

# SECTION 12M - SUPPLEMENTAL RESTRAINT SYSTEM (VERSION 8.0 & 8.1)

## CAUTION:

This vehicle will be equipped with a Supplemental Restraint System (SRS). A SRS will consist of either seat belt pre-tensioners and a driver's air bag, seat belt pre-tensioners and a driver's and front passenger's air bags or seat belt pre-tensioners, driver's and front passenger's air bag and left and right hand side air bags. Refer to SAFETY PRECAUTIONS in this Section of the Service Information CD before performing any service operation on, or around any SRS components, the steering mechanism or wiring. Failure to follow the SAFETY PRECAUTIONS could result in SRS deployment, resulting in possible personal injury or unnecessary SRS system repairs.

## CAUTION:

This vehicle may be equipped with LPG (Liquefied Petroleum Gas). In the interests of safety, the LPG fuel system should be isolated by turning 'OFF' the manual service valve and then draining the LPG service lines, before any service work is carried out on the vehicle. Refer to the LPG leaflet included with the Owner's Handbook for details or the appropriate Section of this Service Information CD for more specific servicing information.

## 1. GENERAL INFORMATION

In August 1998, two new Supplemental Restraint Systems (SRS) were introduced to VT Series Models; version 8.0 and 8.1.

Version 8.0 supersedes version 6.2 and is used on vehicles with pre-tensioners only (LHD Vehicles only), pre-tensioners and driver's air bag only or pre-tensioners and driver's and front passenger's air bags (2, 3 and 4 loop systems). The 8.0 Sensing and Diagnostic Module (SDM) is backward compatible with the 6.2 SDM.

Version 8.1 is used on vehicles with pre-tensioners and driver's and front passenger's and side air bags (6 loop system).

MODEL	Pre-tensioner	Driver's Air bag	Passenger Air bag	Side Air bags
Executive	standard	standard	optional	not available
Acclaim	standard	standard	standard	optional
S	standard	standard	optional	not available
SS	standard	standard	standard	not available
Berlina	standard	standard	standard	optional
Calais	standard	standard	standard	optional

### NOTE:

Side air bags are standard equipment on VT Series Calais Anniversary Pack Models.

The majority of components for SRS 8.0 and 8.1 carry over from the earlier version of SRS (6.2) fitted to VT Series Models. Therefore, for General Information, Service Operations, Diagnostics and Specifications not covered in this Section, refer to [Section 12M SUPPLEMENTAL RESTRAINT SYSTEM \(VERSION 6.2\)](#) in of this Service Information CD.

Although physically possible, an 8.0 SDM must NOT be fitted to a VT Series Model that was originally fitted with the earlier type 6.2 SDM, unless the SRS wiring harness fitted to the vehicle has earth circuit 305 incorporated into it.

Without the additional earth circuit, the SRS functionality may become less reliable and impede the system operation. (Refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section for additional information and relevant break points).

The SRS is intended as a supplement to the protection offered by the driver and front passenger seat belts by deploying an air bag from the centre of the steering wheel and (when fitted) a passenger's air bag from the top left hand side of the instrument panel pad assembly during certain frontal crashes. Seat belt pre-tensioners are also activated.

On vehicles with SRS 8.1, the addition of side air bags provides further protection for the driver and front passenger during certain side impact crashes.

Deployment of the air bag/s and seat belt pre-tensioners is automatic, making the SRS a passive restraint. The driver does not control the operation or activation of the system.

The pre-tensioners and front air bags (driver's and front passenger's) operate if the vehicle is involved in certain frontal (or near frontal) impacts. The frontal impact would normally be within a 60 degree window, occurring up to 30 degrees off the centre line of the vehicle, refer to Fig. 12M-2. The pre-conditions that determine the operation of the side air bags are much harder to quantify in terms of set speeds or quotable angles of impact.

The SRS control module (SDM) has the ability to command some aspects of the SRS restraint devices independently of each other; deployment of the seat belt pre-tensioners only, seat belt pre-tensioners and front air bags, or side air bags. Activation is not designed to occur in situations that would not provide any driver/front passenger protection benefit.

A side air bag will only deploy on the side on which a side impact collision occurs and is independent of the pre-tensioners and front air bags.

Side air bag deployment conditions are not readily quantifiable. The side air bags are calibrated to deploy in accidents where there is risk of serious injury to the (relevant) occupant. However, while the side air bag will deploy and offer protection in most serious side impact collisions, it will not do so in all collisions. The limited time available to detect some events means that it is not possible to deploy the side air bag in every situation it would be desirable to do so. This is particularly true of some pole type collisions.

As a result of the side air bag deployment conditions not being readily quantifiable, the following pre-conditions determine the operation of the SRS pre-tensioners and front air bags only:

Pre-tensioners and front air bags will deploy independently of the side air bags.

**NOTE:**

**The figures quoted below are the minimum required for the SRS to deploy and are the equivalent of a head on contact between the vehicle and a barrier or other immovable object.**

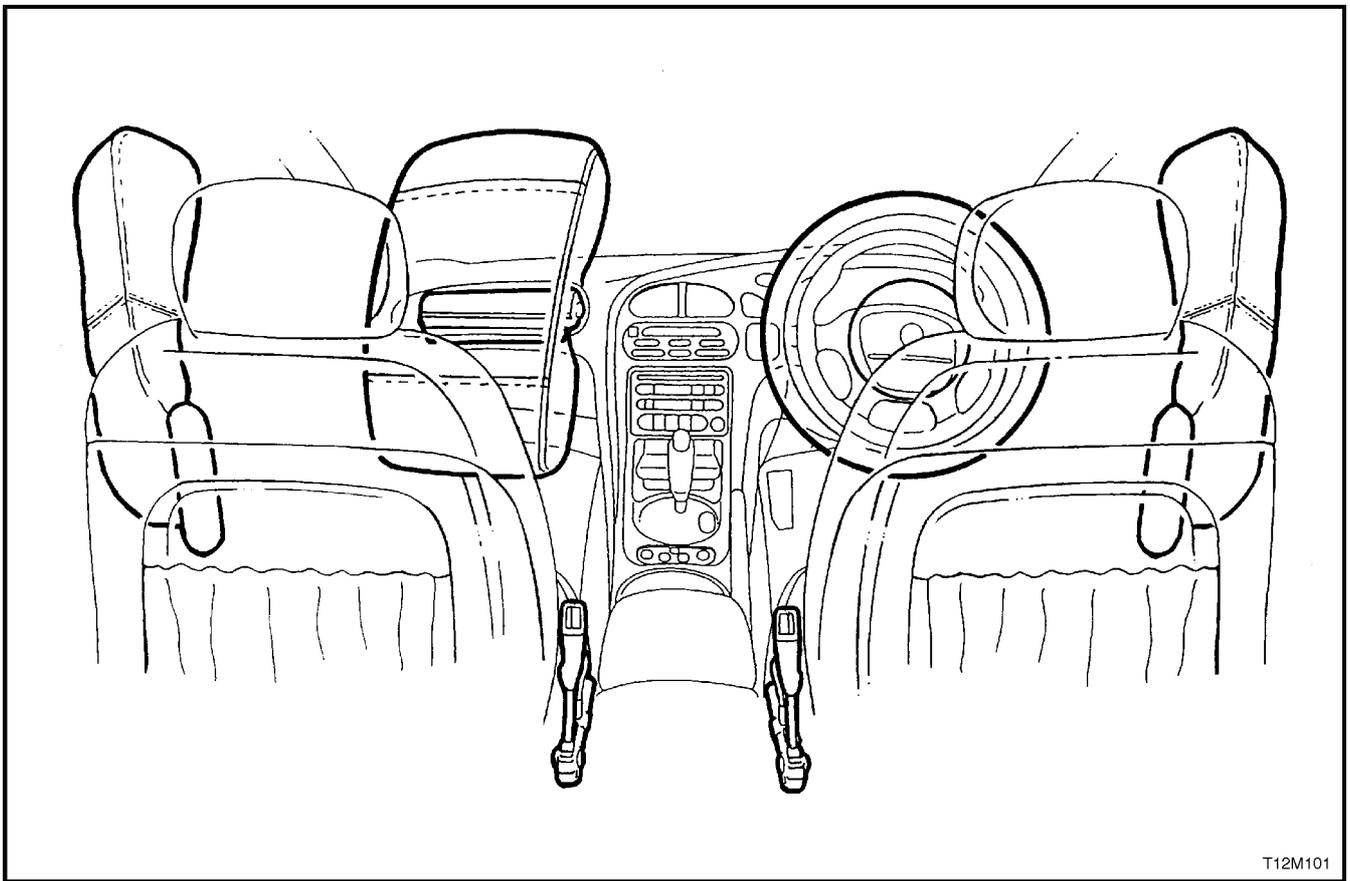
**In most accident scenarios, the vehicle speed required to activate the pre-tensioners and front air bags would be much greater than these values.**

	Pre-tensioner	Front Air Bags
No Deployment	15 km/h*	20 km/h**
Complete Deployment	20 km/h*	28 km/h**
Inflation/Tension Time	5 ms	30 ms
Max. Displacement Free Moving Mass	3.0 cm	12.5 cm

\* If the vehicle is travelling below 15 km/h and is involved in a frontal (or near frontal) collision, the seat belt pre-tensioner will not deploy, between 15 and 20 km/h, the pre-tensioner may or may not deploy, and over 20 km/h, the pre-tensioners will deploy.

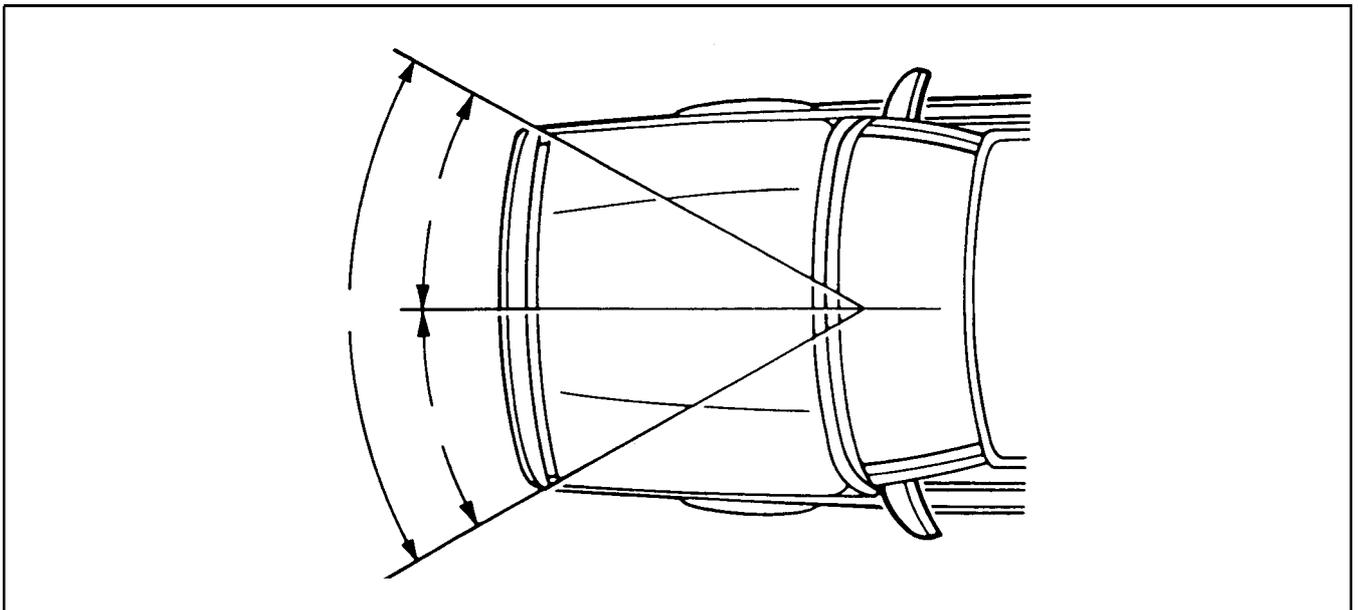
\*\* If the vehicle is travelling below 20 km/h and is involved in a frontal (or near frontal) collision, the air bag/s will not deploy, between 20 and 28 km/h, the air bag/s may or may not deploy, and over 28 km/h, the air bag/s will deploy.

The inflation time for a side air bag is approximately 10ms.



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**Figure 12M-1 SRS System**



**Figure 12M-2 Angle Of Frontal Impact**

For deployment to occur, numerous factors must be taken into account. For instance, the crush area of the other vehicle (if involved in the crash), its mass and speed would all contribute to raising or lowering the force required for deployment to occur as designed. As a general rule, for front air bags and pre-tensioners, the angle of impact force will be within the 60 degree window for SRS deployment to occur (refer Fig. 12M-2), although the physical damage to the vehicle may appear that it was.

The sensors that control the front air bags and seat belt pre-tensioner deployment are incorporated in the Sensing and Diagnostic Module (SDM), located beneath the centre console.

There are two sensors (peripheral acceleration sensors) that control the deployment of the side air bags; one in the left hand B pillar, and the other in the right hand B pillar. If a peripheral acceleration sensor detects a crash situation, it will send a signal to the SDM requesting a side air bag be deployed. If the SDM is in agreement, deployment will occur.

Regular maintenance of SRS is not required. If at anytime the SRS warning lamp comes on while driving, or does not come on when the vehicle is started, there is a system fault and this must be rectified as soon as possible.

The TECH 2 diagnostic scan tool is programmed to assist with VT electrical diagnosis and problem solving, including SRS.

TECH 2 connects to the SRS serial data communication information via the Data Link Connector (DLC), attached to the instrument panel lower right hand trim, to the right of the steering column. For additional information on DLC location and system diagnosis, refer to **3 DIAGNOSIS** in this Section. For more specific and comprehensive information regarding TECH 2, refer to **Section 0C TECH 2** in this Service Information CD.

**IMPORTANT:**

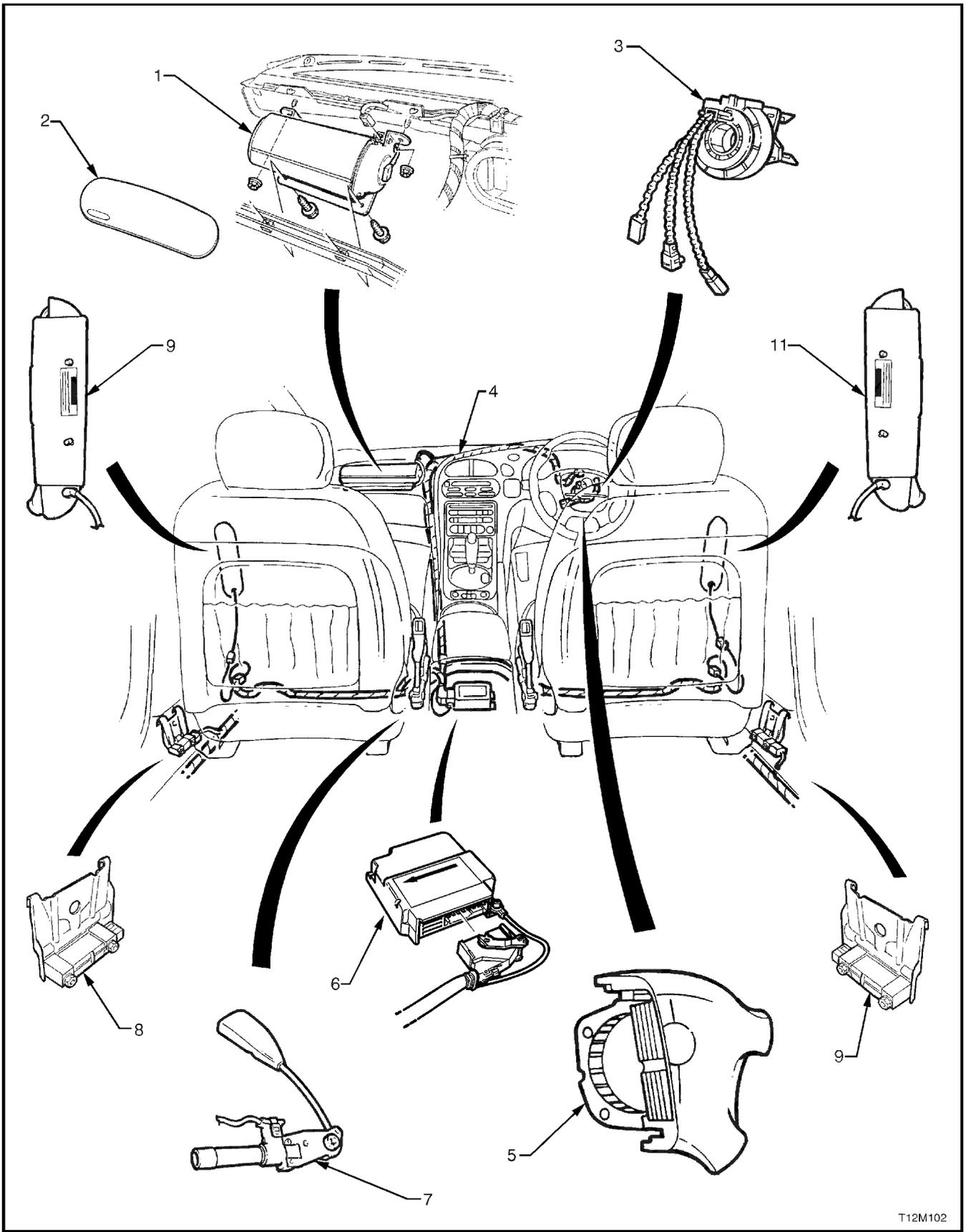
**Accessory type or after market bull bars or such devices not approved by Holden's and fitted to a vehicle with SRS may adversely affect the vehicles desired threshold characteristics for SRS deployment.**

**Accessory and after market seat covers MUST NOT be fitted to a vehicle with side air bags unless approved by Holden. Seat covers that are not approved by Holden could greatly inhibit the performance of the side air bag and occupants safety in the event of side air bag deployment.**

**On vehicles with front passenger's air bag, accessory type or after market type dash panel carpet covers, or the like MUST NOT be installed, as this will greatly inhibit the performance of the air bag and front passenger's safety in the event of an air bag deployment.**

**Fitting of accessories such as drink holders, cassette racks additional mirrors, etc. are not permitted in the immediate deployment area of the front passenger's and side air bags as these may be ripped off and propelled towards the vehicle's occupants when the air bag is deployed.**

Figure 12M-3 illustrates the locations within the passenger compartment of the SRS components.



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**Figure 12M-3 SRS Components**

- |  |   |
|--|---|
| 1. Front passenger's air bag inflator assembly.      | 7. Seat belt pre-tensioner assembly.      |
| 2. Passenger Air Bag (PAB) door.                     | 8. Left peripheral acceleration sensor.   |
| 3. Clock spring coil assembly.                       | 9. Left side air bag.                     |
| 4. SRS wiring harness (part of body wiring harness). | 10. Right peripheral acceleration sensor. |
| 5. Horn bar and driver's air bag inflator module.    | 11. Right side air bag.                   |
| 6. Sensing and Diagnostic Module (SDM).              |   |

The SRS system operates the side air bag inflator modules in four stages to protect the driver or front seat passenger during a side impact collision, refer to Fig. 12M-4.

**NOTE:**

A side air bag will deploy independently of the other SRS air bags and pre-tensioners.

1. **Before Deployment:** The SRS is in a state of readiness, unless the Sensing and Diagnostic Module (SDM) detects a fault and alerts the vehicle driver via the SRS warning lamp in the instrument cluster warning lamp panel.
2. **Fully Deployed:** The relevant side air bag is inflated and the SDM records the data related to the SRS conditions and operation.
3. **During Restraint:** The force of the crash causes the head and upper torso of the front passenger or driver to move sideways into the inflated air bag. Gas is vented from the thorax or chest region of the bag to the head region, reducing the chest loads and providing support for the head and neck.
4. **End of Crash**

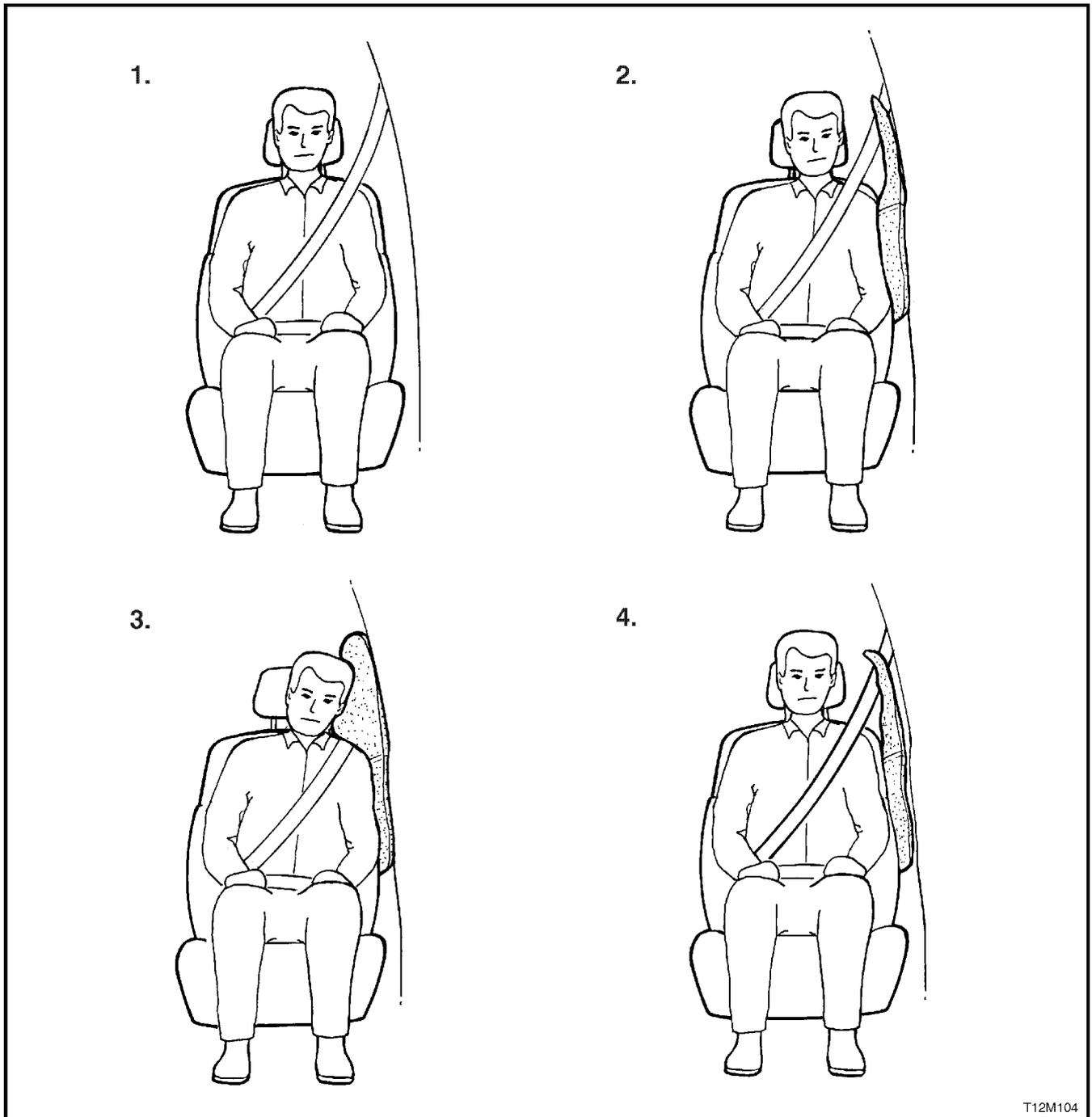


Figure 12M-4 SRS Side Air Bag Deployment

## 1.1 SYSTEM COMPONENTS

### SENSING AND DIAGNOSTIC MODULE (SDM)

The SDM (1), which is mounted under the centre console assembly, consists of an electronic acceleration sensor system, electronic control system, energy storage devices, self diagnostics, fault memory and crash event recording facility.

