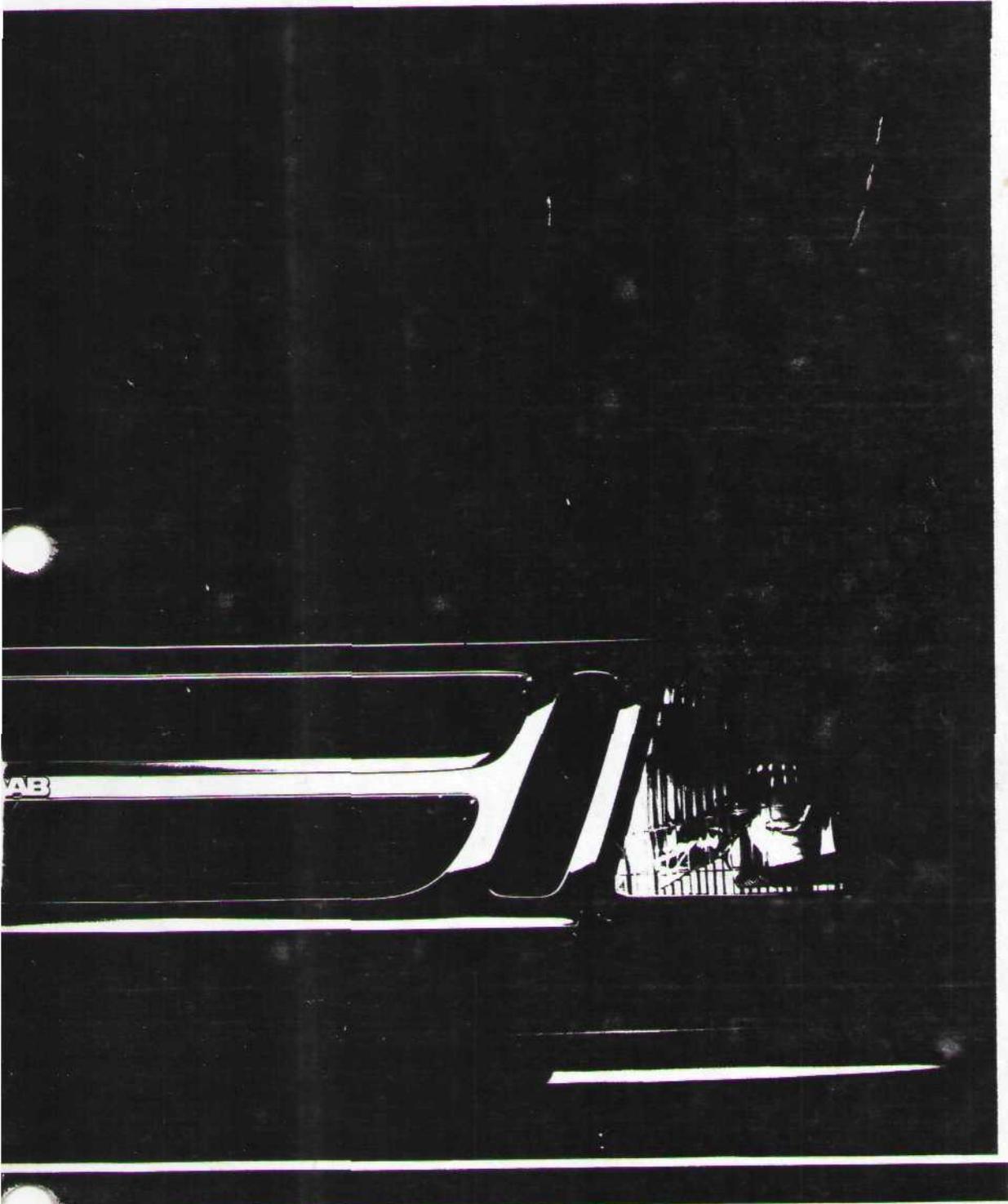


Saab



**SAAB**

8:6 Airbag

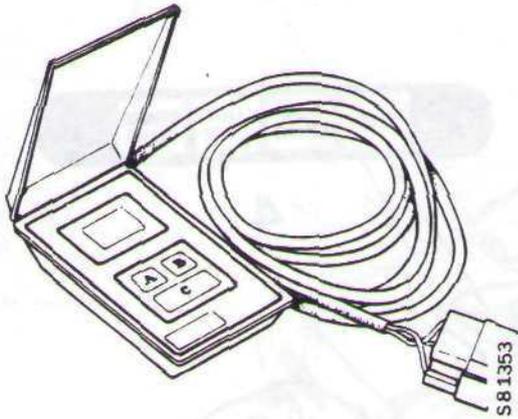
299p

5000

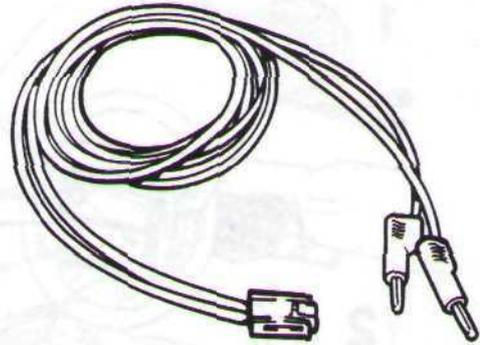


8:8 A/pdg

# Special tools



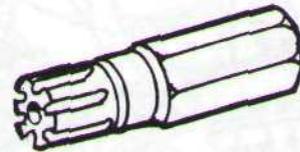
84 71 112  
SRS system tester



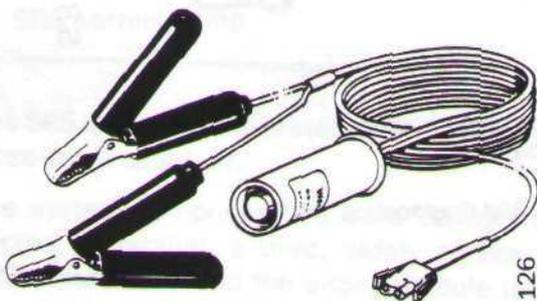
84 71 146  
Measuring cable



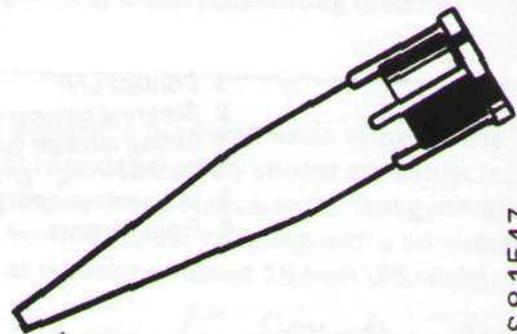
84 71 153  
Reference resistance



84 71 120  
Special T 30 Torx bit for the front sensors and at-  
tachment of the electronic unit

