
SECTION 8B

SUPPLEMENTAL INFLATABLE RESTRAINTS (SIR)

CAUTION: *Disconnect the negative battery cable before removing or installing any electrical unit or when a tool or equipment could easily come in contact with exposed electrical terminals. Disconnecting this cable will help prevent personal injury and damage to the vehicle. The ignition must also be in B unless otherwise noted.*

TABLE OF CONTENTS

Description and Operation	8B-3	DTC 10 Driver Pretensioner Circuit, Resistance Too Low	8B-32
Airbag Module	8B-3	DTC 11 Driver Pretensioner Circuit, Short to Ground	8B-34
Sensing and Diagnostic Module (SDM)	8B-3	DTC 12 Driver Pretensioner Circuit, Short to Battery Voltage	8B-36
SIR Warning Lamp	8B-3	DTC 13 Passenger Pretensioner Circuit, Resistance Too High	8B-38
Clock Spring	8B-4	DTC 14 Passenger Pretensioner Circuit, Resistance Too Low	8B-40
Wiring Harness/Connectors	8B-4	DTC 15 Passenger Pretensioner Circuit, Short to Ground	8B-42
SIR System	8B-4	DTC 16 Passenger Pretensioner Circuit, Short to Battery Voltage	8B-44
General Precautions	8B-5	DTC 18 Connection Between Driver Firing Circuit and Driver Pretensioner Circuit	8B-46
Airbag Deployment Condition	8B-5	DTC 19 Connection Between Driver Firing Circuit and Passenger Pretensioner Circuit	8B-48
Airbag Deployment Procedure	8B-6	DTC 20 Connection Between Passenger Firing Circuit and Driver Pretensioner Circuit	8B-50
Component Locator	8B-7	DTC 21 Connection Between Passenger Firing Circuit and Passenger Pretensioner Circuit	8B-52
SIR Component	8B-7	DTC 22 Connection Between Driver Pretensioner Circuit and Passenger Pretensioner Circuit	8B-54
Diagnostic Information and Procedures	8B-8	DTC 23 Ignition Input Circuit, Voltage Too High	8B-56
Bulb Check	8B-8	DTC 24 Ignition Input Circuit, Voltage Too Low	8B-58
Fault Indication	8B-8	DTC 25 Warning Lamp Failure	8B-60
Clearing Fault Codes	8B-8	DTC 31 SDM Internal Fault	8B-63
Microprocessor – Independent Lamp Activation	8B-8	DTC 32 SDM Crash Recorded	8B-63
System Check	8B-10	Diagnostic Illustration 1	8B-63
Fault Codes	8B-12	Diagnostic Illustration 2	8B-64
DTC 01 Driver Firing Circuit, Resistance Too High	8B-14	Diagnostic Illustration 3	8B-64
DTC 02 Driver Firing Circuit, Resistance Too Low	8B-16	Diagnostic Illustration 4	8B-64
DTC 03 Driver Firing Circuit, Short To Ground	8B-18	Diagnostic Illustration 5	8B-64
DTC 04 Driver Firing Circuit, Short To Battery Voltage	8B-20	Diagnostic Illustration 6	8B-65
DTC 05 Passenger Firing Circuit, Resistance Too High	8B-22	Diagnostic Illustration 7	8B-65
DTC 06 Passenger Firing Circuit, Resistance Too Low	8B-24		
DTC 07 Passenger Firing Circuit, Short To Ground	8B-26		
DTC 08 Passenger Firing Circuit, Short To Battery Voltage	8B-28		
DTC 09 Driver Pretensioner Circuit, Resistance Too High	8B-30		

8B-2 SUPPLEMENTAL INFLATABLE RESTRAINTS (SIR)

