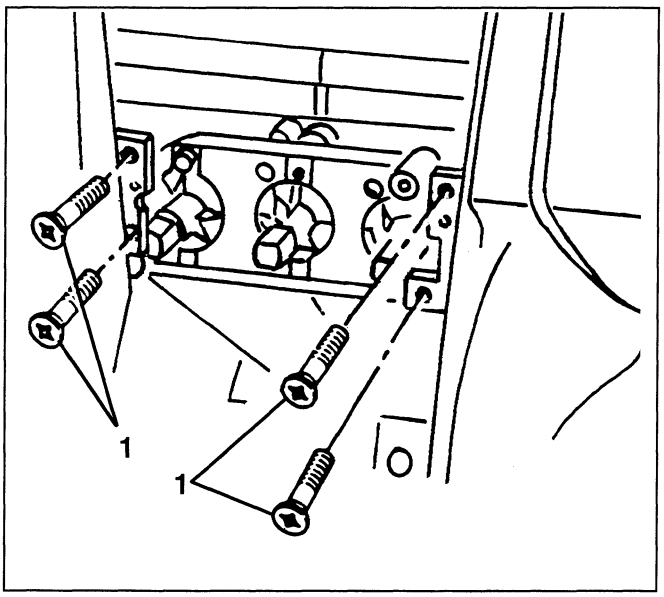
IN-VEHICLE OPERATIONS

CLIMATE UNIT CONTROLS

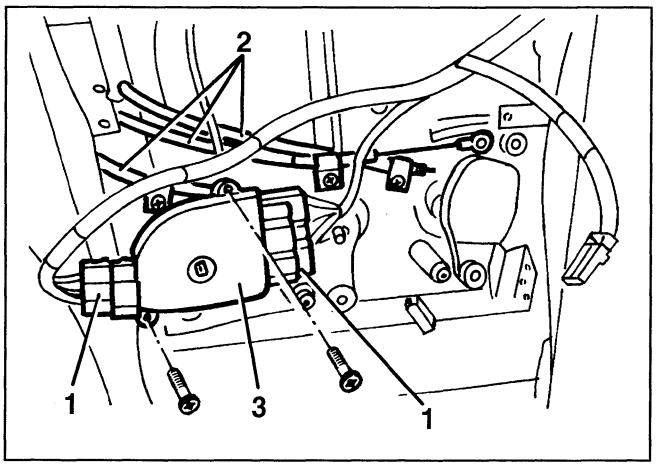
Removal and Refitting

– Disconnect the battery negative terminal.
– Remove the centre console (see GROUP 70, base manual)

1. Slacken the four fastening screws and remove the controls unit.



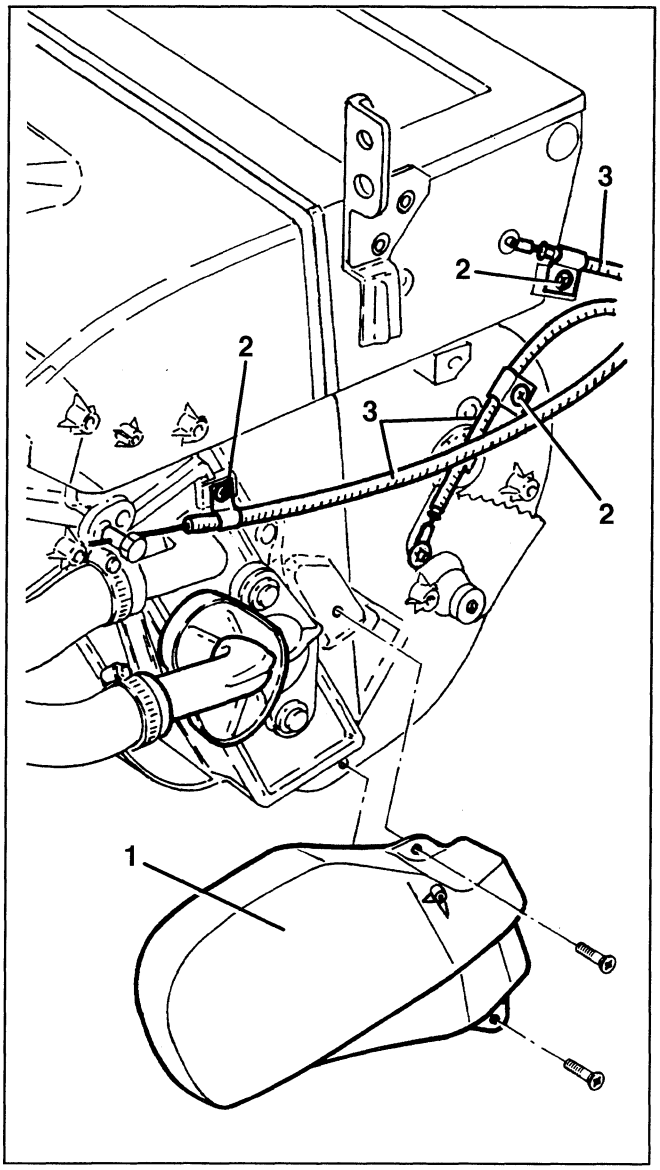
1. Disconnect the two electrical connections.
2. Release the three bowden cables slackening the fastening clamps and removing the washers fastening the end ring.
3. Slacken the two fastening screws and remove the climate control fan speed switch.



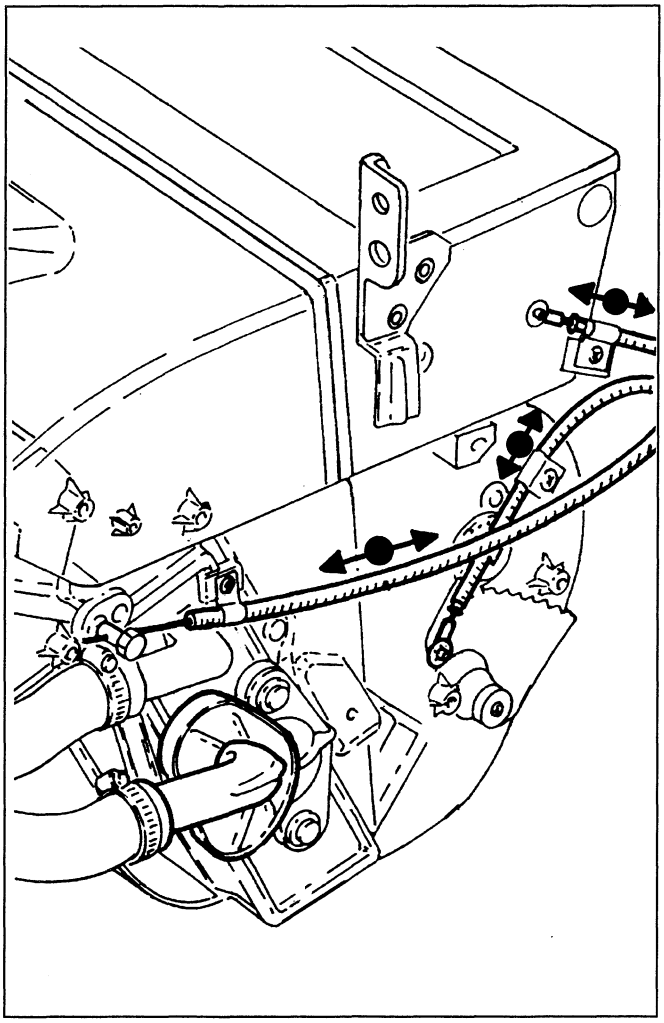
If necessary, remove the three bowden control cables of the mixing and distribution ports.

– Without removing the steering wheel, half boxes, steering column control lever, etc., free the dashboard fasteners to move it aside, especially on the left-hand side (for further details see GROUP 70, base manual).

1. Slacken the two fastening screws and remove the side guard.
2. Loosen the fastening clamps of cables
3. Remove the bowden cables.



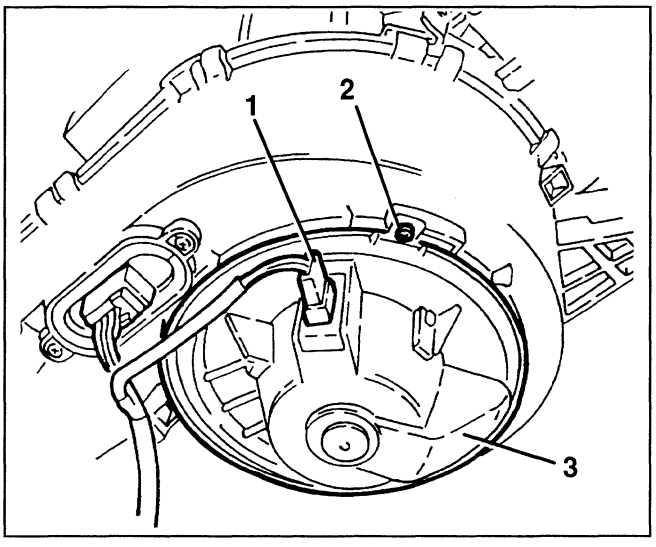
When refitting adjust the bowden cables operating as illustrated in next figure.



ELECTRIC FAN

Removal-Refitting

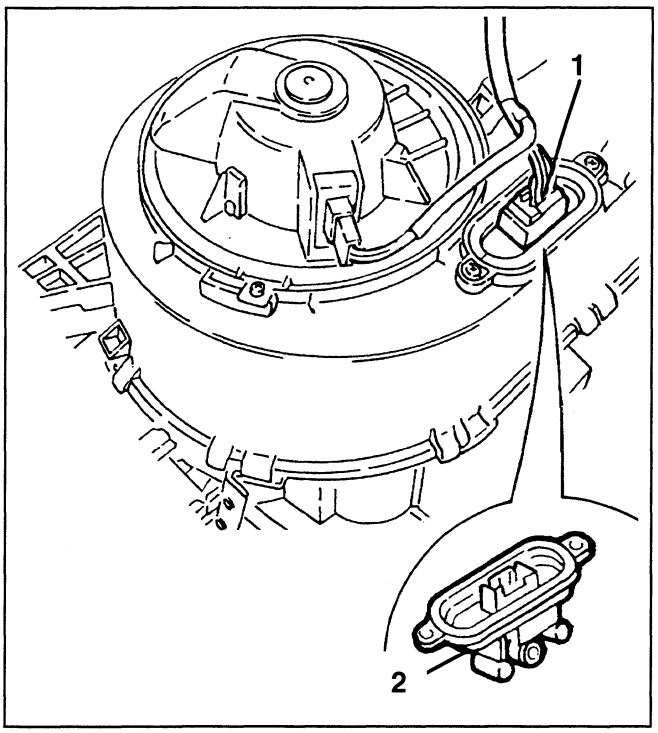
– Disconnect the battery
1. Disconnect the electrical connection from the electric fan.
2. Remove the safety screw and raise the tab.
3. Turn the electric fan and remove it.



ELECTRIC FAN RESISTANCE

Removal-Refitting

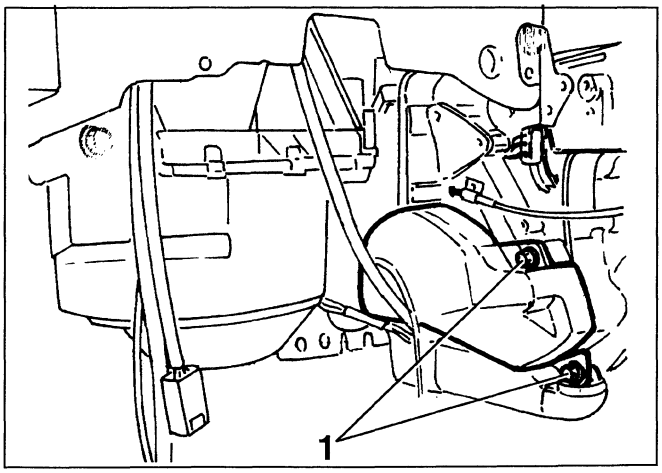
– Disconnect the battery
1. Disconnect the electrical connection from the electric fan resistance.
2. Slacken the two fastening screws and remove the resistances.



HEATER RADIATOR TAP

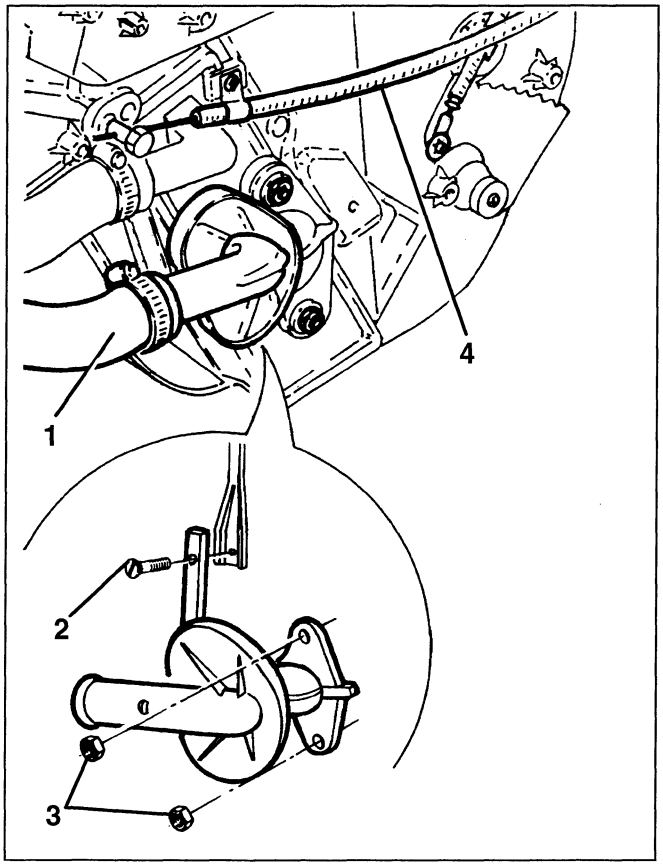
Removal-Refitting

– Remove the centre console (see GROUP 70, base manual).
– Without removing the steering wheel, half boxes, steering column control lever, etc., free the dashboard fasteners to move it aside, especially on the left-hand side (for further details see GROUP 70, base manual), thereby gaining access to the tap side guard.
1. Remove the side guard, slackening the two fastening screws.



1. Disconnect the water inlet piping from the tap and retrieve it.
2. Slacken the screw fastening the tierod.
3. Slacken the two tap fastening nuts, then remove it.
4. Disconnect the bowden cable.

NOTE: to remove the radiator too, it is necessary to work with the ducting/distributor unit on the bench, following the instructions given previously.

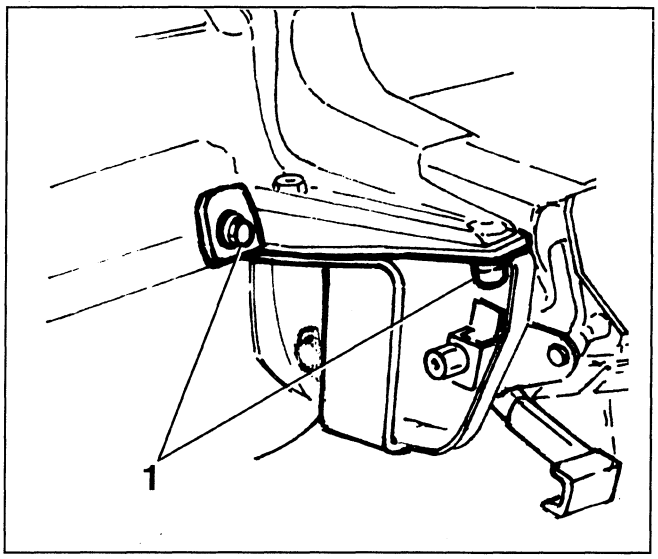


RECIRCULATION PORT CONTROL MOTOR

Removal-Refitting

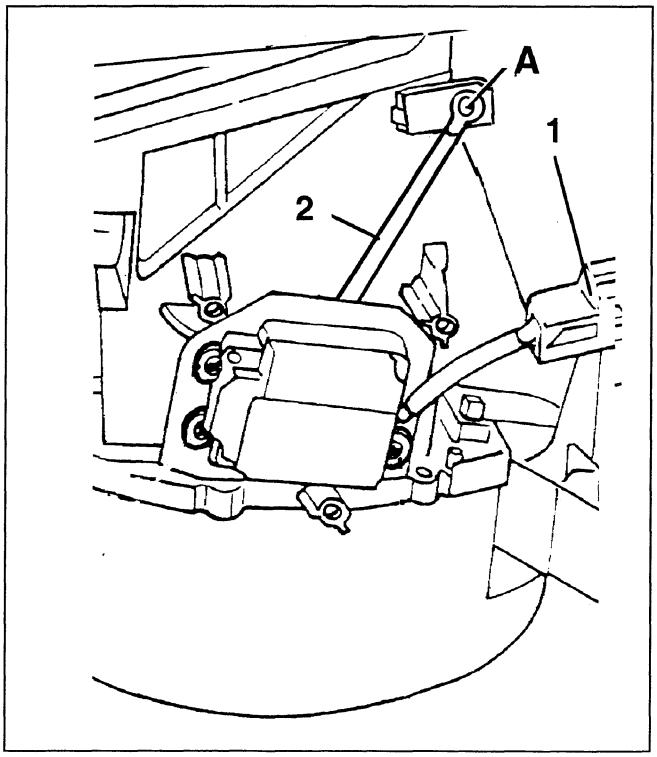
- Disconnect the battery.
- Remove the dashboard (see GROUP 70, base manual).

1. Remove the connection bracket of the heater unit on the right- hand side.

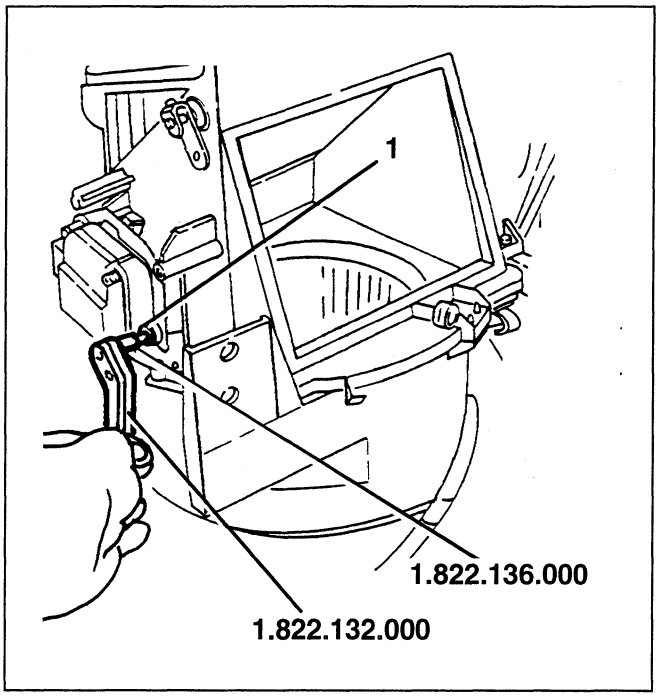


- Remove the injection control unit (N.B. without disconnecting from the wiring loom) (see GROUP 55 of Base Manual).
- Slacken the four screws fastening the ducting/distributor unit: move the unit backwards to gain access to the motor.

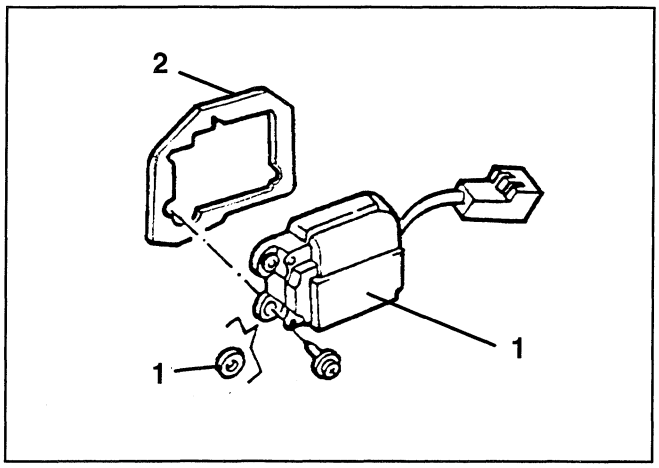
1. Disconnect the electrical connection of the motor.
2. Release the rod from the catch A.



1. Slacken the three cross-slotted screws of the motor using wrench no. 1.822.132.000 with the insert of set no. 1.822.136.000.



1. Remove the outside air/recirculation port control motor complete with grommets on the fastening holes.
2. Retrieve the rear plate.



When refitting, replace the cross-slotted motor fastening screws with Allen screws to be tightened using wrench no. 1.822.132.000 with the insert of set no. 1.822.136.000.

AUTOMATIC TEMPERATURE CLIMATE CONTROL (from '98 version)

PRESENTATION

The climate control system used automatically controls temperature and ventilation re-circulating and directing flows. Therefore, the user can select the temperature required and the flow of air considered most comfortable. A specific ECU handles the operation of the system by controlling:

- air temperature at vents;
- fan speed;
- compressor activation (air cooling circuit)
- air re-circulation activation;
- "rapid defrosting" function.

The ECU sets the above mentioned parameters to bring the temperature of the passenger compartment to that required. The system controls are located outside the container housing the ECU.

The ECU receives information on internal and external temperature by means of:

- External air temperature sensors
- Upper mixed air temperature sensor
- Lower mixed air temperature sensor
- Passenger compartment air temperature sensor

According to the calculations made, the ECU sets the entry speed of the air in the compartment by means of:

- Electronic fan motor variator
- Fan motor

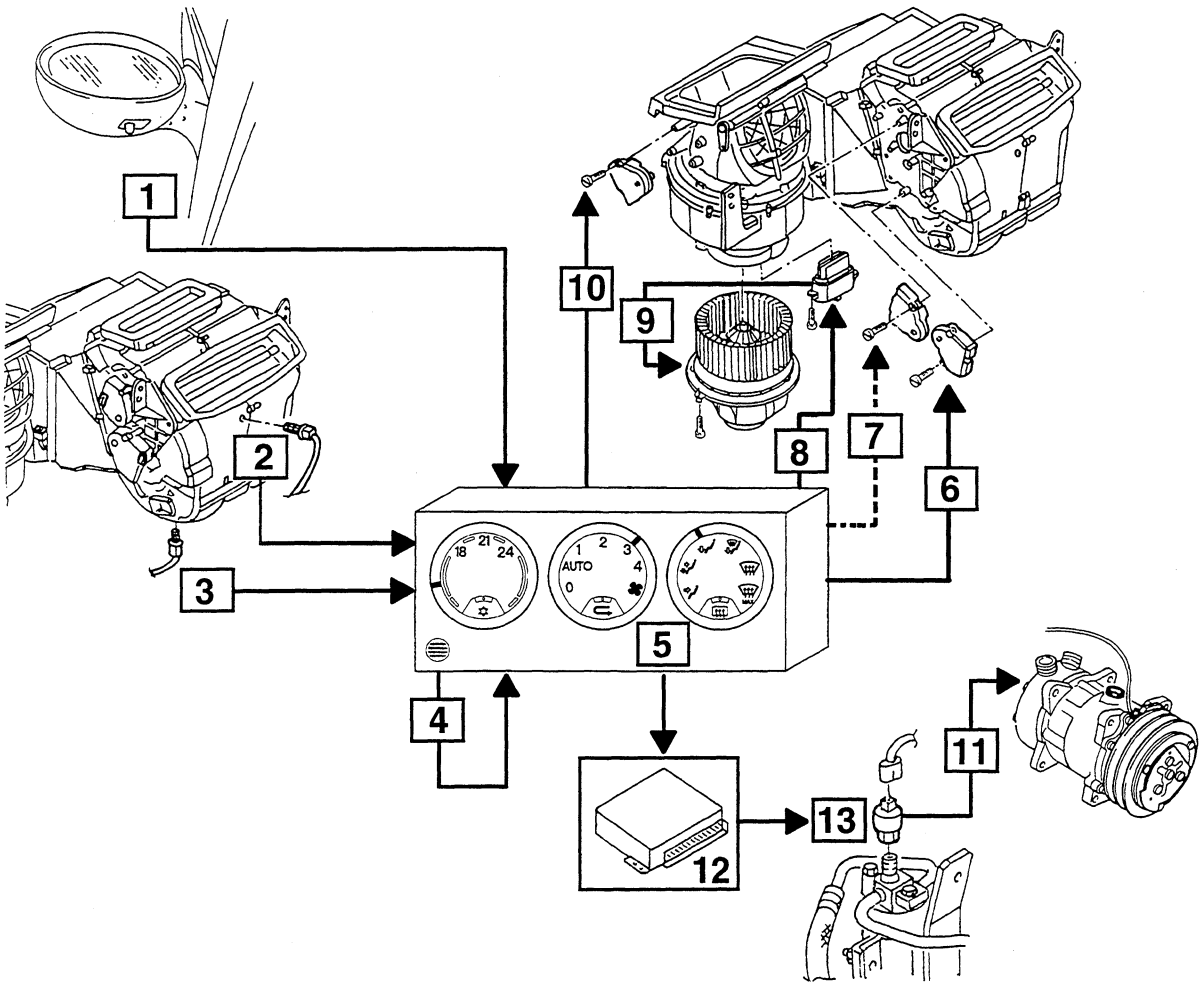
and the temperature of air entering the passenger compartment by means of:

- Mixing actuator
- Re-circulation flap actuator

Finally the ECU adjusts the flow of air to the vents according to user's settings by means of the distribution actuator. If the conditions so require, the ECU also enables the air cooling and drying circuit by activating the air-conditioner compressor.

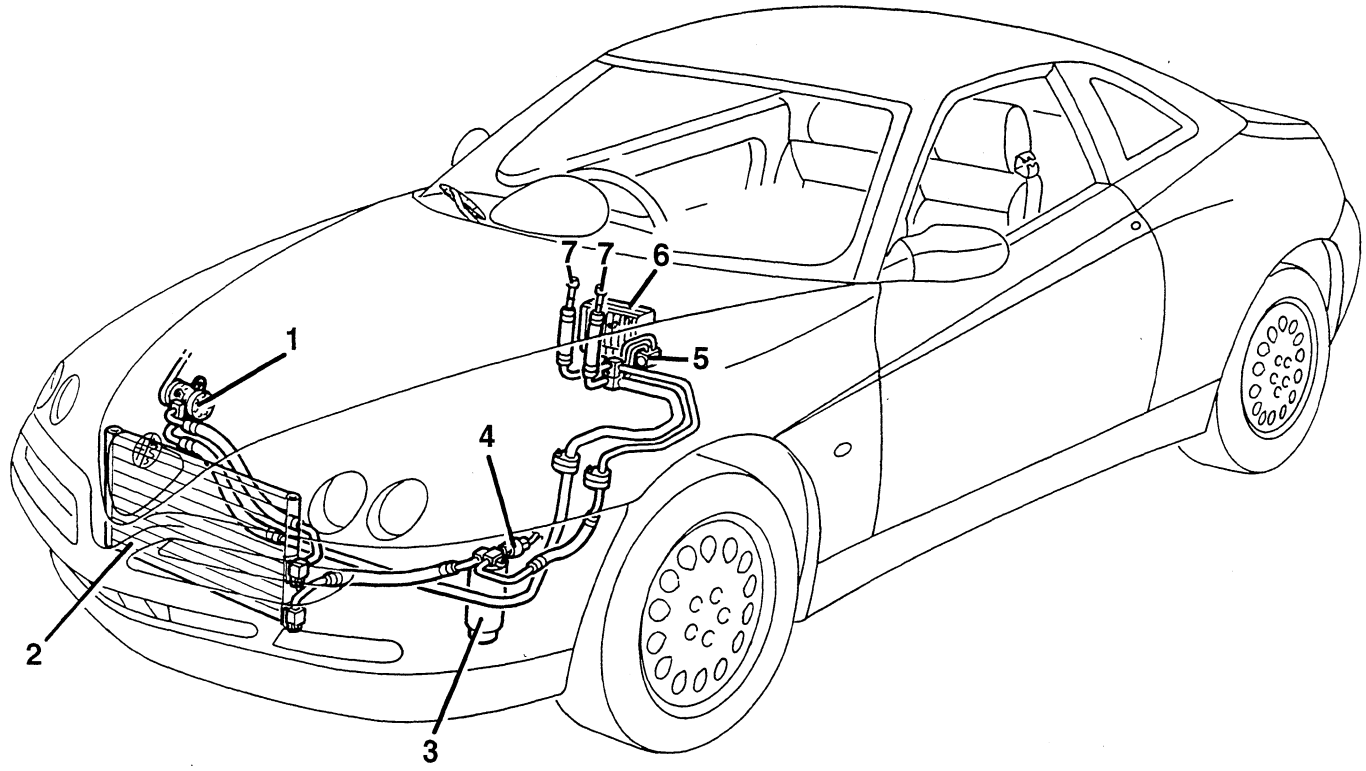
Spider Only: The ECU disables the cooling circuit if the top is open: this is signalled by a specific switch located on one of the side lock straps.

The various components interacting with the ECU are illustrated in the figure:



1 *External air temperature sensor*
2 *Upper mixed air temperature sensor*
3 *Lower mixed air temperature sensor*
4 *Passenger compartment air temperature sensor*
5 *ECU*
6 *Mixing actuator*
7 *Distribution actuator*
8 *Electronic fan motor speed variator*
9 *Fan motor*
10 *Re-circulation flap actuator*
11 *Air-conditioner compressor*
12 *E.I. ECU*
13 *Four-level pressure switch*
14 *Top opening switch*

SYSTEM COMPONENT LOCATION



1. *Conditioner compressor*
2. *Conditioner compressor*
3. *Drier filter*
4. *Four level pressure switch*
5. *Expansion valve*
6. *Evaporator assembly*
7. *System recharge valve fittings*

OPERATING PROCEDURES

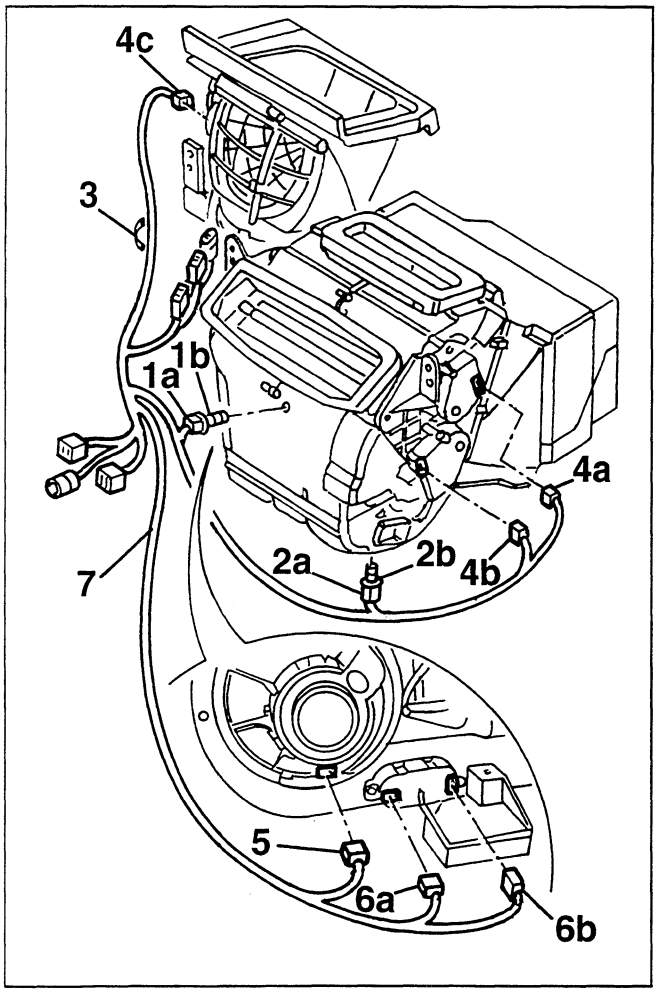
GENERAL PRECAUTIONS FOR WORK ON THE CLIMATE CONTROL UNIT

- **Before carrying out any maintenance and repair work it is advisable to disconnect the battery negative terminal.**
- **Before dismantling the system it must be drained recovering the coolant fluid.**
- **During the operations, when the system components are disconnected, suitable plug the disconnected fittings to prevent moisture and purities from getting into the system.**
- **When re-installing the pipe fittings change the O- rings on them.**
- **Lubricate the pipe fitting threads with the specified antifreeze oil and tighten the fittings to the specified torque.**

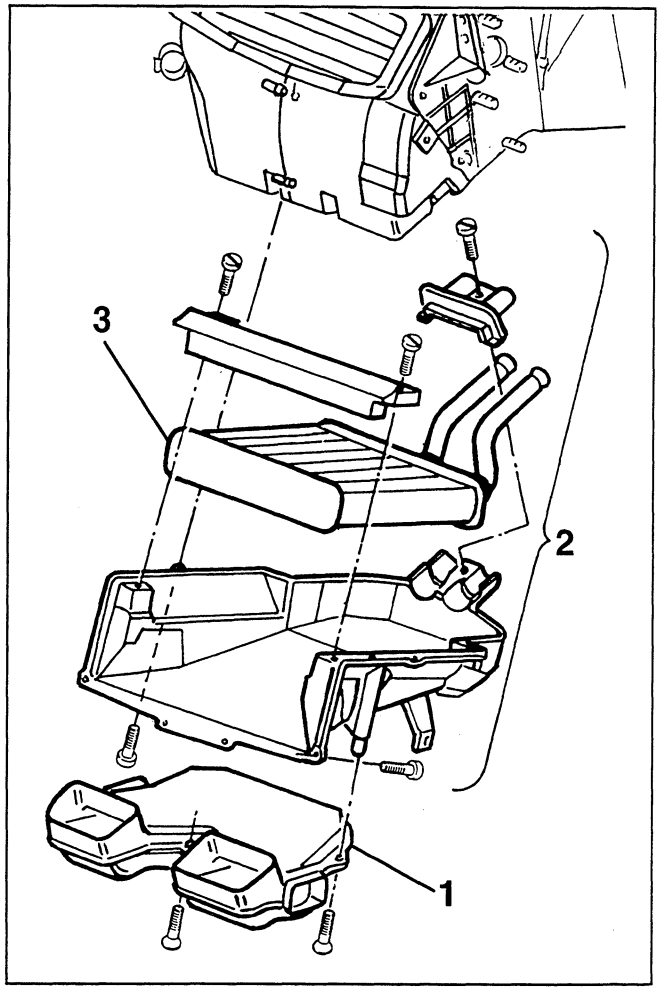
DUCTING/DISTRIBUTOR UNIT

DISASSEMBLY

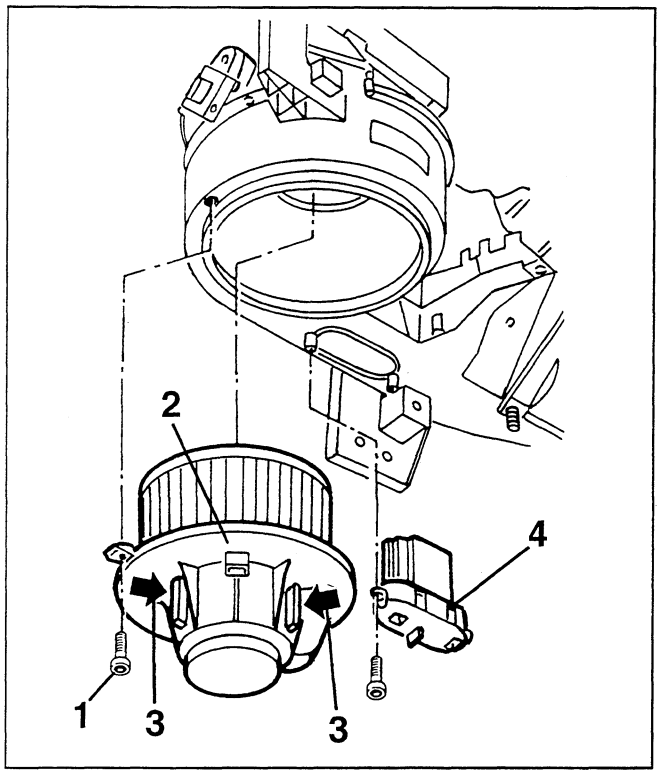
1. Disconnect the electrical connection (1a) from the upper mixed air sensor, turn the sensor (1b) anti-clockwise and remove it.
2. Disconnect the electrical connection (2a) from the lower mixed air sensor, turn the sensor (2b) anti-clockwise and remove it.
3. Remove the fastening clips.
4. Disconnect the three motor electrical connections (4a, 4b, 4c).
5. Disconnect the fan electrical connection.
6. Disconnect the electronic variator electrical connections (6a, 6b).
7. Remove the complete wiring harness.



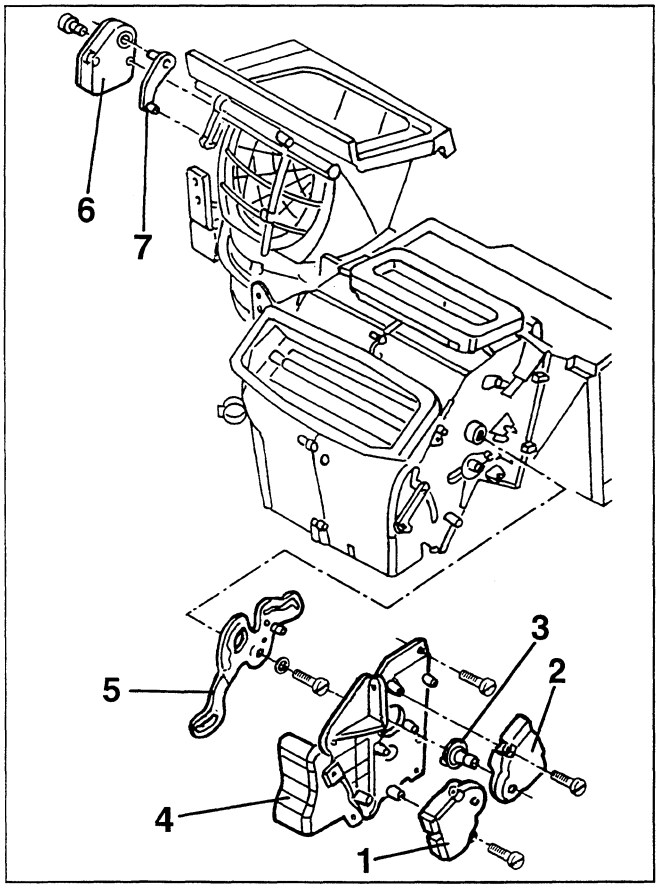
1. Remove the manifold cover.
2. Remove the heater radiator and bracket.
3. Disassemble the radiator from the bracket.



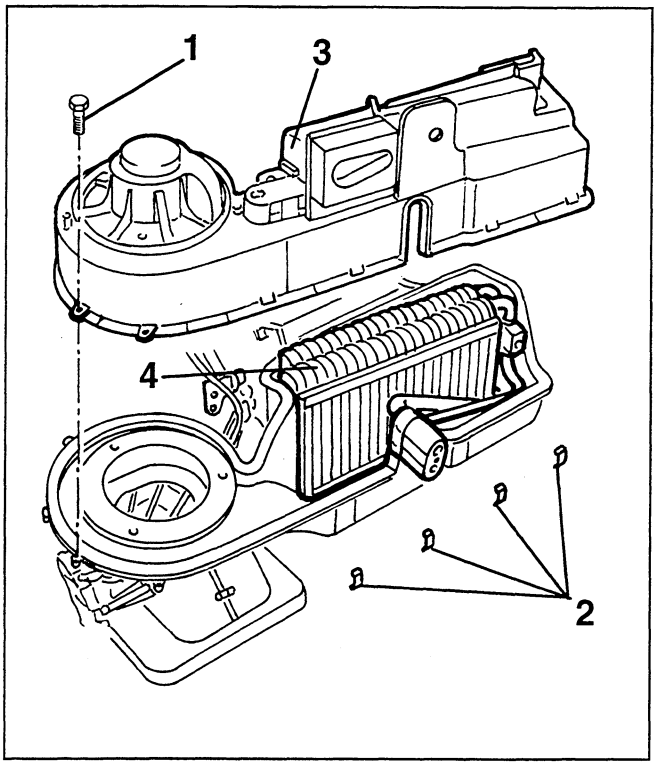
1. Remove the retainer screw.
2. Turn the fan assembly anti-clockwise and remove it.
3. Press the damper pads and separate the fan motor from the bracket.
4. Remove the electronic variator.



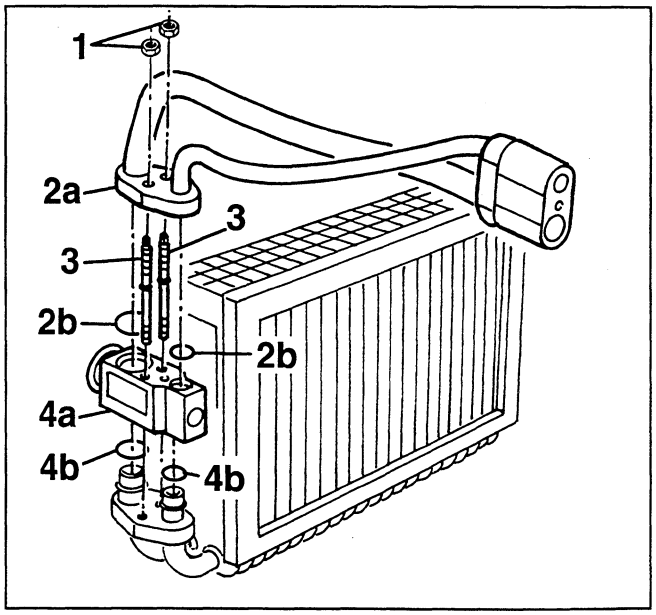
1. Remove the air mixing motor.
2. Remove the air distribution motor.
3. Take the motor shaft.
4. Remove the control linkage cover.
5. Remove the linkage assembly .
6. Remove the air intake motor.
7. Take the control lever.



1. Remove the fastening screws of lower half unit.
2. Use tool 1.823.014.000 to remove the half unit fastening pegs.
3. Remove the lower half unit.
4. Remove the evaporator.



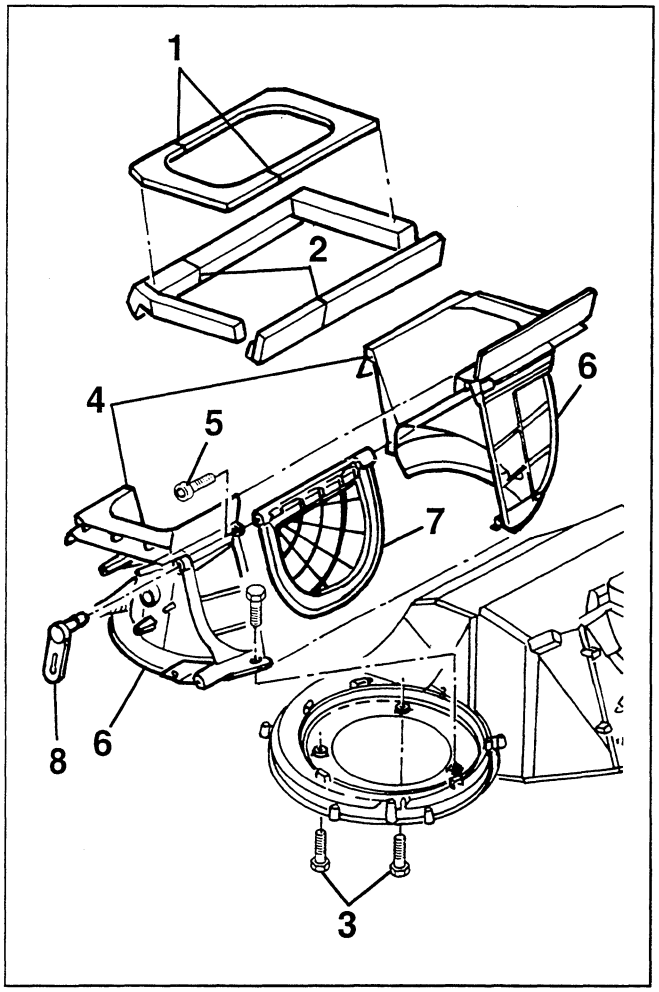
1. Unscrews pipe fixing nuts.
2. Remove pipe with gaskets.
3. Unscrews studs.
4. Remove the expansion valve with gaskets.



1. Cut the rubber guard.
2. Cut the seal.

Work with care to refit guard and seal by closing the two edges of the cut.

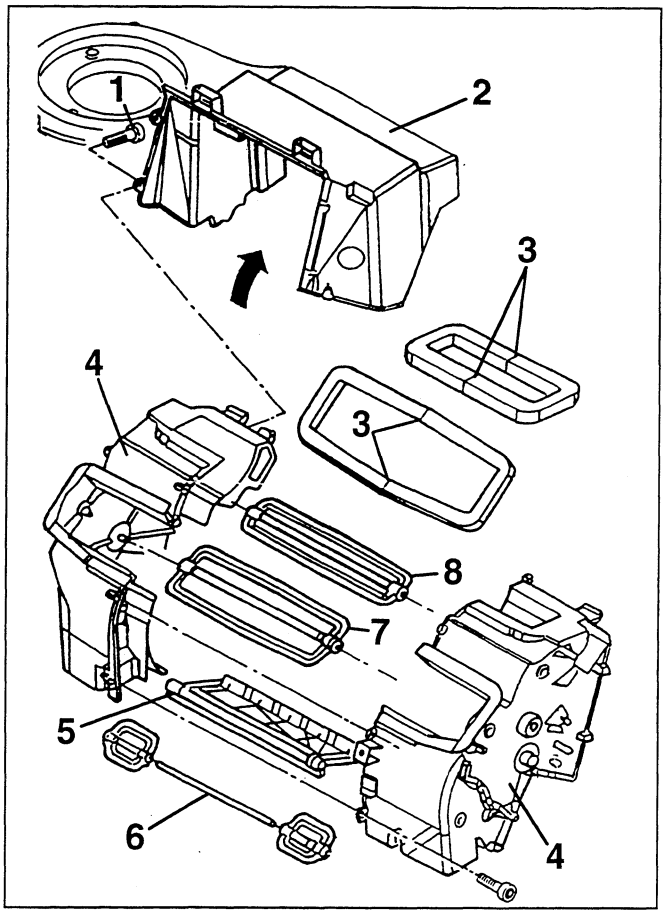
3. Loosen the fastening screw.
4. Remove the air manifold.
5. Loosen the half casings screws.
6. Separate the two air manifold half casings.
7. Remove the recirculation flap from the respective pin.



1. Loosen the upper half casing fastening screw.
2. Turn the upper half casing upwards and remove it.
3. Cut the seals.

Work with care to refit the seal by closing the two edges of the cut.

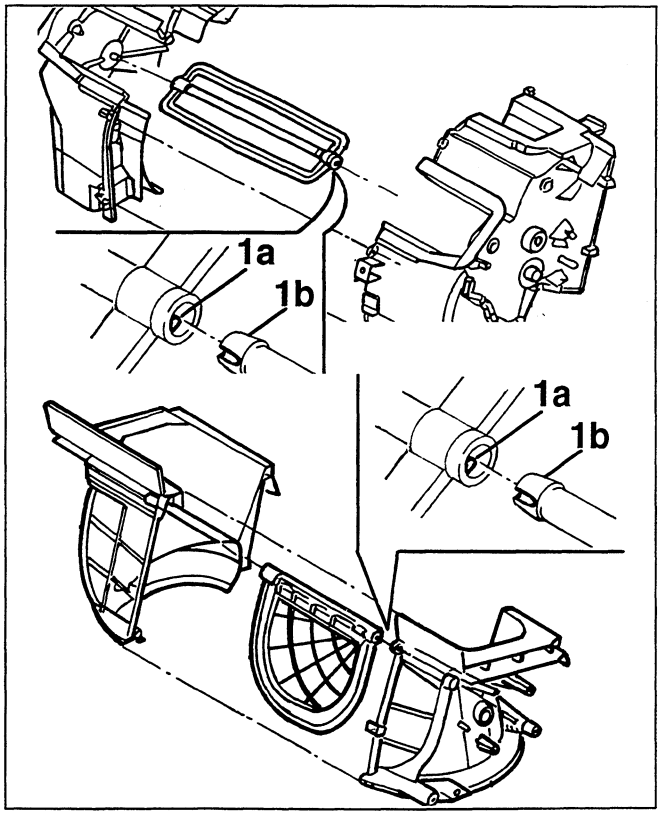
4. Separate the two half casings .
5. Remove the mixing flap from its pin.
6. Remove lower distribution flap from its pin.
7. Remove the front distribution flap from its pin.
8. Remove the upper distribution flap from its pin.



RE-ASSEMBLY

– Re-assembly the conditioner unit by reversing the disassembly sequence.

NOTE: When refitting the flaps in their pins, couple the retainers (1a) correctly in their seats (1b) on the pin.



ELECTRIC SYSTEM 55

INDEX

For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

LIGHTING

UPPER FRONT LIGHT CLUSTERS

The front light clusters are specific: they differ from those of left-hand drive versions due to the different asymmetry of the low beam deflector.

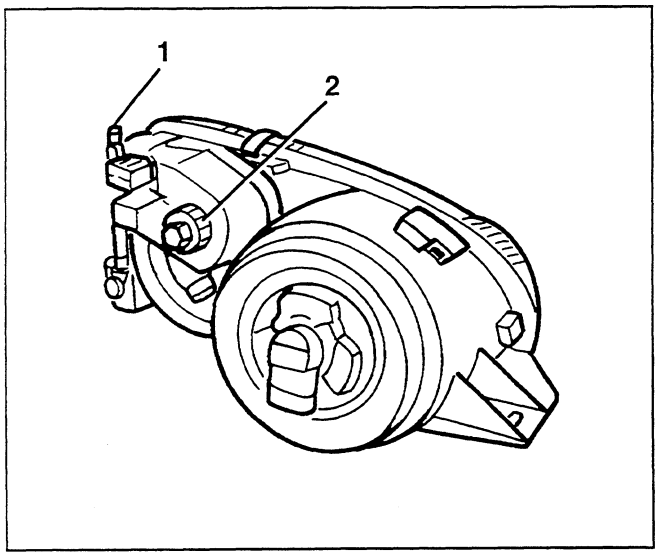
The removing and refitting procedure is the same as for versions with left-hand drive (see GROUP 55, base manual), while it is necessary to pay attention to the aiming procedure given below.

N.B. In the event of replacement make sure a "right-hand drive" headlamp is used.

HEADLAMP AIMING

The upper light clusters have two possibilities of adjustment.

1. Screw for horizontal adjustment.
2. Ringnut for vertical adjustment.



WARNING
Before proceeding with headlamp aiming, make sure that the lighting units mate perfectly with the bonnet in the closed position. If necessary, adjust on the slotted fasteners of the light clusters.

Vehicle preparation

The vehicle must be complete with spare wheel, tools, fuel reserve and fluids, the tyres should be at normal operating pressure with the driver on board.

Set the vehicle on a level surface with the light cluster glass 10 m from a screen or opaque surface on which the following lines have been traced:

V-V: vertical corresponding to the line of the plane of symmetry of the vehicle,

C-C: corresponding to the lines of the vertical planes passing through the reference centres of the light clusters.

HC-HC: horizontal corresponding to the height from the ground of the light cluster reference centres.

AC-AC: horizontal 14 cm below line HC - HC (for new cars), (11 cm for settled cars).

Aim the light clusters on the low beam. Working on the headlamp aiming device, proceed as follows.

NOTE: For cars fitted with headlamp aiming device, adjust with the corrector in position "0".

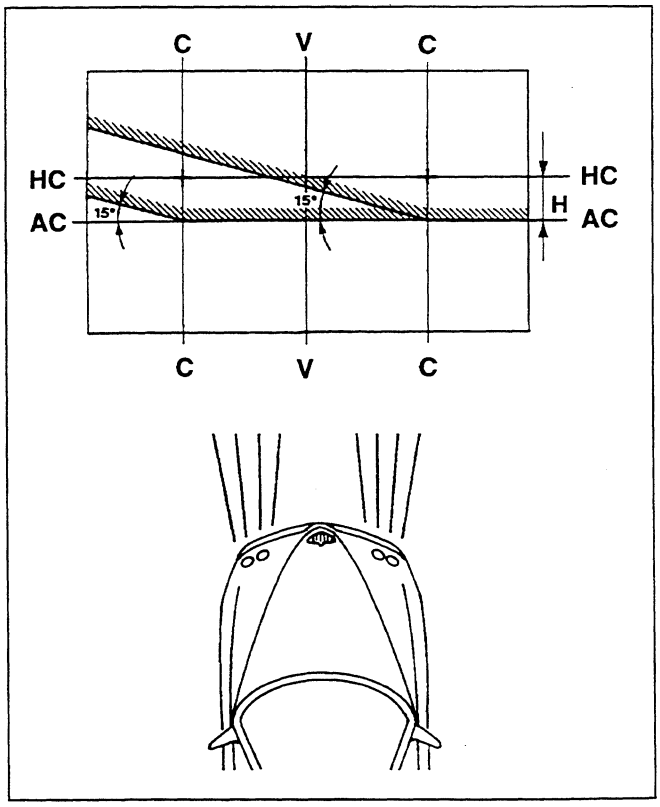
Vertical aiming

Make the horizontal section of the demarcation line between the dark zone and the zone lit by the beam coincide with line AC - AC on the screen.

Horizontal aiming

Make the crossing point of the horizontal and sloped demarcation lines coincide with the respective crossing point of lines C-C and AC-AC of the screen.

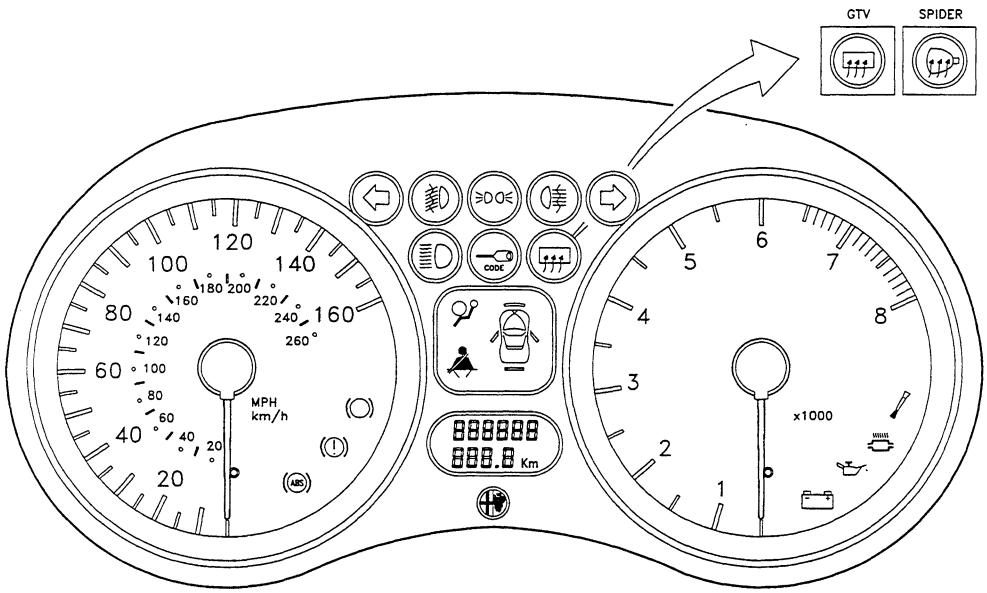
When needing to place the screen at a lower distance, this value must be reduced proportionately (e.g.: for a screen at half the distance, it must be halved).



INSTRUMENT CLUSTER (up to '97 version)

MAIN PANEL

The main panel provides all the indications and information concerning the conditions of the vehicle which are indispensable for safe driving.
The cluster is of the analogue type with two generously- sized indicators for the speedometer and rev counter and a series of plainly visible warning lights which complete the information given to the driver.



- LH direction indicator
- fog lamps
- side lights
- rear fog guard
- RH direction indicator
- high beams
- ALFA ROMEO CODE system
- rearscreen and door mirror defrosting (GTV)
- door mirror defrosting (Spider)
- Air Bag system fault
- seat belts
- doors
- ABS system failure
- handbrake and brake fluid level, EBD system failure (*)
- brake pad wear
- generator
- minimum oil pressure
- catalyst temperature (only for certain markets)
- injection fault (Check Engine)

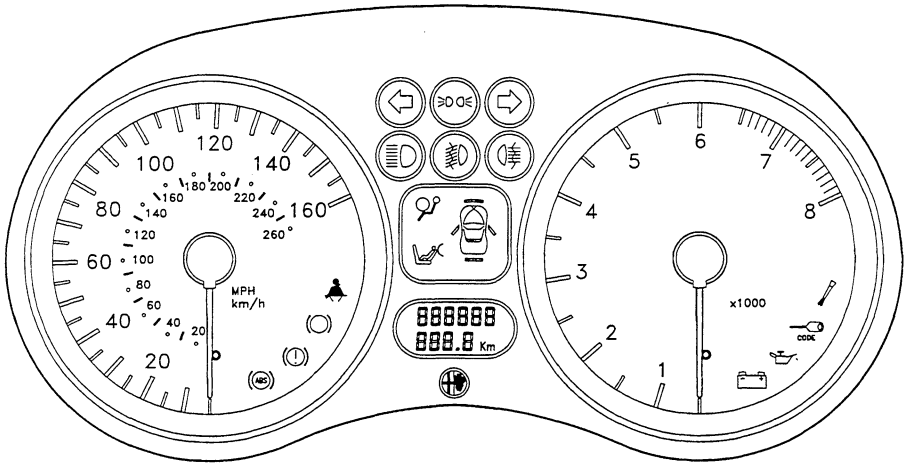
(*) Present from '97 version

NOTE: The speedometer has a double scale, miles per hour (MPH) and kilometres per hour (km/h).

INSTRUMENT CLUSTER ('98 version)

MAIN PANEL

The main panel provides all the indications and information concerning the conditions of the vehicle which are indispensable for safe driving.
The cluster is of the analogue type with two generously- sized indicators for the speedometer and rev counter and a series of plainly visible warning lights which complete the information given to the driver.



- LH direction indicator
- side lights
- RH direction indicator
- high beams
- fog lamps
- rear fog guard
- Air Bag system fault
- passanger side Air Bag deactivated
- doors
- ABS system failure
- handbrake and brake fluid level, EBD system failure
- brake pad wear
- seat belts
- generator
- minimum oil pressure
- ALFA ROMEO CODE system
- injection fault (Check Engine)

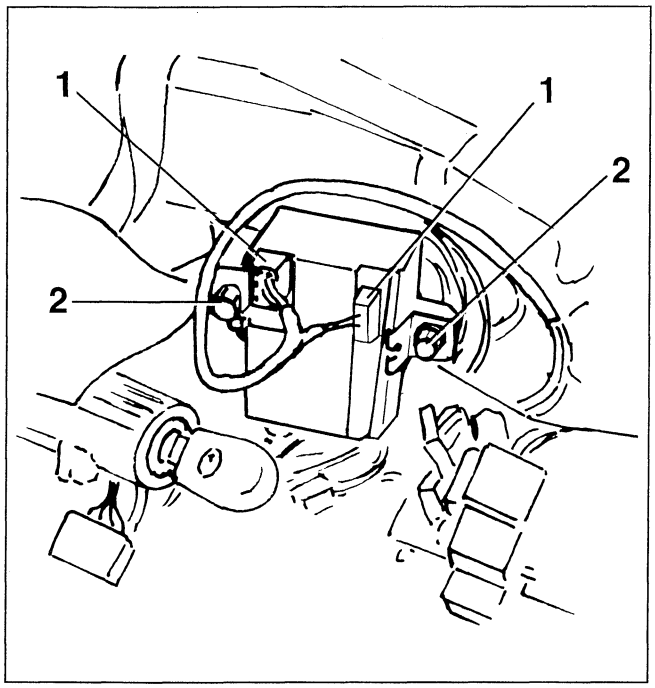
NOTE: The speedometer has a double scale, miles per hour (MPH) and kilometres per hour (km/h).

ELECTRONIC CONTROL UNITS

POWER WINDOW CONTROL UNIT (*)

REMOVAL/REFITTING

– Disconnect the battery.
– Remove the complete dashboard (see GROUP 70, base manual).
1. Disconnect the electrical connections.
2. Slacken the two screws and remove the power window control unit.



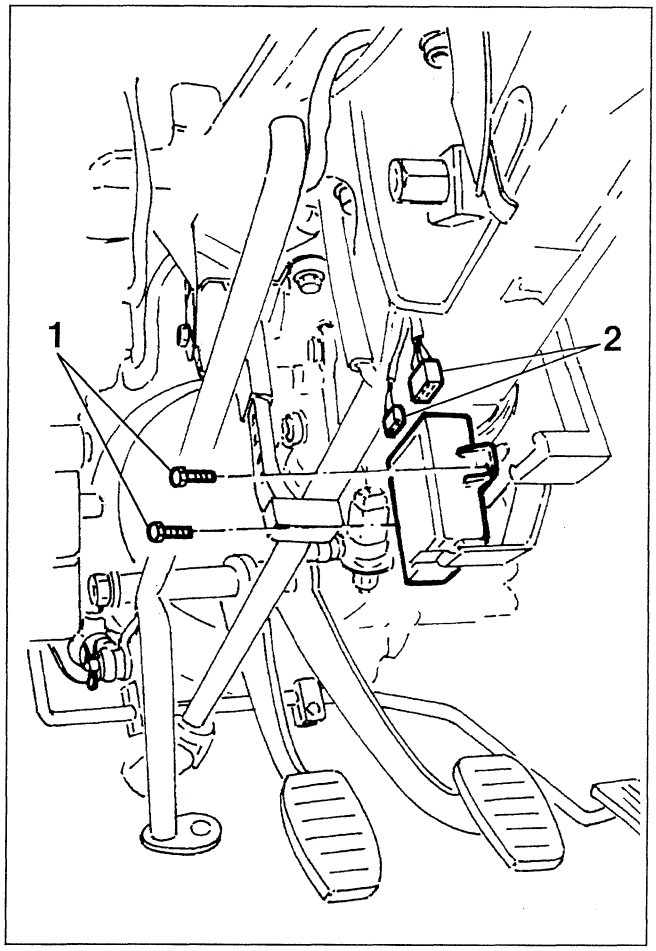
(*) From the '97 version the "integrated services" control unit has been replaced. The REMOVING/REFITTING procedure remains unchanged.

ALFA ROMEO CODE CONTROL UNIT

REMOVAL/REFITTING

Working under the dashboard, gain access to the Alfa Romeo Code control unit to be found on the left-hand side of the fusebox.

1. Slacken the two screws and lower the Alfa Romeo Code control unit.
2. Disconnect the electrical connections and retrieve the control unit.



ELECTRIC SYSTEM DIAGNOSIS 55

INDEX

For the sections marked with an asterisk (*) refer to the base manual "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS": with the exception of the location of components given in APPENDIX A3.

(•) The alarm system with radio frequency control is described in Publication "ALARM SYSTEM" PA500500000000.

FOREWORD

This Group "55 - ELECTRIC SYSTEM DIAGNOSIS" contains all the necessary information regarding the **electric and electronic systems and circuits on these models.**
All the instruments which are useful in finding faults and failures that might occur in the above-mentioned systems are given particular attention.
Each circuit is dealt with separately in a specific section in which the following can be found:

– operation and description of the circuit;

– wiring diagram;

– locating the main components;

– table for locating the more frequent faults with relative test procedures for the components.

VERSIONS WITH RIGHT-HAND DRIVE

For versions with right-hand drive the electric system is completely the same as that of left-hand drive versions as far as the following are concerned:

– operation and description of the circuit

– fault-finding table and checks

Some wiring diagrams differ as they are "specular" (e.g. the power window controls in the driver's door): for these, the complete specific section for right-hand drive is given.

The **location of components and cable routing** change with respect to left-hand drive only in the dashboard and in the passage of the cable along the side panels, while in the engine compartment and rear of the vehicle they remain unchanged.

Therefore, the **appendix A3** contains the illustrations for locating components with the associated cable routing for all the sections not illustrated previously.

LOCATION OF EARTHS

INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

GENERAL DESCRIPTION

For versions with **RIGHT-HAND DRIVE** the earths are located in the same position as for the left-hand drive versions, except for the **earth under the dashboard** which, being on the "driver's side" has been moved from left to right.