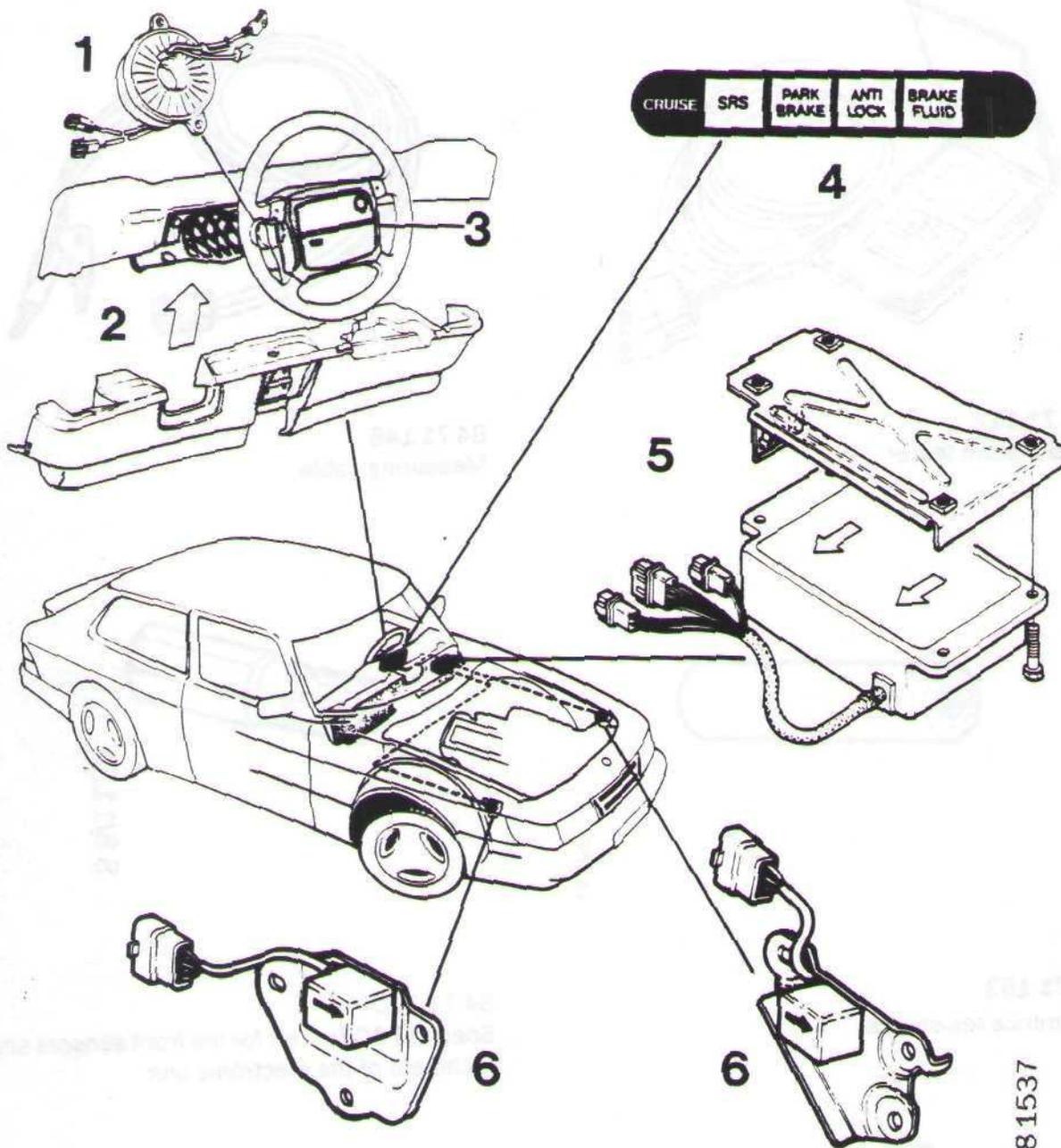


84 71 104  
Detonation device for scrapping the Airbag



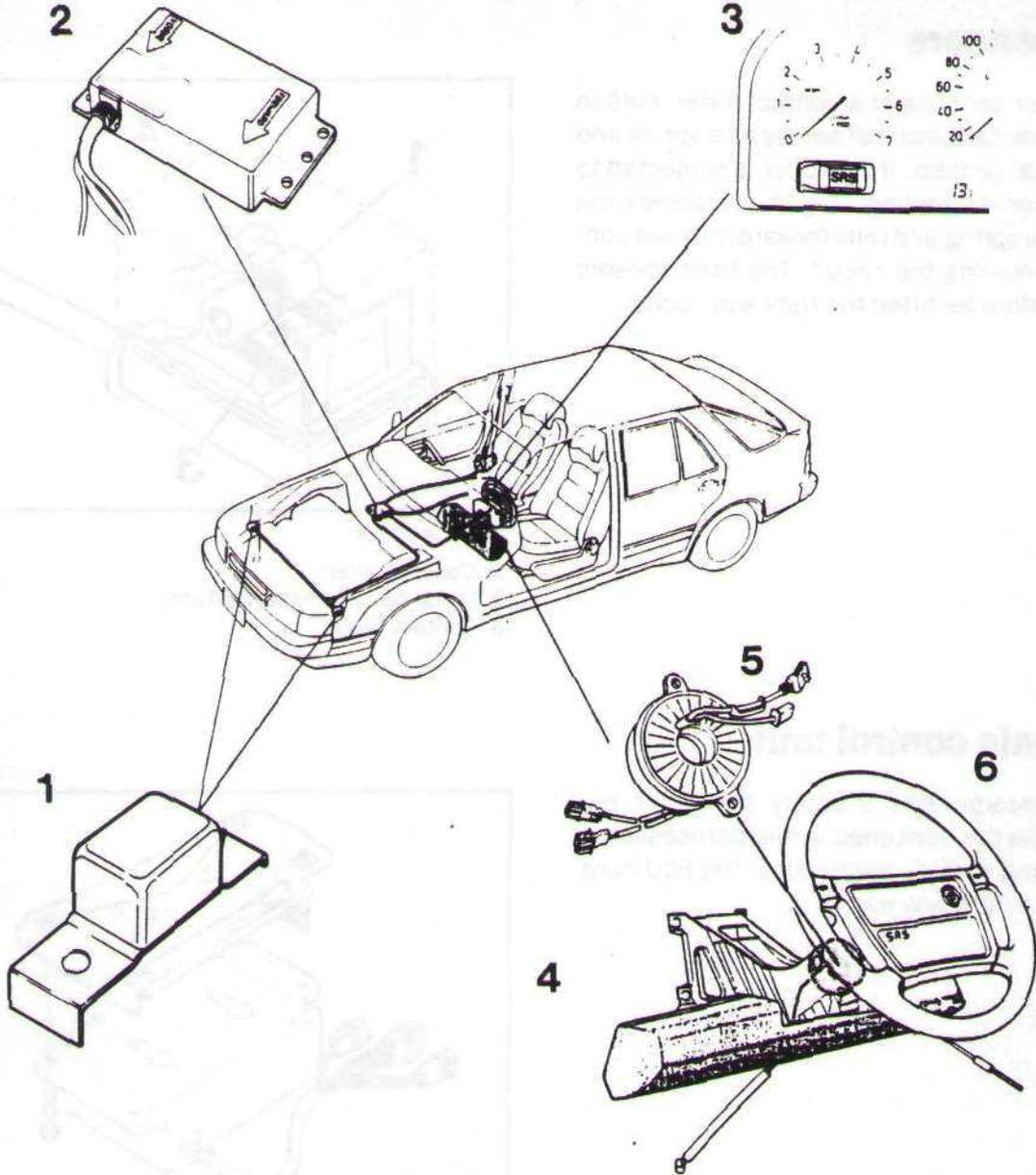
30 18 652  
Metal nozzle

# Technical description



- 1 Contact unit
- 2 Steering column with antishmoring padding
- 3 Airbag module (steering wheel pad)
- 4 SRS warning light
- 5 ECU incorporating safety sensor and diagnostics
- 6 Front sensors

S81537



S81352

- 1 Front sensor
- 2 Electronic unit containing safety sensor, capacitor pack and diagnostic unit.
- 3 SRS warning lamp
- 4 Steering column with knee guard
- 5 Contact unit (coil spring)
- 6 Steering wheel pad (airbag module)

The SRS augments the protection afforded by the three-point seat belt.

The system comprises two front sensors connected in parallel, a third, safety sensor, the SRS-system ECU and the airbag module (steering-wheel pad) containing a gas generator and airbag. The antsubmarining padding underneath the dash panel has also been upgraded, and is stronger, with greater impact-absorbing properties.

The system is triggered when either of the front sensors and the safety sensor are subjected to a retardation force equivalent to that generated by the front of the car colliding with a concrete barrier at a speed of about 15 mph (25 km/h).

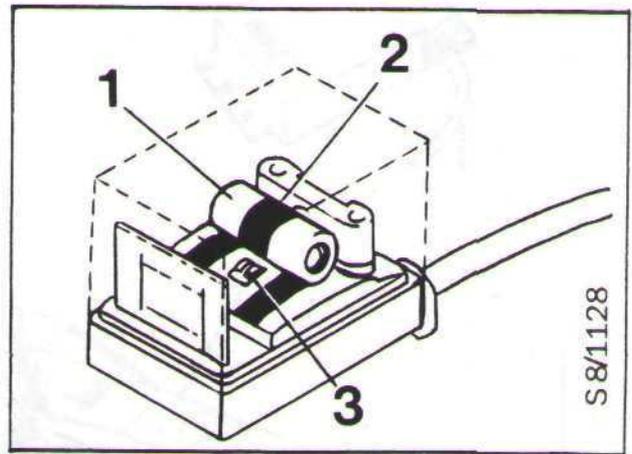
*Safety sensor in computer at 29*

3

3

## Front sensors

Each sensor consists of a contact roller, held in place by a metal band that serves as a spring and an electrical contact. If the roller is subjected to a retardation exceeding 16 g, it overcomes the force of the spring and rolls forward onto the contact reed, making the circuit. The front sensors must therefore be fitted the right way round.



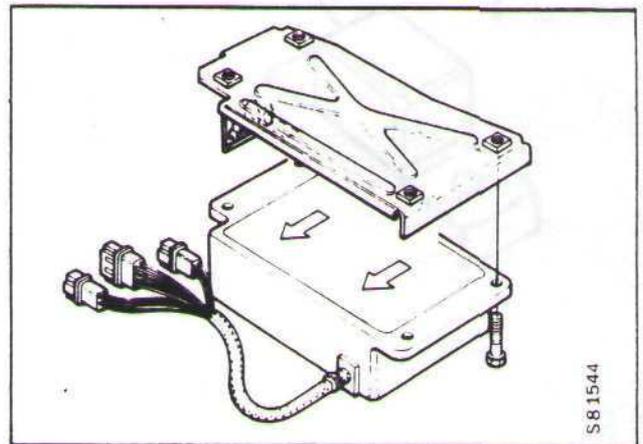
S8/1128

Front sensor

- 1 Contact roller
- 2 Metal band (contact surface)
- 3 Contact reed

## Electronic control unit

The ECU incorporates a safety sensor of the same type as the front ones, a microprocessor, a capacitor and system diagnostics. The ECU must be fitted the right way round.



S81544

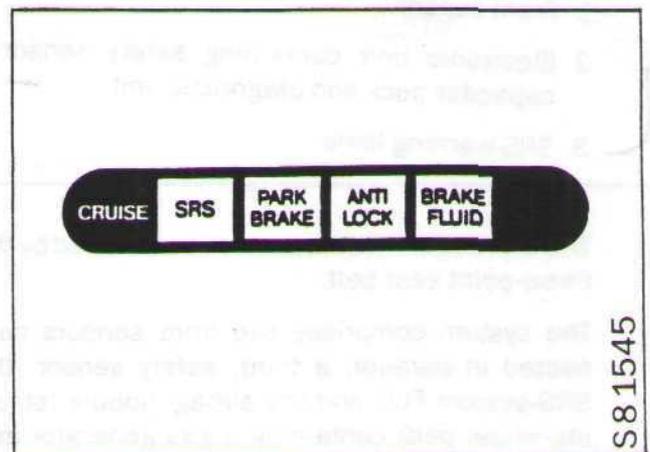
## SRS warning light

If a fault should occur in the system, the SRS light (in the RH array of lights on the instrument panel) will start to flash for about 10 minutes and then remain on.

An SRS-system tester connects to a test socket, located behind the rubber gaiter between the radio console and gear/selector lever, for fault diagnosis.

To verify that the SRS warning light is working, the light will come on for about 6 seconds when the ignition switch is turned to the Start or Drive position. If the light remains on, a fault in the system is indicated.

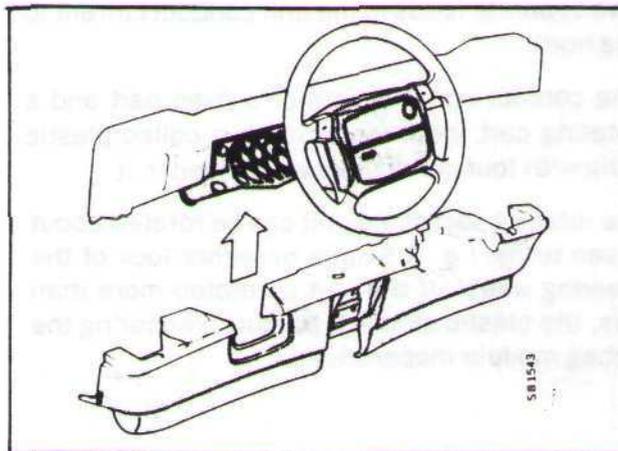
If a collision occurs that causes the airbag module to detonate, the SRS light will flash for 5 seconds and then remain on.



S81545

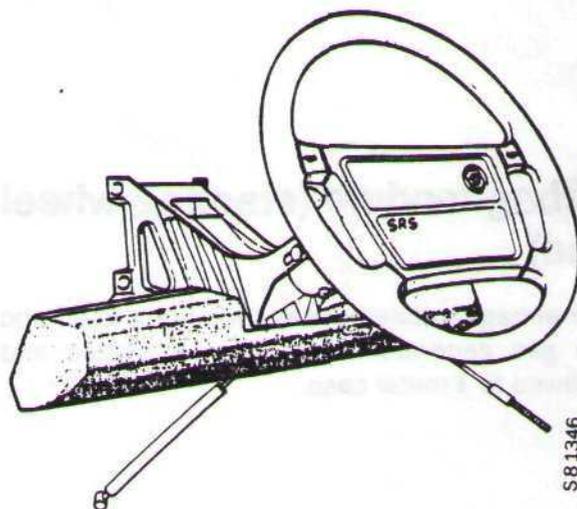
## Steering wheel, steering column and antisubmarining padding

The steering wheel and steering column are of a special design, with the airbag module (housing the airbag and gas generator) fitted in the steering wheel padding. The antisubmarining padding has also been upgraded to provide greater impact-absorbing protection.



## Steering wheel, steering column and knee guard

The steering wheel and steering column are of special design. To stabilize the steering column in a collision, a cable is stretched from the lower part of the A post, over the steering column to the reinforcing tunnel in the floor. The steering wheel is not adjustable. A knee guard plate is welded to the steering column, and a knee guard of shock-absorbing material is bolted to the plate. The center of the steering wheel is designed to accommodate a pad containing the airbag and the gas generator (airbag module).



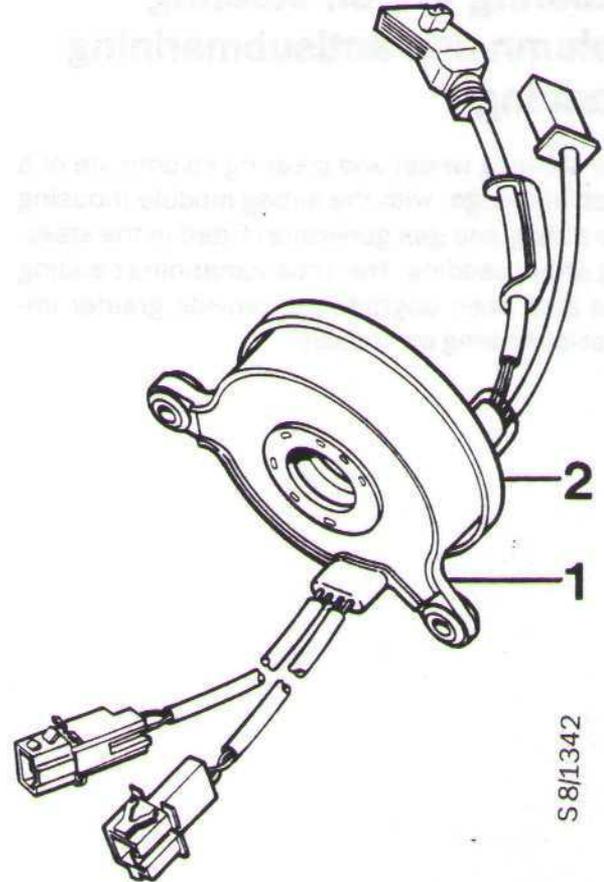
## Airbag contact unit

The contact unit, interposed between the steering wheel and column assembly, conducts test and detonating current to the airbag module.

Two separate leads in the unit conduct current to the horn.

The contact unit consists of a fixed part and a rotating part, between which is a coiled plastic strip with four conductors embedded in it.

The rotating part of the unit can be rotated about seven turns, i.e. 3.5 turns on either lock of the steering wheel. If the unit is rotated more than this, the plastic strip will fracture, rendering the airbag module inoperative.

