

# AIRBAG

## (driver's and passenger's side)

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## GENERAL DESCRIPTION


The Air Bag is a passive safety device formed of one or two cushions which, in the event of a head-on crash, automatically inflate between the body of the occupants of the front seats of the vehicle and the front structures of the passenger compartment.

The system comprises the following components:

- an electronic control unit which contains an electronic circuit with two deceleration sensors; it evaluates the impact situation, implements the intervention strategy and checks and memorises any system faults;
- a driver's side Air Bag module;
- a passenger's side Air Bag module;
- a warning light that indicates any faults,
- a connector for the ALFA TESTER.
- An automatic passenger Air Bag disabling sensor (only up to June '99)

The electronic control, is located in the centre console, unit is equipped with suitably calibrated deceleration sensors, through which it detects a collision situation and triggers the reaction of a chemical compound which produces nitrogen through two electric detonators. The gas inflates the two synthetic fibre cushions respectively housed at the centre of the steering wheel and in a compartment of the dashboard in front of the passenger.

## SAFETY RULES TO BE FOLLOWED FOR OPERATIONS ON CARS FITTED WITH AIR BAG SYSTEM

 Below we are giving some rules which **MUST BE STRICTLY ADHERED TO** during any type of operation concerning vehicles fitted with Air Bag safety systems.

### PRELIMINARY RULES

You are reminded that Air Bag modules should be handled with care. The use, transport and storage of them are ruled by the following procedures for handling these components.

- Before starting to carry out:  
body repair work;  
welding operations;  
work requiring the removal of Air Bag modules or the control unit.
- Remove the key from the ignition switch

- Always disconnect the battery, i.e.: disconnect the two terminals from their posts and isolate them taping carefully.
- Disconnect the control unit connector waiting at least **10 minutes** after disconnecting the battery.
- When removing one of the inflating devices, closely follow the procedure given below:
  1. Wait for at least **10 minutes** after disconnecting the battery before starting to disassemble the module.
  2. Slacken the fastening screws.
  3. Disconnect the coupling of the inflation devices
  4. Store the devices with the cover upwards in a key-locked metal cabinet. This cabinet, to be used only for this purpose, must never be used for storing any other type of material, especially if inflammable. The cabinet must possess all the requisites foreseen for containing pyrotechnical charges (shockproof metal cabinet with air vents to allow natural ventilation inside) and it must be labelled according to the laws in force (DANGER EXPLOSIVES - USE OF NAKED FLAMES PROHIBITED - DO NOT OPEN UNLESS DULY AUTHORISED).

- All the connectors used and wired on Air Bag modules contain a short circuit clip, until the moment in which the Air Bag modules are connected to a suitable power source through the appropriate connector there is no possibility of unduly activating the units.



A component of the system that was not activated during an accident is to be considered still "active" therefore unexploded components due to faults or guarantee expiry or other causes which make their replacement necessary must be returned to the special centre following the procedure described below



Assembly and disassembly of components of the safety system must be carried out **SOLELY** by competent, authorised technical staff.