Diagnostic Illustration 8	8B-65	Driver Airbag Module	8B-69
Diagnostic Illustration 9	8B-65	Clock Spring	8B-70
Diagnostic Illustration 10	8B-66	Passenger Airbag Module	8B-71
Diagnostic Illustration 11	8B-66	Sensing and Diagnostic Module (SDM)	8B-72
Diagnostic Illustration 12	8B-66	Airbag Module Deployment (In Vehicle)	8B-74
Diagnostic Illustration 13	8B-66	Airbag Module Deployment (Outside of Vehicle)	8B-76
Diagnostic Illustration 14	8B-67	Deployed Airbag Module Disposal Procedure	8B-76
Diagnostic Illustration 15	8B-67	Specifications	8B-78
Diagnostic Illustration 16	8B-67	Fastener Tightening Specifications	8B-78
Diagnostic Illustration 17	8B-67	Special Tools and Equipment	8B-78
Diagnostic Illustration 18	8B-68	Special Tools Table	8B-78
Diagnostic Illustration 19	8B-68	Schematic and Routing Diagrams	8B-79
Diagnostic Illustration 20	8B-68	Supplemental Inflatable Restraints (SIR)	
Diagnostic Illustration 21	8B-68	Electrical Schematic	8B-79
Repair Instructions	8B-69		
On-Vehicle Service	8B-69		

DESCRIPTION AND OPERATION

(Left-Hand Drive Shown, Right-Hand Drive Similar)

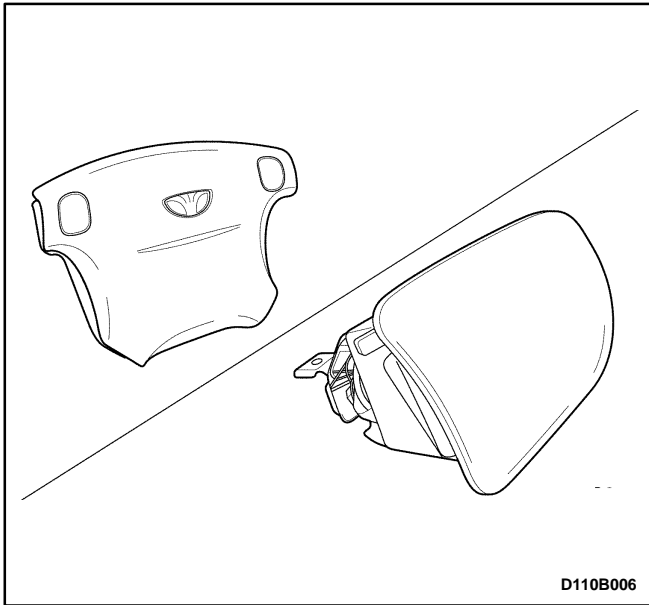
AIRBAG MODULE

Driver Airbag Module

Caution: *Tampering with the driver side airbag module creates the risk of an injury from an unexpected deployment. Therefore, the driver side airbag module should never be disassembled.*

The driver airbag module is under the center pad on the steering wheel.

The driver airbag module contains an ignitor charge and a gas generator to inflate the folded airbag.



Passenger Airbag Module

Caution: *Tampering with the passenger side airbag module creates the risk of an injury from an unexpected deployment. Therefore, the passenger side airbag module should never be disassembled.*

The passenger airbag module is on the passenger side of the instrument panel.

The passenger airbag module contains an ignitor charge and a gas generator to inflate the folded airbag.

SENSING AND DIAGNOSTIC MODULE (SDM)

The SDM

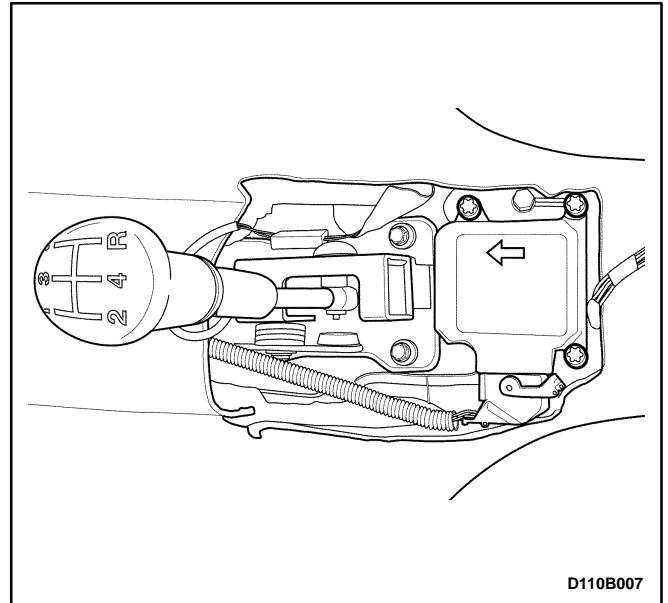
- Has no user-serviceable parts.
- Is under the front console assembly.
- Continuously monitors the system components.
- Records any faults which are discovered.