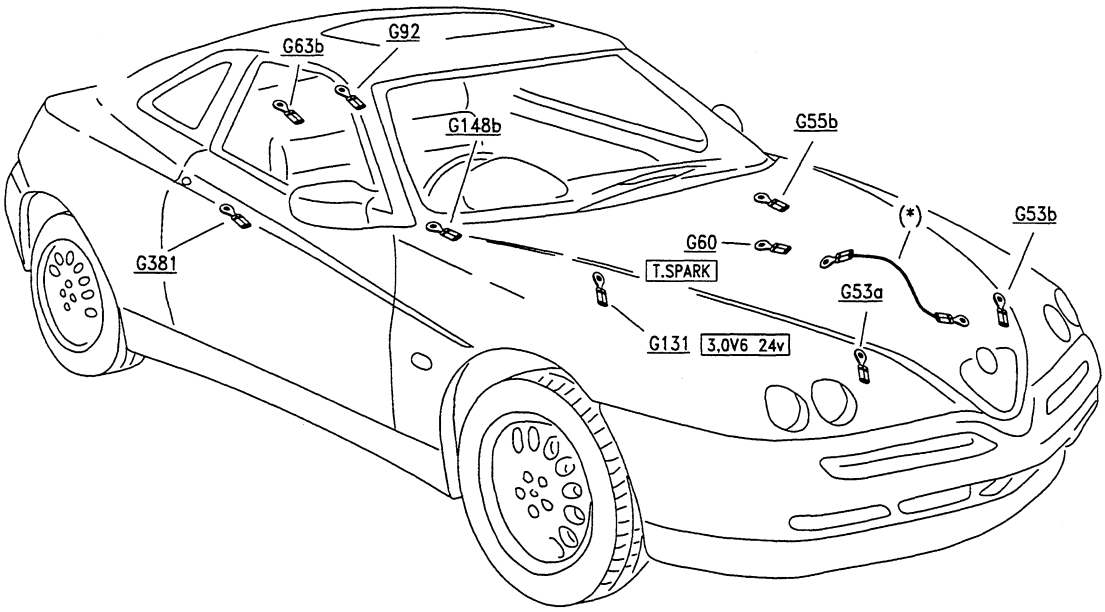
The earths shown are the following:

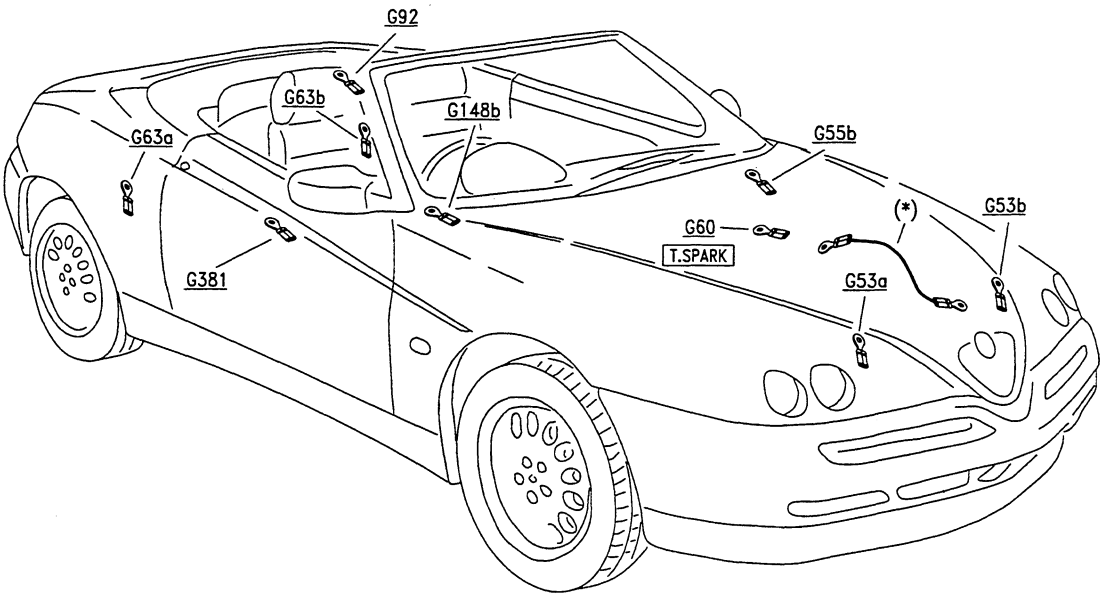
- **G53a** Right-hand engine compartment earth
- **G53b** Left-hand engine compartment earth
- **G55b** Left-hand side panel earth
- **G60** Injection wiring earth (T.SPARK)
- **G63a** Right-hand rear earth (SPIDER only)
- **G63b** Left-hand rear earth
- **G92** Earth for electric aerial
- **G131** Earth on upper cover (3.0V624v)
- **G148b** Earth under drive-hand dashboard, driver's side
- **G381** Airbag earth

There is also an **earth braid**, which connects the power unit to the body.

NOTE
As far as the wiring diagrams are concerned, refer to the base manual "Spider - Gtv: - Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

LOCATION OF EARTHS ON THE CAR





(*) earth braid between gearbox and body

FUSEBOX

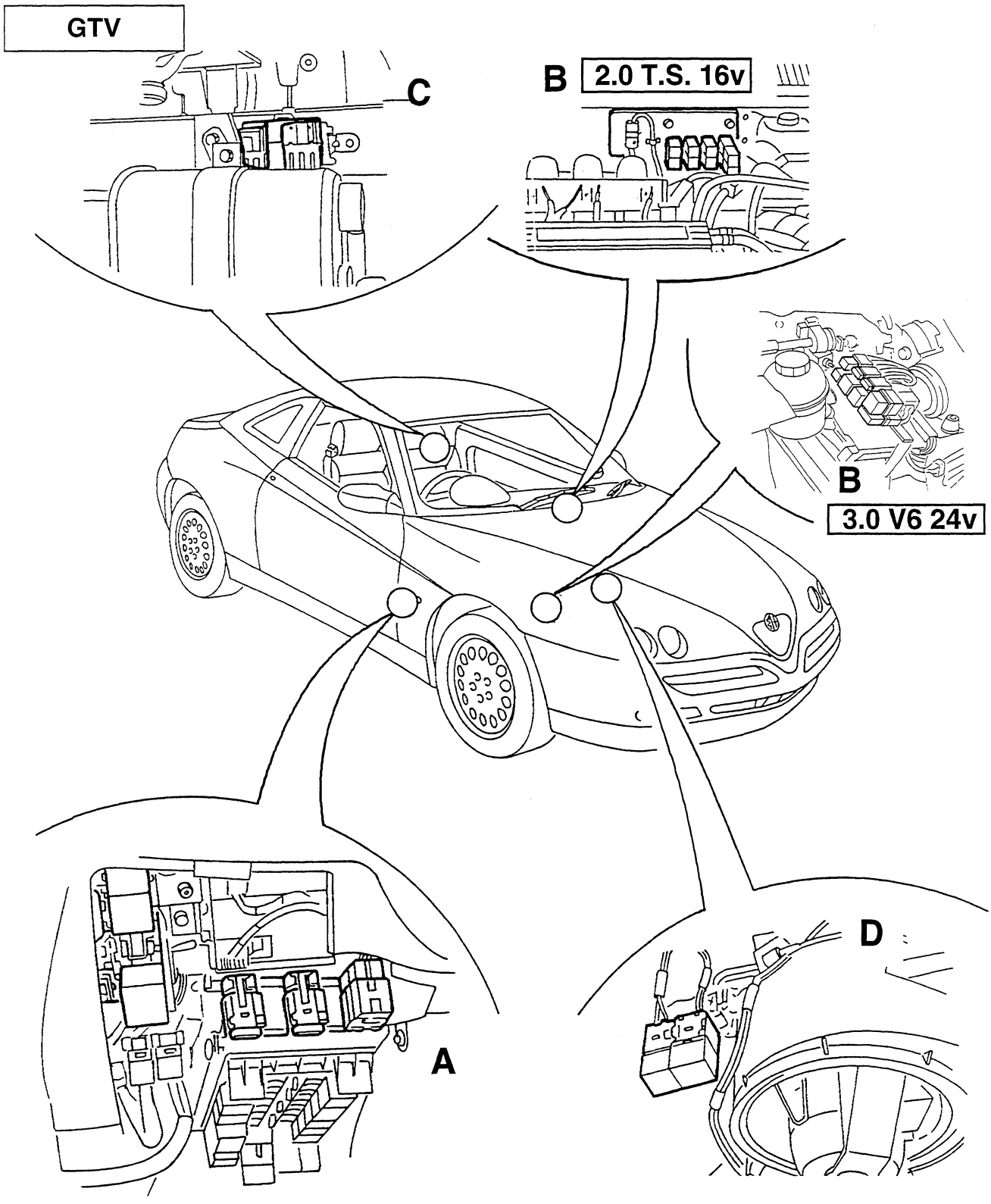
INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

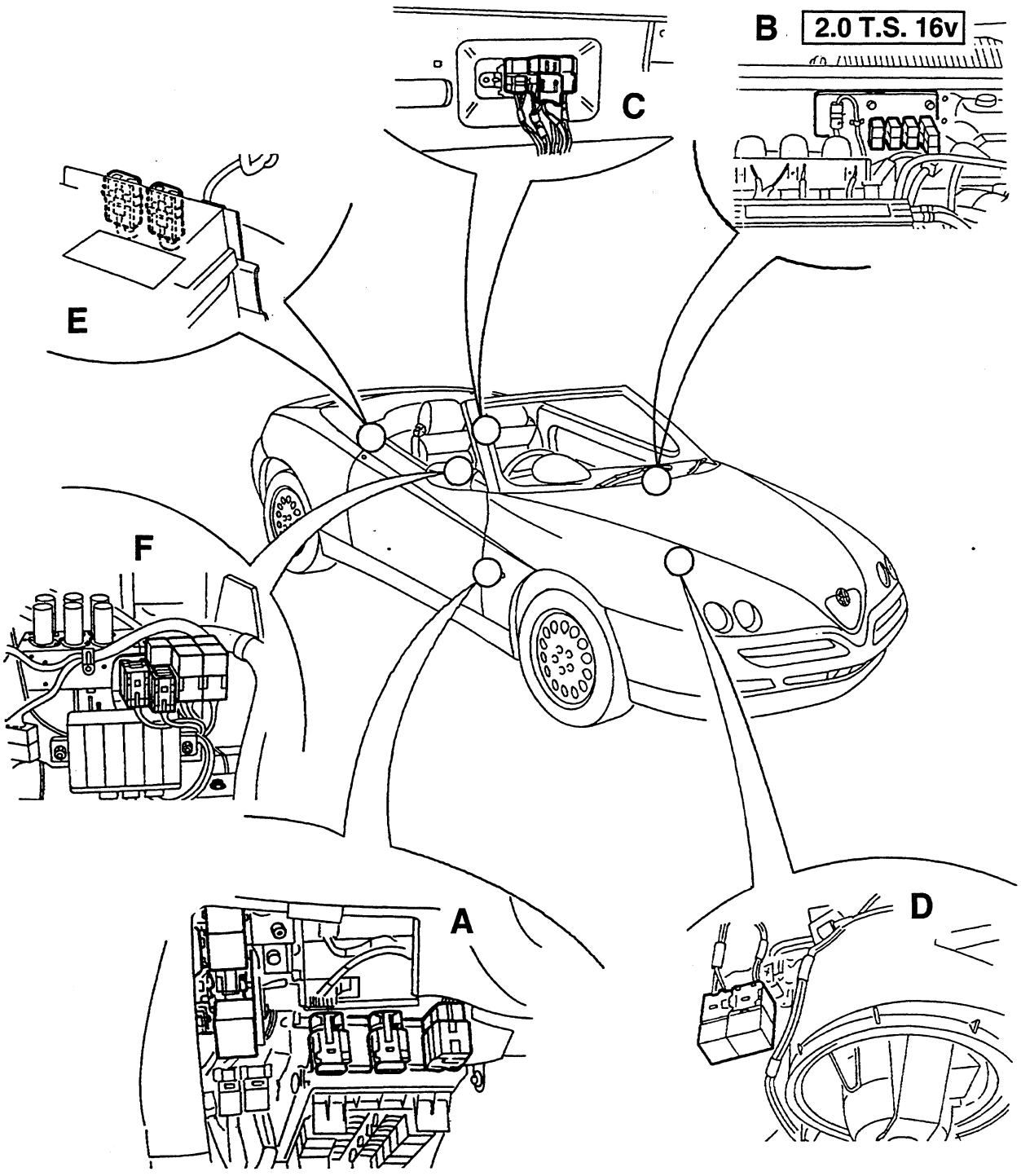
LOCATION OF FUSES AND RELAYS (up to '97 version)

This section shows the locations in the car of all the fuses and switches that are not to be found in the fusebox.

The fuses and relays are distinguished by the colour of the base (fuse holder or relay carrier) which connects them to the wiring harness, as described later.
In addition to the colour of the base, it is always wise to check the exact location of a relay or fuse by the colour of the wires that converge on it (for these - see the wiring diagram concerned).



Spider



FUSES AND RELAYS ON AUXILIARY BRACKET (see fig. position A)

A set of fuses and relays is positioned on an auxiliary bracket (not removable) on the left-hand side of the main fusebox; next to this there is also the integrated services control unit **N82**, the electronic key control unit **N77** and the electronic windscreen wiper device **N14.**

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Fog lamp relay	20A	**I17**	Green
Hazard warning light & direction indicator intermittent device	-	**N13**	Black
Rear fog guard device	-	**N25**	White
Engine cooling fan 2nd speed relay	50A	**I100**	Black
Engine cooling fan 1st speed relay	30A	**I99**	Yellow
Sunroof relay (*)	30A	**I58 (*)**	Red (*)
Automatic hood control relay (***)	30A	**I116 (***)**	Red (***)
ABS fuse	10A	**G125a**	Red
Power window fuse, door locking device	25A	**G312a**	White
Power window fuse, door locking device	25A	**G312b**	White
RH power window fuse	25A	**G310**	White
Sunroof fuse (*)	30A	**G261 (*)**	Green
Fuse for automatic hood switch (***)	30A	**G404 (***)**	Green
Climate control fan fuse	30A	**G255**	Green
Air conditioner system fuse (•)	30A	**Q39**	Green
Rear fog guard fuse	7.5A	**G391**	Brown
ALFA ROMEO CODE control unit fuse	10A	**G389**	Red

(*) GTV only (•) 3.0 V6 24v only
(***) Spider with automatic hood

FUSES AND RELAYS IN ENGINE COMPARTMENT (see fig. position B)

A set of fuses and relays is located in the engine compartment on the services container wall (T.SPARK) or on the R.H. side, near the power steering reservoir.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Engine fan fuse	50A	**G254**	Black
2.0 16v T. SPARK Engine			
Main relay	30A	**S41**	Black
Phase variator relay	30A	**S12c**	Black
Motronic supply fuse	15A	**S46**	Black
Compressor electromagnetic coupling relay	20A	**Q22**	Grey
Compressor auxiliary relay	20A	**Q32**	Grey
Air conditioner wander fuse	30A	**Q39**	Green
3.0 V6 24v Engine			
Main relay	30A	**S41**	Grey
Air flow meter relay	30A	**S12e**	Black
Fuel pump fuse	15A	**S47**	Blue
Control unit supply fuse	7.5A	**S46**	Brown
Compressor control relay	20A	**Q22**	Black
Compressor auxiliary relay	20A	**Q32**	Black
Engine fan delay device	-	**Q42**	White

FUSES AND RELAYS ON REAR BRACKET (see fig. position C)

A set of fuses and relays is located in the luggage compartment on a special bracket.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Hood release relay (*)	20A	**I106**	Black
Hood cover release relay (*)	20A	**I107a**	Red
Hood cover release relay (*)	20A	**I107b**	Black
Luggage compartment opening relay	20A	**I52**	Green
Fuel flap opening relay	20A	**I53**	White
Key-operated supply cut-off relay	20A	**I108**	Blue
Fuel pump relay	30A	**S12a**	Black
Hood cover release timer (*)	27A	**N80**	Black
Services supply fuse	50A	**G384**	Black
ABS supply wander fuse (**)	60A	**G125b**	Black
Injection wander fuse (**)	40A	**S36**	Black
Hood release relay (***)	20A	**I106**	Red
Hood cover release relay (***)	20A	**I107**	Brown
RH hood closing relay (***)	20A	**I112a**	Red
LH hood closing relay (***)	20A	**I112b**	Red
Hood cover closing relay (***)	20A	**I113**	Brown
Automatic hood emergency relay (***)	20A	**I106b**	Grey
Automatic hood electric pump relay (***)	20A	**I117**	Black
Hood control unit fuse (***)	7.5A	**G402**	Brown

(*) Spider only
(**) GTV only
(***) Spider with automatic hood

RELAYS ON HEATER/AIR DISTRIBUTOR UNIT (only versions with air conditioner) (see fig. position D)

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Climate control solenoid valve relay	30A	**Q15**	Yellow
Climate control solenoid valve 1st speed relay	30A	**Q69**	Brown

FUSES ON BRACKET IN REAR TRAY (Spider only) (see fig. position E)

In the Spider two wander fuses are to be found near the battery, in the rear tray.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
ABS supply wander fuse	60A	**G125b**	Black
Injection wander fuse	40A	**S36**	Black
Automatic hood system fuse (***)	40 A	**G401**	Black
Hood relays supply fuse (***)	40 A	**G403**	Black

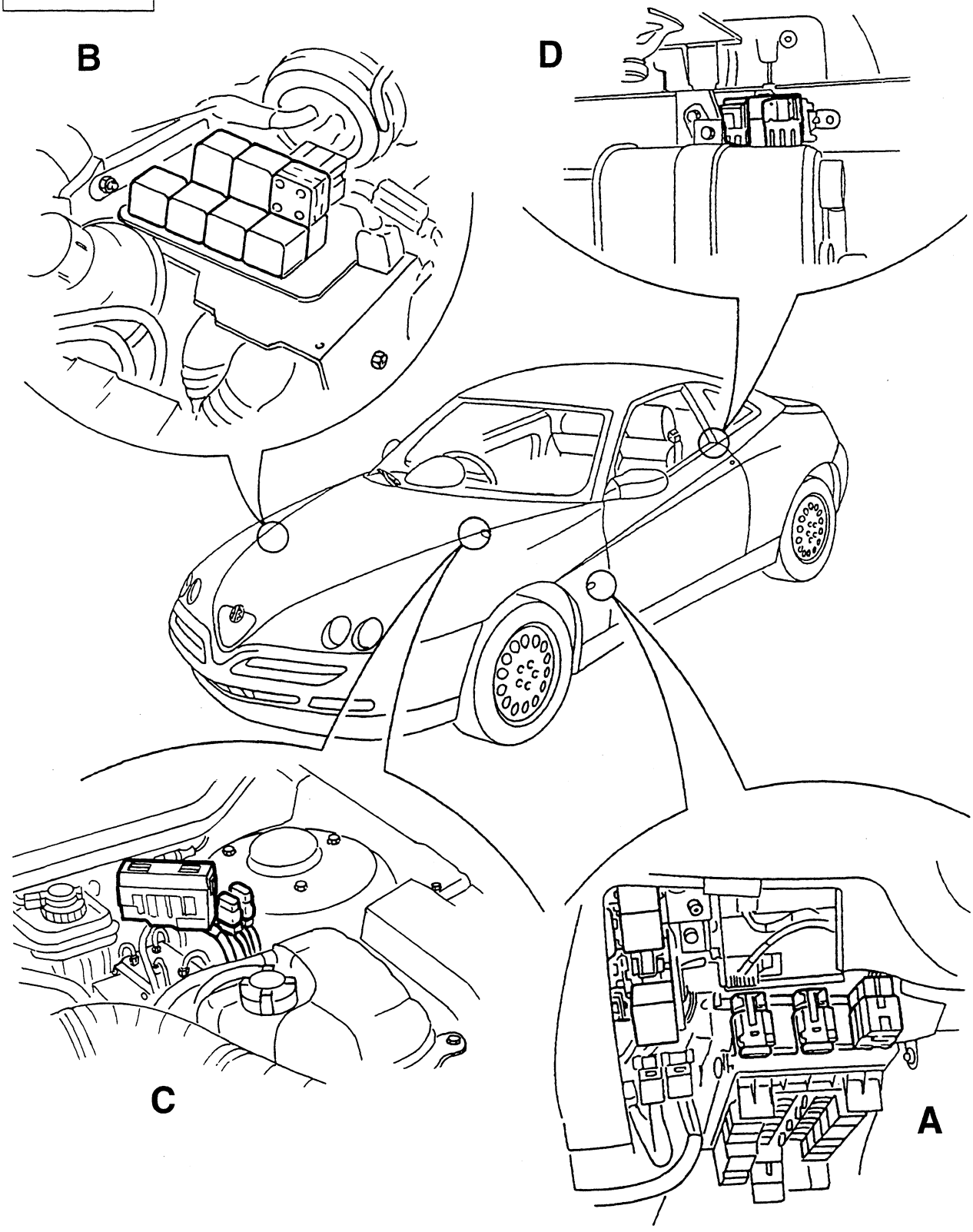
(***)Spider with automatic hood

LOCATION OF FUSES AND RELAYS ('98 version)

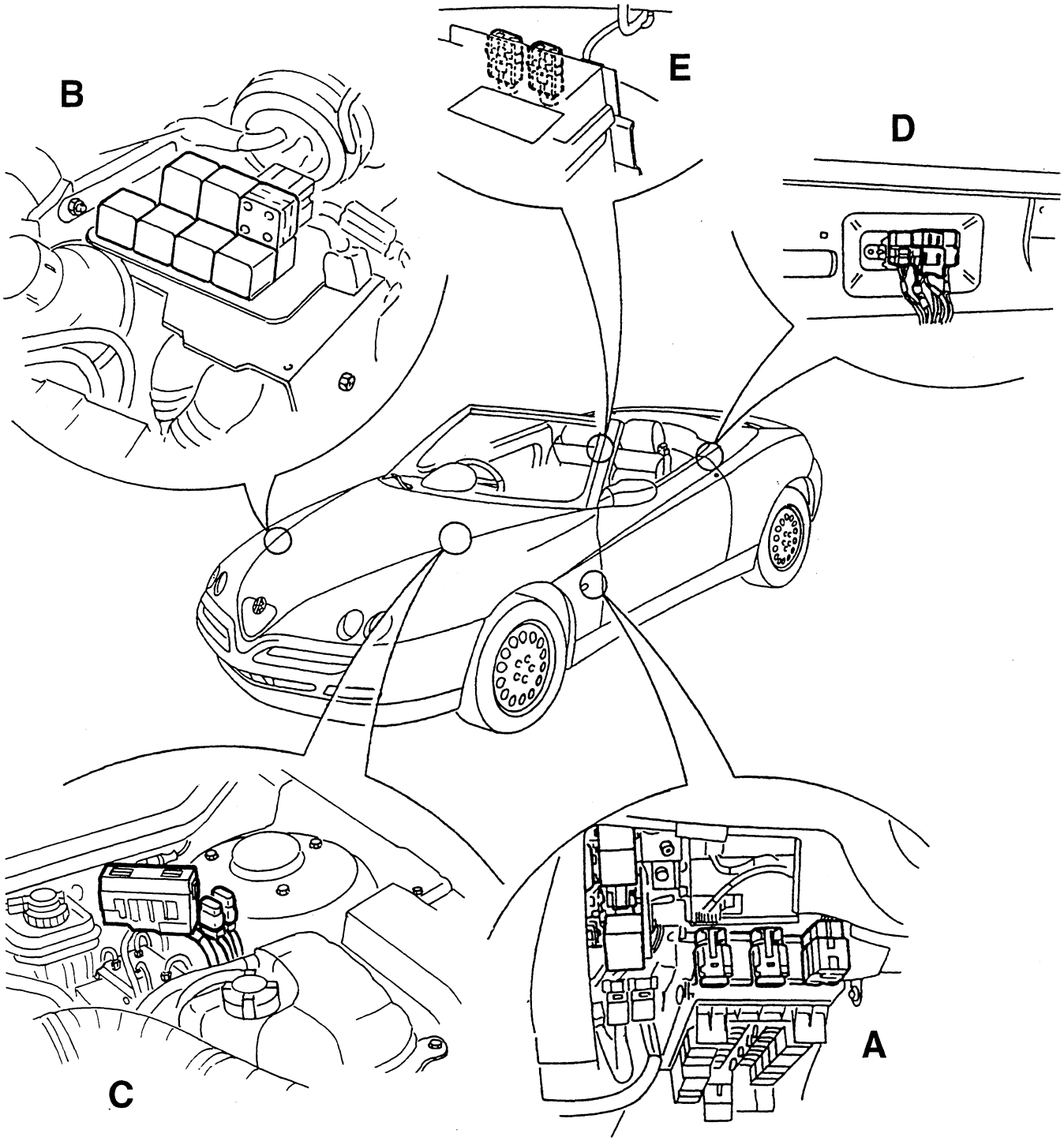
This section shows the locations in the car of all the fuses and switches that are not to be found in the fusebox.

The fuses and relays are distinguished by the colour of the base (fuse holder or relay carrier) which connects them to the wiring harness, as described later.
In addition to the colour of the base, it is always wise to check the exact location of a relay or fuse by the colour of the wires that converge on it (for these - see the wiring diagram concerned).

GTV



Spider



FUSES AND RELAYS ON AUXILIARY BRACKET (see fig. position A)

A set of fuses and relays is positioned on an auxiliary bracket (not removable) on the left-hand side of the main fusebox; next to this there is also the integrated services control unit **N82**, the electronic key control unit **N77** and the electronic windscreen wiper device **N14**.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Fog lamp relay	20A	**I17**	Black
Hazard warning light & direction indicator intermittent device	-	**N13**	Black
Rear fog guard device	-	**N25**	White
Engine cooling fan 2nd speed relay	50A	**I100**	Black
Engine cooling fan 1st speed relay	30A	**I99**	Yellow
ABS fuse	10A	**G125a**	Red
Power window fuse, door locking device	25A	**G312a**	Yellow
Power window fuse, door locking device	25A	**G312b**	Yellow
Air conditioner system fuse (•)	10A	**Q39**	Red
Rear fog guard fuse	10A	**G395**	Red
Fog light fuse	10A	**G382**	Red
Rear view defroster fuse	7.5A	**G394**	Brown

(•) 3.0 V6 24V

FUSES AND RELAYS IN ENGINE COMPARTMENT (see fig. position B)

One set of fuses and relays located in the engine compartment, on right-hand side.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Engine fan fuse	50A	**G254**	Black
Compressor electromagnetic coupling relay	15A	**Q22**	Black
T.Spark Engine			
Main relay	30A	**S41**	Black
Motronic fuel pump relay	30A	**S12a**	Black
Motronic supply fuse	15A	**S46**	Blue
Lambda probe fuse	15A	**S45**	Blue
3.0 V6 24v Engine			
Main relay	30A	**S41**	Red
Motronic fuel pump relay	30A	**S12a**	Black
Lambda probe fuse	15A	**S45**	Blue
Motronic supply fuse	7.5A	**S46**	Brown
Injection ECU power fuse	7.5A	**S58**	Brown

FUSES NEXT TO THE FUSEBOX (see fig. position C)

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Fuse for ALFA ROMEO CODE unit	10A	**G389**	Red
Injection ECU power fuse (*)	7.5A	**S58**	Brown

(*) T.SPARK only

FUSES AND RELAYS ON REAR BRACKET (see fig. position D)

A set of fuses and relays is located in the luggage compartment on a special bracket.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
Hood release relay (*)	20A	**I106**	Black
Hood cover release relay (*)	20A	**I107a**	Red
Hood cover release relay (*)	20A	**I107b**	Brown
Luggage compartment opening relay	20A	**I52**	Black
Fuel flap opening relay	20A	**I53**	Black
key-operated supply cut-off relay	20A	**I108**	Black
Hood cover release timer (*)	27A	**N80**	Black
Services supply fuse	30A	**G384**	Green
ABS supply wander fuse (**)	60A	**G125b**	Black
Hood release relay (***)	20A	**I106**	Brown
Hood cover release relay (***)	20A	**I107**	Brown
RH hood closing relay (***)	20A	**I112a**	Brown
LH hood closing relay (***)	20A	**I112b**	Brown
Hood cover closing relay (***)	20A	**I113**	Brown
Automatic hood emergency relay (***)	20A	**I106a**	Brown
Automatic hood electric pump relay (***)	20A	**I117**	Black
Hood control unit fuse (***)	7.5A	**G402**	Brown
Seat fuse	40A	**G240**	Black
Fusebox power MAXI FUSE (**)	80A	**G405**	Black

(*) Spider only
(**) GTV only
(***) Spider with automatic hood

FUSES ON BRACKET IN REAR TRAY (Spider only) (see fig. position E)

In the Spider two wander fuses are to be found near the battery, in the rear tray.

COMPONENT	AMP.	SYMBOL	COLOUR OF BASE
ABS supply wander fuse	60A	**G125b**	Black
Fusebox power MAXI FUSE	80A	**G405**	Black
Automatic hood system fuse (***)	40 A	**G401**	Black

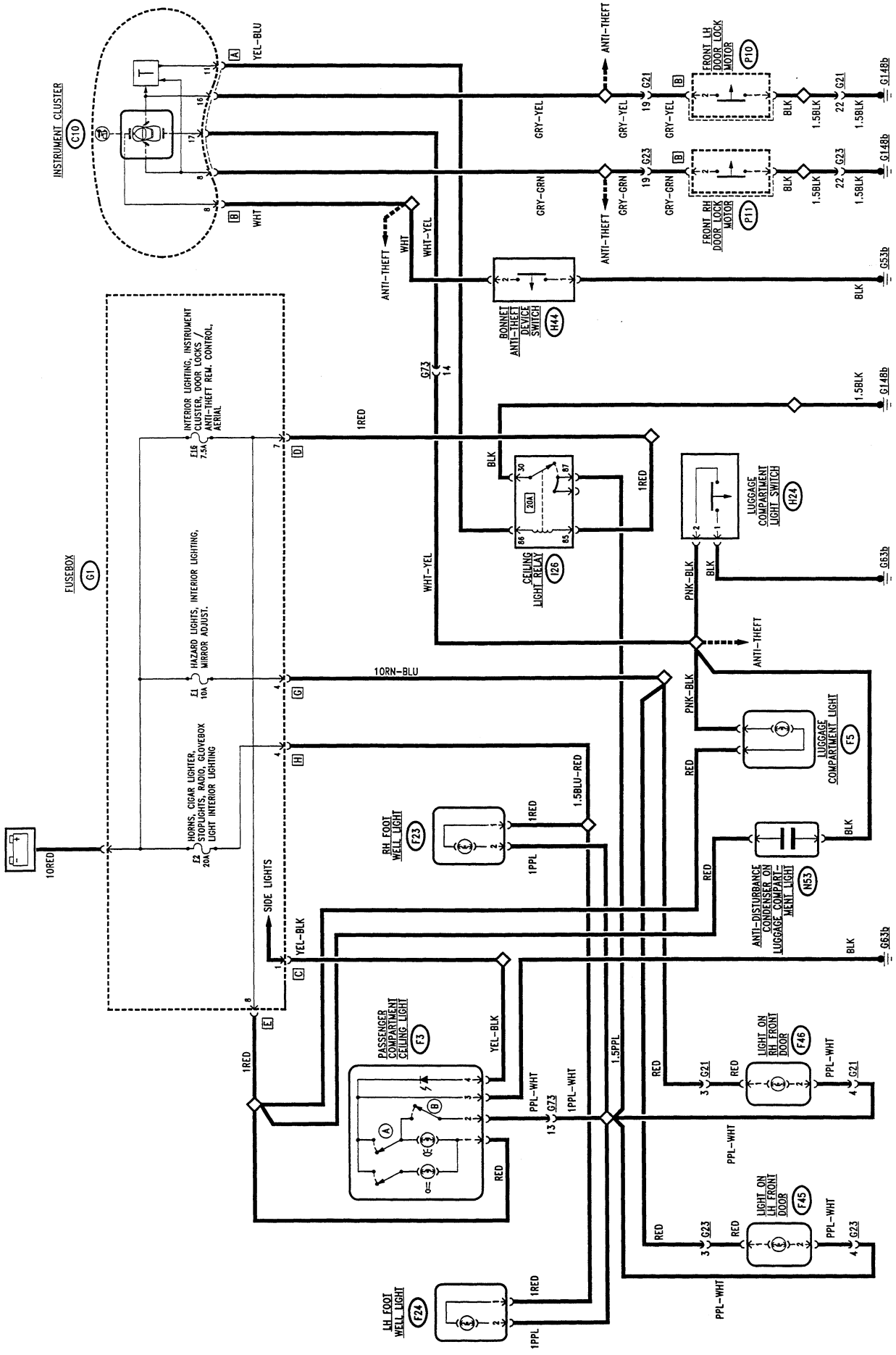
(***) Spider with automatic hood

COURTESY LIGHTS AND TIMED LIGHTS

INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

WIRING DIAGRAM (up to '96 version)



GENERAL DESCRIPTION (up to '96 version)

Courtesy lights and timed lights

The numerous light sources provided ensure good lighting inside the passenger compartment and/or of some specific points under all conditions.
The courtesy light **F3** in the centre above the windscreen, lights **F23** and **F24** under the dashboard, and lights **F45** and **F46** in the lower part of the doors are timed: they are turned on when one of the two doors is opened, and turned off a few moments after the doors have been closed again, according to a complex logic determined by an electronic device inside the instrument cluster **C10**.

Courtesy lights timing logic

With the ignition key at STOP (or removed);

– opening and closing the driver's door, the lights turn on when the door is opened and turn of **5.5 sec.** after it has been closed. The same occurs also when the passenger's door is opened;

– if a door is opened and left open, the lights stay on for **2 minutes**, and then go off.

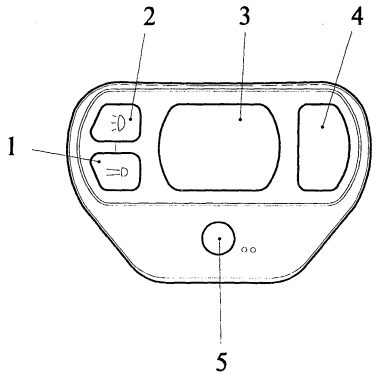
Turning the key to RUN:

– the lights go out **immediately** whether the doors are open or closed;

– re-opening one of the doors with the key at RUN, the lights turn on for **2 minutes**, and then go off.

The front courtesy light may also be turned on by hand using the switch provided.
On the front courtesy light, there is also a reading spot lamp which makes for instance reading possible without disturbing the driver.

NOTE: The courtesy light unit is different for the versions with alarm system. Nothing changes however with regard to the operating features described here.



1 - spot light switch
2 - courtesy light switch
3 - courtesy light
4 - spot light
5 - alarm I.R. receiver (See "Alarm system")

A special lamp **F5** illuminates the luggage compartment, which is turned on when the boot is opened.

Doors open warning light

A display on the instrument cluster signals when each door, the bonnet and the boot are open.

FUNCTIONAL DESCRIPTION (up to '96 version)

Courtesy lights and timed lights

The courtesy light and reading lamp **F3** receive the supply directly through fuse **F16** of fusebox **G1**: this makes it possible to operate the reading lamp or the courtesy light from the corresponding switch **A**; when switch **B** is closed the courtesy light turns on automatically when the doors are opened: the timing signal is generated by an electronic device inside the instrument cluster **C10**, according to the logic described previously.
This signal energizes switch **I26** - located on the bracket next to fusebox **G1** - which is supplied by the line of fuse **F16**.
Relay **I26** sends an earth signal to the courtesy lights for timed operation.
Lights **F23** and **F24** are supplied by the line of fuse **F2** at **G1** and are turned on only by the timing signal (they cannot be operated manually).
Similarly, lights **F45** and **F46** are supplied directly respectively through connector Q and fuse **F1** of fusebox **G1**, and they are turned on only by the timing signal.
The luggage compartment light **F5** is supplied with battery voltage through the line protected by fuse **F16**; it is turned on when the boot is opened and switch **H24** sends an earth signal.
Near light **F5** there is a radio suppressor condenser **N53** (for further details see "Radio system").

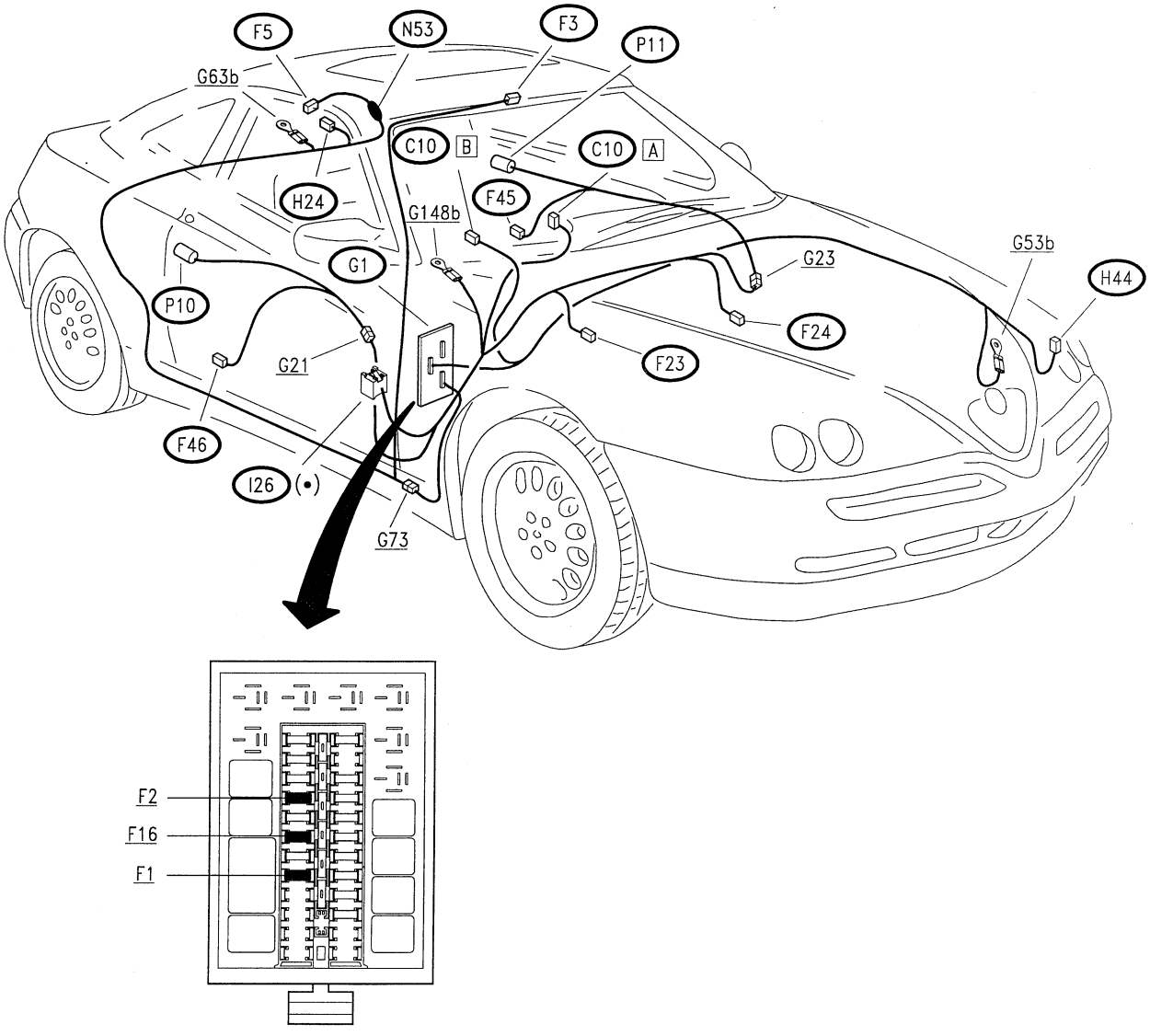
Doors open warning lights

The door locking devices **P10** and **P11**, located on each door in correspondence of the lock, also contain a microswitch which closes when the door is open, thereby sending an earth signal to the instrument cluster **C10**, and turning on the corresponding led.
N.B. inside the cluster the same signal is also sent to the electronic device which operates the courtesy light timing logic.

In the same way, switch **H24** (to be found on the boot telescopic prop) closes when the boot is open, sending an earth signal to the instrument cluster **C10**, thereby turning on the corresponding led.

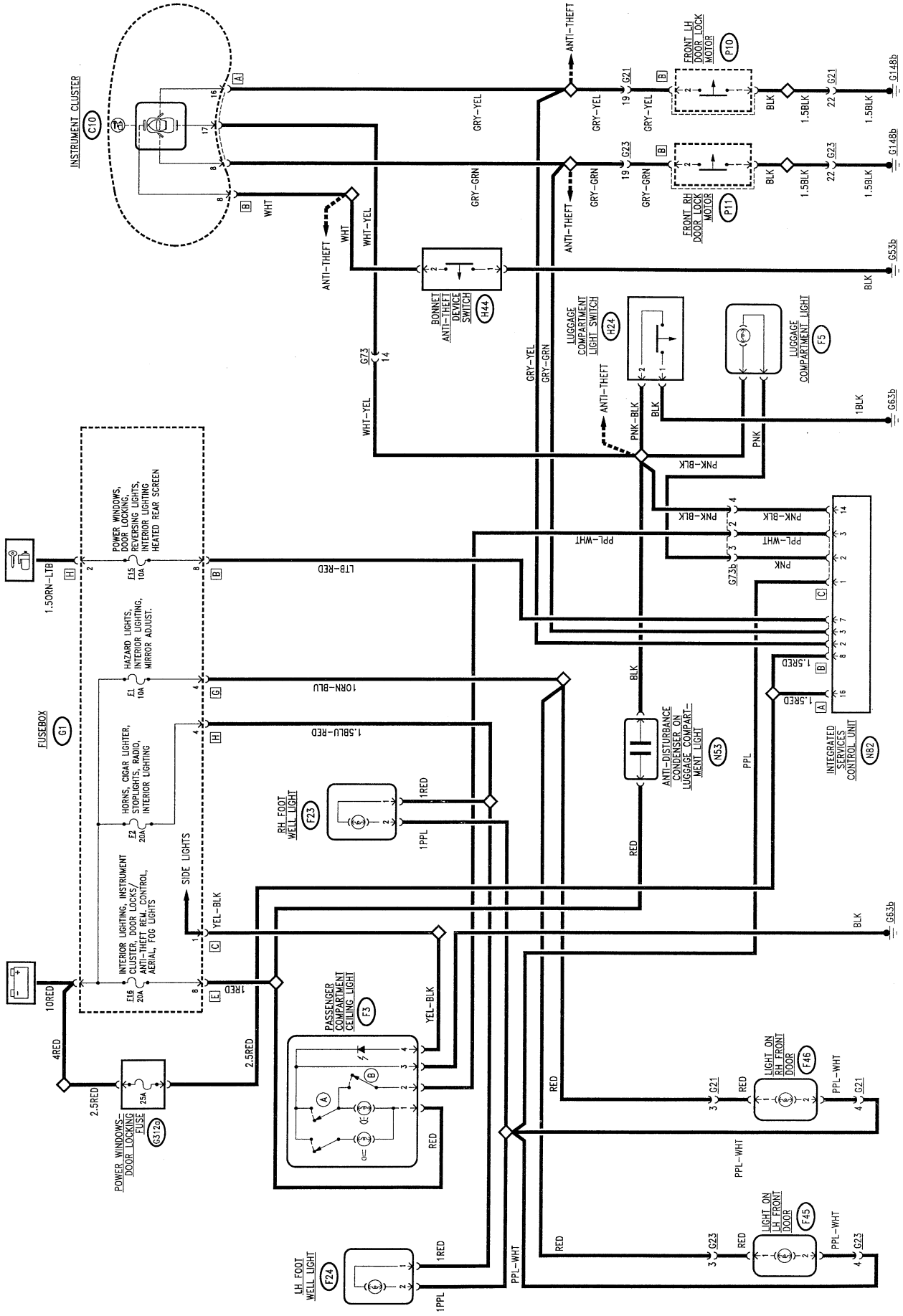
Lastly, switch **H44** also sends an earth signal when the bonnet is open, turning on the corresponding led on the instrument cluster **C10**.
N.B. These four "door open" signals are also used by the alarm system (for further details see "Alarm System").

LOCATION OF COMPONENTS (up to '96 version)



(•) Green base

WIRING DIAGRAM (from '97 version)



GENERAL DESCRIPTION (from '97 version)

Roof lights and timed lights

The numerous lighting points provided offer good lighting in the passenger compartment and/or other specific points under all conditions.
The front roof lamp **F3** in the centre above the windscreen, lights **F23** and **F24** under the dashboard, and lights **F45** and **F46** in the lower part of the doors, are timed: they are turned on when one of the two doors is opened, and when the doors are closed again they turn off after and few moments, according to a logic determined by the integrated services electronic control unit **N82**.

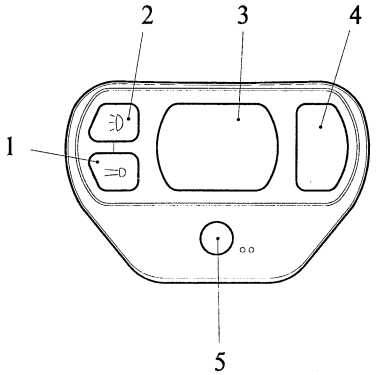
Roof lamp timing logic

When the doors are opened all the lights are operated and timed according to the following logic:

- timing for 15 SECONDS from when the door is closed again; at all events, timing is stopped when the key is turned to MAR: this makes it possible to get into the car and engage the key;
- timing for 3 MINUTES if the door stays open: this avoids draining the battery if the door is left open.

The front roof lamp may also be turned on by hand using the switch.
There is also a spot light incorporated in the front roof lamp unit which can be used for example for reading without disturbing the driver.

NOTE: The roof lamp unit is different for versions with alarm system. However, there are no changes as far as this description is concerned.



1 - spot light switch
2 - roof lamp switch
3 - roof lamp
4 - spot light
5 - alarm I.R. receiver (See "Alarm system")

Boot light

When the boot is opened, the boot light is operated with 20 MINUTE timing: timing is however cut out when the boot is closed.

Doors open warning light

A display on the instrument cluster indicates the opening of the doors, bonnet and boot.

FUNCTIONAL DESCRIPTION (from '97 version)

Roof lamps and timed lights

The passenger compartment light and spot light **F3** receive a direct supply through fuse **F16** of fusebox **G1**: this makes it possible to turn on the reading light or the roof lamp using switch **A**; with switch **B** closed, the roof lamp is turned on automatically when the doors are opened: the timing signal is generated by the integrated services electronic control unit **N82** - pin C3.
Lights **F23** and **F24** are supplied by the line of fuse **F2** at **G1** and they are only turned on by the timing signal (they can not be turned on by hand) of the control unit **N82** - pin C1.
Similarly, lights **F45** and **F46** are supplied directly via fuse **F1** of fusebox **G1**, and they are only turned on by the timing signal of the control unit **N82** - pin C1.
The boot light **F5** is supplied by **N82** - from pin C2 - at 12V and it is turned on when the boot is opened and switch **H24** sends an earth signal, pin C14.
Next to the roof light **F5** there is a radio anti-disturbance condenser **N53** (for further details see "Radio system").

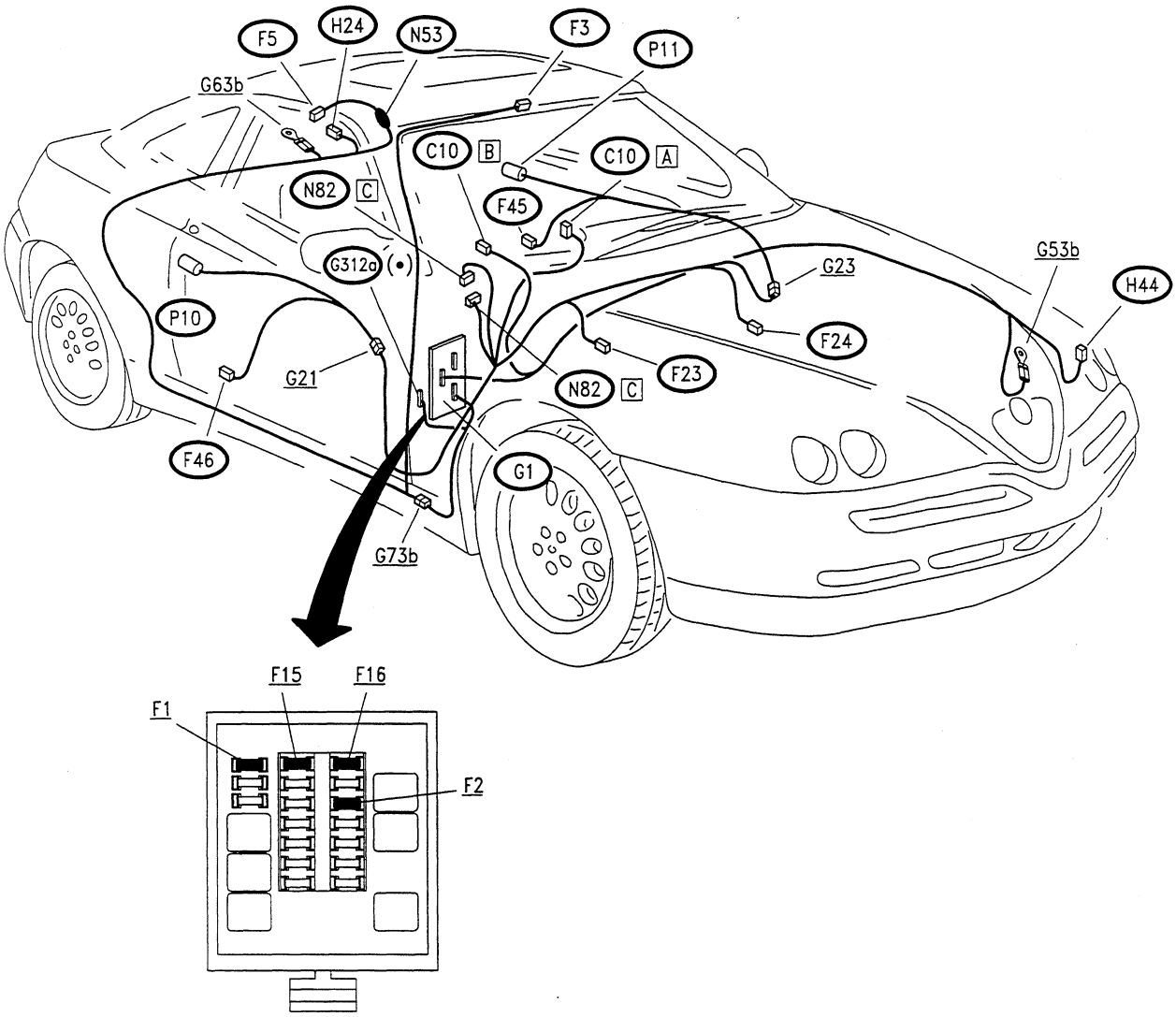
Doors open warning light

The door locking devices **P10** and **P11**, on each door in correspondence with the lock, also contain a microswitch which closes when the door is opened, thereby sending an earth signal to the instrument cluster **C10**, turning on the corresponding led.

Similarly, switch **H24** (on the telescopic boot prop) closes when the boot is open, sending an earth signal to the instrument cluster **C10**, turning on the corresponding led.

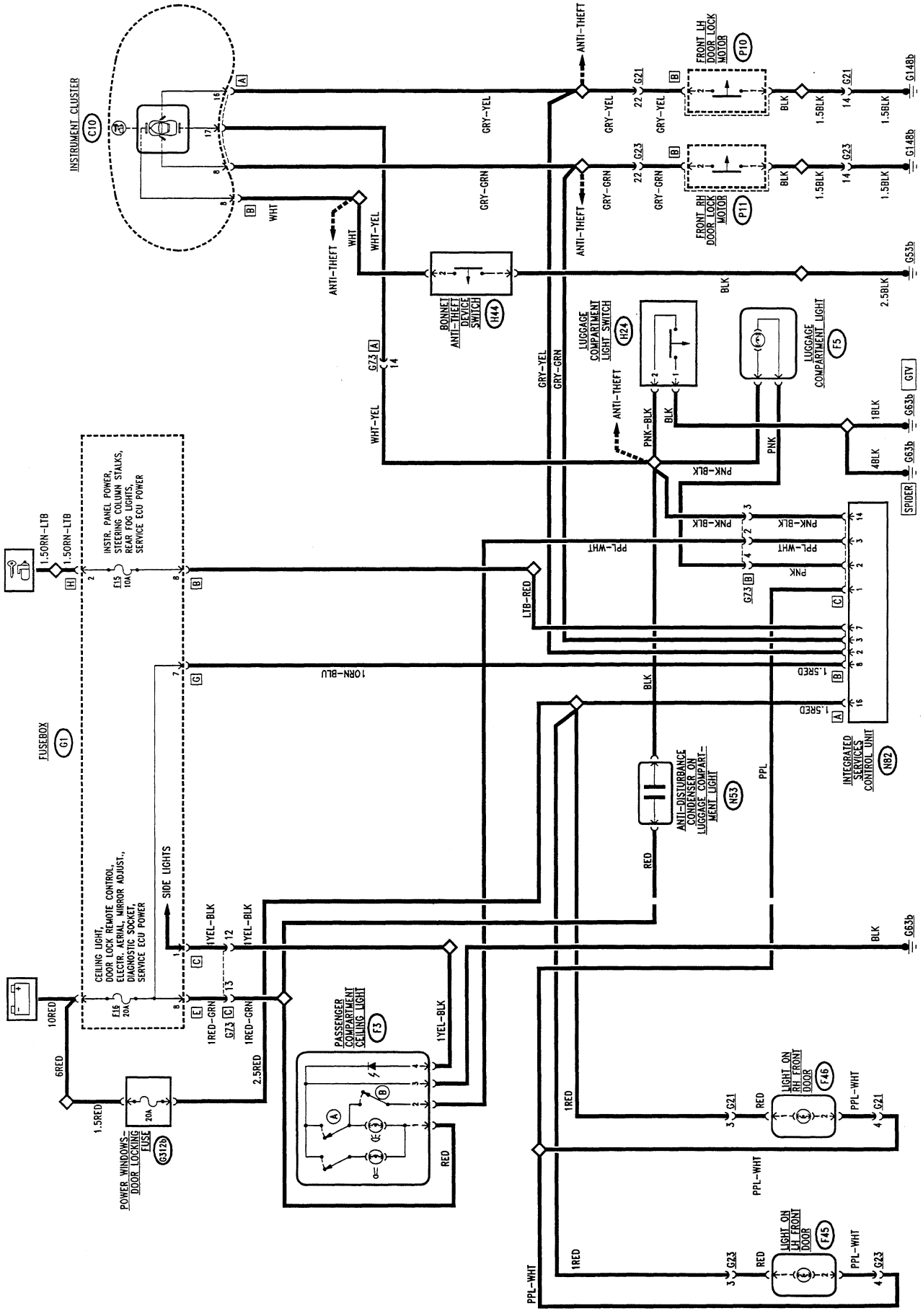
Lastly, switch **H44** also sends an earth signal when the bonnet is open turning on the led on the cluster **C10**.

LOCATION OF COMPONENTS (from '97 version)



(•) White fuse holder

WIRING DIAGRAM (from '98 version)



GENERAL DESCRIPTION (from '98 version)

Roof lights and timed lights

The numerous lighting points provided offer good lighting in the passenger compartment and/or other specific points under all conditions.
The front roof lamp **F3** in the centre above the windscreen and lights **F45** and **F46** in the lower part of the doors, are timed: they are turned on when one of the two doors is opened, and when the doors are closed again they turn off after and few moments, according to a logic determined by the integrated services electronic control unit **N82**.

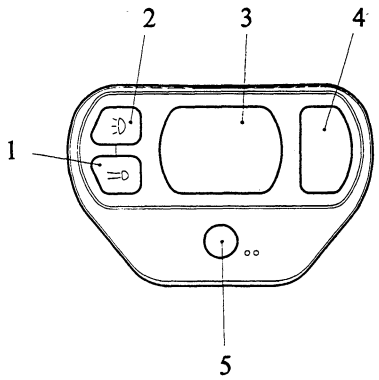
Roof lamp timing logic

When the doors are opened all the lights are operated and timed according to the following logic:

- timing for 10 SECONDS from when the door is closed again; at all events, timing is stopped when the key is turned to MAR: this makes it possible to get into the car and engage the key;
- timing for 2 MINUTES if the door stays open: this avoids draining the battery if the door is left open.

The front roof lamp may also be turned on by hand using the switch.
There is also a spot light incorporated in the front roof lamp unit which can be used for example for reading without disturbing the driver.

NOTE: The roof lamp unit is different for versions with alarm system. However, there are no changes as far as this description is concerned.



1 - spot light switch
2 - roof lamp switch
3 - roof lamp
4 - spot light
5 - alarm I.R. receiver (See "Alarm system")

Boot light

When the boot is opened, the boot light is operated with 20 MINUTE timing: timing is however cut out when the boot is closed.

Doors open warning light

A display on the instrument cluster indicates the opening of the doors, bonnet and boot.

FUNCTIONAL DESCRIPTION (from '97 version)

Roof lamps and timed lights

The passenger compartment light and spot light **F3** receive a direct supply through fuse **F16** of fusebox **G1**: this makes it possible to turn on the reading light or the roof lamp using switch **A**; with switch **B** closed, the roof lamp is turned on automatically when the doors are opened: the timing signal is generated by the integrated services electronic control unit **N82** - pin C3.
The, lights **F45** and **F46** are supplied directly via fuse **G312b** and they are only turned on by the timing signal of the control unit **N82** - pin C1.
The boot light **F5** is supplied by **N82** - from pin C2 - at 12V and it is turned on when the boot is opened and switch **H24** sends an earth signal, pin C14.
Next to the roof light **F5** there is a radio anti-disturbance condenser **N53** (for further details see "Radio system").

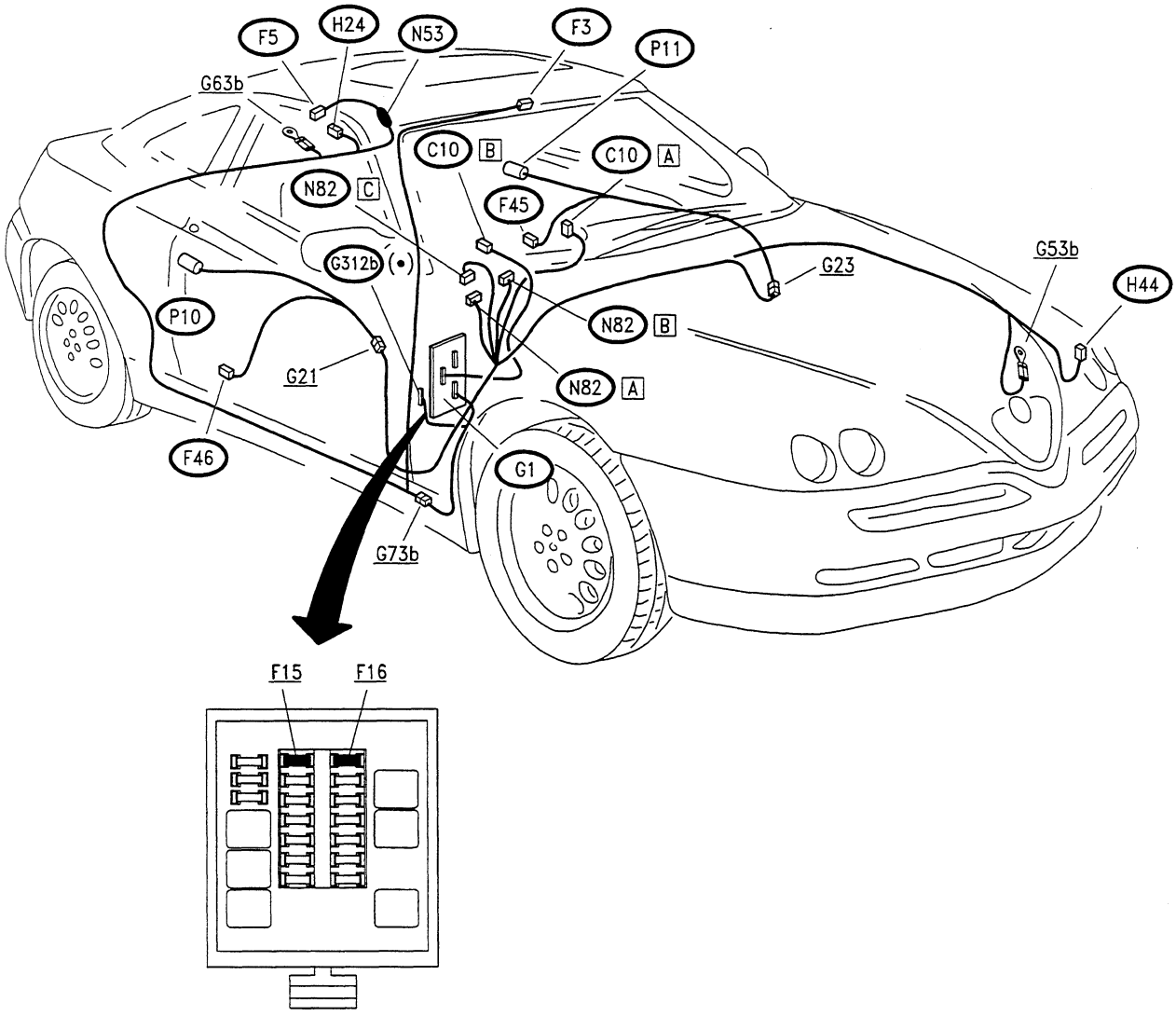
Doors open warning light

The door locking devices **P10** and **P11**, on each door in correspondence with the lock, also contain a microswitch which closes when the door is opened, thereby sending an earth signal to the instrument cluster **C10**, turning on the corresponding led.

Similarly, switch **H24** (on the telescopic boot prop) closes when the boot is open, sending an earth signal to the instrument cluster **C10**, turning on the corresponding led.

Lastly, switch **H44** also sends an earth signal when the bonnet is open turning on the led on the cluster **C10**.