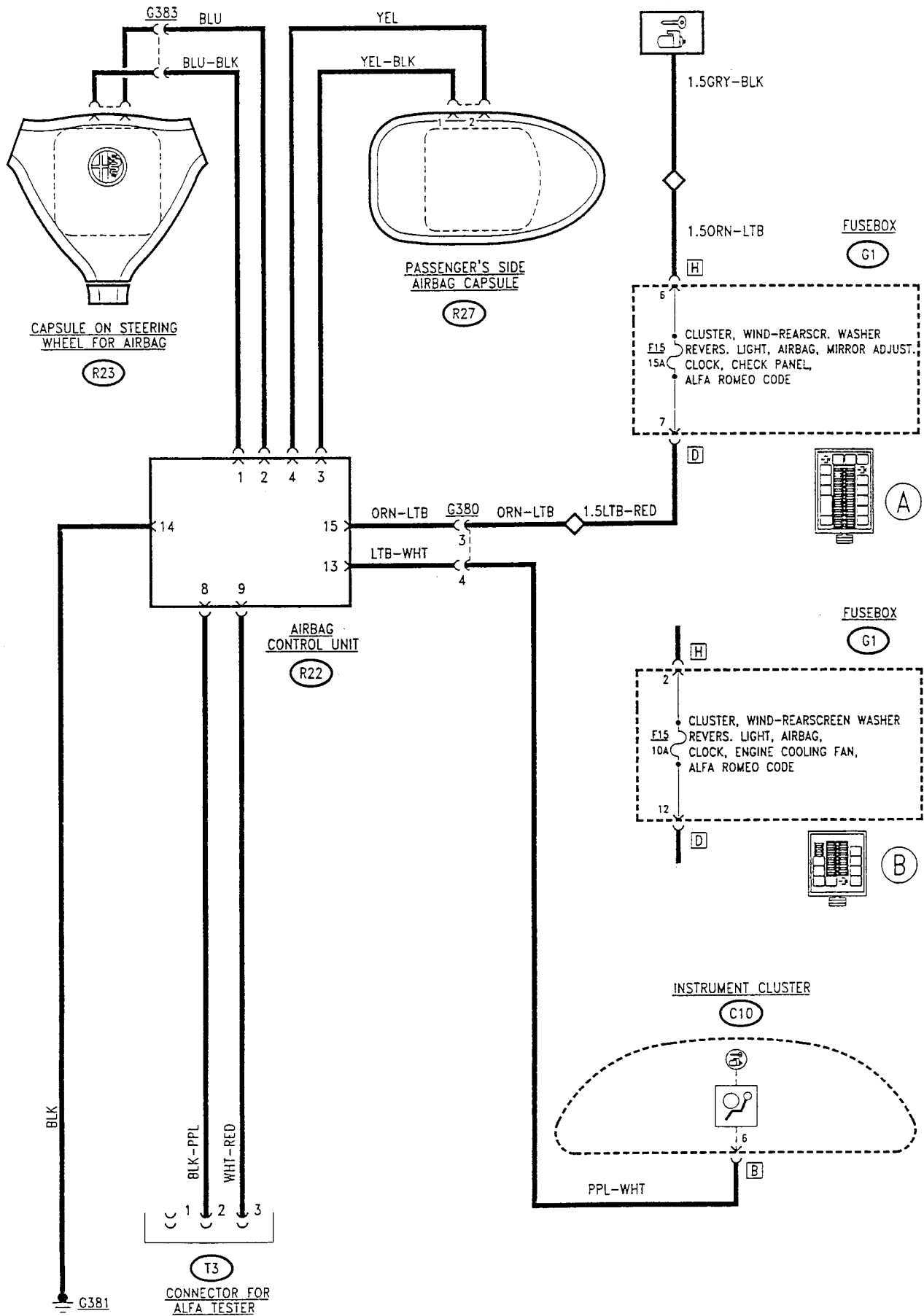
The failure to abide by the instructions herein may involve undesired activation of the system, personal injury or unnecessary system repairs.

**IT IS STRICTLY PROHIBITED TO DISASSEMBLE THE COMPONENTS OF AIR BAG MODULES.**

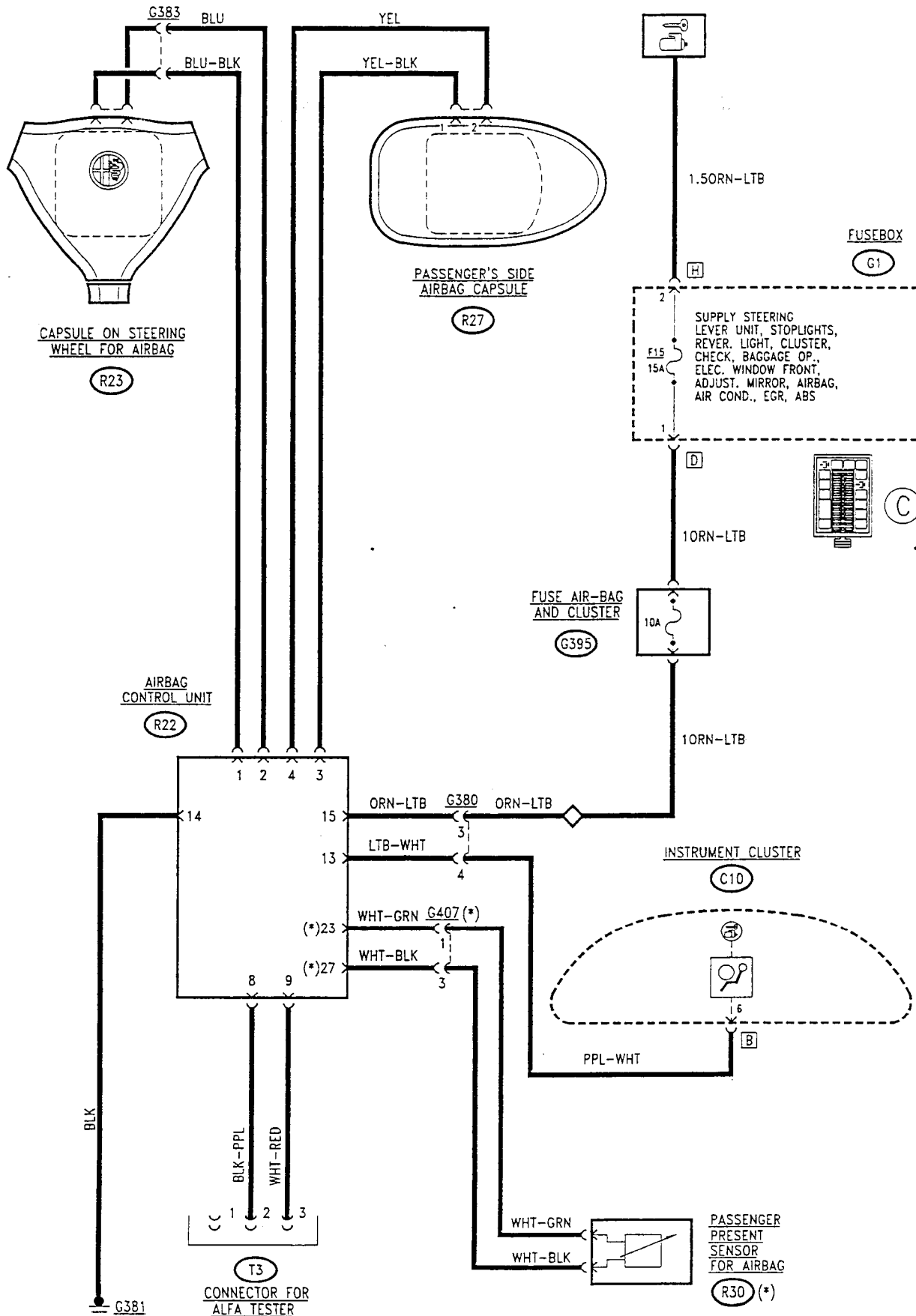
All the system components have been designed specifically to work on a car of specific make and model, therefore Air Bags cannot be adapted, re-used or installed on other vehicles, but only on those for which they were designed and produced.