- Illuminates a warning lamp that alerts the driver to any faults.

- Allows the fault codes to be retrieved with a scan tool.

The SDM controls the deployment of the airbag system through the use of the

- Arming sensor.
- Capacitor.
- Crash sensor, or accelerometer.



Arming Sensor

The arming sensor is safety device made up of a dual-contact, electro-mechanical switch that:

- Acts independently of the electronic components.
- Keeps the firing circuits for the airbags unarmed under normal driving conditions.
- Allows the airbags to deploy under the required conditions.

Capacitor

The capacitor provides reserve power.

Crash Sensor

The crash sensor, or accelerometer, electronically represents the acceleration or deceleration of the vehicle during a frontal impact. In this electronic representation, the electrical signal is proportional to the acceleration or deceleration of the vehicle.

SIR WARNING LAMP

The supplemental inflatable restraints (SIR) system includes a self-diagnostic function.

8B-4 SUPPLEMENTAL INFLATABLE RESTRAINTS (SIR)

If there is a failure of the sensing and diagnostic module or the external circuits, the SIR warning lamp in the instrument cluster turns ON.

As a system check, the SIR warning lamp also turns ON when the ignition is first switched to the ON position.

Correct Functioning

The system is working properly if:

- The SIR warning lamp turns OFF after approximately four seconds.

Faulty Functioning

The system is not working properly, meaning one of the SIR components or the wiring connector is faulty, if:

- The SIR warning lamp fails to turn ON when the ignition is first switched ON.
- The SIR warning lamp remains ON.



CLOCK SPRING

The clock spring:

- Is on the steering column.
- Contains a coil that is the electrical contact between the steering column wiring harness and the driver side airbag module.
- Is part of the circuit for the horn.

Notice: Turning the steering wheel more than three and one-quarter turns may damage the clock spring.

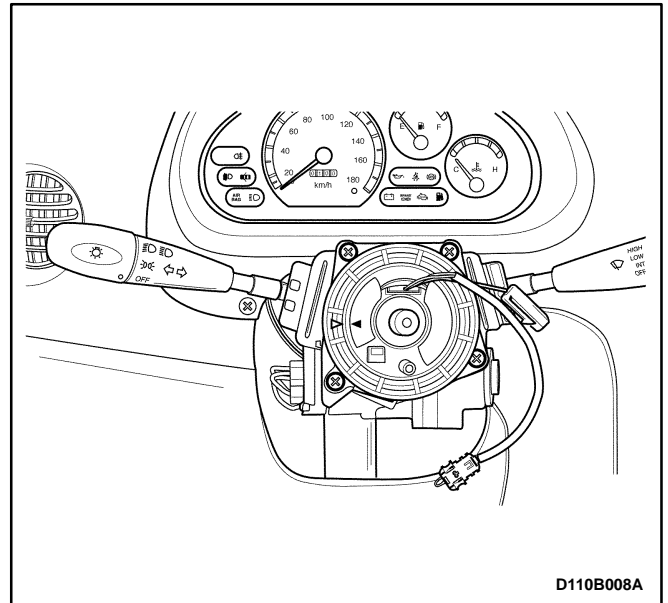
Turning the steering wheel:

- In one direction tightens the coil.
- In the opposite direction loosens the coil.
- More than three and one-quarter turns may damage the clock spring.

Caution: *Disassembling the clock spring can cause injury and vehicle damage.*

The clock spring should never be disassembled.

The clock spring must be replaced if the airbags have been deployed.