LOCATION OF COMPONENTS (from '98 version)



(•)Yellow fuse holder

CAR RADIO

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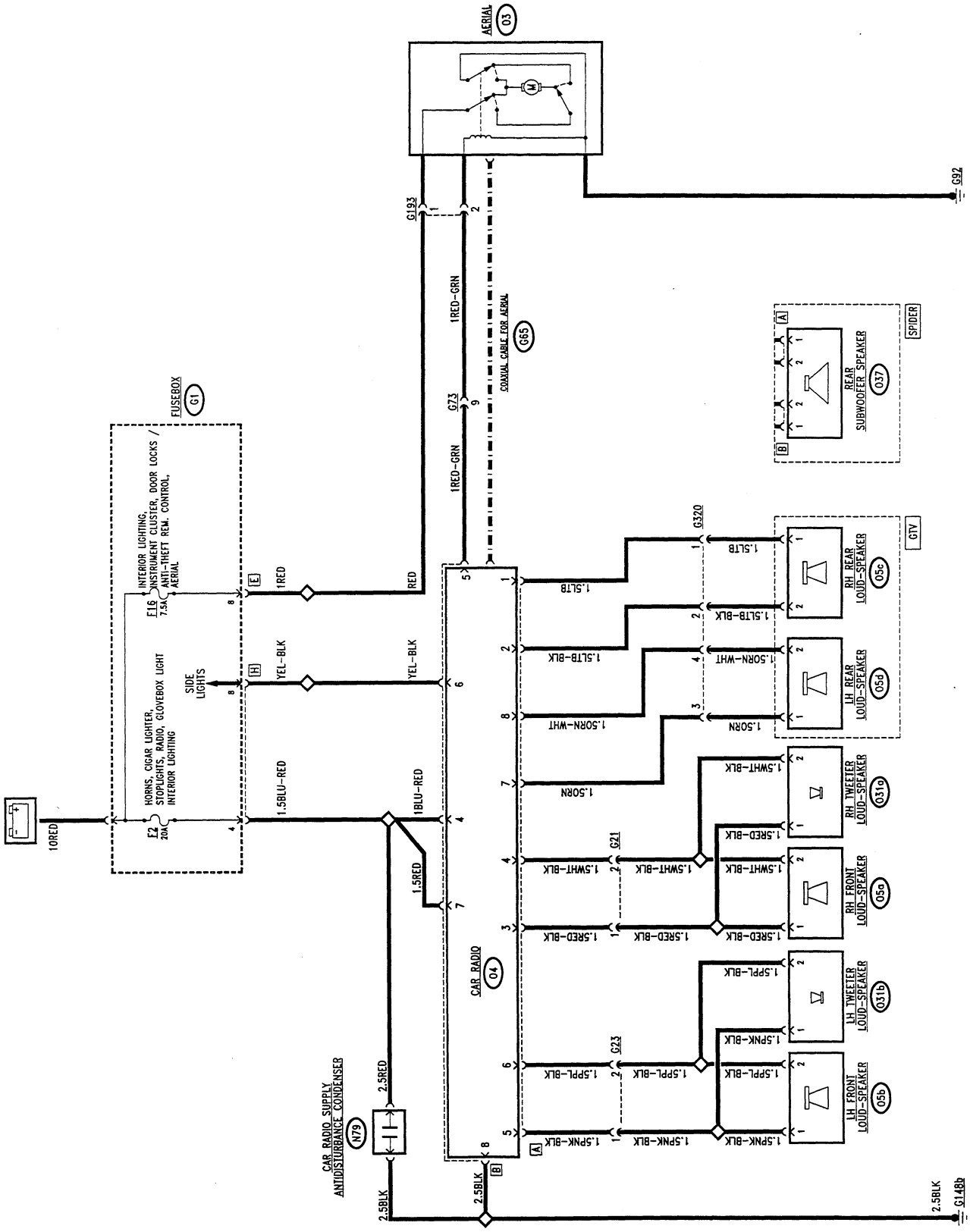
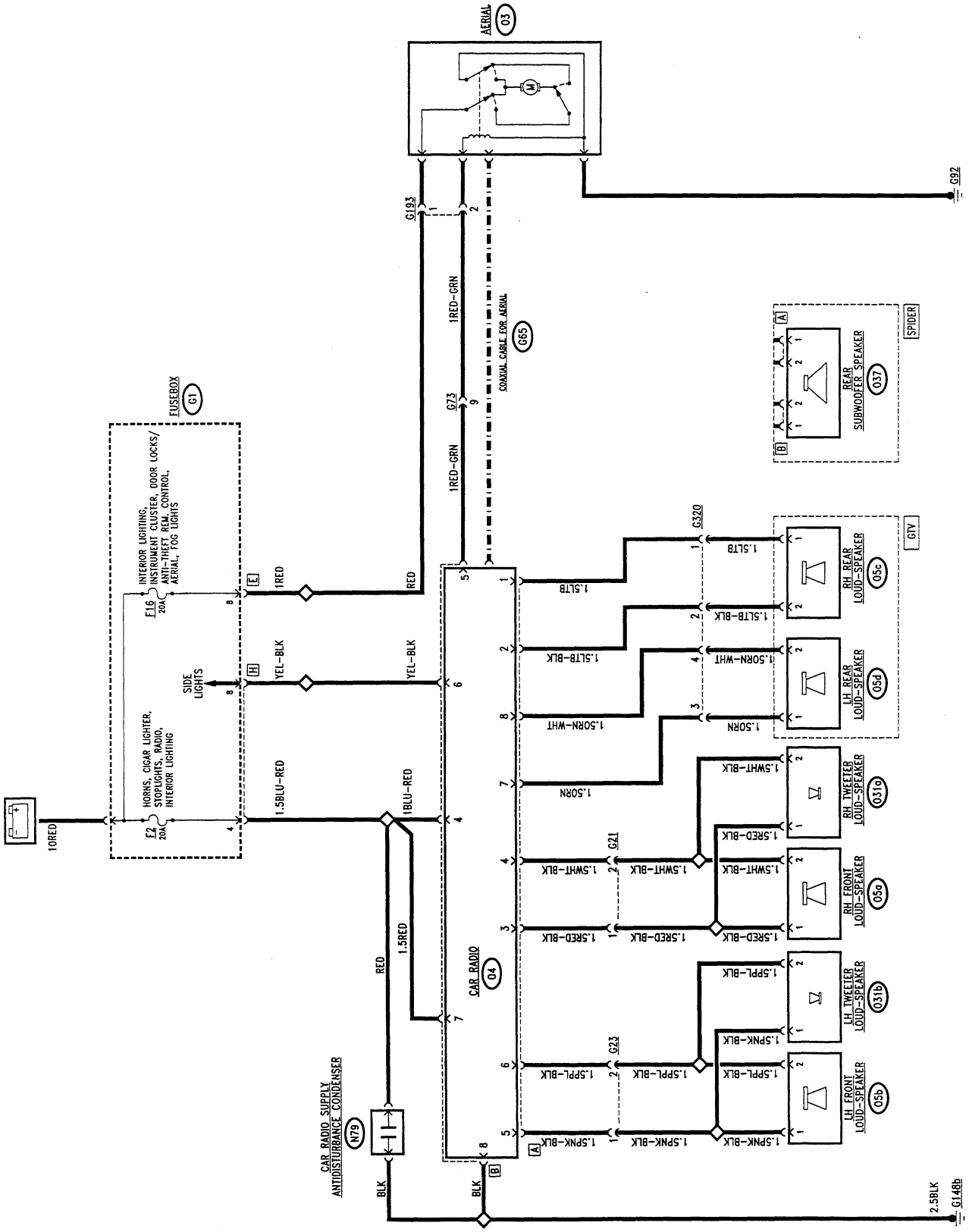
(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

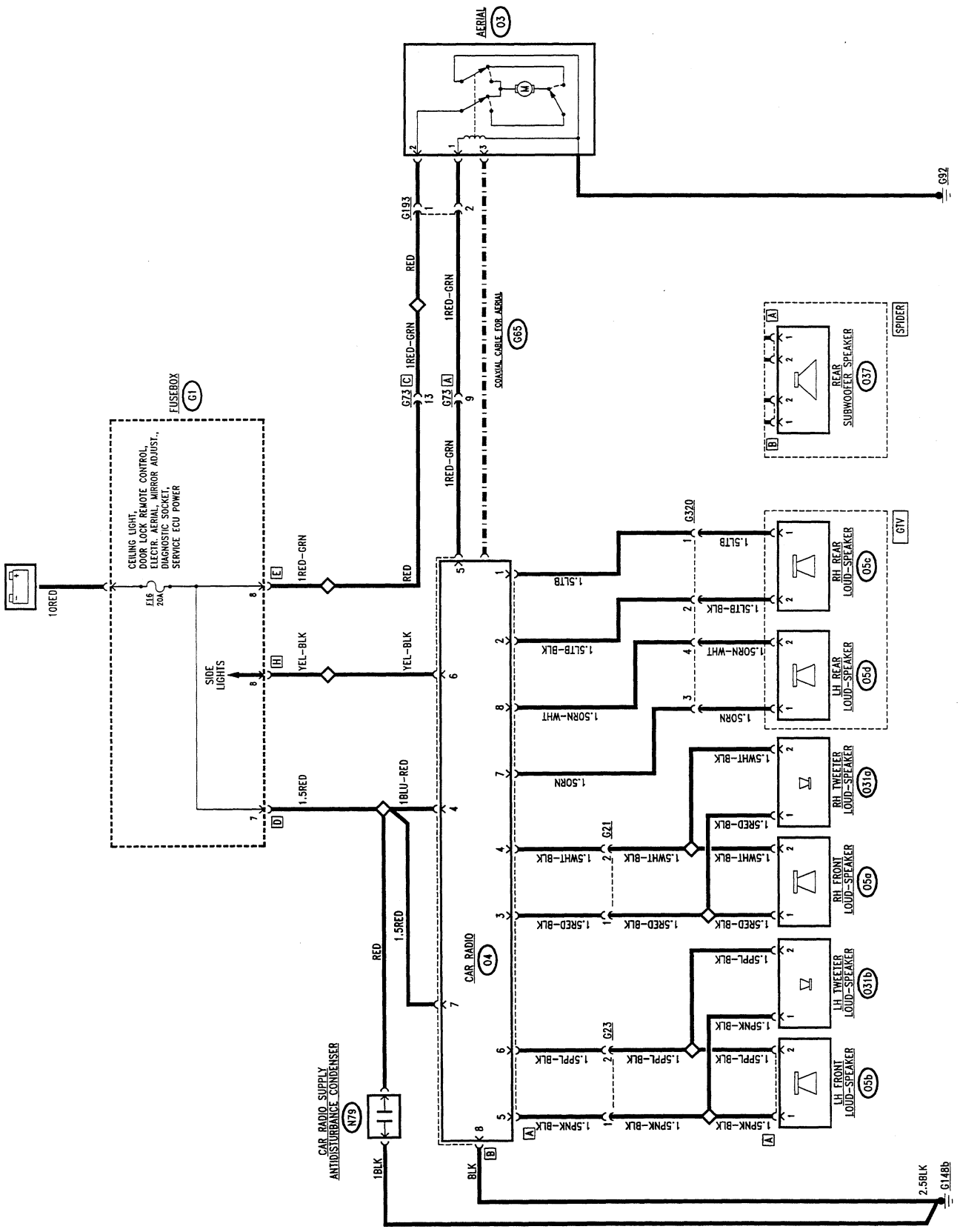
WIRING DIAGRAM (up to '96 version)



WIRING DIAGRAM (from '97 version)



WIRING DIAGRAM (from '98 version)



GENERAL DESCRIPTION

The car is fitted with a provision for the installation of **a car radio system complete with loud speakers.**

The system includes all the **wirings** necessary, already connected to the "base" wiring loom of the car, with **two** 130x180mm **front loudspeakers with 2 separate tweeters**, and **two** 165 mm, two-way **rear loudspeakers** (GTV) or a single 165 mm **rear subwoofer loudspeaker** (SPIDER).
The front speakers are located at the sides in the lower sections of the doors, with the tweeters on the pillar and the rear ones are on the shelf behind the seat (GTV) or in the centre behind the console (SPIDER).

The **electric aerial** is extended by a motor operated when the radio is switched on; it is located on the lefthand side of the boot lid and is connected with the radio by a coaxial cable.

The pre-installed supply for the radio is both key-operated and direct from the battery; this also makes it possible to memorise tuning, safety codes, etc. in the radio set.

In order to ensure very high sound quality under all conditions of use, a number of **anti-disturbance suppressors** have been fitted: this enables "electronic silencing" of the electric services that might interfere on the radio circuit:

– a suppressor in the boot lock;

– an aluminium sheet on the bonnet sound-deadening, earthed with a suitable braid;

– two condensers on the radio power supply.

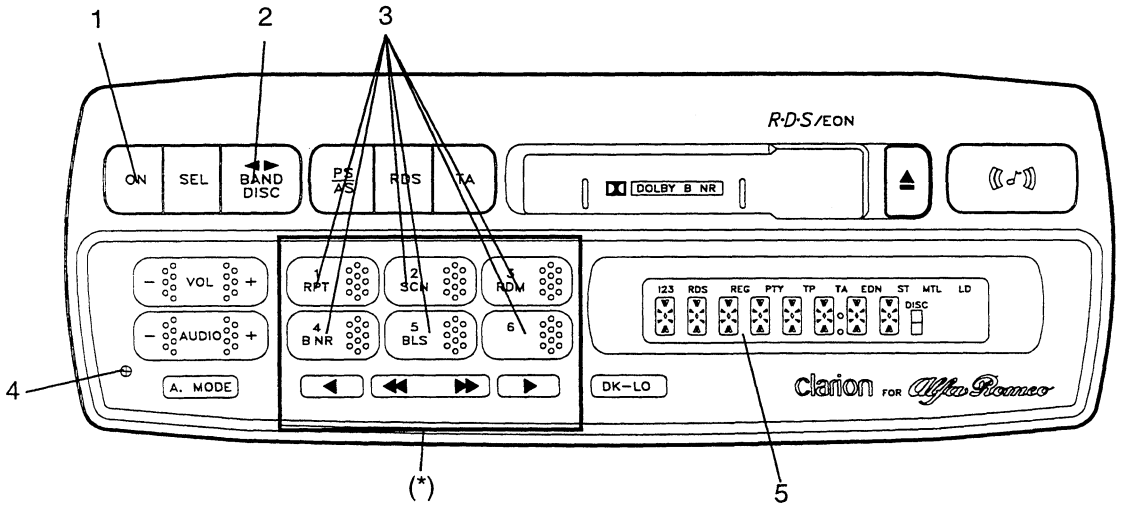
As an optional extra the car can also fitted with a **fixed radio :** this system is composed of a **CLARION** radio with RDS coding, cassette player and CD loading control.

The radio has a removable front panel, as protection against theft and an internal antitheft code for further security.

FUNCTIONAL DESCRIPTION

The radio **O4** is supplied directly by the battery voltage via fuse **F2** (**F16** from '98 version) of fusebox **G1**, at pin 4 and at pin 7 of connector B.
Pin 8 of connector B is earthed.
Pin 6 receives the "sidelights on" signal used for lighting the radio controls.
The cables with the signals to the speakers leave from connector A of **O4.**
The aerial **A3** is connected to the radio by the special screened coaxial cable **G65.**
A signal also leaves pin 5 of connector B of **O4** which operates the motor of the electric aerial and extends it completely; when the radio signal ceases, the motor is operated in the reverse direction and the aerial is retracted completely.
The aerial **A3** is powered via the line of fuse **F16** of **G1**.
The suppressor **N79** is inserted on the radio supply.
Other suppressors are to be found near the services that would be more likely to interfere on the radio circuit.

CLARION RADIO

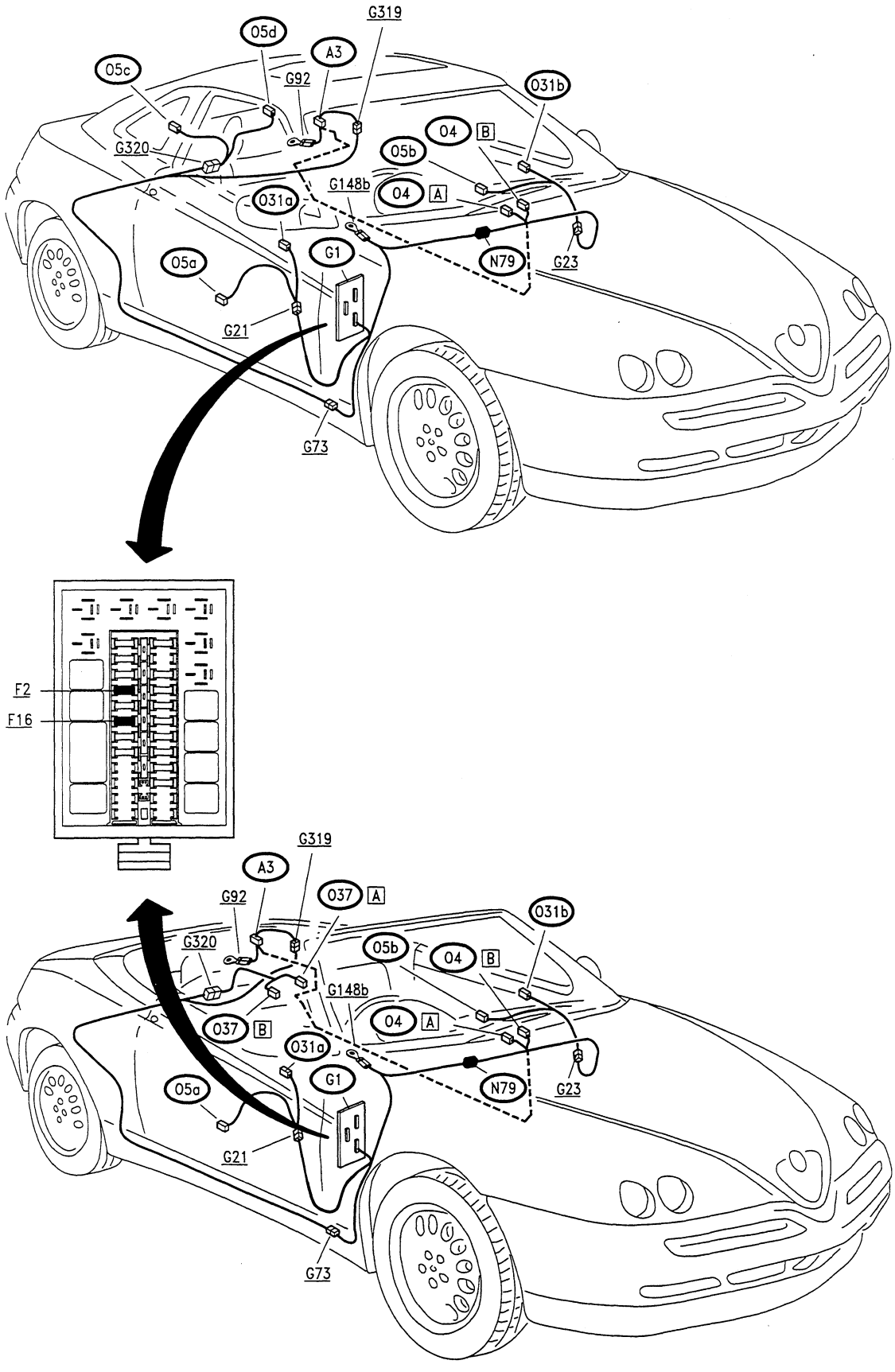


1. ON/OFF switch
2. Frequency band selector
3. Pre-select buttons
4. Antitheft led
5. Display

(*) Removable control panel

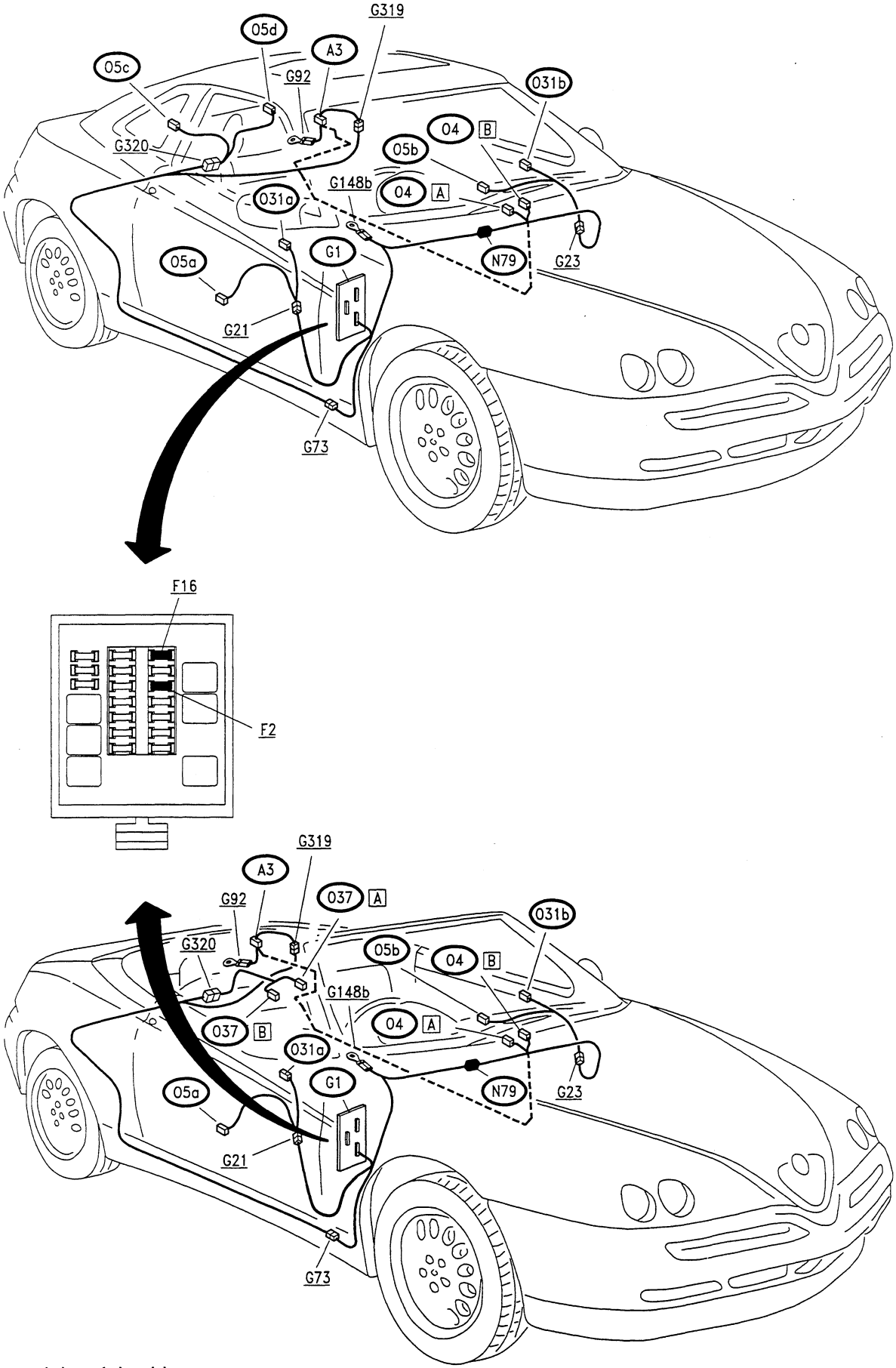
NOTE:
For further details about the radio, see the base manual, or the handbook provided with the radio.

LOCATION OF COMPONENTS (up to '96 version)



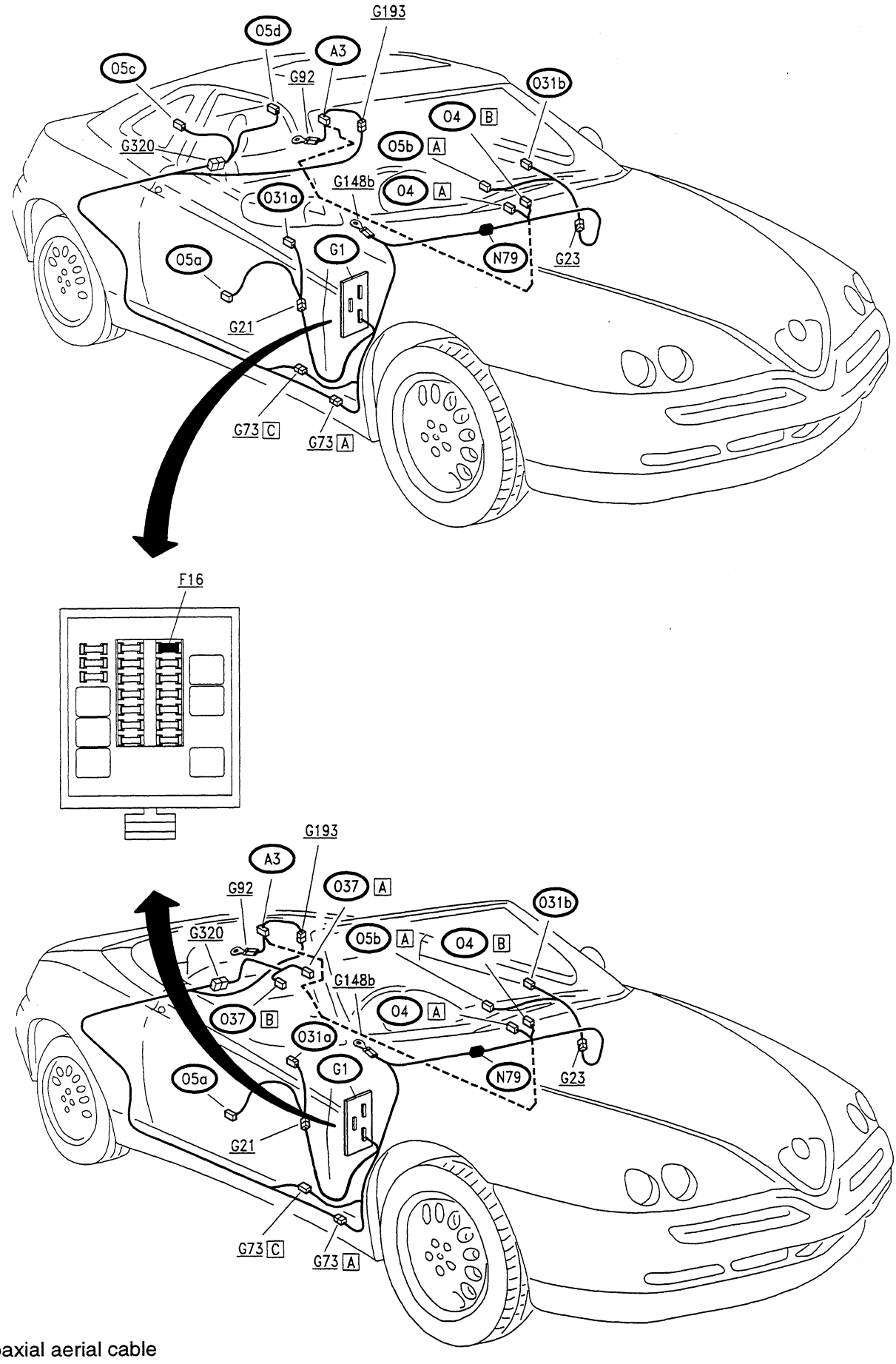
– – – – coaxial aerial cable

LOCATION OF COMPONENTS (from '97 version)



– – – – coaxial aerial cable

LOCATION OF COMPONENTS (from '98 version)



– – – coaxial aerial cable

ALARM SYSTEM (V.A.S.)

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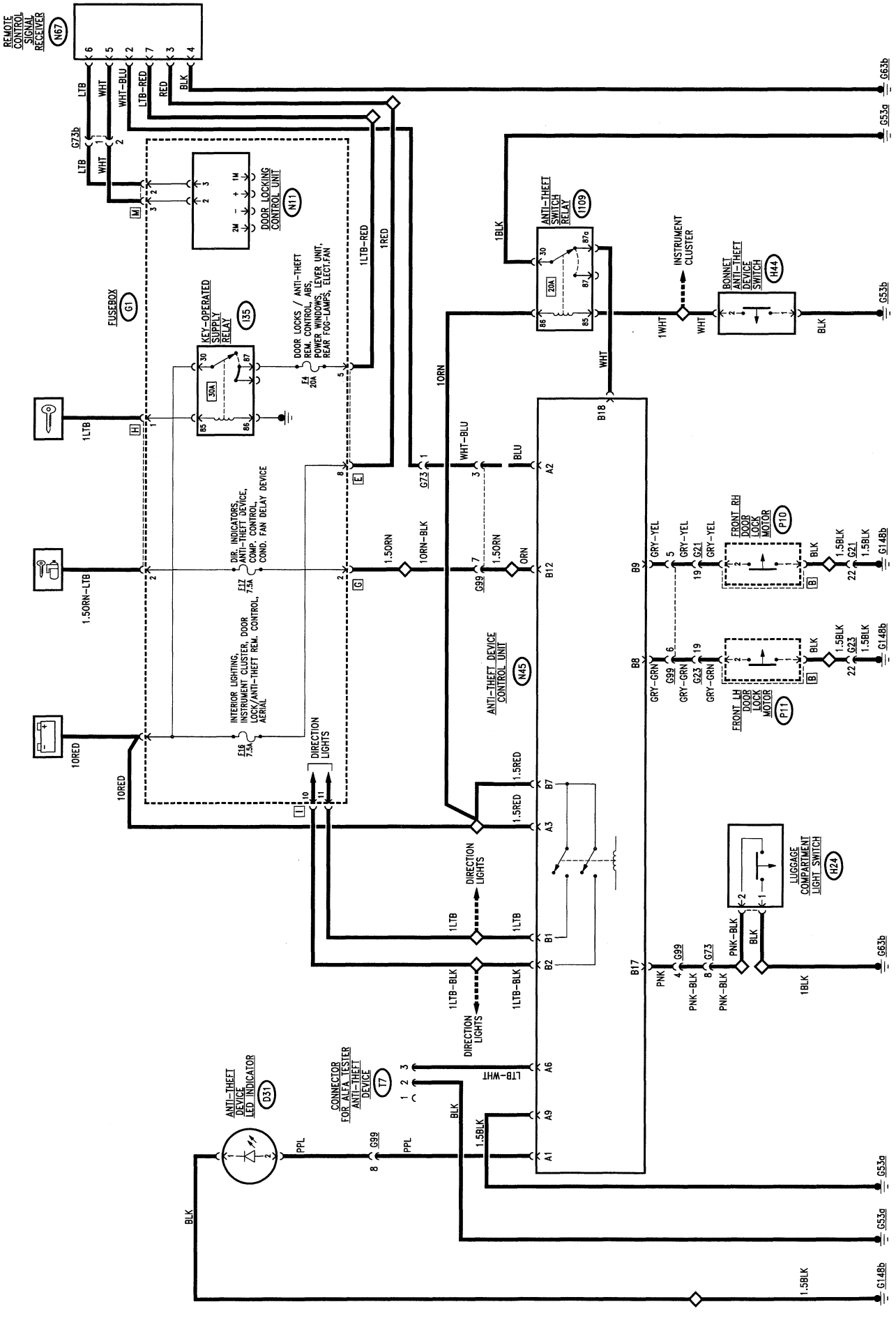
(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

WIRING DIAGRAM



FUNCTIONAL DESCRIPTION

The alarm system is controlled by electronic control unit **N45** integrated with the siren and the emergency key.

The control unit is supplied directly by the battery at pin A3; the key-operated supply reaches pin B12 via fuse **F17** of the fusebox **G1,** the same line also supplies pin B7 (blinker supply).

Pin A9 is earthed (**G53a**).

The system activation signal is sent from the receiver **N67** to pin A2 of the control unit, via the **serial connection line**.

Through the receiver **N67** door opening/closing is controlled, by means of the door lock control unit **N11** of fusebox **G1** (for further details see "Door locking System").

The control unit controls the closing of doors and bonnets via switches **P11** and **P10** of the doors (which are the same for the door locking device) which sends an earth respectively to pins B8C, B9. The bonnet is controlled by switch **H44**, which is connected at pin B18, and the boot by switch **H24** (the same that turns on the luggage compartment light) which is connected at pin B17.

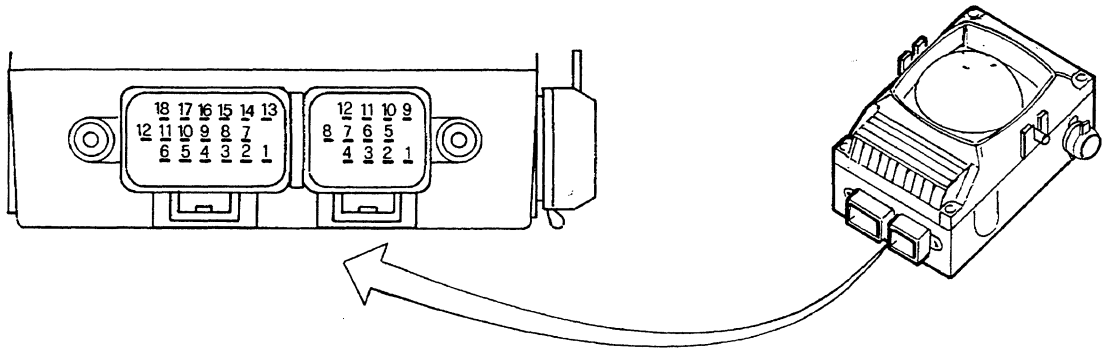
The signal leading from the bonnet is "inverted" through a special relay **I109.**
N.B. The signals which reach the control unit from the doors and boot are a.c. when the door is closed and earth when the door is open. Conversely, the one from the bonnet is an earth signal when the bonnet is closed and a.c. when the bonnet is open.

In addition to the locking of the doors carried out directly by the receiver **N67**, the control unit activates the blinkers (flashing of the hazard warning lights) sending an intermittent signal from pin B1 for the righthand lights and from B2 for the lefthand lights.

Pin A1 of the control unit sends a "duty-cycle" signal to led **D31** when conditions so require.

Lastly the system can be connected with the Alfa Romeo Tester through connector **T7**; the diagnosis signal - line K - leaves from pin A6 of the control unit.

NOTE:
For everything involving operation of the system and CODE MEMORISING, refer to the base manual.

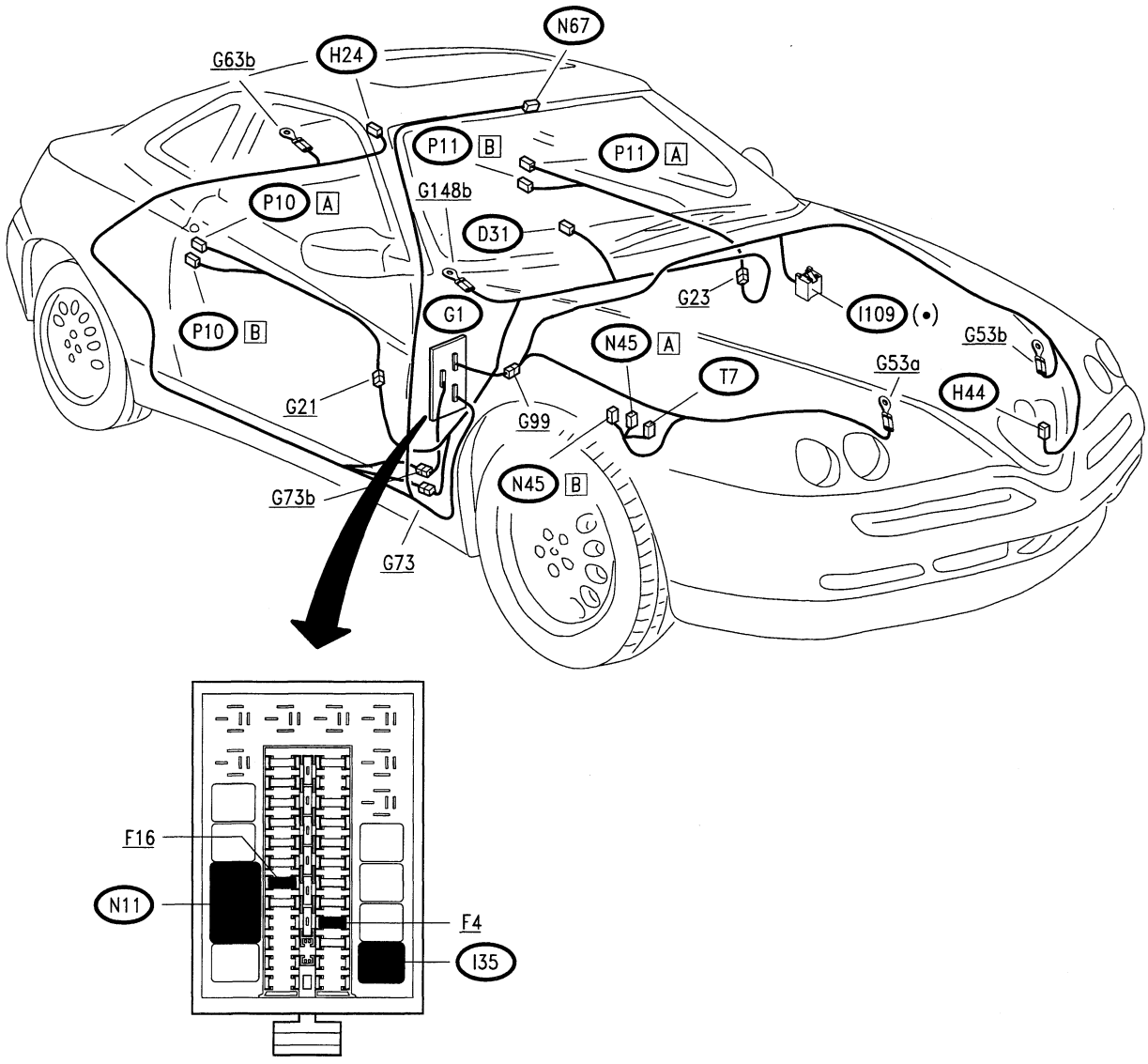


PIN-OUTS OF THE ALARM SYSTEM CONTROL UNIT

A1 Signalling led control
A2 Serial connection line with receiver (ceiling light)
A3 Direct supply
A4 N.C.
A5 N.C.
A6 Diagnosis line K
A7 N.C.
A8 N.C.
A9 Control unit earth
A10 N.C.
A11 N.C.
A12 N.C.

B1 RH direction indicators control
B2 LH direction indicators control
B3 N.C.
B4 N.C.
B5 N.C.
B6 N.C.
B7 Blinker supply
B8 LH door open signal
B9 RH door open signal
B10 N.C.
B11 N.C.
B12 "Key-operated" supply
B13 N.C.
B14 N.C.
B15 N.C.
B16 N.C.
B17 Tailgate open signal
B18 Bonnet closed signal

LOCATION OF COMPONENTS



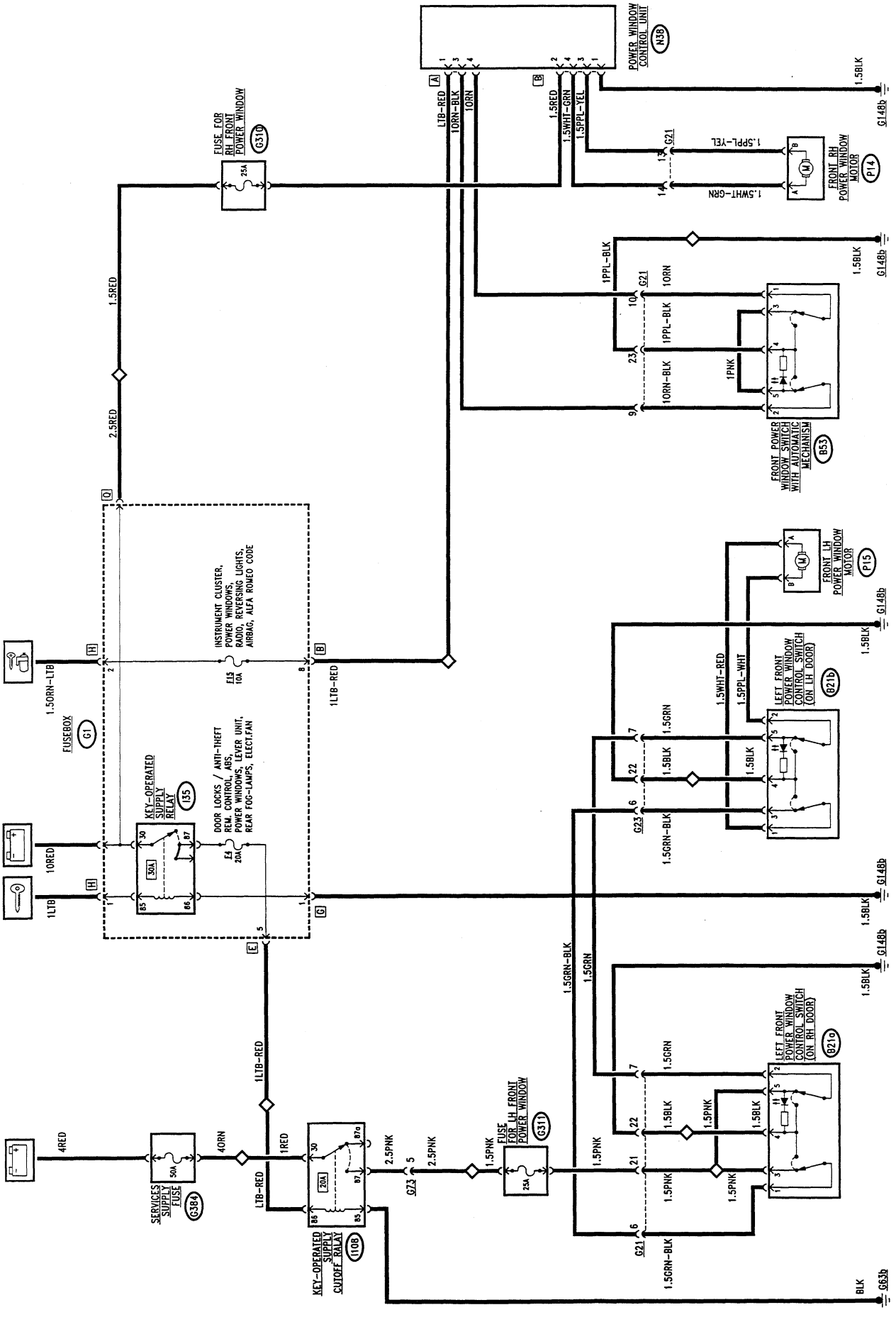
(•) Red base

POWER WINDOWS

INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

WIRING DIAGRAM (up to '96 version)



WIF

GENERAL DESCRIPTION (up to '96 version)

The operation of the right electric window (driver's side) is automatic, controlled by a control unit which actuates it according to the following logic:

- pressing the button and keeping it pressed (over 300 ms), the window opens or closes normally until the pushbutton is released;
- a short pulse (below appr. 300 ms.) operates the motor which automatically stops when the stop limit is reached (window open or closed completely);
- an even shorter pulse (less than appr. 50 ms.) is considered by the control unit as an accidental shock and no action will result.

This operating logic takes place through the "key-operated" supply".

The electrical mechanism that operates the left front window is of the conventional type: when the button is pressed the window rises or drops; it is fitted with two control switches: one on the left-hand door and one on the right-hand door; in this case, too, operation is only possible with the ignition key engaged.

FUNCTIONAL DESCRIPTION '96 version)

The power window control unit **N38** is su
2 of connector B by the battery voltage t
der fuse **G310** near the fusebox.
The "key-operated" consensus signal re
of connector A via fuse **F15** of **G1**.
The control signals for the upward and do
respectively reach pins 4 and 3 of conn
the right automatic window control switch
In fact, this double switch sends an earth t
unit from the part in which the contact has
(pin 1 = up; pin 2 = down).
The operating signals (up or down) leav
4 of connector B of **N38** for the right-h
motor **P14:** 12 V and earth are inverted to
direction of rotation
Pin 1 of connector B of **N38** is connected

Conversely, the operation of the left-ha
controlled directly by one of the two sv
(**B21a** located on the right-hand door, **E**
left) which are connected in series.
The "key-operated" supply passes thro
fuse **G311**, also located next to the fu
left-hand window motor **P15** is operated b
two switches **B21** in one direction or the ot
ing on the origin of the 12V or earth signa

RAL DESCRIPTION (from '97)n)

n of the power windows is controlled by the d services control unit which operates them g to the following logic:

er's window is raised and lowered automat- ile the passenger's window is only lowered. n is manual when the button activating time en 60 and 300 milliseconds. ely, operation is automatic when the activat- is over 300 milliseconds. the button in the opposite direction stops the

rating logic works with the "key-operated"

ystems

ping of the power windows (turning off the lectrical supply) is determined by reaching upper or lower limit switch, or if an obstacle way blocking the window itself. This is ad- rough the engine direct current control which aptive.

tronic control unit acts as follows:

event of an interruption of the motor control during operation, the control unit de- en- the system in a max. time of 500 millisec- nis interruption is detected when the current ed by the power window motor, controlled in , becomes lower than approx. 0.8 A;

is a fault on the control buttons (short circuit, ns remained pressed) when the control unit ated, operation of the corresponding control led, until the fault disappears (or the button sed) for more than 60 milliseconds.

FUNCTIONAL DESCRIPTION (from '97 version)

The control unit **N82** is supplied directly at pins B8, A15 and A16 through wander fuses **G312a** and **G312b**, located next to the fusebox.
The "key-operated" enable signal reaches pin B7 through fuse **F15** of **G1**.

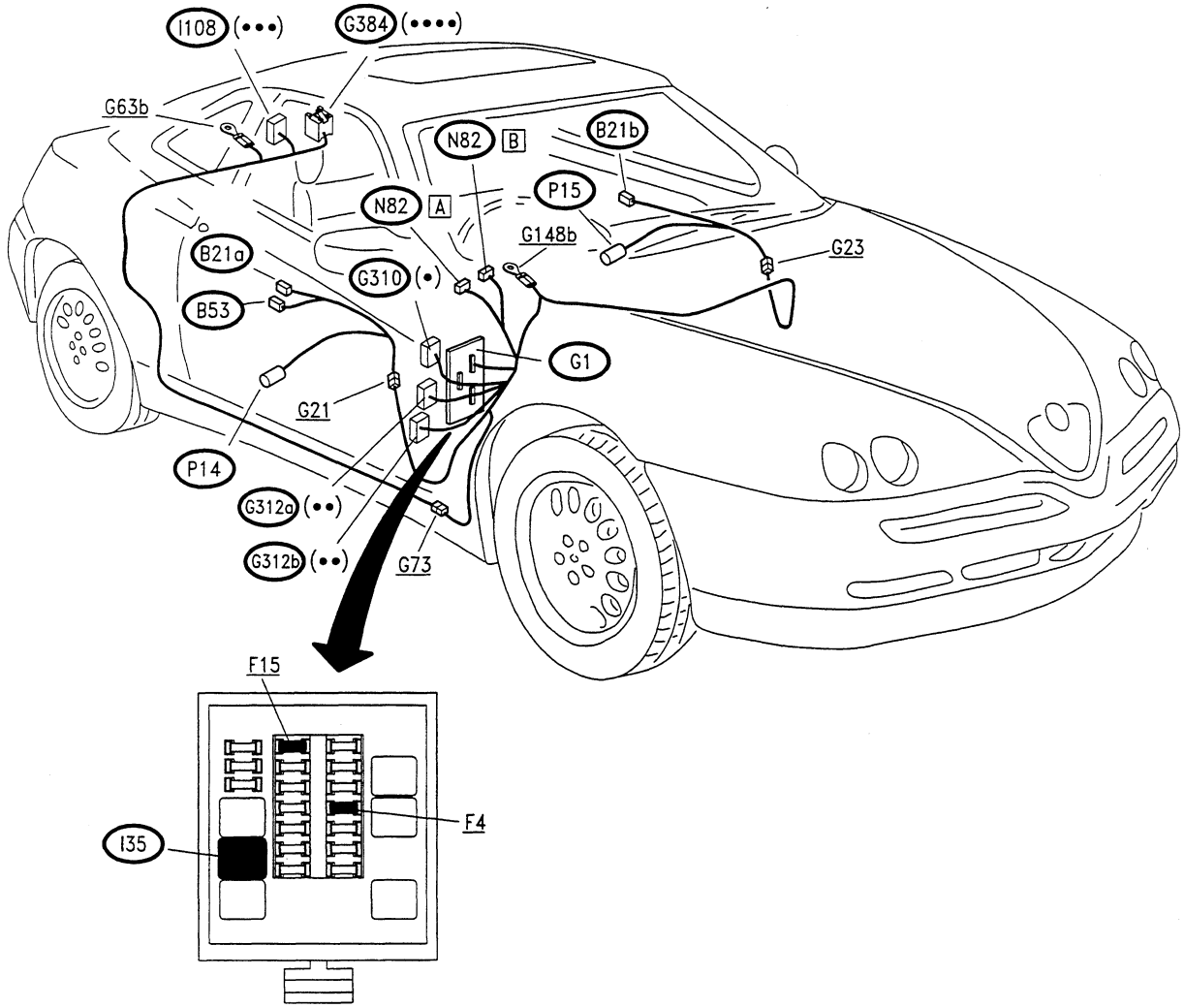
Driver's window

Pins A10 and A11 respectively receive the control signals for raising and lowering leading from the control switch of the left window **B53**.
In fact, this double switch sends an earth to the control unit from the part in which the contact has been closed (pin 1 = up; pin 2 = down).
The operating signals (up or down) leave pins A8 and A9 of **N82** for the left window motor **P15**: 12 V and earth are inverted to change the direction of rotation
Pin A20 is connected to earth.

Passenger's window

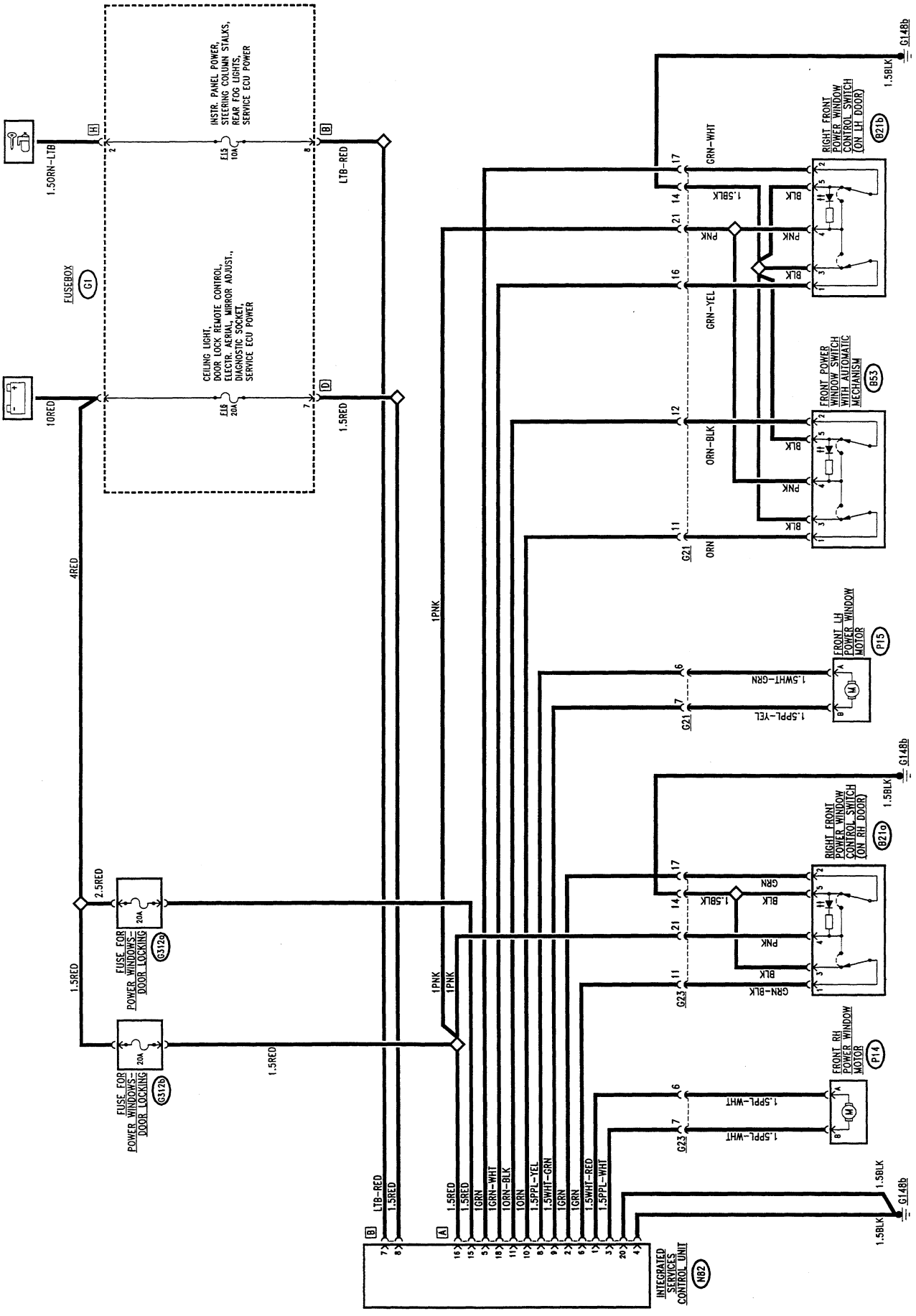
Pin A5 and A18 receive the control signals respectively for lowering and raising leading from the control switch of the right window **B21b**.
So do pins A6 and A2 from switch **B21a.**
The operating signals (up or down) leave pins A1 and A3 of **N82** for the right window motor **P14**: 12 V and earth are inverted to change the direction of rotation
Pin A4 is connected to earth.

LOCATION OF COMPONENTS (from '97 version)



(•) Brown fuseholder
(••) White fuseholder
(•••) Blue base
(••••) Black fuseholder

WIRING DIAGRAM (from '98 version)



GENERAL DESCRIPTION (from '98 version)

Operation of the power windows is controlled by the integrated services control unit which operates them according to the following logic:

The driver's window is raised and lowered automatically, while the passenger's window is only lowered.
Operation is manual when the button activating time is between 60 and 300 milliseconds.
Conversely, operation is automatic when the activating time is over 300 milliseconds.
Pressing the button in the opposite direction stops the window.

This operating logic works with the "key-operated" supply.

Safety systems

The stopping of the power windows (turning off the engine electrical supply) is determined by reaching the glass upper or lower limit switch, or if an obstacle is in the way blocking the window itself. This is adjusted through the engine direct current control which is self-adaptive.

The electronic control unit acts as follows:

- in the event of an interruption of the motor control signal during operation, the control unit de- energises the system in a max. time of 500 milliseconds: this interruption is detected when the current absorbed by the power window motor, controlled in current, becomes lower than approx. 0.8 A;
- if there is a fault on the control buttons (short circuit, or buttons remained pressed) when the control unit is activated, operation of the corresponding control is disabled, until the fault disappears (or the button is released) for more than 60 milliseconds.

FUNCTIONAL DESCRIPTION (from '98 version)

The control unit **N82** is supplied directly at pins B8, through fuse **F16** of **G1** and at pins A15 and A16 through wander fuses **G312a** and **G312b**, located next to the fusebox.
The "key-operated" enable signal reaches pin B7 through fuse **F15** of **G1**.

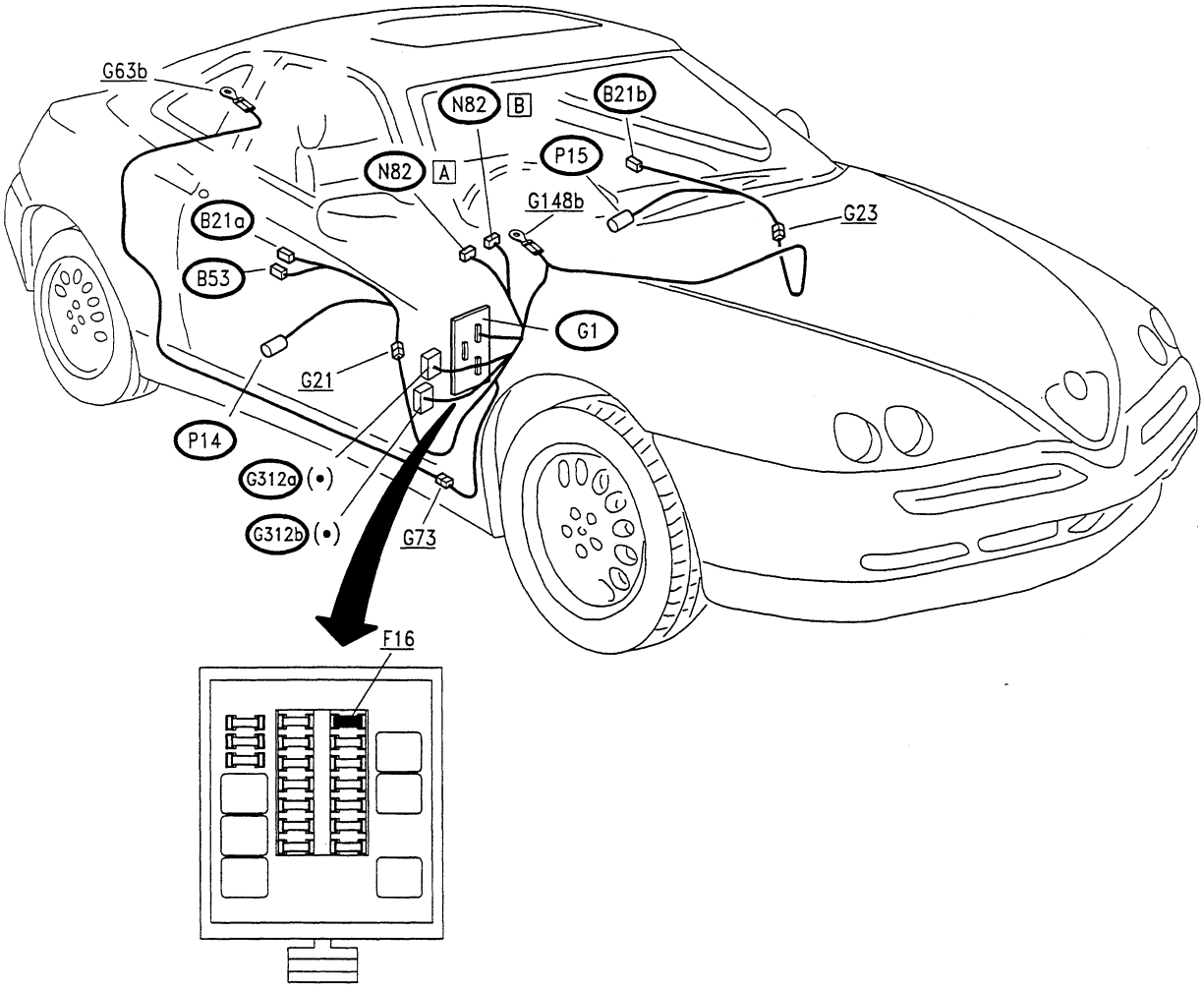
Driver's window

Pins A10 and A11 respectively receive the control signals for raising and lowering leading from the control switch of the left window **B53**.
In fact, this double switch sends an earth to the control unit from the part in which the contact has been closed (pin 1 = up; pin 2 = down).
The operating signals (up or down) leave pins A8 and A9 of **N82** for the left window motor **P15**: 12 V and earth are inverted to change the direction of rotation
Pin A20 is connected to earth.

Passenger's window

Pin A5 and A18 receive the control signals respectively for lowering and raising leading from the control switch of the right window **B21b**.
So do pins A6 and A2 from switch **B21a**.
The operating signals (up or down) leave pins A1 and A3 of **N82** for the right window motor **P14**: 12 V and earth are inverted to change the direction of rotation
Pin A4 is connected to earth.

LOCATION OF COMPONENTS (from '98 version)



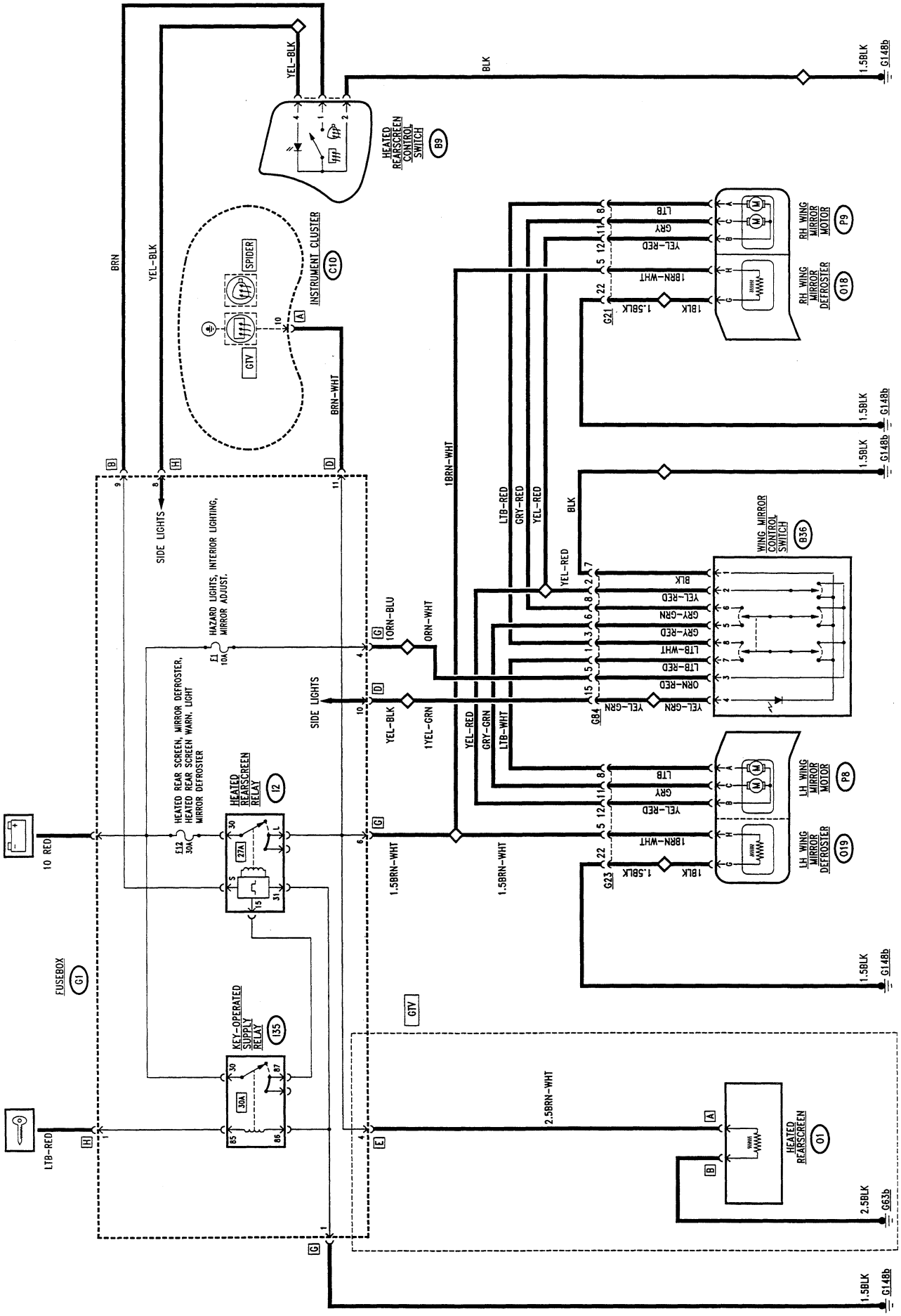
(•) Yellow fuseholder

HEATED REARSCREEN (GTV only) AND WING MIRROR DEFROSTING AND ADJUSTMENT

INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

WIRING DIAGRAM (up to '96 version)



GENERAL DESCRIPTION (up to '96 version)

Defrosting

The rearscreen **(GTV only)** and wing mirrors incorporate a wire that heats the surfaces it contacts when it is crossed by current, thereby quickly demisting and/or defrosting them.
The device is actuated by pressing the corresponding switch on the panel which controls the heated rearscreen relay.
A warning light on the instrument cluster indicates when the device is operating.

Actuation of the heated rearscreen also turns on the wing mirror defrosting function.

N.B. The ideogram in the switch and on the warning light is different for the GTV which also includes the rearscreen and for the SPIDER which involves the wind mirrors only.

Wing mirror adjustment

The two wing mirrors are adjusted through the switch that operates two electric motors in each of the two mirrors (one motor turns the mirror on a horizontal axis, the other on a vertical axis.

A single switch operates both the left-hand and right-hand mirrors, as a selector makes it possible to switch from one to the other.

FUNCTIONAL DESCRIPTION (up to '96 version)

Defrosting

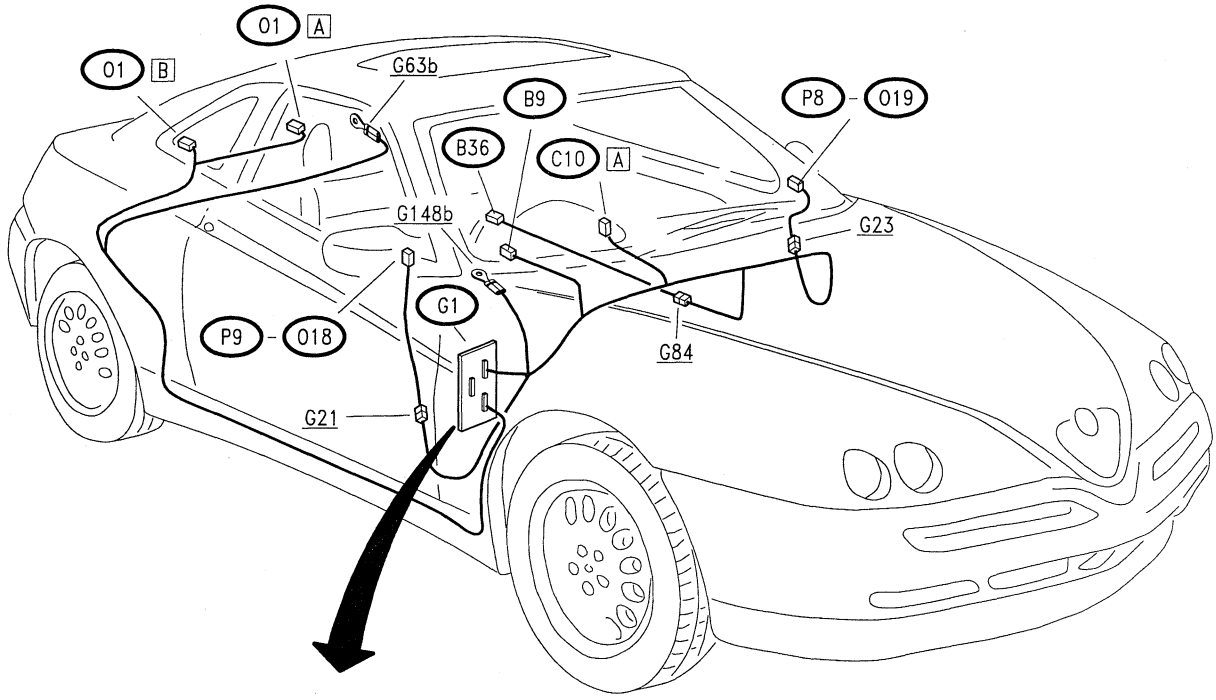
The line of fuse **F12** of fusebox **G1** supplies the rearscreen heating relay switch **I2**, the coil of which is supplied from the ignition switch and energized by an earth signal leading from switch **B9** or .
Relay switch **I2** to be found in fusebox **G1**, includes an electronic timing device which turns off the device after 20 minutes from the first time it is turned on and after 10 minutes if it is turned on again.

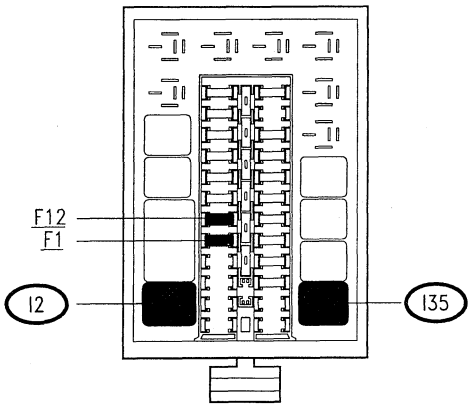
When the contact of relay switch **I2** closes the battery voltage supplies the line, which reaches the rearscreen heating **O1** (GTV only) and the resistances of the wing mirrors **O19** (left) and **O18** (right).
The same rearscreen supply signal is also sent to the instrument cluster **C10** to turn on the corresponding warning light.