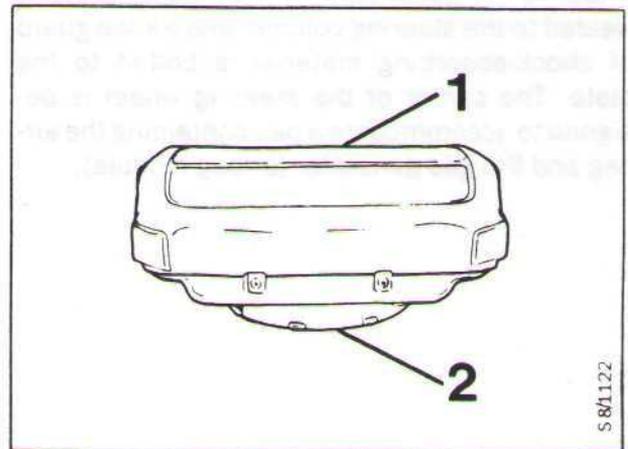


S8/1342

- 1 Fixed part
- 2 Rotating part

## Airbag module (steering-wheel pad)

The airbag module houses the airbag itself and the gas generator. The latter is riveted and screwed to a metal case.



S8/1122

- 1 Airbag
- 2 Gas generator

## Gas generator

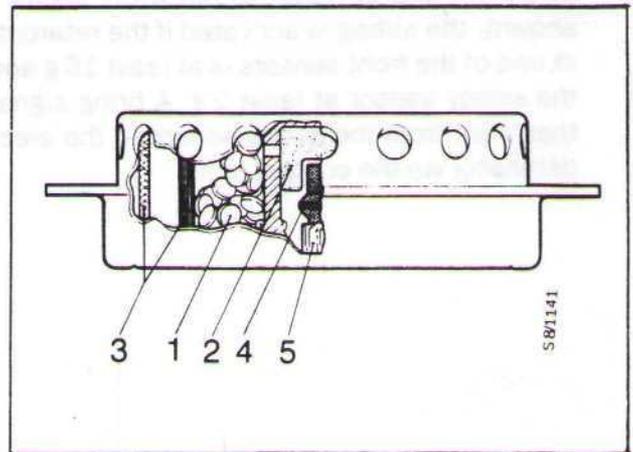
The gas generator consists of an aluminium case enclosing a central chamber and two annular chambers.

The central chamber contains an electric detonator and an explosive charge connected by passages to the inner annular chamber.

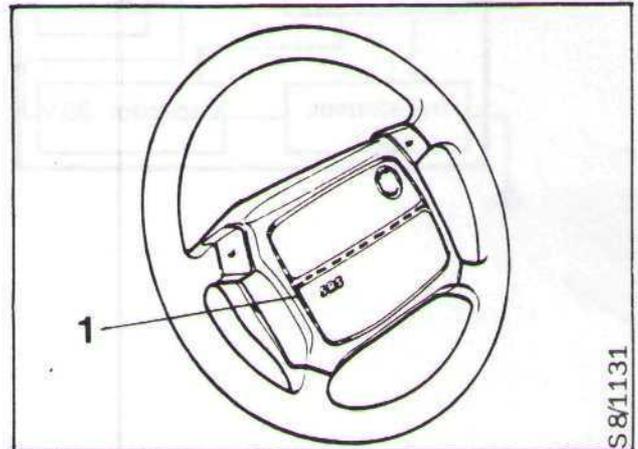
The annular chamber contains fuel in the form of pellets, which gives off a gas when it burns. Passages link the inner annular chamber to the outer one.

A filter inside the outer annular chamber removes particles from the gas before it enters the airbag.

The airbag is connected to the gas generator and protected by a plastic cover attached to the metal case. The cover incorporates fracture lines along its centre.



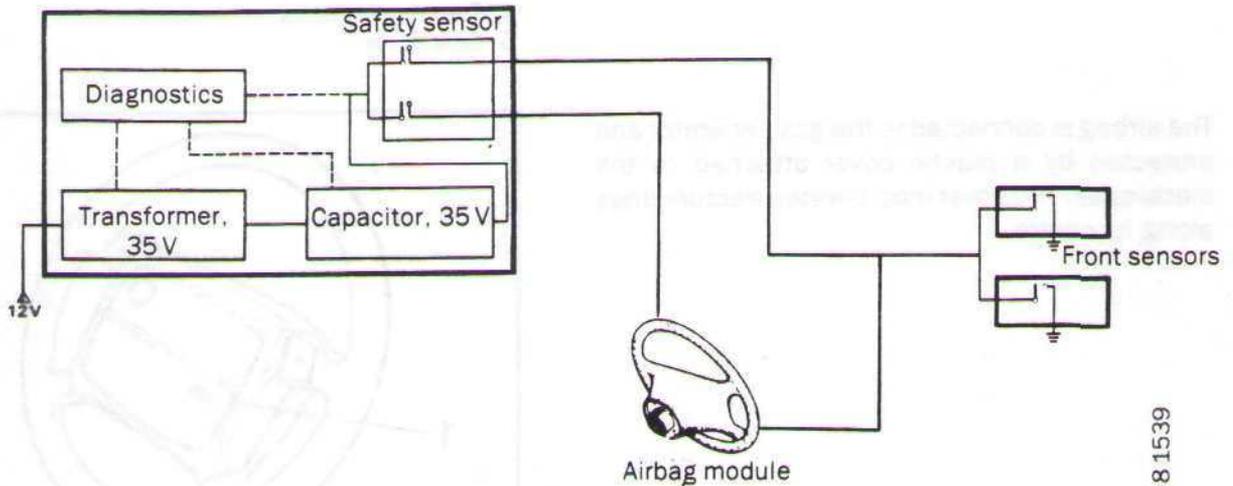
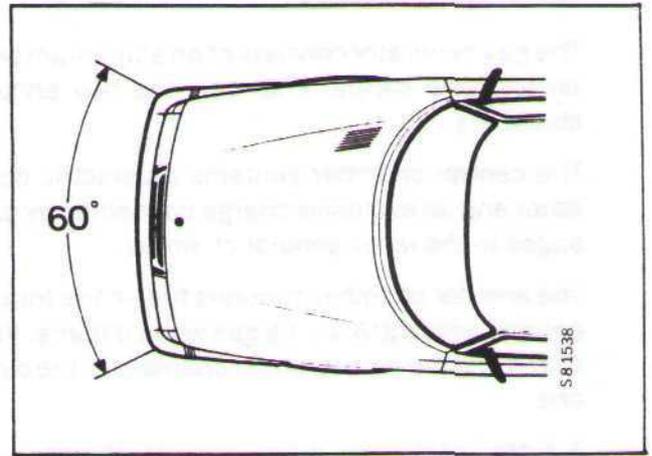
- 1 Fuel pellets
- 2 Explosive charge
- 3 Filter
- 4 Electric detonator
- 5 Connector



- 1 Fracture lines

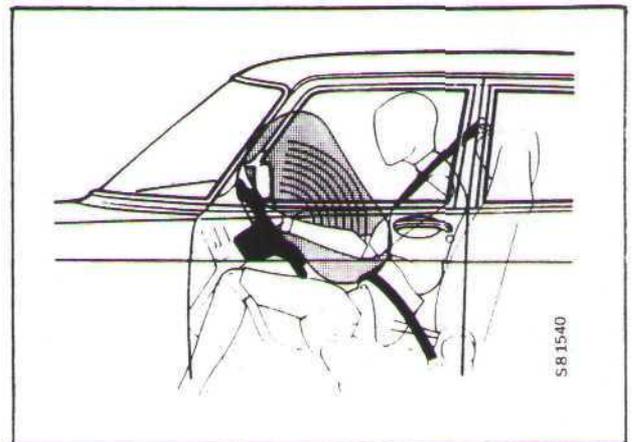
## What happens in a collision

In a front-end collision within a 60° sector (as shown), the airbag is activated if the retardation at one of the front sensors is at least 16 g and at the safety sensor at least 2 g. A firing signal is then sent from the safety sensor to the electric detonator via the contact unit.



The detonator is earthed to the body via the contact unit and front sensor. On detonation, the explosive charge ignites the fuel in the gas generator, causing gas to be generated at high pressure.

The gas will inflate the airbag in 20-30 milliseconds.



# Safety precautions and handling instructions

General	5	Work on the car body	8
Welding	6	Replacing the windscreen	8
Respraying	7	Work on the steering	8
Electrical work	8	Repairing vehicles after airbag detonation	9
Fault diagnosis	8	Cleaning vehicles after airbag detonation	9

## General

All work involving the system must be carried out carefully as detailed in the Manual. Failure to do so could result in injury.

Components must not be tampered with and must always be handled carefully. Avoid exposing them to impact, direct heat, moisture, etc.

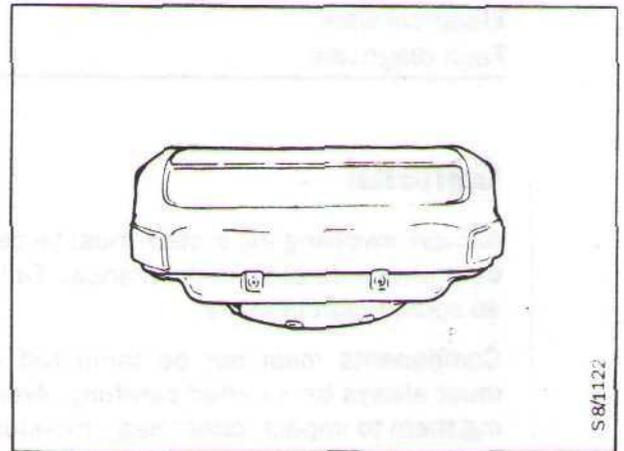
Before starting any work on the system, always disconnect the negative (-) battery lead and wait 20 minutes before proceeding.

The airbag module (steering-wheel pad) is classified as an explosive and therefore comes under the provisions of the relevant regulations governing storage and handling of explosives.

Once an airbag module has been taken out of the stores, it must be fitted immediately. If the work has to be interrupted for any reason, the module must be returned to the stores and locked away until the work can be restarted. The airbag module must never be left out unattended.

- The airbag module is a sealed unit. No attempt must be made to dismantle or repair it.
- Airbag modules must not be stored at a temperature exceeding 70°C (158°F). At temperatures above 135°C (275°F), the airbag may self-detonate.
- Airbag modules must be handled with care. Do not drop them or allow them to be knocked or subjected to vibration.

- When not fitted in the steering-wheel, airbag modules must be stored in accordance with the regulations governing the storage of explosives in the country concerned.
- Always store and carry airbags with the black casing uppermost. This should prevent injury in the event of accidental detonation.



S8/1122

- Airbag modules must not be stored with petroleum products or other flammable materials.
- Always wear goggles and protective gloves when removing a module that has been detonated. Place the module in a tightly sealed plastic bag and wash your hands using mild soap and warm water.

## Welding

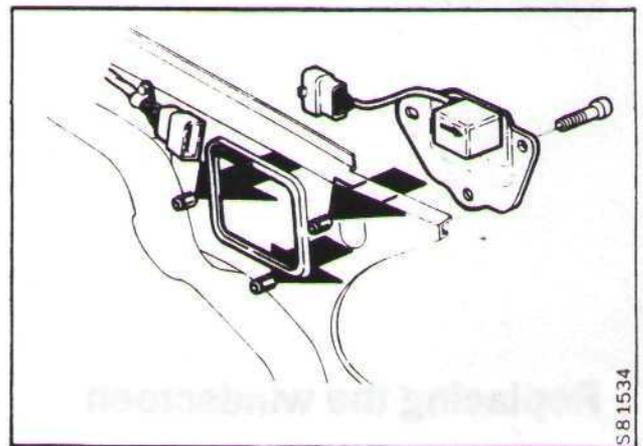
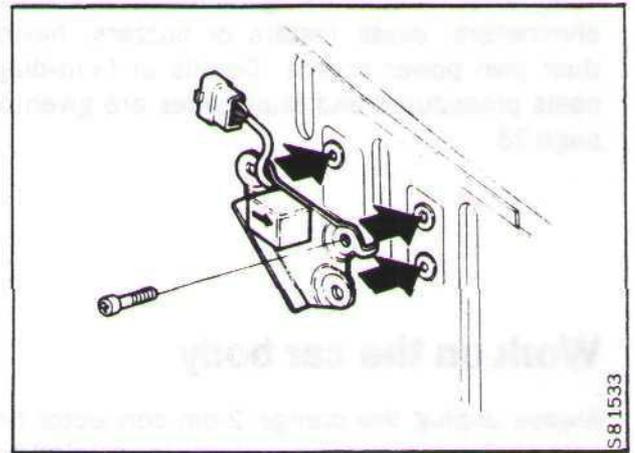
Before starting any welding work on the car:

- Disconnect the negative (-) battery lead and (+) cover the terminal pole on the battery.