The primary function of the SDM, as part of the SRS, is to sense crash events and discriminate between non-deployment and required deployment events.

The SDM is a centralised, self contained crash sensing and triggering system that, with exception of two peripheral acceleration sensors for detecting lateral acceleration for side air bags, requires no additional external sensing inputs. The SDM also performs continual tests on the pre-tensioner and air bag circuits for the front seat belt pre-tensioners, the driver's air bag and (if fitted) front passenger's and side air bags.

In the case of a deployment event, the function of the sensing system is to initiate the pre-tensioners or pre-tensioners and front air bag/s or relevant side air bag in a timely manner in order to protect the vehicle occupant/s. Secondary to this, the SDM can diagnose system faults which may prevent air bag deployment or increase the probability of an inadvertent deployment and warn the driver in the case of a system fault.

**The SDM is designed for a one time deployment use only, and must be replaced after a deployment. If deployment occurs and the SDM is not replaced, the SRS warning lamp in the instrument cluster will be continually illuminated.**

Integrated in the SDM are two piezoelectric sensors (crash sensor) that constantly monitor the acceleration data of the vehicle. Microprocessors within the SDM run the outputs from these acceleration sensors (accelerometers) through a complex mathematical algorithm. A similar function is performed by each peripheral acceleration sensor (where fitted). The respective outputs are compared to a set of stored values in the processor memory. If the processed values exceed their set of stored values, the SDM provides an AC output signal to ignite the pyrotechnic gas generators of the relevant SRS component/s .

An energy reserve (capacitor) in the SDM stores sufficient energy to activate the air bag/s in the event of the electrical system being damaged by the impact.

The electronic diagnostic facility within the SDM constantly monitors the electrical circuits and the firing circuit. Faults that occur in the system are stored in the memory and the SRS warning lamp in the instrument cluster warning lamp panel will be switched on.

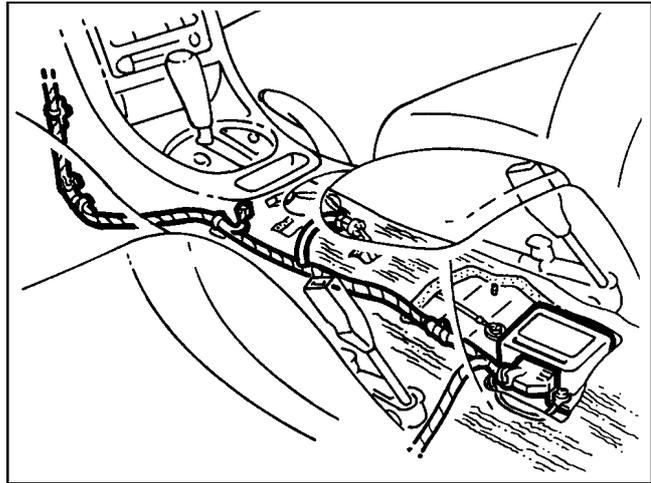


Figure 12M-5 SDM Location

**The SDM performs the following functions:**

It continuously monitors the SRS electrical circuits.

It controls the SRS warning lamp in the instrument cluster to alert the vehicle driver of a detected system fault.

It has an energy reserve that provides back-up power (in case the vehicle system power is lost during a crash) to operate the air bag inflator module/s.

**NOTE:**

Due to the presence of energy storage devices within the SDM, servicing of any SRS component should not be attempted within 10 seconds after disabling the system.

During deployment, it records and stores SRS and crash event information:

- Diagnostic Trouble Codes (DTCs) for detected faults.
- SRS warning lamp operation data.

It communicates diagnostic information through the Data Link Connector (DLC) for the following purposes:

- System checks at the vehicle assembly plant.
- Service diagnosis (using TECH 2).
- Transmitting of crash event recording data for post crash analysis.

For details on connecting TECH 2 to the DLC, refer to [3.4 TECH 2 DIAGNOSTICS](#) in this Section, or for more detailed information regarding TECH 2, refer to [Section 0C TECH 2](#), in this Service Information CD.

Additionally, in the event of SRS deployment, the SDM will send serial data via the auxiliary serial data bus (circuit 1220) to advise various vehicle systems to take appropriate shutdown action.

The PCM monitors this serial data and performs a vehicle shutdown once the appropriate data is identified and the vehicle speed is zero for more than 10 seconds.

The BCM also monitors this serial data and performs the following actions once the appropriate data is identified and the vehicle speed is zero for more than 10 seconds:

Turn the dome lamp on continuously.

Unlock all doors.

**NOTE:**

This is only effective for the ignition cycle in which the deployment(s) occurred. Providing the vehicle electric's are functional, cycling the ignition will restore normal function.

For VT Series Models with SRS 8.0 and 8.1 systems, four different and non-interchangeable SDMs are released. These systems can be identified by the last digit of the part number:

2 - 2 loop system for pre-tensioners only (8.0 SDM).

3 - 3 loop system for pre-tensioners and driver's air bag only (8.0 SDM).

4 - 4 loop system for pre-tensioners, driver's air bag and front passenger's air bag (8.0 SDM).

6 - 6 loop system for pre-tensioners, driver's air bag, front passenger's air bag and side air bags (8.1 SDM).

**NOTE:**

Always refer to the latest VT Series spare parts information for the latest part numbers when ordering SRS components.

## SDM TERMINAL ASSIGNMENTS

TERMINAL NO.	FUNCTION	SYSTEM
1	Left hand pre-tensioner, plus	8.0 & 8.1
2	Left hand pre-tensioner, minus	8.0 & 8.1
3	Right hand pre-tensioner, plus	8.0 & 8.1
4	Right hand pre-tensioner, minus	8.0 & 8.1
5	Battery voltage	8.0 & 8.1
8	Earth	8.0 & 8.1
9	Serial data	8.0 & 8.1
10	Driver's air bag, plus	8.0 & 8.1
11	Driver's air bag, minus	8.0 & 8.1
13	Front passenger's air bag, plus	8.0 & 8.1
14	Front passenger's air bag, minus	8.0 & 8.1
16	Left hand side air bag, plus	8.1 only
17	Left hand side air bag, minus	8.1 only
18	Right hand side air bag, plus	8.1 only
19	Right hand side air bag, minus	8.1 only
20	Left hand peripheral acceleration sensor, plus	8.1 only
21	Right hand peripheral acceleration sensor, plus	8.1 only
33	Left hand peripheral acceleration sensor, minus	8.1 only
34	Right hand peripheral acceleration sensor, minus	8.1 only

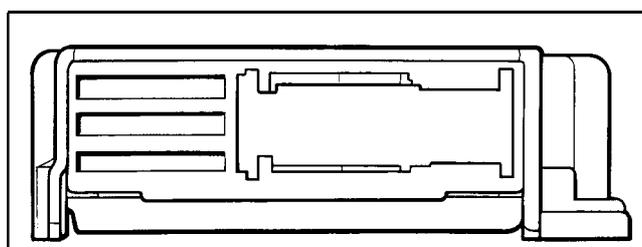


Figure 12M-6 SDM 8.0

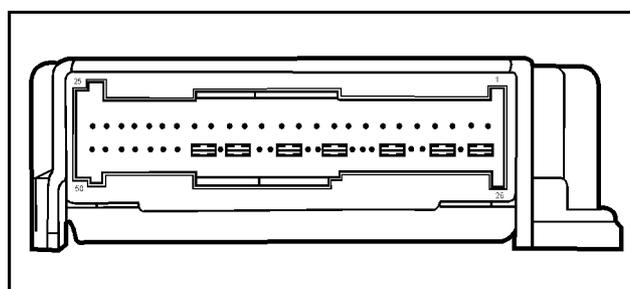


Figure 12M-7 SDM 8.1

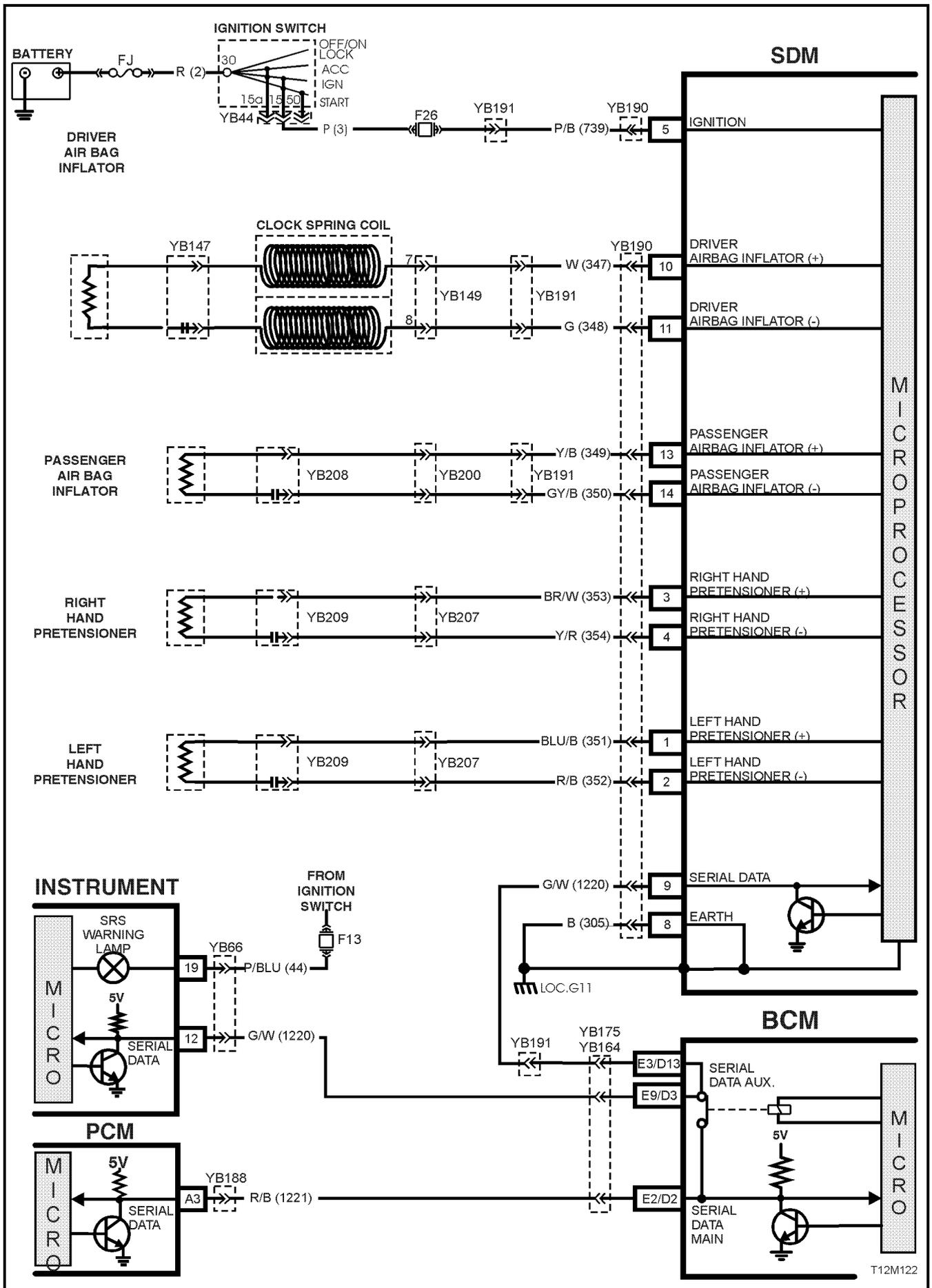


Figure 12m-8 Circuit Diagram For Vehicles With An 8.0 SDM (No Side Air Bags)

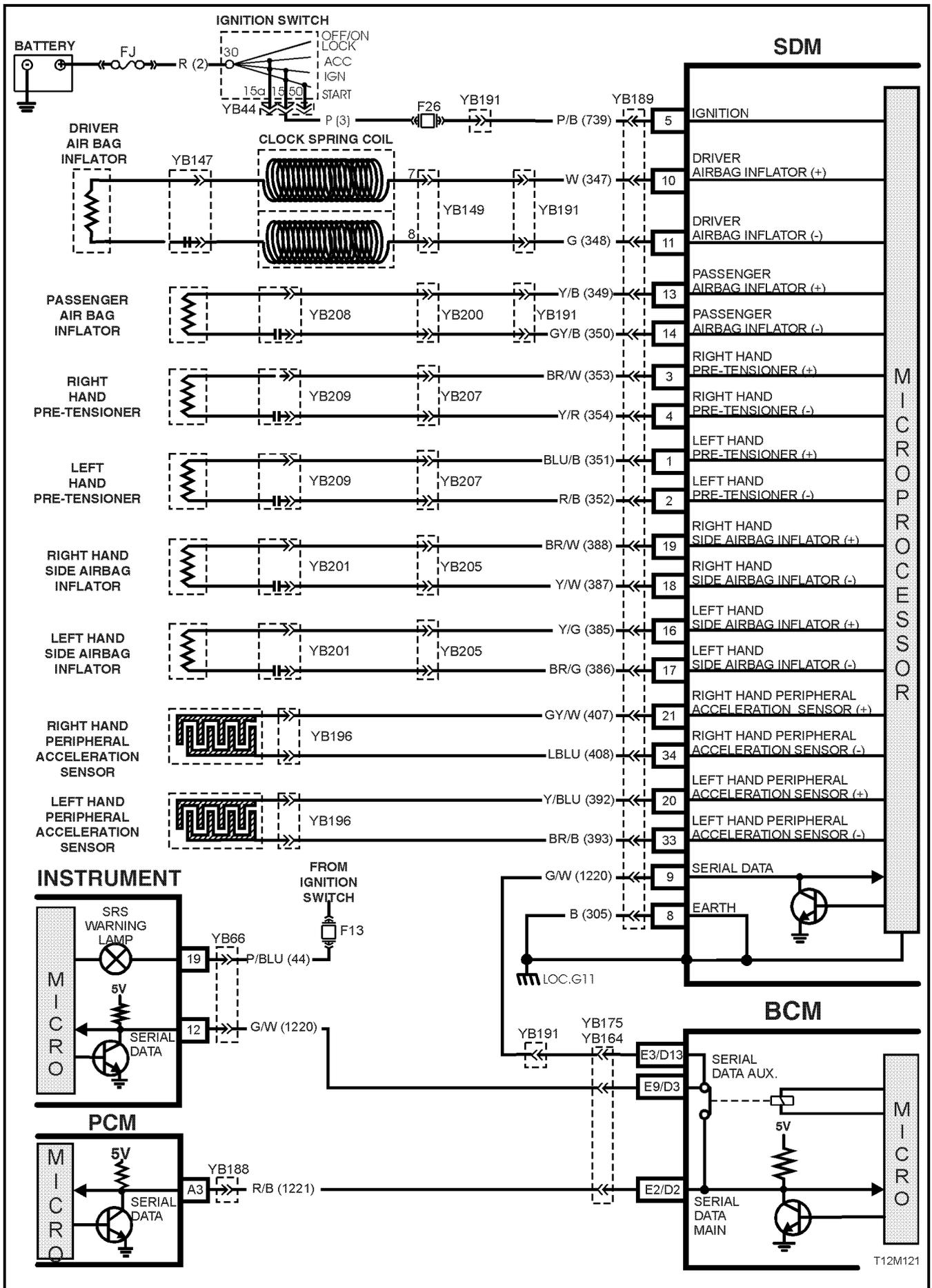


Figure 12M-9 Circuit Diagram For Vehicles With An 8.1 SDM (Side Air Bags)

**SYSTEM OPERATION**

With an AC firing system it is possible to fire the air bags and pre-tensioners even if a (single wire) short circuit exists, this is possible due to the use of a 'H' firing circuit.

The 'H' bridge circuit is used to allow readiness in the case of single wiring harness faults. The bridge structure allows several firing paths so that the squib can still be fired even if one of the four power transistors is faulty. The firing energy is fed from the energy reserve by diode D2 and from the battery by diode D1.

This means that the higher of the two voltages is always present at the power stages. Normally this energy reserve voltage is 45 volts. If for any reason the reserve voltage is unavailable if a firing is required, it is possible to trigger from the battery voltage.

**NOTE:**

The operation of only one firing loop is described in the following explanation. However the operation of all firing loops is the same.

**FIRING MODE 1**

S3 is closed connecting the firing loop (-) to ground. S4 is open.

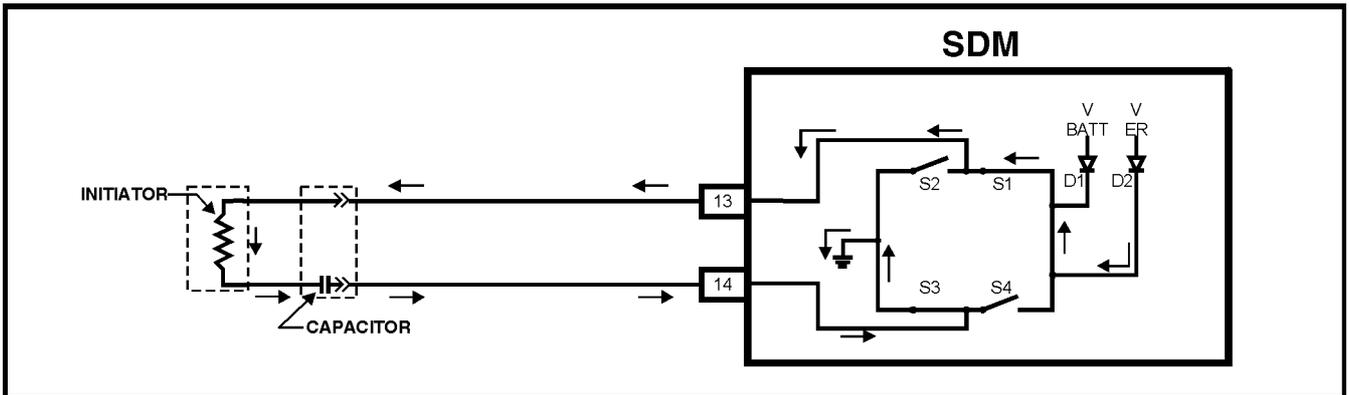


Figure 12M-10 Firing Mode 1 Charging

S1 and S2 are switched alternately for approximately 5µs, thereby causing charging and discharging cycles at the initiator.

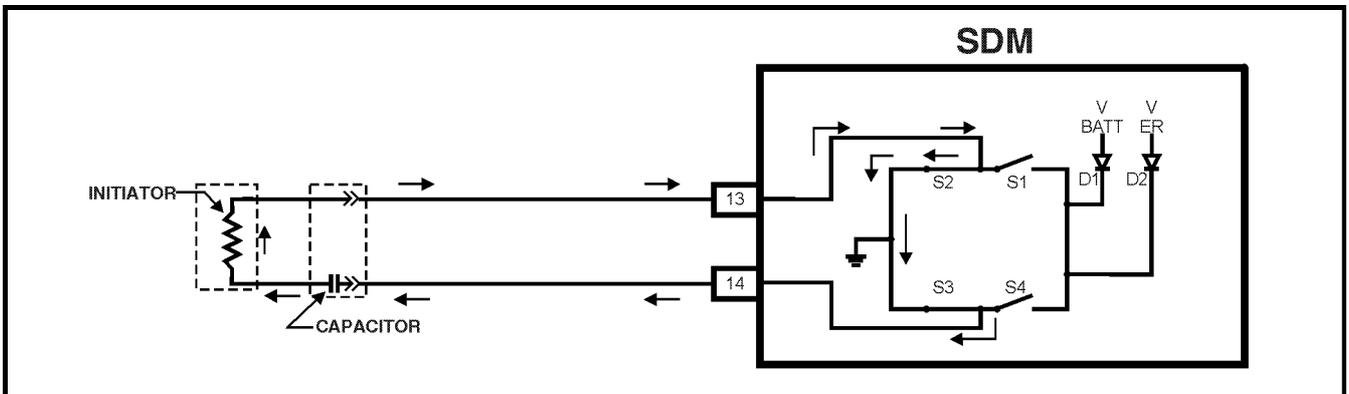


Figure 12M-11 Firing Mode 1 Discharging

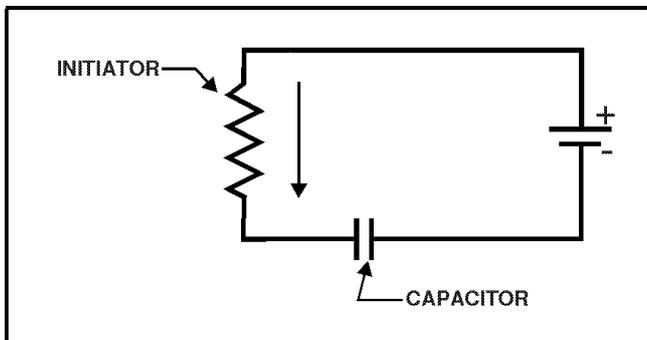


Figure 12M-12 Firing Mode 1 Charging

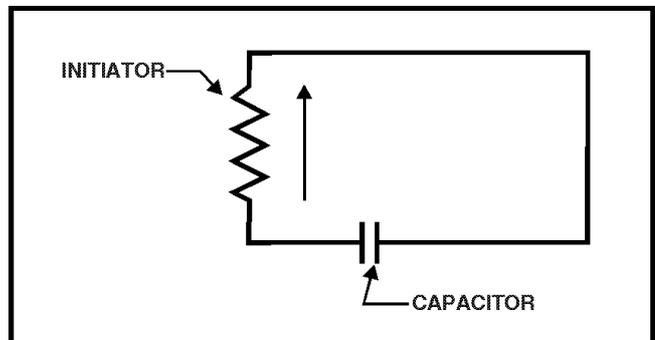
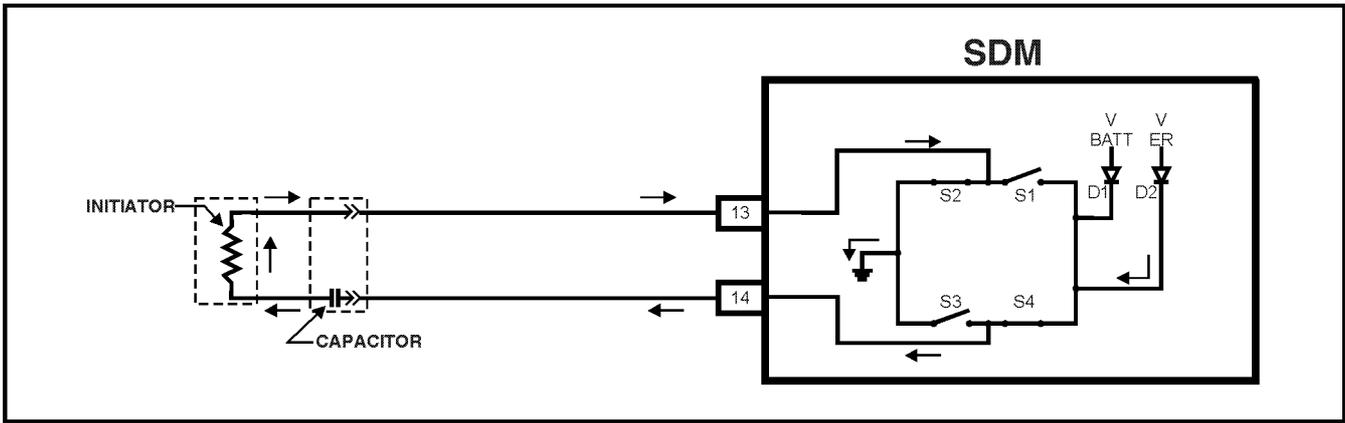


Figure 12M-13 Firing Mode 1 Discharging

In this phase of operation a shorted firing loop (-) has no influence on firing, as the firing current flows through the initiator via S1 and S2. S3 is not damaged due to the current limiting of the power stages even if a short to battery exists. Firing then takes place into the short circuit to battery voltage.