Wing mirror adjustment

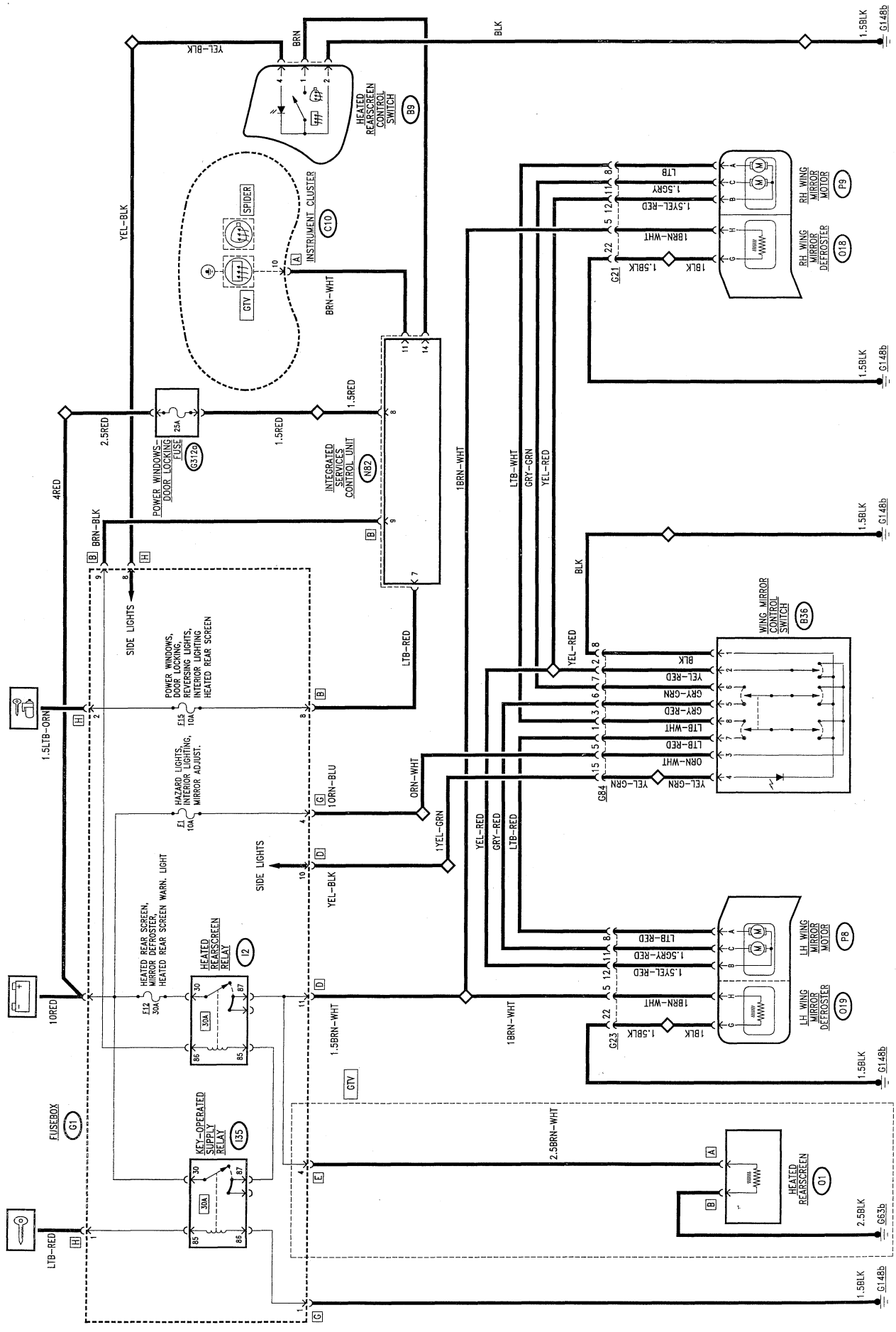
The double switch **B36** controls the two electric mirrors in the mirrors **P8** (left) and **P9** (right).
The switch is supplied with direct voltage - pin 3 - which crosses fuse **F1** of the fusebox **G1**; pin 1 is earthed.
Operating switch **B36** in one direction or in the other one of the motors receives positive and earth, in addition to the shared signal - pin 2, thereby determining the direction of rotation. Depending on the position of the selector, the right-hand motor **P9** (signals from pins 6 and 8 of **B36**) or the left-hand motor **P8** (signals from pins 5 and 7 of **B36**) is connected; the switch is illuminated by a led which is turned on when the sidelights are on (pin 4).

LOCATION OF COMPONENTS (up to '96 version)





WIRING DIAGRAM (from '97 version)



GENERAL DESCRIPTION (from '97 version)

Defrosting

The rearscreen **(GTV only)** and wing mirrors incorporate a wire that heats the surfaces it contacts when it is crossed by current, thereby quickly demisting and/or defrosting them.
The device is actuated by pressing the corresponding switch on the panel which controls the heated rearscreen relay.

This device is operated by pressing the corresponding switch on the dashboard; this action is adjusted by the integrated services control unit **N82** according to the following logic:

- with the key at MAR; the engagement signal leads from the switch on the dashboard.
- The supply ceases if the key is turned to STOP or turned off; or if the signal to turn off is received from the switch on the dashboard.
- If neither of these two signals are received, the timer keeps the resistances supplied for 20 MINUTES, but with a particular control logic:
- the supply remains PERMANENT during the first 10 MINUTES;
- then during the FOLLOWING 10 MINUTES the supply is cut off if the battery voltage falls below 11.6V (and it is restored if the voltage rises and exceeds 13V).

A warning light on the instrument cluster indicates when the device is operating.

Actuation of the heated rearscreen also turns on the wing mirror defrosting function.

N.B. The ideogram in the switch and on the warning light is different for the GTV which also includes the rearscreen and for the SPIDER which involves the wind mirrors only.

Wing mirror adjustment

The two wing mirrors are adjusted through the switch that operates two electric motors in each of the two mirrors (one motor turns the mirror on a horizontal axis, the other on a vertical axis.

A single switch operates both the left-hand and right-hand mirrors, as a selector makes it possible to switch from one to the other.

FUNCTIONAL DESCRIPTION (from '97 version)

Defrosting

The line of fuse **F12** of fusebox **G1** supplies the heated rearscreen relay **I2**, the coil of which receives the "key-operated" supply, and is energised by an earth signal from the control unit **N82** - pin 9.

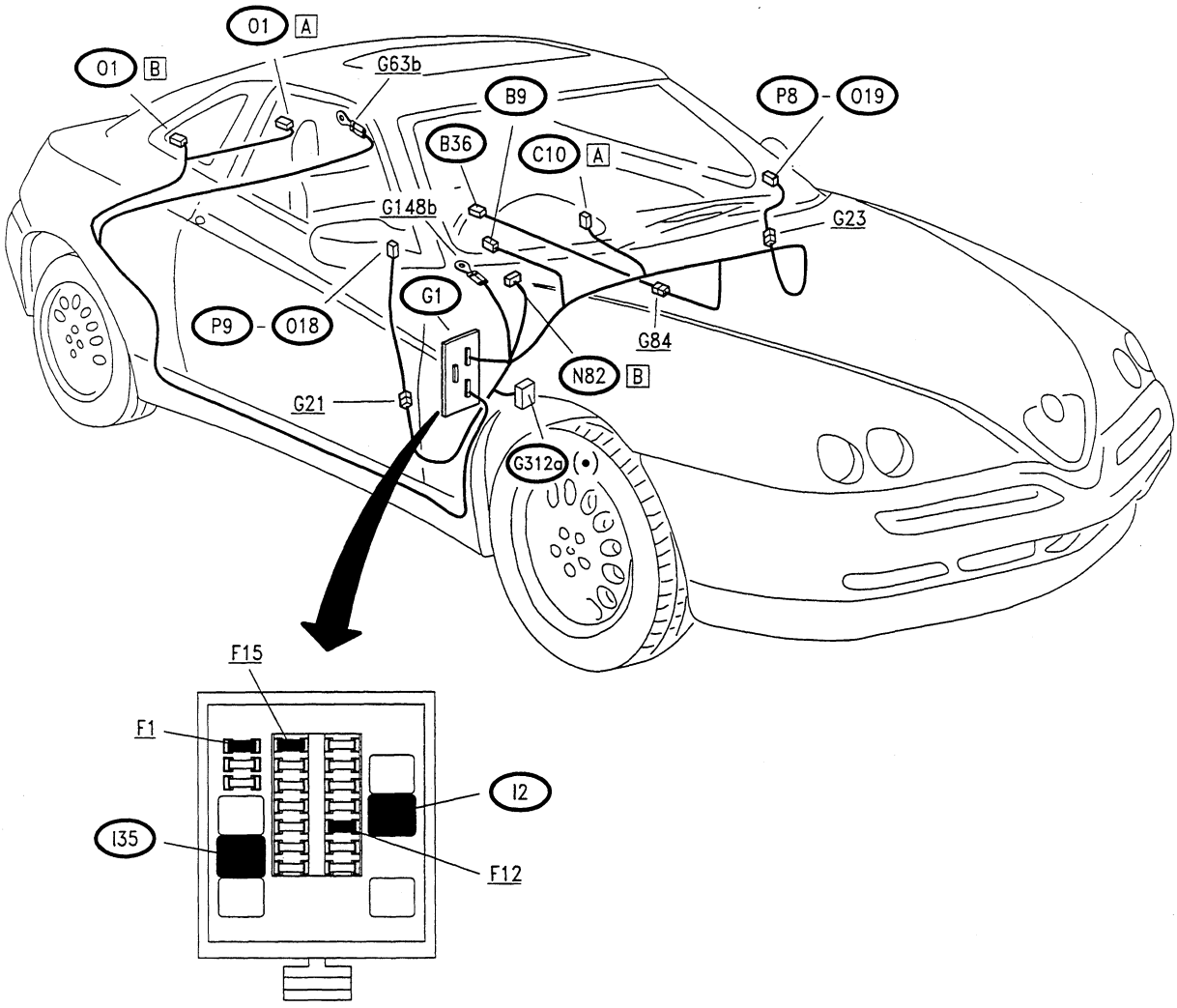
The control unit receives - pin B14 - the command of switch **B9** or .

When the contact of relay switch **I2** closes the battery voltage supplies the line, which reaches the rearscreen heating **O1** (GTV only) and the resistances of the wing mirrors **O19** (left) and **O18** (right).
A signal from control unit - pin B11 - is also sent to the instrument cluster **C10** to turn on the corresponding warning light.

Wing mirror adjustment

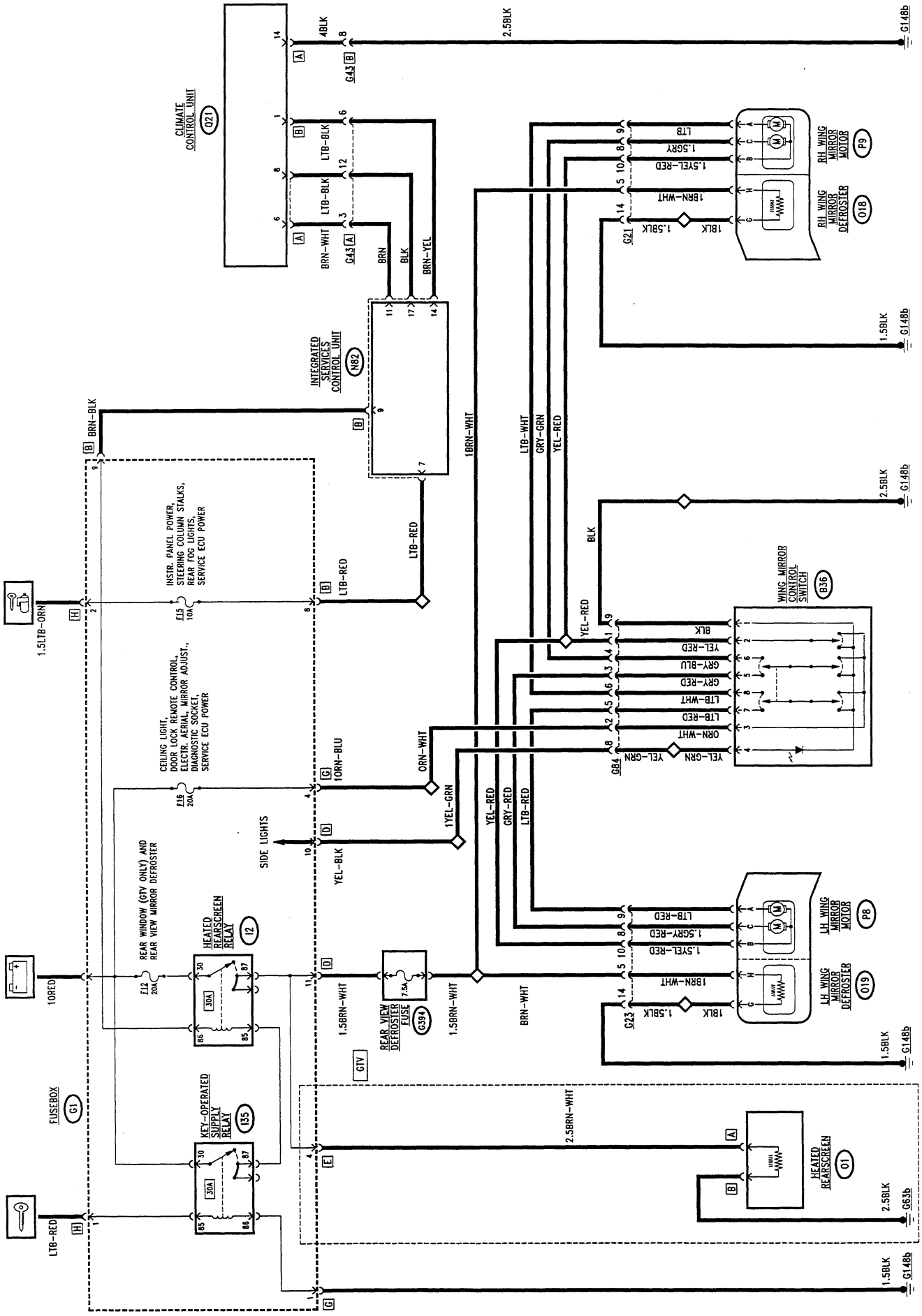
The double switch **B36** controls the two electric mirrors in the mirrors **P8** (left) and **P9** (right).
The switch is supplied with direct voltage - pin 3 - which crosses fuse **F1** of the fusebox **G1**; pin 1 is earthed.
Operating switch **B36** in one direction or in the other one of the motors receives positive and earth, in addition to the shared signal - pin 2, thereby determining the direction of rotation. Depending on the position of the selector, the right-hand motor **P9** (signals from pins 6 and 8 of **B36**) or the left-hand motor **P8** (signals from pins 5 and 7 of **B36**) is connected; the switch is illuminated by a led which is turned on when the sidelights are on (pin 4).

LOCATION OF COMPONENTS (from '97 version)



(•) white fuseholder

WIRING DIAGRAM (from '98 version)



GENERAL DESCRIPTION (from '98 version)

Defrosting

The rear window (**GTV only**) and the door rear view mirrors feature a built-in conductor which heats the contact surfaces when crossed by current thus ensuring rapid demisting and/or defrosting. The device is operated by means of the button fitted in the climate control panel **Q21**. Operation is controlled by the integrated service ECU **N82** according to the following logic:

- with key at MAR, the "on" signal is received from the switch (or from the "quick demisting" function");
- power is cut when the key is either turned to STOP or removed, or when the "off" signal is received.

If neither signal is received, the timer powers the resistance for 20 MINUTES according to the following specific control logic:

- power on ALWAYS for the first 10 MINUTES;
- DURING THE FOLLOWING 10 MINUTES the power is cut if the battery voltage drops to under 11.6V (and is restored if the voltage rises and exceeds 13V).

The heated rear window operation always switches the rear view mirror defroster on (also fitted on SPIDER). This control logic is controlled by the integrated service ECU: the climate control/heater ECU only "houses" the control button and the respective LED but does not play any role in the operation logic.

The button control always has higher priority with respect to the "fast demisting" function; e.g. if the rear window "fast demisting" function is switched on automatically and the button is pressed, the heated rear window will be switched off.
The respective LED on the button will come on when the heated rear window is on.

Rear view mirror adjustment

The two door rear view mirrors can be adjusted by means of a specific switch which controls two motors located in each of the mirrors (one motor turns the mirror on the horizontal axis and the other on the vertical axis).

A single switch is used to operate both the left-hand and right-hand mirror. A switch is used to control either one or the other.

FUNCTIONAL DESCRIPTION (from '98 version)

Defrosting

The rear window relay **I2** is powered via fuse **F12** in fusebox **G1**. The coil is powered via the ignition switch and is energised by an earth signal from ECU **N82** - pin 9.

When relay **I2** contact closes, the battery voltage powers the line to the heated rear window **O1** (GTV ONLY) and the door rear view mirror resistance **O19** (left-hand) and **O18** (right-hand) via fuse **G394**.

ECU **N82** is powered via the ignition switch via fuse **F15** in fusebox **G1** (connector B pin 7).

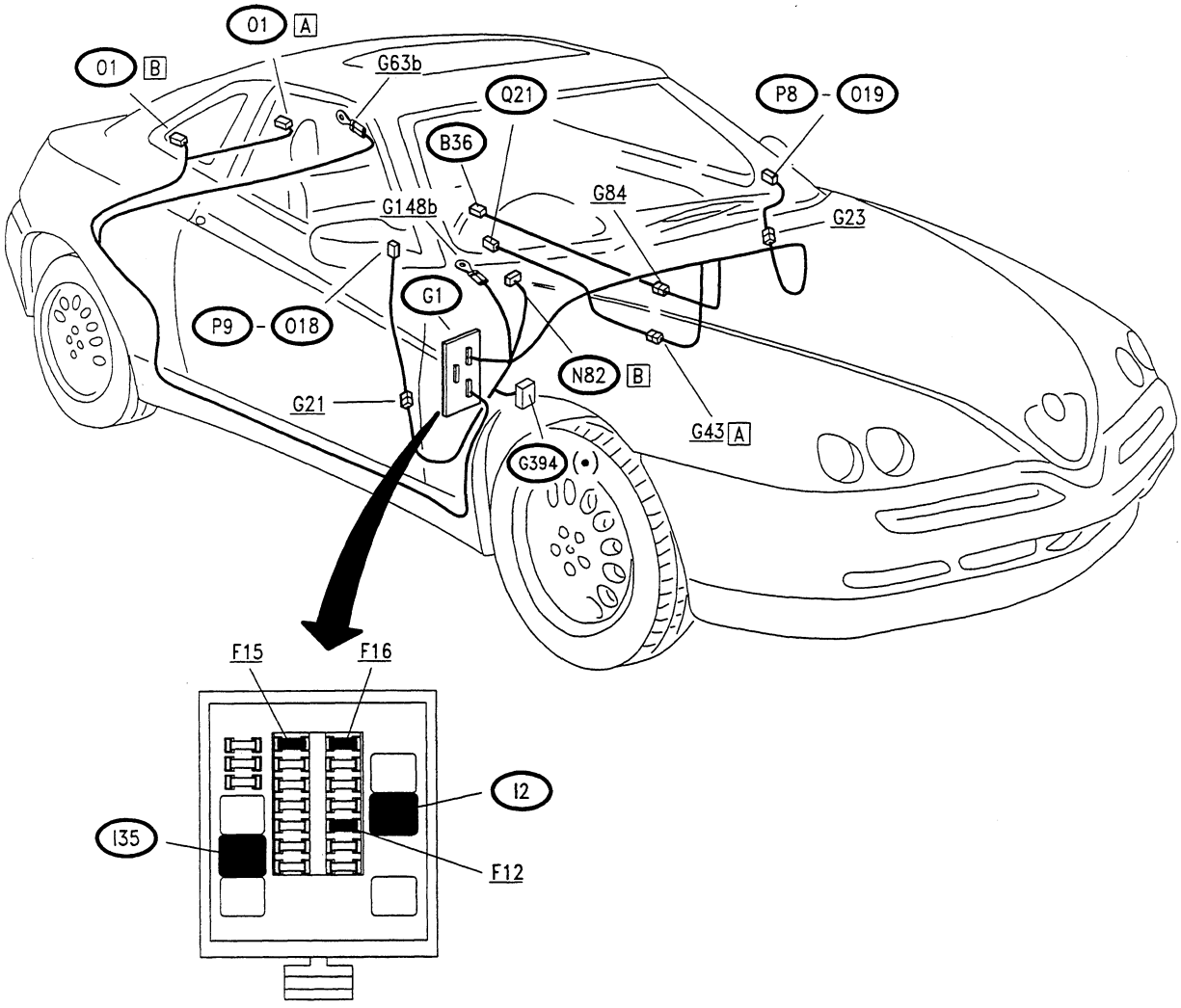
When an earth signal is received (connector B pin 14) from the climate control ECU **Q21** (heated rear window button pressed), it energises relay coil **I2** (connector B pin 9) according to the operating logic described above. In a similar fashion, when the "fast demisting" function is on, ECU **P21** sends a signal to **N82** connector B pin 17.

When the resistance is switched on, a signal is sent (from **N82** connector B pin 11) to light the LED on the control button on the climate control ECU **Q21**.

Rear view mirror adjustment

The double switch **B36** controls the two motors in the mirrors **P8** (left) and **P9** (right).
The switch is directly powered - pin 3 - via fuse **F16** in fusebox **G1**; pin 1 is connected to earth.
By operating switch **B36** in either direction, positive and earth is sent to one of the two motors (as well as the common, pin 2) to define direction of rotation. According to the position of the switch either the right-hand motors **P9** (output signals from **B36** pins 6 and 8) or the left-hand motors **P8** (signals from **B36** pins 5 and 7) are connected. The switch is light by a LED which is switched on with the side/taillights (pin 4).

LOCATION OF COMPONENTS (from '98 version)



(•) Brown fuseholder

HEATING AND VENTILATION: AIR CONDITIONER (3.0V6 24v up to '97 version) (**)

INDEX

(*) See the corresponding chapter of "Spider - Gtv: Group 55 - ELECTRIC SYSTEM DIAGNOSIS".

(**) for T.SPARK version and '98 version refer to the base manual with the exception of the location of components, given in APPENDIX A3.

COMPRESSOR ENGAGEMENT

(3.0 V6 24v engine)

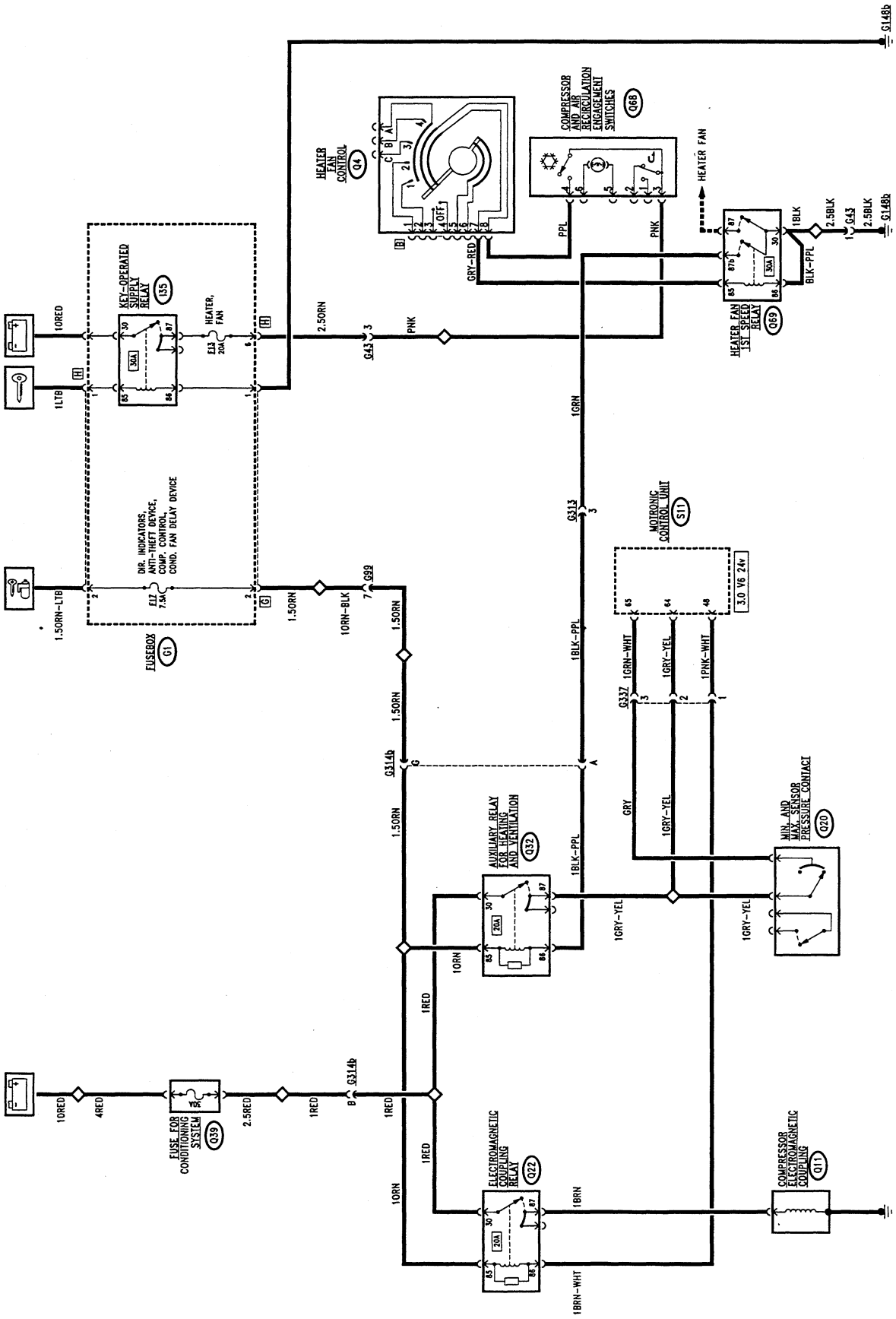
The electromagnetic joint that operates the compressor **Q11** is controlled by relays **Q22** and **Q32**, located in the engine compartment, RH side.

The coil of relays **Q22** and **Q32** receive the key-operated supply (line protected by fuse **F17** of **G1**); their power line is supplied with battery voltage through fuse **Q39** (30A).

Relay **Q22** is energised, consequently it supplies 12V current to the electromagnetic joint **Q11**, according to the following logic:

- relay **Q32** is energised by an earth signal leading from **Q69**, which is in turn energised with a positive signal leading from the compressor engagement switch **Q68**; this signal crosses the control knob **Q4** which cuts it off when the knob is at "OFF": in fact in this condition, the compressor cannot be engaged. The same signal simultaneously controls fan engagement at 1st speed ("Fan and Recirculation Control")
- relay **Q32** consequently sends two signals to the Motronic control unit **S11**: a direct signal to "request compressor engagement" - pin 64 - and a second signal that crosses the minimum and maximum pressure switch (trinary) **Q20** which cuts in in the event of high or low pressure in the cooling system: in this case the signal does not reach the control unit - pin 65 - which does not command the compressor
- The control unit "refers" the command signal - pin 48 - at relay **Q22** which is energised and supplies the joint **Q11** which thus engages the compressor, but only when the internal logic has checked determinate conditions (e.g. the compressor is not engaged in the event of the need for full power at the engine, etc..)

Wiring diagram (3.0 V6 24v)



ENGINE COOLING FAN CONTROL

(3.0 V6 24v engine)

Two fans **P2a** and **P2b** ensure the necessary ventilation of the cooling air for the engine radiator and air conditioning system condenser.

N.B.: the two fans are in parallel, therefore they are operated together, always following the same logic.

The two fans are always supplied by battery voltage, through the line protected by wander fuse **G254**; they are operated by an earth command signal: this signal arrives directly (2nd speed) or through the additional resistances **O22a** and **O22b** (1st speed), fitted with a thermal safety fuse.

The delaying device **Q42** controls the gradual engagement of the fans which are operated at two different speeds, also via two relays **I99b** and **I100**; the relays are located on the auxiliary bracket next to the fusebox, as the delaying device is located in the engine compartment, RH side.

The delaying device works according to the following logic:

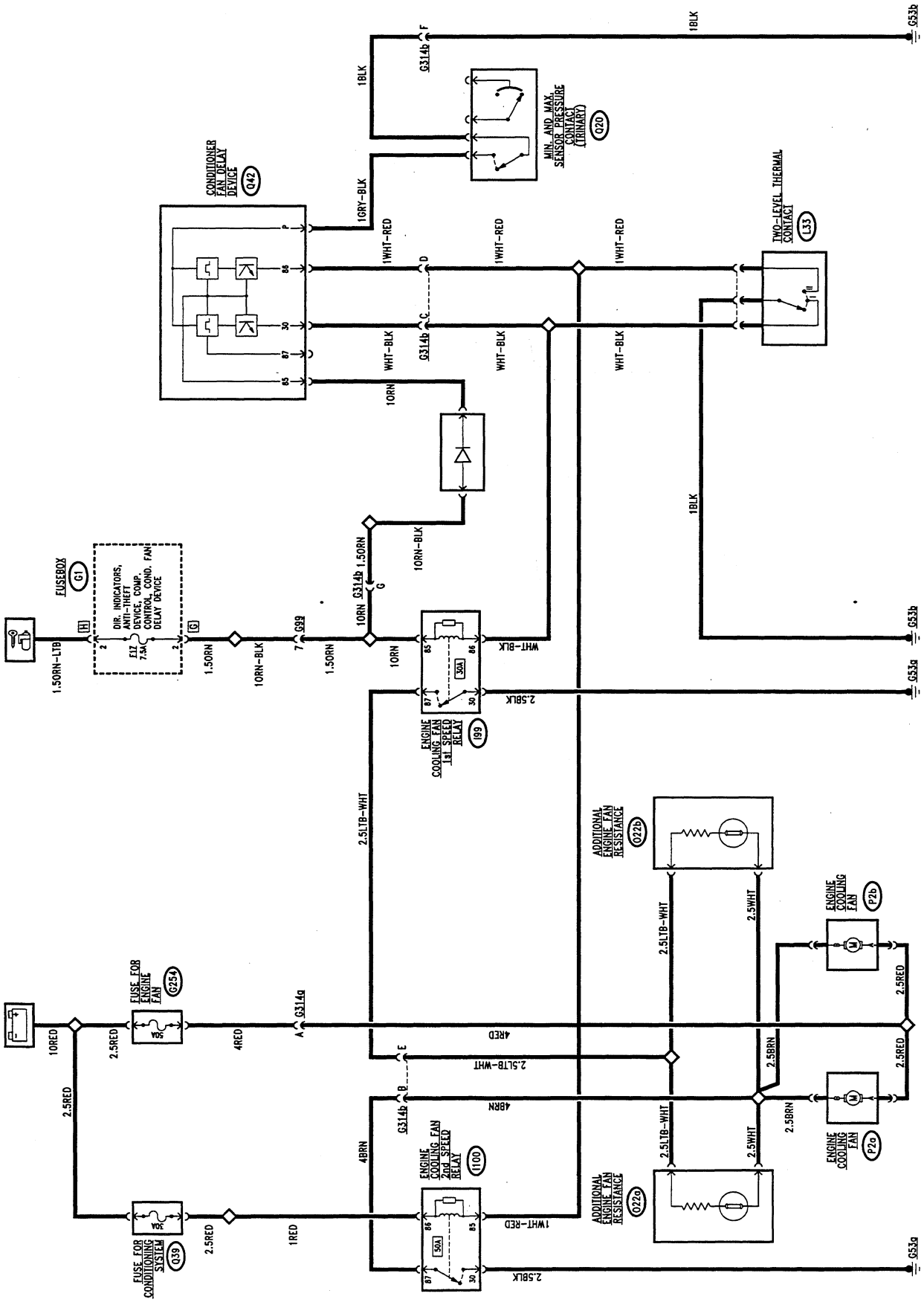
The "key-operated" voltage (line protected by fuse **F17** of **G1**) supplies the coil and the electronic devices of the delaying device **Q42** -pin 85, and relay **I99**; the coil of the delaying device **Q42** is energised by an earth signal -pin P- which leads from the trinary pressure switch **Q20**: this causes the immediate sending of an earth signal - pin 30 - to energise relay **I99** which sends the earth command to the two ngine cooling fans **P2a** and **P2b** through the additional resistances **O22a** and **O22b**: 1st speed.

After appr. 12 seconds, if the signal from the trinary persists, the delaying device operates the second speed: in fact, the earth signal is cut off from pin 30 and a signal leaves pin 86, which energises **I100** which sends the earth command directly to the two engine cooling fans **P2a** and **P2b**: 2nd speed.
When the signal from the pressure switch ceases, the fans are disengaged.

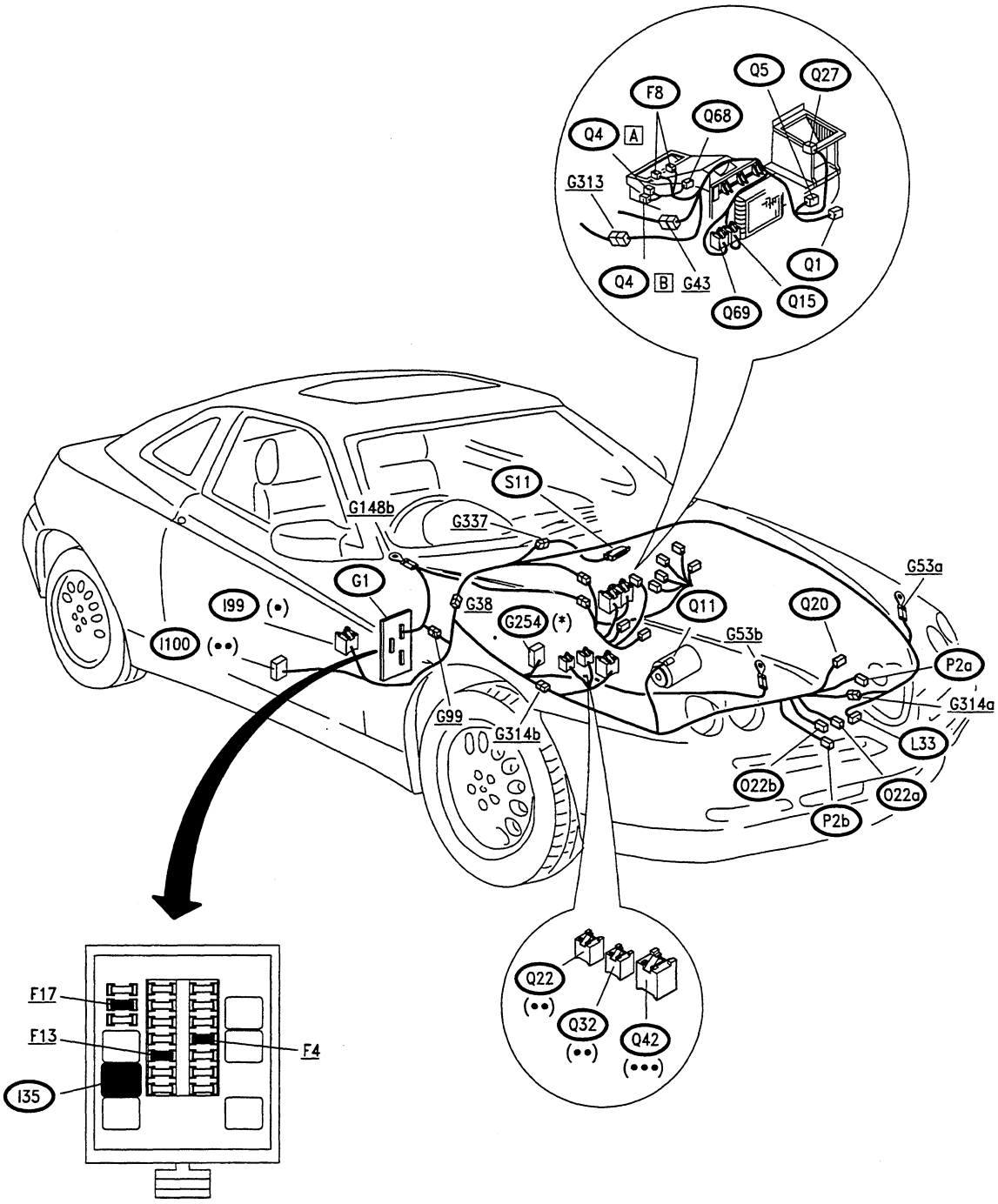
The two fans are operated at the two different speeds also by the two-level thermal contact **L33** which controls the temperature of the coolant in the engine radiator: when a first level is reached, relay **I99** is energised which sends the earth command to the two engine cooling fans **P2a and P2b** via resistances **O22a** and **O22b**: 1st speed. Relay **I100** is supplied by the line protected by fuse **Q39** (30A).

If the second temperature level is reached, relay **I100** is energised which sends the earth command directly to the two engine cooling fans **P2a and P2b**: 2nd speed.

Wiring diagram (3.0 V6 24v engine)



LOCATION OF COMPONENTS (3.0 V6 24v engine)



(•) Yellow base
(••) Black base
(•••) White base

(*) Black fuse holder

KEY TO COMPONENTS

A STARTING - RECHARGING
A1 Battery
A3 Alternator, with integrated voltage regulator
A8 Ignition coil
A8a Ignition coil A
A8b Ignition coil B
A11 Starter motor
A12 Spark plugs

B MANUAL ELECTRICAL CONTROLS
B1 Ignition switch
B10 Fog lights control switch
B11 Rear fog guards control switch
B12 Hazard warning lights control switch
B16 Instrument panel light dimmer button
B21a Right front power window control switch (on RH door)
B21b Right front power window control switch (on LH door)
B36 Wing mirror control switch
B40 Trip meter reset switch
B47 Sun roof motor control switch
B53 Front power window switch with automatic mechanism
B61 Fuel flap opening switch
B68 Steering column lever unit
B69 Headlamp aiming device
B87 Luggage compartment opening switch with glove box light
B99 Hood release switch
B100 Hood cover release switch
B101 Automatic hood control switch
B102 Passenger airbag disable switch

C INSTRUMENTATION
C10 Instrument cluster
C18 Auxiliary instrument cluster

D WARNING LIGHTS
D31 Anti-theft device led indicator
D43 Signalling led for automatic hood

E EXTERIOR LIGHTS
E1a LH front direction indicator bulb
E1b RH front direction indicator bulb
E2a LH front side light bulb
E2b RH front side light bulb
E5a LH low beam light bulb
E5b RH low beam light bulb
E7a LH high beam light bulb
E7b RH high beam light bulb
E9a LH direction indicator light bulb
E9b RH direction indicator light bulb
E10a LH fog light bulb
E10b RH fog light bulb
E17a LH number plate light bulb
E17b RH number plate light bulb
E19 RH tail light cluster
E20 LH tail light cluster
E28 Third stop light
E28a Third stop light on spoiler
E30 Rear RH fog guard/reversing light
E31 Rear LH fog guard/reversing light

F INTERIOR LIGHTS
F3 Passenger compartment ceiling light
F5 Luggage compartment light
F45 Light on LH front door
F46 Light on RH front door

G FUSEBOX - CONNECTORS - EARTHS
G1 Fusebox
G21 Connector for RH front door wiring
G23 Connector for LH front door wiring
G38 Air conditioner wiring connector/front
G43 Connector for heating and ventilation control wiring/dashboard
G53a RH engine compartment earth
G53b LH engine compartment earth
G55b LH side panel earth
G56 Branch terminal board
G60 Injection wiring earth
G63a RH rear earth
G63b LH rear earth
G65 Coaxial cable for aerial
G65a Radio telephone coaxial cable for aerial
G73 Connector for rear services
G73b Connector for rear services
G84 Console wiring connector
G92 Luggage compartment earth
G99a Connector for dashboard wiring/engine wiring
G99b Connector for dashboard wiring/engine wiring
G124 ABS system connector
G125a ABS system fuse
G125b ABS system fuse
G131 Earth on upper cover
G131a Earth on upper cover
G131b Earth on upper cover
G133a Connector for electronic injection wiring A
G133b Connector for electronic injection wiring B
G148b Earth under dashboard LH
G155 LH seat connection
G156 RH seat connection
G193 Connector for electric aerial wiring
G219 Connector for sun roof
G240 Seat fuse
G308 Connector for engine sensors
G312a Power window and door lock fuse
G312b Power window and door lock fuse
G313 Connector for additional conditioner wiring
G314 Connector for engine wiring / conditioner wiring
G320 Connector for rear loudspeaker cables
G337 Connector for conditioner syst./injection syst. cables
G338 Coil and injectors connector

G355 Seat set-up connector
G380 Airbag connector
G381 Earth for airbag
G382 Fog light fuse
G383 Connector for airbag capsule
G384 Services supply fuse
G385 Connector for wiring in front bumper
G389 Fuse for ALFA ROMEO CODE unit
G394 Rear view defroster fuse
G395 Airbag fuse
G396 Telepass set-up
G397 Cellular phone set-up
G398 Aerial power connection
G399 Dashboard connector for automatic hood
G400 Rear connector for automatic hood
G401 Fuse for automatic hood system
G402 Fuse for automatic hood control unit
G405 Fusebox power MAXI FUSE
G406 Hood release fuse

H SWITCHES
H1 Handbrake switch
H2 Reversing light switch
H3 Stop lights switch
H9 RH front brake pad switch
H10 LH front brake pad switch
H17 Brake fluid minimum level switch
H20 Inertial switch
H21 Clutch pedal switch
H24 Luggage compartment light switch
H44 Bonnet anti-theft device switch
H51 Sun roof stroke limit switch
H55a RH hood closing switch
H55b LH hood closing switch
H56a RH hood cover closing switch
H56b LH hood cover closing switch
H57 "5th arc" raised switch
H58 Intermediate "5th arc" switch
H59 Hood cover raised switch
H60 Hood position switch
H61 Climate control enable switch

I RELAYS
I2 Heated rearscreen relay
I3 Horn relay
I17 Fog light relay
I29 Fuel pump relay
I35 Key-operated supply relay
I49 Low beam relay
I50 High beam relay
I52 Luggage compartment opening relay
I53 Fuel flap opening relay
I64 Side lights relay
I99 Engine cooling fan 1st speed relay
I100 Engine cooling fan 2nd speed relay
I106 Hood release relay
I106a Hood emergency release relay
I107 Hood cover release relay
I107a Hood cover release relay
I107b Hood cover release relay
I108 Key-operated supply cutoff relay
I109 Anti-theft switch relay
I112a RH hood closing relay
I112b LH hood closing relay
I113 Hood cover closing relay
I117 Automatic hood electric pump relay

L SENDERS
L2 Minimum engine oil pressure
L7 Engine coolant temperature transmitter
L10 Sender for engine coolant temperature gauge and max. temperature warning light contact
L21 Pierbourg valve
L28 RH front phonic wheel inductive sensor
L29 LH front phonic wheel inductive sensor
L30 RH rear phonic wheel inductive sensor
L31 LH rear phonic wheel inductive sensor
L33 Two-level thermal contact
L46 E.G.R. solenoid valve
L49 Accelerator pedal potentiometer

M ELETTROMAGNETS - SOLENOID VALVES
M12 Luggage compartment opening actuator electromagnet
M13 Fuel flap opening actuator electromagnet
M15 Evaporation solenoid valve
M26a LH hood release actuator electromagnet
M26b RH hood release actuator electromagnet
M27 Hood cover release actuator electromagnet
M27a LH hood cover release actuator electromagnet
M27b RH hood cover release actuator electromagnet
M28 Automatic hood solenoid valve

N ELECTRONIC DEVICES - INTERMITTENCES- TIMERS
N1 Power module
N13 Hazard warning lights and direction indicators intermittence
N14 Electronic windscreen wiper intermittence
N18 Electronic headlamp switching device
N23 Ignition control unit
N25 Rear fog guard electronic device
N45 Anti-theft device control unit
N51 Hydraulic unit with ABS control unit
N53 Anti-disturbance condenser on luggage compartment light
N60 Sun roof control unit
N67 Remote control signal receiver
N77 ALFA ROMEO CODE control unit
N78 ALFA ROMEO CODE receiver
N79 Car radio supply antidisturbance condenser
N80 Hood cover release timer
N81 Automatically-operated hood Control unit
N82 Integrated services control unit
N83 Main injection relay protection diode
N84 Delay device protection diode

O SERVICES
O1 Heated rearscreen
O2a High tone horn

O2b Low tone horn
O3 Aerial
O4 Car radio
O5a RH front loud-speaker
O5b LH front loud-speaker
O5c RH rear loud-speaker
O5d LH rear loud-speaker
O6 Cigar lighter - current socket
O18 RH wing mirror defroster
O19 LH wing mirror defroster
O22 Additional engine fan resistance
O22a Additional engine fan resistance
O22b Additional engine fan resistance
O31a RH Tweeter loud-speaker
O31b LH Tweeter loud-speaker
O37 Rear subwoofer speaker

P ELECTRIC MOTORS
P2 Engine cooling fan
P2a Engine cooling fan
P2b Engine cooling fan
P8 LH wing mirror motor
P9 RH wing mirror motor
P10 Front RH door lock motor
P11 Front LH door lock motor
P14 Front RH power window motor
P15 Front LH power window motor
P18 Fuel pump
P19 Windscreen and rearscreen washer pump
P24 Sun roof motor
P27 Windscreen wiper motor with control unit
P35a RH headlamp aiming motor
P35b LH headlamp aiming motor
P51 Automatic hood control pump

Q HEATING/VENTILATION - AIR CONDITIONING
Q1 Heater fan
Q11 Compressor electromagnetic coupling
Q20 Min. and max. pressure switch
Q21 Climate control ECU
Q22 Electromagnetic coupling relay
Q24 External air temperature sensor
Q25a Upper conditioned air sensor
Q25b Lower conditioned air sensor
Q27 Air recirculation flap control motor
Q30a Air distribution actuator
Q30b Air mixing actuator
Q31 Climate control solenoid valve electronic regulator
Q33 Passenger compartment air temperature sensor
Q39 Fuse for conditioning system
Q42 Conditioner fan delay device

R SAFETY DEVICES
R22 Airbag control unit
R23 Capsule on steering wheel for airbag
R27 Passenger's side airbag capsule
R28 Capsule on RH pretensioner
R29 Capsule on LH pretensioner

S ELECTRONIC INJECTION
S3 Elettroinjectors
S5 Air flow meter
S7 Engine temperature sensor
S11 Motronic control unit
S12a Motronic fuel pump relay
S12c Phase variator relay
S12e Air flow meter relay
S15 Phase variator
S16 Altitude corrector
S20 Pinging sensor
S20a Pinging sensor a
S20b Pinging sensor b
S29 Idle adjustment actuator
S31 Rpm and crankshaft position sensor
S34 Air temperature sensor
S35 Heated lambda probe
S38 Sensor on throttle body
S39 1st cylinder detection sensor
S41 Main relay
S42 Secondary relay
S43 Absolute pressure sensor
S45 Lambda probe fuse
S46 Injection power individual fuse
S47 Fuse for fuel pump
S52 Cam angle sensor
S57 Variable geometry solenoid valve
S58 Injection ECU power fuse
S59 Throttle casing actuator

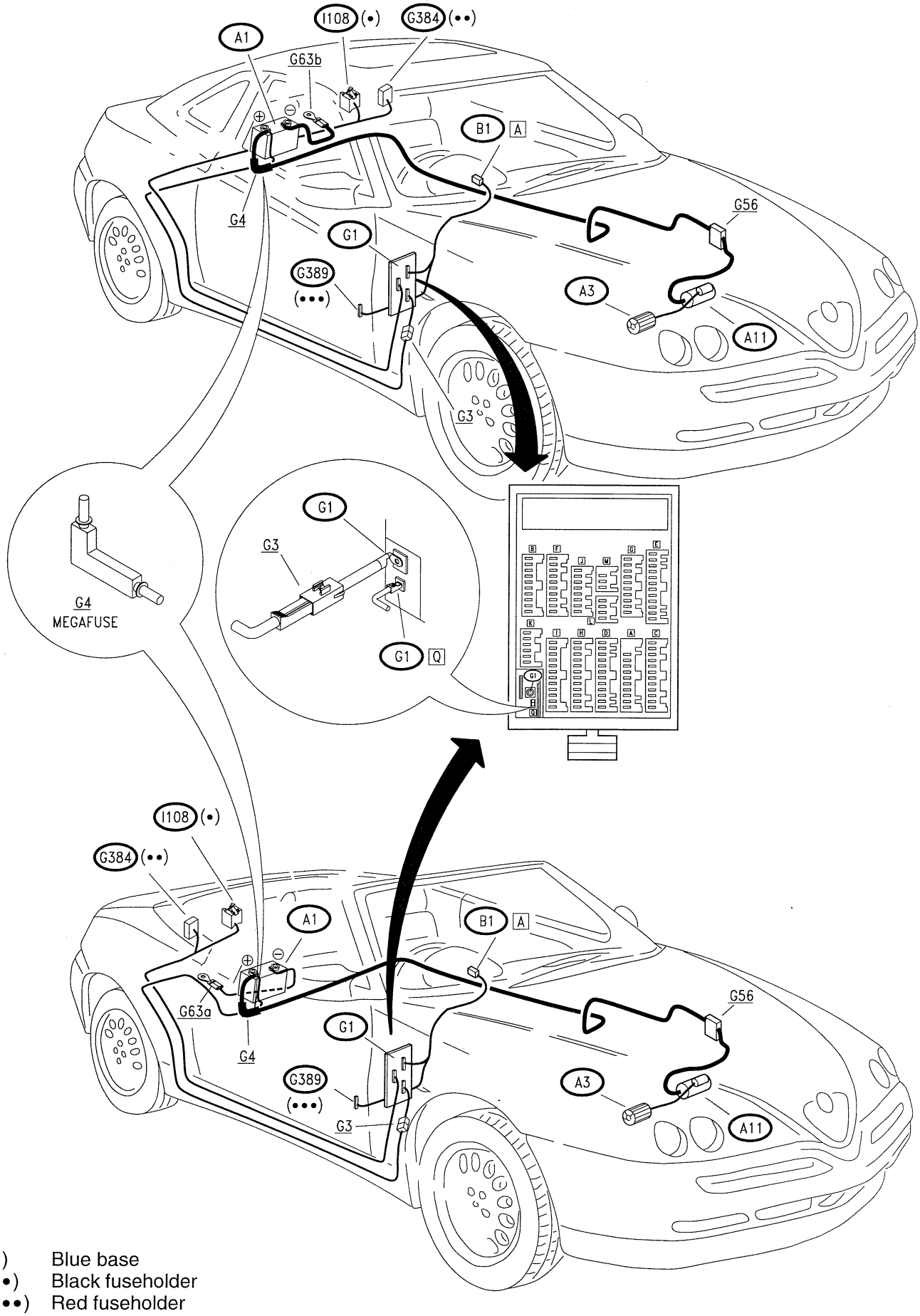
T DIAGNOSIS
T1 Connector for ALFA TESTER (Motronic and ALFA ROMEO CODE)
T3 Connector for ALFA TESTER (airbag)
T7 Connector for ALFA TESTER (anti-theft device)
T8 Connector for ALFA TESTER (ABS)
T13 Diagnosis connector for ALFA ROMEO TESTER (automatic hood)
T20 Unified diagnostic connector

LOCATION OF COMPONENTS AND CABLE ROUTING

LOCATION OF COMPONENTS AND CABLE ROUTING

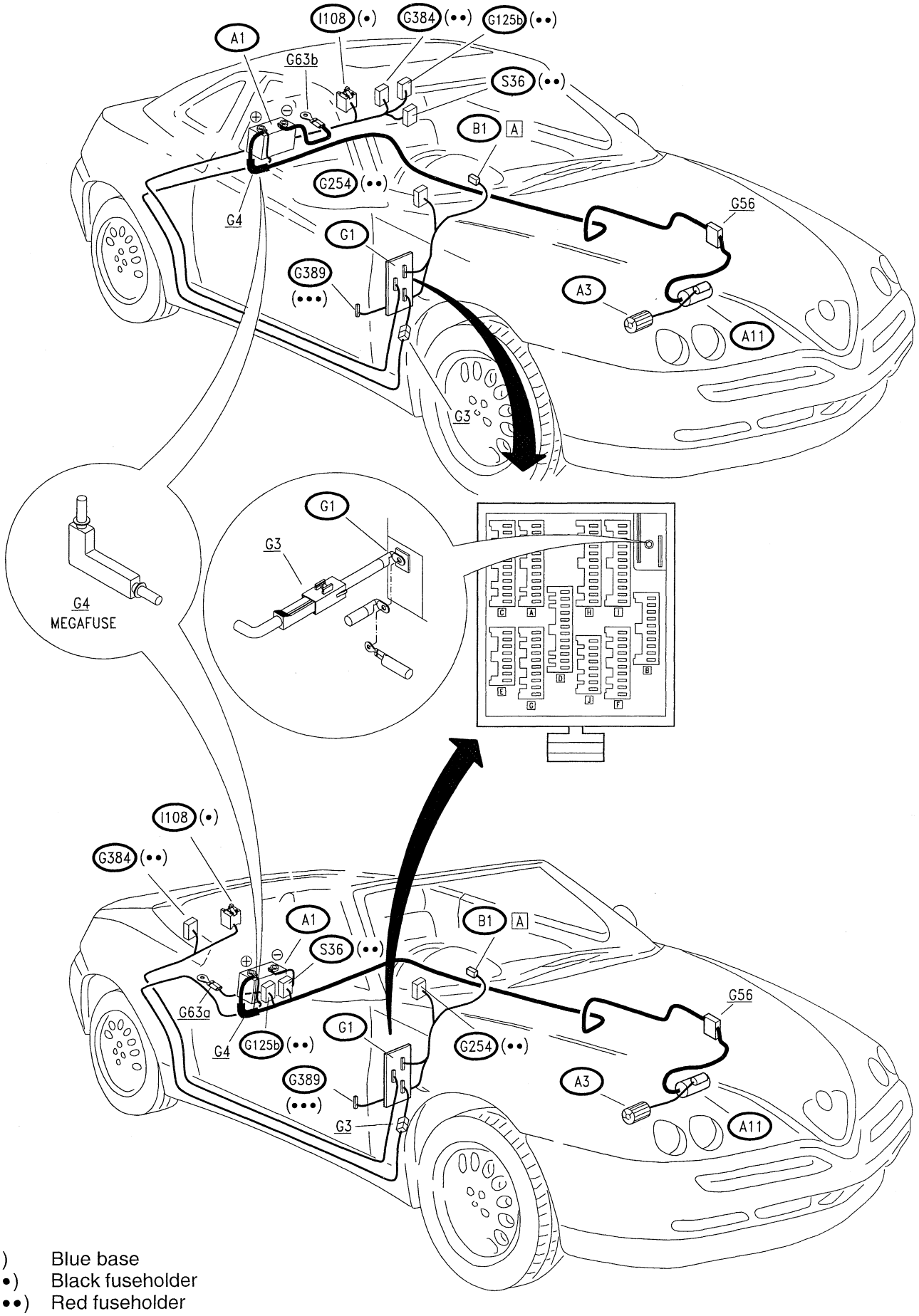
The following pages contain all the illustrations concerning the location of components and cable routing for the functions that have not been illustrated previously; **for these functions refer to section 55 "ELECTRIC SYSTEM DIAGNOSIS" of the base manual for all other information.**

ELECTRIC SYSTEM OF THE CAR - POWER SUPPLY (up to '96 version)



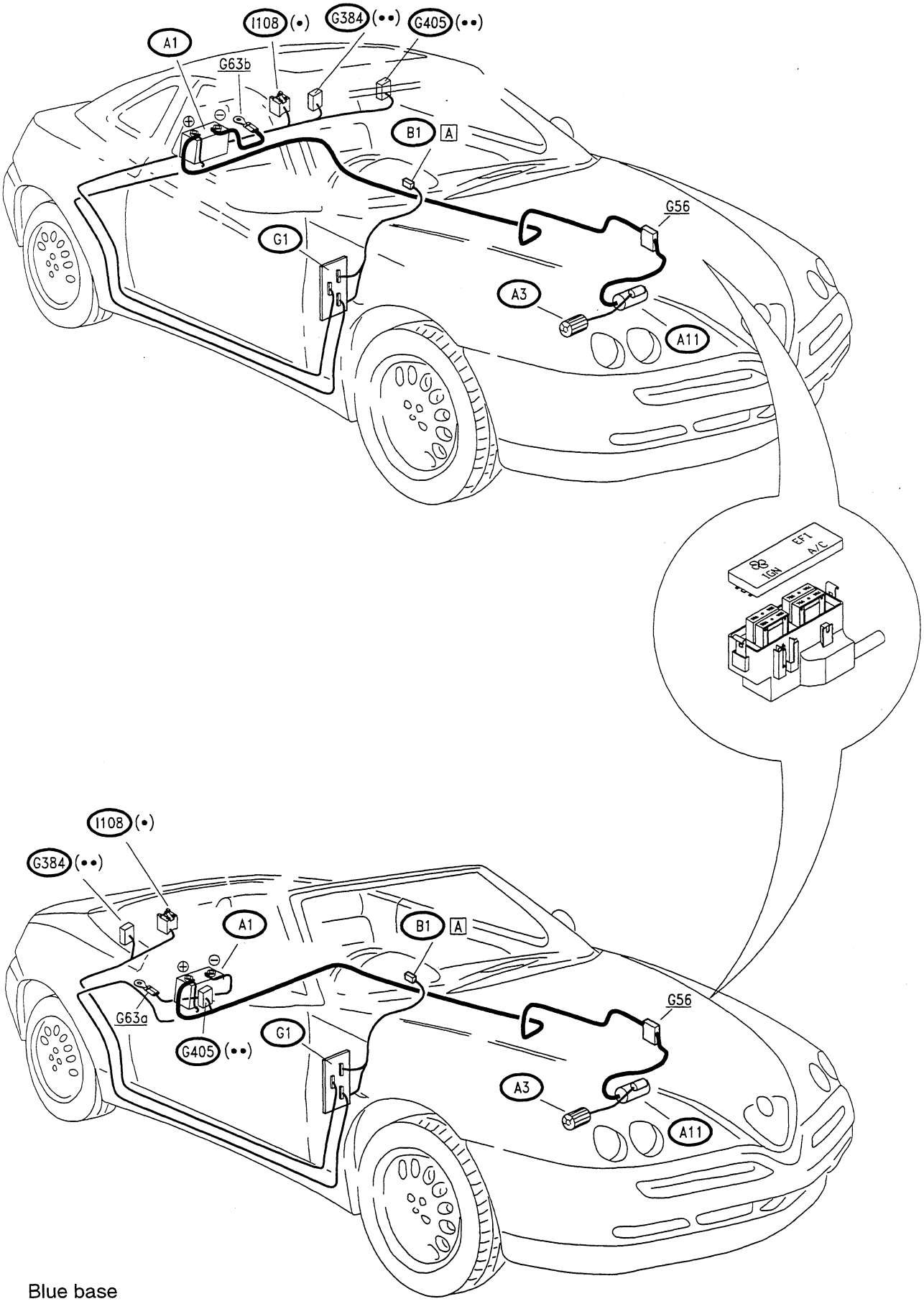
(•) Blue base
(••) Black fuseholder
(•••) Red fuseholder

ELECTRIC SYSTEM OF THE CAR - POWER SUPPLY (from '97 version)



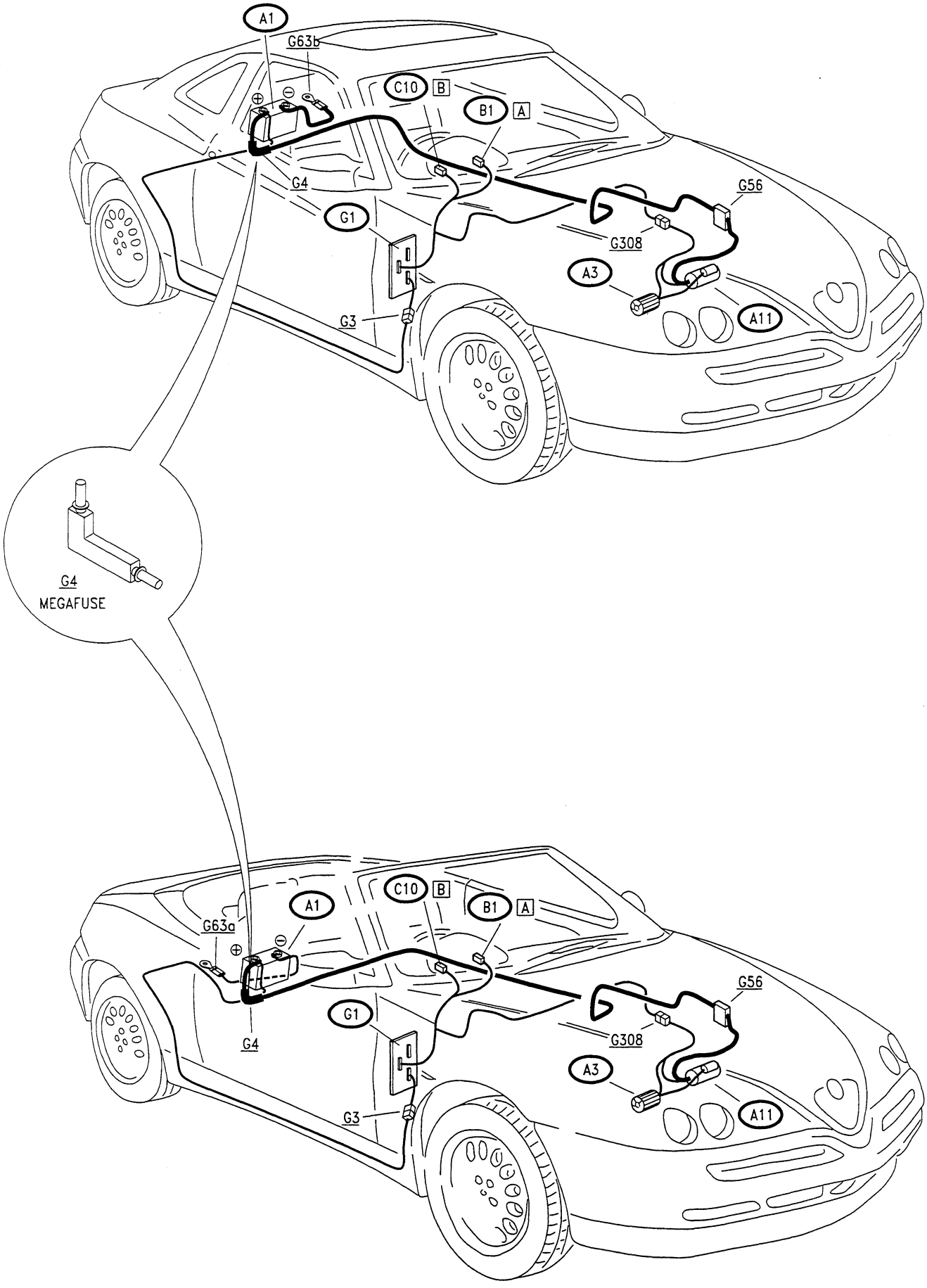
(•) Blue base
(••) Black fuseholder
(•••) Red fuseholder

ELECTRIC SYSTEM OF THE CAR - POWER SUPPLY (from '98 version)

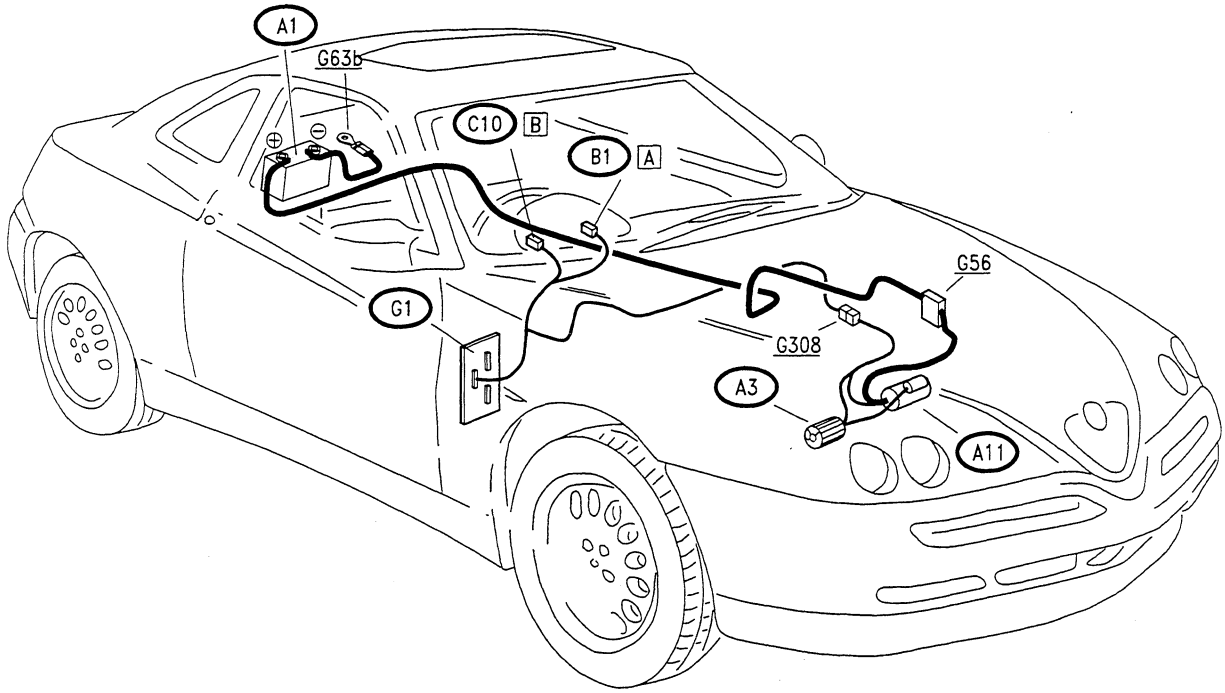


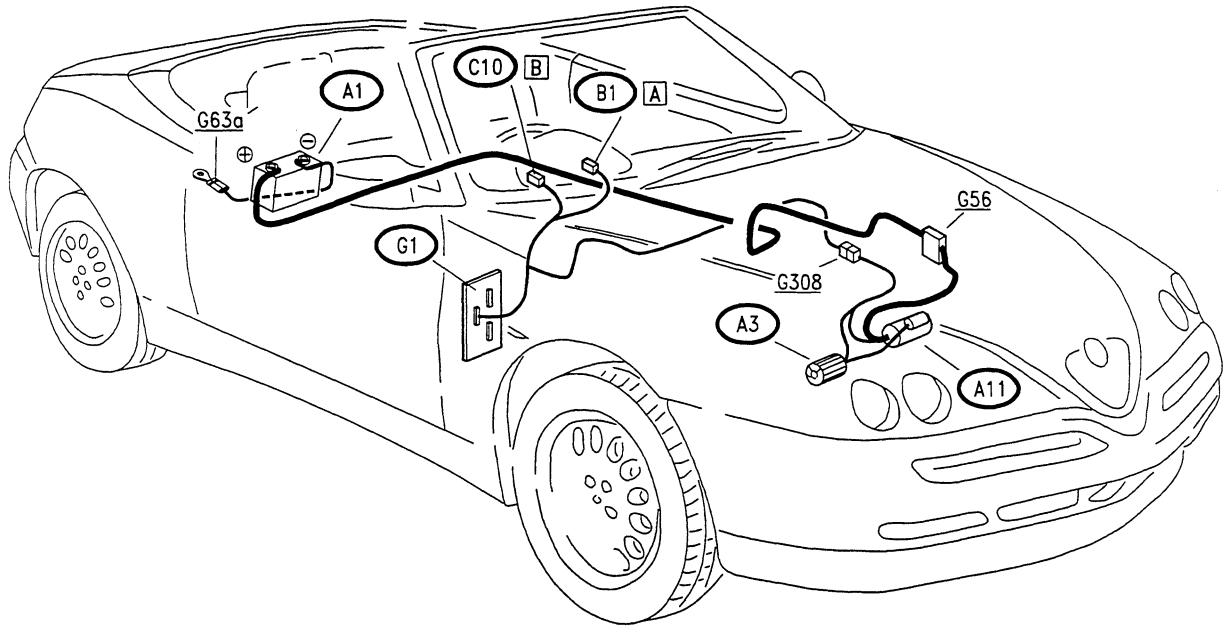
(•) Blue base
(••) Black fuseholder

STARTING AND CHARGING

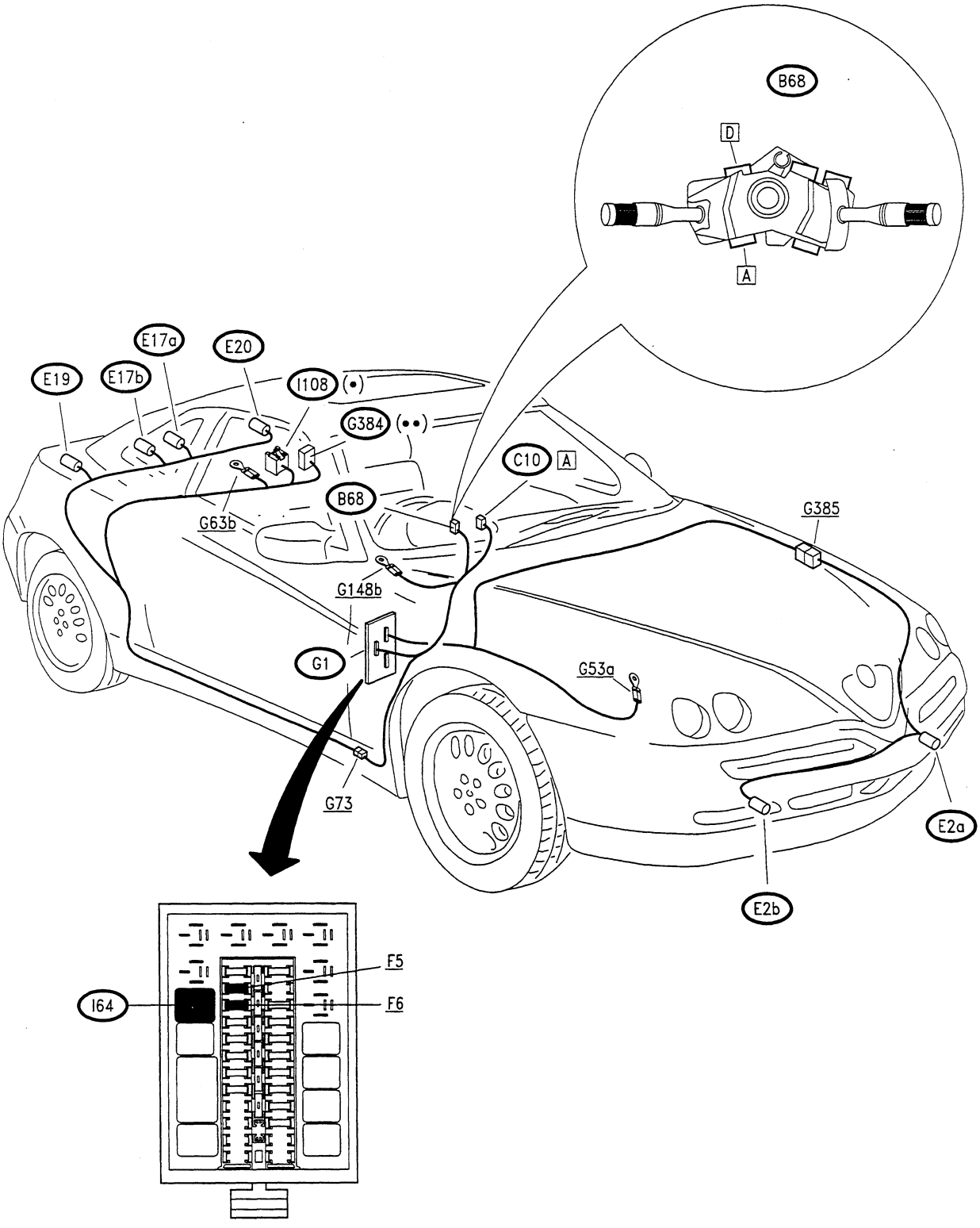


STARTING AND CHARGING (from '98 version)