## Respraying

Before stove-drying the paint:

- Mask the threads of the spring steel fasteners and surfaces in contact with the front sensors to ensure that good earthing is maintained between the body and the SRS components.



## Electrical work

Electrical leads in the SRS circuitry must never be spliced. This could make the system potentially dangerous and render it inoperative.

Insulation on individual leads may be replaced if damaged but only if the copper conductor has not been damaged and remains intact.

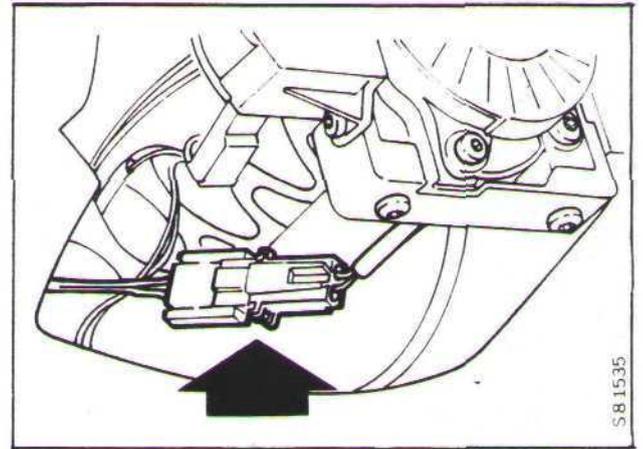
Never apply grease to connectors in the SRS system.

## Fault diagnosis

Fault diagnosis on the airbag module and ECU must never be done using instruments, such as ohmmeters, diode testers or buzzers, having their own power source. Details of fault-diagnosis procedures and fault codes are given on page 23.

## Work on the car body

Always unplug the orange 2-pin connector (located behind the steering column lower joint) before starting any panel beating or similar impact work on the body.



## Replacing the windscreen

Because an inflated airbag applies pressure to the windscreen, the method of bonding the windscreen is different in cars equipped with SRS.

Details on how to replace the windscreen are given on page 108.

## Work on the steering

To prevent the basic setting of the airbag contact unit being altered during work in which the steering-column shaft is disconnected from the rack-and-pinion gear, the steering wheel must be immobilized. If the basic setting of the contact unit is altered, the coiled conductor inside the contact unit will fracture when the steering wheel is turned to full lock.

Details of how to immobilize the steering-wheel are given on page 77.

## Repairing vehicles after airbag detonation

The following components must be replaced in cars that have been involved in a collision that has detonated the airbag:

- Airbag module (steering wheel pad)
- Steering wheel
- Airbag contact unit
- SRS-system ECU
- Front sensors

The following items must be inspected for signs of scorching or distortion:

- All system wiring
- Steering column
- Steering-column shaft
- Sensor brackets

To ensure that the system will still function properly following damage to the bodywork, all damaged parts, including sensor brackets, must be replaced.

## Cleaning vehicles after airbag detonation

Before a car in which the airbag has detonated can be repaired or reused, it must be cleaned as follows.

### **Warning**

Always wear goggles and protective gloves.

Remove the airbag module and place it in a tightly sealed plastic bag.

On detonation of the airbag, talc and other fine dust (combustion residue) are released. The whole of the inside of the car must therefore be vacuum cleaned thoroughly.

# Scrapping of airbag modules

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## Precautions

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### Warning

Components of the SRS system must never be removed for use in another vehicle.

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Undetonated airbag modules must be made safe before they are scrapped. This is done by detonating them electrically under controlled conditions as detailed below. An airbag module with a primed explosive charge is potentially highly dangerous and unless handled correctly could cause serious injury.

---

### Warning

For controlled detonation, airbag modules must be correctly fitted in the car. Check to ensure there are no loose parts or other objects in the vicinity of the module.

Airbag modules can cause serious injury if they are not fitted securely on detonation.

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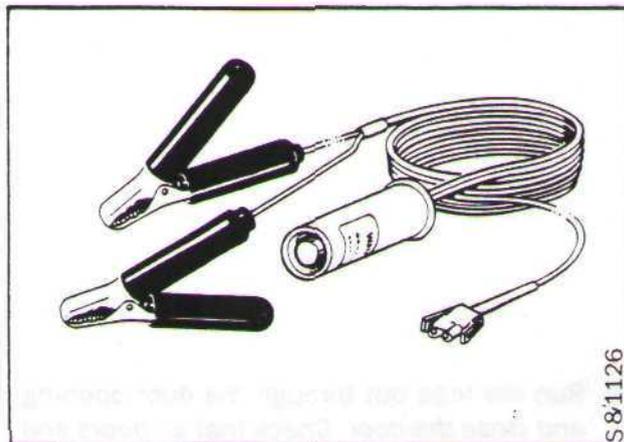
Undetonated airbag modules are extremely dangerous if exposed to high temperatures (e.g. at the scrapyards) or if primed components should start to smoulder or burn.

## Controlled detonation

Before a car equipped with the SRS system can be scrapped, the explosive charge in the airbag module must be detonated from a safe distance using a special triggering device.

The triggering device consists of a 15-m length of twin-core cable, with clips at one end for connection to a battery, and a connector at the other end for connection to the airbag module. The triggering device itself has a pushbutton switch.

Check that the battery to be used is in good condition.



S81126

Triggering device 84 71 104

For the controlled detonation of the airbag module, the car must be parked outdoors with a completely open space around it. The perimeter of this danger zone must be at least 10 m (33 feet) from the car.

Check to ensure there are no loose objects on the front seat or on top of the dash, and that there is nobody inside the car or within the danger zone.

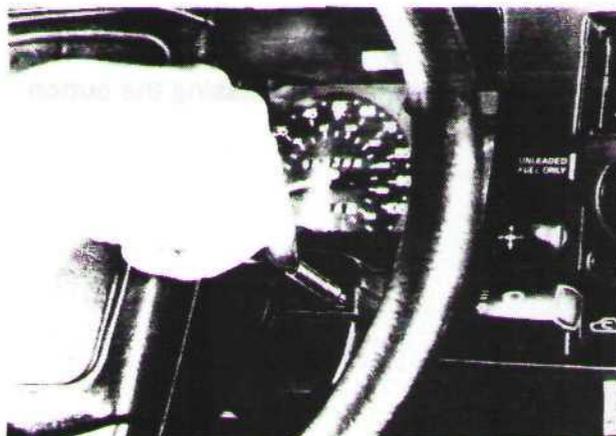
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### Warning

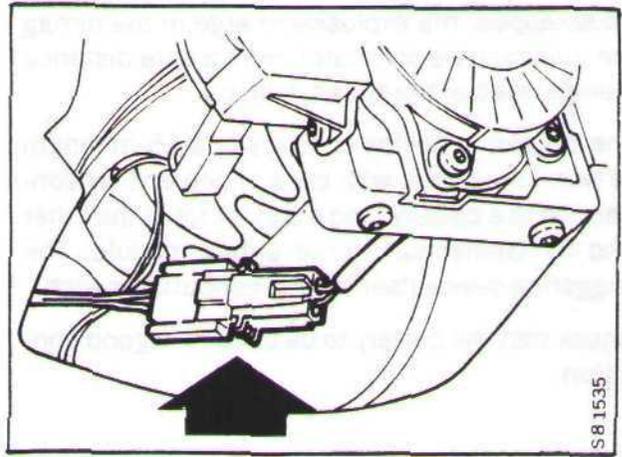
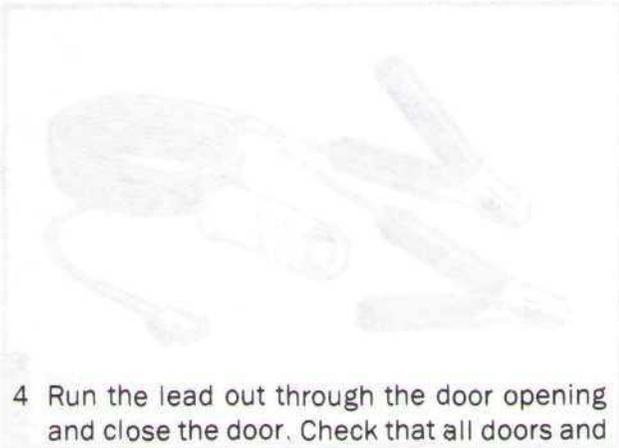
Always wear safety goggles and protective gloves.

---

- 1 Disconnect the negative (-) battery lead and cover the terminal pole on the battery.
- 2 Remove the bottom cowling from the steering column.



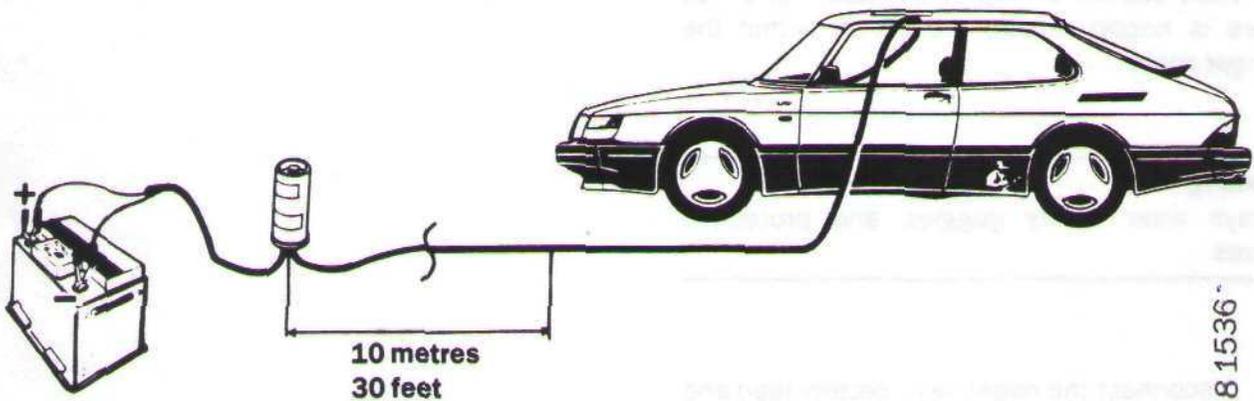
- 3 Unplug the orange 2-pin connector and plug the connector from the triggering device into the female half of the connector.



S8 1535

- 4 Run the lead out through the door opening and close the door. Check that all doors and windows are closed.

- 5 Stand a fully charged car battery 10 m (33 ft) from the car. Connect the triggering device to the battery and check that there is nobody within 10 m (33 ft) of the car.



S8 1536

- 6 Detonate the airbag by pressing the button on the triggering device.

## Power feed

The supply to the system is taken from the +15 terminal block when the ignition is in the Start or Drive position and from the +50 block when the ignition switch is in the Start position.

When the ignition switch is in the Start or Drive position, current flows from the +15 terminal block via pin 3 in connector 58 and pin 3 of connector 98 to pin 18 of the ECU (331), charging the capacitor.

The capacitor serves as a back-up power supply in the event that the main feed goes down in a collision.

Power is also taken from the +15 terminal block to feed the SRS warning light (47T) on the instrument display panel via the ignition switch relay (21), fuse 7 and connector 152B.

The warning light is earthed via pin 7 in connector 98 and pin 20 of the ECU (331).

When the ignition switch is turned to the Start position, current is taken from the +50 terminal block to pin 16 of the ECU (331) whereupon a signal is sent to initiate the diagnostics function.