Any attempt to re-use, adapt or install an Air Bag on a different model may cause serious or lethal harm to the occupants of the vehicle in the event of an accident.

### WIRING DIAGRAM (TRW control unit, from chassis no....)



### WIRING DIAGRAM (from Model Year '97)



(\*) only present up to June '99

### FUNCTIONAL DESCRIPTION

The control unit **R22** receives the "key-operated" supply, (circuit protected by fuse **F15** in fusebox **G1**) at pin 9 - BECKER or at pin 15 - TRW.

For box "C" the supply of control unit **R22** is protected by a further fuse **G395** next to the box itself **G1** "C".

The system comprises two cushions, one in front of the driver **R23** (at the centre of the steering wheel) and one in the dashboard in front of the passenger **R27**.

**NOTE:** The cushion on the steering wheel is connected electrically through a clock spring and connector **G383**.

While the car travels, the control unit **R22** continuously diagnoses the system, thereby checking the continuity of the circuits and of the components.

In the event of a crash, detected by the two internal sensors (one piezoelectric and one mechanical) commands activation of the two modules sending current through two signals: one earth and one 12V supply (from pins 6 and 2 - BECKER and 3 and 4 - TRW for the passenger's module and from pins 5 and 2 -

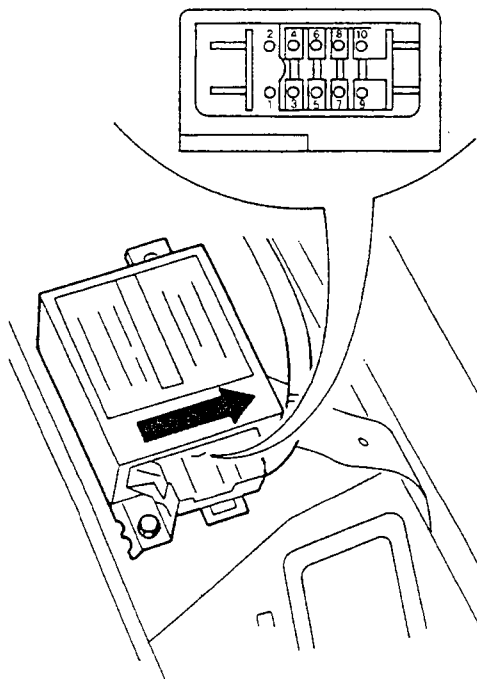
BECKER or 1 and 2 - TRW for the module on the steering wheel).

If sensor **R30** (only present until June '99) signals (pins 15 and 37 of **R22**) that there is no passenger on the seat, the Air Bag is not activated.

When a fault or system malfunction is detected, the type of fault is logged and the warning light on the instrument panel **C10** is turned on to alert the driver of the presence of a fault in the system.