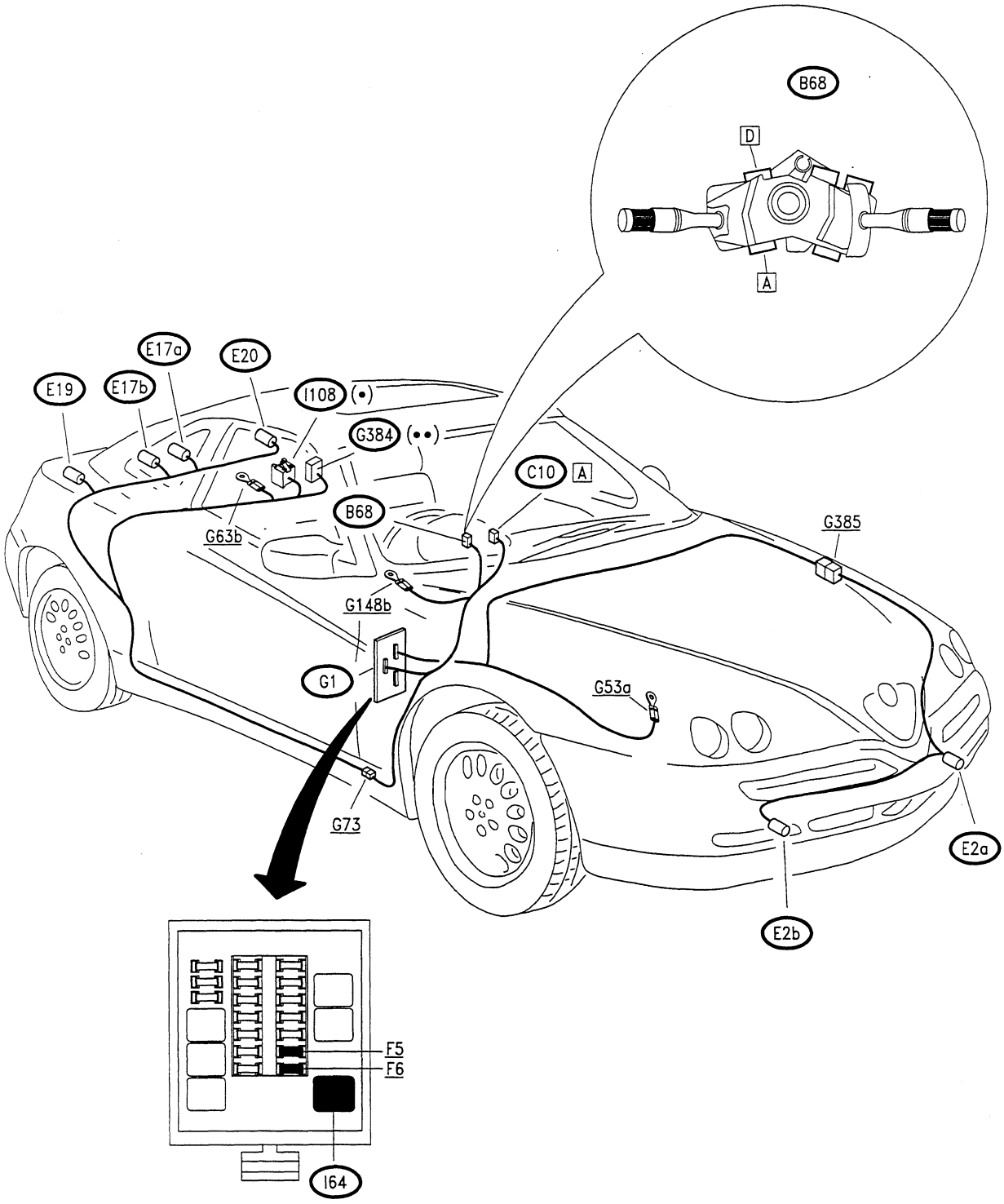


SIDE LIGHTS (up to '96 version)



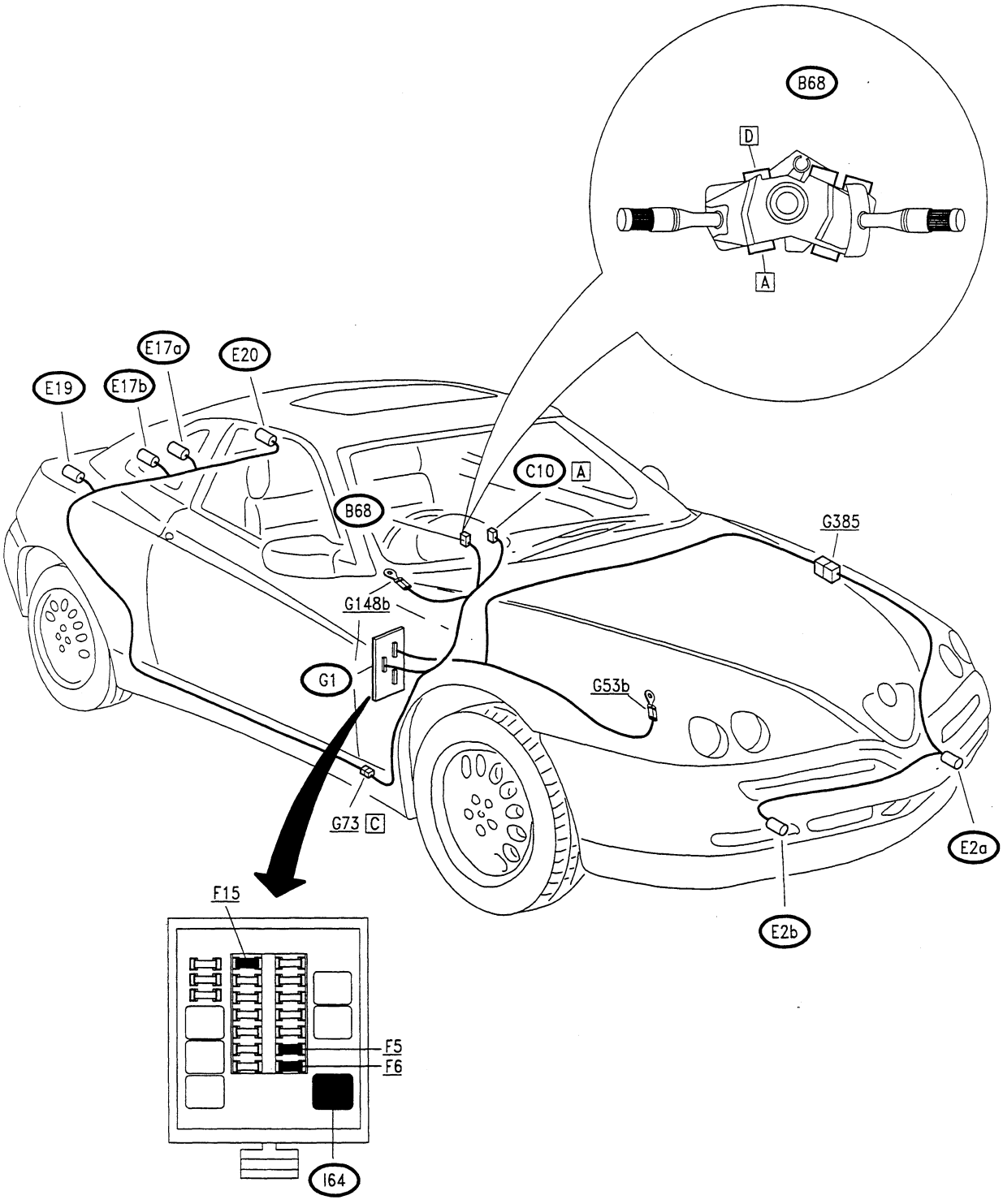
(•) Blue base
(••) Black fuseholder

SIDE LIGHTS (from '97 version)

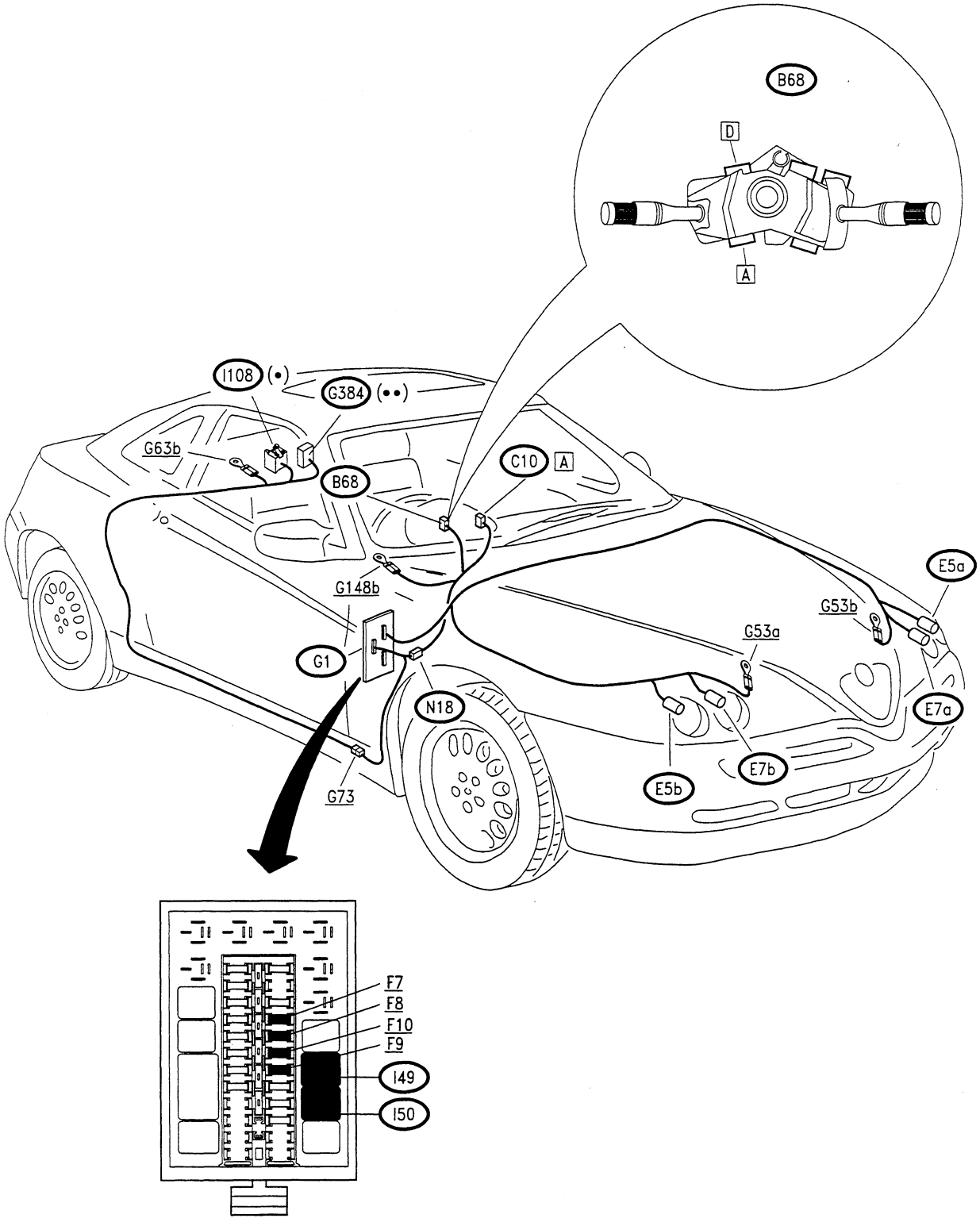


(•) Blue base
(••) Black fuseholder

SIDE LIGHTS (from '98 version)

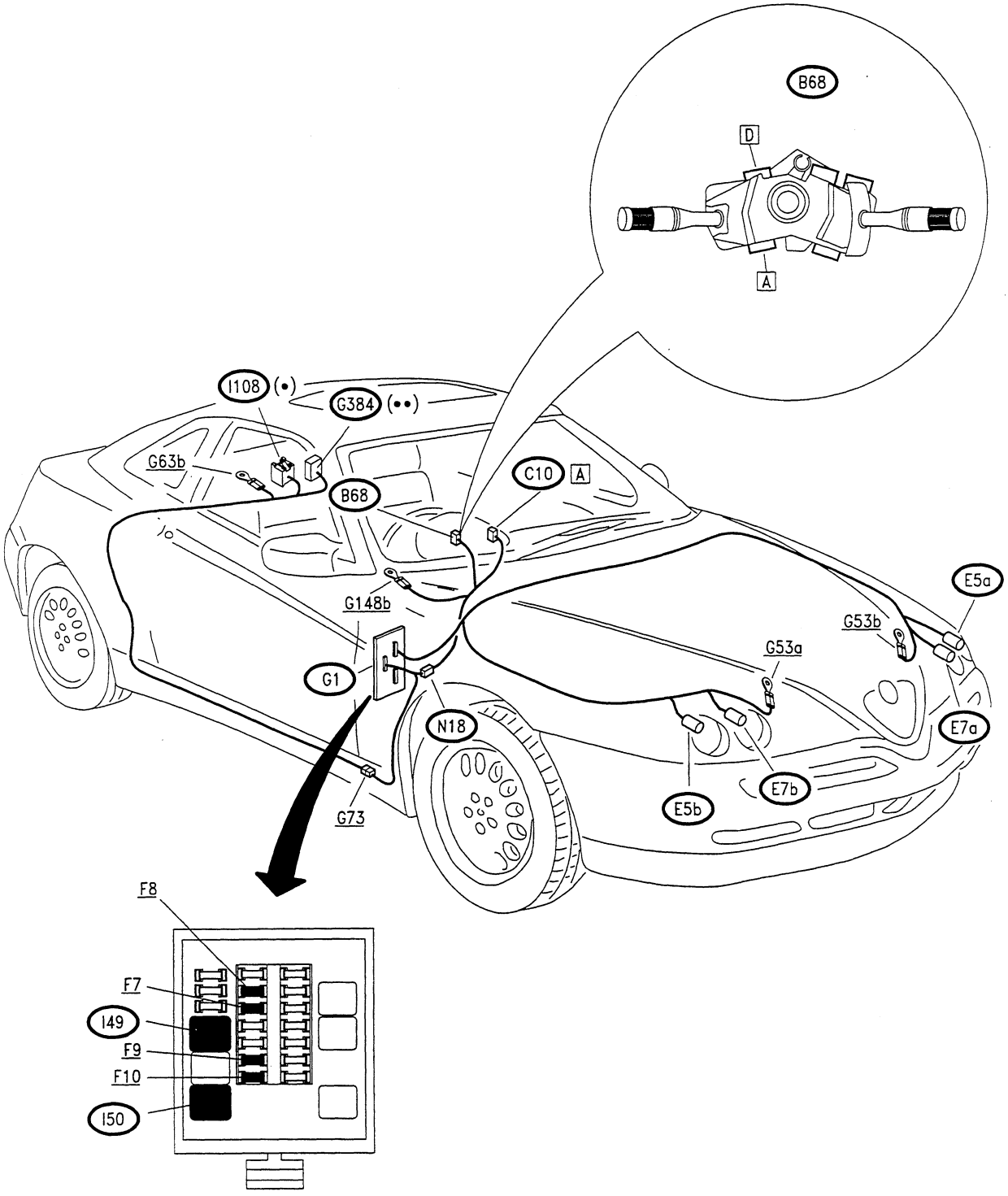


HIGH AND LOW BEAM HEADLAMPS (up to '96 version)



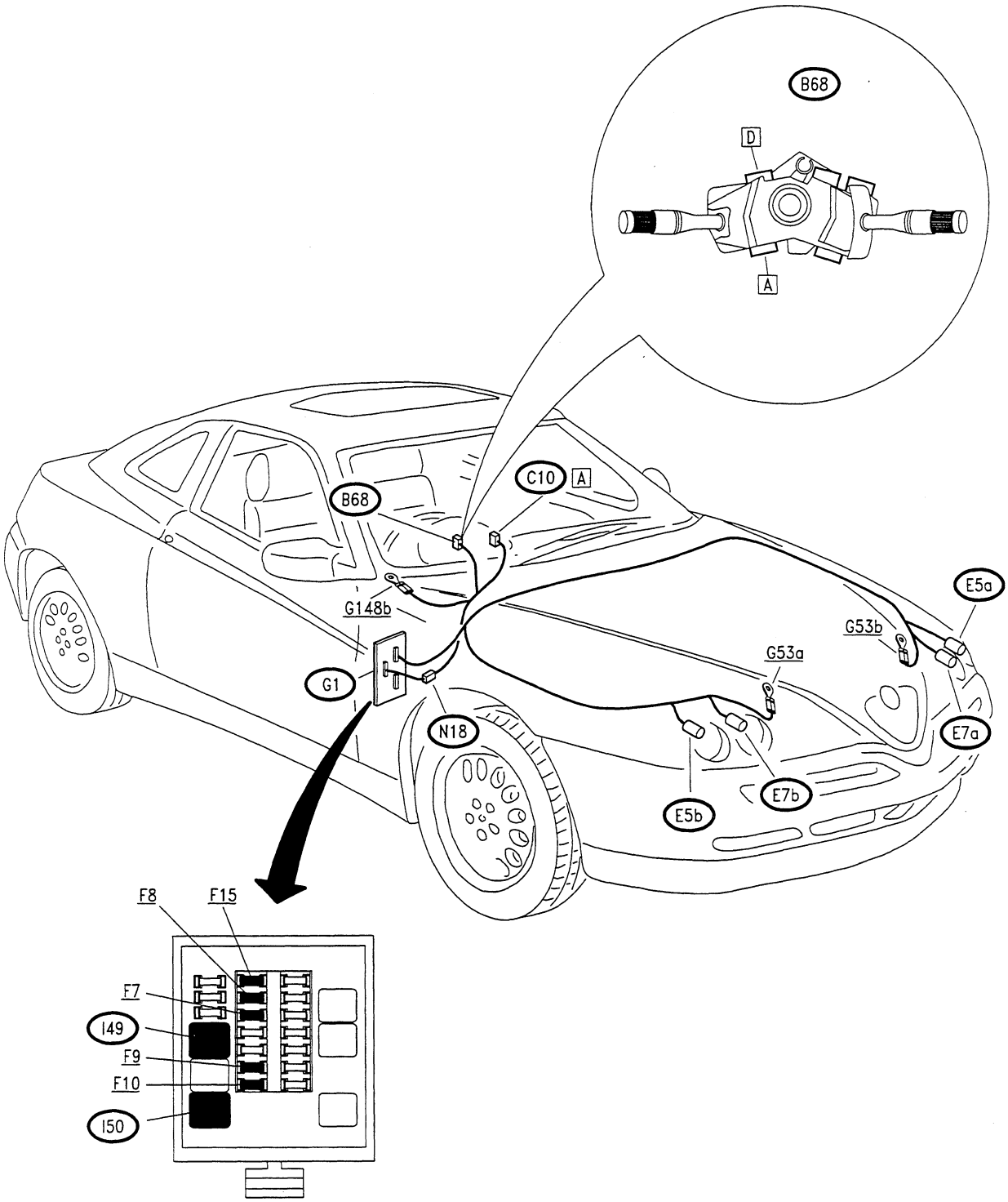
(•) Blue base
(••) Black fuseholder

HIGH AND LOW BEAM HEADLAMPS (from '97 version)

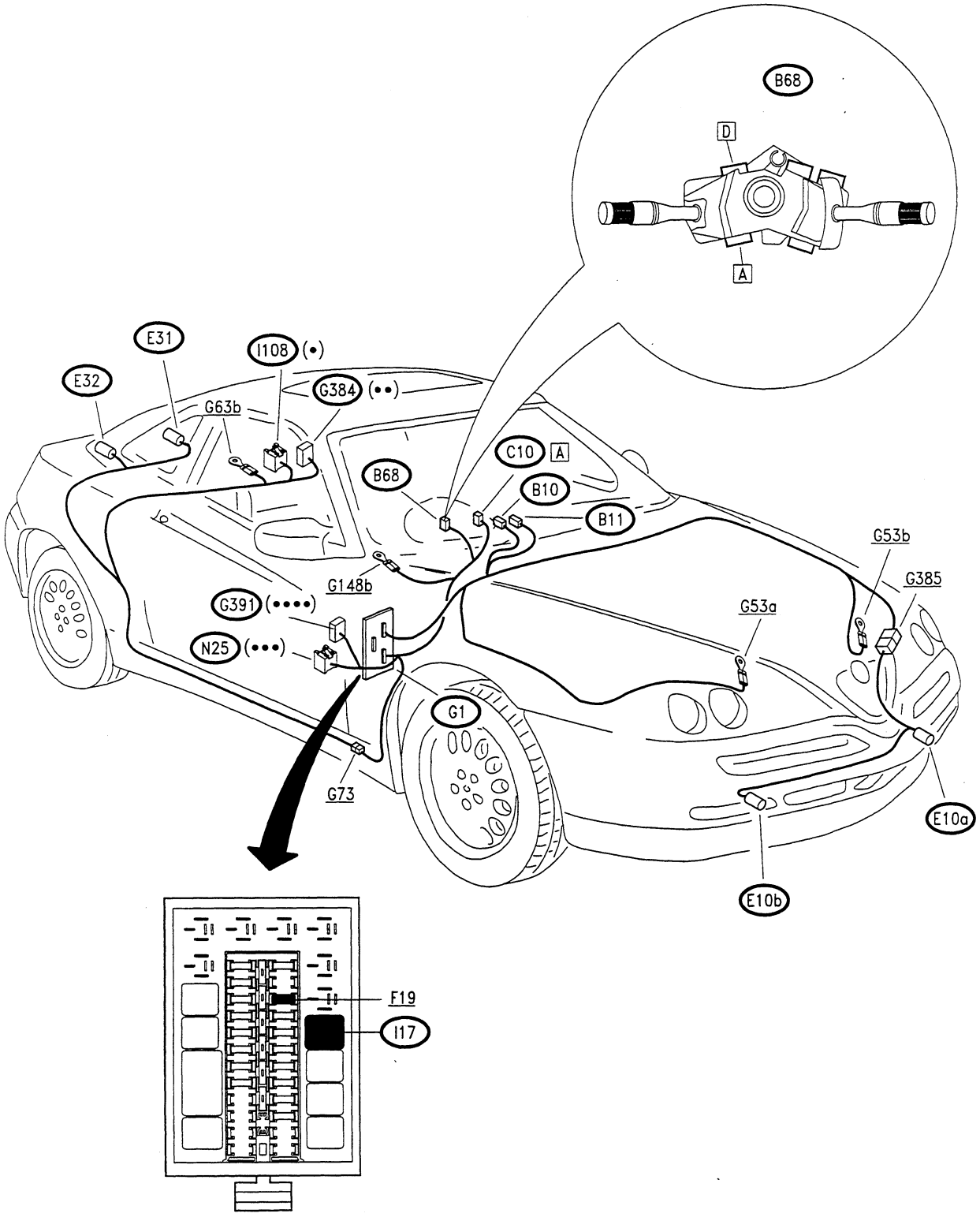


(•) Blue base
(••) Black fuseholder

HIGH AND LOW BEAM HEADLAMPS (from '98 version)

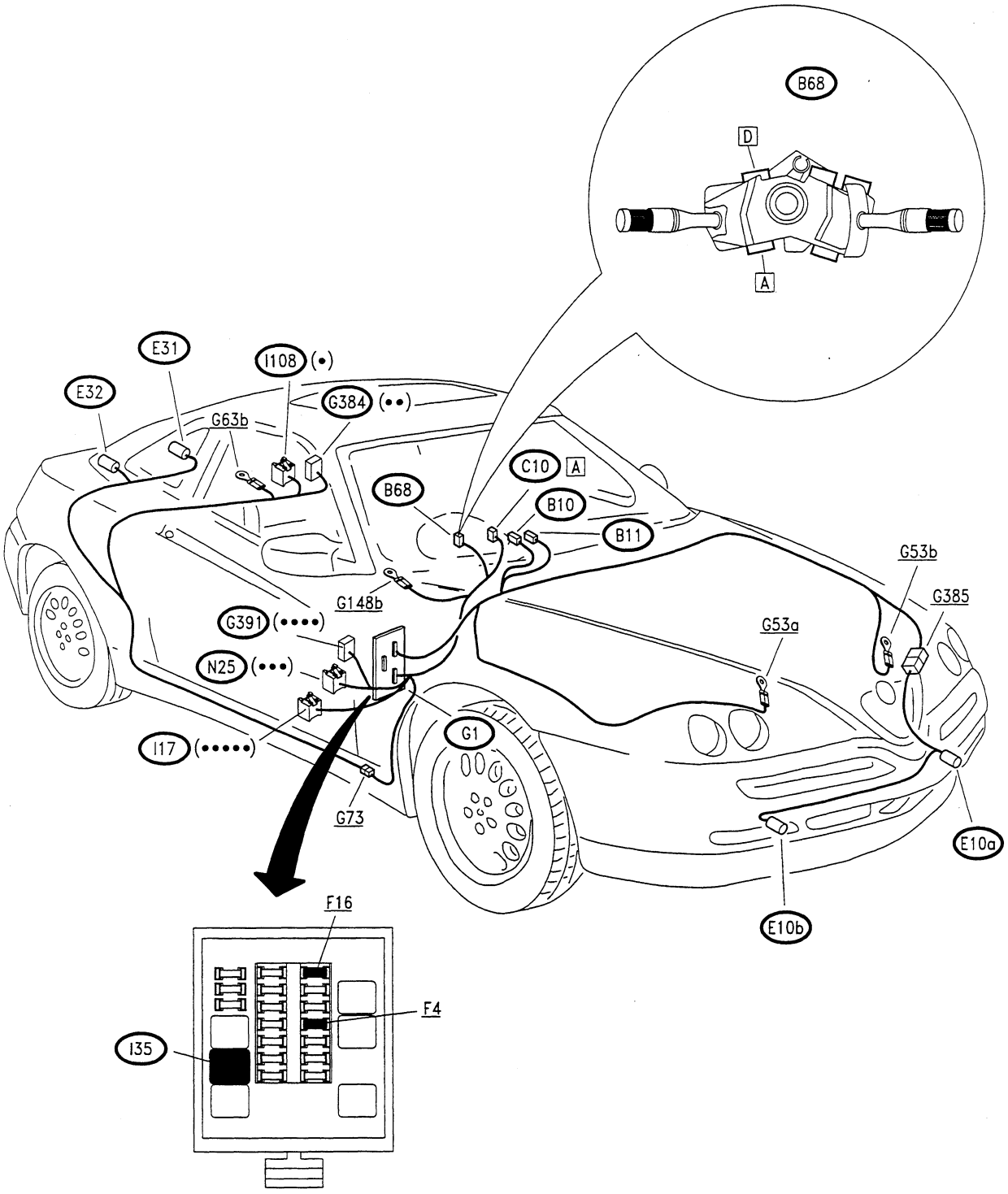


FOG LIGHTS AND REAR FOG GUARDS (up to '96 version)



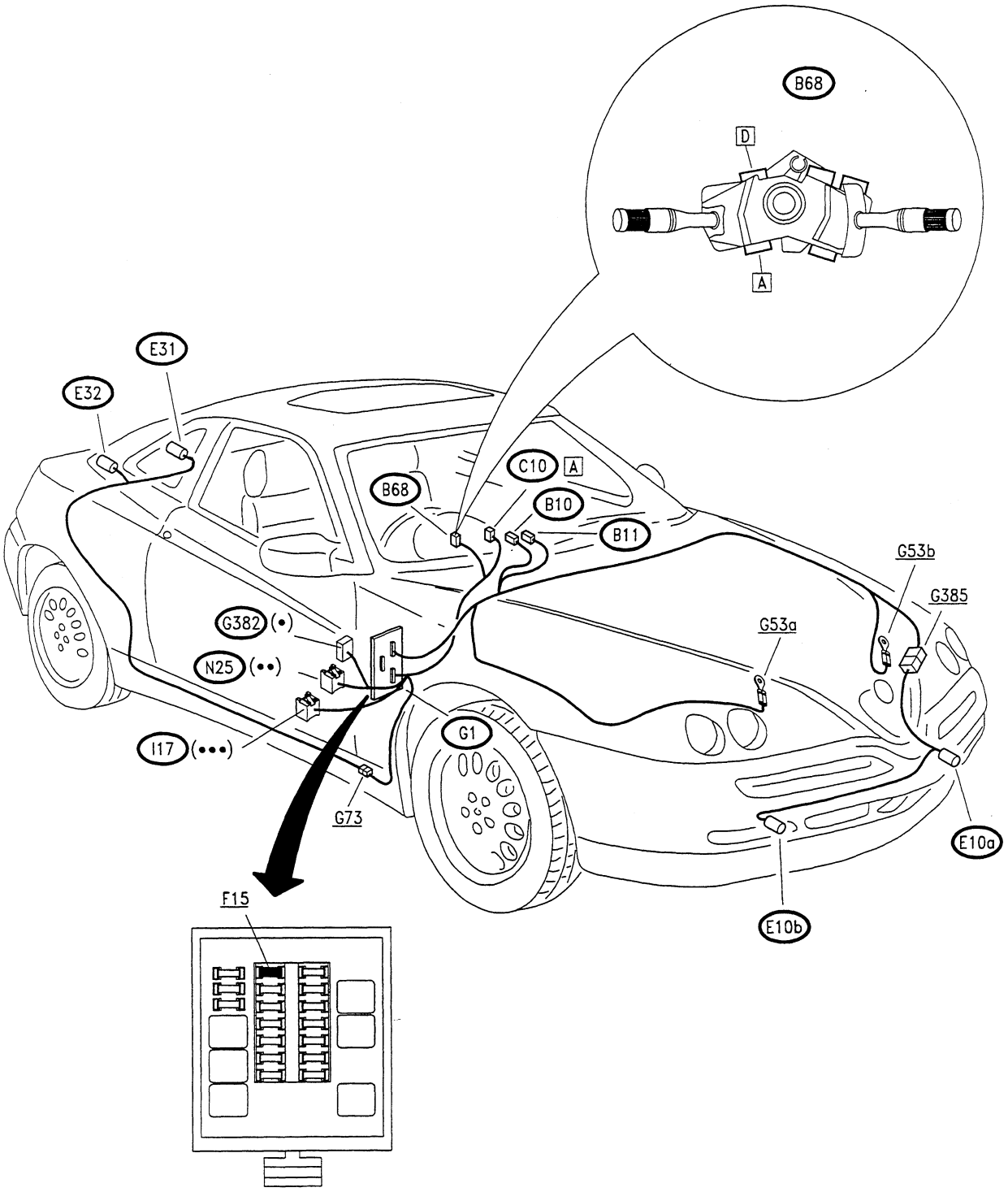
(•) Blue base
(••) Black fuseholder
(•••) White base
(••••) Brown fuseholder

FOG LIGHTS AND REAR FOG GUARDS (from '97 version)



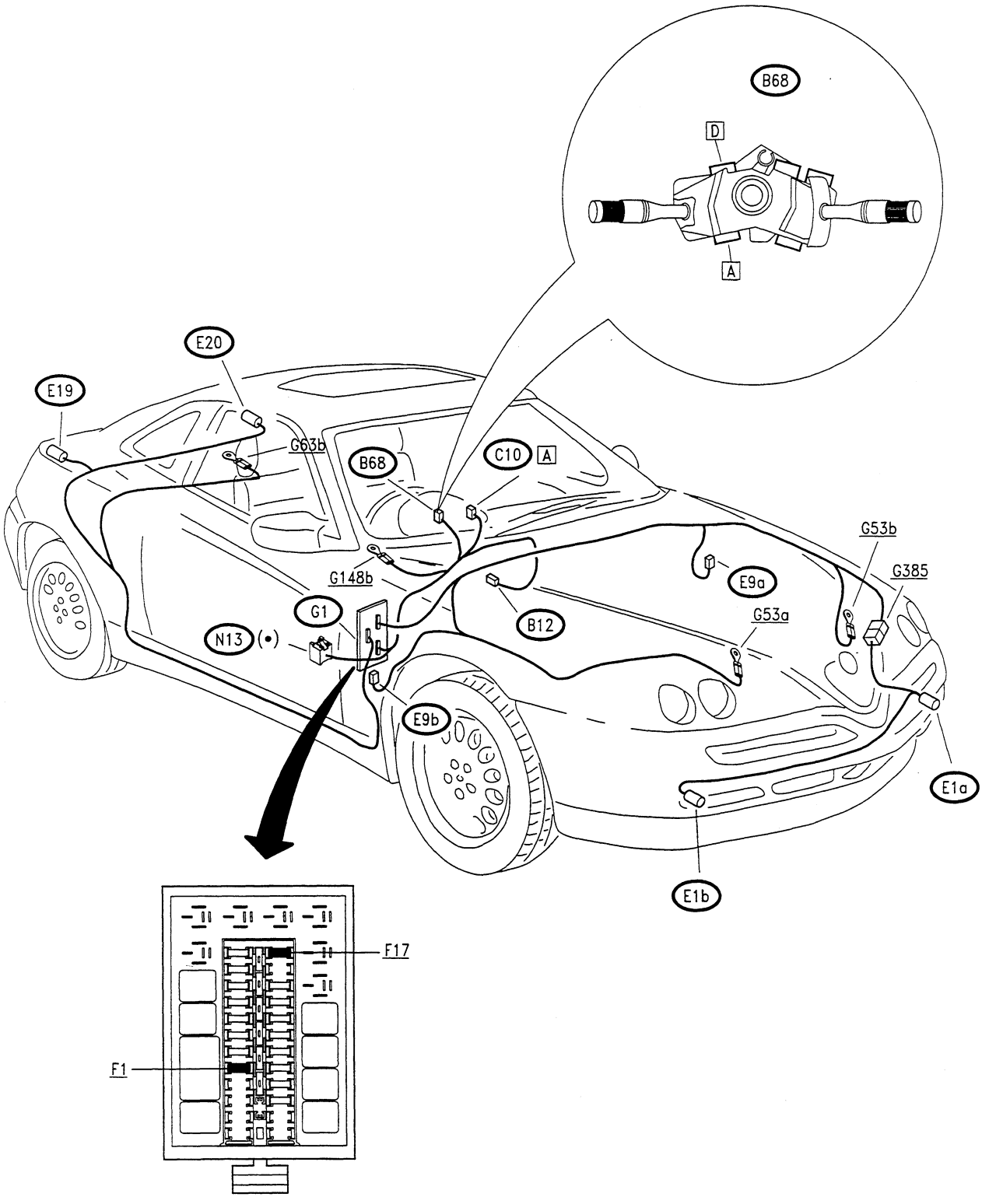
(•) Blue base
(••) Black fuseholder
(•••) White base
(••••) Brown fuseholder
(•••••) Green fuseholder

FOG LIGHTS AND REAR FOG GUARDS (from '98 version)



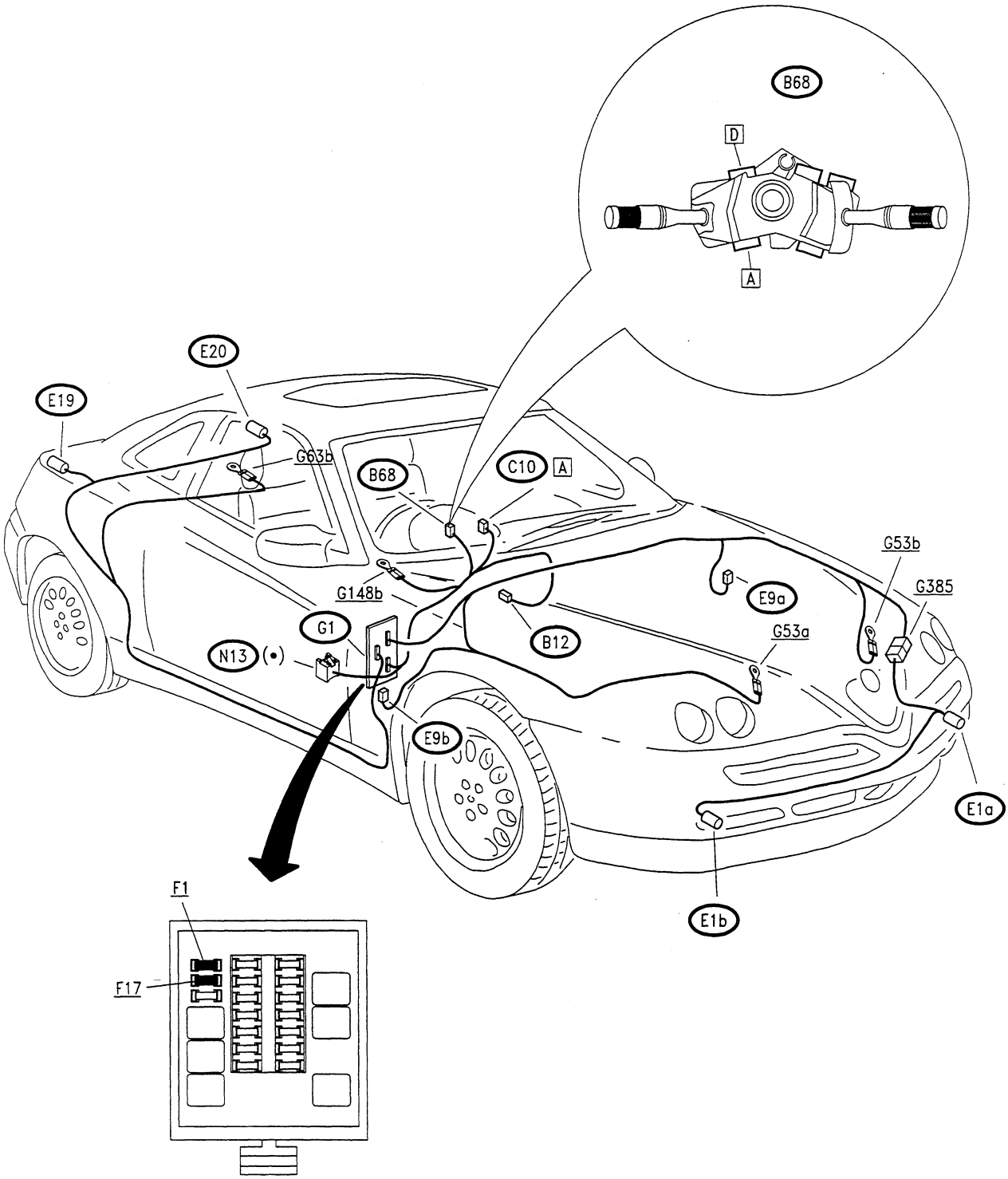
(•) Red fuseholder
(••) White base
(•••) Black base

DIRECTION INDICATORS AND HAZARD WARNING LIGHTS (up to '96 version)



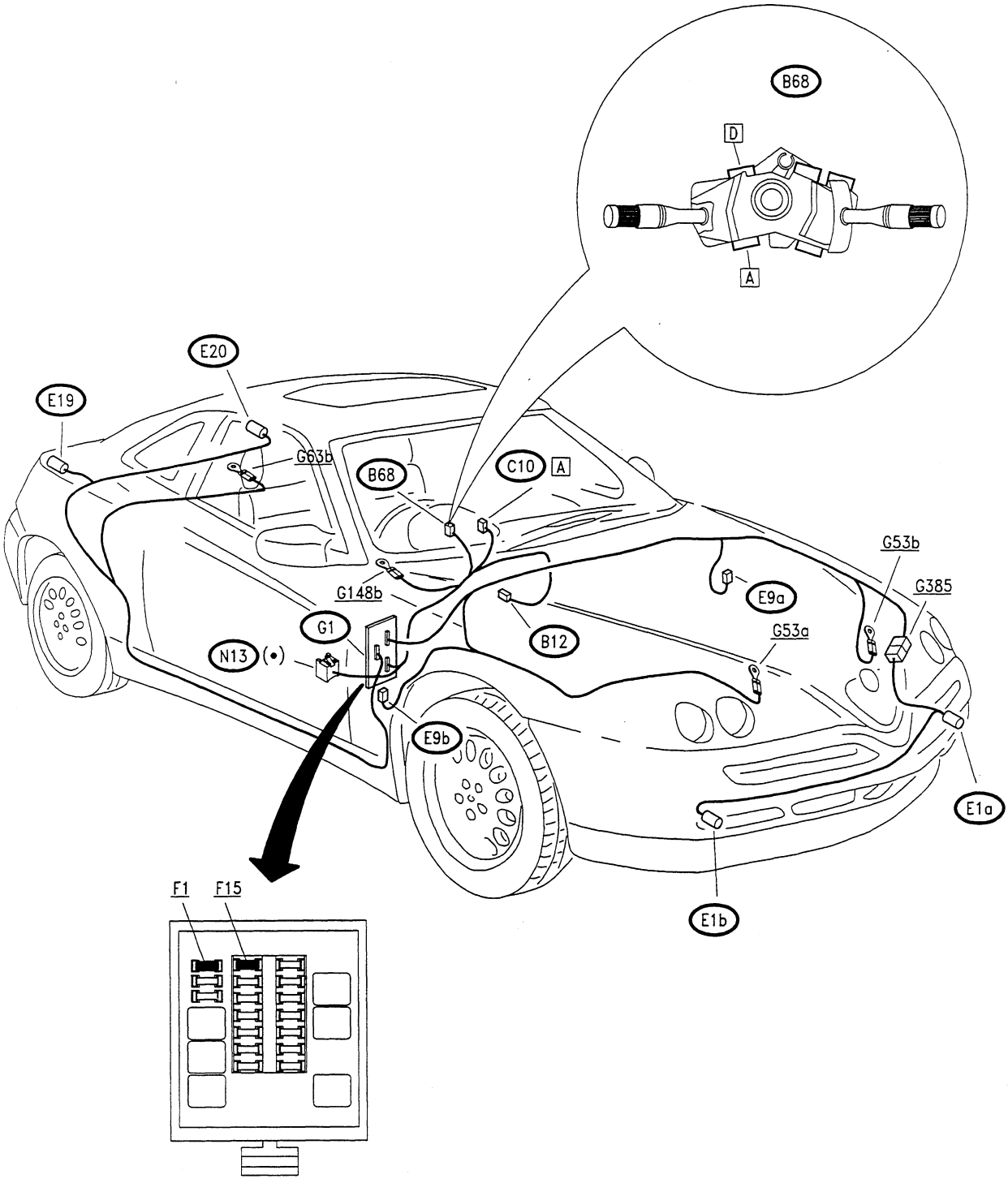
(•) Black base

DIRECTION INDICATORS AND HAZARD WARNING LIGHTS (from '97 version)



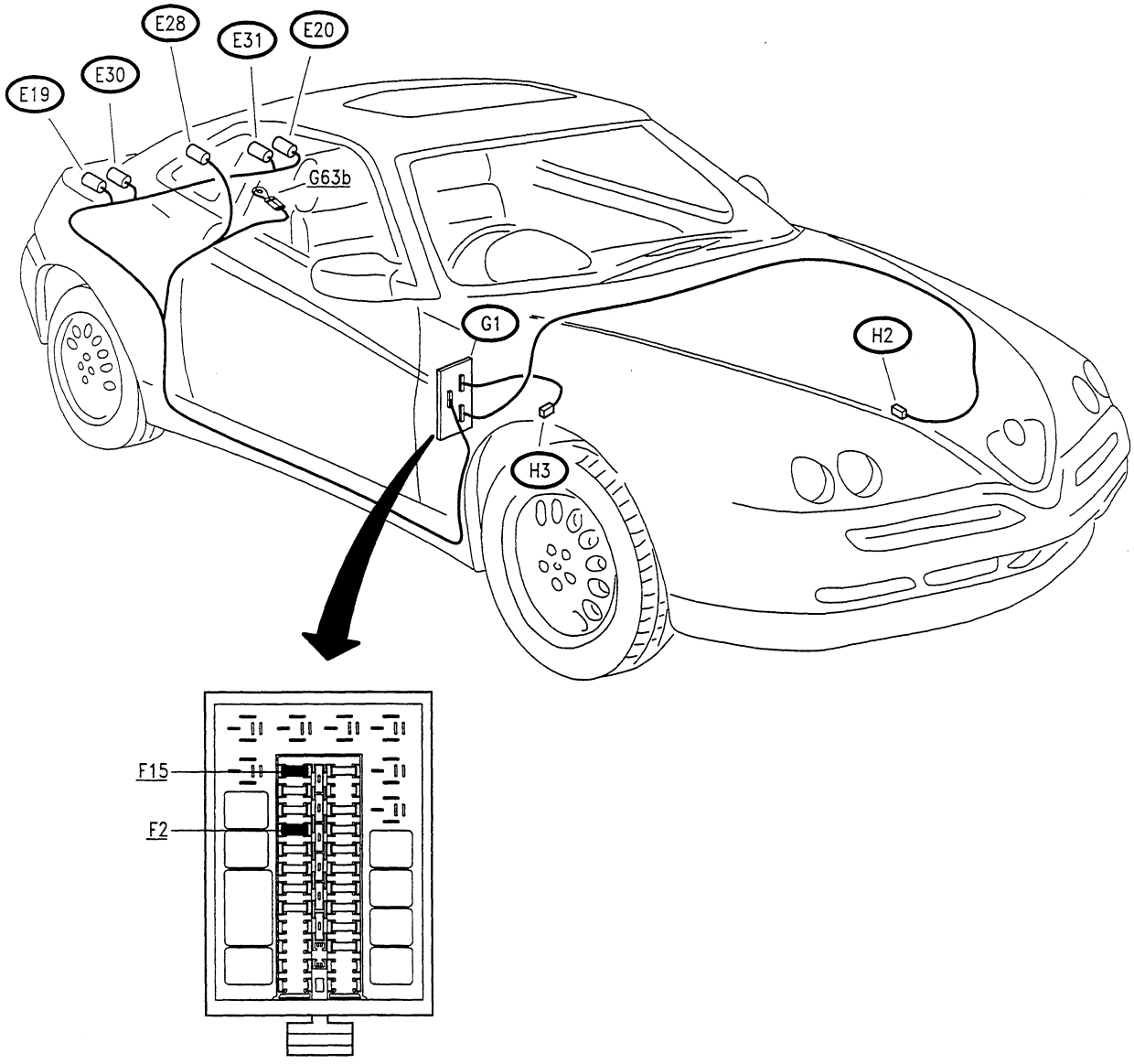
(•) Black base

DIRECTION INDICATORS AND HAZARD WARNING LIGHTS (from '98 version)

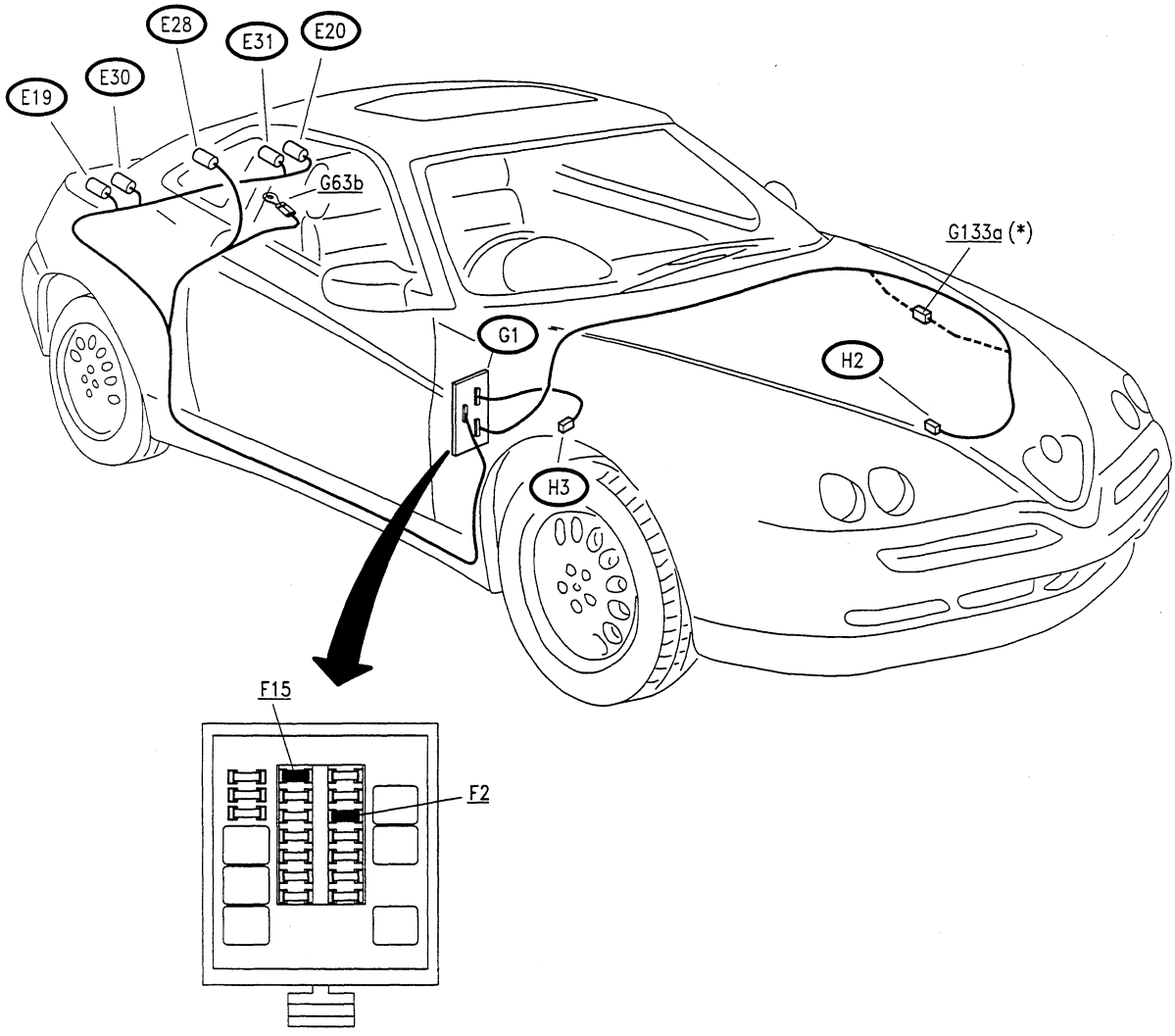


(•) Black base

STOP LIGHTS AND REVERSING LIGHTS (up to '96 version)

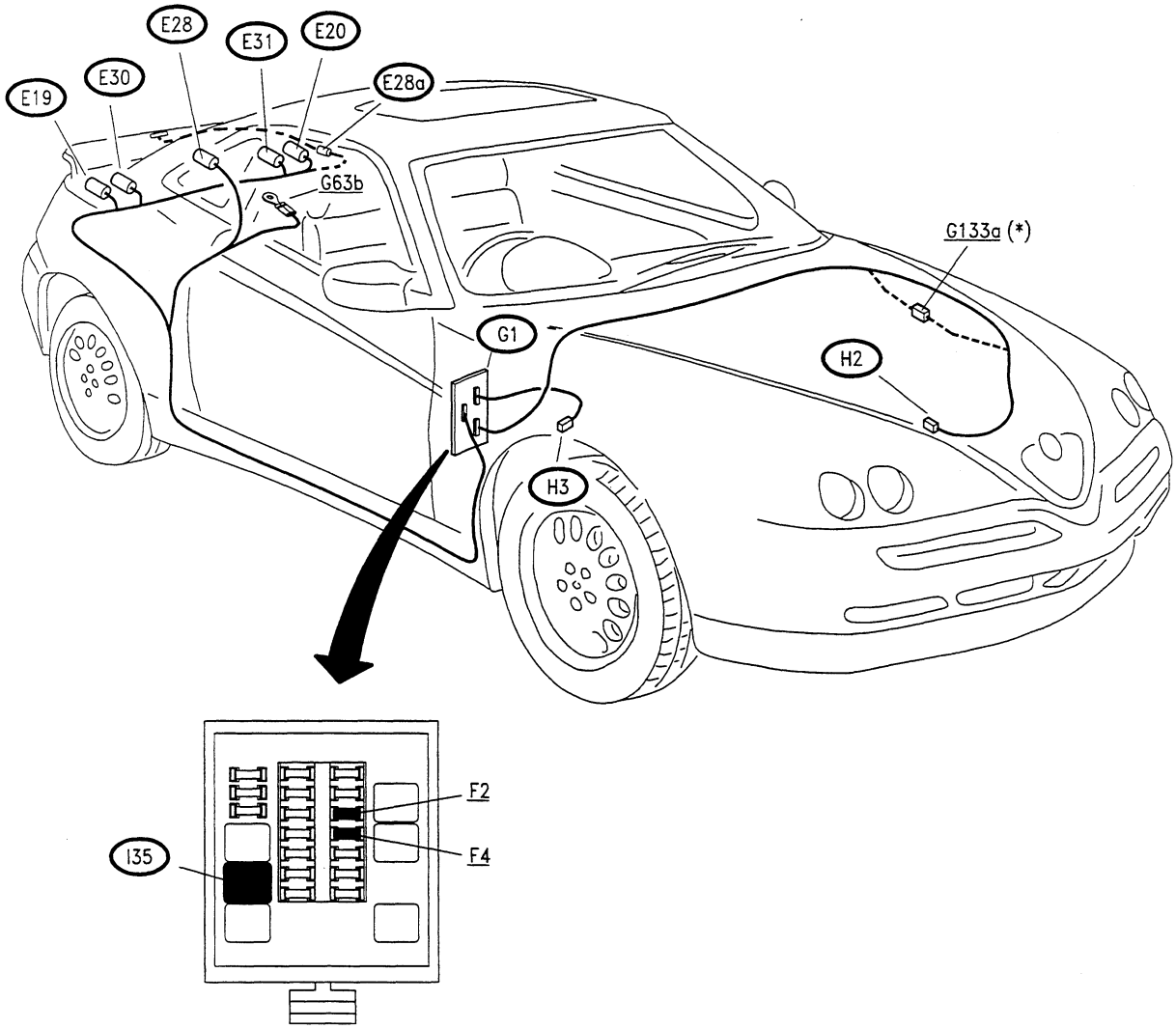


STOP LIGHTS AND REVERSING LIGHTS (from '97 version)



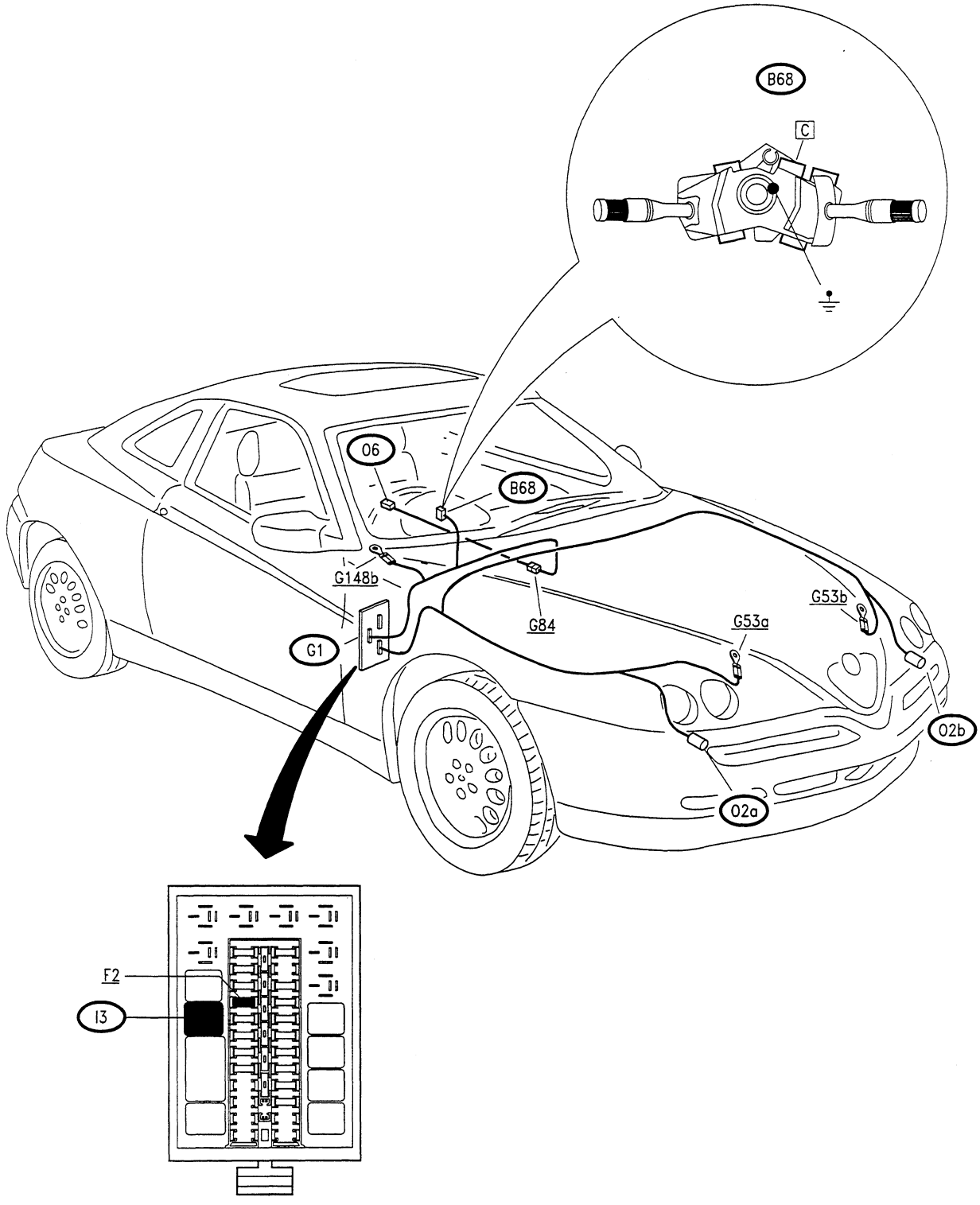
(*) for 3.0V624v only

STOP LIGHTS AND REVERSING LIGHTS (from '98 version)