## Activation of the airbag

For the airbag module to be triggered in a collision, one of the front sensors and the safety sensor in the ECU must sense the minimum critical retardation (front sensor: 16 g; safety sensor: 2 g).

The contacts in the sensors then make the circuit, causing the capacitor in the ECU to discharge, sending a firing signal to the detonator in the airbag module.

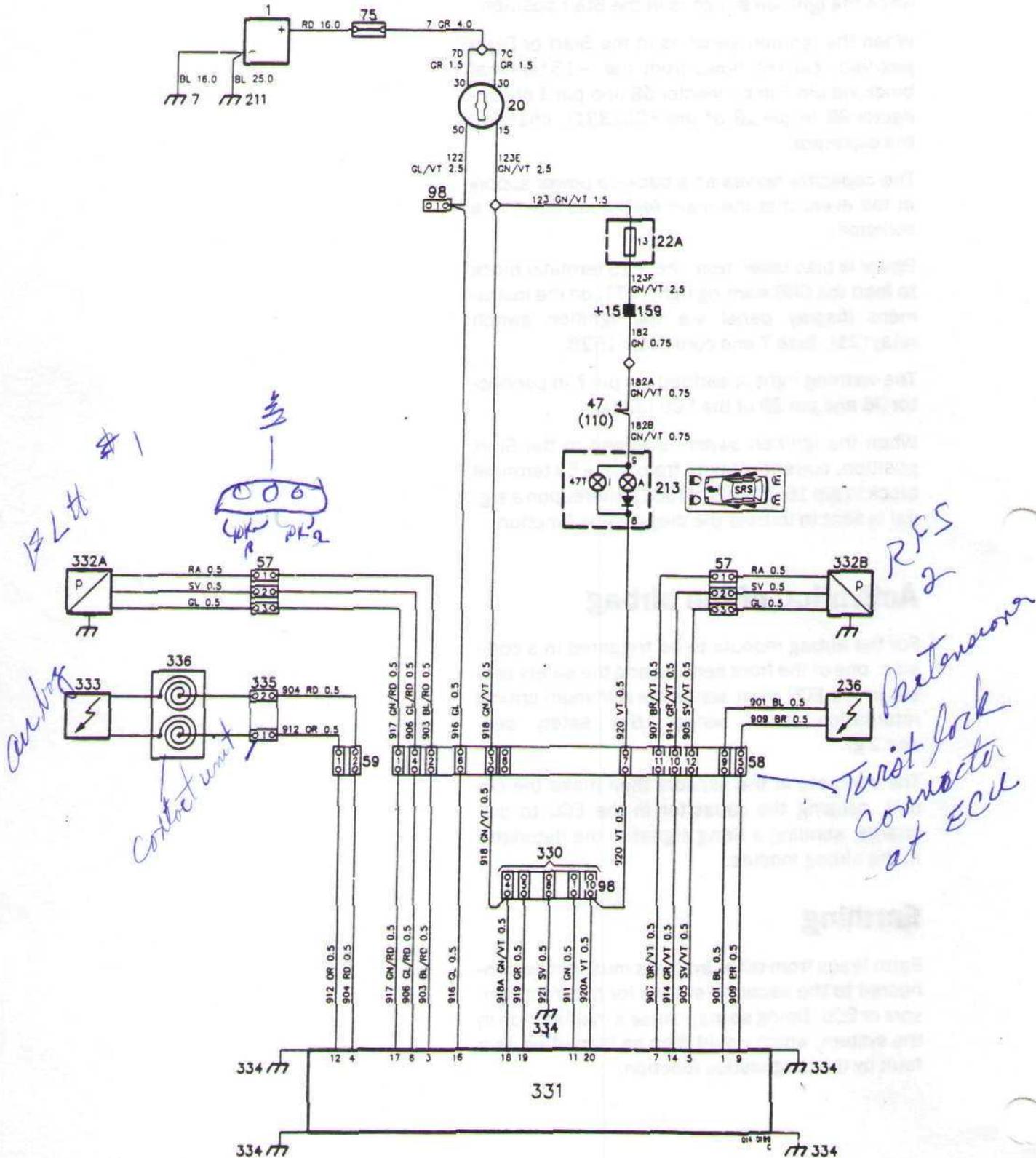
## Earthing

Earth leads from other systems must not be connected to the securing screws for the front sensors or ECU. Doing so may cause a malfunction in the system, which would then be identified as a fault by the diagnostics function.

# Wiring diagram

9000

## Airbag (US)



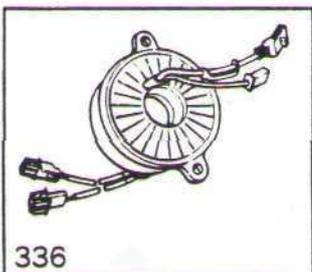
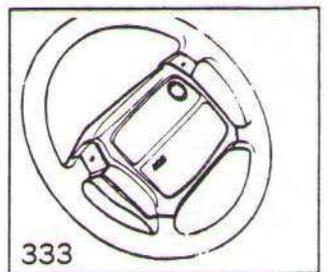
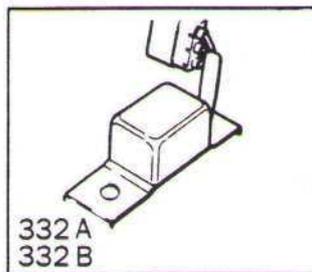
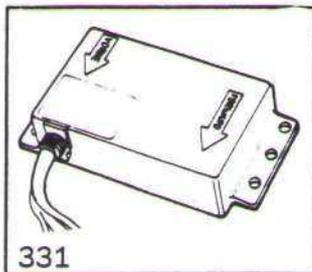
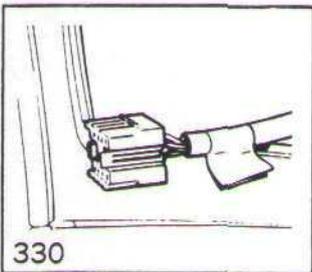
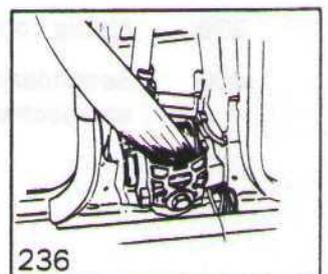
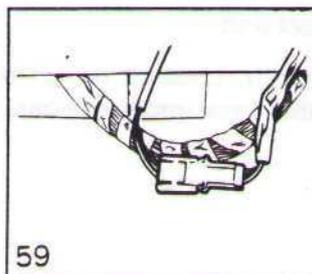
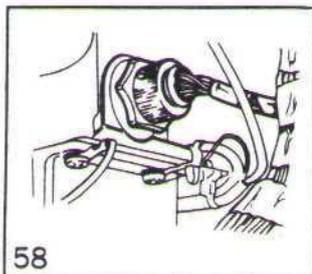
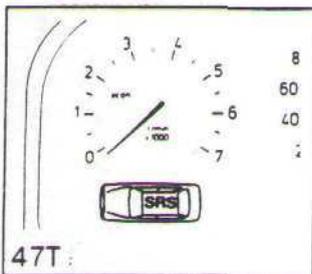
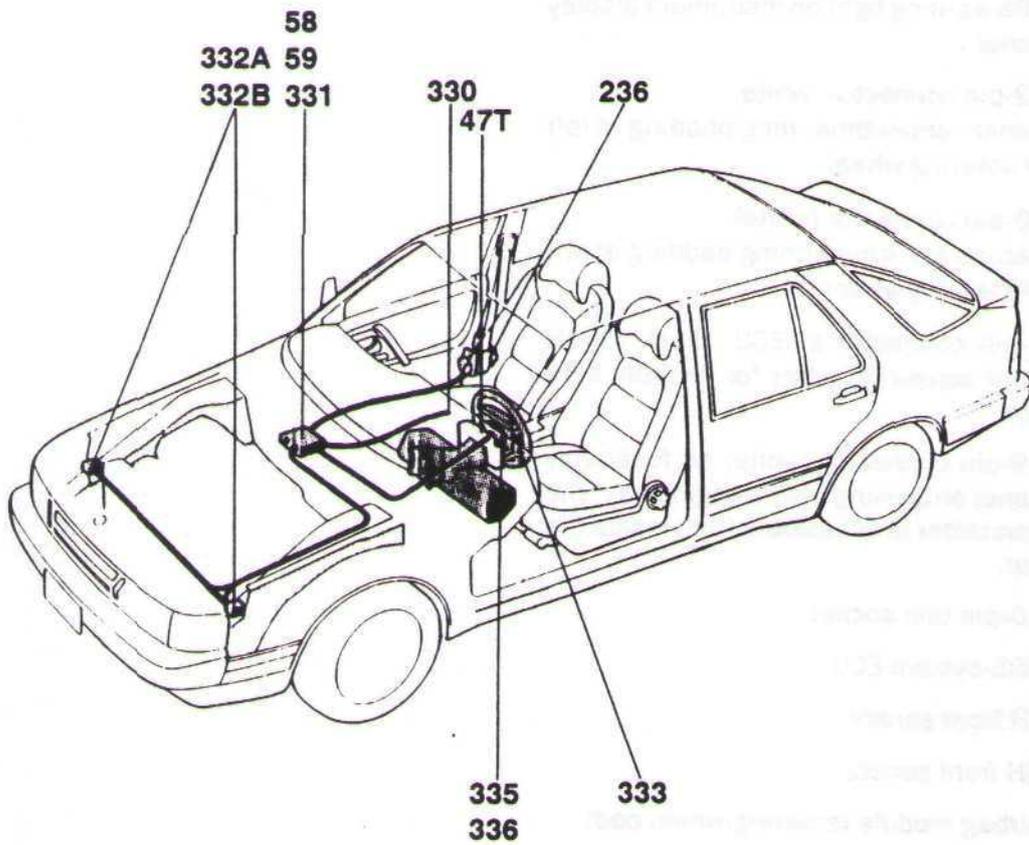
# List of components

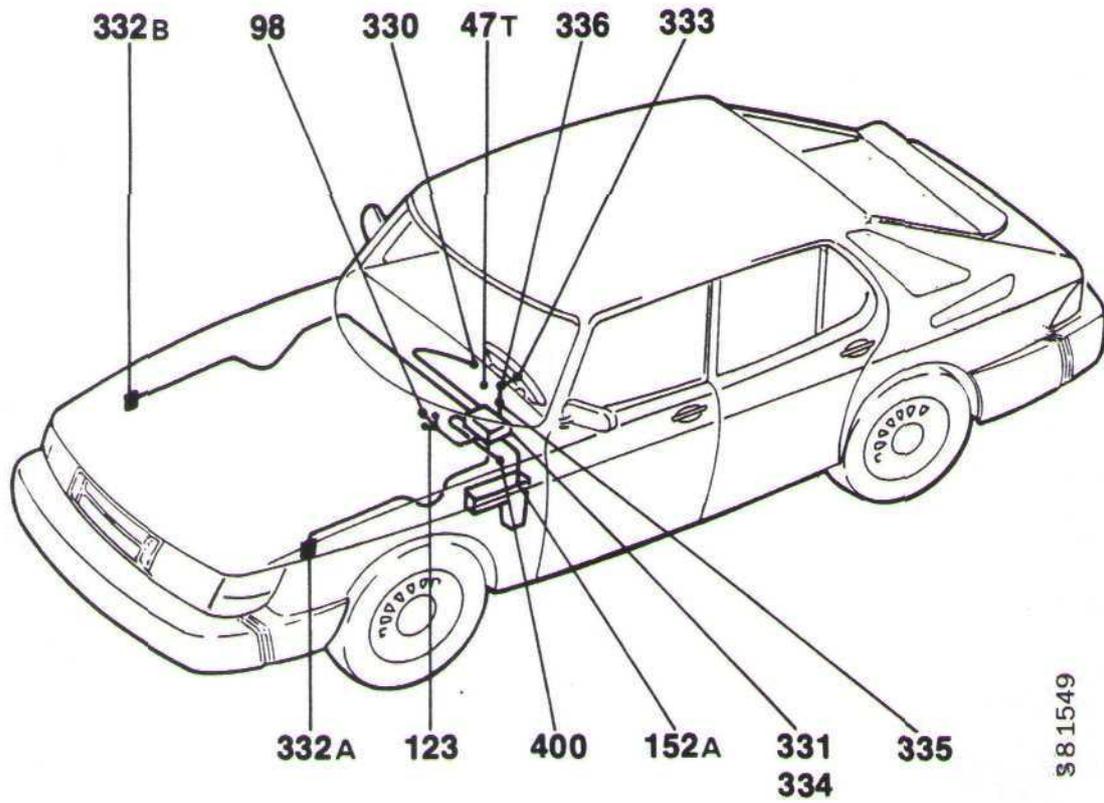
9000

- 47T Airbag warning lamp in pictogram 213
- 58 12-pin connector
- 59 2-pin connector (orange). The male pins are short-circuited when the connector is separated.
- 236 Seat-belt tensioner, right-hand
- 330 Test outlet, 10-pin, airbag
- 331 Electronic unit, airbag
- 332 A Front sensor, left-hand
- 332 B Front sensor, right-hand
- 333 Steering wheel pad, airbag
- 334 Ground point for electronic unit and test outlet
- 335 2-pin connector (orange). The male pins are short-circuited when the connector is separated.
- 336 Contact unit (coil spring)