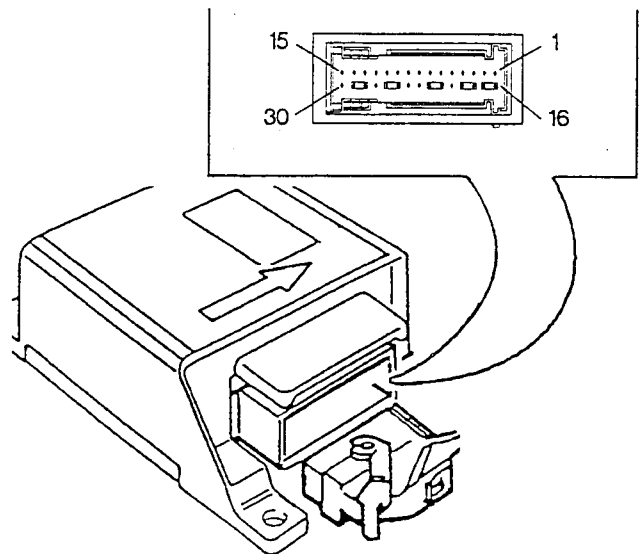
From M.Y. '99, the telltale light in question is the so-called "intelligent" type: it turns on not only if the system detects an anomaly, but also in cases of lack of contact or short circuit to earth of the circuit that connects the telltale light to the relative control unit thanks to a special internal pilot circuit which checks proper connection.

Lastly connector **T3** allows connection to the ALFA TESTER.



#### BECKER CONTROL UNIT PIN-OUT

1. N.C.
2. Module activation circuit (+)
3. Warning light signal (and diagnosis connector)
4. Diagnosis connector signal
5. Passenger module activation (-)
6. Steering wheel module activation (-)
7. N.C.
8. Earth
9. "Key-operated" supply
10. N.C.