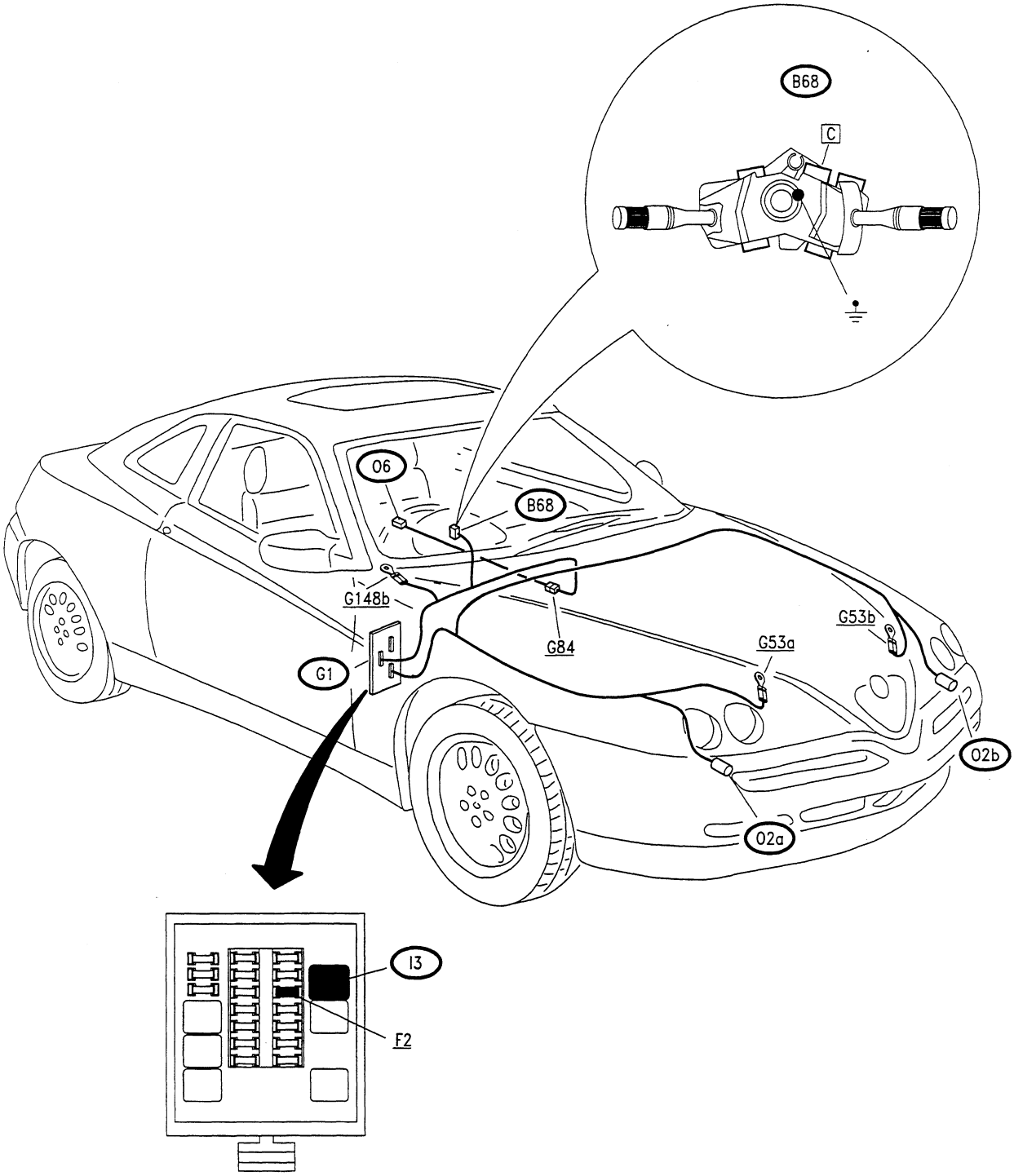


(*) for 3.0V624v only
– – – variant for GTV with rear spoiler

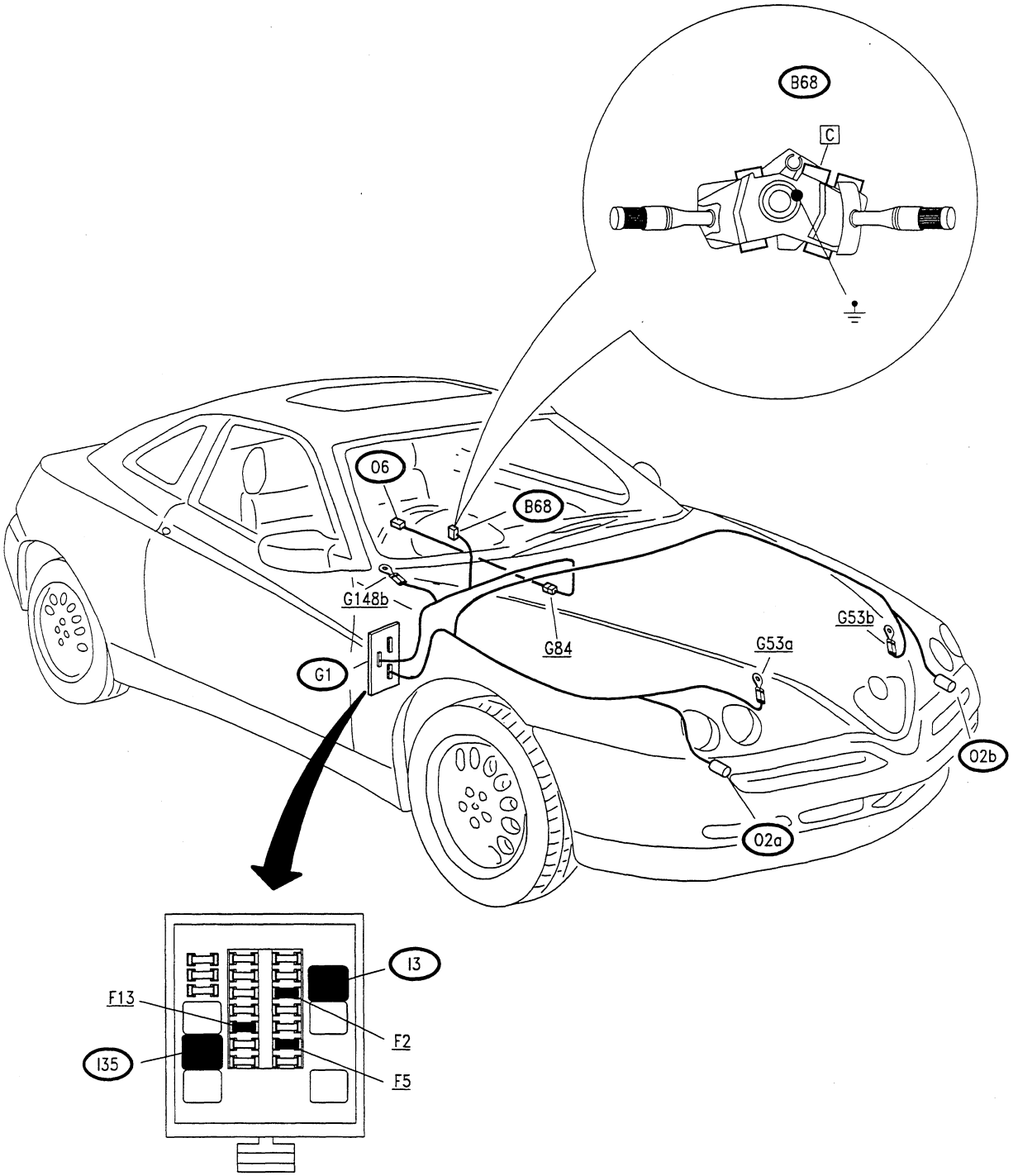
HORNS, CIGAR LIGHTER/CURRENT SOCKET (up to '96 version)



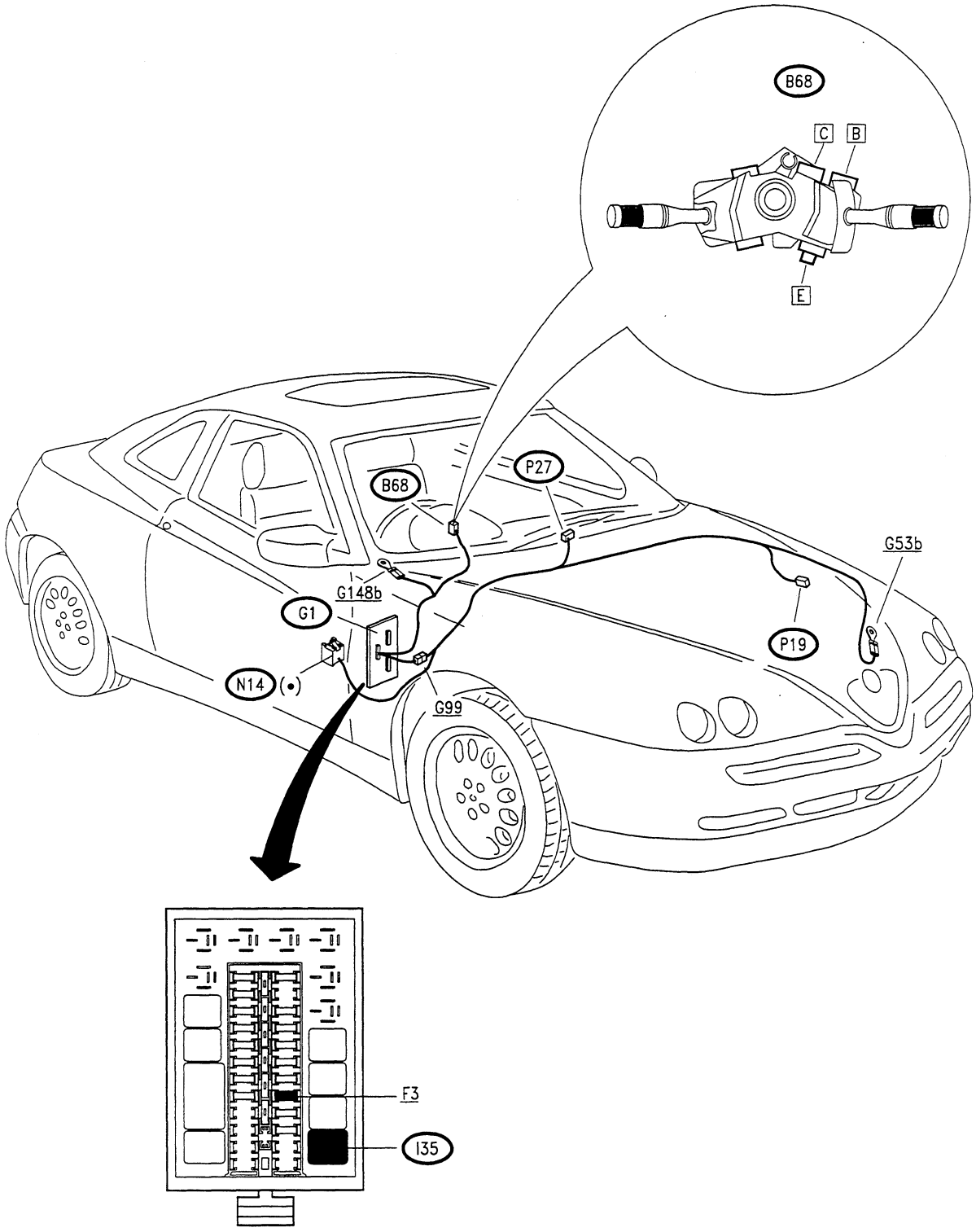
HORNS, CIGAR LIGHTER/CURRENT SOCKET (from '97 version)



HORNS, CIGAR LIGHTER/CURRENT SOCKET (from '98 version)

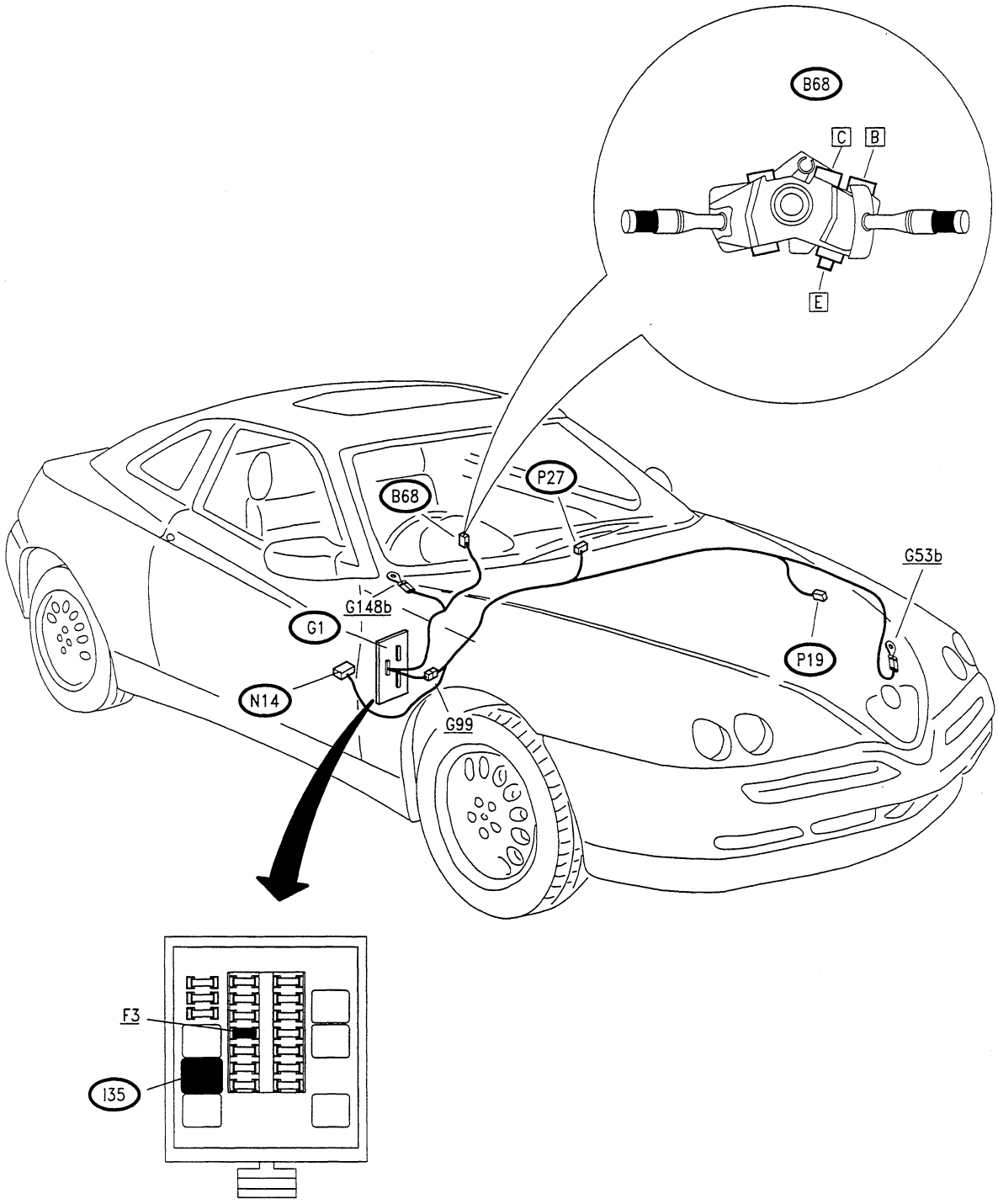


WINDSCREEN WIPER/WASHER (up to '96 version)

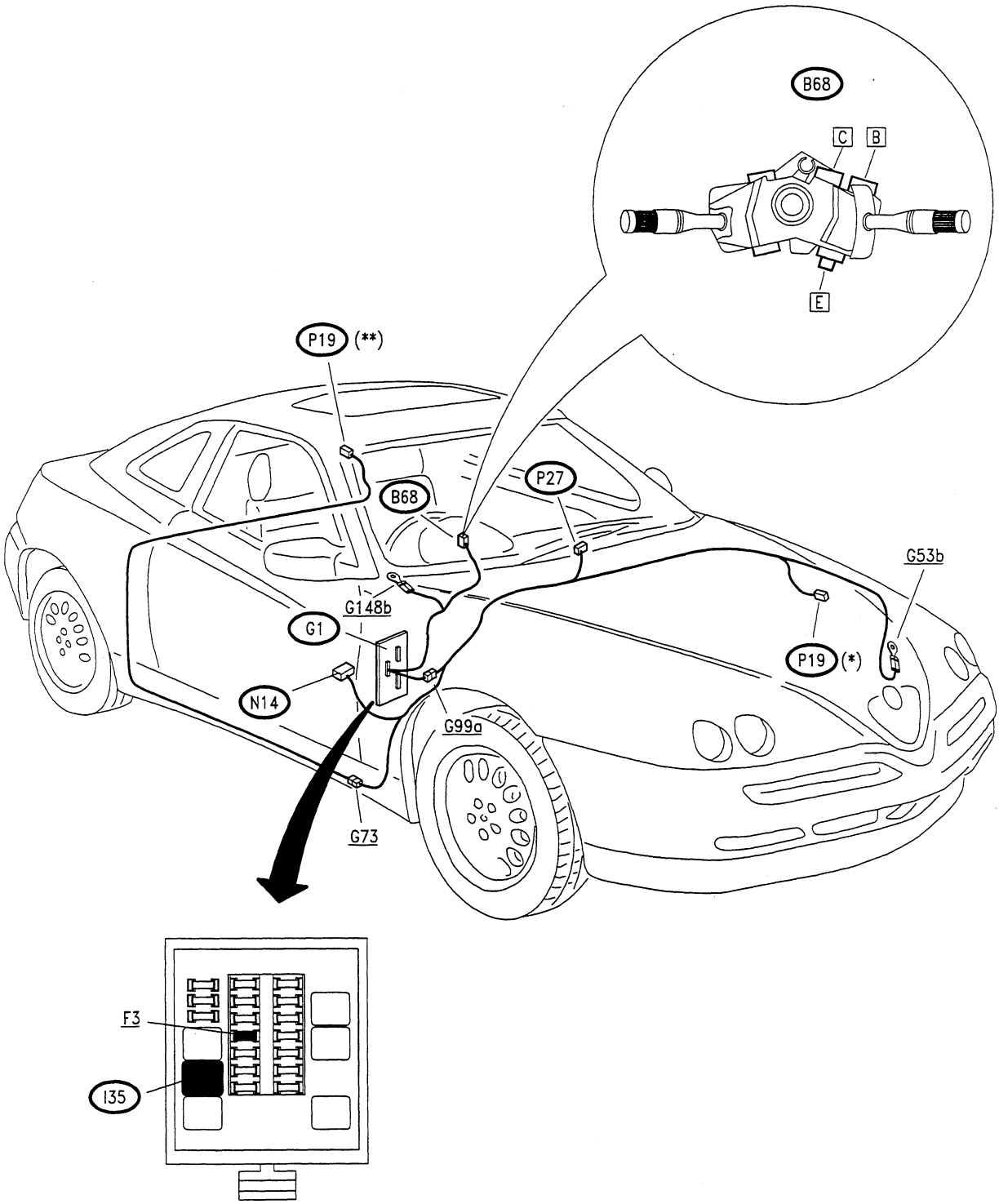


(•) Brown base

WINDSCREEN WIPER/WASHER (from '97 version)

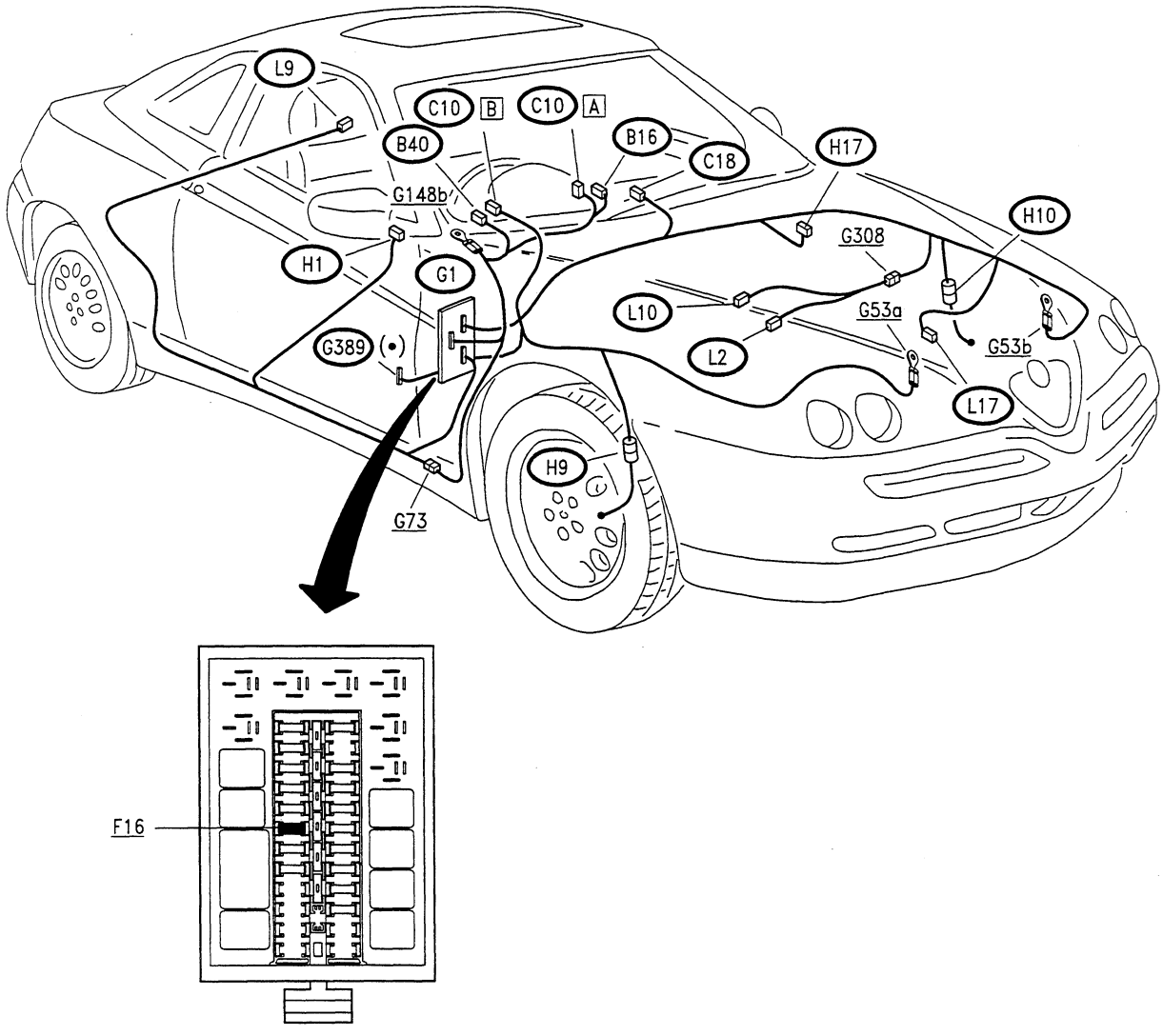


WINDSCREEN WIPER/WASHER (from '98 version)



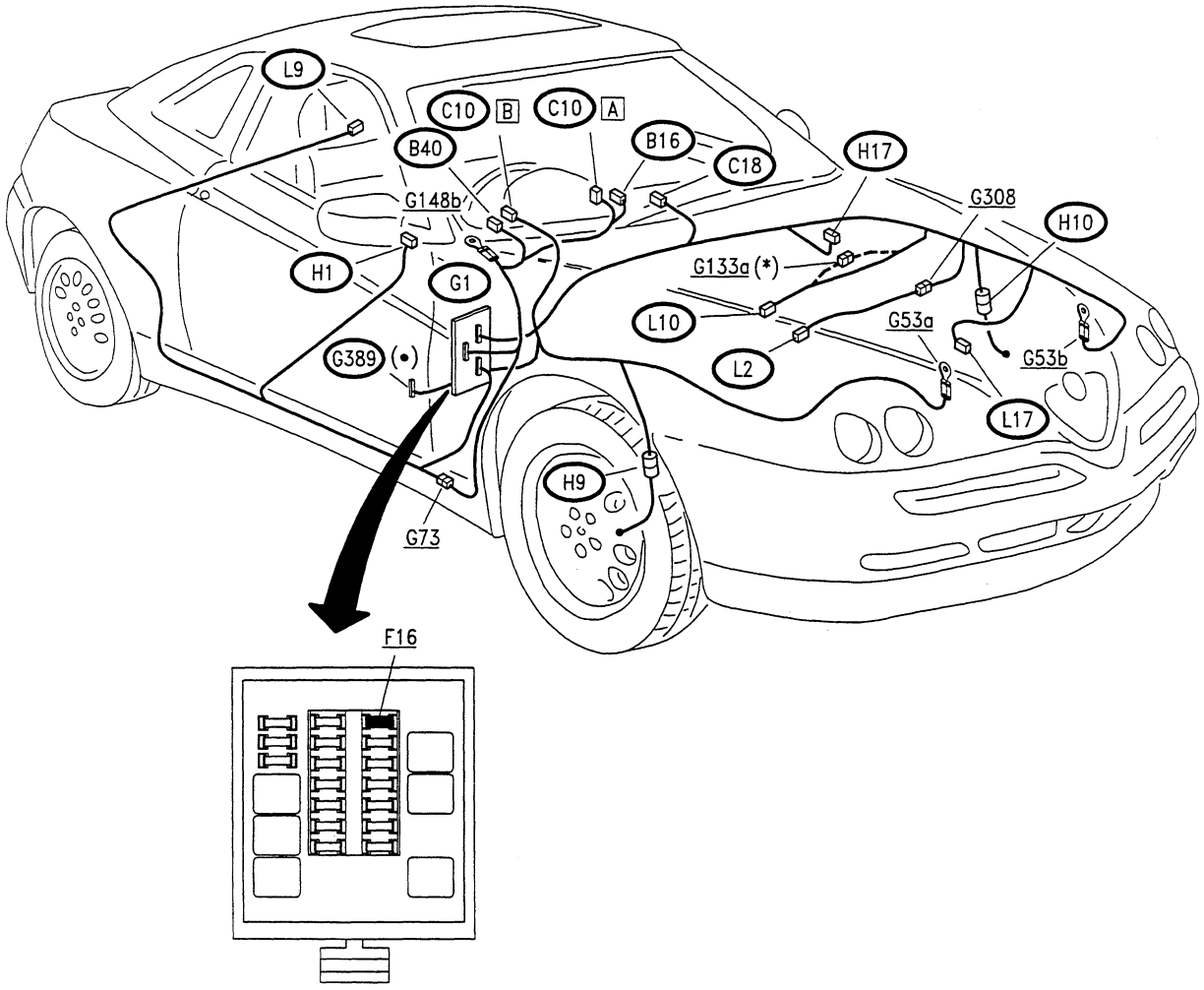
(*) T.SPARK
(**) 3.0 V6 24V

INDICATORS AND WARNING LIGHTS (up to '96 version)



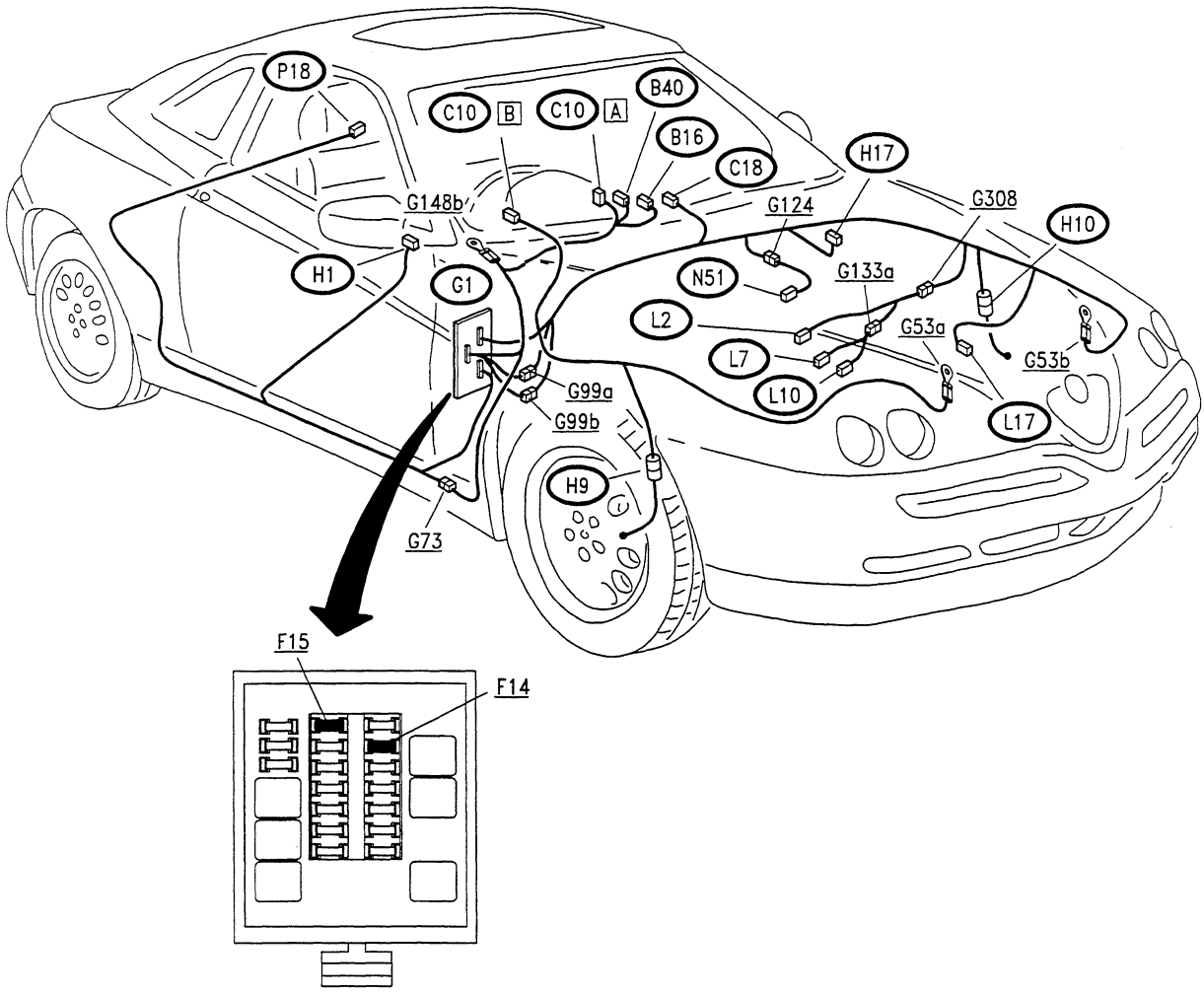
(•) Red fuseholder

INDICATORS AND WARNING LIGHTS (from '97 version)

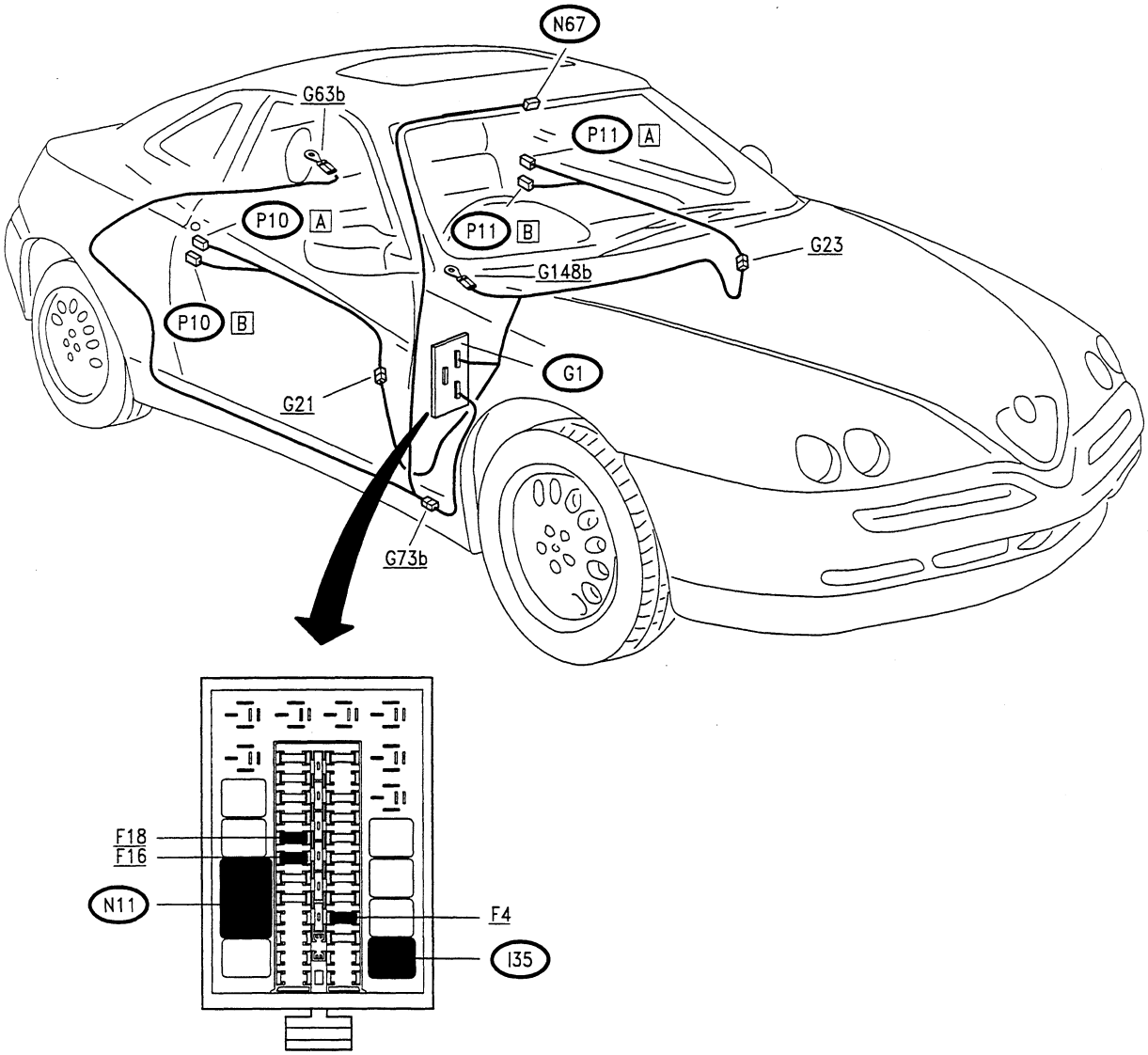


(•) Red fuseholder
(*) for 3.0V6 24v only

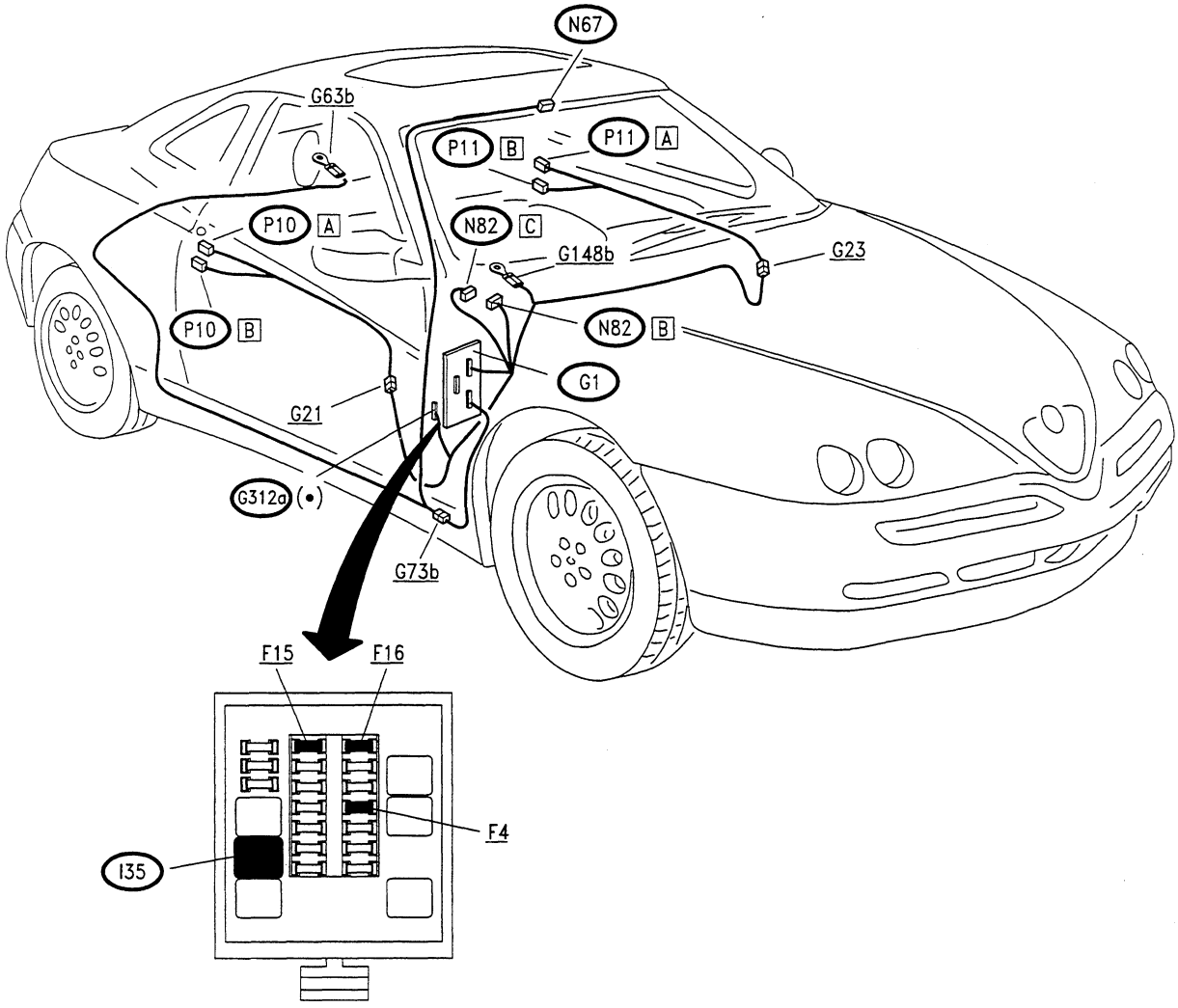
INDICATORS AND WARNING LIGHTS (from '98 version)



DOOR LOCKING SYSTEM (up to '96 version)

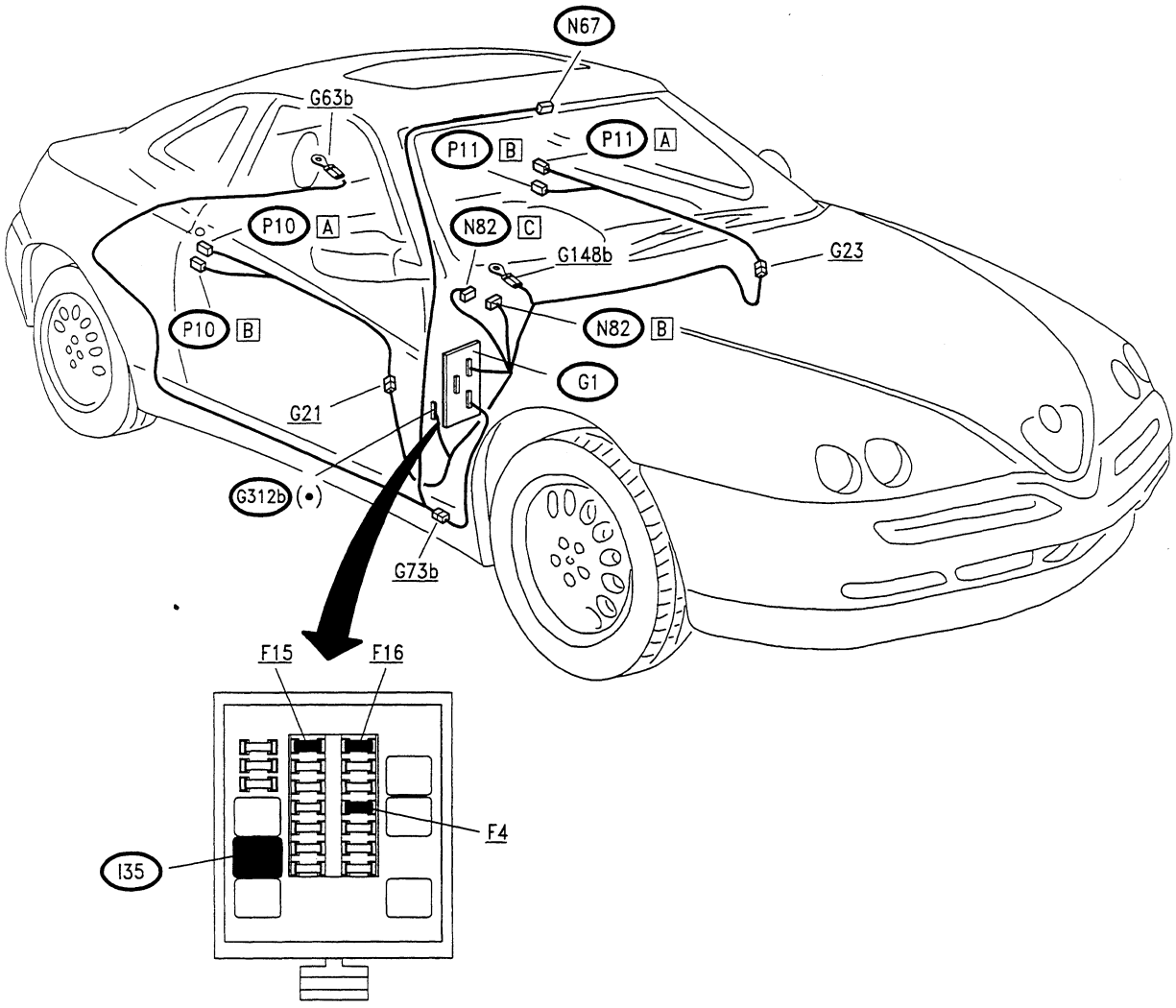


DOOR LOCKING SYSTEM (from '97 version)



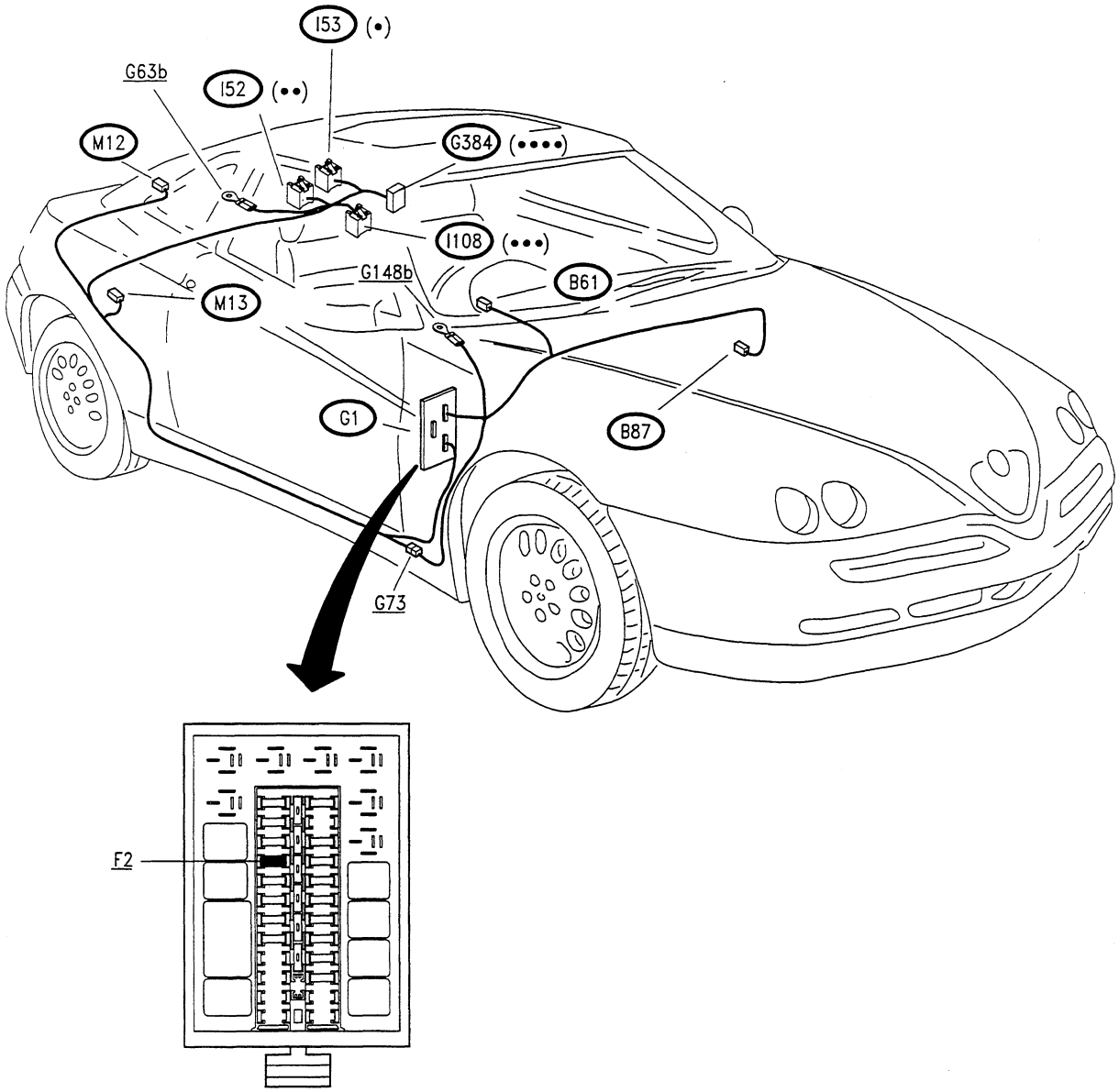
(•) White fuseholder

DOOR LOCKING SYSTEM (from '98 version)



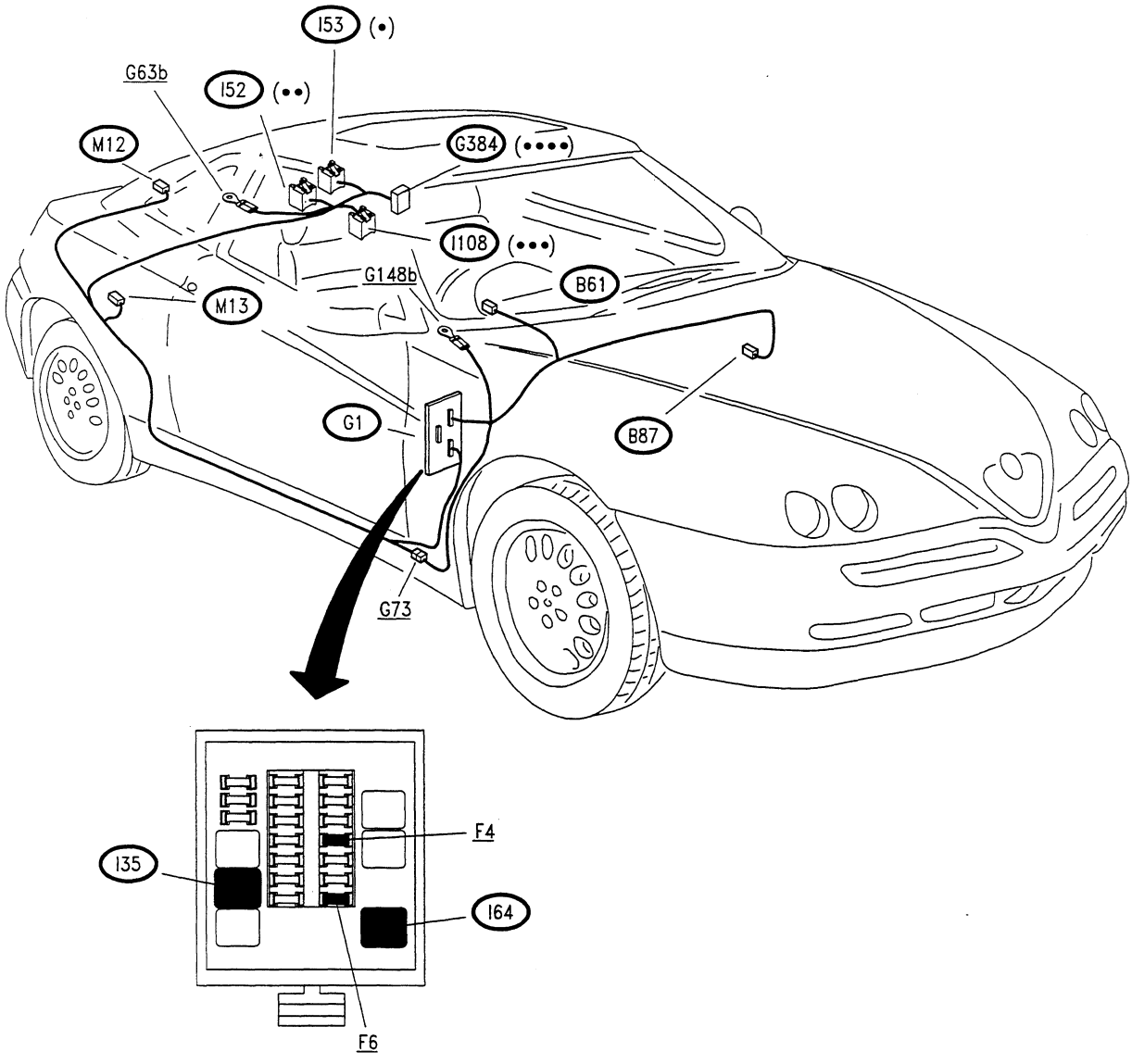
(•) Yellow fuseholder

LUGGAGE COMPARTMENT AND FUEL FLAP OPENING CONTROL (up to '96 version)



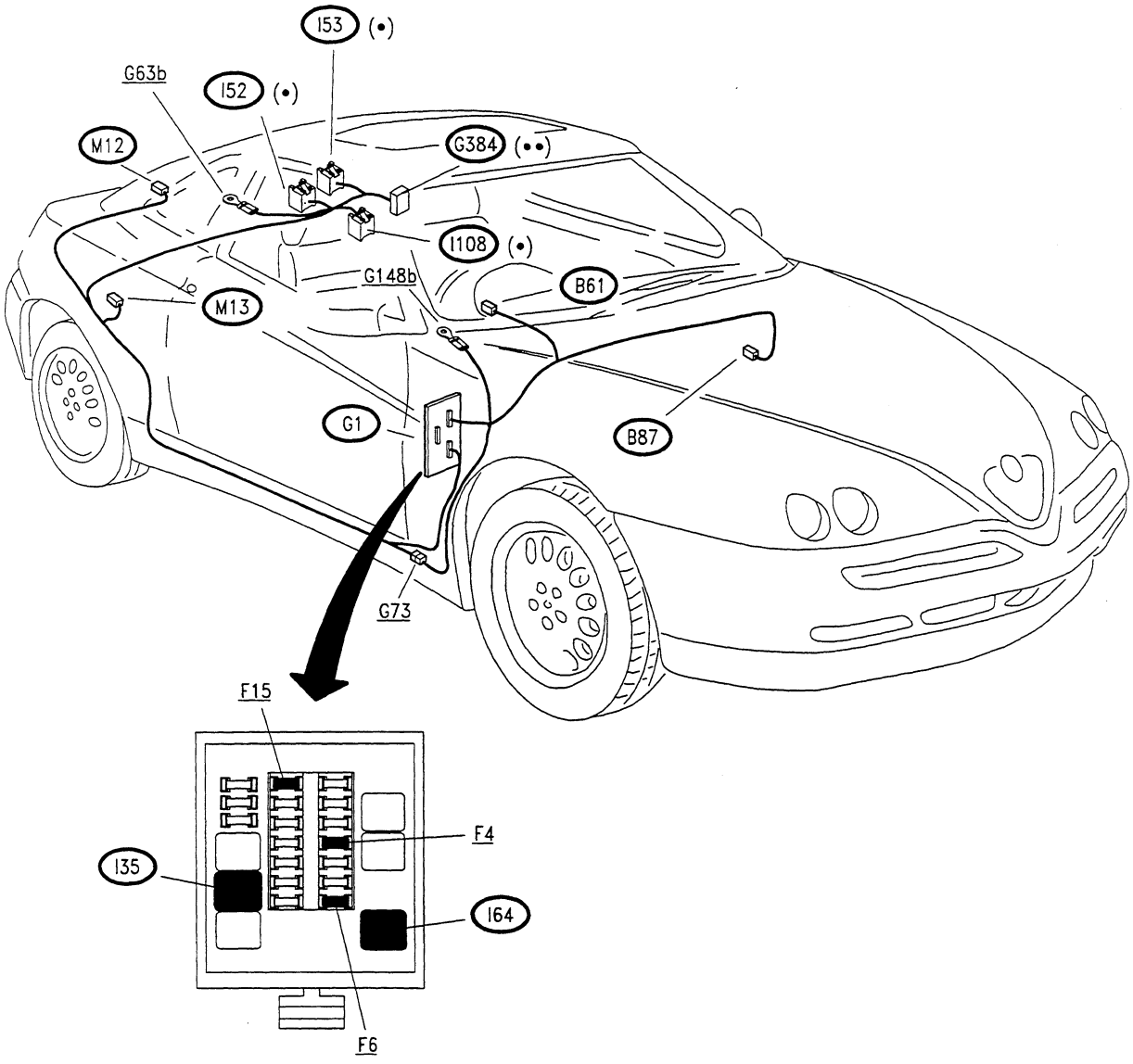
(•) White base
(••) Green base
(•••) Blue base
(••••) Black fuseholder

LUGGAGE COMPARTMENT AND FUEL FLAP OPENING CONTROL (from '97 version)



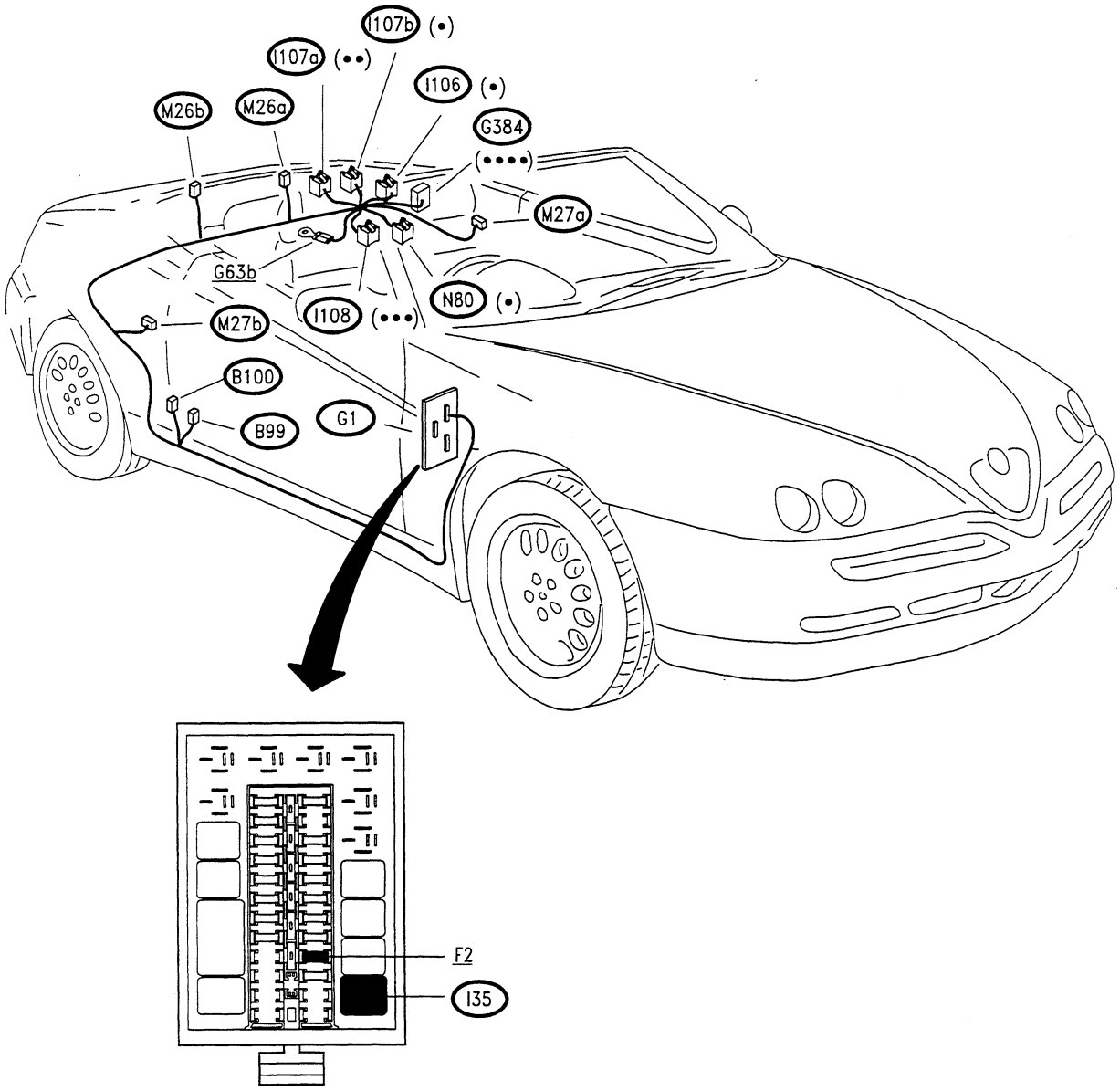
(•) White base
(••) Green base
(•••) Blue base
(••••) Black fuseholder

LUGGAGE COMPARTMENT AND FUEL FLAP OPENING CONTROL (from '98 version)



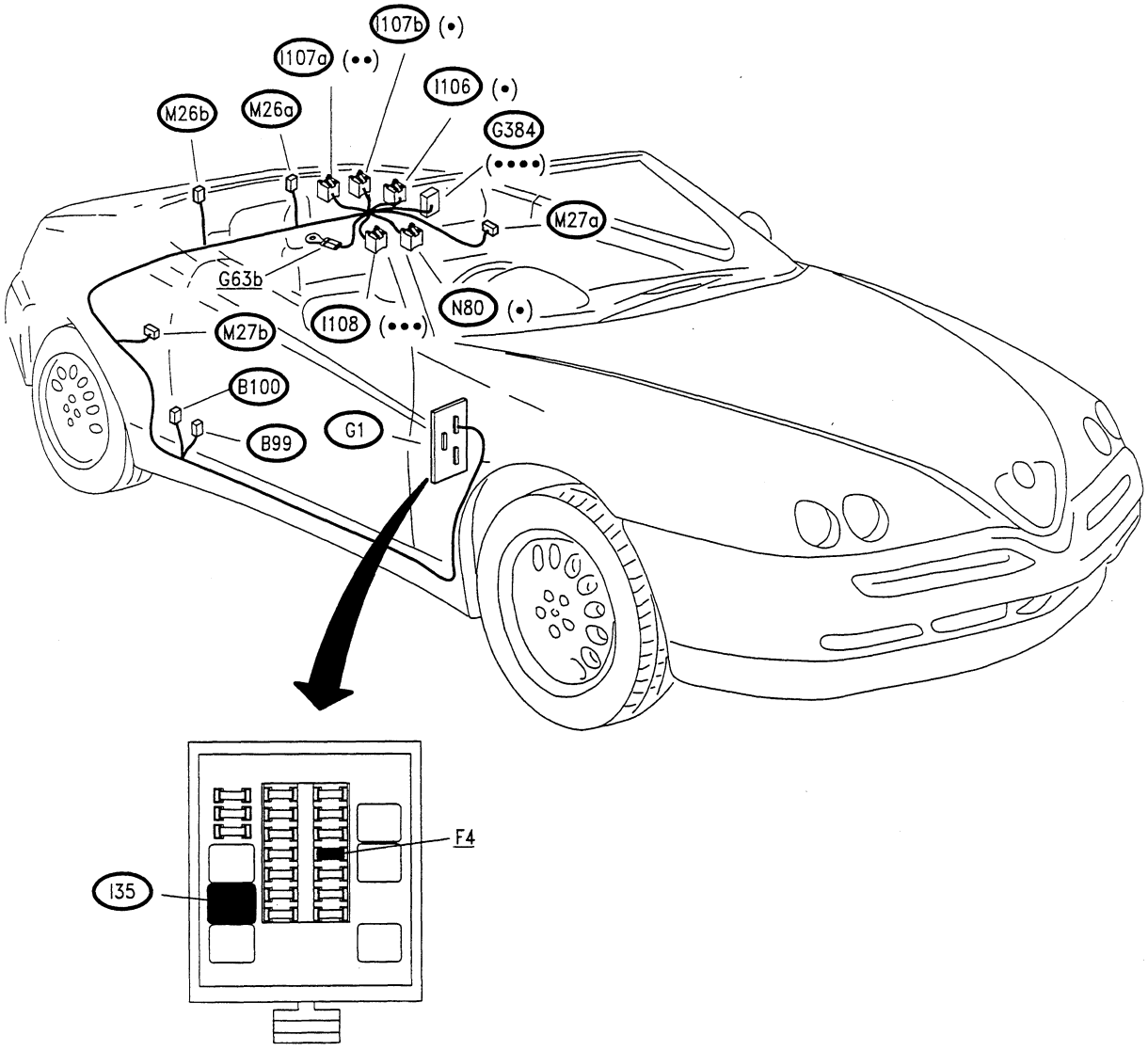
(•) Black base
(••) Green fuseholder

HOOD (up to '96 version)



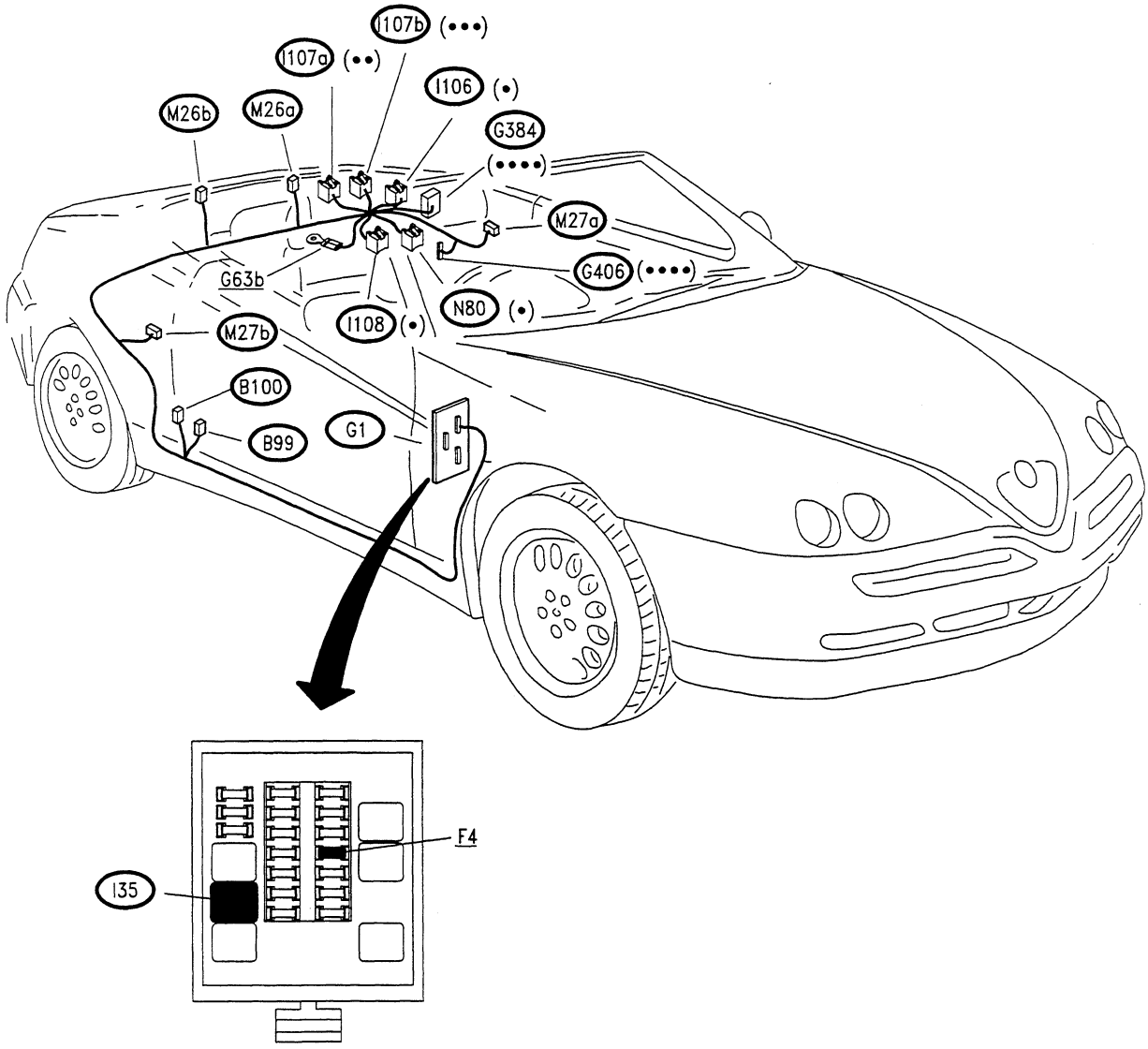
(•) Black base
(••) Red base
(•••) Blue base
(••••) Black fuseholder

HOOD (from '97 version)



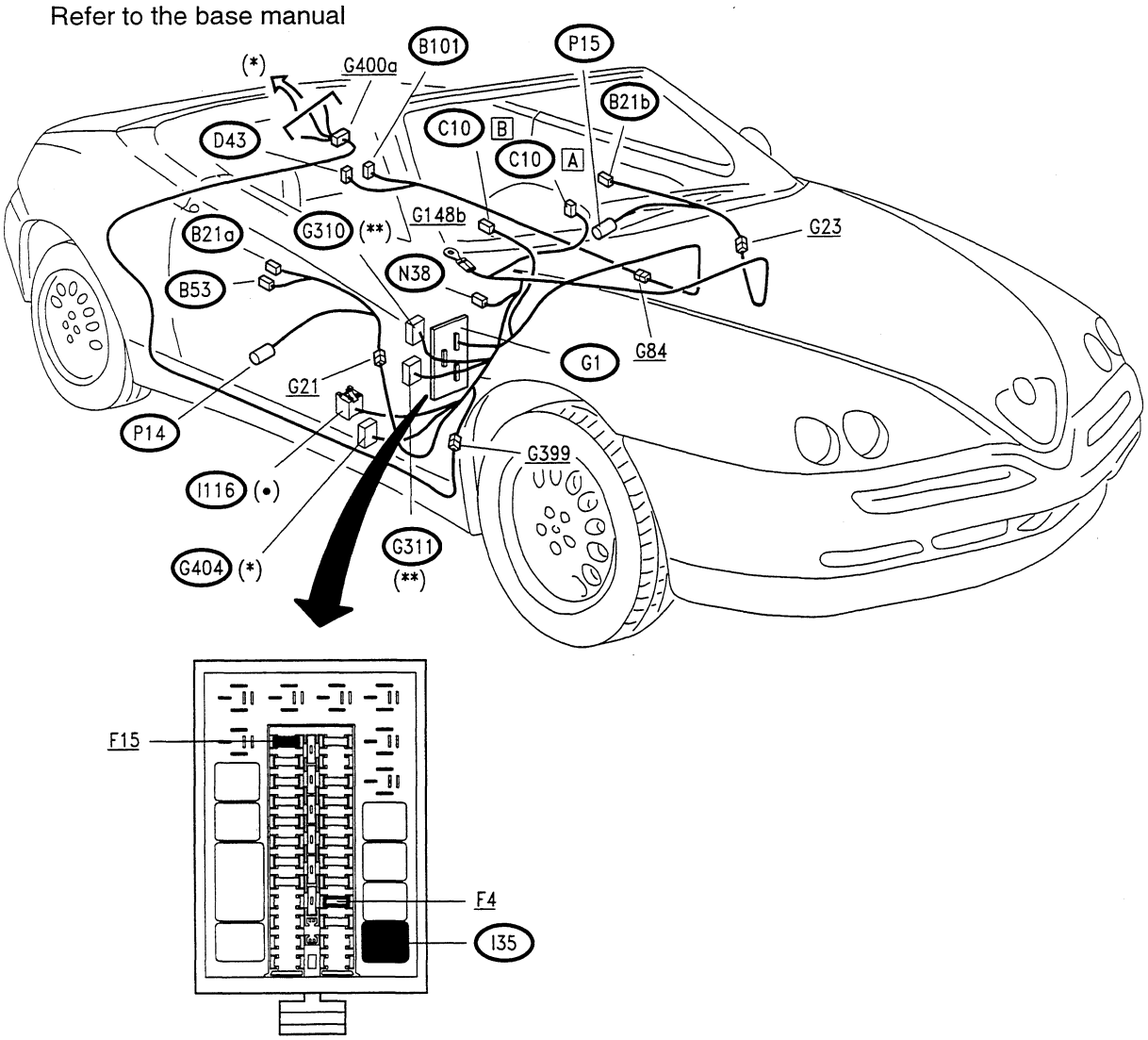
(•) Black base
(••) Red base
(•••) Blue base
(••••) Black fuseholder

HOOD (from '98 version)



(•) Black base
(••) Red base
(•••) Brown base
(••••) Green fuseholder

AUTOMATICALLY-OPERATED HOOD (up to '96 version)