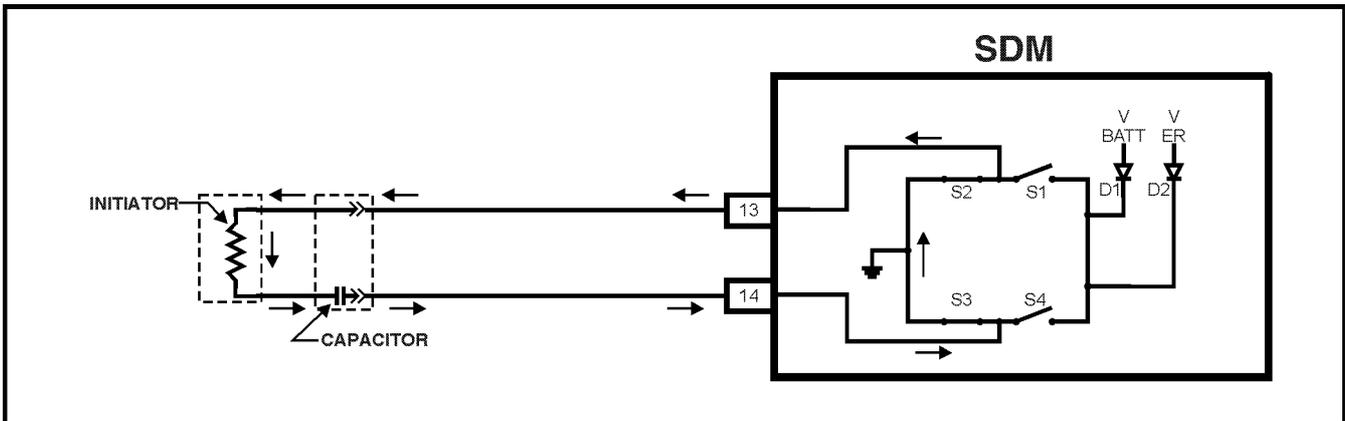
**FIRING MODE 2**

S2 is closed and firing loop (+) is therefore connected to ground. S1 is open.

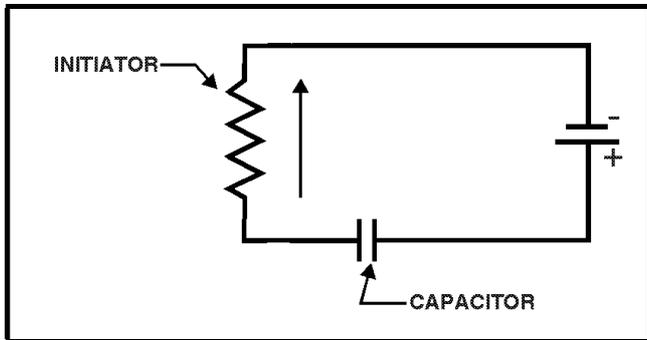


**Figure 12M-14 Firing Mode 2 Charging**

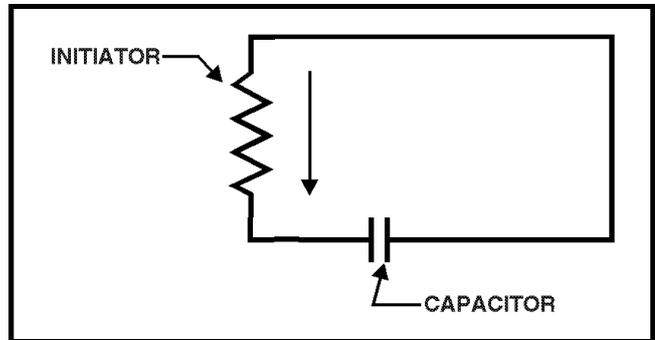
S4 and S3 are switched alternately for approximately 5µs, thereby causing charging and discharging cycles at the initiator.



**Figure 12M-15 Firing Mode 2 Discharging**



**Figure 12M-16 Firing Mode 2 Charging**



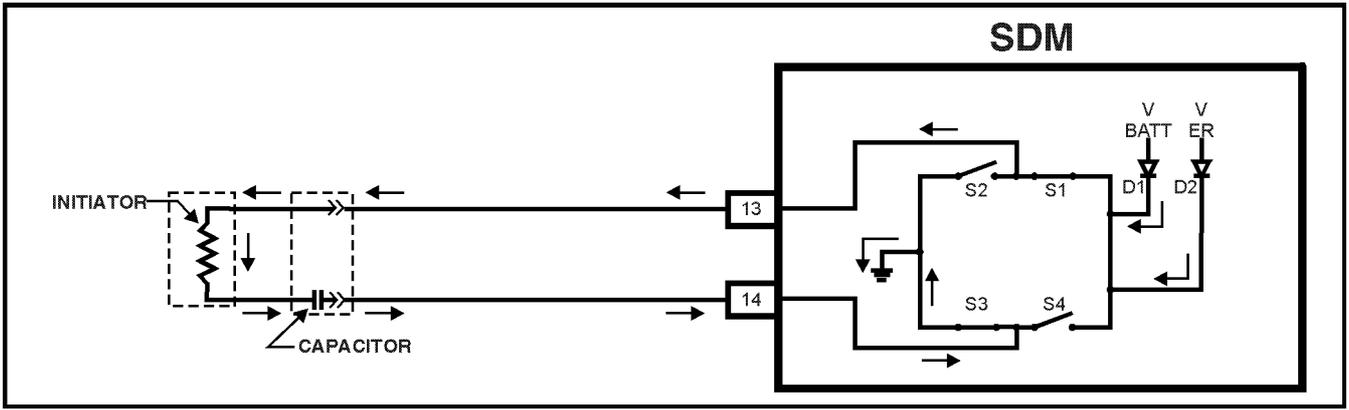
**Figure 12M-17 Firing Mode 2 Discharging**

In this phase of operation a short circuit at the firing loop (+) has no influence since firing current flows through the initiator via S4 and S3. S2 is not damaged due to current limitation of the power stages, even if a short circuit to battery voltage exists on the firing loop (+) line. Firing takes place into the short circuit to battery voltage.

Modes 1 and 2 are activated alternately for several cycles respectively. If the voltage at the power stages has dropped to below 25 volts, phase 3 is started. If the energy reserve is not available for any reason when firing is required, only battery voltage at the power stage is present, and firing occurs immediately with firing mode 3.

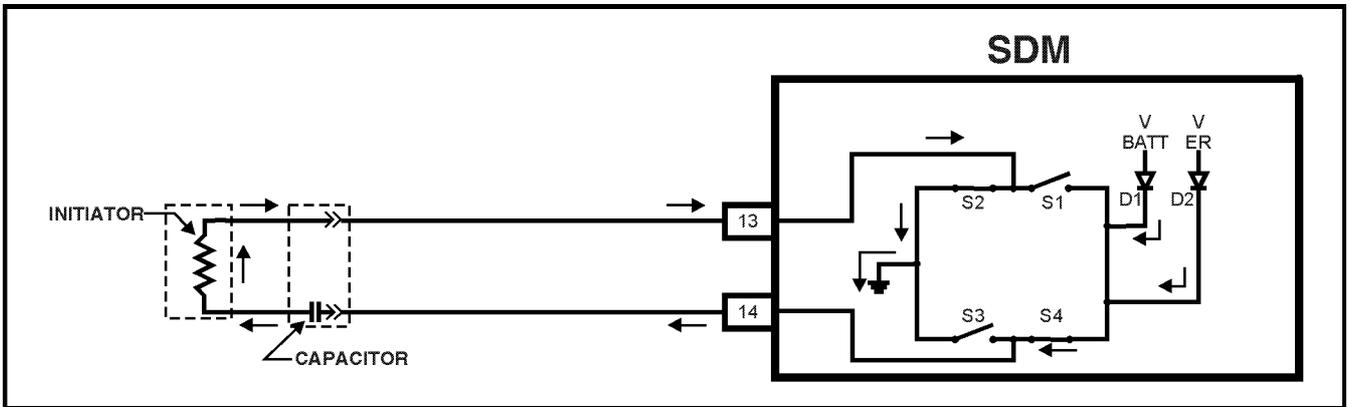
**FIRING MODE 3**

S2 and S4 are switched off, S1 and S3 are switched on. This charges the capacitor to battery voltage.

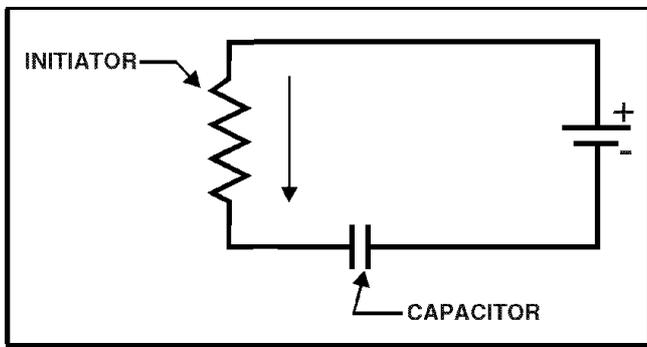


**Figure 12M-18 Firing Mode 3 Charging**

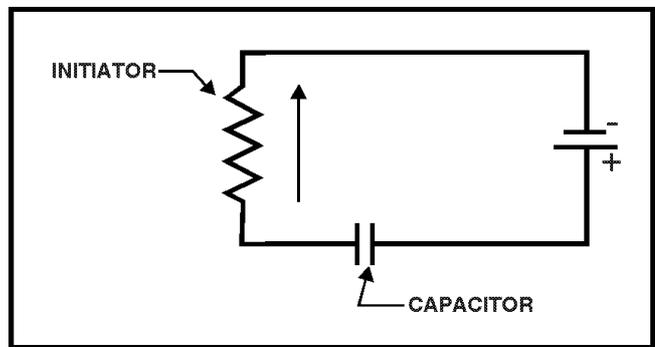
S1 and S3 are switched off, S2 and S4 are switched on. This discharges the capacitor and then charges it in the reverse direction. Due to this recharging of the capacitor via the firing element from positive voltage to negative voltage, the firing voltage of this mode can be considered to be doubled to  $2 \times V_{ER}$  (Energy Reserve Voltage) or  $2 \times V_{BAT}$  (Battery Voltage). As a result AC firing from battery voltage is possible.



**Figure 12M-19 Firing Mode 3 Discharging**



**Figure 12M-20 Firing Mode 3 Charging Positive**



**Figure 12M-21 Firing Mode 3 Charging Negative**

## FIRING LOOP MONITORING

The firing loop monitoring ensures that failures in the firing leads and squibs that could affect triggering are identified.

The following errors in the firing loops or squibs are detected.

- Short circuit or leakage resistance to ground or battery voltage.
- Short circuit or shunt circuit between firing leads of the firing loop.
- Resistance of the squib too high or too low.
- Capacitance of the firing loop capacitor too high or too low.

In the case of AC firing, measurement of the squib resistance is more difficult because no direct measurement of this resistance is possible due to the in series capacitor. The dynamic measurement described below allows an accurate measurement of the firing loop resistance.

The following sequence is used for diagnosis:

1. Test whether a short circuit or leakage resistance from the firing line to battery voltage or ground exists.
2. The firing loop capacitor is charged from the energy reserve through a resistor. The charging is interrupted after a short time and the voltage across the firing loop capacitor is measured. This voltage is a measure of the capacitance of the firing loop capacitor.
3. The squib resistance measurement is performed directly after the capacitance measurement by briefly discharging the firing loop capacitor through the squib. The discharge of the capacitor is a measure of the loop resistance.

## PERIPHERAL ACCELERATION SENSOR (SIDE AIR BAG SENSOR)

The peripheral acceleration sensor (1) is a sensing component which is mounted on the B pillars (3) (one each side) which is able to detect lateral acceleration, recognise a crash and send a signal to the SDM that a side air bag deployment situation exists or not.

The SDM can then decide whether to deploy the relevant side air bag (the side facing the crash).

Peripheral acceleration sensors are only fitted to vehicles with side air bags (8.1 SDM).

Due to the critical nature of the torque specification of the two nuts (4) securing the peripheral acceleration sensor (1) to the mounting bracket (2), the peripheral acceleration sensor is serviced with the mounting bracket as an assembly only.

If there is a need to remove the acceleration sensor from the vehicle, it must be removed as an assembly with the mounting bracket attached.

**A peripheral acceleration sensor is designed for a one time deployment use only. If a side air bag deploys, the peripheral acceleration sensor and mounting bracket assembly on the same side as the deployed air bag must be replaced.**

### NOTE:

Figure 12M-22 shows the RHS peripheral acceleration sensor, as peripheral acceleration sensor are non handed, the LHS peripheral acceleration sensor has the SRS wiring harness facing the front of the vehicle.

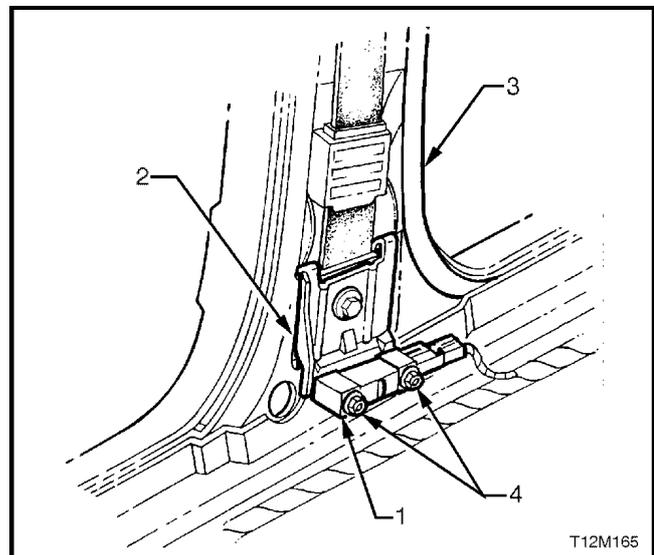


Figure 12M-22 Peripheral Acceleration Sensor

## CLOCK SPRING COIL ASSEMBLY

The clock spring coil assembly remains unchanged from the 6.2 SRS for SRS 8.0 and 8.1, however, as the illustration for the clock spring coil was incorrectly labelled in **Section 12M SUPPLEMENTAL RESTRAINT SYSTEM (VERSION 6.2)** in this Service Information CD, this information has been republished in full.

The clock spring coil assembly has the following parts:

1. A pigtail wiring harness (3) that connects to the air bag inflator module at the top of the steering column (connector YB147).
2. A lower wiring harness connector which is incorporated with the clock spring coil outer housing assembly (2).
3. A rotating inner hub (1) which engages with the rear of the steering wheel.
4. A ribbon wire assembly that provides an unbroken connection between the SDM and air bag inflator module as the steering wheel is rotated during vehicle operation.
5. The coil assembly also has pigtail wiring harnesses and wires in the ribbon wire assembly (4) for the horn contacts in the steering wheel horn bar and, if fitted, the remote audio controls (not shown).

The coil assembly operates in the following manner:

When the steering wheel is in the straight-ahead position, the inner hub and outer housing are aligned to provide approximately 2.5 turns of the steering wheel in either direction.

When the steering wheel is turned in a clockwise direction (right turn), the inner hub winds the ribbon wire as it rotates with the steering wheel.

When the steering wheel is turned in an anti-clockwise direction (left turn), the inner hub unwinds the ribbon wire as it rotates with the steering wheel.

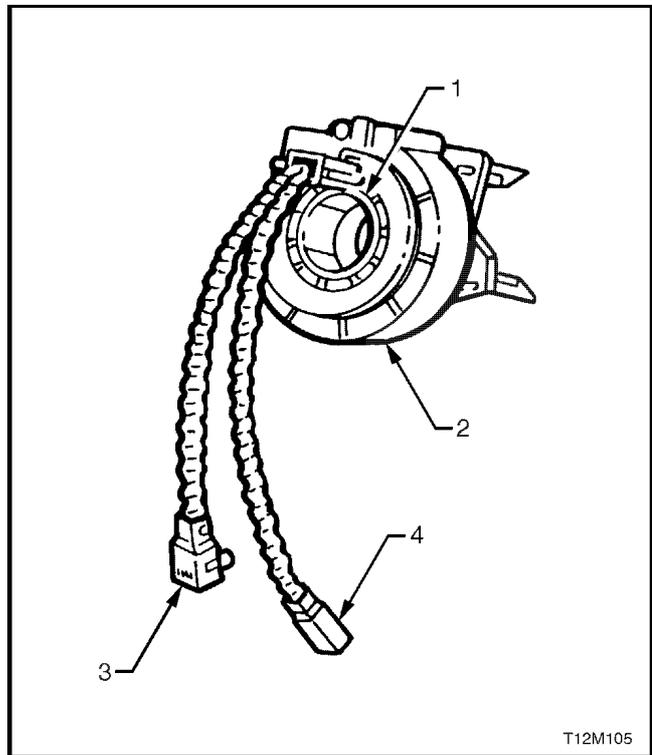


Figure 12M-23 Clock spring coil assembly

### **SIDE AIR BAG MODULE ASSEMBLY**

The side air bag module assembly contains the following parts (refer to Fig. 12M-24):

A housing (1), fastened to the outboard side of the seat back frame with studs (2) and nuts (not shown).

A nylon fabric cushion folded around the housing and mounted in a plastic container (5).

A protective reinforcement paper (Tyvek) cover with the seam around the container (not shown for clarity).

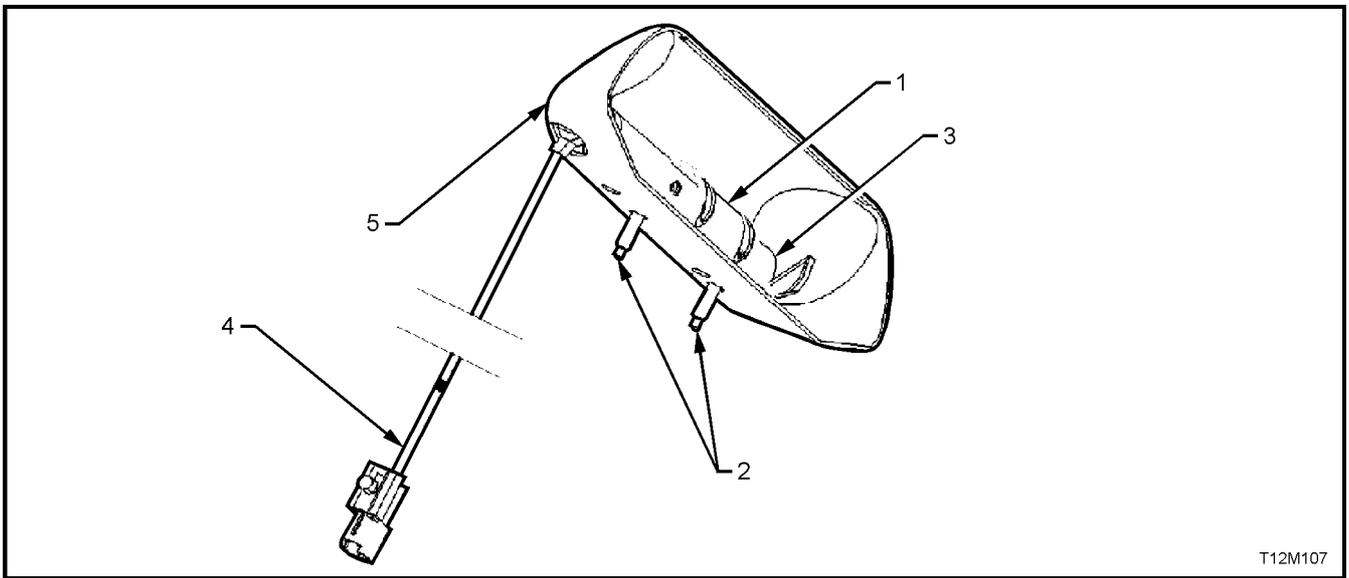
An inflator (3) and wiring loom (4).

The side air bag deploys through the seat back foam and seat back fabric at approximately the forward most side seam, providing a protective barrier between the occupant and the vehicle door.

### **WARNING:**

**COMPONENTS OF THE SIDE AIR BAG MODULE ARE NOT REPAIRABLE.**

**UNDER NO CIRCUMSTANCES ARE THE COMPONENTS OF THE SIDE AIR BAG MODULE TO BE DISASSEMBLED. THE AIR BAG INFLATOR CONTAINS COMPRESSED GAS AND A SMALL PYROTECHNIC CHARGE. ADDITIONALLY, THE AIR BAG CUSHION FOLD IS CRITICAL TO AIR BAG PERFORMANCE AND FRONT OCCUPANT SAFETY.**



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**Figure 12M-24 SRS Side Air Bag Module Assembly**

The inflator contains several components (refer to Fig. 12M-25 which shows a typical inflator assembly).

An Electro Explosive Device (EED also called an initiator) (4) which consists of an electrical heating element covered with a mixture of sensitive pyrotechnical charge.

A small amount of fuel (3) and oxidiser (1).

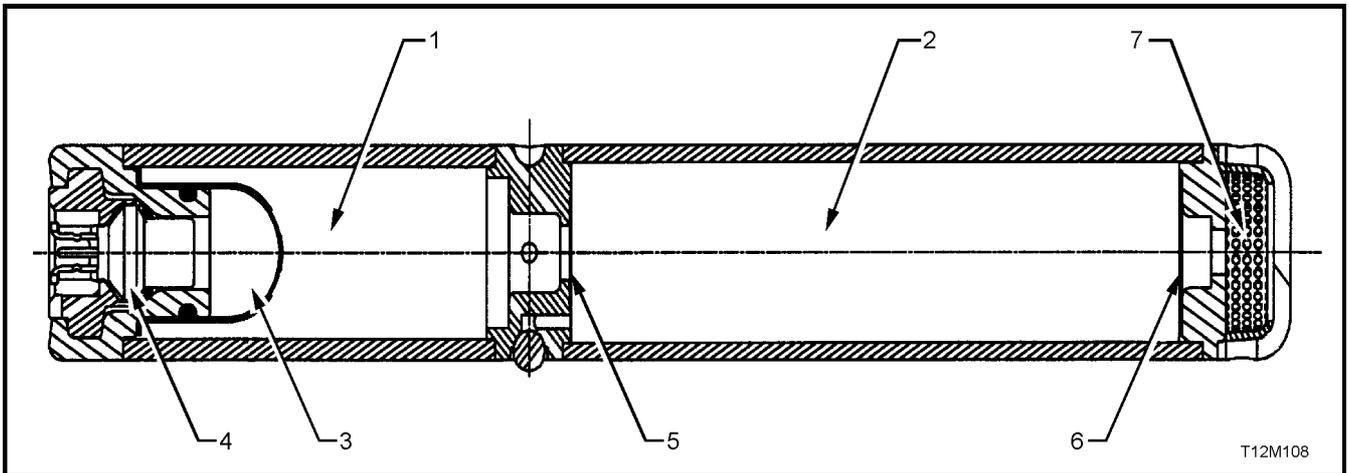
Compressed inert gas (typically Argon) in a sealed chamber (2).

During deployment, the side air bag inflator operates in three stages:

1. The EED initiator receives current from the SDM, heating the sensitive pyrotechnic charge which ignites the fuel.
2. The combustion of the fuel and oxidiser creates enough pressure to burst the disk(s), heating the compressed gas and allowing it to escape into the cushion.
3. The heated expanding gas starts to unfold the air bag cushion, which separates the protective cover, the seat back foam and the seat back fabric and inflates.

As the cushion inflates, some of the gas begins to exit into the passenger compartment through vent holes or through the pores of the cushion fabric.

Internal tethering controls the fill and placement of the air bag to maximise the benefits to the front occupant.



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**Figure 12M-25 Typical side impact inflator construction**

- |            |               |                    |
|------------|---------------|--------------------|
| 1. Oxygen  | 4. Initiator  | 7. Diffuser screen |
| 2. Argon   | 5. Burst disk |                    |
| 3. Ethanol | 6. Burst disk |                    |

## WIRING HARNESS

The SRS wiring harness contains the necessary wiring to interconnect the various system components.

During the months of March through to May 1998, the SRS wiring harness was gradually changed from being incorporated with the main wiring harness to being incorporated with the body wiring harness.

A second change to the body wiring harness was also made to all vehicles after August 1 1998. This change introduced an additional earth circuit for the SDM (circuit 305).