WIRING HARNESS/CONNECTORS

The connector for the sensing and diagnostic module (SDM) has a built-in shorting bar that will turn ON the warning lamp if there is a poor connection at the SDM.

As an anti-deployment mechanism, additional shorting bars are in the

- Connector for the clock spring at the lower steering column.
- Passenger airbag module connector.
- SDM connector.

When these connectors are separated, the shorting bars will short circuit any current which is applied, preventing the current from reaching the airbag modules.

SIR SYSTEM

The supplemental inflatable restraints (SIR) system is a safety device used in conjunction with the seat belts.

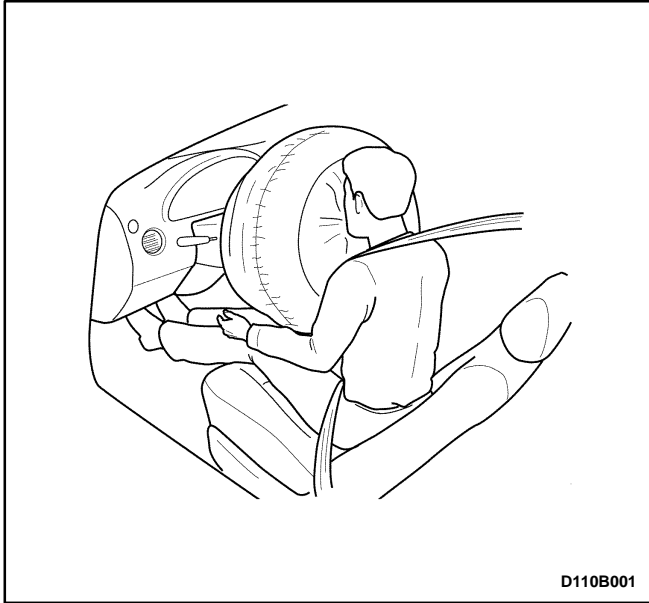
The airbag does not replace the function of the seat belt. The driver and the passengers must always fasten their seat belts and adjust them for a proper fit.

The SIR is designed to protect the driver and the front seat passenger in the event of a significant frontal impact to the vehicle. The airbags deploy if the force is applied from a direction within 30 degrees of the vehicle's centerline and above 25 km/h (15 mph) speed.

The SIR consists of a

- Driver airbag module.
- Passenger airbag module.

- Sensing and diagnostic module.
- Steering column clock spring.
- Wiring harness.
- SIR malfunction warning lamp.



GENERAL PRECAUTIONS

The supplemental inflatable restraints (SIR) warning lamp must illuminate when the ignition is switched ON, and then turn OFF after approximately 4 seconds.

There is a fault in the airbag system if

- The warning lamp does not turn OFF.
- The warning lamp illuminates while the vehicle is in operation.

If the warning lamp indicates there is a fault in the airbag system, assume that the SIR system may not be functional.

Caution: *Failure to follow all service procedures in the correct sequence can cause the airbag system to deploy unexpectedly and possibly cause a serious injury.*

Only trained personnel at franchised Daewoo dealers and authorized Daewoo service dealerships may service the airbag system.

Never attempt to disassemble, repair, or reuse the

- Airbag modules.
- Clock spring.
- Sensing and diagnostic module.
- Wiring harness.

When making SIR repairs,

- Inspect any SIR part before it is installed.
- Use only new parts.
- Do not install used SIR parts from other vehicles.
- Do not install any part that has been dropped or that has dents, cracks, or other defects.

AIRBAG DEPLOYMENT CONDITION

Airbag is designed to deploy under 30° left/right angle barrier and above 25 km/h (15 mph) speed.