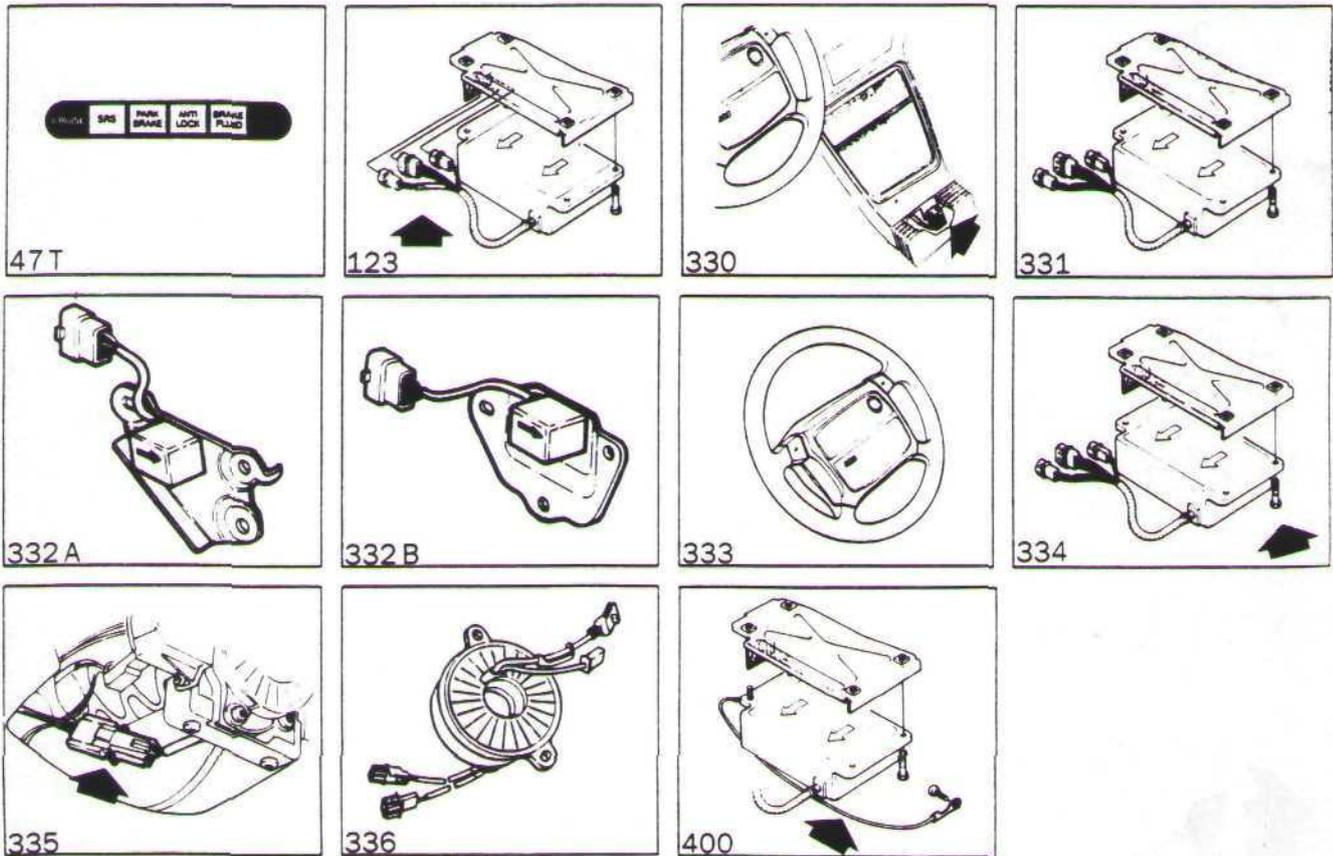


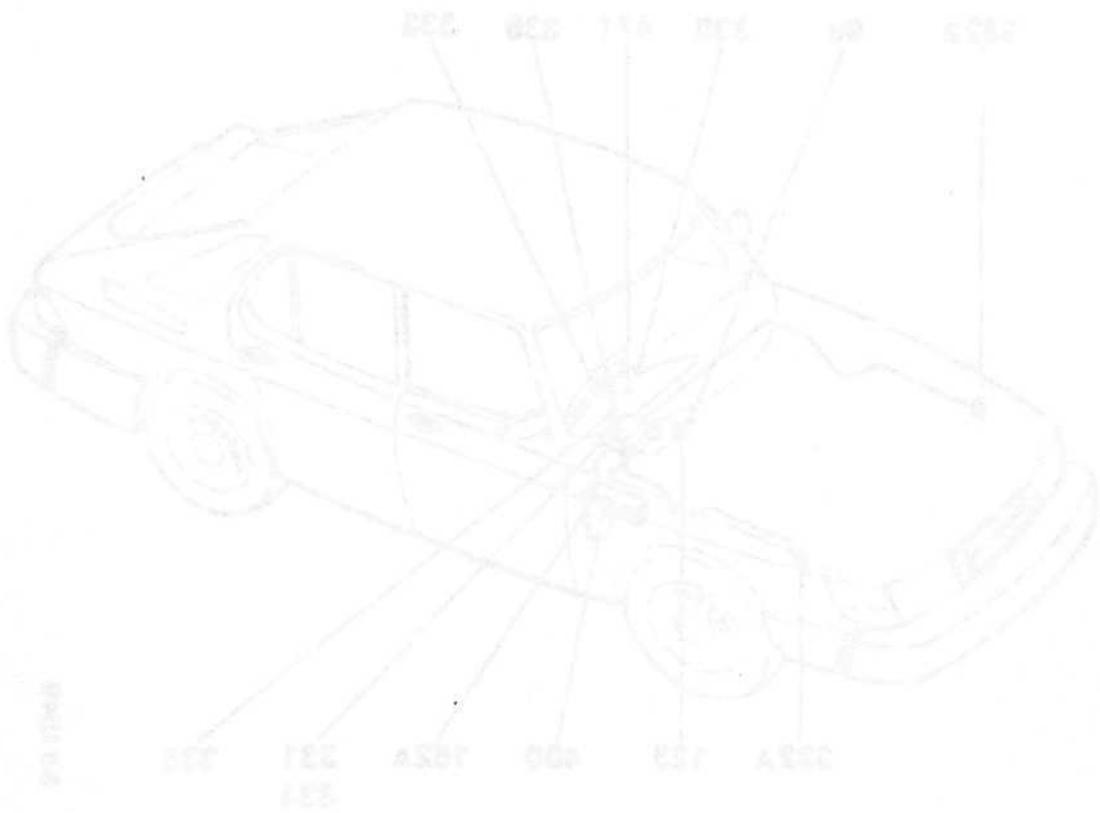






381549





# Fault diagnosis

Diagnostics function . . . . .	23	Test procedures . . . . .	31
SRS-system tester . . . . .	24	Wiring diagram . . . . .	39
Fault-code chart . . . . .	28	List of components . . . . .	40

Before starting work on the system, always disconnect the negative (-) battery lead and cover the terminal pole on the battery.

After the lead has been disconnected, wait 20 minutes before starting work on the system.

No attempt must be made to repair a defective airbag component. All defective components must be replaced.

Electrical leads in the SRS circuitry must never be spliced. This could make the system potentially dangerous and render it inoperative.

New insulation may be fitted to replace damaged insulation on the wiring in the SRS system, provided that the conductors are undamaged and intact.

If a connector is unplugged while the ignition is on, this will generate a fault code that can only be cleared using the procedure to delete all fault codes in the memory.

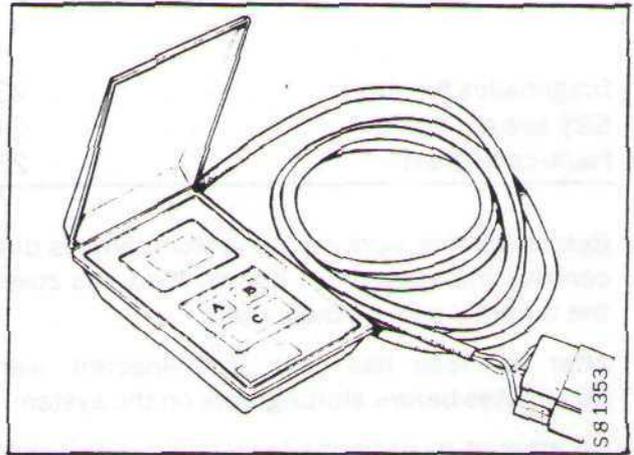
## Diagnostics function

The diagnostics function monitors the system continuously. If a fault is detected, the SRS warning light on the instrument display panel will start flashing for about 10 minutes and then remain on until the ignition is switched off. If the fault is still there when the ignition is next switched on, the symbol will flash again for 10 minutes.

Information on detected faults is stored in the form of fault codes in the ECU.

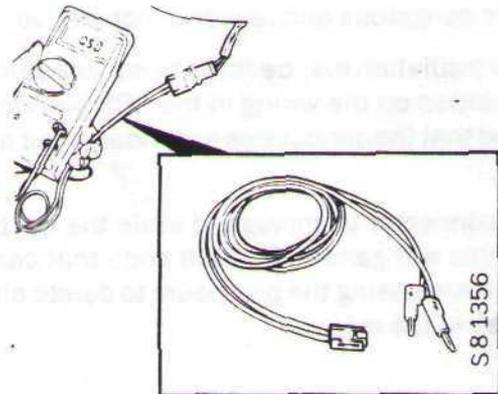
## SRS-system tester

Fault codes stored in the ECU can be read off using the SRS-system tester, part no. 84 71 112.

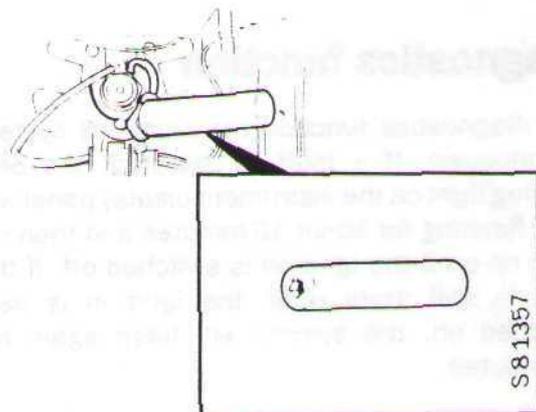


SRS-system tester  
Part no. 84 71 112

For fault-diagnosis work, use test lead set, part no. 8171146, and test resistor, part no. 8471153.



Test lead set 84 71 146



Test resistor 84 71 153

## Casing

The casing of the tester is made of impact and oil-resistant plastic and incorporates a hinged cover over the display and control panel.

## Display

Specially designed LCD display comprising 14 segments.

## Control panel

The control panel is specially designed and incorporates three membrane switches.

## Microprocessor

Eight-bit crystal-controlled processor with 1.8 K of internal storage.