These two wiring harness changes do not affect vehicles built with a 8.0 or 8.1 SDM, as 8.0 and 8.1 SDMs were introduced after this period, however, do affect VT Series Models built with the earlier type 6.2 SDM.

If the SDM on a vehicle that was originally equipped with a 6.2 SDM becomes faulty, provided the vehicle was built after August 1 1998 and the additional earth lead is provided, a 8.0 SDM may be used as a replacement.

If the vehicle was originally equipped with a 6.2 SDM and later replaced by an 8.0 SDM the diagnostic procedures in this Section are to be used.

### CAUTION:

Do not fit an 8.0 SDM to any vehicle that does not have the additional earth circuit (circuit 305). Although 6.2 and 8.0 SDMs are physically interchangeable, without the additional earth circuit, the SRS functionality may become less reliable and impede the system operation.

### NOTE:

TECH 2 is capable of identifying the SDM fitted to the vehicle, refer to **3.5 TECH 2 TEST MODES AND DISPLAYS FOR SRS DIAGNOSIS** in this Section.

An SRS wiring harness can be identified by the yellow PVC tubing or yellow tape covering the harness wiring. The specific SRS wiring harness connectors are either coloured yellow, mustard or orange, or have a yellow retaining clip or slide to identify them as SRS connectors.

The 'pigtail' wiring harness that connects to the side air bag module, and runs through the front seat down to the seat rail, is not serviced separately from the side air bag inflator module due to the design of the anti back out connector on the module assembly.

If this 'pigtail' wiring harness, as with any other SRS 'pigtail' wiring harness, becomes damaged no wire, connector or terminal repairs are to be attempted. REPLACE THE SIDE AIR BAG MODULE AND PIGTAIL WIRING HARNESS ASSEMBLY.

The connectors on the SRS wiring harness which interface with the igniters have an in-built capacitor which is connected in series with the trigger circuit. The purpose of the capacitor is to prevent unintentional triggering of the SRS by blocking any Direct Current (DC) in the circuit.

Figure 12M-26 illustrates the SRS wiring harness connector with an in-built capacitor. The connector consists of:

- 1 Capacitor.
- 2 A 'Service Hole' to aid in diagnosis of the system.
- 3 & 4. Terminals.

Due to the sensitive nature of the SRS circuitry, special wiring repair procedures have been developed.

As such, the procedures described in **2.8 SRS WIRING REPAIR** in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) in this Service Information CD are the only recommended and approved SRS wiring repair method. These procedures are to be read in conjunction with **2.7 WIRING REPAIRS** in this Section.

**No alternative repair methods are to be used.**

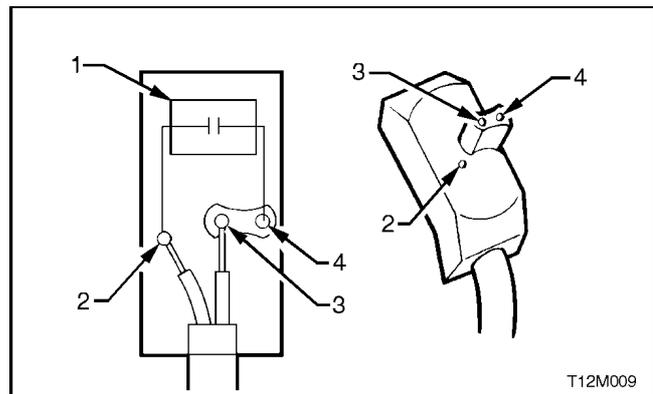


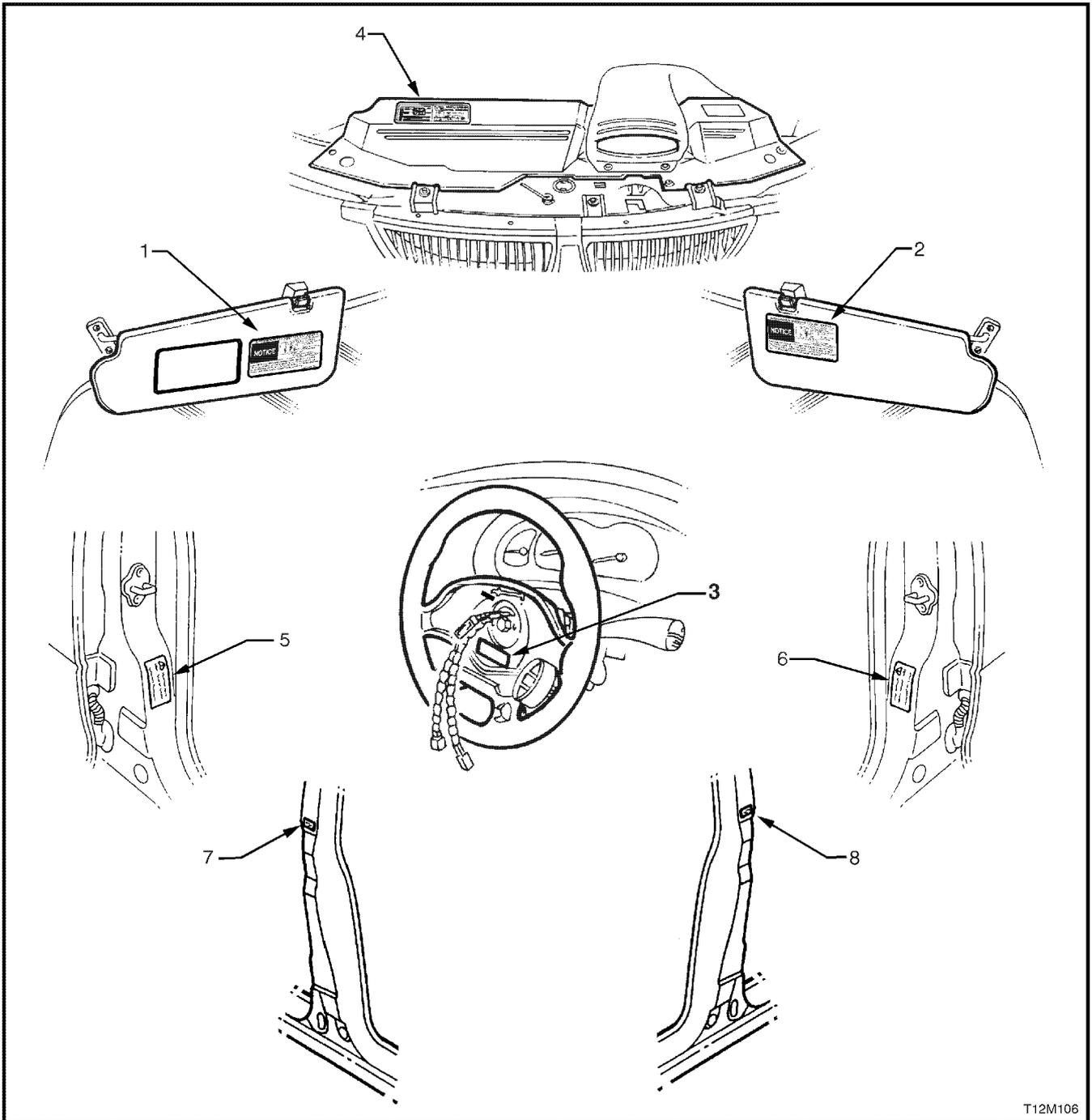
Figure 12M-26 SRS wiring harness connectors

## WARNING LABELS

In order to provide adequate warning of the SRS operation and service requirement to the vehicle's owner, driver or service technicians, SRS warning labels are located on various components of the vehicle, refer to Fig. 12M-27.

### IMPORTANT:

If at any time any these components are replaced, ensure that the appropriate warning label is applied to the replacement part.



T12M106

Figure 12M-27 SRS Warning Labels

1. Passenger's side sun visor (vehicles with front passenger's air bag).
2. Driver's side sun visor.
3. Steering wheel (horn bar and air bag inflator removed).
4. Engine cooling fan shroud.
5. Left hand B pillar (vehicles with side air bags).
6. Right hand B pillar (vehicles with side air bags).
7. Left hand B pillar moulding (vehicles with side air bags).
8. Right hand B pillar moulding (vehicles with side air bags).

## 2. SERVICE OPERATIONS

### 2.1 SAFETY PRECAUTIONS

1. Do not use a fast battery charger for starting the vehicle.
2. Never disconnect the battery from the vehicle's electrical system while the engine is running.
3. Disconnect the battery from the vehicle's electrical system before fast battery charging.
4. Never disconnect or connect the SDM connector with the ignition turned on.
5. After an accident, the individual SRS components must be replaced if the following circumstances apply:
  - a. Deformation of the SDM. (If the floor pan is deformed where the SDM is mounted, it must be repaired).
  - b. Deformation of the peripheral acceleration sensor or mounting bracket.
  - c. Deformation of the B pillar or surrounding area where the peripheral acceleration sensor and mounting bracket assembly is mounted.
  - d. Pre-tensioners, horn bar and air bag inflator module, front passenger's air bag inflator module and side air bag modules that have not been triggered, but are damaged.
  - e. Pre-tensioners, horn bar and air bag inflator module, front passenger's air bag inflator module, side air bag inflator module, SDM, or deployed side peripheral acceleration sensor assemblies that have been triggered.
  - f. If a vehicle is involved in an accident which was severe enough to deploy the pre-tensioners but not severe enough to deploy air bag/s, the following components must be replaced: Any seat belt worn in the accident, seat belt pre-tensioners front seat guide rail and adjuster assembly (provided seat was occupied in accident) and the SDM.

If a vehicle is involved in an accident where the seat belt pre-tensioners and the front air bag/s are deployed, the following components must be replaced: the same components as in a pre-tensioner only deployment, plus the horn bar and air bag inflator module assembly, SDM, clock spring coil, steering column, steering, front passenger's air bag inflator module (vehicles with front passenger's air bag), instrument panel pad and PAB door assembly (vehicles with front passenger's air bag), instrument panel pad name plate (vehicles with front passenger's air bag), front passenger air bag inflator support rail assembly (vehicles with front passenger's air bag).

If a vehicle is involved in an accident where a side air bag is deployed, the following components must be replaced: any seat belt worn in the accident, SDM, relevant side front seat assembly and relevant side peripheral acceleration sensor.

#### NOTE:

#### **DAMAGED OR DEFECTIVE COMPONENTS OF THE SYSTEM MUST NOT BE REPAIRED, BUT MUST ALWAYS BE REPLACED.**

6. When fasteners are removed, always reinstall them in the same location from which they were removed. If a fastener needs to be replaced, use a fastener with the correct part number for that application. If a fastener with the correct part number is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that should not be reused, and those requiring thread locking compound will be identified in this Section. The correct torque value must be used when installing fasteners that require it. If these conditions are not adhered to, parts or system damage could result.
7. The windshield plays an active part during the deployment of the front passenger's air bag. The strength of the windshield and its urethane adhesive is critical to ensure that the front seat passenger is correctly protected during deployment. Replacement windshield glass and adhesives complying to Holden's specifications may only be used.

Only use the correct urethane adhesive when installing a windshield to maintain original installation integrity. Failure to use the correct product will result in poor retention of the glass. For vehicles with front passenger side air bag, the windshield must be replaced properly so that occupant protection provided by the SRS is maintained.
8. Sensing and Diagnostic Module.

Take care when handling the SDM. Never strike or jar the module or body structure adjacent to the module in a manner which could cause deployment of the pre-tensioner's or air bag/s.

If an SDM is dropped from a height, greater than one metre, it must be replaced.
9. Peripheral acceleration sensor.

Take care when handling the peripheral acceleration sensor. Never strike or jar the module or body structure adjacent to the sensor in a manner which could cause deployment of the side air bag/s. Never carry a peripheral acceleration sensor by the wiring harness leads.

If a peripheral acceleration sensor is dropped from a height, greater than one metre, it must be replaced.

10. Undeployed air bag inflator module.

When carrying a live (undeployed) air bag inflator module, ensure that it is pointed away from you. In case of an accidental deployment, the air bag will then deploy with minimal chance of injury.

When placing a live air bag inflator module on a bench or other surface, always face the assembly up, away from the surface. This is necessary in order to provide free space for the air bag to expand, in case of accidental deployment. Also, never place anything on top of air bag inflator module.

Never carry the driver's air bag inflator module by the horn bar contact wires on the underside of the assembly. Never carry a side air bag inflator module by the wiring harness leads.

If still connected, never carry the front passenger's inflator module, or pre-tensioner's by their wiring harness lead.

Do not apply power to the module except as specified in this Section.

Do not attempt to make any repairs to the module or sensors. A damaged or defective horn bar and air bag inflator module, front passenger's air bag inflator module or side air bag inflator module assembly must be replaced.

Do not weld, solder, braze, hammer, machine, drill, or otherwise heat seat belt pre-tensioners or air bag inflator modules.

11. Deployed air bag inflator module/s.

Always wear gloves and safety glasses when handling a deployed pre-tensioner or air bag inflator module. The surface of these components may contain chemicals (eg. Sodium Hydroxide) as a result of the gas generated during combustion. This can irritate your skin. Wash hands with mild soap and water afterwards.

12. Steering column.

During any service operation that requires removal and reinstallation of a steering column fitted with an air bag inflator module, always carry the steering column with two hands and with the steering wheel away from your body. Never carry the column by one hand or with steering wheel toward you.

Never set a steering column on the floor with the steering wheel toward the floor.

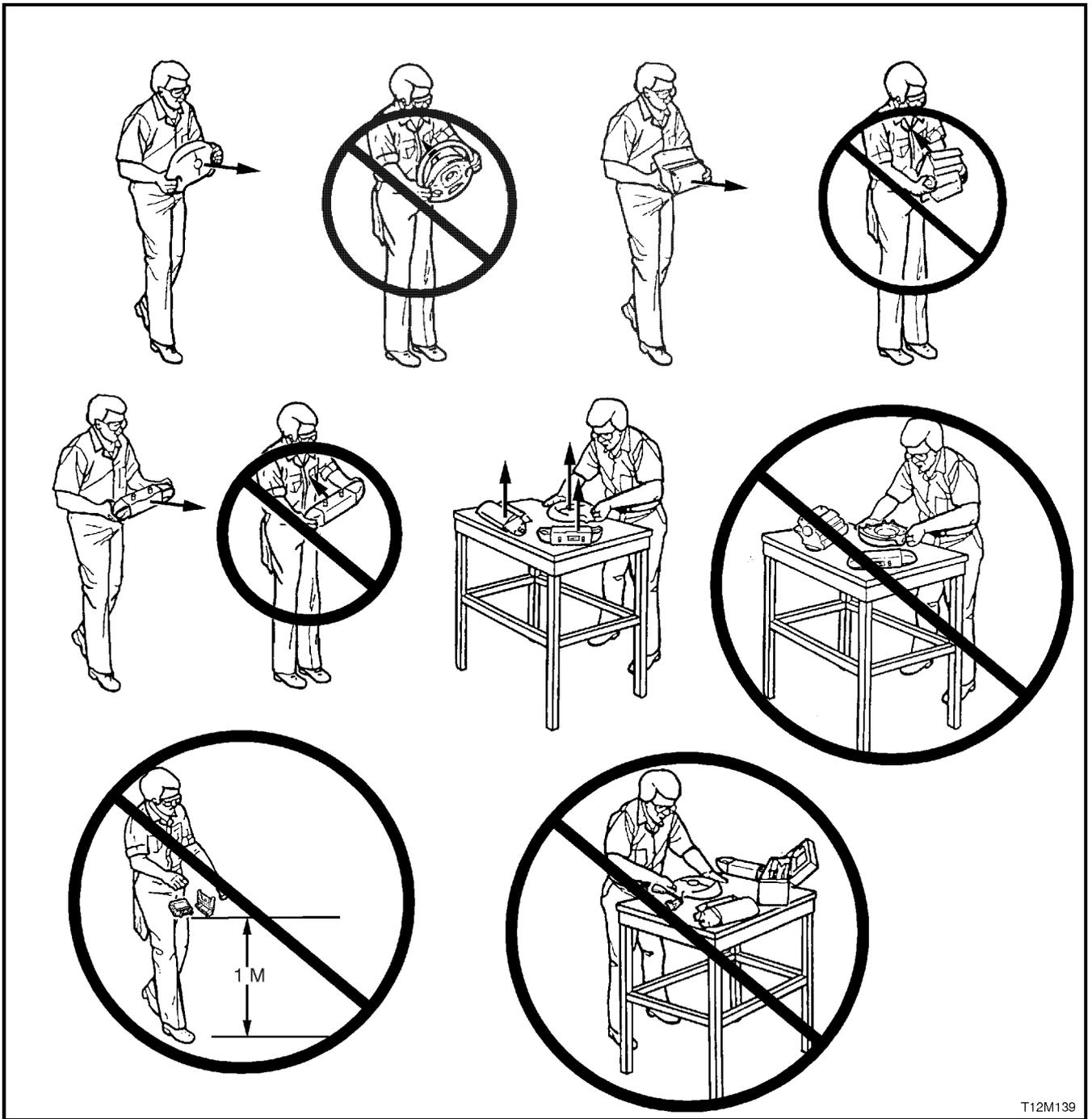
**NOTE:**

During any service operation that requires removal of a steering column, ensure that the steering shaft is locked to the column to prevent any possibility of allowing the steering shaft to rotate and possibly damaging the clock spring coil ribbon wire. For details of locking the steering shaft to the column, refer to [Section 9A, STEERING](#) in this Service Information CD.

**CAUTION:**

**When performing service on or around SRS components or wiring, follow the procedures listed in this Section to temporarily disable the SRS. Failure to follow these procedures could result in possible SRS deployment, personal injury or otherwise unnecessary SRS repairs.**

13. Disconnecting the battery WILL NOT immediately deactivate the SRS. A residual energy reserve in the SDM is incorporated to enable the pre-tensioners and air bag/s to deploy in the event of a battery failure. The SDM has the power to deploy the air SRS for up to 10 seconds after the battery has been disconnected or the ignition turned off.
14. The SDM can maintain sufficient voltage to cause a deployment for up to 10 seconds after the ignition switch is turned OFF or the battery is disconnected. Many of the service operations require disconnection of the battery to avoid an accidental deployment of the pre-tensioners or air bag/s.
15. When carrying out steering gear removal and installation procedures, remove the ignition key from the ignition lock and ensure that the steering column is locked. If this operation is not carried out and the steering wheel is spun while the steering gear is removed, the clock spring coil will be destroyed. This will result in the SDM setting a DTC and non-deployment of the driver's air bag.



T12M139

Figure 12M-28

## 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE

### DISABLING THE SRS

#### NOTE:

This disabling procedure applies only to VT Series Models which have an AC firing SRS. Conventional SRS with DC firing such as VS Series Models have a more complex disabling procedure. Always refer to the appropriate Service Information CD for SRS disabling and enabling procedures.

Disconnect both the battery earth and power leads and wait at least 10 seconds before performing any work on the vehicle.

#### CAUTION:

The SDM can maintain sufficient voltage to cause SRS deployment for up to 10 seconds after the ignition switch is turned OFF or the battery is disconnected.

### ENABLING THE SRS

#### NOTE:

Ensure all wiring harness connectors are connected before reconnecting the battery leads.

1. Reconnect both the battery power and earth leads.
2. Switch ignition on, and observe the SRS warning lamp in the instrument cluster. The warning lamp should be illuminated for approximately 5 seconds. During this period the SDM performs a wiring and self check.  
If no system faults are detected, the SRS warning lamp will be switched off. If the warning lamp remains illuminated and an audible alarm chimes, or the warning lamp illuminates 2 seconds after it was originally switched off, an SRS fault is present. Refer to **3 DIAGNOSTICS** in this Section to rectify fault.

## 2.3 SIDE AIR BAG MODULE ASSEMBLY

### NOTE:

Due to the critical nature of how the side air bag wiring harness is routed and retained to the seat, the seat must be removed to ensure this routing is correct when installing the side air bag module assembly. If the side air bag module's wiring harness is not routed and retained correctly, damage to the wiring harness may occur, resulting in the side air bag becoming inoperative and a DTC being set.

### REMOVE

1. Position the relevant front seat to obtain the easiest access to the four seat retaining bolts and, if possible, the seat should be fully raised and the seat back tilted forward.
2. Disable the SRS, refer to **2.2 SYSTEM DISABLING AND ENABLING PROCEDURE** in this Section.
3. If removing the driver's seat, remove the retaining screw (1) from the driver's side outer front guide rail cover.
4. Using a small screwdriver, push in the centre of the front (3) and rear (2) outer seat guide rail covers where the two parts meet.
5. Remove the front outer guide rail covers by lifting the outer edge of the front cover up and pulling it forward. Lift driver's outer front seat guide rail cover over fuel filler door release lever.
6. Lift the two rear guide rail covers up and off the guide rails.
7. Disconnect seat (3), seat belt pre-tensioner (2) and side air bag module (1) wiring harness connectors from outer side of the relevant seat.

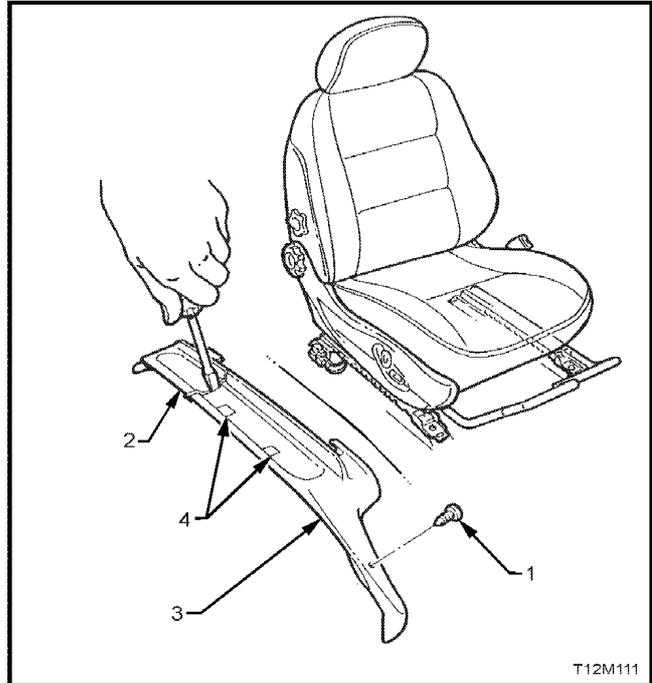


Figure 12M-29

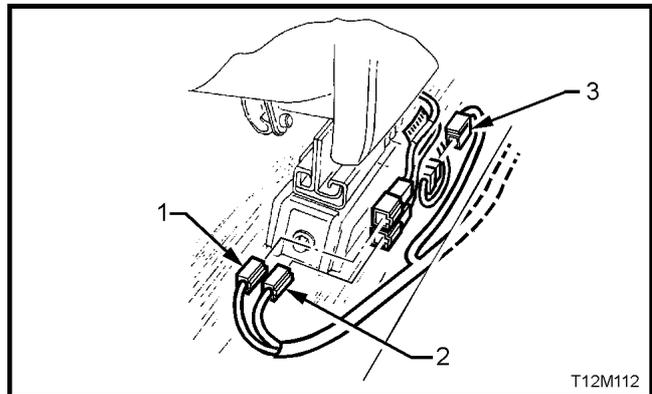


Figure 12M-30

8. Remove the four bolts securing the front seat to the floor and remove seat.

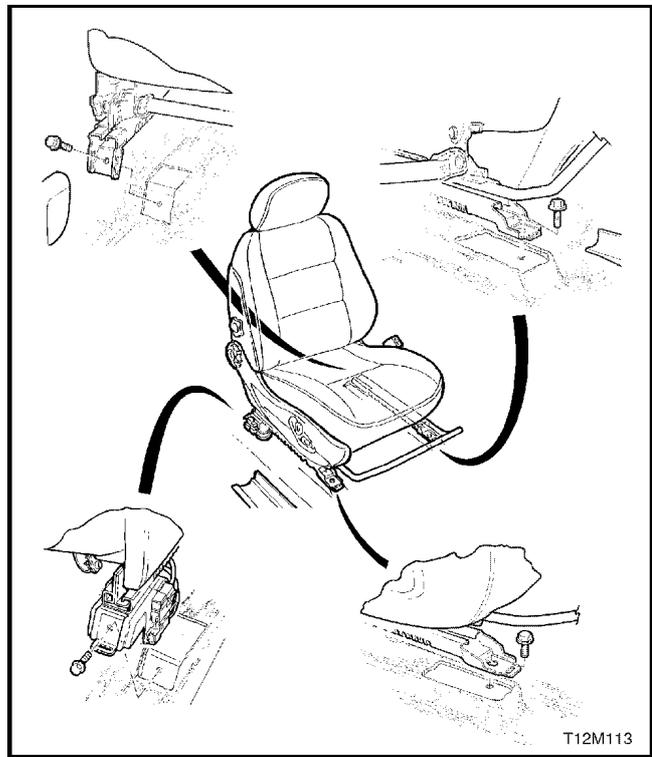


Figure 12M-31

9. On vehicles with four-way seat electric seats, remove the screw (2) securing side inner cover (1) to seat and remove inner side cover.