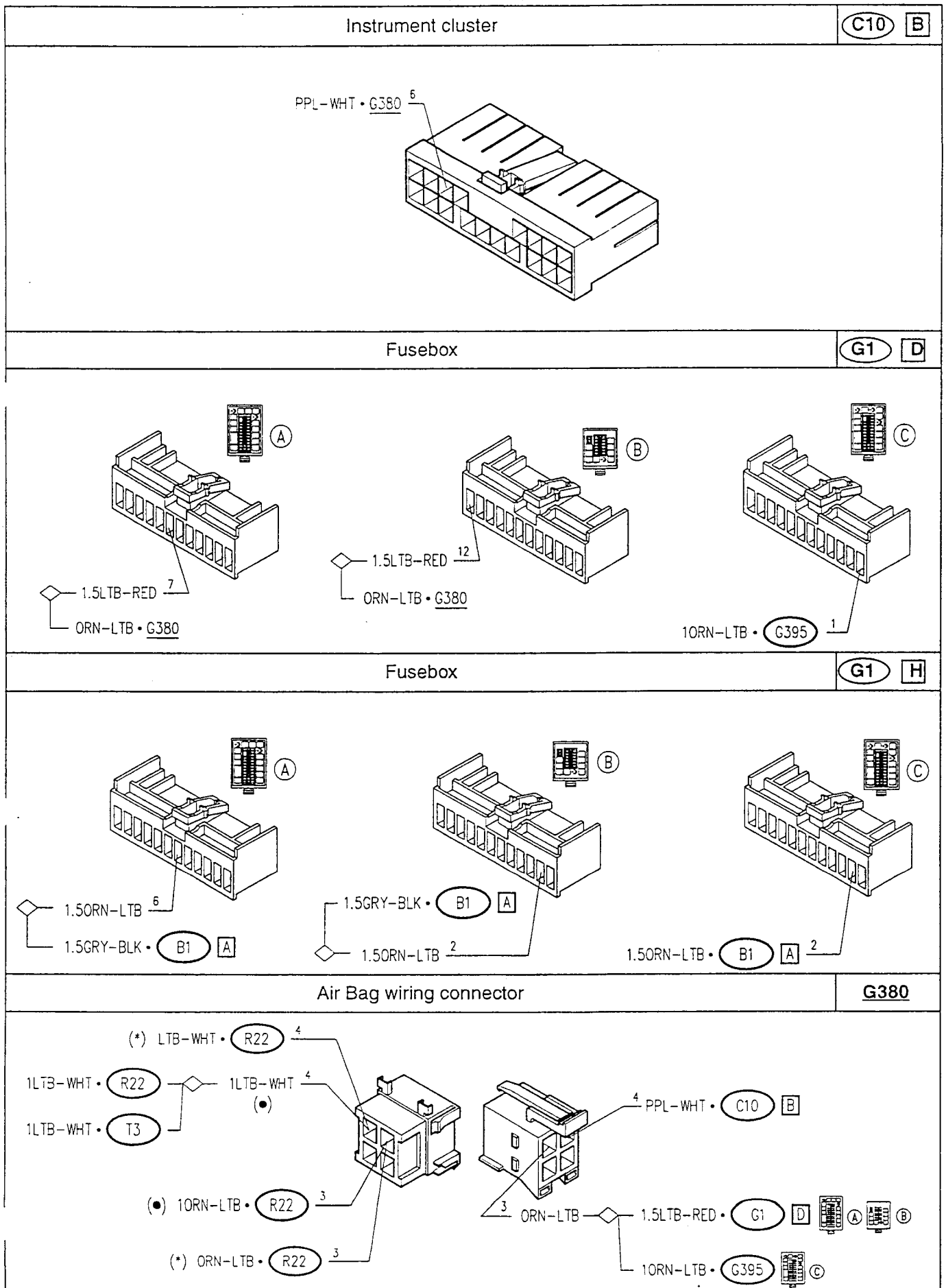


#### TRW CONTROL UNIT PIN-OUT

1. Driver's Air Bag (-)
2. Driver's side Air Bag (+)
3. Passenger's side Air Bag (-)
4. Passenger's side Air Bag (+)
5. N.C.
6. N.C.
7. N.C.
8. Earth for diagnosis
9. Line K for diagnosis
10. N.C.
11. N.C.
12. N.C.
13. Warning light (failure and diagnosis)
14. Control unit earth
15. "Key-operated" supply
23. Passenger presence sensor
27. Passenger presence sensor

**PAGES  
4/3 and 4/4  
TO BE ELIMINATED**

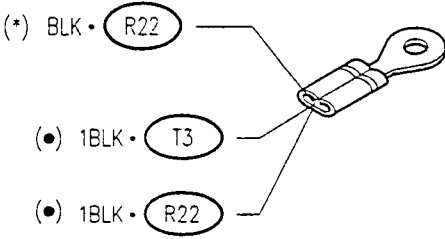
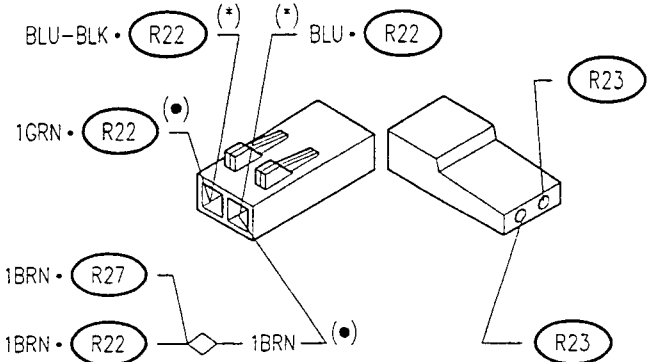
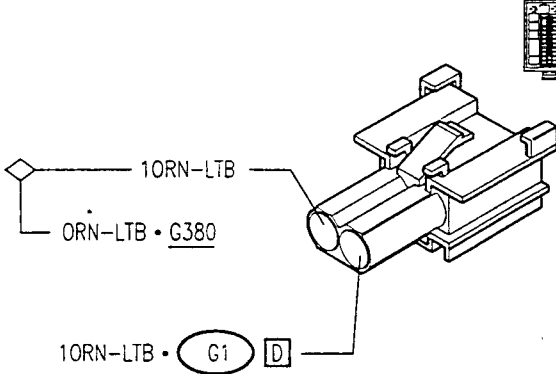
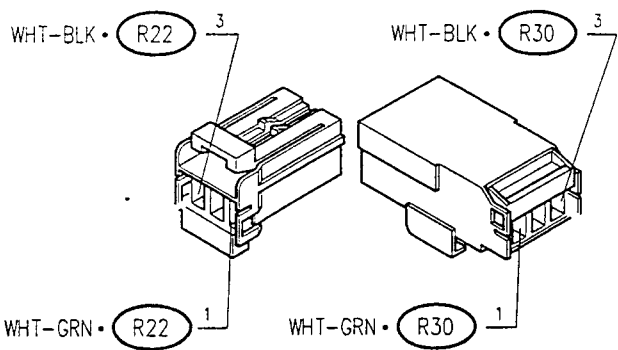
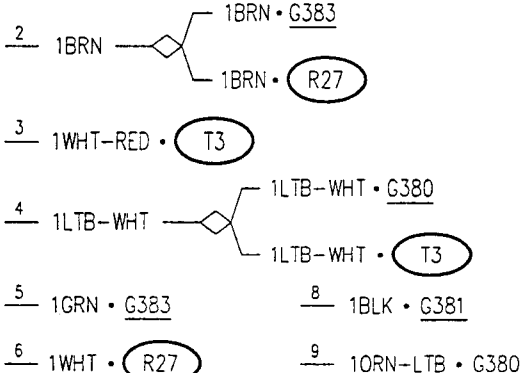
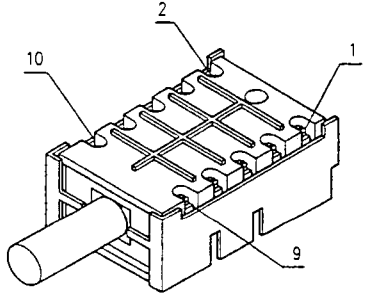
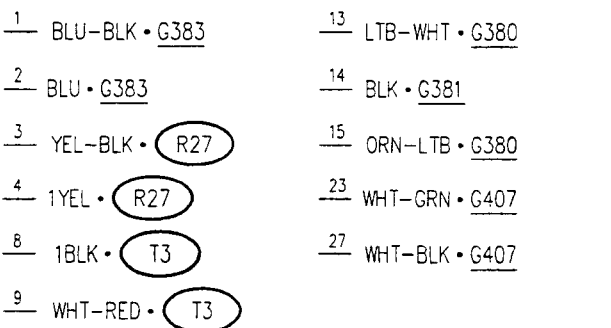
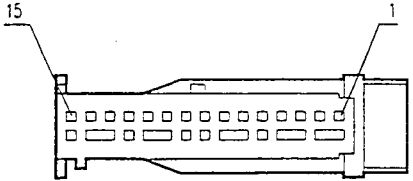
### COMPONENTS AND CONNECTORS (cont.d)