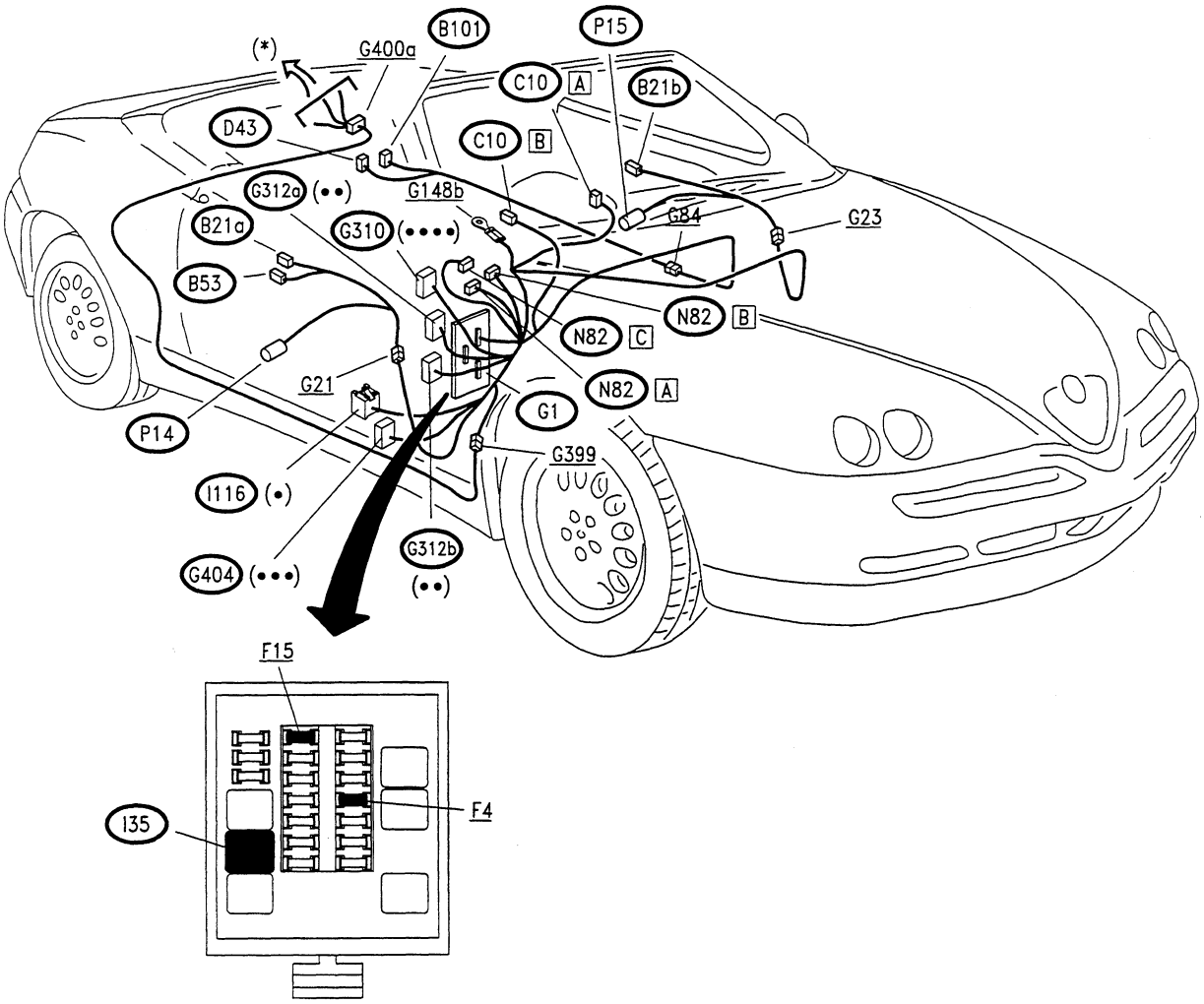


(•) Green base

(*) Geen fuseholder
(**) White fuseholder

AUTOMATICALLY-OPERATED HOOD (from '97 version)

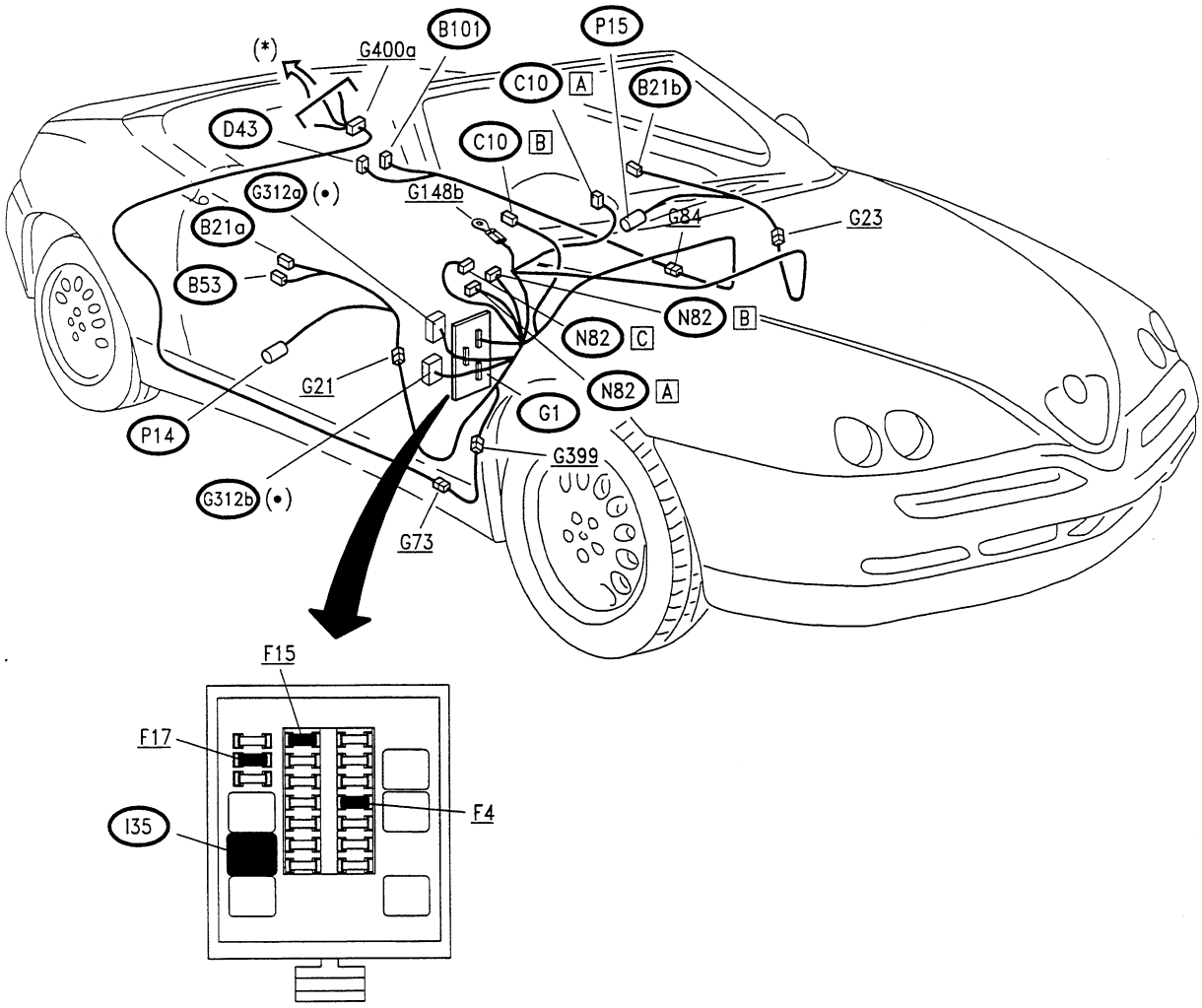
Refer to the base manual



(•) Red base
(••) White fuseholder
(•••) Green fuseholder
(••••) Brown fuseholder

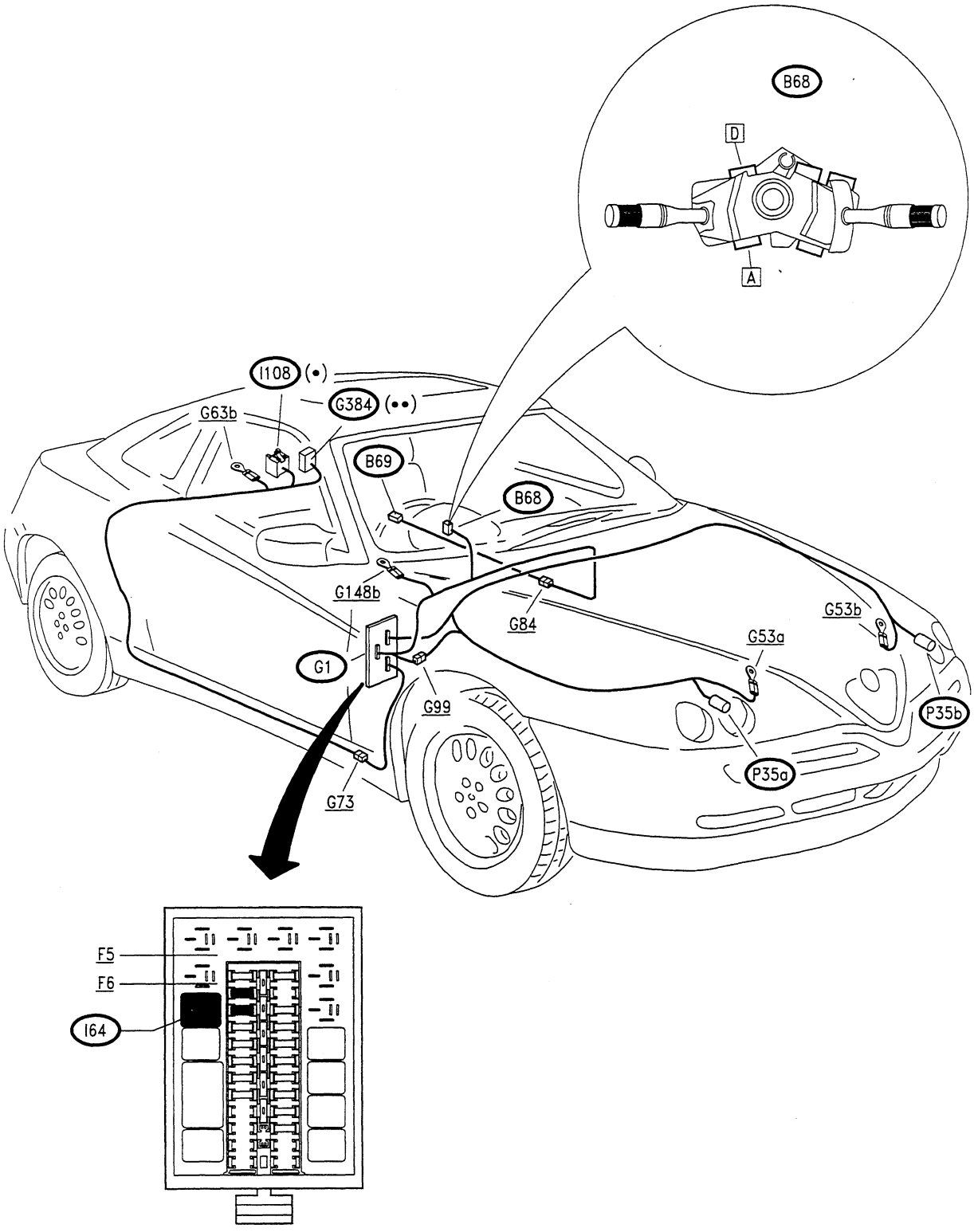
AUTOMATICALLY-OPERATED HOOD (from '98 version)

Refer to the base manual



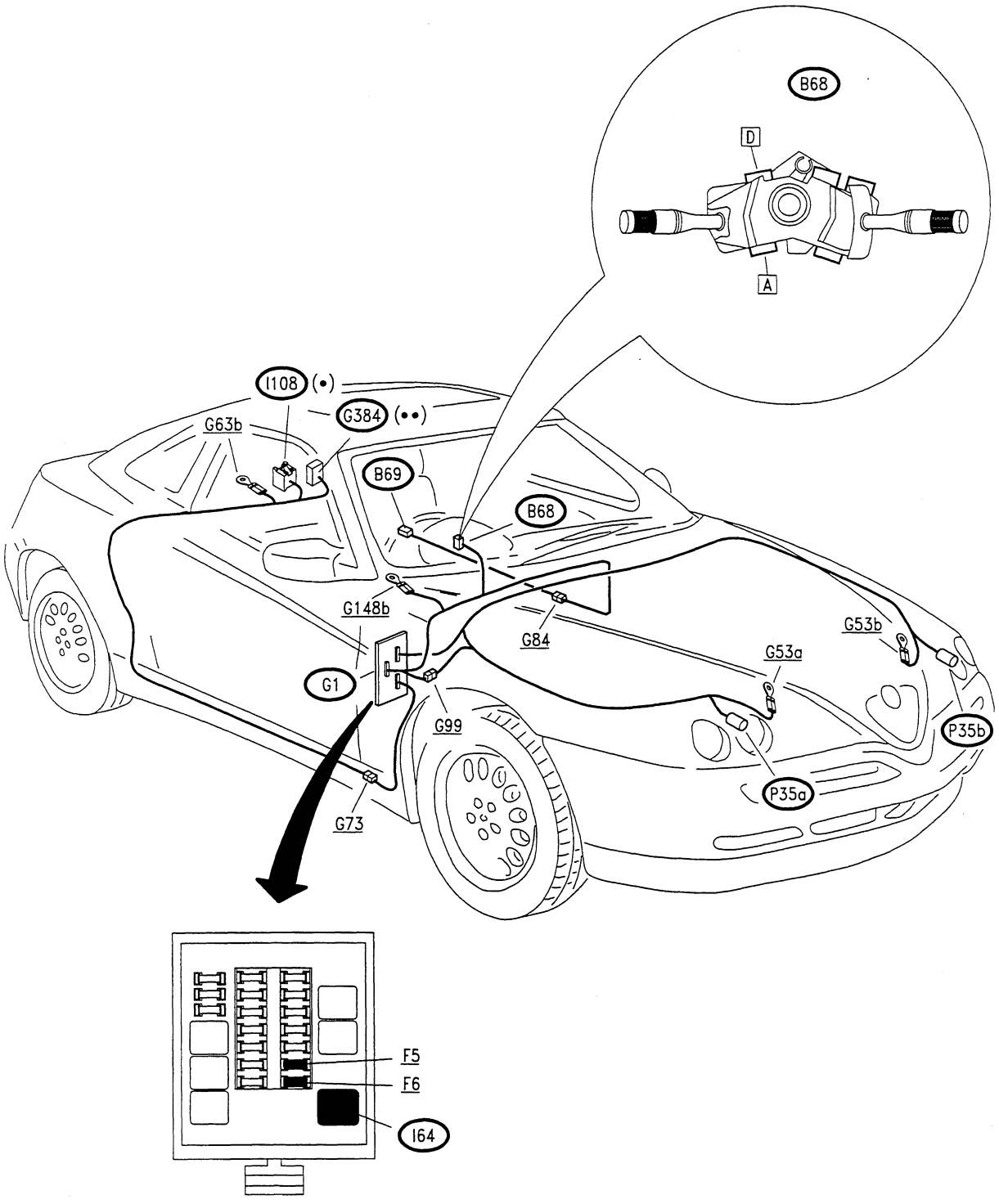
(•) Yellow fuseholder

HEADLAMP AIMING DEVICE (up to '96 version)



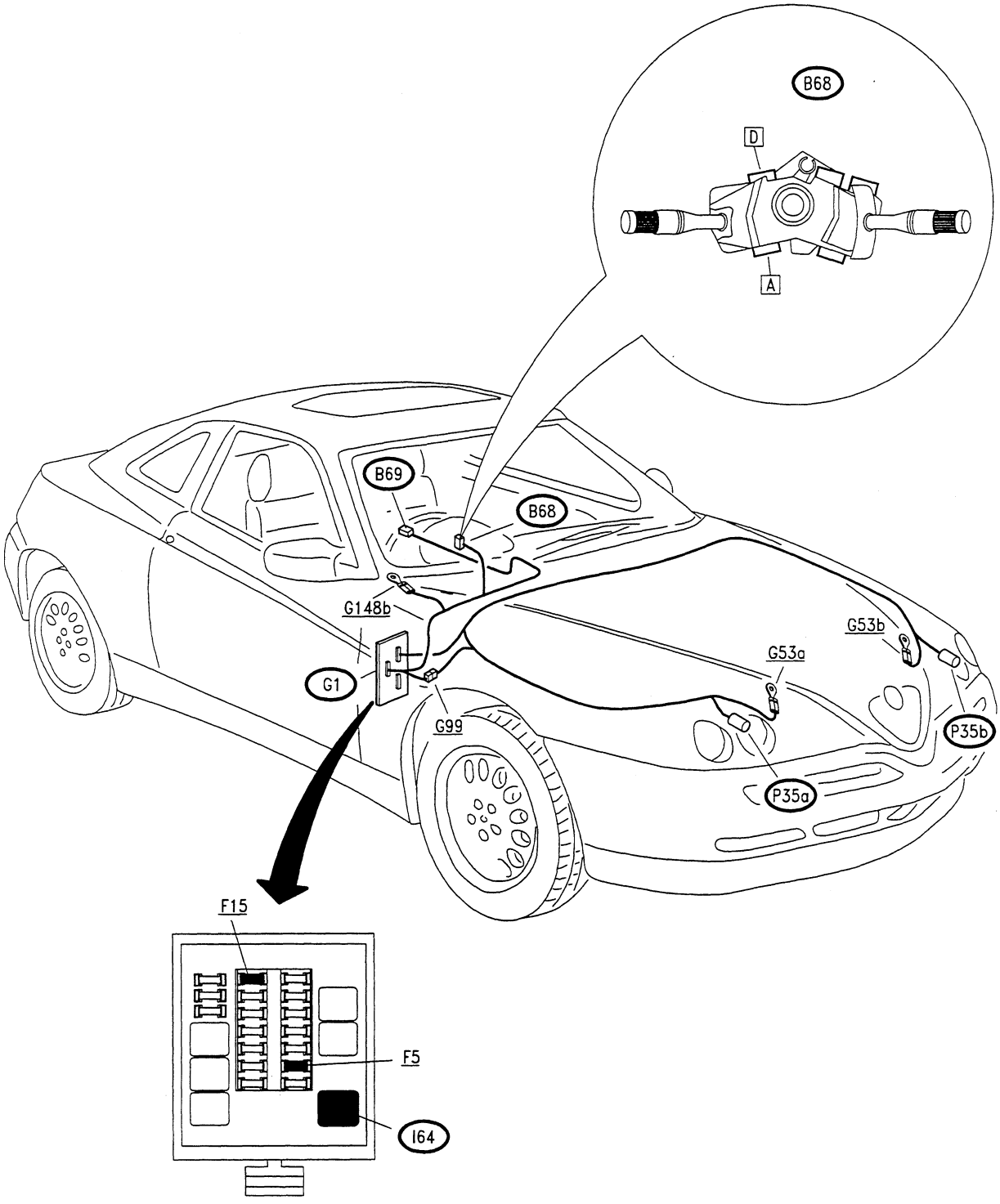
(•) Blue base
(••) Black fuseholder

HEADLAMP AIMING DEVICE (from '97 version)

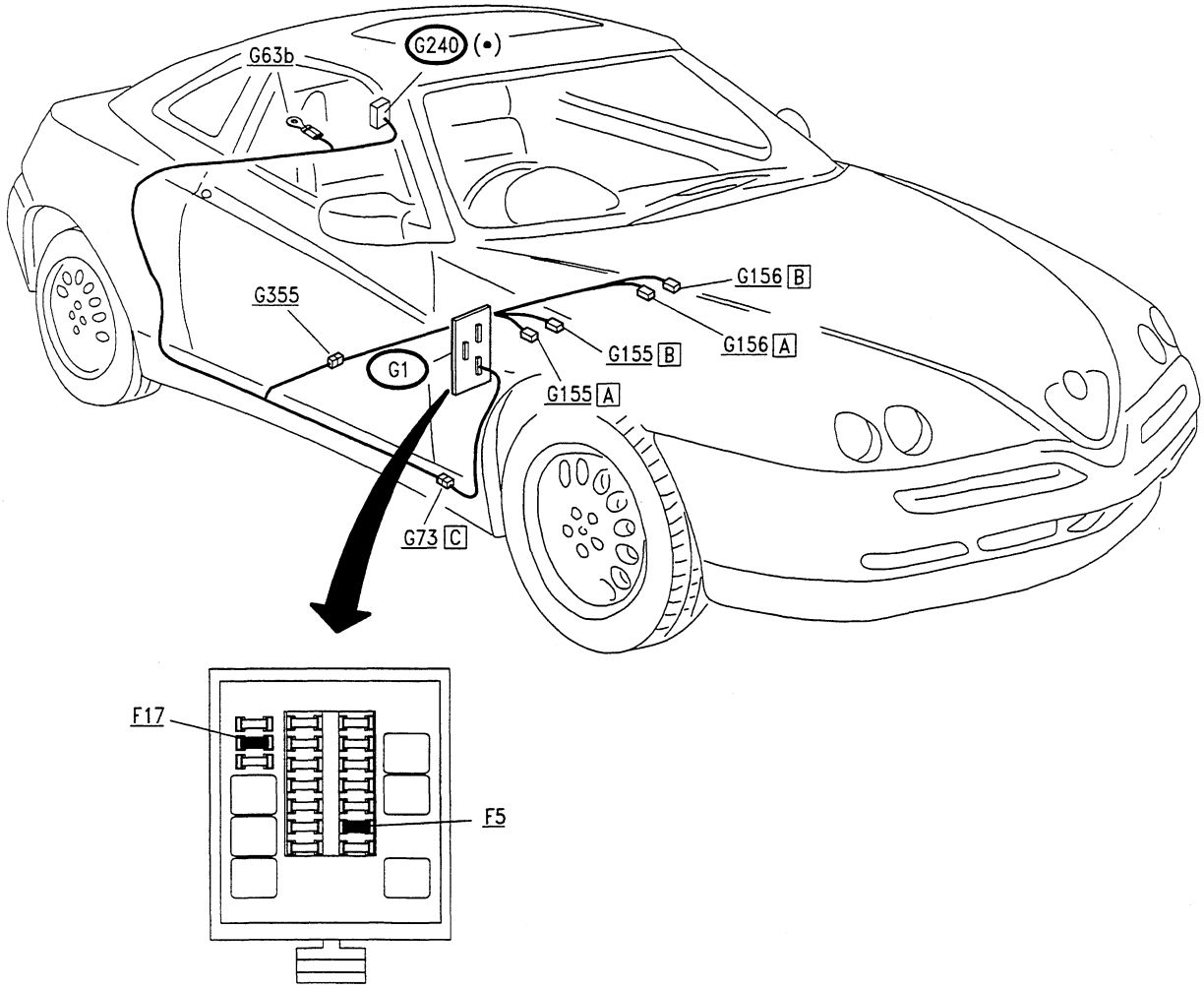


(•) Blue base
(••) Black fuseholder

HEADLAMP AIMING DEVICE (from '98 version)

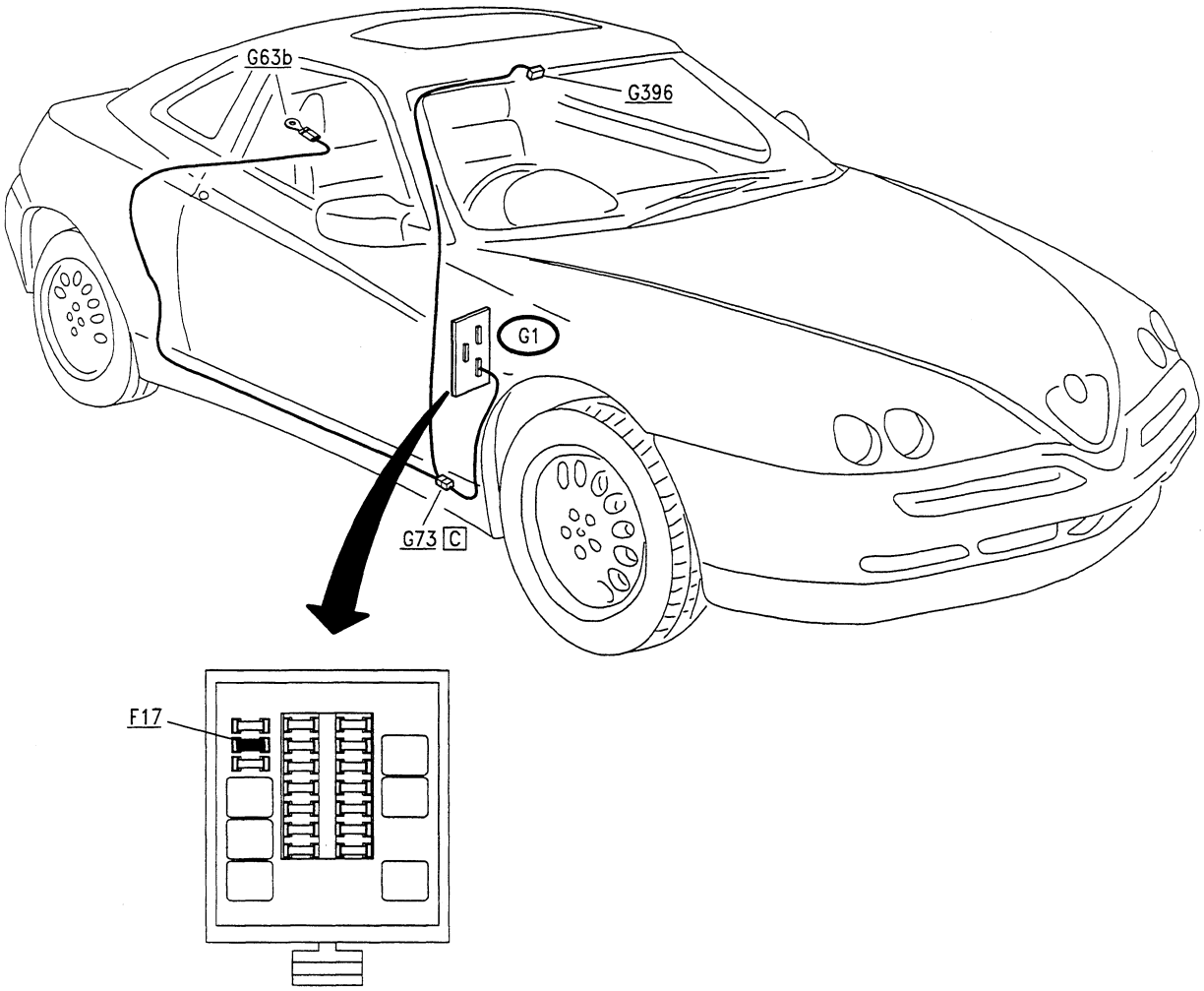


ADJUSTABLE AND HEATED SEATS

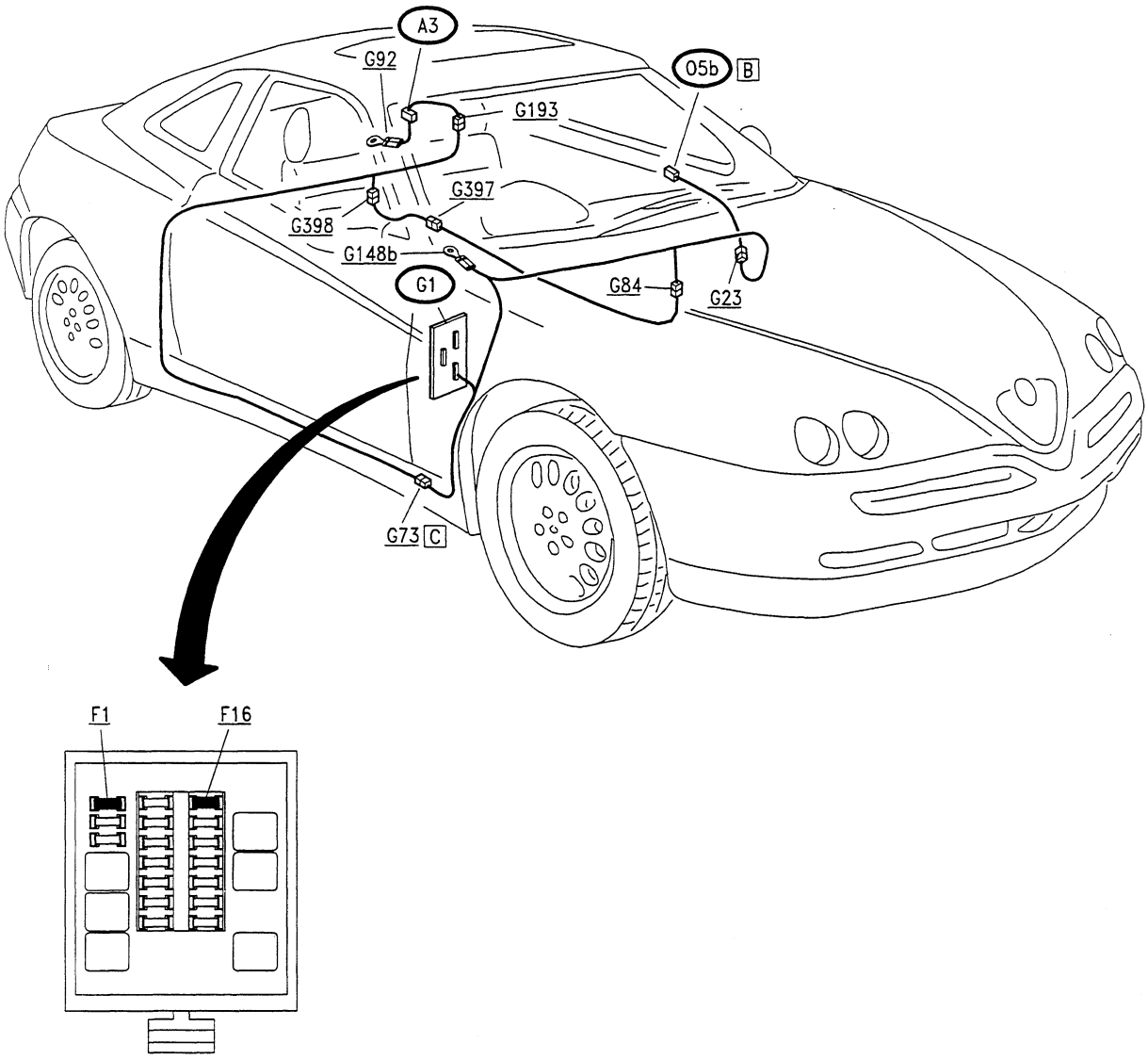


(*) Black fuseholder

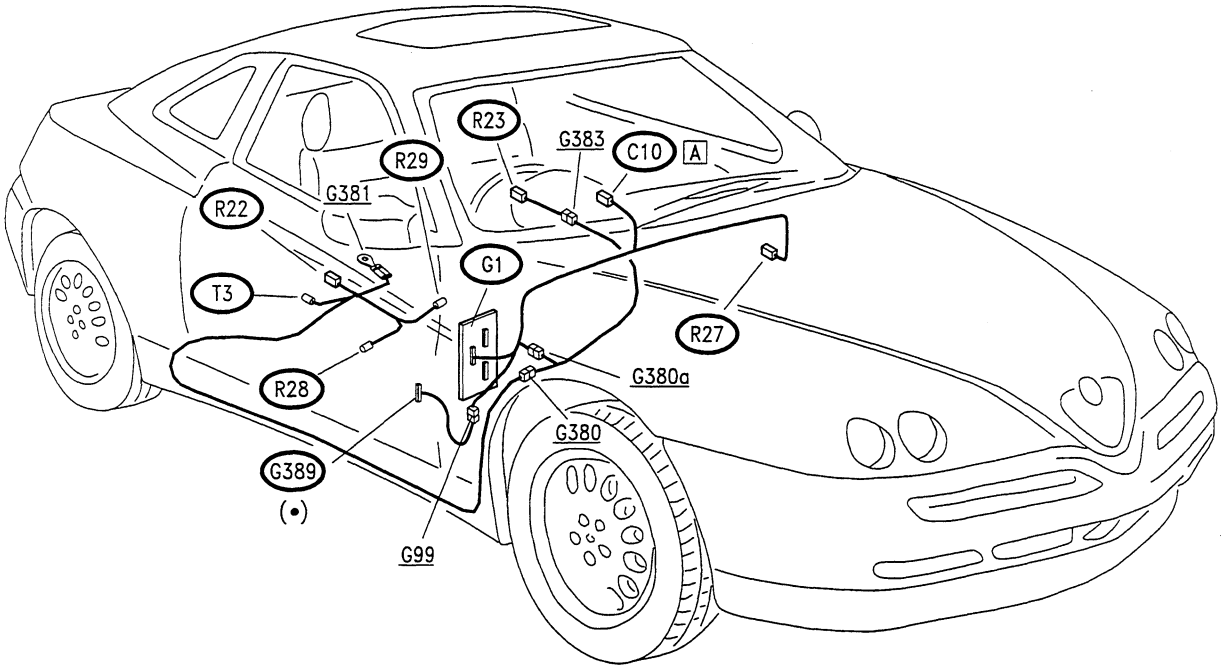
TELEPASS SET-UP



RADIO TELEPHONE SET-UP

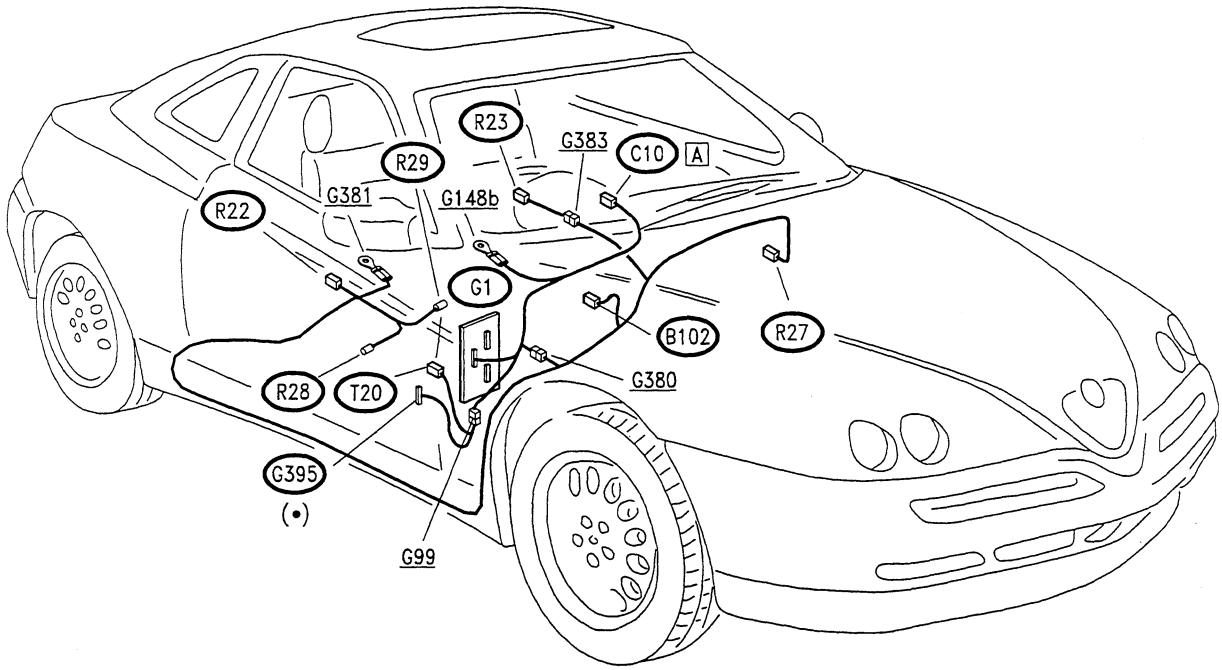


AIR BAG AND PRETENSIONERS (up to '97 version)



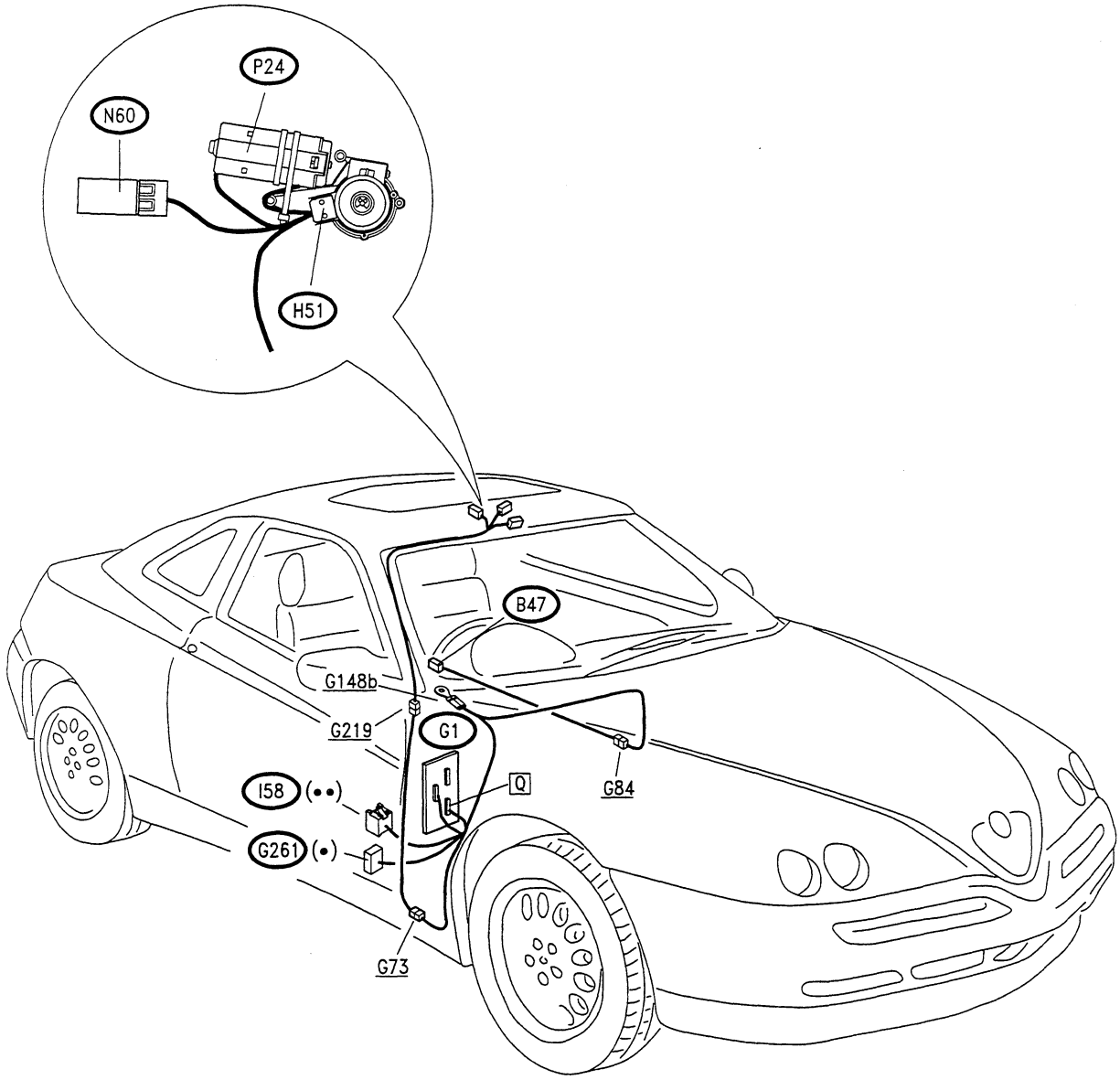
(•) Red fuseholder

AIR BAG AND PRETENSIONERS (up to '98 version)



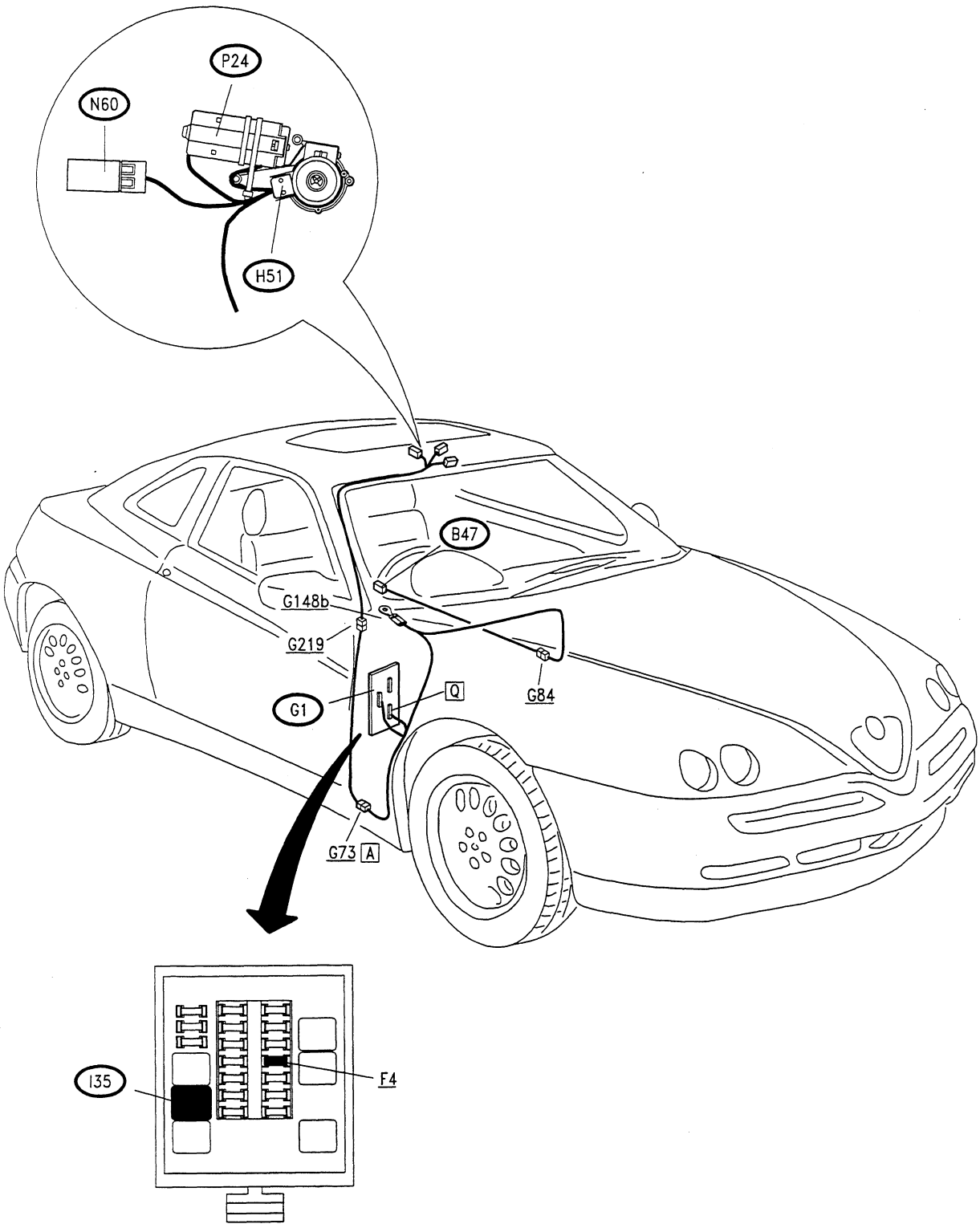
(•) Red fuseholder

SUNROOF (up to '97 version)

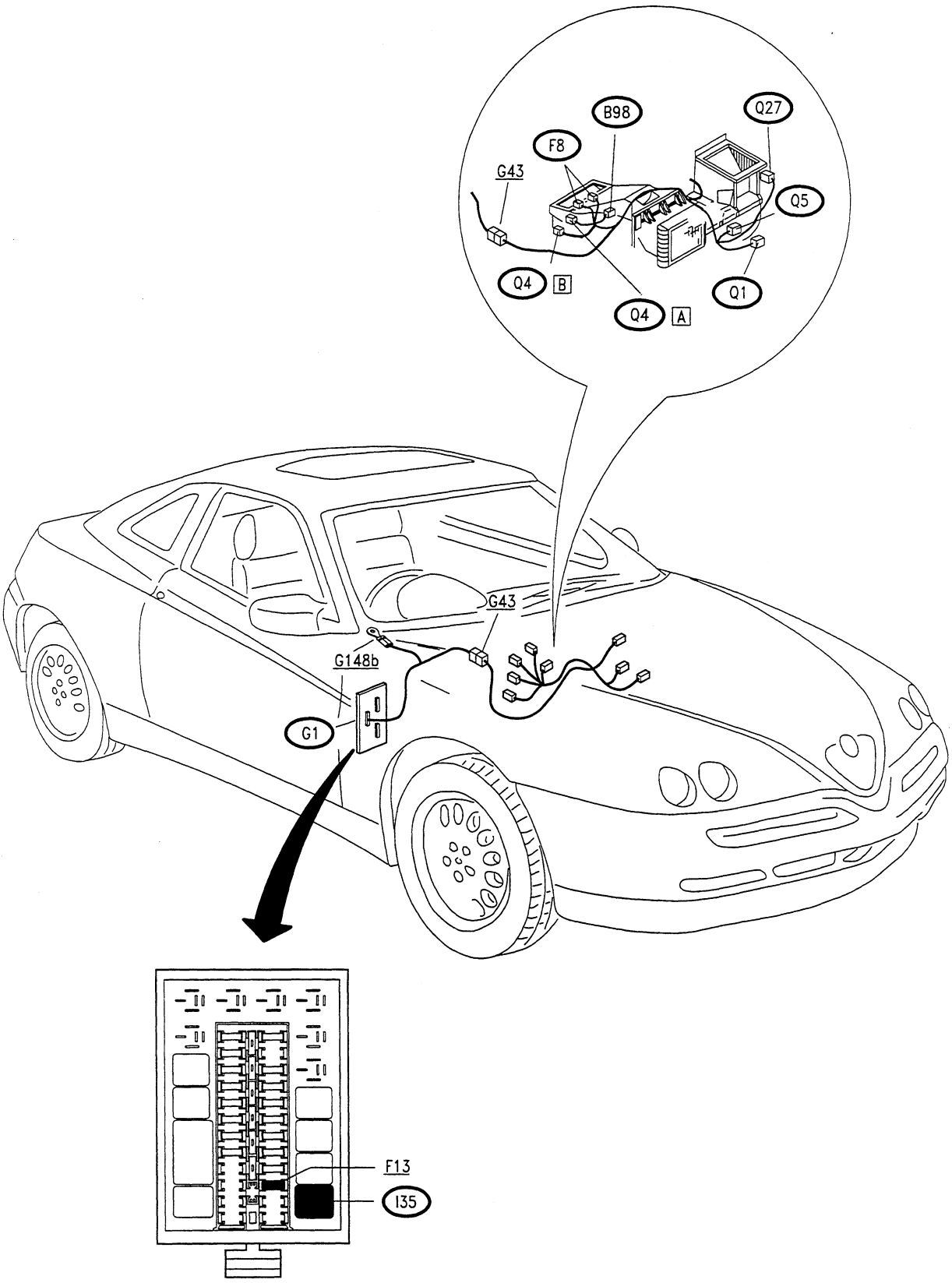


(•) Green fuseholder
(••) Red base

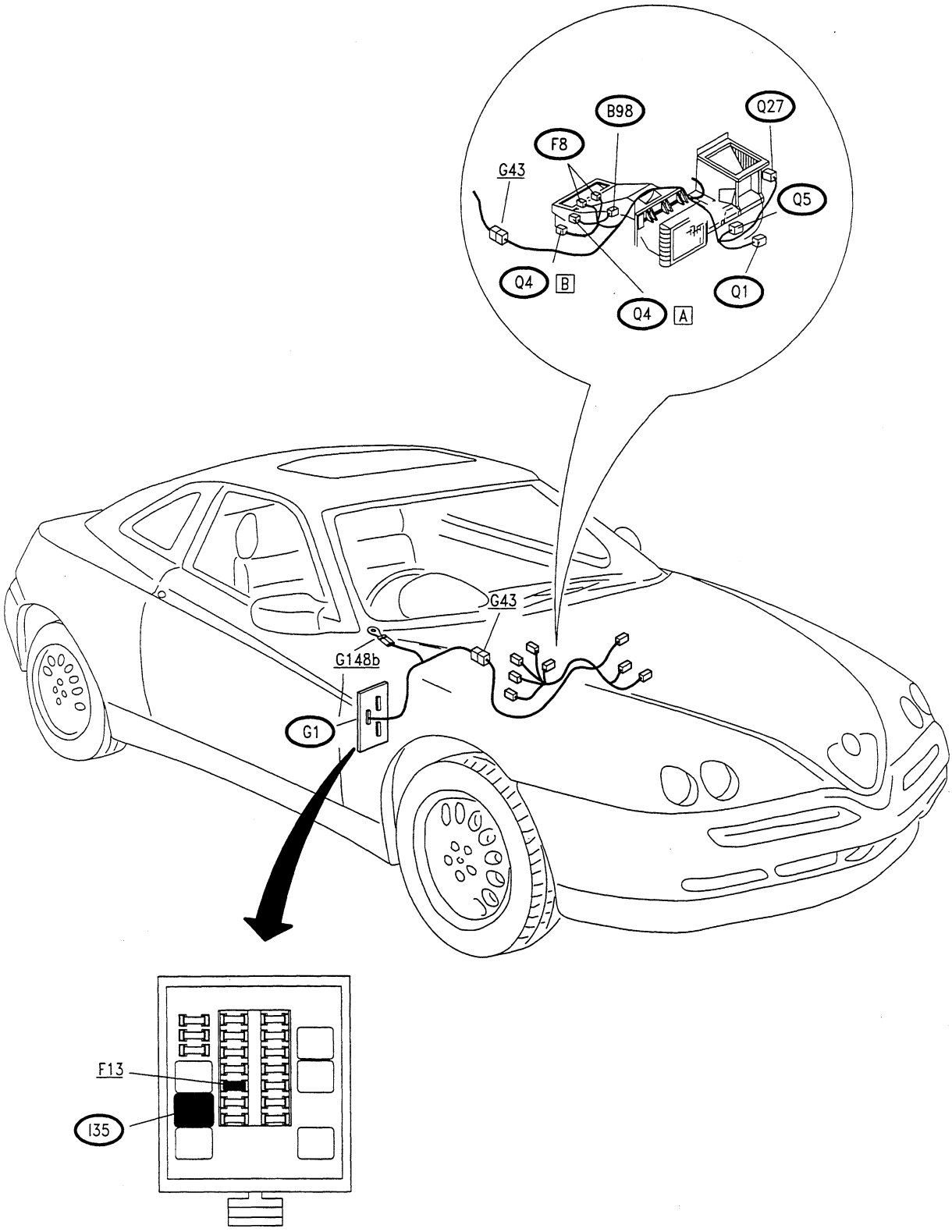
SUNROOF (up to '98 version)



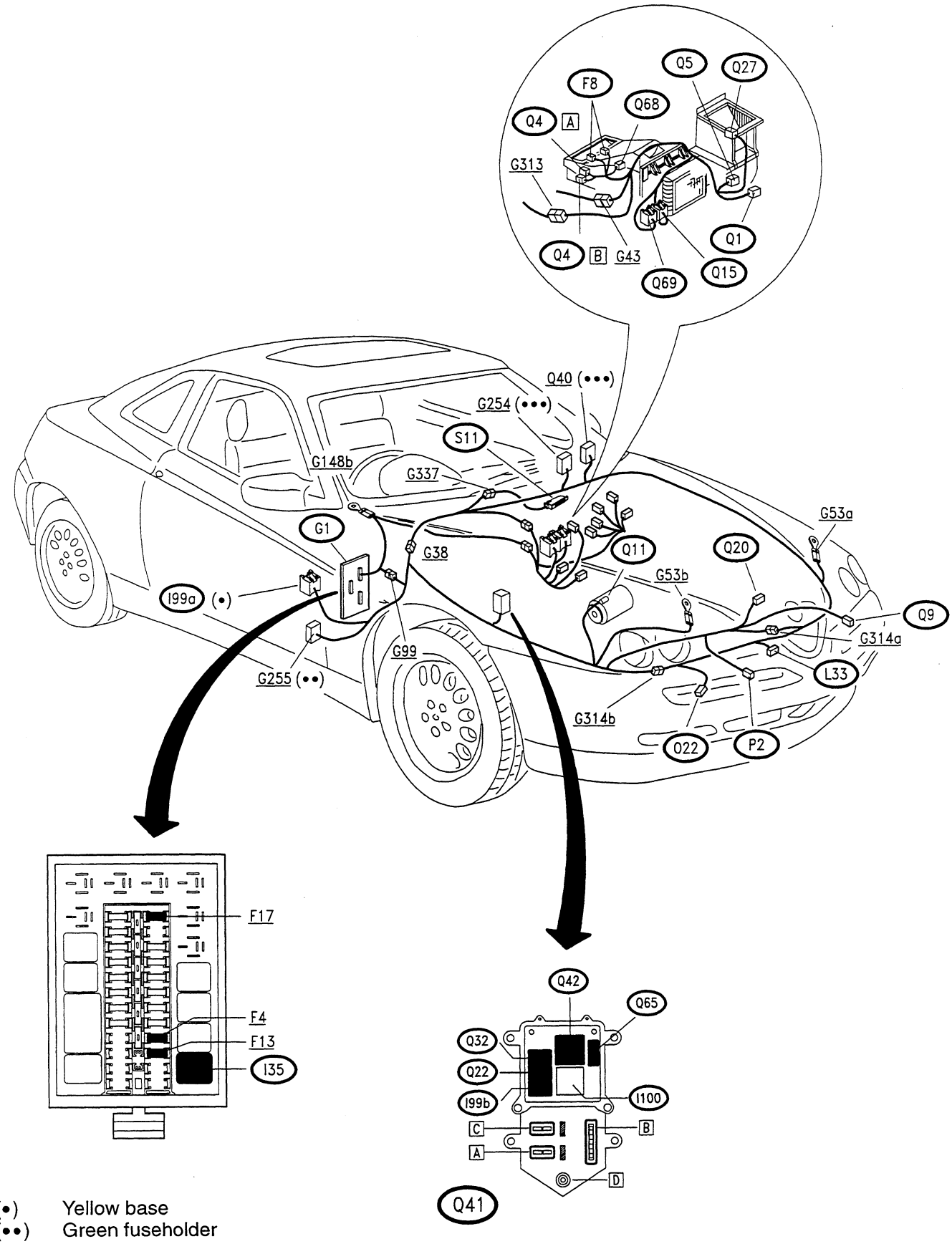
HEATER (up to '96 version)



HEATER (from '97 version)



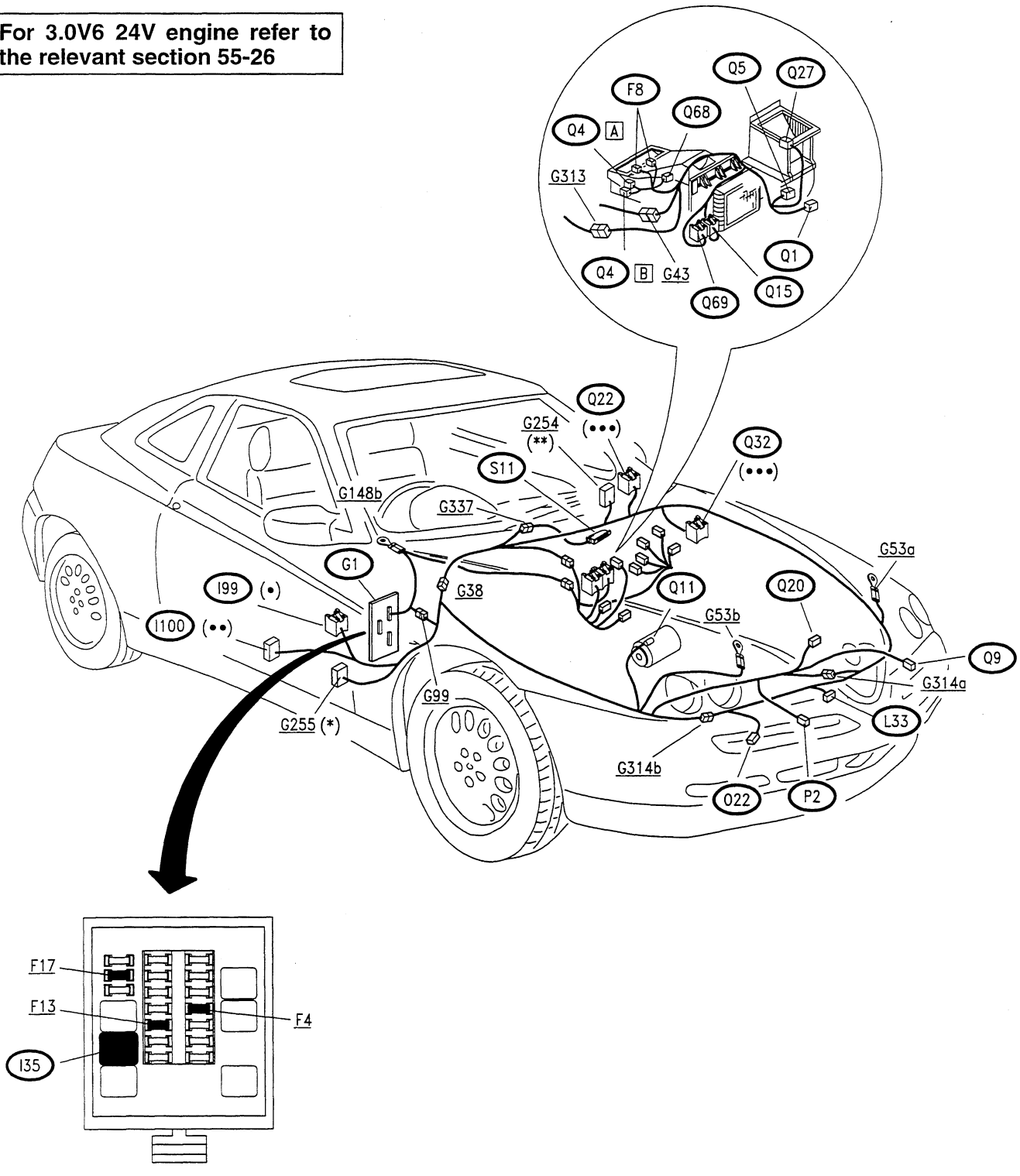
AIR CONDITIONER (up to '96 version)



(•) Yellow base
(••) Green fuseholder
(•••) Black fuseholder
(••••) Blue fuseholder

AIR CONDITIONER (T.SPARK from '97 version)

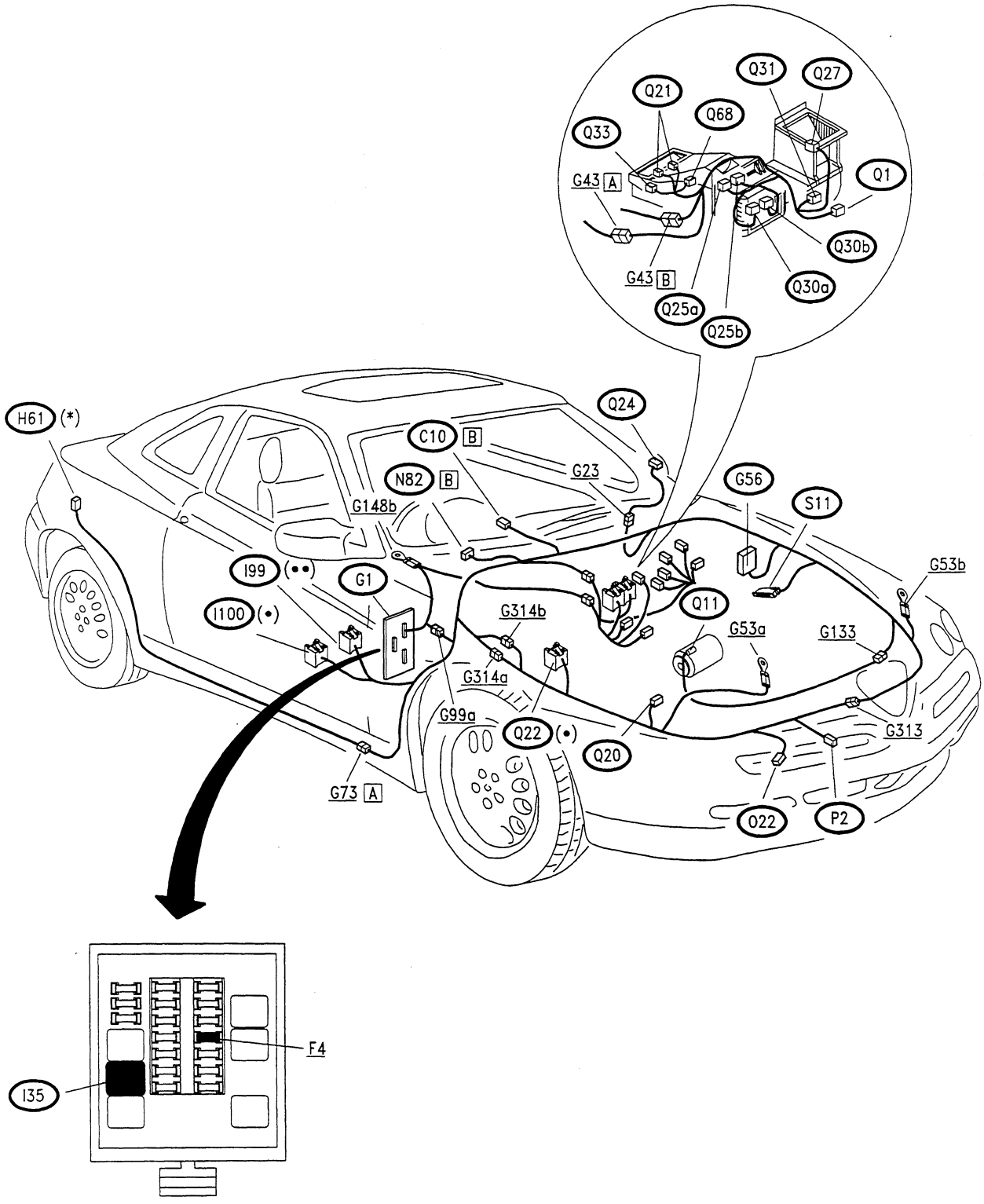
For 3.0V6 24V engine refer to the relevant section 55-26



(•) Yellow base
(••) Black base
(•••) Grey base

(*) Green fuseholder
(**) Black fuseholder

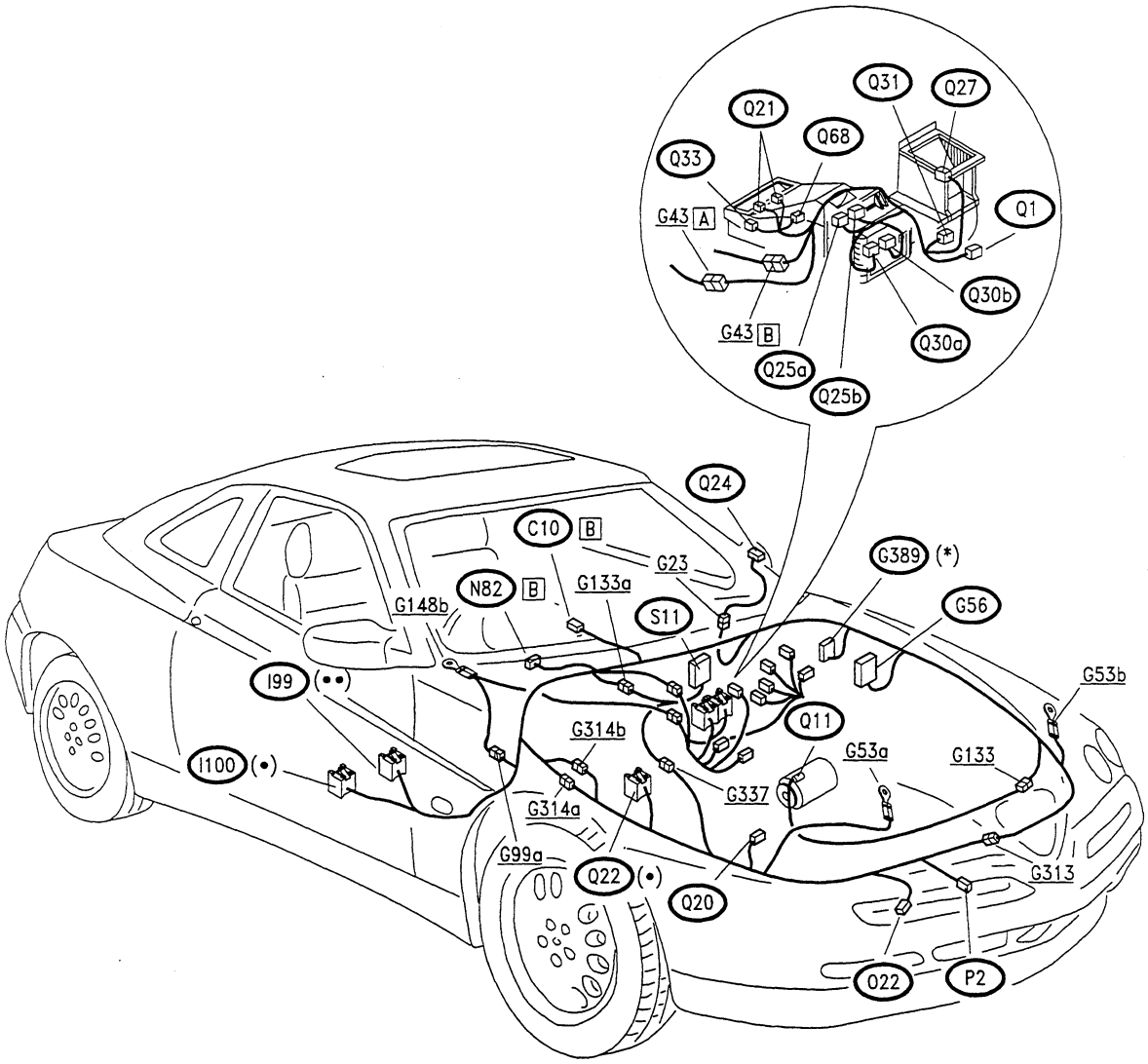
AIR CONDITIONER (T.SPARK from '98 version)