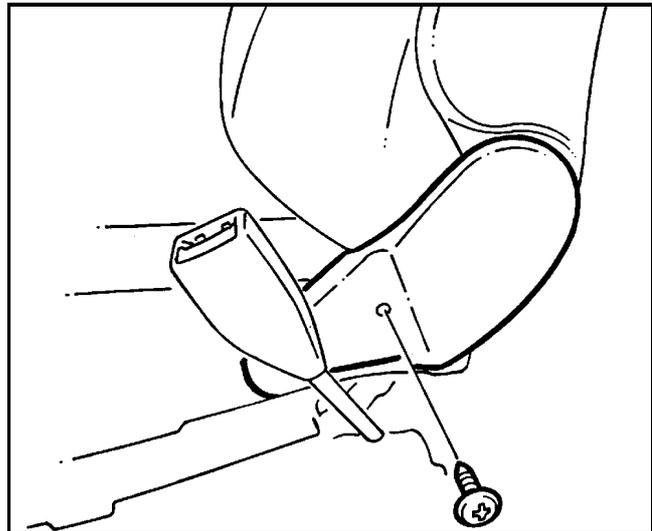


Figure 12M-32

10. On vehicles with a four-way electric seat, from the inner side of the seat assembly, gently tap the recliner shaft towards the outer side of the seat assembly (approximately 1 - 2 cm) using a pin punch.
11. On vehicles with a four-way electric seat, fully withdraw the seat back reclining knob and recliner shaft assembly (1) from the seat assembly.
12. Remove the screw (2) from the front of the outer side cover (3).
13. Remove the front seat outer side cover fastener (4) by rotating fastener anti-clockwise (one quarter turn) and remove the screw (5) located behind this fastener.
14. Gently pull outer cover away from seat back recliner (clip either side of recliner frame).
15. Reach up under the seat assembly and squeeze the retaining tangs (6) together (2 positions) on the inner side of the outer cover while gently pulling the outer cover.

**NOTE:**

Only remove outer cover far enough away from the seat cushion assembly to gain access to the seat adjusting switch wiring harness.

16. Disconnect seat adjusting switch wiring harness at the switch and remove outer cover and switch assembly.

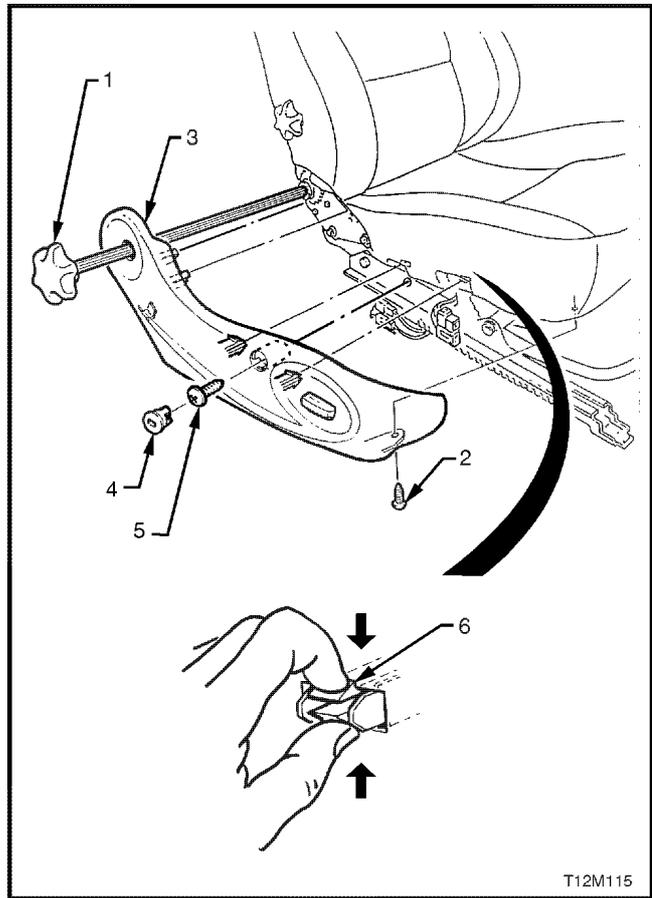


Figure 12M-33

17. Insert a screwdriver between the seat back cover (1) and seat back (2) and push up on the lower retaining clip (3) (2 places) while pulling the bottom of the back cover out, away from seat, to release lower retaining clips.

If the seat is not equipped with a lumbar support, pull the back seat cover down to release the top retainers (4) and remove seat back cover.

If the seat is equipped with a lumbar support, refer to step 18 before pulling the seat back cover down.

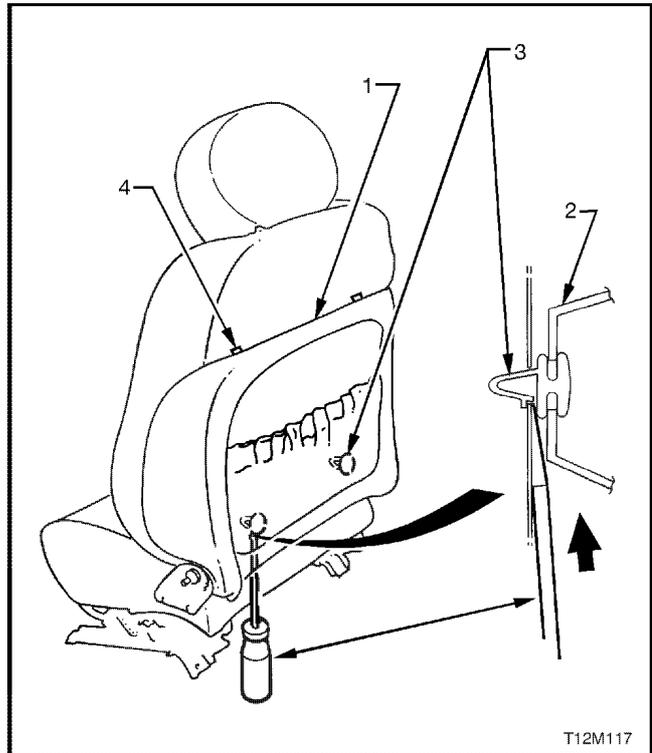


Figure 12M-34

18. From the front side of the seat back cover, in front of the lumbar support knob, pull the seat back cover outwards from the seat assembly to disengage the lumbar support knob.
- While holding the side of the seat back cover out, pull the seat back cover down to release the top seat back cover retainers, refer Fig. 12M-34 (4). Remove seat back cover.

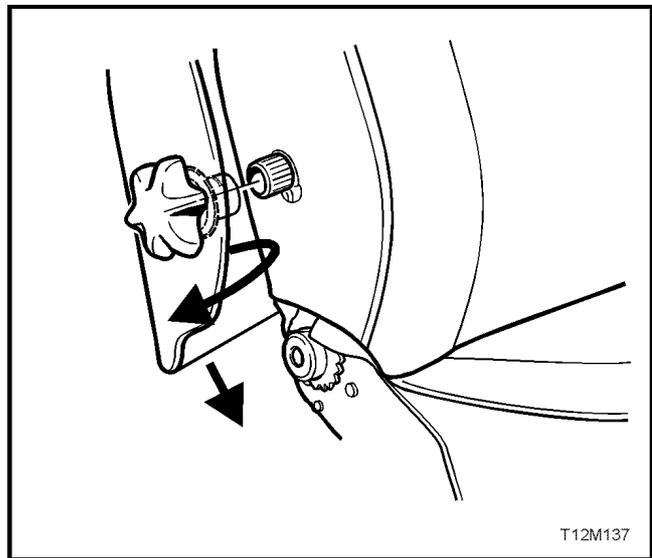


Figure 12M-35

19. While holding head restraint height adjuster lock in, pull head restraint completely out of guide.
20. From the back of front seat, squeeze the locking prongs of head restraint guide together while pulling top of guide out of seat back assembly.

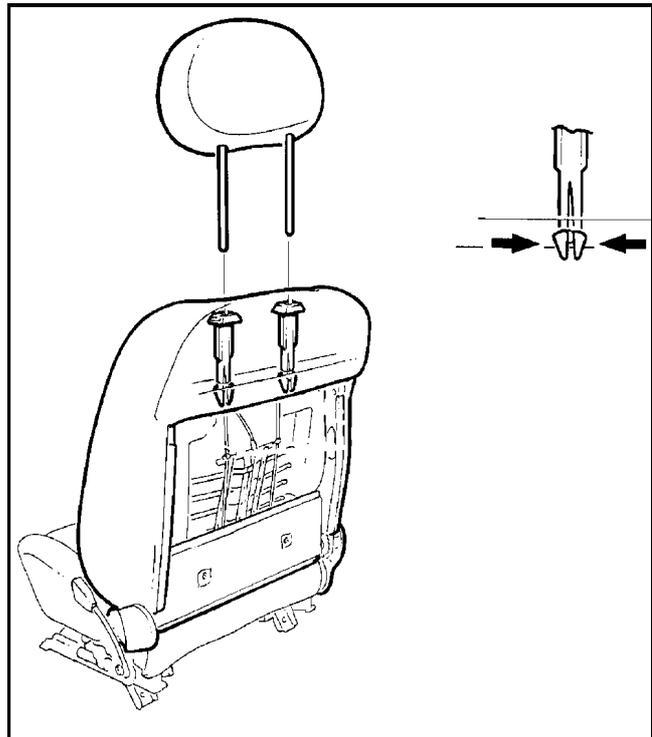


Figure 12M-36

21. Pull the four 'J' strips away from the seat frame.
22. Lift cover and pad assembly away from seat back frame.

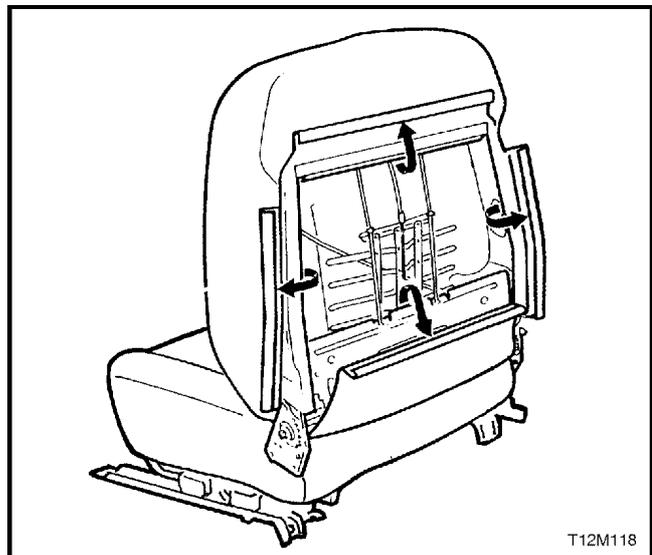


Figure 12M-37

23. Taking care not to damage the wiring harness, cut the wire ties (five places) securing the side air bag module 'pigtail' wiring harness to the front seat assembly.

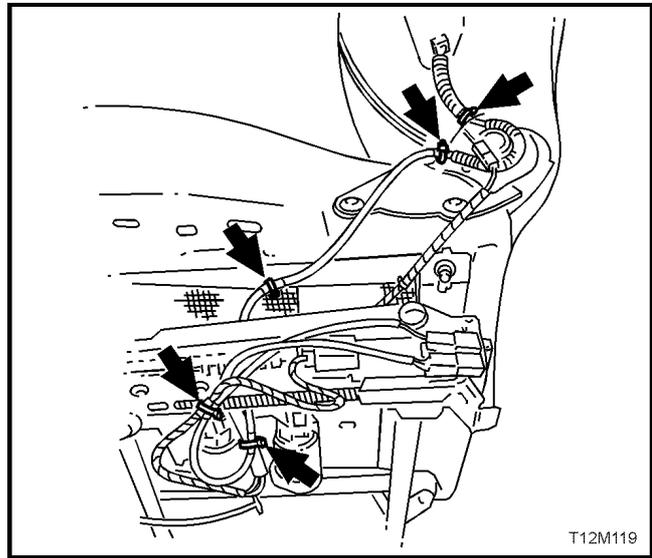


Figure 12M-38

24. Loosen and remove the two nuts securing the side air bag assembly to the front seat back frame.
25. Remove side air bag module and 'pigtail' wiring harness assembly from front seat back frame.

**CAUTION:**

When carrying a live (undeployed) side air bag inflator module assembly, make sure the bag opening is pointed away from you. Never carry the side air bag inflator module assembly by the wiring harness or connectors. In case of an accidental deployment, the bag will then deploy with minimal chance of injury.

When placing a live side air bag inflator module assembly on a bench or other surface, always face the air bag opening up, away from the surface. Never rest the air bag inflator module assembly with the opening face down. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.

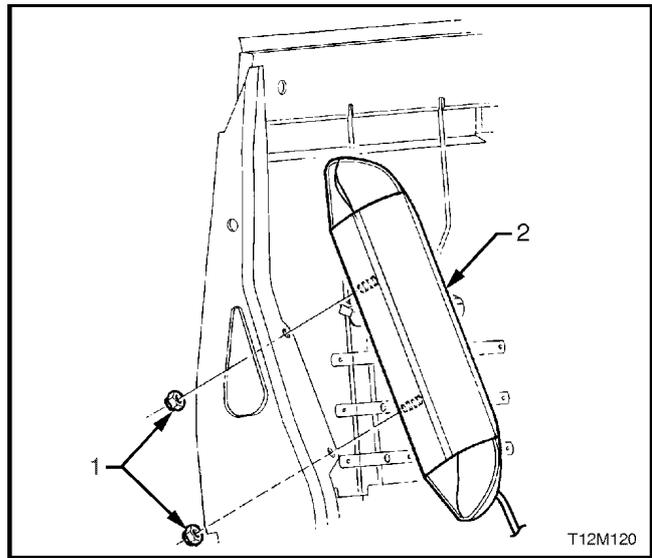


Figure 12M-39

## REINSTALL

1. Install the side air bag and 'pigtail' wiring harness assembly into position on the front seat back frame.
2. Install side air bag to front seat back frame retaining nuts and tighten to the correct torque specification.

SIDE AIR BAG ASSEMBLY TO FRONT SEAT BACK FRAME RETAINING NUT TORQUE SPECIFICATION	5 - 6 Nm
---	----------

3. Route side air bag 'pigtail' wiring harness through to the side of the seat frame and secure with five new wire ties as per Fig 12M-41.

### NOTE:

If the side air bag module's wiring harness is not routed and retained correctly, damage to the wiring harness may occur, resulting in the side air bag becoming inoperative and a DTC being set.

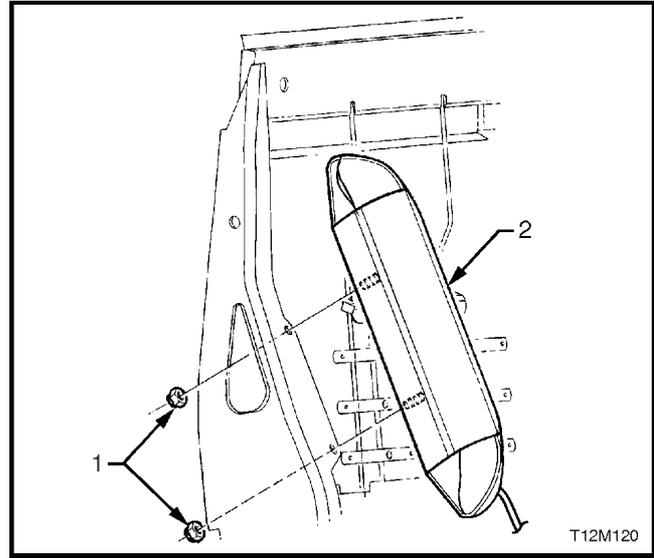


Figure 12M-40

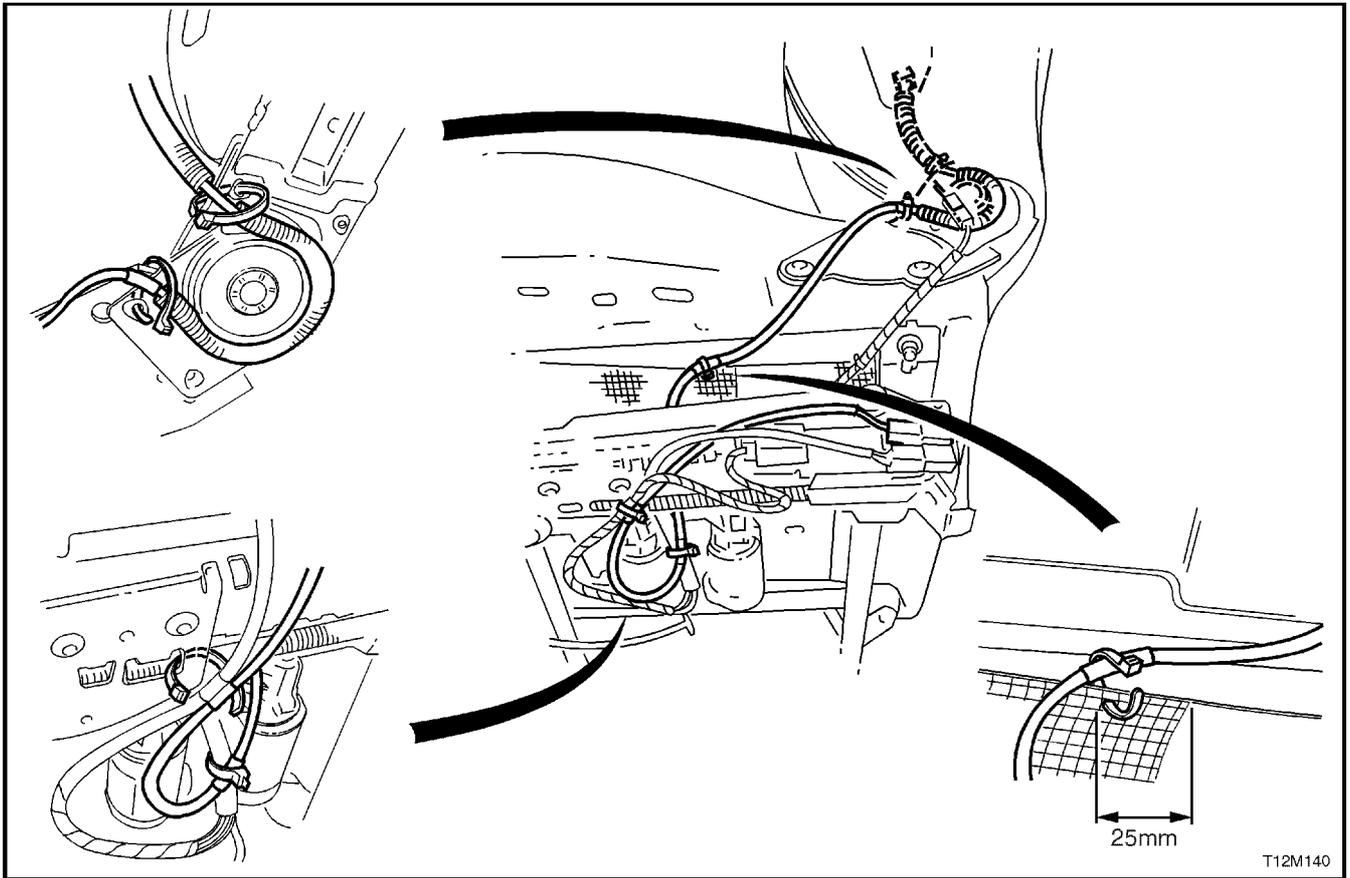


Figure 12M-41

4. Position the seat back cover and pad assembly over the seat back frame and pull the four 'J' strips over the seat back frame.
5. Insert the head restraint guides into the seat back, ensuring that the locating slots in the seat back align with the key-way on the head restraint guide and the head restraint guide with the adjusting lock is installed on the correct side, ie. side with notches on the head restraint. Push the guides down into the seat back until they lock into position.
6. Install the head restraint into the head restraint guides.

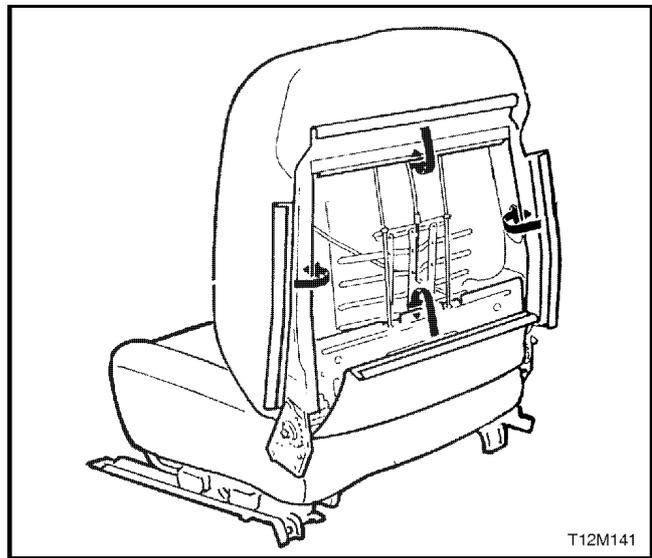


Figure 12M-42

7. Install the seat back cover assembly onto the seat assembly as per the following:  
locate the two upper retaining clips on the seat back cover with the seat back (refer [Fig. 12M-34](#) in this Section).

If the vehicle is fitted with a lumbar support, pull the side of the seat back cover out, align the splines on the lumbar support knob and adaptor with the splines on the lumbar support shaft. Push lumbar support knob and adaptor onto lumbar support shaft.

Push the seat back cover into the seat back, to engage the two lower retaining clips (refer [Fig. 12M-34](#) in this Section).

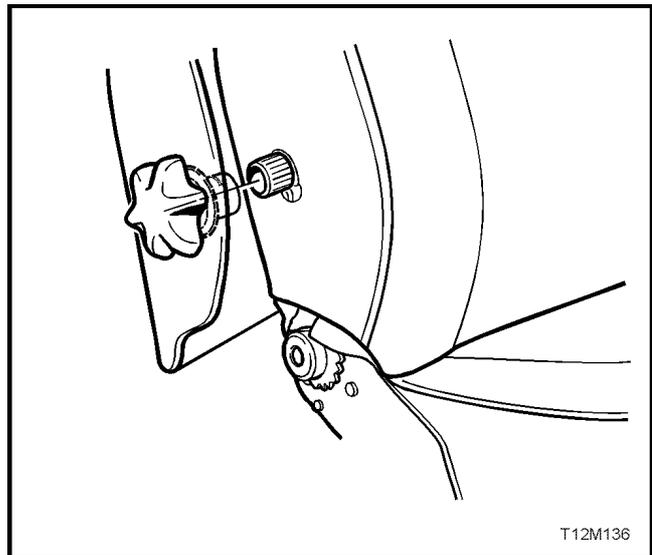


Figure 12M-43

8. Position the front seat outer side cover (3) in place and connect the seat adjusting switch wiring harness to the seat adjusting switch.
9. Align the front seat outer side cover retaining clips and locking tangs with the seat frame, and push the outer side cover onto the seat frame until the retaining clips and tangs engage.
10. Install and tighten the outer side cover retaining screws (2 & 5) and the fastener (4).
11. On vehicles with four-way electric seats, install the recliner shaft and knob assembly (1), ensuring the splines are aligned evenly and the seat back is not twisted.