(\*) BECKER  
PA49300000012

(\*) TRW

### COMPONENTS AND CONNECTORS (cont.d)

Air Bag earth	<u>G381</u>	Air Bag capsule connector	<u>G383</u>
 <p>(*) BLK • R22 (•) 1BLK • T3 (•) 1BLK • R22</p>		 <p>BLU-BLK • R22 (*) BLU • R22 (*) 1GRN • R22 (•) 1BRN • R27 1BRN • R22 1BRN • R23</p>	
Air Bag and cluster fuse	<u>G395</u>	Passenger presence sensor connector (**)	<u>G407</u>
 <p>10RN-LTB ORN-LTB • G380 10RN-LTB • G1</p>		 <p>WHT-BLK • R22 3 WHT-BLK • R30 3 WHT-GRN • R22 1 WHT-GRN • R30 1</p>	
Air Bag control unit (BECKER)			<u>R22</u>
 <p>2 1BRN — 1BRN • G383 1BRN • R27 3 1WHT-RED • T3 4 1LTB-WHT — 1LTB-WHT • G380 1LTB-WHT • T3 5 1GRN • G383 8 1BLK • G381 6 1WHT • R27 9 10RN-LTB • G380</p>			
Air Bag control unit (TRW)			<u>R22</u>
 <p>1 BLU-BLK • G383 2 BLU • G383 3 YEL-BLK • R27 4 1YEL • R27 8 1BLK • T3 9 WHT-RED • T3 13 LTB-WHT • G380 14 BLK • G381 15 ORN-LTB • G380 23 WHT-GRN • G407 27 WHT-BLK • G407</p>			



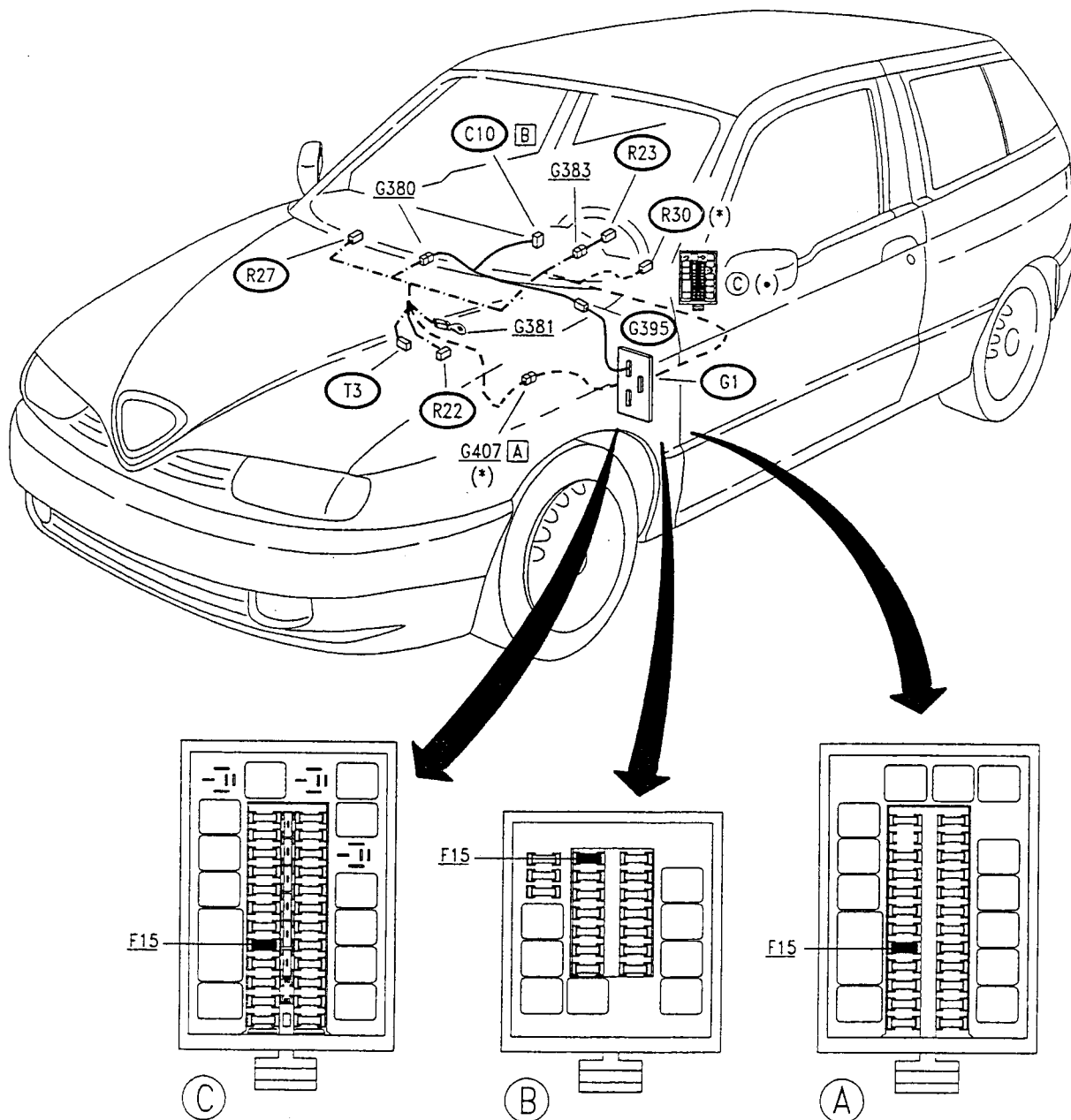
### COMPONENTS AND CONNECTORS (cont.d)