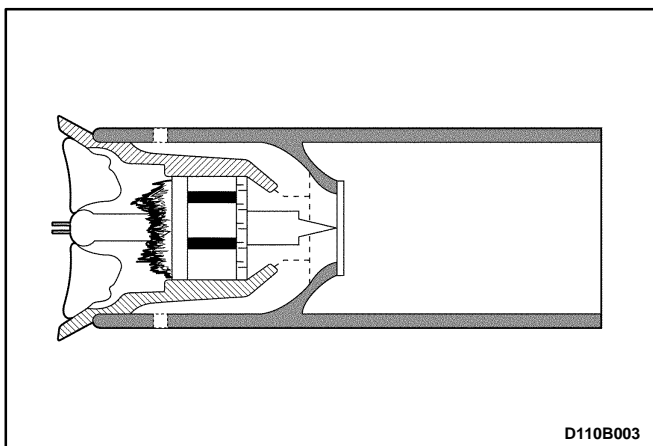
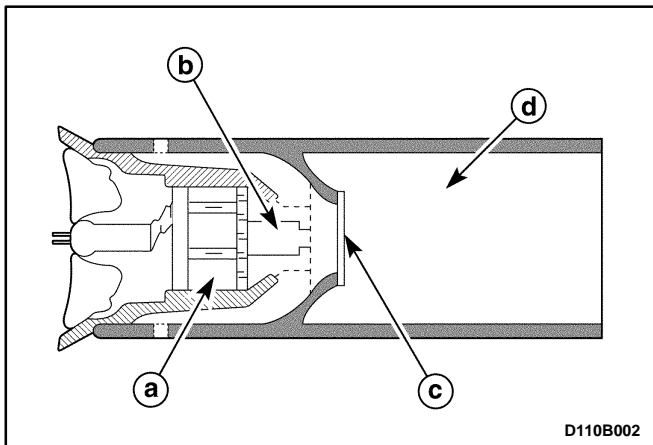
Concrete Barrier Deployment Condition

In case of the 0° frontal concrete barrier, airbag may deploy above 25 km/h (15 mph) speed.

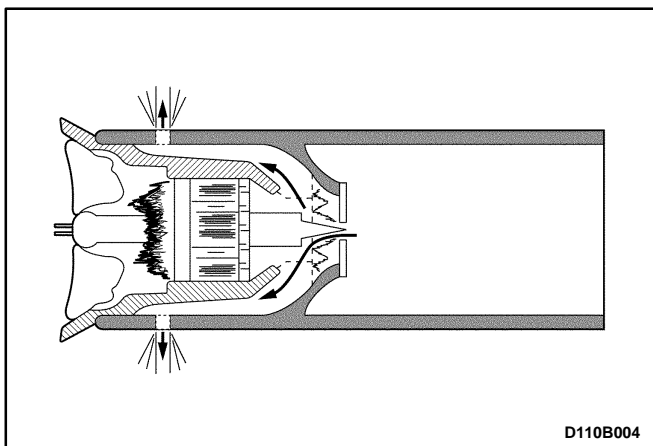
AIRBAG DEPLOYMENT PROCEDURE

1. Non-Deployment condition

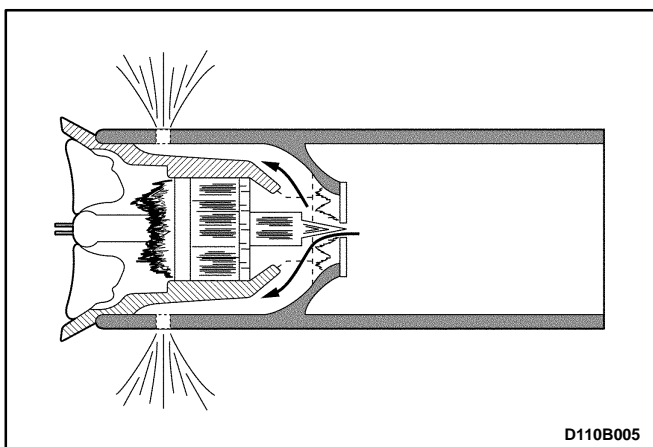
- a. Initiator
- b. Piston
- c. Safety disc
- d. Compressed Ar gas



2. When crashing, firing current flows from the SDM to the initiator.
3. Initiator is burning and the inside pressure is increasing and the piston hits the safety disc.



4. Safety disc is broken and the compressed Ar gas is spouted out.



5. Compressed Ar gas and the burned initiator are carbureted. And the airbag is deployed.