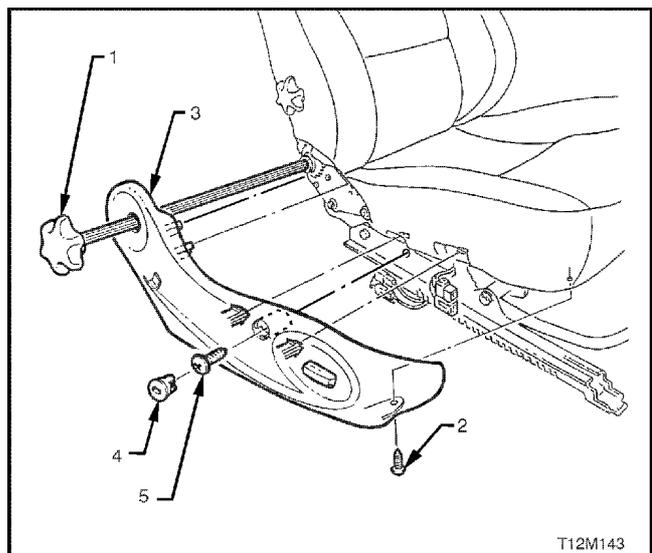


Figure 12M-44

12. On vehicles with four-way seat electric seats, reinstall inner side cover (1) and tighten securing screw (2) to the seat frame assembly.

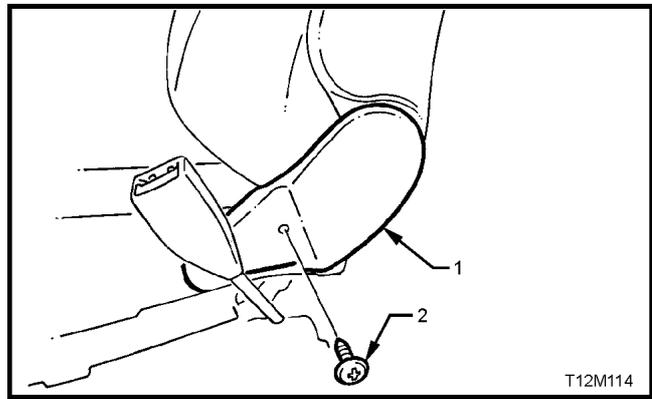


Figure 12M-45

13. Position the front seat assembly into the vehicle.  
14. Install the four bolts securing the front seat to the floor and tighten to the correct torque specification.

FRONT SEAT TO FLOOR SECURING BOLT TORQUE SPECIFICATION	35 - 50 Nm
--	------------

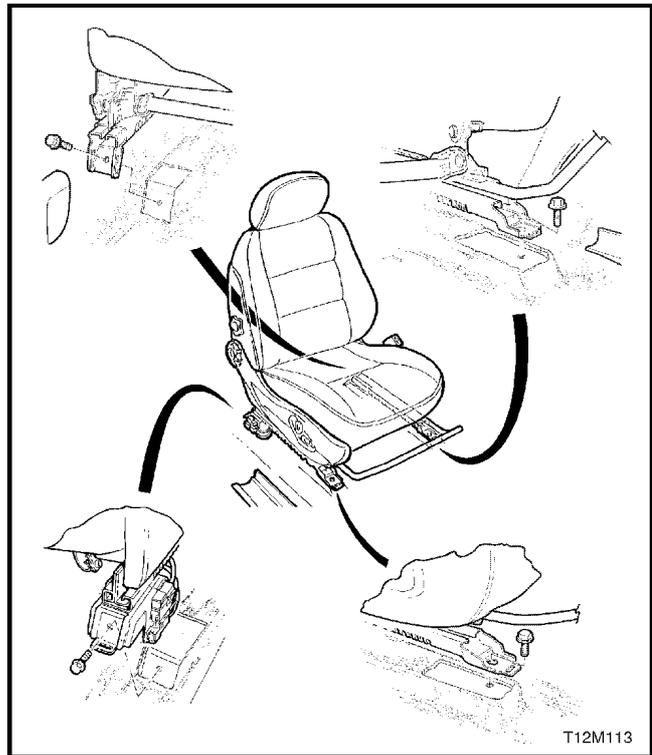


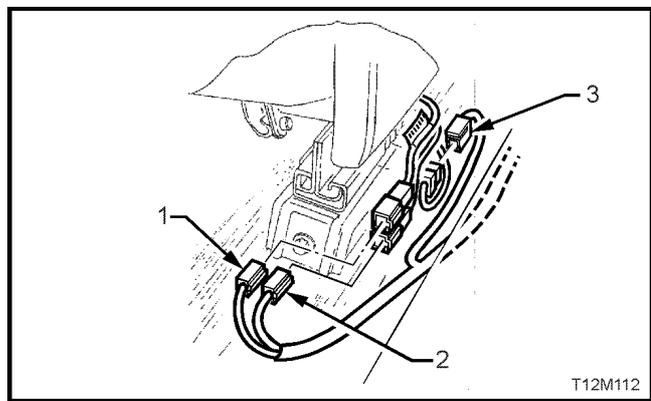
Figure 12M-46

15. Connect seat (3), pre-tensioner (2) and side air bag module (1) wiring harness connectors.
16. Align the front outer seat guide rail cover's two retaining clips and push firmly to engage.

**NOTE:**

The two retaining clips can be aligned by using the alignment marks on the upper side of the cover, refer to [Fig. 12M-29](#), (4).

17. Push the front of the outer seat guide rail cover down to engage cover with front of seat rail.
18. If installing the driver's side outer seat guide rail cover, install the screw at the front of the front outer seat guide rail cover.
19. Install the rear outer seat guide rail cover lower rear retainer over the seat guide rail and push rear outer seat guide rail cover forward to engage with front outer seat guide rail cover.
20. Enable the SRS, refer to [2.2 SYSTEM DISABLING AND ENABLING PROCEDURE](#) in this Section.
21. Switch ignition on, and observe the SRS warning lamp in the instrument cluster. The warning lamp should be illuminated for approximately 5 seconds. During this period the SDM performs a wiring and system self check.  
  
If no system faults are detected, the SRS warning lamp will be switched off. If the warning lamp remains illuminated and an audible alarm chimes, or the warning lamp illuminates 2 seconds after it was originally switched off, an SRS fault is present. Refer to [3 DIAGNOSTICS](#) in this Section to rectify fault.
22. Check operation of front seat mechanical and electrical adjustments / operation. While checking the seat adjustment / operation, also check to ensure that the side air bag 'pigtail' harness does not foul with any of the seats moveable components (ie. seat motor drive shafts, etc.).



**Figure 12M-47**

### **SIDE AIR BAG MODULE ASSEMBLY SCRAPPING PROCEDURE**

During the course of a vehicle's useful life, certain situations may arise which will necessitate the disposal of a live (undeployed) side air bag inflator module assembly. The following information covers proper procedures for deploying a live side air bag assembly.

**CAUTION:**

**Failure to follow proper Supplemental Restraint System (SRS) side air bag inflator module assembly disposal procedures can result in air bag deployment which may cause personal injury. The undeployed air bag inflator module contains substances that can cause severe illness or personal injury if the sealed container is damaged during disposal.**

In situations which require deployment of a live side air bag inflator module assembly, deployment may only be accomplished outside the vehicle.

The side air bag inflator module needs to be removed so the SRS wiring harness with the capacitor built into the connector can be removed. Intentional deployment of the side air bag inflator module can not be accomplished using a 12 volt DC supply with the capacitor in the SRS circuit.

**NOTE:**

Due to an anti-back-out lug being moulded into the plastic housing of the side air bag module, it will be necessary to cut part of the housing away from the air bag module to disconnect the SRS wiring harness connector from the air bag module.

**SIDE AIR BAG MODULE DEPLOYMENT OUTSIDE VEHICLE**

There may be some circumstances that require the deployment of a side air bag inflator module assembly before a vehicle is to be returned to service. For example, situations in which the vehicle will be returned to an owner after a functionally malfunctioning side air bag inflator module assembly is replaced. Deployment and disposal of a malfunctioning air bag inflator module is, of course, subject to any required retention period.

For deployment of a live (undeployed) side air bag inflator module assembly outside the vehicle, the deployment procedure must be followed exactly. Always wear safety glasses during the deployment procedure until the assembly is removed. Before performing the procedure you should be familiar with servicing the SRS and with proper handling of the side air bag inflator module assembly.

The following must be read fully and understood before performing the actual procedure.

The following procedure requires use of special tools; J38826-1 SRS deployment harness with adaptor E1992. Do not attempt procedure without J38826-1 and E1992.

**CAUTION:**

**Failure to follow procedures in the order listed may result in personal injury. Never connect deployment harness to any power source before connecting deployment harness to the side air bag inflator module assembly. The deployment harness must remain shorted and not be connected to a power source until the side air bag inflator module assembly is ready to be deployed. The module will immediately deploy the air bag when a power source is connected to it. Wear safety glasses and gloves throughout this entire deployment and disposal procedure.**

1. Turn ignition switch OFF and put on safety glasses.
2. Inspect J38826-1 SRS deployment harness (1) and adaptor, E1992 (2) for damage. If harness or adaptor is damaged, discard and obtain a replacement.
3. Short two SRS deployment harness leads together by fully seating one banana plug into the other. SRS deployment harness MUST remain shorted and NOT connected to a power source until the air bag is to be deployed.
4. Connect adaptor E1992 to the SRS deployment harness J38826-1.

**CAUTION:**

**SRS deployment harness must remain shorted and not connected to a power source until the air bag is to be deployed.**

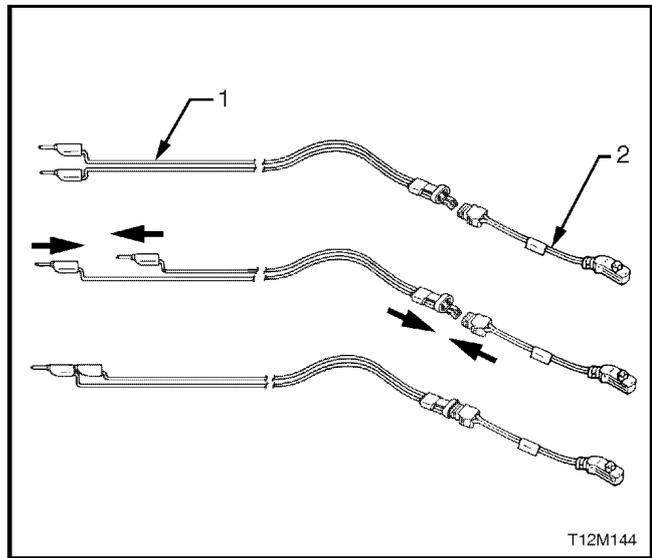


Figure 12M-48

5. Remove relevant side air bag inflator module assembly from vehicle, refer to **2.3 SIDE AIR BAG MODULE ASSEMBLY** in this Section.

**CAUTION:**

**When carrying a live (undeployed) side air bag inflator module assembly, make sure the bag opening is pointed away from you. Never carry the side air bag inflator module assembly by the wiring harness or connectors. In case of an accidental deployment, the bag will then deploy with minimal chance of injury.**

**When placing a live side air bag inflator module assembly on a bench or other surface, always face the air bag opening up, away from the surface. Never rest the air bag inflator module assembly with the opening face down. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.**

6. Using a piece of angle iron (approximately 60cm long) drill two holes on one surface that will allow it to be bolted to a piece of square steel tubing (refer Step 9.).

On the other surface of the angle iron, drill two more holes that are suitably sized and positioned to allow the side air bag to be attached to it.

Using the existing air bag retaining studs and appropriate nuts, attach the side air bag assembly to the angle iron, ensuring the opening of the air bag will be able to face upwards when bolted to the square steel tubing.

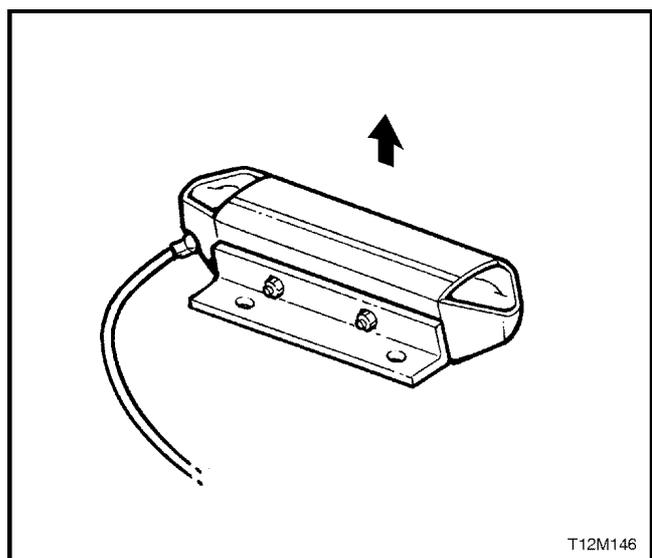
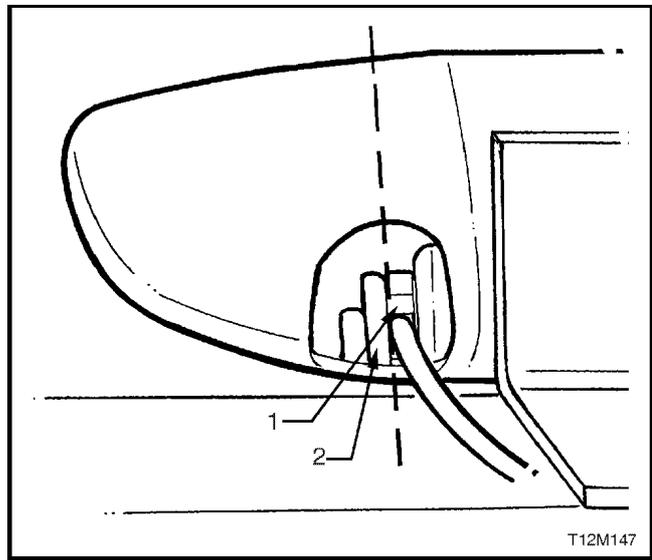


Figure 12M-49

**NOTE:**

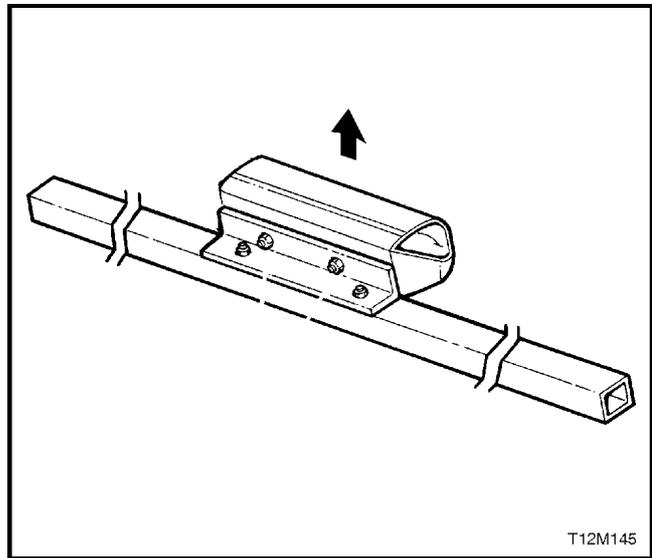
The side air bag module plastic housing has an anti-back-out lug (2) moulded into it which will prevent the SRS wiring harness connector (1) from being disconnected. Due to the in-built capacitor in this connector, a side air bag cannot be intentionally deployed with this connector in the circuit, therefore, it will be necessary to cut part of the side air bag housing away from the side air bag module assembly to allow the SRS wiring harness connector be disconnected.

7. Clamp angle iron (with side air bag attached) in a vice with the air bag opening facing upwards. Using a hack saw, cut the end off the side air bag module plastic housing so that it will enable the SRS wiring harness connector (1), with in-built capacitor, to be disconnected from the side air bag module (refer to Fig. 12M-50).
8. Disconnect SRS wiring harness from side air bag module assembly.
9. Using a 2 metre long square steel tube and suitable nuts and bolts, attach the angle iron and side air bag module assembly to the centre of the square steel tube.

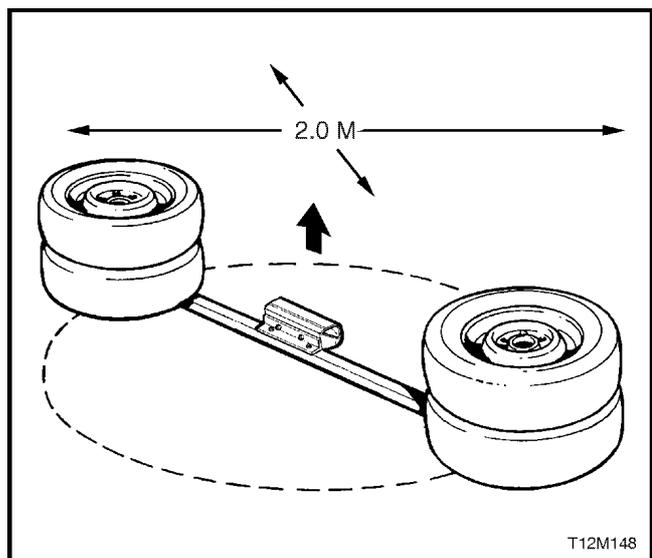


**Figure 12M-50**

10. Clear a space on the ground about 2 metres in diameter where the assembly is to be deployed. A paved, outdoor location where there is no activity is preferred. If an outdoor location is not available, a space on the workshop floor where there is no activity and sufficient ventilation is recommended. Ensure no loose or flammable objects are within the deployment area.
11. Position two wheel and tyre assemblies on each end of the square steel tubing, ensuring the side air bag module's opening is facing upwards.



**Figure 12M-51**



**Figure 12M-52**

12. Extend the SRS deployment harness (1) and adaptor (2) to its full length from the side air bag module.
13. Place a power source near the shorted end of the SRS deployment harness. Recommended application:

12 volts minimum, 2 amps minimum  
(a vehicle battery is suggested).

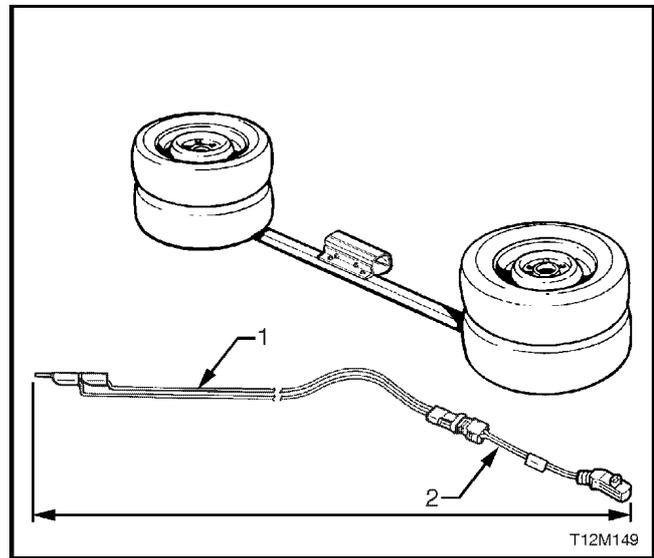


Figure 12M-53

14. Connect the adaptor E1992 (1) and SRS deployment harness lead J38826-1 (2) to the side bag inflator module assembly (3).

**CAUTION:**

**SRS deployment harness must remain shorted and not connected to a power source until the air bag is to be deployed. The inflator module will immediately deploy the air bag when a power source is connected to it.**

15. Verify that the area around the side air bag inflator module assembly is clear of all people and loose or flammable objects.
16. Verify that the side air bag inflator module assembly is resting with the air bag facing up.
17. Notify all people in the immediate area that you intend to deploy the side air bag inflator module assembly. The deployment will be accompanied by an explosion which may startle the uninformed.

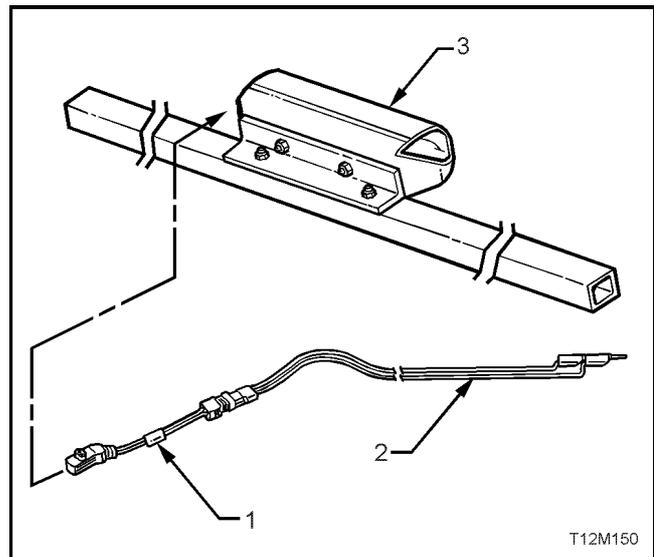


Figure 12M-54

18. Separate the two banana plugs on the SRS deployment harness.

**NOTE: 1.**

When the air bag deploys, the rapid gas expansion will create an explosion. Notify all people in the immediate area that you intend to deploy the module.

**NOTE: 2.**

When the air bag deploys, the assembly may jump vertically. This is a normal reaction of the module to the force of the rapid gas expansion inside the air bag.

**CAUTION:**

The deployment harness **MUST** remain shorted and **NOT** connected to a power source until the air bag is to be deployed. The module will immediately deploy the air bag when a power source is connected to it. Connecting the deployment harness to the power source should always be the last step prior to deployment of the air bag. Failure to follow procedures in the order listed may result in personal injury.

19. Connect SRS deployment harness leads to the power source to immediately deploy the side air bag inflator module assembly.

**NOTE:**

Should this procedure fail to deploy the air bag for any reason, provided it is not due to a discharged deployment battery or a faulty deployment harness, contact Holden Ltd for advise.