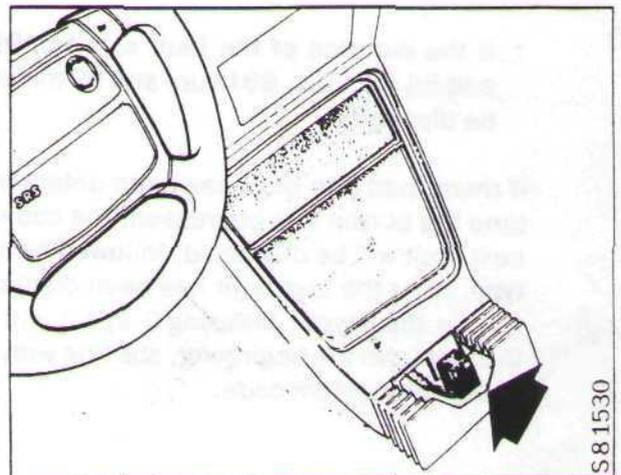
## Description

Saab's SRS-system tester has been developed for efficient servicing and fault-diagnosis work. The tester set comprises the tester itself and a connecting lead with connector. Provision has been made for the connection of any accessories that may be available in the future.

All faults occurring in the system, be they permanent or intermittent, are stored in the ECU in the form of codes that can be displayed by the tester.

## SRS-system tester

The tester connects to the special SRS-system test socket, located underneath the rubber gaiter between the radio console and the gear/selector lever, by means of a connector and a one-metre test lead.

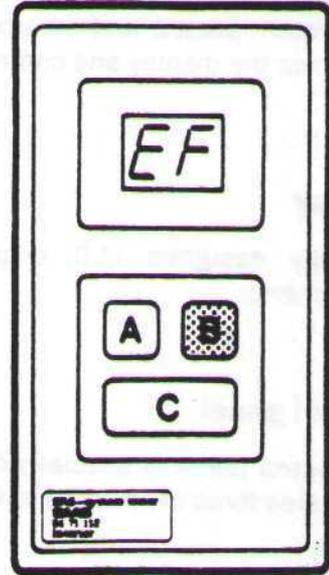


## Test for external faults (In wiring, sensors, etc.)

Start by pressing B, whereupon EF will appear on the display.

Now press C.

Each time C is pressed a new code will be displayed in the sequence shown in the table below. The first time C is pressed, the SRS system code will be displayed. The second time, the program version, and so on.



### Example Explanation of code

- |    |   |
|----|---|
| 41 | SRS system code   |
| 03 | Program version   |
| 01 | Duration of fault in hours* (first fault)   |
| 15 | Duration of fault in minutes*<br>(first fault)<br>(shown in 5-minute increments)  |
| 2d | Fault code (2-character alphanumeric)<br>(see the table of fault codes for<br>appropriate test procedure)   |
| L  | Fault type<br><br>L = Permanent (Lasting) fault<br>(Remains when ignition switched off.)<br><br>S = Intermittent (Sporadic) fault<br>(Disappears when ignition switched off.) |

\* If the duration of the fault exceeds 99 hours and 55 minutes, 99 hours and 99 minutes will be displayed.

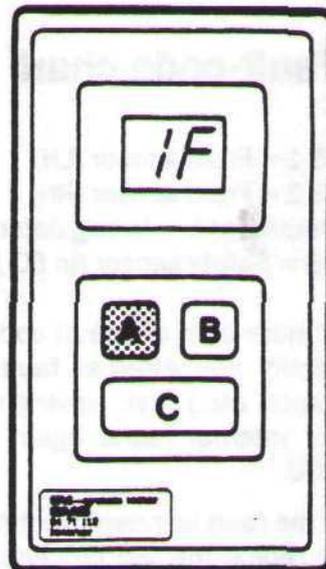
If more than one fault has been detected, each time the button C is depressed, the code for the next fault will be displayed, followed by the fault type. After the last fault has been displayed, EF will be displayed. Pressing C again will restart the test from the beginning, starting with display of the SRS system code.

## Test for internal faults (In ECU)

Start by pressing A, whereupon IF will appear on the display.

Start the test by pressing C.

The test procedure is then the same as that for external faults (see preceding page).



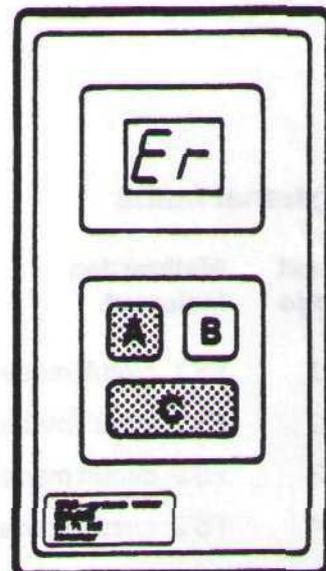
## Deleting fault codes from the memory

Press A and C simultaneously, whereupon 'Er' will appear on the display.

Press C.

The SRS system code will now be displayed. Pressing C again will display the program version. The third time C is pressed, all fault codes will be deleted from the memory, acknowledged by 01 appearing on the display. If 02 is displayed (indicating unsuccessful deletion), the procedure must be repeated.

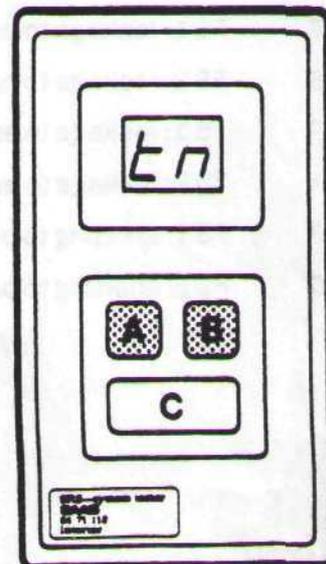
Fault codes cannot be deleted if the airbag module has been activated.



## ECU identification code

Each ECU has a unique identification code consisting of 10 digits, which can only be displayed two at a time.

To display the identification code, start by pressing A and B simultaneously, whereupon 'tn' will appear on the display. Press C repeatedly to display the code two digits at a time.



## Fault-code chart

FS 1 = Front sensor (LH)

FS 2 = Front sensor (RH)

Detonator 1 = Airbag detonator

SS = Safety sensor (in ECU)

If more than one fault code has been recorded, rectify any external faults (in wiring, components, etc.) first. Having rectified these, check for internal faults again before replacing the ECU.

If the fault is intermittent (type S), you may need to repeat the test procedure a number of times, wiggling the wiring and connectors, before identifying the cause.

### External faults

Fault code	Malfunction Indicated	Action
01	FS 1: circuit made 1 - 5 times	Fit a new FS 1
02	FS 1: circuit made more than 5 times	Fit a new FS 1
03	FS 2: circuit made 1 - 5 times	Fit a new FS 2
04	FS 2: circuit made more than 5 times	Fit a new FS 2
05	FS 1: circuit made more than 2 s	Fit a new FS 1
06	FS 2: circuit made more than 2 s	Fit a new FS 2
07	FS 1: leakage to battery positive	Test procedure 1
08	FS 2: leakage to battery positive	Test procedure 1
09	FS 1: leakage to earth	Test procedure 2
0A	FS 2: leakage to earth	Test procedure 2
0B	FS 1: shorting to battery positive	Test procedure 3
0C	FS 2: shorting to battery positive	Test procedure 3

<b>Fault code</b>	<b>Malfunction Indicated</b>	<b>Action</b>
0E	System earth resistance too high	Test procedure 4
0F	FS 1: resistance to earth 3 ohm or higher	Test procedure 5
10	FS 2: resistance to earth 3 ohm or higher	Test procedure 5
11	FS 1: break in wiring	Test procedure 6
12	FS 2: break in wiring	Test procedure 6
13	FS 1: resistance in wiring too high	Test procedure 7
14	FS 2: resistance in wiring too high	Test procedure 7
17	Capacitance of 4700-uF capacitor low	Fit a new ECU
19	Transfer resistance of 4700-uF capacitor high	Fit a new ECU
1b	Detonator 1: leakage to battery positive	Test procedure 8
1E	Detonator 1: shorting to battery positive	Test procedure 9
21	Detonator 1: leakage to earth	Test procedure 10
24	Detonator 1: shorting to earth	Test procedure 11
27	Detonator 1: break in circuit continuity	Test procedure 13
2A	Detonator 1: resistance low	Test procedure 12
2d	Detonator 1: resistance high	Test procedure 13
30	SRS warning light shorting to battery positive or earth	Test procedure 14
31	SRS warning light faulty	Test procedure 15

Deal with fault codes 1 - 31 before testing for internal faults.

## Internal faults

<b>Fault code</b>	<b>Malfunction Indicated</b>	<b>Action</b>
32	Diagnostics function defective	Fit a new ECU
33/34	Collision recording This code is displayed after a collision in which the airbag has been activated correctly.	
39	Capacitor 4700 uF: voltage low	Fit a new ECU
3A	Capacitor 4700 uF: voltage high	Fit a new ECU
3E	Diode D5: short circuit or break in circuit continuity	Fit a new ECU
40	Detonator 1: power supply faulty	Fit a new ECU
43	Diode D7: short circuit or break in circuit continuity	Fit a new ECU
44	Diode D8: short circuit or break in circuit continuity	Fit a new ECU
47	FS 1: power supply defective	Fit a new ECU
48	FS 2: power supply defective	Fit a new ECU
49	SS: break in wiring	Fit a new ECU
4b	SS: circuit made more than 2 s	Fit a new ECU
52	Detector IC defective	Fit a new ECU
53	5 V regulation defective	Fit a new ECU
54	EEPROM defective	Fit a new ECU
56	Detector IC: high temperature	Fit a new ECU
57	Microprocessor faulty	Fit a new ECU
58	Multiplexer faulty	Fit a new ECU
59	Supply for detector current for leakage current defective	Fit a new ECU
5A	A/D converter faulty	Fit a new ECU
5b	FS 1 monostable flip-flop out of spec.	Fit a new ECU
5C	FS 2 monostable flip-flop out of spec.	Fit a new ECU
5d	SS monostable flip-flop out of spec.	Fit a new ECU
5E	Collision recording initiation defective	Fit a new ECU
5F	Sensor-recording initiation defective	Fit a new ECU

## Test procedures

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### Note

The test procedures are mainly for pinpointing permanent faults.

If a fault only occurs intermittently, it may not be present when the test procedure is carried out. Delete the fault code and try to reproduce it by wiggling the relevant connectors, wiring, etc.

At the end of each test procedure, delete the fault codes, switch on the ignition, wait at least 35 seconds and check that no fault codes reappear.

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### Caution

To avoid damage to the ohmmeter, it must not be earthed when measuring resistance to battery positive.

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### Test procedure 1

Fault code 07: LH front sensor, leakage to battery positive

Fault code 08: RH front sensor, leakage to battery positive

A Unplug connectors 123 and 57.

Using an ohmmeter, measure the resistance in the lead between connector 123 and the front sensor as follows.

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### Note

Take readings with the engine running and power consumers being switched on one at a time (lighting, electric motors, etc.)

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For the LH front sensor measure:  
between pin 1 and battery positive  
between pin 3 and battery positive

For the RH front sensor measure:  
between pin 1 and battery positive  
between pin 2 and battery positive

If all the readings are higher than 4.7 kohm, the fault could be in the wiring between connector 123 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 4.7 kohm or lower, the fault could be in the wiring between connectors 123 and 57. Find and rectify the cause, if possible. If not, fit a new wiring loom.

## Test procedure 2

Fault code 09: LH front sensor, leakage to earth  
Fault code 0A: RH front sensor, leakage to earth

### A Unplug connector 123.

Using an ohmmeter, measure the resistance in the lead between connector 123 and the front sensor as follows.

For the LH front sensor measure:  
between pin 1 and earth  
between pin 3 and earth

For the RH front sensor measure:  
between pin 1 and earth  
between pin 2 and earth

If all the readings are higher than 4.7 kohm, the fault could be in the wiring between connector 123 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 4.7 kohm or lower, go to step B.

### B Unplug connector 57.

Measure the resistance at connector 123, following the same procedure as in step A above.

If all the readings are higher than 4.7 kohm, the fault could be in the front sensor. Fit a new sensor.

If any of the readings is 4.7 kohm or lower, the fault could be in the wiring loom between connector 123 and connector 57. Find and rectify the cause, if possible. If not, fit a new wiring loom.