(•) Black base
(••) Yellow base

(*) SPIDER only

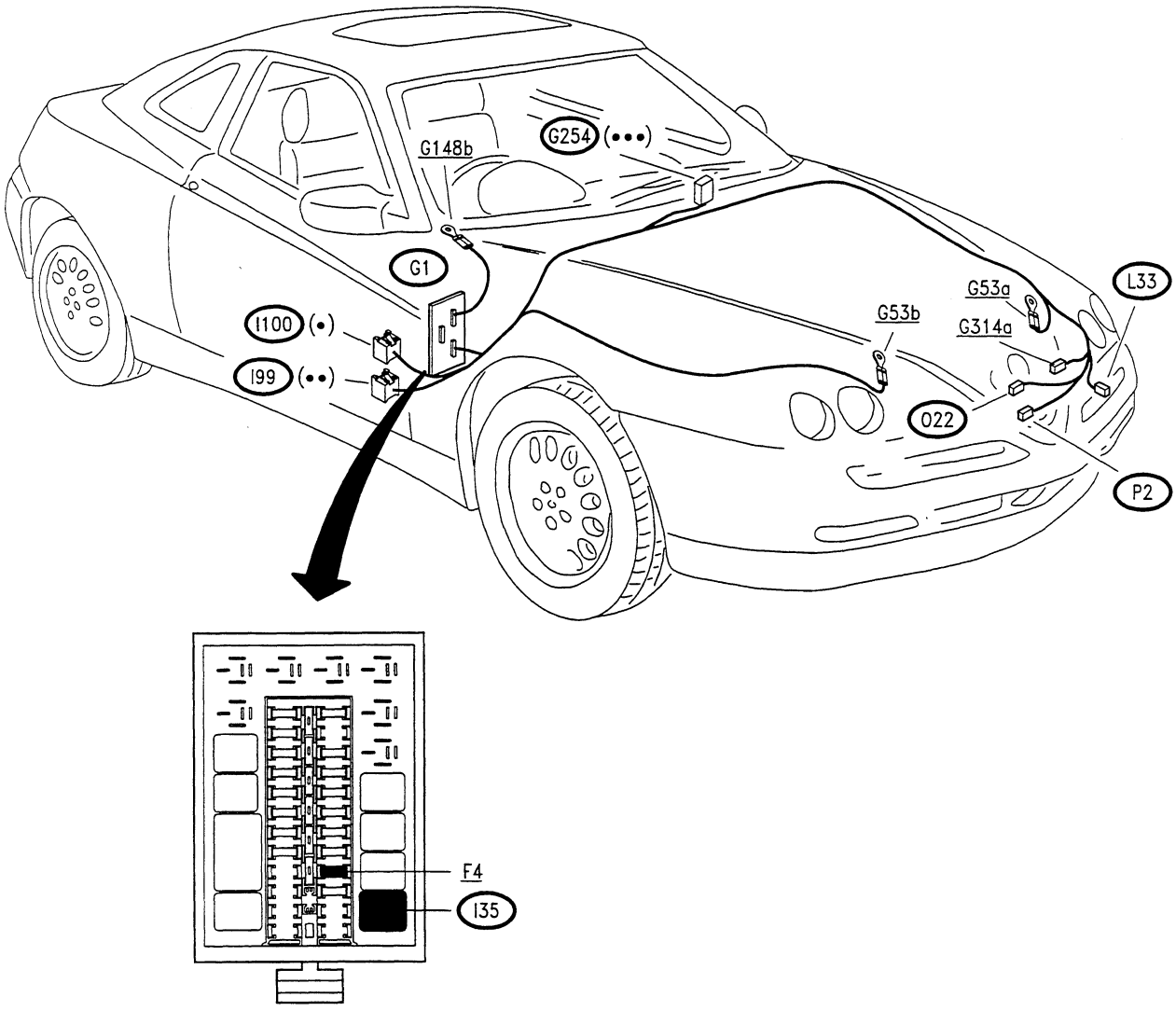
AIR CONDITIONER (3.0 V6 24V from '98 version)



(•) Black base
(••) Yellow base

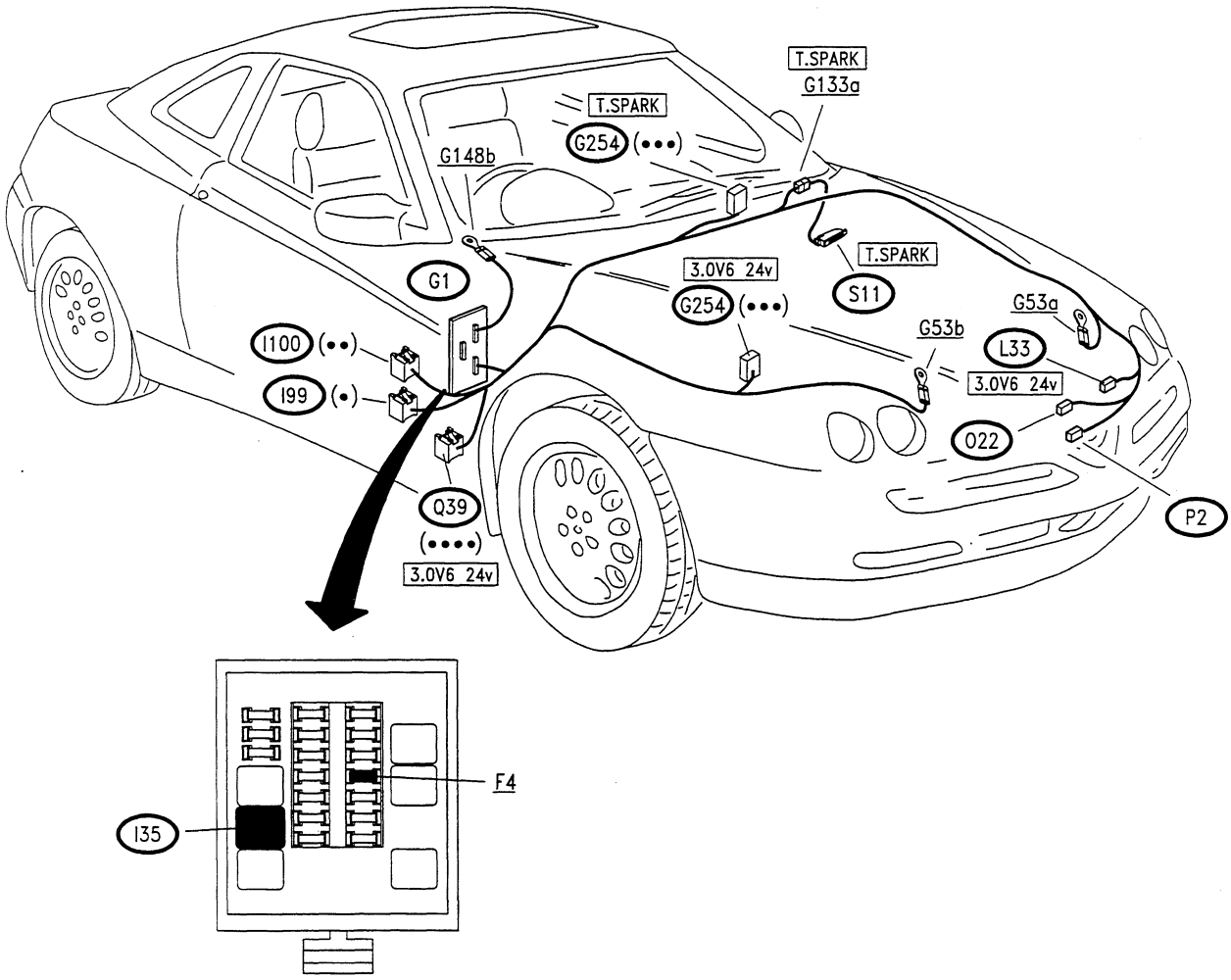
(**) Red fuseholder

ENGINE COOLING (VERSIONS WITH HEATER) (up to '96 version)



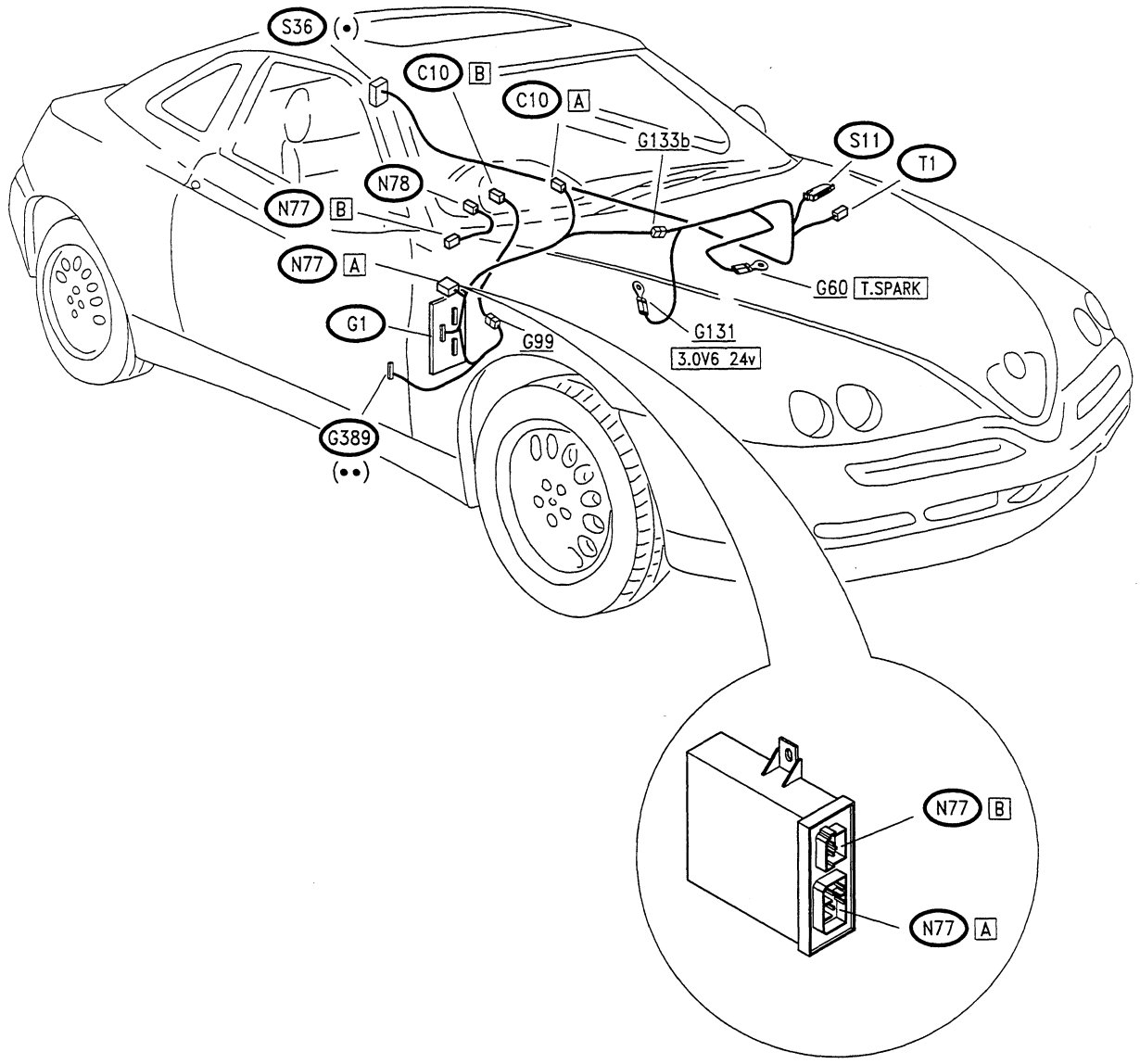
(•) Yellow base
(••) Yellow base
(•••) Black fuseholder

ENGINE COOLING (VERSIONS WITH HEATER) (from '97 version)



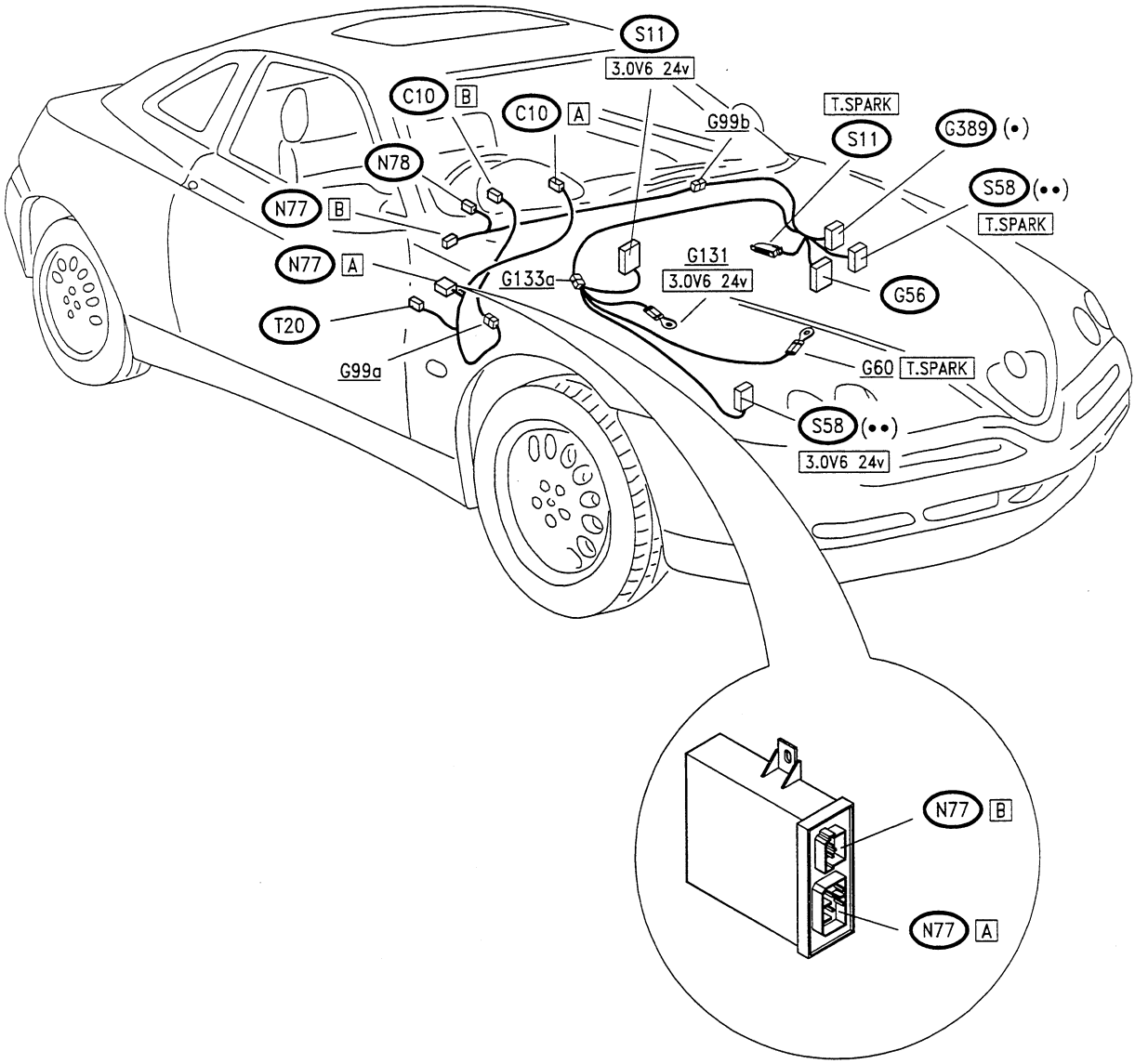
(•) Yellow base
(••) Black base
(•••) Black fuseholder
(••••) Green fuseholder

ALFA ROMEO CODE (up to '97 versione)



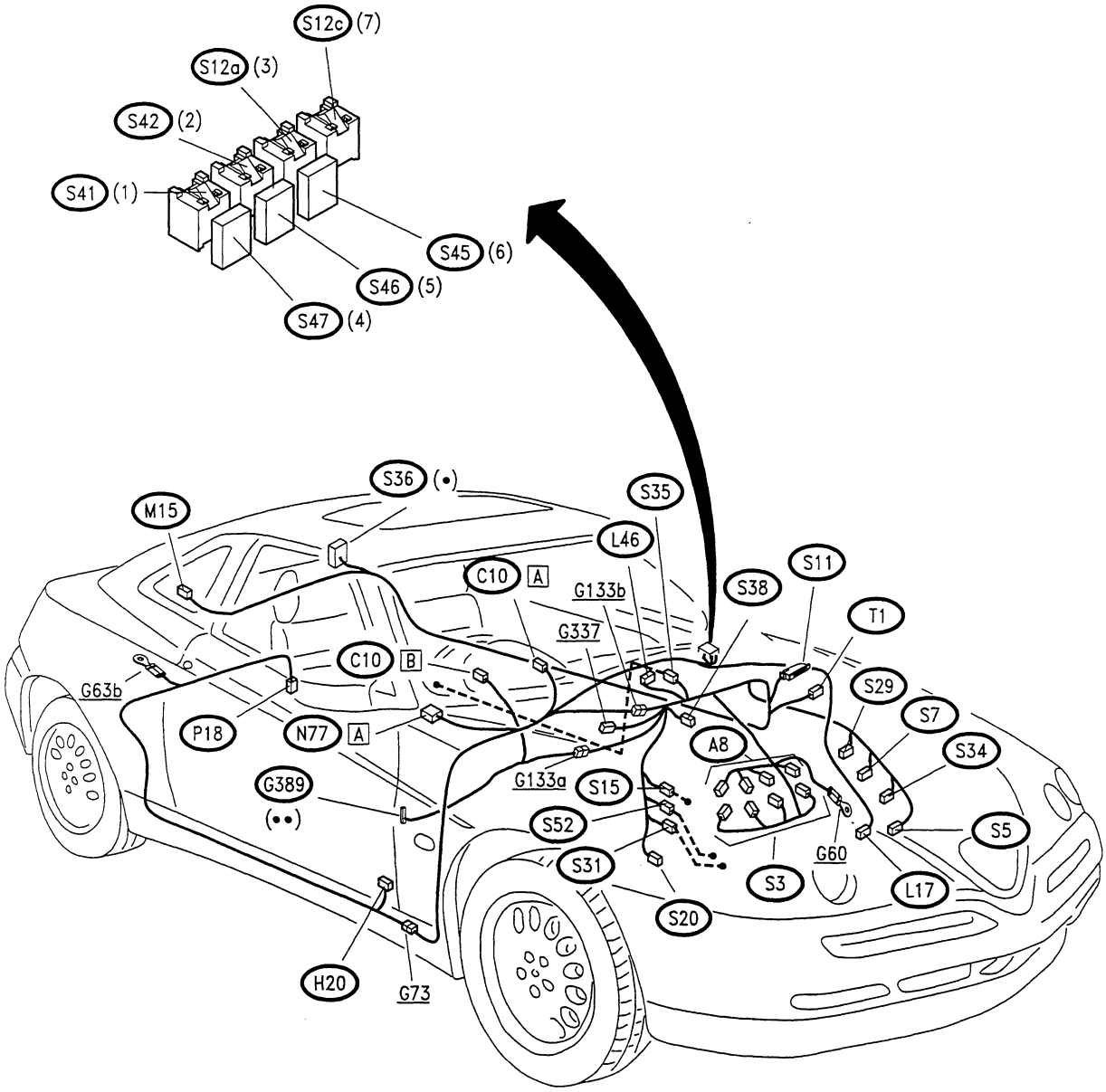
(•) Black fuseholder
(••) Red fuseholder

ALFA ROMEO CODE (from '98 version)



(•) Red fuseholder
(••) Brawn fuseholder

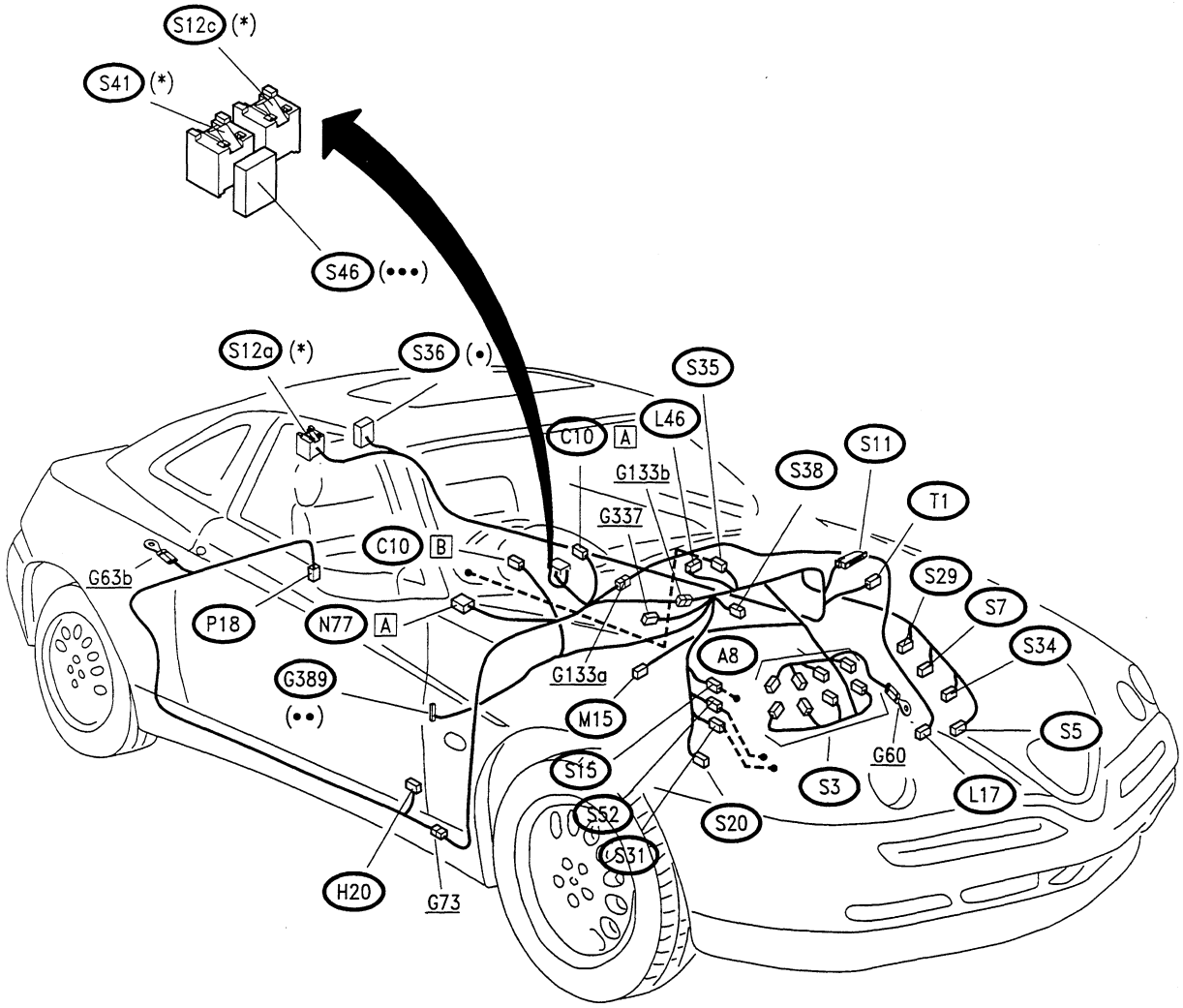
BOSCH MOTRONIC M2.10.3 CONTROL SYSTEM (T.SPARK engines)



(•) Black fuseholder
(••) Red fuseholder

(1) Black base
(2) Black base
(3) Black base
(4) Red fuseholder
(5) Brown fuseholder
(6) Brown fuseholder
(7) Black base

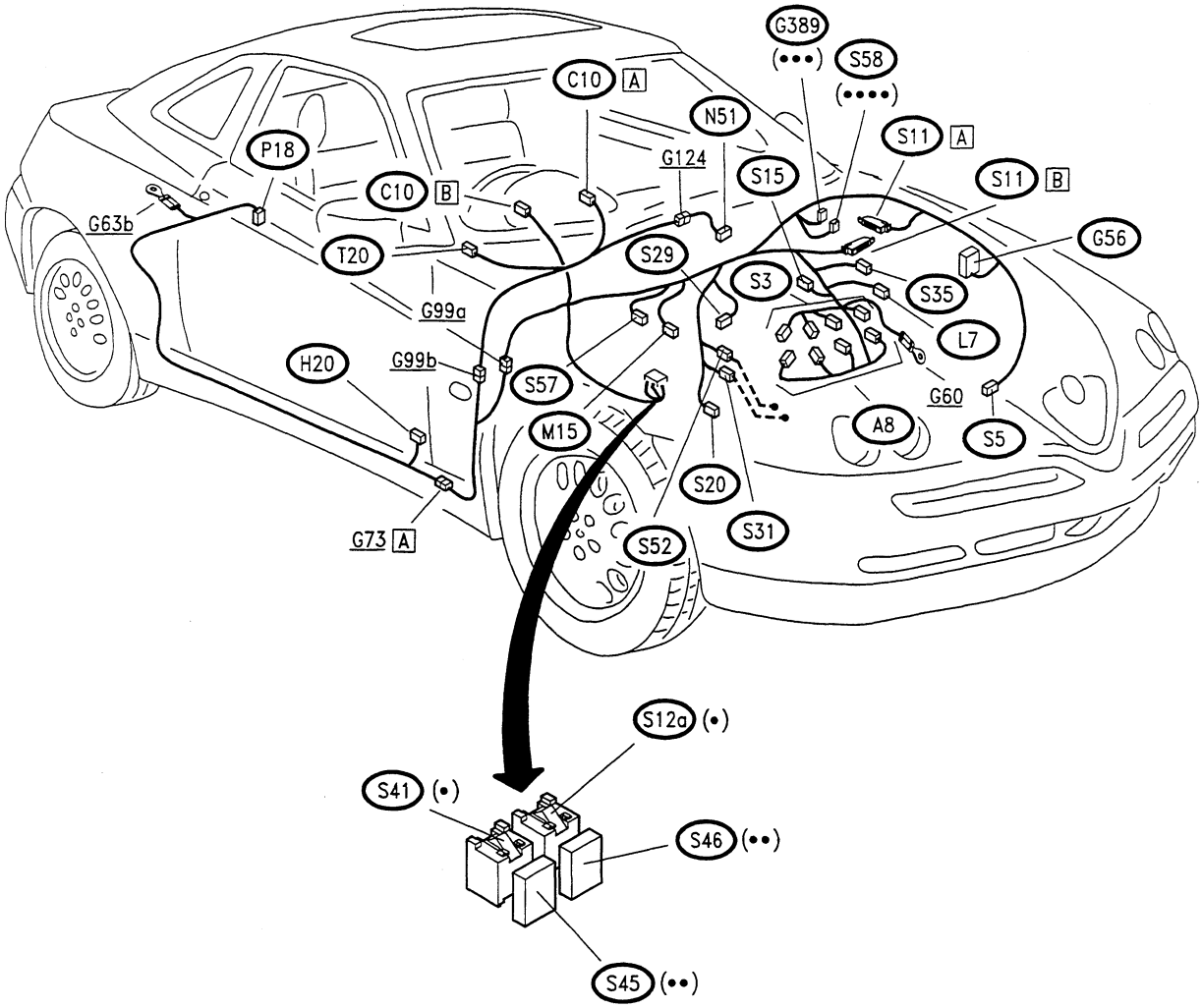
BOSCH MOTRONIC M2.10.4 CONTROL SYSTEM (T. SPARK engines)



(*) Black base

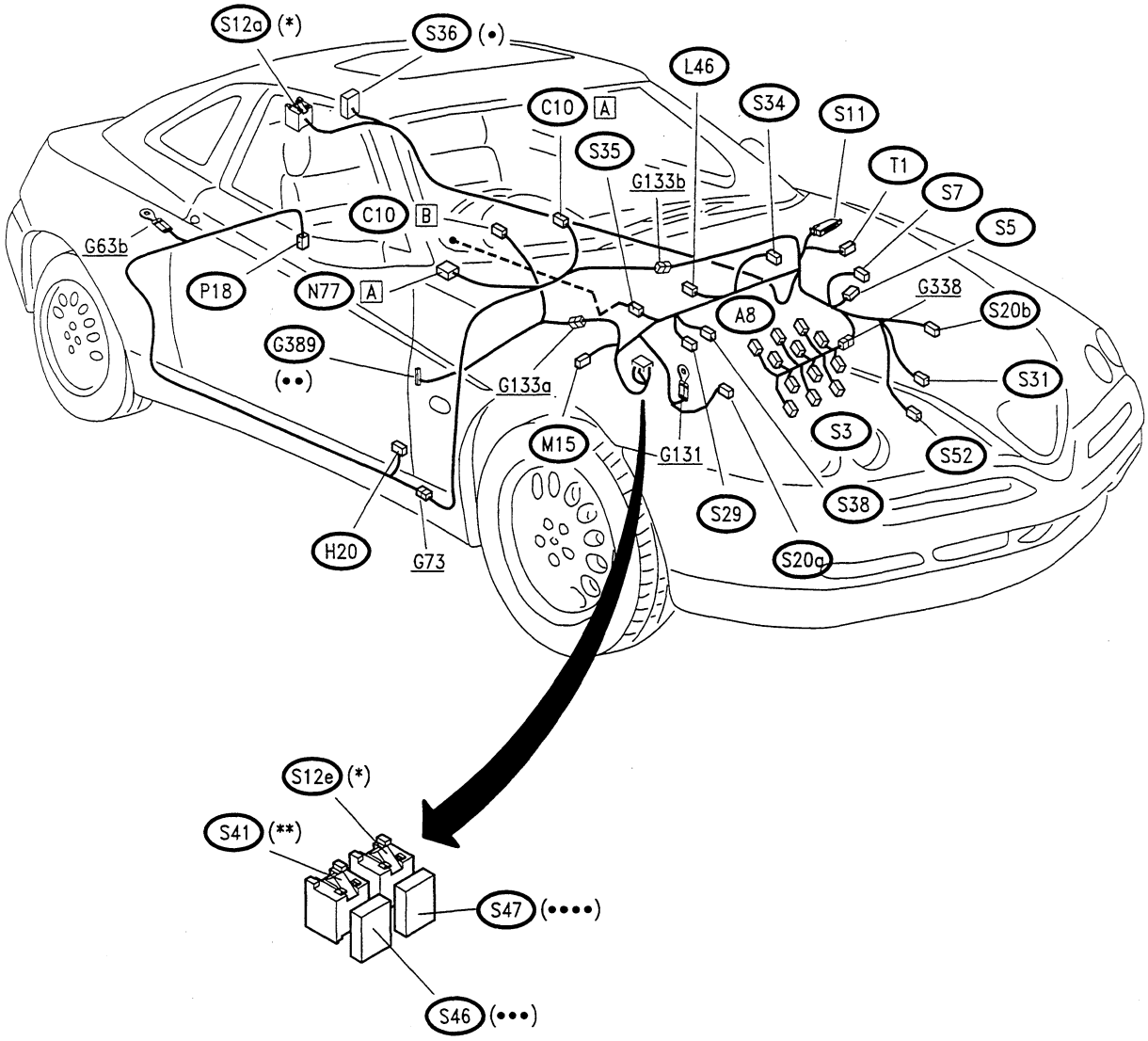
(•) Black fuseholder
(••) Red fuseholder
(•••) Brown fuseholder

BOSCH MOTRONIC M1.5.5 CONTROL SYSTEM (T. SPARK engines)



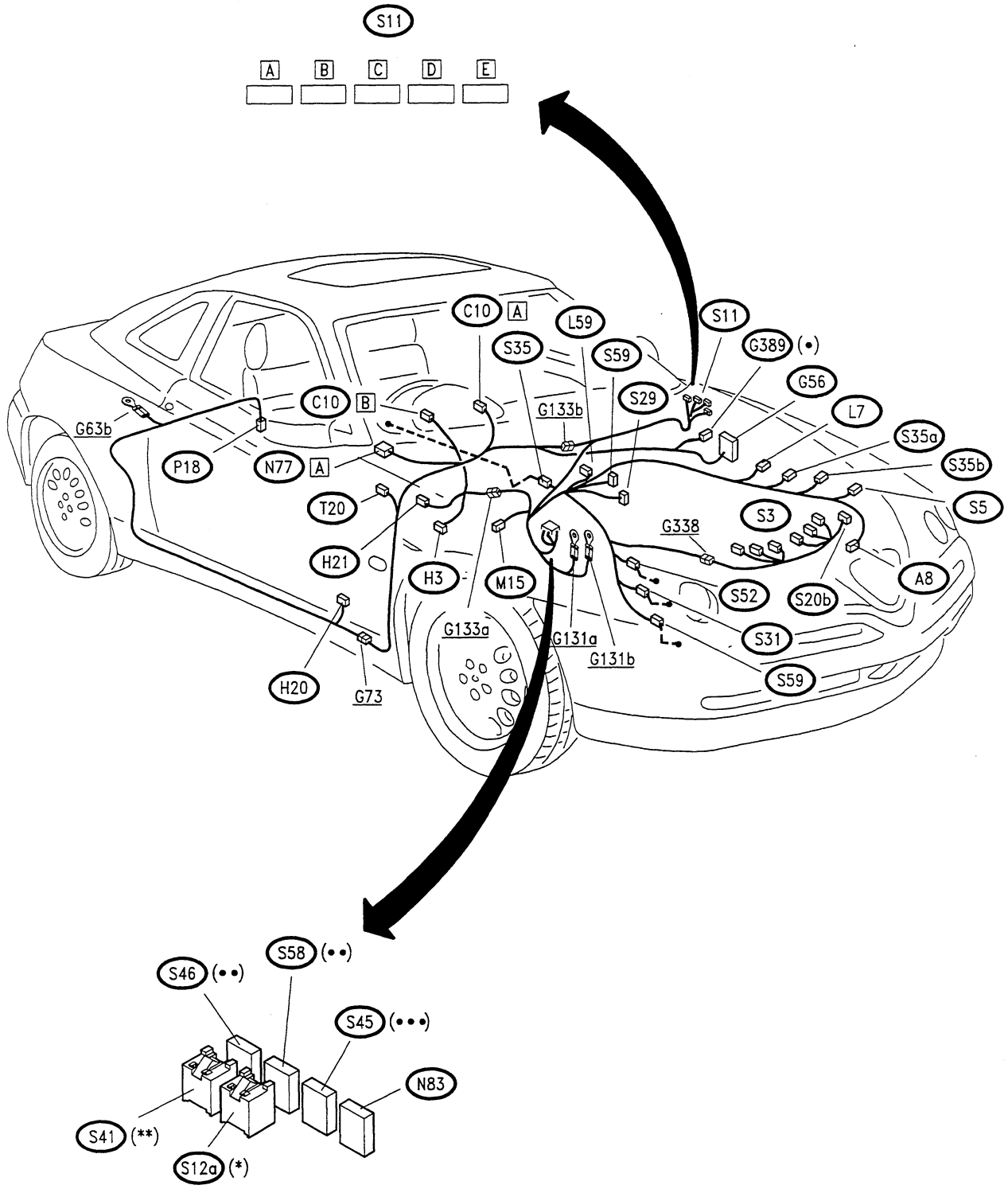
(•) Black base
(••) Blue fuseholder
(•••) Red fuseholder
(••••) Brown fuseholder

BOSCH MOTRONIC M3.7.1 CONTROL SYSTEM (3.0 V6 24v engine)



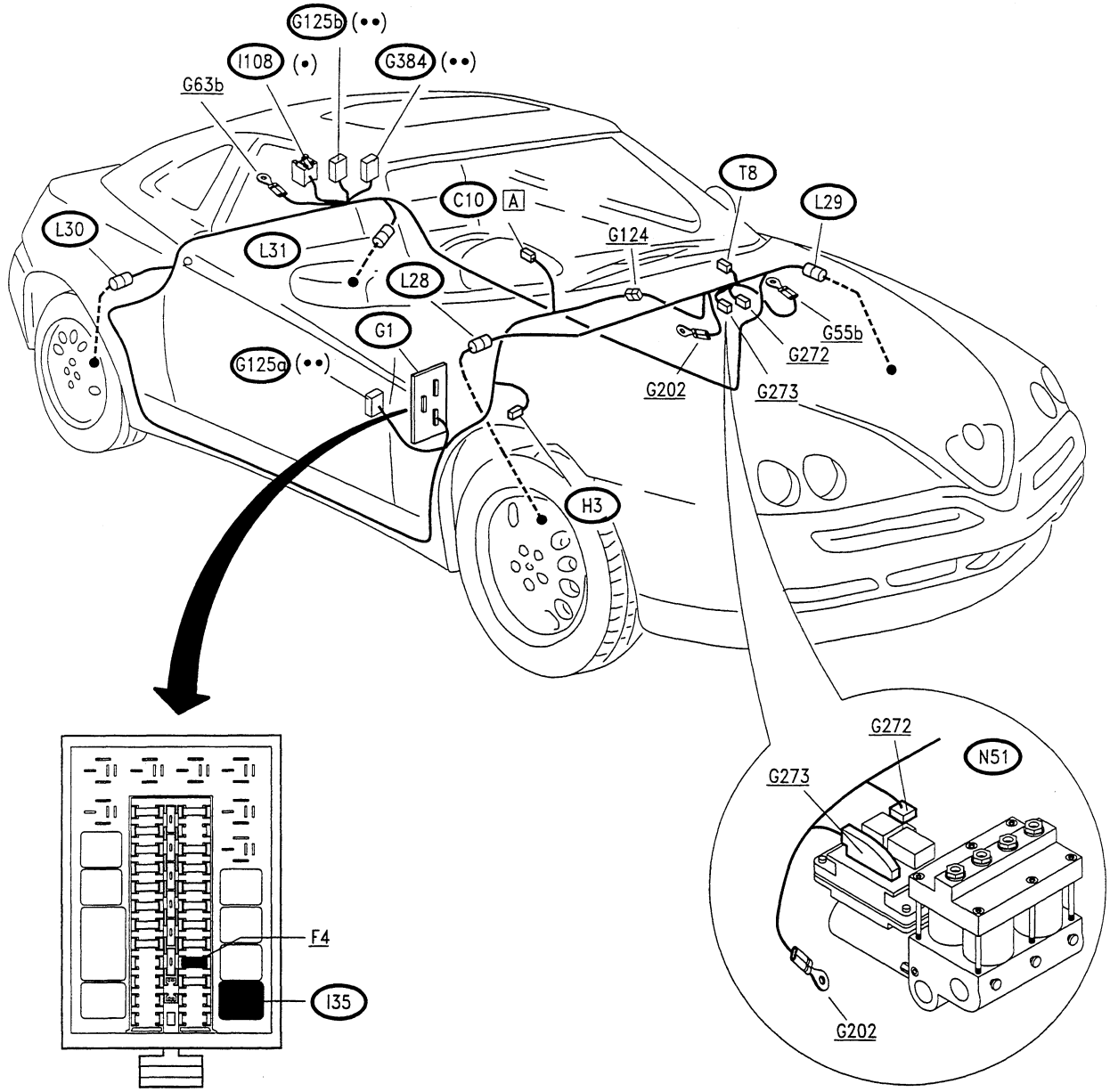
(*) Black base
(**) Grey base
(•) Black fuseholder
(••) Red fuseholder
(•••) Brown fuseholder
(••••) Blue fuseholder

BOSCH MOTRONIC ME2.1 CONTROL SYSTEM (3.0 V6 24v engine)



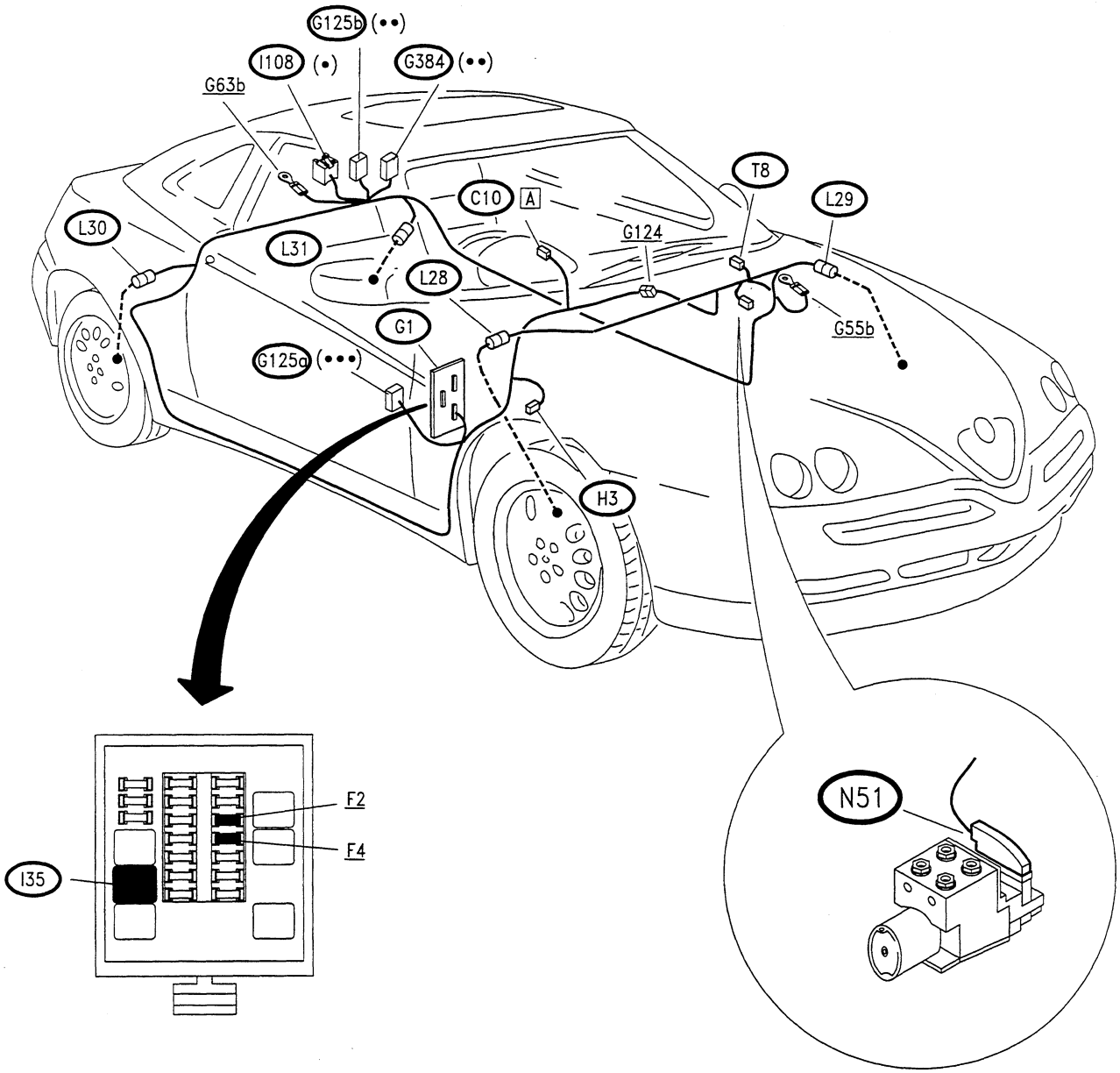
(*) Black base
(**) Red base
(•) Red fuseholder
(••) Brown fuseholder
(•••) Blue fuseholder

ABS SYSTEM BOSCH 2SI (T.SPARK engines)



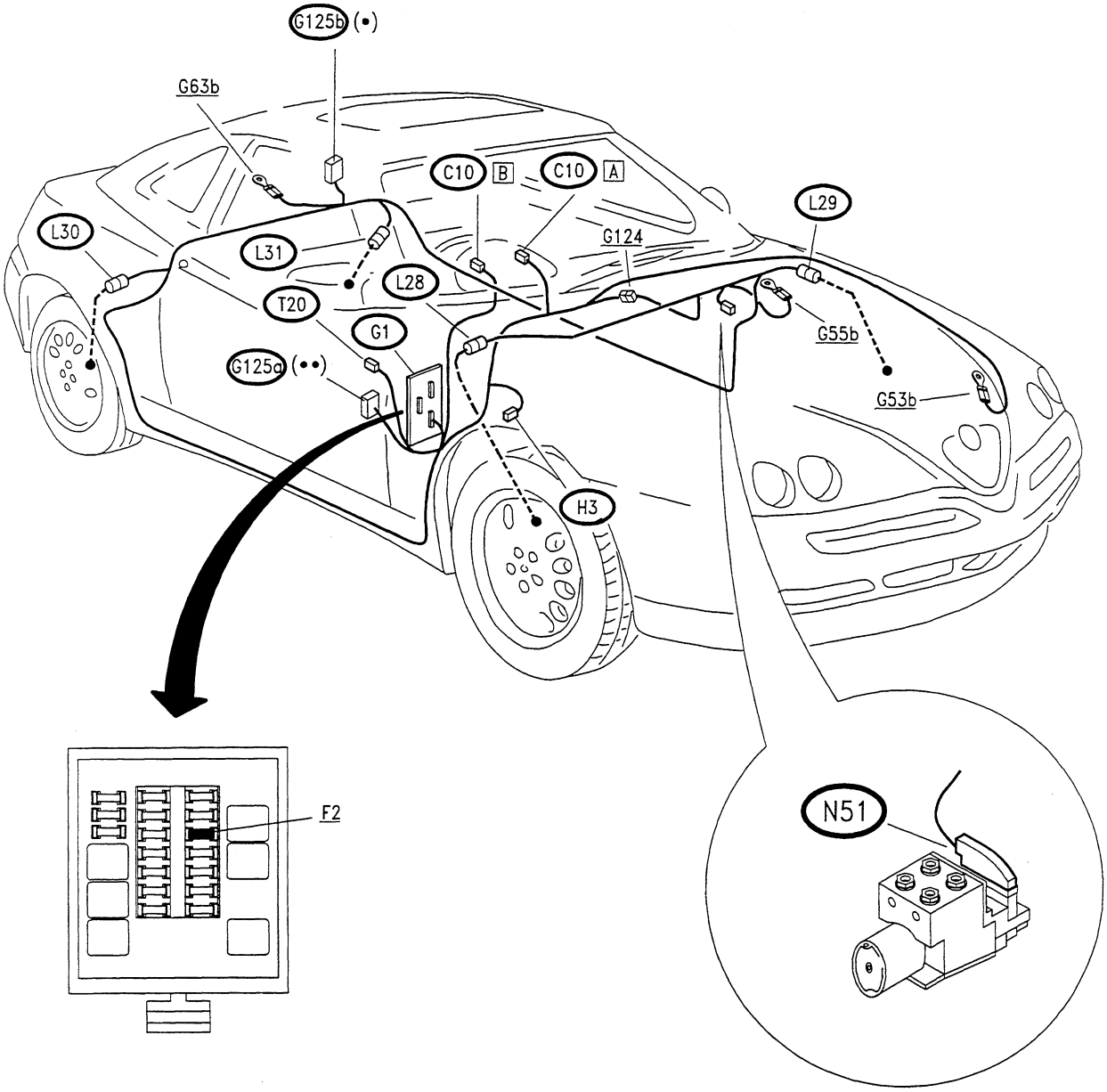
(•) Blue base
(••) Black fuseholder

ABS SYSTEM BOSCH 5.3 (up to '97 version)



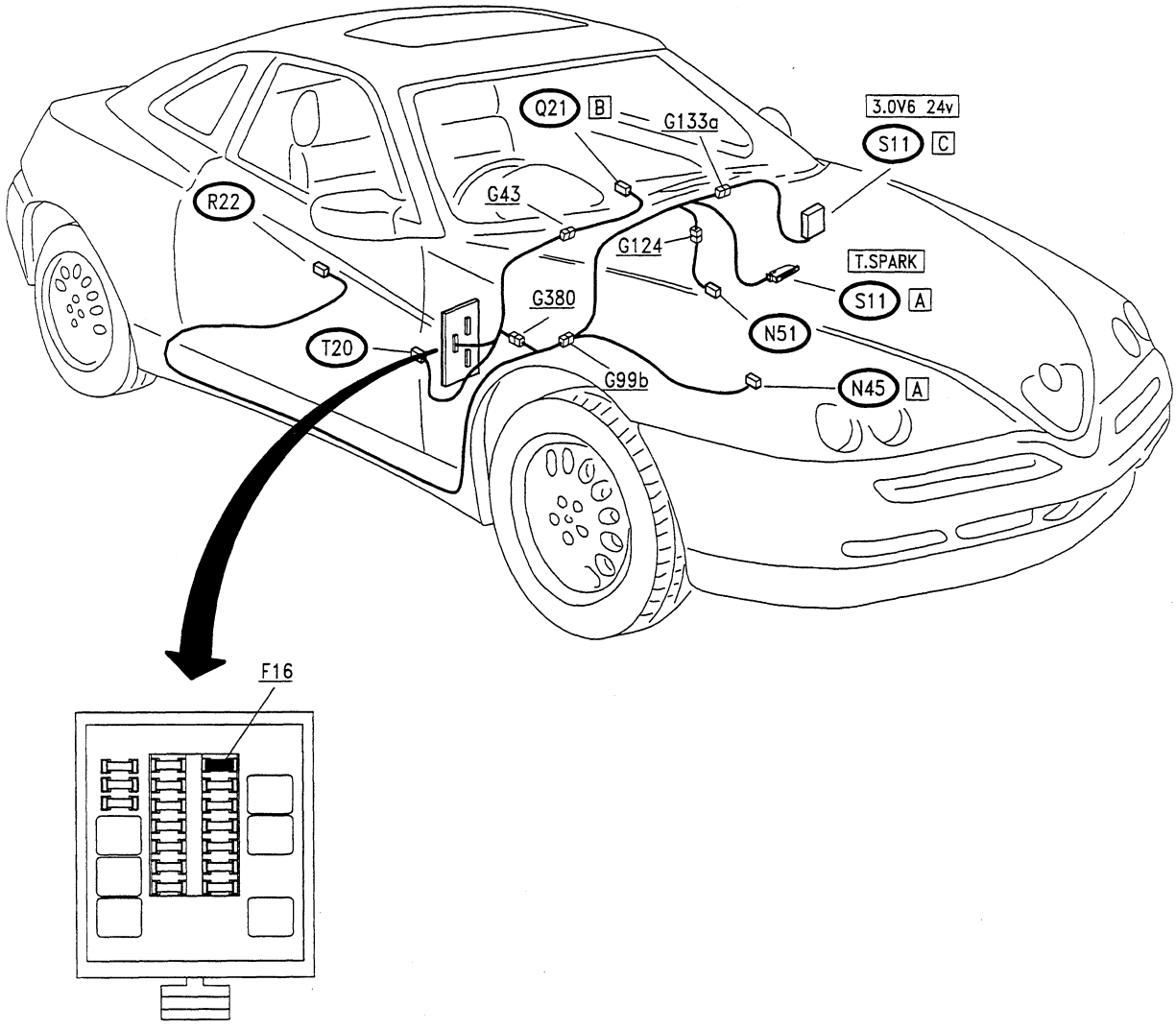
(•) Blue base
(••) Black fuseholder
(•••) Red fuseholder

ABS SYSTEM BOSCH 5.3 (from '98 version)



(•) Black fuseholder
(••) Red fuseholder

MULTIPLE DIAGNOSTIC CONNECTOR



BODY 70

INDEX

BONNET

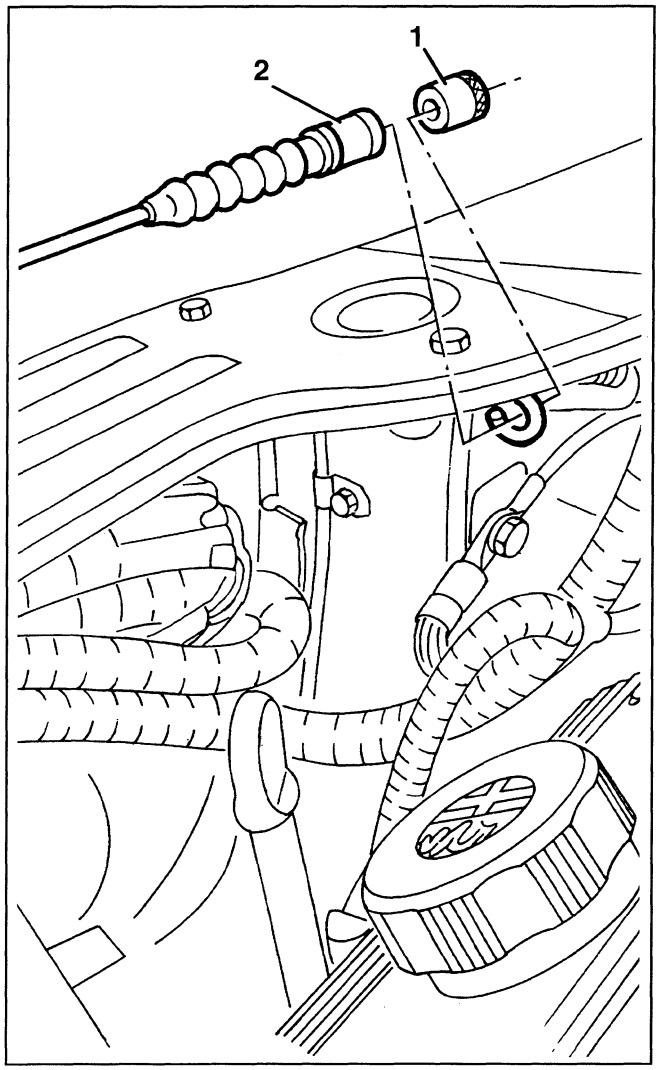
For all information here not listed, see the corresponding section of "Spider-Gtv: Base Manual".

BONNET

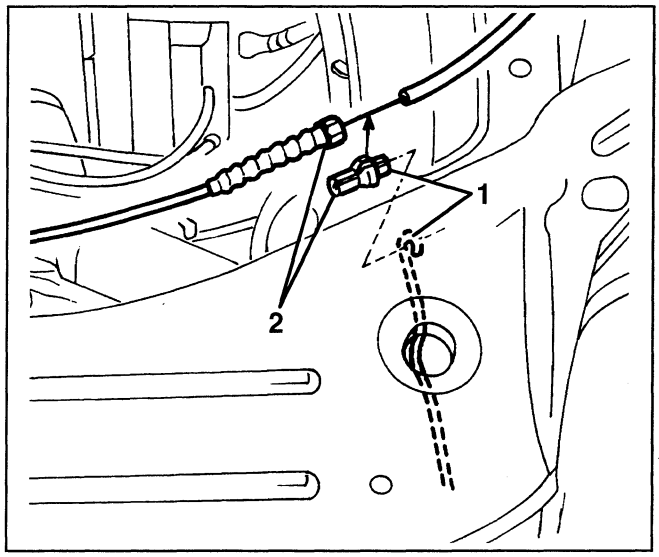
BONNET OPENING CONTROL CABLE

REPLACEMENT

1. Working from the engine compartment, slacken the cable end bush.
2. Withdraw the cable from the locking lever eyelet.

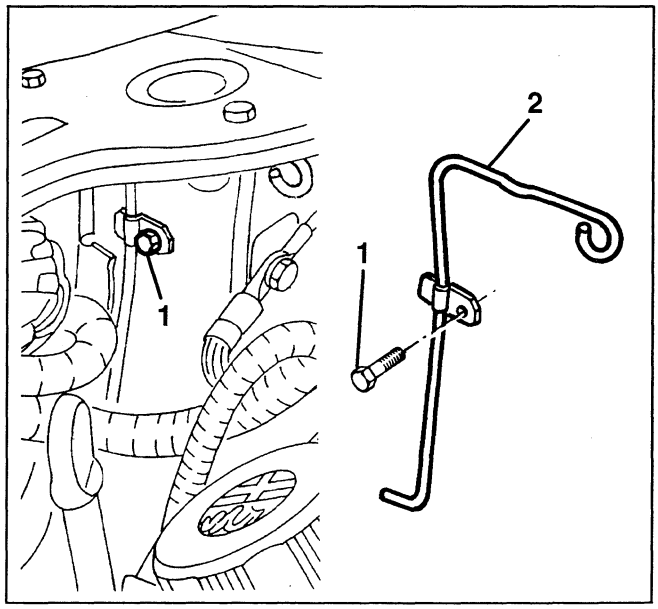


1. Release the intermediate bush from the locking lever eyelet.
2. Release the cable bush.



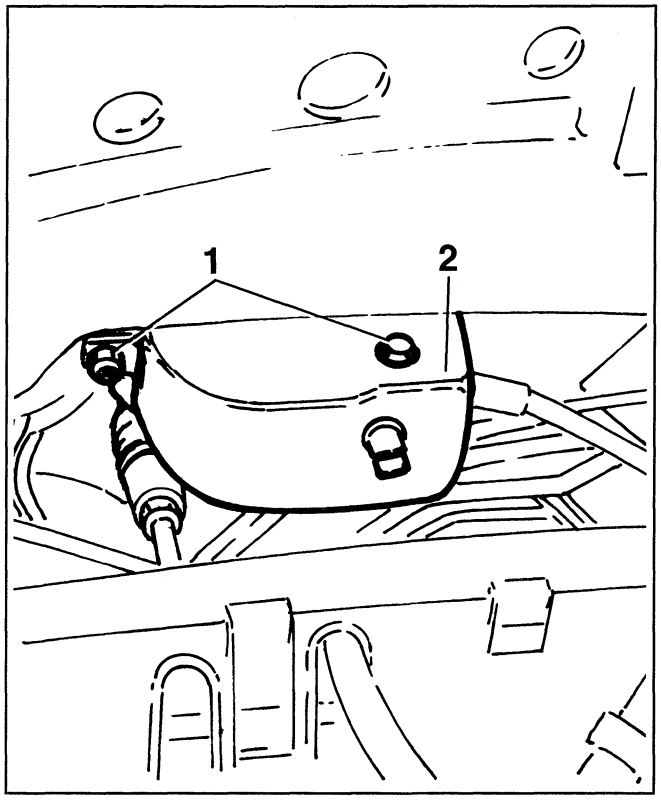
1. If necessary, slacken the screw.
2. Retrieve the bonnet locking lever.

– Remove all the components of the engine compartment that impede access to the bonnet opening control cable. Free the sheath from the fastening clamps.

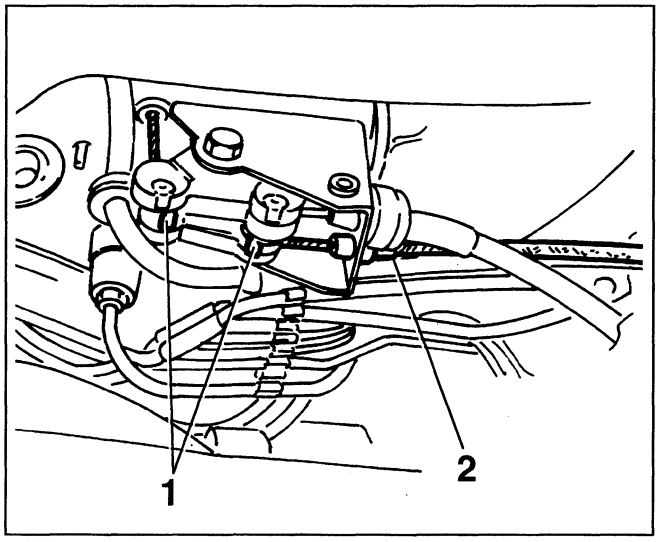


– Remove the intake box (see GROUP 10).

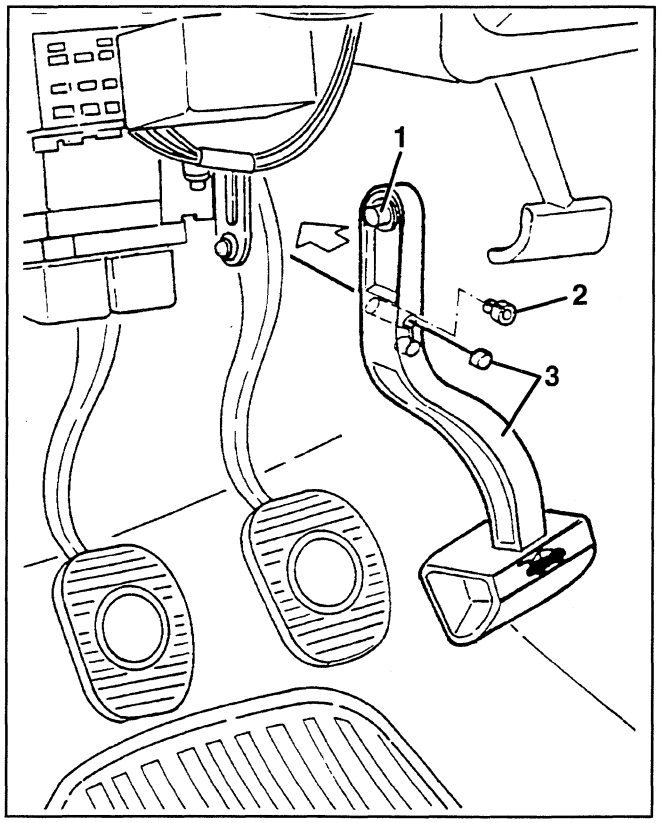
1. Working in the engine compartment, slacken the screw and nut fastening the transmission cover.
2. Remove the cover.



1. Free the bonnet opening cable pawls.
2. Retrieve the sheath complete with cable from the engine compartment.



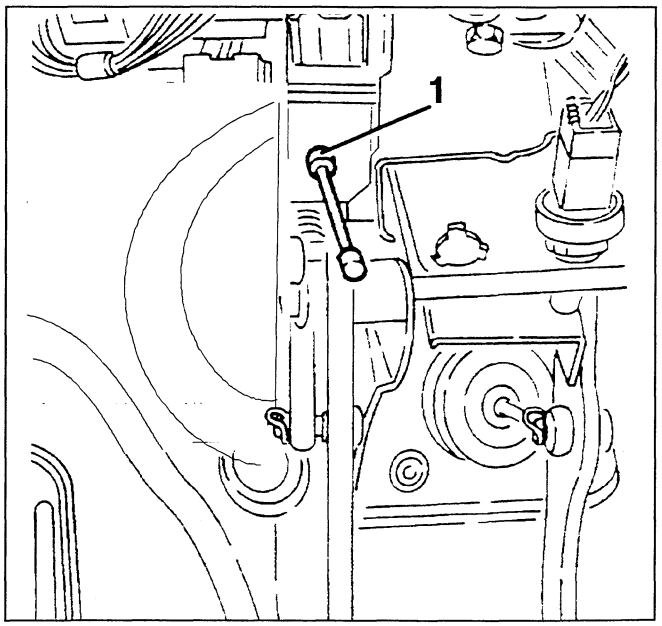
1. Working in the passenger compartment, free the bonnet opening handle from its fulcrum.
2. Remove the cap.
3. Withdraw the bonnet opening cable pawl from the handle, then remove the handle.



1. Using pliers, prise the control cable from the fastening bracket.

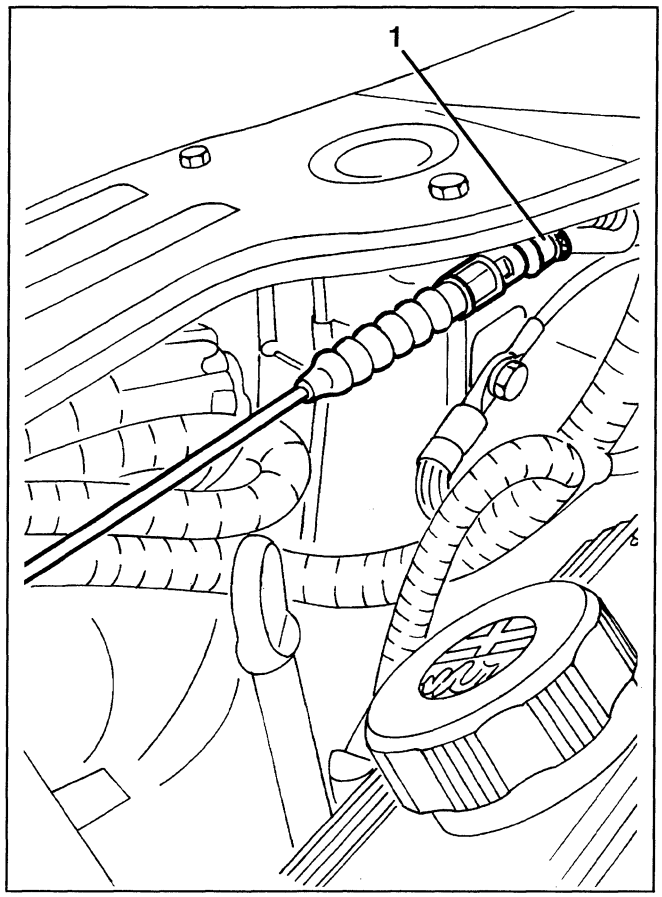
– Tie a piece of wire to the end of the control cable on the passenger compartment side to facilitate removal of the cable.

– Install the new bonnet opening control cable reversing the sequence followed for removal and adjusting it as follows:



ADJUSTMENT

1. Working from the engine compartment, adjust the tension of the bonnet opening control cable turning the special control bushes by hand. Check that the bonnet opens and closes correctly.



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