Capsule on steering wheel for Air Bag	<b>R23</b>	Passenger's side Air Bag capsule	<b>R27</b>
Passenger present sensor for Air Bag (**)			<b>R30</b>
Connector for ALFA TESTER (Air Bag)			<b>T3</b>

(•) BECKER  
(\*) TRW

(1) dummy resistance  
(\*\*) only present up to June '99

### LOCATION OF COMPONENTS



(•) red fuseholder

NOTA:

----- The Air Bag wiring is easily distinguished because the protective sheath is **YELLOW**

(\*) only present up to June '99

## FAULT-FINDING



### WARNING:

Before doing any work whatsoever on system components, carefully read through the **RULES OF SAFETY** given previously and closely adhere to them.

## System diagnosis

During the whole time the vehicle is travelling the electronic control unit performs a diagnosis cycle every 100 msec. checking the Air Bag system and memorising any faults in the **FAULT-MEMORY** whether they are momentaneous or continuous. The moment the fault is detected, besides memorising it, the control unit turns on the Air Bag warning light.

When the engine is turned on, this warning light turns on for 4 seconds (initial test) and then it turns off.

If the warning light does **NOT** turn on or does **NOT** turn off after 4 seconds it means that there is a fault in the Air Bag system.

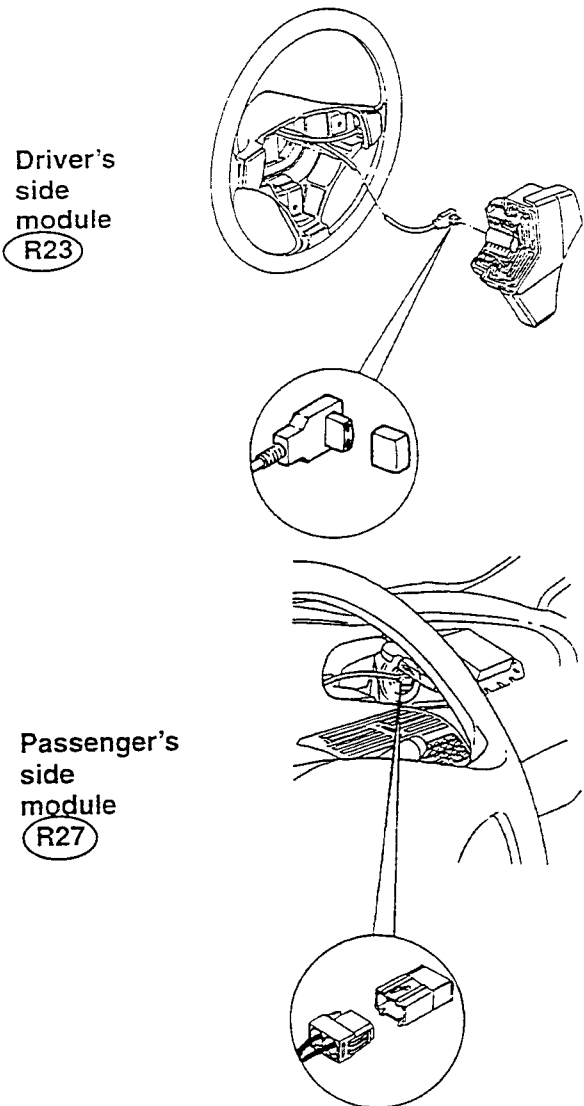
The User must then take the vehicle **at the soonest** to the nearest Service Centre to have the fault repaired because the system is no longer capable of operating correctly.