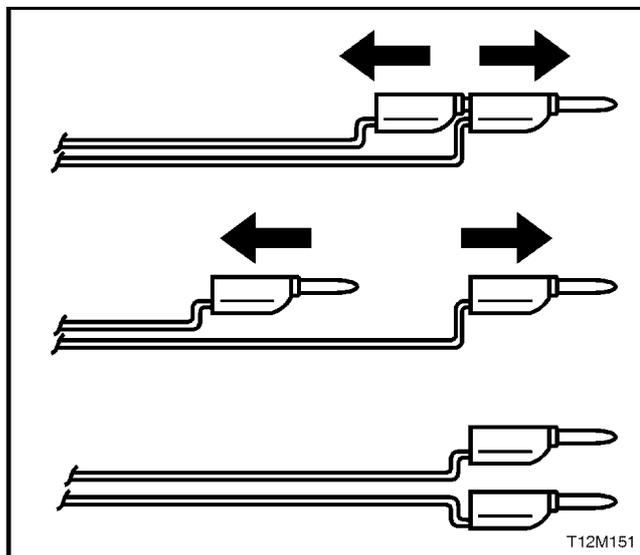
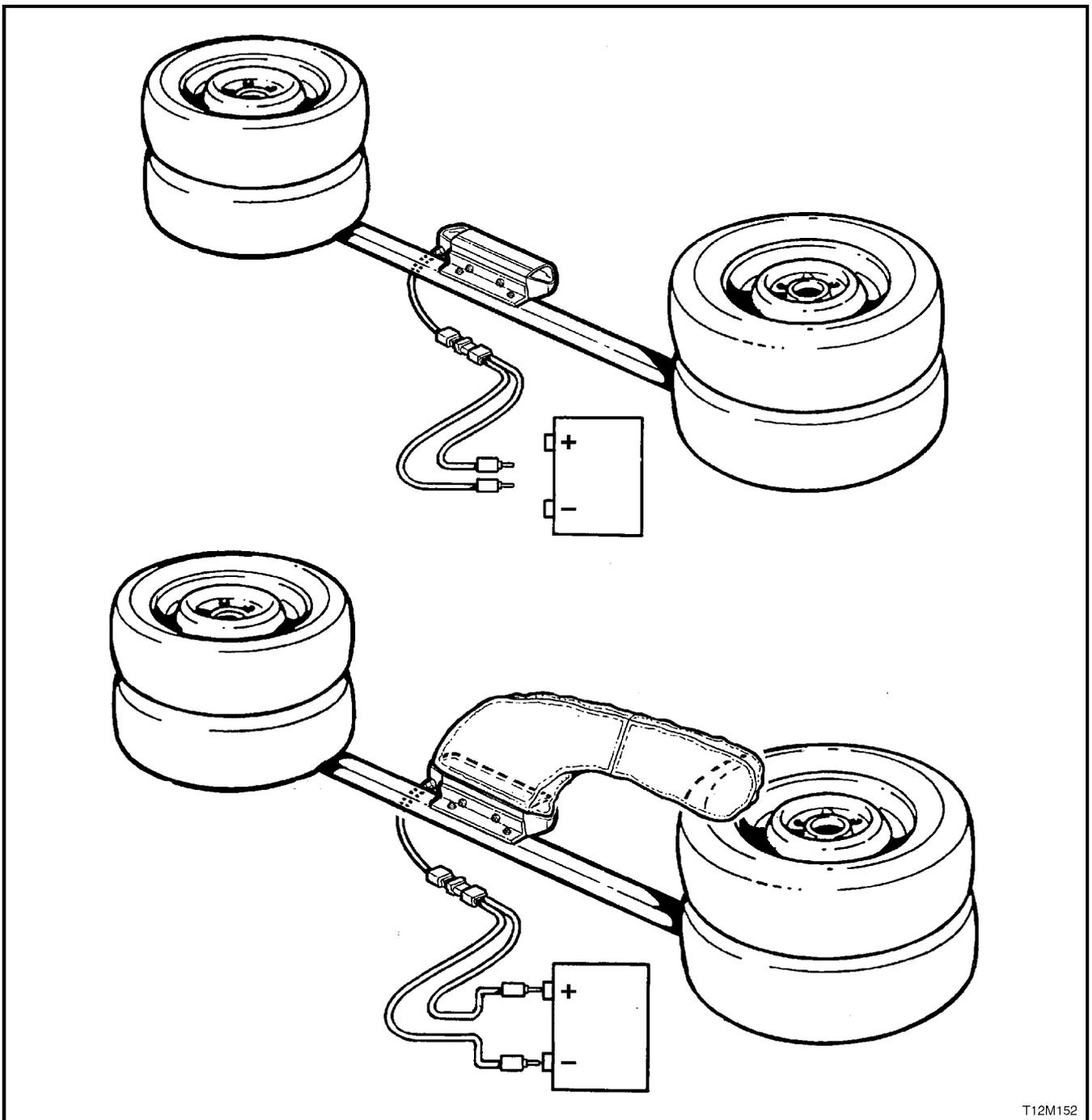


Figure 12M-55



T12M152

**Figure 12M-56**

20. Disconnect the SRS deployment harness from the power source.
21. Short the two SRS deployment harness leads together by fully seating one banana plug into the other.
22. Disconnect the adaptor E1992 from the module as soon as possible after deployment. This will prevent damage to the adaptor or SRS deployment harness. The adaptor and SRS deployment harness are designed to be reused. They should, however, be inspected for damage after each deployment and replaced if necessary.
23. Dispose of the deployed side air bag module assembly through normal refuse channels.

## 2.4 SENSING AND DIAGNOSTIC MODULE (SDM)

### REMOVE

1. Disable the SRS, refer to **2.2 SYSTEM DISABLING AND ENABLING PROCEDURE** in this Section.
2. Remove the centre console assembly, refer to **Section 1A3 INSTRUMENT PANEL AND CONSOLE** in this Service Information CD.
3. Using a number T30H Torx bit, Tool No. ETX30H and suitable holder such as Tool No. J25359-8, loosen and remove the SDM to floor attaching screw (1) with the earth lead attached to it
4. Lift up SRS wiring harness connector locking lever (2) and pull harness connector (3) out of SDM.

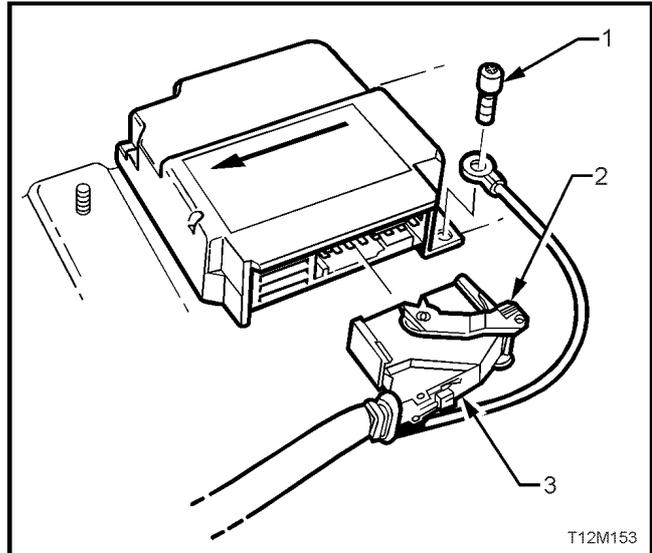


Figure 12M-57

5. Using the number T30H Torx bit, Tool No. ETX30H and suitable holder such as Tool No. J25359-8, loosen and remove the remaining two SDM to floor attaching screws (1).
6. Remove SDM.

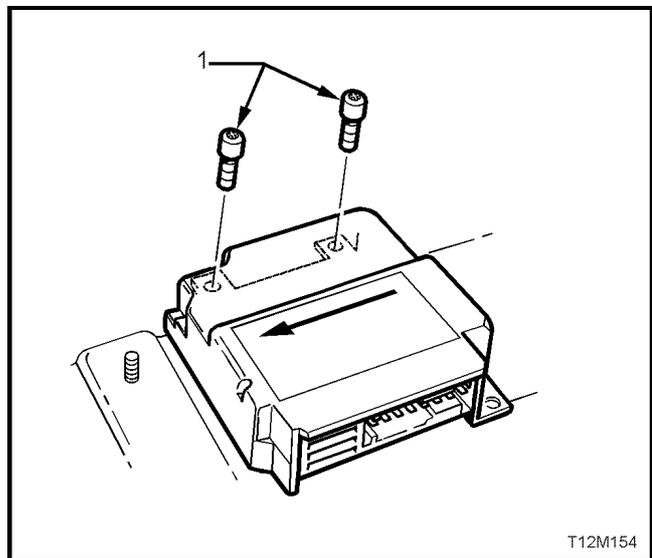


Figure 12M-58

### REINSTALL

Installation of the SDM is the reverse of removal procedures, noting the following points:

1. Ensure that the directional arrow on the SDM identification label is pointing towards the front of the vehicle.
2. Install the the SRS wiring harness earth lead to the left hand rear SDM retaining screw.
3. Using a number T30H Torx bit, Tool No. ETX30H and suitable holder such as Tool No. J25359-8, tighten SDM to floor attaching screws to the correct torque specification.

### NOTE:

**It is very important that the SDM is mounted securely to the floor. The screws must be tightened to the correct torque specification and not exceeded.**

SENSING AND DIAGNOSTIC MODULE TO FLOOR ATTACHING SCREW TORQUE SPECIFICATION
--

7 - 11 Nm
--------------

4. Connect the SRS wiring harness connector, ensuring that the connector is fully seated into SDM module and the locking lever is locked down.
5. Enable the SRS, refer to **2.2 SYSTEM DISABLING AND ENABLING PROCEDURE** in this Section.
6. Switch ignition on, and observe the SRS warning lamp in the instrument cluster. The warning lamp should be illuminated for approximately 5 seconds. During this period the SDM performs a wiring and self check.

If no system faults are detected, the SRS warning lamp will be switched off. If the warning lamp remains illuminated and an audible alarm chimes, or the warning lamp illuminates 2 seconds after it was originally switched off, an SRS fault is present. Refer to **3 DIAGNOSTICS** in this Section to rectify fault.

## 2.5 PERIPHERAL ACCELERATION SENSOR (SIDE AIR BAG SENSOR)

### REMOVE

1. Disable the SRS, refer to **2.2 SYSTEM DISABLING AND ENABLING PROCEDURE** in this Section.
2. If removing the driver's side peripheral acceleration sensor, remove the retaining screw (1) from the driver's side outer front guide rail cover.
3. Using a small screwdriver, push in the centre of the front (3) and rear (2) outer seat guide rail covers where the two parts meet.
4. Remove the front outer guide rail covers by lifting the outer edge of the front cover up and pulling it forward. Lift driver's outer front seat guide rail cover over fuel filler door release lever.
5. Lift the two rear guide rail covers up and off the guide rails.

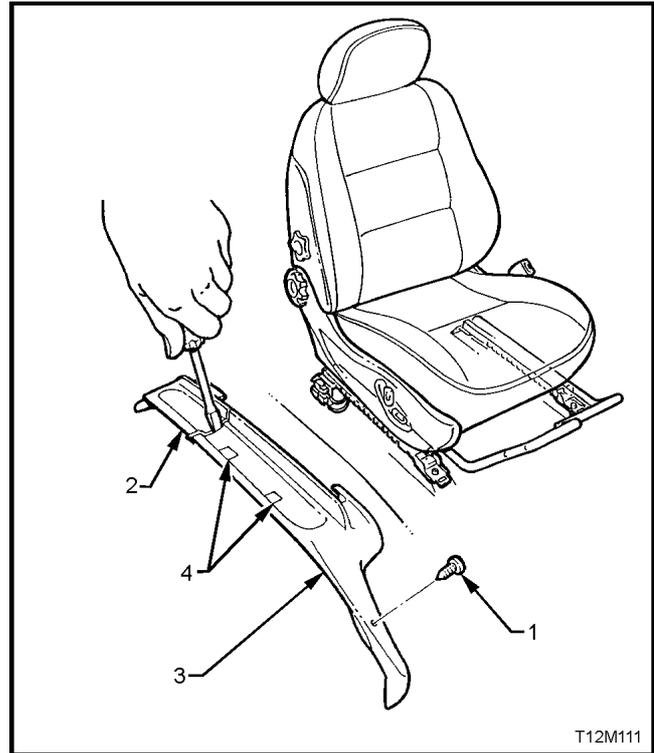


Figure 12M-59

6. From the top of the lower B pillar trim (1), gently lever trim out away from B pillar to release the two retaining clips (2).
7. Lift lower B pillar trim up to disengage it from the rocker panel trim, and remove the lower B pillar trim.

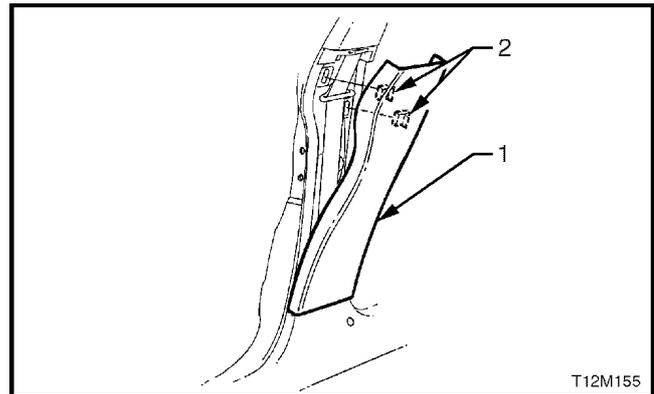


Figure 12M-60

8. Gently pry the front (1) and rear (2) rocker panel cover inserts from the rocker panel cover (3).
9. Loosen and remove the rocker panel cover retaining screw (seven places), and remove rocker panel cover.

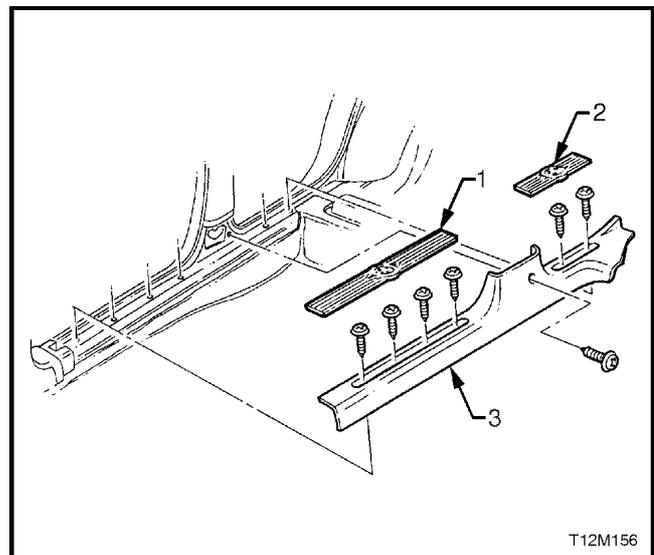


Figure 12M-61

10. Disconnect peripheral acceleration sensor wiring harness connector (2) from peripheral acceleration sensor and bracket assembly (1).
11. Loosen and remove the bolt (3) retaining the peripheral acceleration sensor and bracket assembly (together with seat belt retractor assembly) to the B pillar.

**NOTE:**

Do not loosen or unscrew the two nuts retaining the peripheral acceleration sensor to the mounting bracket. The peripheral acceleration sensor is only serviced with the mounting bracket as an assembly.

12. Remove the peripheral acceleration sensor and bracket assembly from the B pillar.

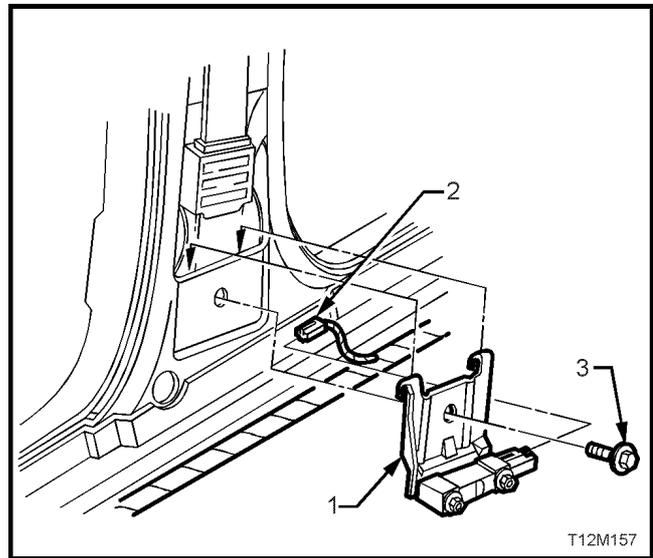


Figure 12M-62

**REINSTALL**

Installation of the peripheral acceleration sensor and bracket assembly is the reverse of the removal procedure, noting the following:

1. Tighten peripheral acceleration sensor and mounting bracket assembly retaining bolt (front seat belt retractor retaining bolt) to the correct torque specification.

PERIPHERAL ACCELERATION SENSOR AND BRACKET ASSEMBLY RETAINING BOLT (FRONT SEAT BELT RETRACTOR RETAINING BOLT) TORQUE SPECIFICATION	
35 - 50 Nm	

2. Enable the SRS, refer to [2.2 SYSTEM DISABLING AND ENABLING PROCEDURE](#) in this Section.
3. Switch ignition on, and observe the SRS warning lamp in the instrument cluster. The warning lamp should be illuminated for approximately 5 seconds. During this period the SDM performs a wiring and self check.

If no system faults are detected, the SRS warning lamp will be switched off. If the warning lamp remains illuminated and an audible alarm chimes, or the warning lamp illuminates 2 seconds after it was originally switched off, an SRS fault is present. Refer to [3. DIAGNOSTICS](#) in this Section to rectify fault.

## 2.6 REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT

If any SRS components are damaged, they must be replaced. If SRS component mounting points are damaged, they must be repaired or replaced.

Never use SRS components from another vehicle.

### **CAUTION:**

**Proper operation of the SRS requires that any repairs to the vehicle structure must return it to its original production configuration.**

The steering column must be dimensionally inspected, whether deployment occurred or not, refer to [Section 9A STEERING](#), Checking Steering Column for Accident Damage in this Service Information CD.

If a vehicle is involved in an accident which was severe enough to deploy the pre-tensioners but not severe enough to deploy air bag/s, the following components must be replaced:

- Any seat belt worn in the accident.
- Seat belt pre-tensioners.
- Front seat guide rail and adjuster assembly (provided seat was occupied in accident).
- Sensing and Diagnostic Module.

If a vehicle is involved in an accident where the seat belt pre-tensioners and the front air bag/s are deployed, the following components must be replaced:

- Any seat belt worn in the accident.
- Seat belt pre-tensioners.
- Front seat guide rail and adjuster assemblies (provided seat was occupied in accident).
- Horn bar and air bag inflator module assembly.
- Sensing and Diagnostic Module.
- Clock spring coil.
- Steering column.
- Steering wheel.
- The front passenger's air bag inflator module (vehicles with front passenger's air bag).
- The instrument panel pad and PAB door assembly (vehicles with front passenger's air bag).
- Instrument panel pad name plate (vehicles with front passenger's air bag).
- Front passenger air bag inflator support rail assembly (vehicles with front passenger's air bag).

If a vehicle is involved in an accident where a side air bag is deployed, the following components must be replaced:

- Any seat belt worn in the accident.
- Sensing and Diagnostic Module.
- Relevant side front seat assembly.
- Relevant side peripheral acceleration sensor.

## 2.7 WIRING REPAIRS

Special wiring harness repair procedures have been developed for use on the Supplemental Restraint System (SRS) due to the sensitive nature of the circuitry. These procedures remain unchanged from those detailed in [Section 12M SUPPLEMENTAL RESTRAINT SYSTEM \(VERSION 6.2\)](#) in this Service Information CD, noting the following:

The 'pigtail' wiring harness that connects to the side air bag module, and runs through the front seat down to the seat rail, is not serviced separately from the side air bag inflator module due to the design of the anti-back-out connector on the module assembly.

If this 'pigtail' wiring harness, as with any other SRS 'pigtail' wiring harness, becomes damaged no wire, connector or terminal repairs are to be attempted. REPLACE THE SIDE AIR BAG MODULE AND PIGTAIL WIRING HARNESS ASSEMBLY.

## 3. DIAGNOSTICS

### 3.1 BASIC KNOWLEDGE REQUIRED

Before attempting to diagnose the Supplemental Restraint System (SRS) you must have a good understanding of electrical system basics and the use of circuit testing tools. Without this basic knowledge it will be difficult to use the diagnostic procedures detailed in this Section.

Some electrical basics, as well as basic troubleshooting procedures and hints of the use of circuit testing tools are covered in **Section 12P, WIRING DIAGRAMS** in this Service Information CD.

**Basic Electrical Circuits** - You should understand the basic theory of electricity, series and parallel circuits, and voltage drops across series resistors. You should know the meaning of voltage (volts), current (amps), and resistance (ohms). You should understand what happens in a circuit with an open or shorted wire (shorted either to voltage or earth). You should also be able to read and understand a wiring diagram.

Additionally, a knowledge of AC theory including; inductance, capacitance and impedance would be useful.

**Use of Circuit Testing Tools** - You should know how to use a jumper lead to test circuits. You should be familiar with the use of a high input impedance (10 Mohm) digital type multimeter such as Tool No. J39200 or equivalent and be able to measure voltage, current, and resistance. You should be familiar with the proper use of the TECH 2 Diagnostic Scan Tool.

## 3.2 PRELIMINARY SYSTEM DIAGNOSIS

When investigating any complaint of an SRS problem or malfunction, always begin diagnosis with a circuit check, refer to 3.6 DIAGNOSTICS CHARTS, **CHART A - DIAGNOSTIC CIRCUIT CHECK** in this Section.

The diagnostic circuit check is a preliminary procedure that checks to ensure the SDM is communicating on the serial data line as well as helping to identify the problem and directing the reader to the appropriate diagnostic chart in this Section.

### 3.3 SRS SELF DIAGNOSTICS

The SRS has a self diagnostic facility that can detect and isolate SRS problems or failures. When a problem or failure is detected, the Sensing and Diagnostic Module (SDM) sets a fault code that represents that particular problem or failure. Fault codes will cause the SRS warning lamp to be illuminated and depending on the fault, the SDM may disable the SRS.

If present, diagnosable system faults are detected by the SDM during an initialisation process when the ignition is first turned on. Upon first detection of an external system fault condition, the SDM records the failure and is classed as an 'Intermittent Failure'. If the fault condition is maintained to meet the failure duration conditions for the individual system problem (approximately 3 - 5 seconds), the fault then becomes a current Diagnostic Trouble Code (DTC). If the fault duration conditions are not met, the intermittent fault is cleared from the SDM.

Current DTCs are permanently stored in the SDM's memory. When the fault conditions are no longer met, the DTC will become a History DTC.

#### **CURRENT DTC'S**

Current DTCs when detected are stored in the SDM's RAM during the current ignition cycle and then maintained in an EEPROM. Current DTCs are set or cleared based on the condition of the SRS during ignition on or continuous monitoring of the current ignition cycle.

#### **NOTE:**

A current DTC can be identified on the TECH 2 display by the word 'Current' between the DTC number and the DTC description. The word 'History' between the DTC number and the DTC description indicates that the DTC displayed is a history DTC.

Current DTCs will be reset to History DTCs upon the next diagnostic test sequence that the fault conditions are not met. Current DTCs can be cleared (changed to history DTC) by removing the fault conditions.

TECH 2 is unable to clear current DTCs if the fault conditions still exist; TECH 2 will display 'Clear DTC Information Failed'.

DTCs stored in the SDM memory can only be displayed and / or cleared using the TECH 2 diagnostic scan tool

The TECH 2 communicates with SDM serial data via the Data Link Connector (DLC), which is attached to the instrument panel lower right hand trim, to the right of the steering column (refer to [3.4 TECH 2 DIAGNOSTICS](#) in this Section).

#### **HISTORY DTC'S**

History DTCs are set upon the clearing of a current DTC fault condition. History DTCs are maintained by the SDM over multiple ignition cycles in the EEPROM. The SDM can only clear history DTCs from its EEPROM by a clear DTCs serial data message via TECH 2.

#### **CLEARING FAULT CODES**

Once any system fault has been rectified, any fault codes stored in the Sensing and Diagnostic Module's memory can be erased by using TECH 2 "Clear DTCs" selection, refer to [3.4 TECH 2 DIAGNOSTICS](#) in this Section.

#### **IMPORTANT:**

**Once DTCs have been cleared, be sure to verify proper system operation and absence of any fault codes when clearing procedure is completed.**

**If TECH 2 displays "Clear DTC Information Failed" after attempting to clear DTCs, the fault condition still exists.**

### 3.4 TECH 2 DIAGNOSTICS

TECH 2, with the appropriate software, cables and adaptors, when connected to the Data Link Connector (DLC) is capable of reading SRS serial data. The DLC is connected to the instrument panel lower right hand trim, to the right of the steering column.

For additional general information on connecting and operating TECH 2, refer to **Section 0C TECH 2** in this Service Information CD.

- DLC
- DLC ADAPTOR
- DLC CABLE
- TECH 2

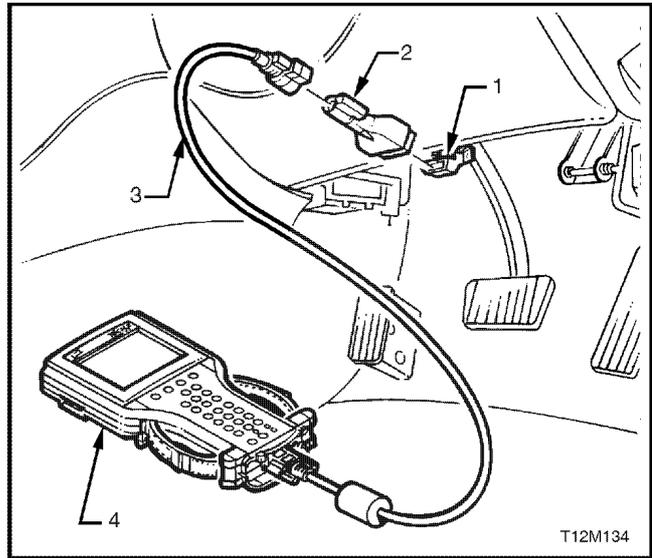


Figure 12M-63

TECH 2 has four test modes for diagnosing the SRS. The four test modes are as follows:

#### MODE F0: NORMAL MODE

In this mode, the TECH 2 monitors the communication between control modules on the serial data line. The information displayed on the TECH 2 screen in this mode is what the SDM is communicating to the other modules via the serial data line.