## Test procedure 3

Fault code 0B: LH front sensor, shorting to battery positive

Error code 0C: RH front sensor, shorting to battery positive

### A Unplug connectors 123 and 57.

Using an ohmmeter, measure the resistance in the lead between connector 123 and the front sensor as follows.

For the LH front sensor measure:  
between pin 1 and battery positive  
between pin 3 and battery positive

For the RH front sensor measure:  
between pin 1 and battery positive  
between pin 2 and battery positive

---

### Note

Take readings with the engine running and power consumers being switched on one at a time (lighting, electric motors, etc.).

---

If all the readings are higher than 470 ohm, the fault could be in the wiring between connector 123 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 470 ohm or lower, the fault could be in the wiring between connectors 123 and 57. Find and rectify the cause if possible. If not, fit a new wiring loom.

## Test procedure 4

Fault code OE: system earth resistance too high

This code signifies that the earth resistance between the front sensors and ECU is too high.

A Unplug both front sensor connectors (57).

Check that the pins are firmly seated and correctly configured.

Plug in and unplug the connectors a few times. Delete the fault codes and wait with the ignition on for at least 35 seconds, then check whether the code reappears.

If the fault is still present, go on to step B.

B Undo the securing screws for the front sensors. Clean the contact surfaces between each sensor and its bracket on the body, and also the thread on the captive nut.

Lubricate the thread and cavity in the captive nut.

Lubricate the threads on the new securing screws and fit the screws.

Use lubricant, part no. 45-3007309, or Ford Motorcraft silicone dielectric compound or an equivalent lubricant with good electrical conductivity and high viscosity.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds.

Check that the code has been cleared.

If the code reappears, go on to step C.

C Unplug and plug in both 4 pin connectors (123) several times.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds. Check that the code has been cleared.

If the code reappears, go on to step D.

D Check earthing point 400 and the earth lead to the ECU.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds.

Check that the code has been cleared.

If the code reappears, go on to step E.

E Undo the ECU securing screws.

Clean the contact surfaces under the screws.

Refit the screws, ensuring that the two earth leads are connected to the right screws.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds.

Check that the code has been cleared.

If the fault code reappears, fit a new ECU.

## Test procedure 5

Fault code OF: LH front sensor, resistance to earth 3 ohm or higher

Fault code 10: RH front sensor, resistance to earth 3 ohm or higher

A Undo the securing screws for the front sensor. Clean the contact surfaces between the sensor and its bracket on the body, and also the thread on the captive nut.

Lubricate the thread and cavity in the captive nut.

Lubricate the threads on the new securing screws and fit the screws.

Use lubricant, part no. 45-3007309, or Ford Motorcraft silicone dielectric compound or an equivalent lubricant with good electrical conductivity and high viscosity.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds.

Check that the code has been cleared.

## Test procedure 6

Fault code 11: LH front sensor, break in wiring

Fault code 12: RH front sensor, break in wiring

- A Check for poor contact in connectors 123 and 57. Delete the fault codes and wait, with the ignition on, for at least 35 seconds. Check that the fault code has been cleared.

If the code has been cleared, the fault was in one of the connectors (57 or 123).

If the code reappears, go on to step B.

- B Unplug connector 123.

Using an ohmmeter, measure the resistance in the lead between the connector and the front sensor.

For the LH front sensor measure:

between pin 1 and pin 3

For the RH front sensor measure:

between pin 1 and pin 2

If the reading is lower than 40 ohm, the fault is in the wiring between connector 123 and the ECU.

Fit a new ECU.

If the reading is 40 ohm or higher, go on to step C.

- C Unplug connector 57.

Using an ohmmeter, measure the resistance in the lead between the connector and the front sensor.

For the LH front sensor measure:

between pins 1 and 3

For the RH front sensor measure:

between pins 1 and 3

If the reading is 40 ohm or higher, the fault is in the front sensor, which should now be replaced.

If the reading is below 40 ohm, the fault is in the wiring between connectors 123 and 57.

Fit a new wiring loom.

## Test procedure 7

Fault code 13: LH front sensor, resistance in wiring too high

Fault code 14: RH front sensor, resistance in wiring too high

- A Undo the securing screws for the front sensor. Clean the contact surfaces between the sensor and its bracket on the body, and also the thread on the captive nut.

Lubricate the thread and cavity in the captive nut.

Lubricate the threads on the new securing screws and fit the screws.

Use lubricant, part no. 45-3007309, or Ford Motorcraft silicone dielectric compound or an equivalent lubricant with good electrical conductivity and high viscosity.

Delete the fault codes and wait, with the ignition on, for at least 35 seconds.

Check that the code has been cleared.

If the code reappears, go on to step B.

- B Check for poor contact in connectors 123 and 57. Delete the fault codes and wait, with the ignition on, for at least 35 seconds. Check that the fault code has been cleared.

If the code has been cleared, the fault was in one of the connectors (57 or 123).

If the code reappears, go on to step C.

- C Unplug connector 123.

Using an ohmmeter, measure the resistance in the lead between the connector and the front sensor.

For the LH front sensor measure:

between pin 1 and pin 3

For the RH front sensor measure:

between pin 1 and pin 2

If the reading is lower than 3 ohm, the fault is in the wiring between connector 123 and the ECU.

Fit a new ECU.

If the reading is 3 ohm or higher, go on to step D.

D Unplug connector 57.

Using an ohmmeter, measure the resistance in the lead between the connector and the front sensor.

For the LH front sensor measure:  
between pins 1 and 3

For the RH front sensor measure:  
between pins 1 and 3

If the reading is 3 ohm or higher, the fault is in the front sensor, which should now be replaced.

If the reading is below 3 ohm, the fault is in the wiring between connectors 123 and 57. Fit a new wiring loom.

### Test procedure 8

Fault code 1b: Detonator 1, leakage to battery positive

A Unscrew the airbag module and unplug the connector behind it.

Plug resistor 84 71 153 into the connector.

Unplug connector 335 and plug in test loom 84 71 146.

Using an ohmmeter, measure the resistance between each pin and battery positive.

---

**Note**

Switch on the ignition and turn the steering wheel lock-to-lock a few times when taking each reading.

---

If all the readings are higher than 4.7 kohm, the fault could be in the wiring between connector 335 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 4.7 kohm or lower, the fault is in the airbag contact unit, which must therefore be replaced.

### Test procedure 9

Fault code 1E: Detonator 1, shorting to battery positive

A Unscrew the airbag module and unplug the connector behind it.

Plug resistor 84 71 153 into the connector.

Unplug connector 335 and plug in test loom 84 71 146.

Using an ohmmeter, measure the resistance between each pin and battery positive.

---

**Note**

Switch on the ignition and turn the steering wheel lock-to-lock a few times when taking each reading.

---

If all the readings are higher than 470 ohm, the fault could be in the wiring between connector 335 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 470 ohm or lower, the fault is in the airbag contact unit, which must therefore be replaced.

## Test procedure 10

Fault code 21: Detonator 1, leakage to earth

A Unscrew the airbag module and unplug the connector behind it.

Plug resistor 84 71 153 into the connector.

Unplug connector 335 and plug in test loom 84 71 146.

Using an ohmmeter, measure the resistance between each pin and ground.

---

### Note

Switch on the ignition and turn the steering wheel lock-to-lock a few times when taking each reading.

---

If all the readings are higher than 4.7 kohm, the fault could be in the wiring between connector 335 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 4.7 kohm or lower, the fault is in the airbag contact unit, which must therefore be replaced.

## Test procedure 11

Fault code 24: Detonator 1, shorting to earth

A Unscrew the airbag module and unplug the connector behind it.

Plug resistor 84 71 153 into the connector.

Unplug connector 335 and plug in test loom 84 71 146.

Using an ohmmeter, measure the resistance between each pin and ground.

---

### Note

Switch on the ignition and turn the steering wheel lock-to-lock a few times when taking each reading.

---

If the readings are higher than 470 ohm, the fault could be in the wiring between connector 335 and the ECU. Find and rectify the cause, if possible. If not, fit a new ECU.

If any of the readings is 470 ohm or lower, the fault is in the airbag contact unit, which must therefore be replaced.

## Test procedure 12

Fault code 2A: Detonator 1, resistance low

- A Unplug connector 335 and check that the short-circuiting spring contacts open when the connector cover is compressed. Plug the connector back together.

Delete the fault codes and, with the ignition on, wait at least 35 seconds.

Check that the code has been cleared.

If the code reappears, go on to step B.

- B Unscrew the airbag module and unplug the connector behind it. Check for shorting between the pins and the sleeve in the connector.

Plug resistor 84 71 153 into the connector.

Delete the fault codes, switch on the ignition and turn the steering wheel lock-to-lock a few times. Check that the fault code has been cleared.

If the code reappears, go on to step D.

If the code has been cleared, go on to step C.

- C The fault is possibly in the airbag module. Check by reconnecting the airbag module, switching on the ignition and waiting at least 35 seconds to see whether the fault code has been cleared.

If the code reappears, fit a new airbag module.

If the code has been cleared, go on to step D.

- D Unplug connector 335.

Delete the fault codes and, with the ignition on, wait at least 35 seconds.

Check if the fault code has been cleared.

(Note: Fault code 27 may be generated by this test. If so, ignore it.)

If the code reappears, go on to step E.

If the code has been cleared the fault is probably in the airbag contact unit. Test the unit as follows. Plug in connector 335 and make sure that the test resistor is also connected.

Delete the fault codes, switch on the ignition and turn the steering wheel lock-to-lock a few times. Check if the code reappears.

If it does, fit a new airbag contact unit.

- E The fault is in the wiring between connector 335 and the ECU.

Find and rectify the cause, if possible. If not, fit a new ECU.

## Test procedure 13

Fault code 27: Detonator 1, break in circuit continuity

Fault code 2d: Detonator 1, resistance high

- A If the fault is intermittent (S), fit a new airbag contact unit.

After the unit has been replaced, delete the fault codes and wait, with the ignition on, at least 35 seconds. Check that the fault code has been cleared.

If the fault is a permanent one (L), go on to step B.

- B Inspect the pins and sleeves in connector 335 for signs of damage. Plug in the connector again.

Unscrew the airbag module and unplug the connector behind it.

Inspect the connector pins and sleeves for signs of damage.

Plug resistor 84 71 153 into the connector.

Delete the fault codes and, with the ignition on, wait at least 35 seconds. Check if the fault code has been cleared.

If the code reappears, the airbag contact unit is probably defective. Go on to step D.

If the code has been cleared, an intermittent fault in the airbag contact unit is indicated. Go on to step C.

C Fit a new airbag contact unit.

Reconnect the airbag module.

Delete the fault codes and, with the ignition on, wait at least 35 seconds.

Check that the fault code has been cleared.

If not, fit a known good airbag module.

D Fit a new airbag contact unit.

Reconnect the airbag module.

Delete the fault codes and, with the ignition on, wait at least 35 seconds.

Check that the fault code has been cleared.

If not, fit a known good ECU.

### Test procedure 14

Fault code 30: SRS warning light, shorting to battery positive of earth

If the SRS light is shorting to earth, it will remain on when the ignition is on.

If the SRS light is shorting to battery positive, it will fail to come on when the ignition is on.

The fault code will not be generated for a fault duration of less than 20 seconds.

A Check lead 920A between ECU pin 20 and pin 7 in connector 98, and thence to pin 6 of the instrument display panel. Also check for shorting to earth or to battery positive in lead 920 between pin 7 in connector 98 and pin 10 in test socket 330.

### Test procedure 15

Fault code 31: SRS warning light faulty

A Check fuse 7.

B Unplug connector 98.

Switch on the ignition.

Connect pin 10 in test socket 330 to earth (circuit to the SRS light).

Check if the SRS warning light comes on.

If not, the light may be faulty and should therefore be replaced.

If the light does come on, go on to step C.

C Unplug connector 98 and check the pins and sleeves.

Plug in the connector again.

Switch on the ignition. (Pin 10 of socket 330 must still be grounded.)

Check whether the SRS warning light comes on.

If not, there is a break in lead 920A between connector 98 and the ECU.

Find and fix the problem if possible. If not, fit a new ECU.