Once the fault has been signalled, the warning light stays on until the fault has been repaired and cancelled from the fault memory.

## DIAGNOSIS USING THE ALFA TESTER

N.B. Before carrying out diagnosis using the tester, carry out the preliminary test described below (**TEST A**).

To prevent the Air Bags from being triggered accidentally during diagnosis - upon request of the Tester - it is necessary to disconnect them from the wiring and connect a dummy resistance to the connectors which is supplied with the **ALFA TESTER** cartridge.



### NOTA:

When the ignition key is removed, the time and type of fault or error code remain present in the **FAULT-MEMORY**. Once the fault has been repaired it will be cancelled by the **TESTER**. Intermittent faults are kept in the **FAULT-MEMORY** for 48 hours, counted from the time in which they occur (time calculated only with the ignition key at **MARCIA**).

**DIAGNOSIS WITH FLASHING CODES****(only with BECKER control unit)**

As an alternative to the ALFA TESTER it is possible to diagnose the system by reading the number of flashes of the Air Bag warning light.

**N.B. Before carrying out diagnosis using the flashing code, carry out the preliminary test described later (TEST A).**

To perform diagnosis, with the ignition key engaged, earth pin 3 of the electronic control unit for between 1 and 5 seconds ( pin 3 of the control unit connects the Air Bag failure warning light and pin 1 of connector T3).

Once the fault has been repaired, the test must be repeated to check that other faults are not present. Remember that the control unit signals one fault at a time, in decreasing order, until the system has been repaired completely. When the repairs have been completed, the FAULT MEMORY is cancelled by earthing pin 3 of the control unit for between 5 and 10 seconds. All the errors stored must be cancelled one by one, repeating the procedure each time, until the FAULT-MEMORY has been cancelled completely.

The following table shows the possible faults and the remedies to be adopted, according to the number of flashes of the warning light.

**Flashing code table**

NO. OF FLASHES	POSSIBLE FAULT	REMEDIES
1	No faults detected	-
2	Faulty control unit	Change the control unit <b>R22</b>
3	Module triggering circuit in contact with +12V	Check the wiring
4	Module triggering circuit in contact with earth	Check the wiring
5	Driver's side module triggering device resistance out of tolerance	Check the wiring or change the driver's side module <b>R23</b>
6	Passenger's side module triggering device resistance out of tolerance	Check the wiring or change the passenger's module <b>R27</b>
7	Supply voltage below 9.5 V	Check fuse <b>F15</b> of fusebox <b>G1</b> or recharge or change the battery <b>A1</b>
8	Warning light circuit fault	Check the wiring or change the instrument cluster <b>C10</b>

**NOTE: Diagnosis with the blink code is NOT possible with the TRW control unit.**

<b>PRELIMINARY CHECKS ON THE AIR BAG SYSTEM</b>	<b>TEST A</b>
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TEST PROCEDURE		RESULT	CORRECTIVE ACTION
<b>A1</b>	CHECK FUSE	OK →	Carry out step A2
	– Check the intactness of fuse F15 of fusebox G1	<del>OK</del> →	
<b>A2</b>	CHECK CONTINUITY	OK →	Carry out step A3
	– Check continuity of the cable between fusebox G1 connector D, and the Air Bag control unit R22 (pin 9 BECKER - pin 15 TRW)	<del>OK</del> →	
<b>A3</b>	CHECK CONTINUITY	OK →	Carry out step A4
	– Check continuity of the cable between the control unit R22 (pin 8 - BECKER - pin 14 TRW) and earth G381	<del>OK</del> →	
<b>A4</b>	WARNING LIGHT	OK →	Carry out step A5
	– Check that the warning light is intact in the instrument cluster C10	<del>OK</del> →	
<b>A5</b>	CHECK CONTINUITY	OK →	Carry out step A6
	– Check the continuity of the cables between module R27 and the control unit R22	<del>OK</del> →	
<b>A6</b>	CHECK CONTINUITY	OK →	CONNECT TO THE DIAGNOSIS SOCKET T3 AND CONTINUE OPERATIONS WITH THE ALFA TESTER OR WITH THE FLASHING CODE with control unit BECKER
	– Check continuity of the cables between module R23 and control unit R22	<del>OK</del> →	