#### MODE F1: DIAGNOSTIC TROUBLE CODES

If F1: Diagnostic Trouble Codes is selected, a selection list is displayed which contains:

**F0: Read DTC Information** - Once this mode is selected, both current and history Diagnostic Trouble Codes (DTCs) stored in the control modules memory may be displayed.

**F1: Clear DTC Information** - once this mode is selected, DTCs stored in the control module memory may be cleared.

#### MODE F2: DATA DISPLAY

In this test mode, TECH 2 displays the status of inputs and outputs of the SRS.

#### MODE F3: SNAPSHOT

In this test mode, the TECH 2 captures SRS data before and after a forced manual trigger.

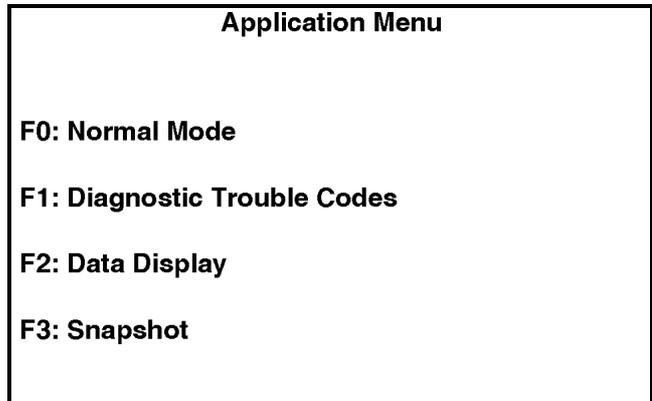


Figure 12M-64

### 3.5 TECH 2 TEST MODES AND DISPLAYS FOR SRS DIAGNOSIS

A prerequisite to this diagnostic section is for the user to be familiar with the proper use of TECH 2, the following pages illustrate only the major TECH 2 screen displays and provide a brief explanation of their function for diagnosing the SRS. If additional information is required on the operation of TECH 2, reference should be made to either [Section 0C TECH 2](#) in this Service Information CD or the TECH 2 User's Guide.

#### SYSTEM SELECT MENU

With TECH 2 connected to the DLC, the 'F0: Diagnostics' selected from the Main Menu, the correct Model Year and Vehicle Type must be selected for access to the System Select Menu.

Select F3: Body.

This mode contains all functions to test, diagnose, monitor and program the vehicles body systems including the SRS as well as providing the opportunity to check all DTCs that may be set in the vehicle.

#### BODY APPLICATION MENU

Once "F3: Body" has been selected from the System Select Menu, SRS can be selected.

Select SRS.

#### NOTE:

If information regarding DTCs set for the vehicle is required, select DTC Check and press enter to continue. To return to the "SRS" mode option from the "DTC Check" mode option screen display, simply press the EXIT key on TECH 2.

Once the "SRS" has been selected, the following two System Identification screens will appear which require action.

#### SYSTEM IDENTIFICATION

Turn the ignition ON (as requested) and press the CONFIRM soft key to continue.

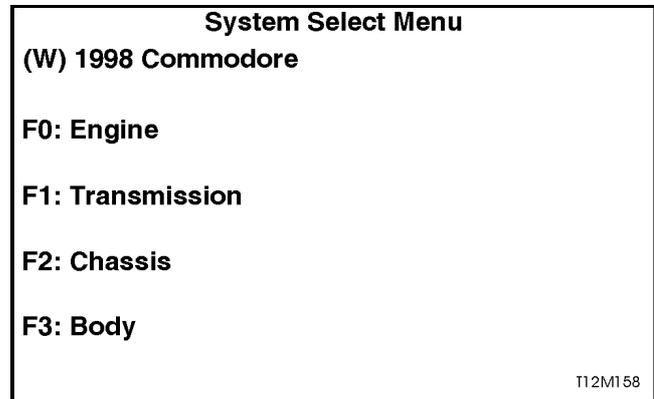


Figure 12M-65

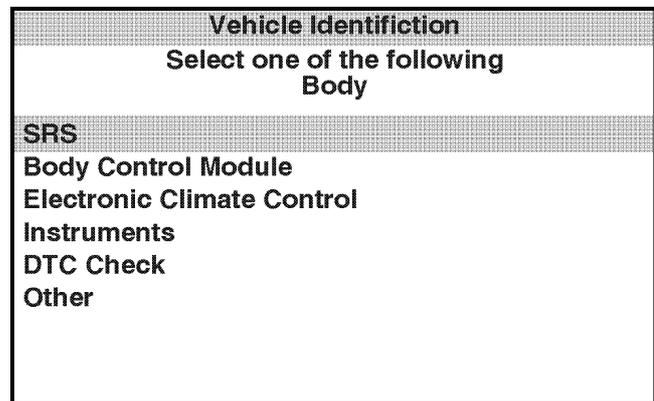


Figure 12M-66

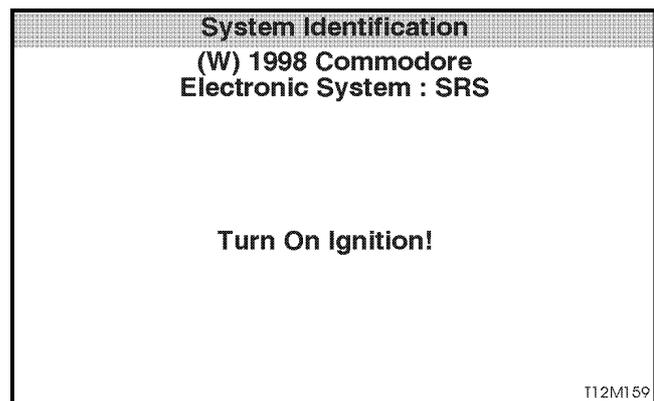


Figure 12M-67

The System Identification screen will then display the control module part number, production date and type of control module (62, 80 or 81). Press the CONFIRM soft key to continue to the SRS Application Menu.

**NOTE:**

There are different control modules for SRS depending on the system and system configuration.

Module types 62 and 80 are used on vehicles with; pre-tensioners only (2 loops), pre-tensioners and driver's air bag only (3 loops) or pre-tensioners and driver's and passenger's air bags (4 loops).

Module type 81 is used on vehicles with pre-tensioners, driver's, front passenger's and side air bags (6 loops).

Always refer to the latest Holden spare parts microfiche / Part finder® CD for the correct part number information.

**APPLICATION MENU**

The following functions will now be available:

- F0: Normal Mode
- F1: Diagnostic Trouble Codes
- F2: Data Display
- F3: Snapshot

**F0: NORMAL MODE**

In the 'F0: Normal Mode', information that the SDM is communicating to other control modules, via the serial data line, is displayed.

For example: As displayed opposite, the SRS warning lamp status is ON. This means the SDM is communicating with the instruments requesting the SRS warning lamp to be displayed.

**NOTE:**

If SRS Module 6.2 is displayed, reference should be made to the diagnostic procedures detailed in **Section 12M SUPPLEMENTAL RESTRAINT SYSTEM (VERSION 6.2)** in this Service Information CD.

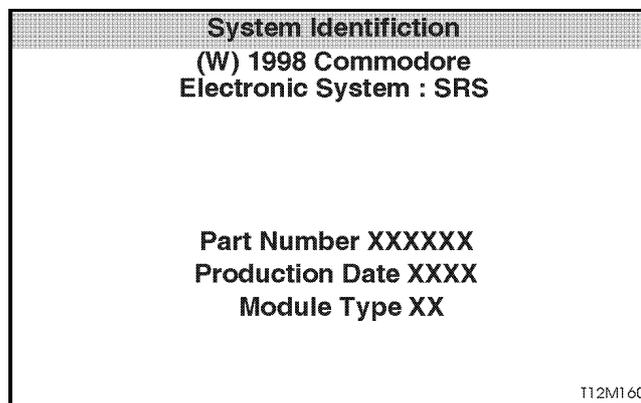


Figure 12M-68

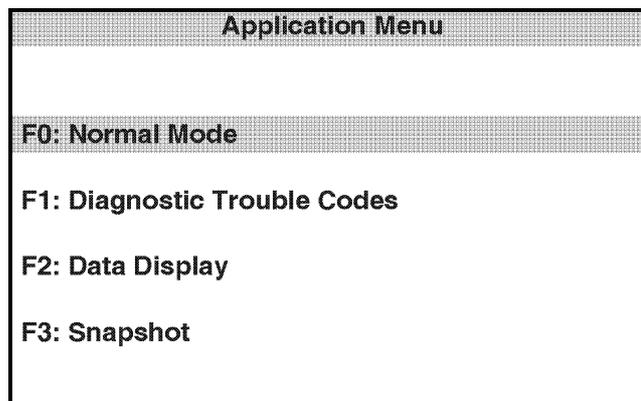


Figure 12M-69

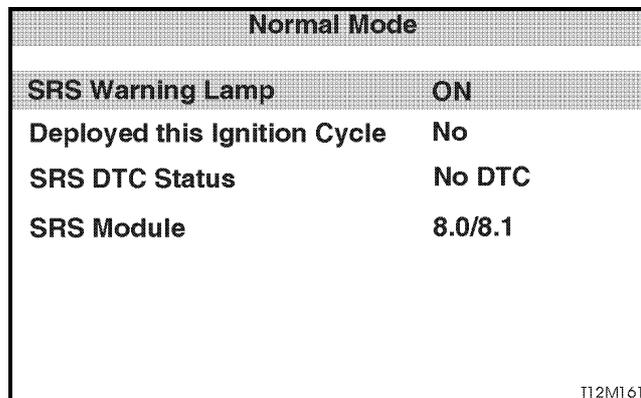


Figure 12M-70

## F1: DIAGNOSTIC TROUBLE CODES

If 'F1: Diagnostic Trouble Codes' is selected, a selection list is displayed which contains:

**F0: Read DTC Information** - If this mode is selected, a listing of all (if any) DTCs that have been set by the SDM will be displayed. Information displayed with the DTC number/s that have been set is; a short description of what the DTC is and whether it is a current (fault present) or history (stored, but not necessarily on this ignition cycle) DTC.

### NOTE:

If any DTCs are set, reference should be made to the relevant diagnostic charts in this section.

**F1: Clear DTC Information** - DTCs can be cleared in this mode by simply selecting F1: CLEAR DTC INFORMATION, pressing the ENTER button on TECH 2 and confirming the action as instructed by TECH 2.

If a DTC condition is present, TECH 2 will be unable to clear the DTC and will display "Clear DTC Information Failed".

The following table sets out all the possible diagnostic trouble codes as indicated by TECH 2.

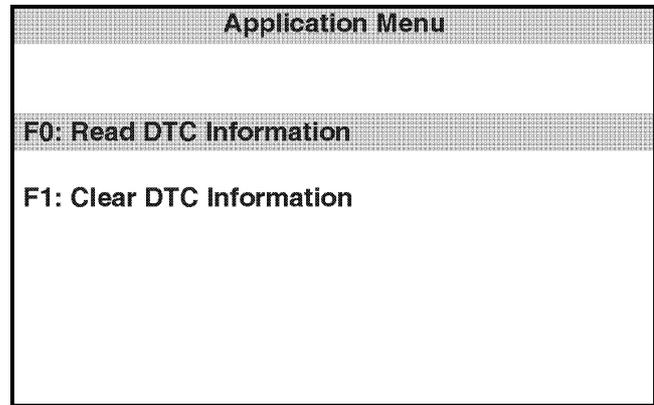


Figure 12M-71

DTC	SRS CODE DESCRIPTIONS (For 8.0 and 8.1 systems only)
17	Driver air bag circuit short to battery
18	Driver air bag circuit short to earth
19	Driver air bag circuit capacitance too high
20	Driver air bag circuit capacitance too low
21	Driver air bag circuit resistance too high
22	Driver air bag circuit resistance too low
247	Driver's air bag Circuit Power Stage Error (Displayed as a History DTC only)
33	Passenger air bag circuit short to battery
34	Passenger air bag circuit short to earth
35	Passenger air bag circuit capacitance too high
36	Passenger air bag circuit capacitance too low
37	Passenger air bag circuit resistance too high
38	Passenger air bag circuit resistance too low
247	Passenger air bag Circuit Power Stage Error (Displayed as a History DTC only)
49	Left hand belt pre-tensioner circuit short to battery
50	Left hand belt pre-tensioner circuit short to earth
51	Left hand belt pre-tensioner circuit capacitance too high
52	Left hand belt pre-tensioner circuit capacitance too low
53	Left hand belt pre-tensioner circuit resistance too high
54	Left hand belt pre-tensioner circuit resistance too low
247	Left Hand Belt Tensioner Circuit Power Stage Error (Displayed as a History DTC only)
65	Right hand belt pre-tensioner circuit short to battery

<b>DTC</b>	<b>SRS CODE DESCRIPTIONS (For 8.0 and 8.1 systems only) cont.</b>
66	Right hand belt pre-tensioner circuit short to earth
67	Right hand belt pre-tensioner circuit capacitance too high
68	Right hand belt pre-tensioner circuit capacitance too low
69	Right hand belt pre-tensioner circuit resistance too high
70	Right hand belt pre-tensioner circuit resistance too low
247	Right Hand Belt Tensioner Circuit Power Stage Error (Displayed as a History DTC only)
81	Left hand side air bag circuit short to battery
82	Left hand side air bag circuit short to earth
83	Left hand side air bag circuit capacitance too high
84	Left hand side air bag circuit capacitance too low
85	Left hand side air bag circuit resistance too high
86	Left hand side air bag circuit resistance too low
247	Left Hand Side impact air bag Circuit Circuit Power Stage Error (Displayed as a History DTC only)
97	Right hand side air bag circuit short to battery
98	Right hand side air bag circuit short to earth
99	Right hand side air bag circuit capacitance too high
100	Right hand side air bag circuit capacitance too low
101	Right hand side air bag circuit resistance too high
102	Right hand side air bag circuit resistance too low
247	Right Hand Side impact air bag Circuit Circuit Power Stage Error (Displayed as a History DTC only)
129	Left peripheral acceleration sensor line fault
130	Right peripheral acceleration sensor line fault
131	Left peripheral acceleration sensor communication fault
132	Right peripheral acceleration sensor communication fault
133	Left peripheral acceleration sensor identification fault
134	Right peripheral acceleration sensor identification fault
135	Left peripheral acceleration sensor hardware fault
136	Right peripheral acceleration sensor hardware fault
161	Configuration mismatch (to instrument)(Displayed as a History DTC only)
163	SDM internal fault (Displayed as a History DTC only)

## F2: Data Display

In this test mode, TECH 2 displays the status of inputs and outputs of the SRS.

The following table lists each item contained in the data stream together with a brief description of its meaning.

### NOTE:

Depending on the system / system configuration it is possible that some data list parameters may not appear in the data stream / screen display. In that case, these data list parameters are not applicable for this system / system configuration.

The last three columns of the following table identify whether any of the data list parameters will be displayed for that particular system.

2 = 2 loop system; pre-tensioners only.

3 = 3 loop system; pre-tensioners and driver's air bag only.

4 = 4 loop system; pre-tensioners and driver's and passenger's air bags.

6 = 6 loop system; pre-tensioners and driver's, passenger's and side air bags.

A = Data parameter displayed for this system.

N/A = Data is not applicable and thus not displayed for this system.

DATA STREAM / SCREEN DISPLAY	DESCRIPTION	2	3	4	6
Battery Voltage	Displays current battery voltage (approximately 12 volts).	A	A	A	A
Driver Air Bag Loop Resistance	Displays the resistance in the driver's air bag circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 1 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	N/A	A	A	A
Driver Air Bag Loop Capacitance	Displays capacitance in the driver's air bag circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	N/A	A	A	A
Passenger Air Bag Loop Resistance	Displays resistance in the passenger's air bag circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 0.6 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	N/A	N/A	A	A
Passenger Air Bag Loop Capacitance	Displays capacitance in the passenger's air bag circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	N/A	N/A	A	A
Left Hand Pre-tensioner Loop Resistance	Displays resistance in the left hand pre-tensioner circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 0.6 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	A	A	A	A
Left Hand Pre-tensioner Loop Capacitance	Displays capacitance in the left hand pre-tensioner circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	A	A	A	A
Right Hand Pre-tensioner Loop Resistance	Displays resistance in the right hand pre-tensioner circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 0.6 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	A	A	A	A
Right Hand Pre-tensioner Loop Capacitance	Displays capacitance in the right hand pre-tensioner circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	A	A	A	A
Left Hand Side Air Bag Loop Resistance	Displays resistance in the left hand side air bag circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 0.6 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	N/A	N/A	N/A	A
Left Hand Side Air Bag Loop Capacitance	Displays capacitance in the left hand side air bag circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	N/A	N/A	N/A	A
Right Hand Side Air Bag Loop Resistance	Displays resistance in the right hand side air bag circuit. The resistance should be approximately 2 ohms. If resistance of this circuit is less than 0.6 ohm or greater than 8.4 ohms, a DTC will be set. (ohms)	N/A	N/A	N/A	A

DATA STREAM / SCREEN DISPLAY	DESCRIPTION	2	3	4	6
Right Hand Side Air Bag Loop Capacitance	Displays capacitance in the right hand side air bag circuit. The capacitance should be approximately 470 nF. If capacitance reading is outside $\pm 17\%$ of this specification for more than 3 seconds, a DTC will be set. (nF)	N/A	N/A	N/A	A
Driver Air Bag Loop	Display indicates whether the SDM has been programmed for the driver's air bag loop circuit (enabled / disabled).	N/A	A	A	A
Driver's air bag Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the driver's air bag circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the driver's air bag circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than one ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	N/A	A	A	A
Passenger Air Bag Loop	Display indicates whether the SDM has been programmed for the passenger's air bag loop circuit (enabled / disabled).	N/A	N/A	A	A
Passenger air bag Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the Passenger air bag circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the Passenger air bag circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than 0.6 ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	N/A	N/A	A	A
Left Hand Pre-tensioner Loop	Display indicates whether the SDM has been programmed for the left hand pre-tensioner loop circuit (enabled / disabled).	A	A	A	A
Left Hand Pre-tensioner Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the Left Hand Pre-tensioner circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the Left Hand Pre-tensioner circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than 0.6 ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	A	A	A	A
Right Hand Pre-tensioner Loop	Display indicates whether the SDM has been programmed for the right hand pre-tensioner loop circuit (enabled / disabled).	A	A	A	A
Right Hand Pre-tensioner Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the Right Hand Pre-tensioner circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the Right Hand Pre-tensioner circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than 0.6 ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	A	A	A	A
Left Hand Side Air Bag Loop	Display indicates whether the SDM has been programmed for the left hand side air bag loop circuit (enabled / disabled).	N/A	N/A	N/A	A

DATA STREAM / SCREEN DISPLAY	DESCRIPTION	2	3	4	6
Left Hand Side impact air bag Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the Left Hand Side impact air bag circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the Left Hand Side impact air bag circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than 0.6 ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	N/A	N/A	N/A	A
Right Hand Side Air Bag Loop	Display indicates whether the SDM has been programmed for the right hand side air bag loop circuit (enabled / disabled).	N/A	N/A	N/A	A
Right Hand Side impact air bag Circuit Power Stage Error	<ol style="list-style-type: none"> <li>Displays capacitance in the Right Hand Side impact air bag circuit. The capacitance should be approximately 470 nF. <ul style="list-style-type: none"> <li>If the capacitance reading is less than 390.1 nF for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> <li>Displays the resistance in the Right Hand Side impact air bag circuit. The resistance should be approximately two ohms. <ul style="list-style-type: none"> <li>If resistance of this circuit is less than 0.6 ohm for less than 500 milliseconds during a initial ignition/key on cycle, a DTC 247 history code will be set.</li> </ul> </li> </ol>	N/A	N/A	N/A	A
SRS Lamp	Displays the current state of the SDM's internal SRS warning lamp driver. (on / off)	A	A	A	A
Lamp Check	Display indicates the status of the SRS warning lamp during the lamp check (first 5 seconds after the ignition is switched on). (on / off)	A	A	A	A
Battery Voltage (after 3 sec)	Displays the vehicle system input voltage to the SDM. If voltage is below 8 volts or above 21.2 volts for more than 3 seconds, the SRS warning lamp is switched on. (<8 Volts / okay / >21.2 Volts)	A	A	A	A
Energy Reserve	Display indicates status of the energy reserve. If the battery voltage falls below 7.5 volts, the energy reserve will be switched on. (on / off)	A	A	A	A
Serial Data From Instrument	Display indicates whether the instrument configuration of the SRS is correct. The instruments must be programmed for the SRS configuration of the vehicle; pre-tensioners only, pre-tensioners and drivers air bag, pre-tensioners and drivers and passengers air bag, or pre-tensioners, drivers, passengers and side air bag. (yes / no)	A	A	A	A
BCM Poll	Display indicates whether the SDM is receiving a request (a poll via the serial data line) from the BCM for its status of deployment and malfunction data. (Received / Not Received)	A	A	A	A
Left Hand Peripheral Acceleration Sensor Communication	Display indicates whether the SDM is receiving data from the left hand peripheral acceleration sensor. If the SDM does not receive data, a DTC will be set. (Received / Not Received)	N/A	N/A	N/A	A
Right Hand Peripheral Acceleration Sensor Communication	Display indicates whether the SDM is receiving data from the right hand peripheral acceleration sensor. If the SDM does not receive data, a DTC will be set. (Received / Not Received)	N/A	N/A	N/A	A
Module has deployed	Display indicates whether the SDM has deployed any SRS components. (yes/no)	A	A	A	A

### Mode F3: Snapshot

In the "F3: Snapshot" mode, TECH 2 enables the user to capture data before and after a forced manual trigger.

## 3.6 DIAGNOSTIC CHARTS

### INTRODUCTION

The following diagnostic charts are designed to provide fast and efficient fault location of the SRS for vehicles fitted with an 8.0 or 8.1 SDM. The diagnostic charts contain: a 'diagnostic chart', pertinent information, circuit diagrams, and where necessary, the steps are explained by the corresponding numbered paragraphs.

If a VT Series Model is fitted with a 6.2 SDM, reference should be made to the diagnostic procedures detailed in **Section 12M SUPPLEMENTAL RESTRAINT SYSTEM (VERSION 6.2)** in this Service Information CD.

If an 8.0 SDM is fitted to a VT Series Model that was originally equipped with a 6.2 SDM, the diagnostic procedures detailed in this Section are to be used. However, if the vehicle contains a SRS wiring harness that is incorporated with the main wiring harness (in lieu of being incorporated with the body wiring harness) reference should also be made to the applicable wiring diagrams for that Model, refer to SRS wiring diagrams in **Section 12P WIRING DIAGRAMS** of this Service Information CD. For additional information, including vehicle break points, refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section.

Figure 12M-72 illustrates the terminal layout of the various connectors used in the 8.0 and 8.1 system. This illustration should be used in conjunction with the diagnostic chart circuit diagrams when checking circuit faults if the connector diagram is not included in the chart.

When carrying out wiring checks as directed to by the diagnostic charts, rather than probe terminals and connectors with incorrect sized multimeter connections, use the adaptors contained in connector test adaptor kit KM-609 and test lead set KM-609-20. This will prevent any possibility of spreading or damaging wiring harness terminals and later on causing a system intermittent failure.

Figure 12M-73 illustrates the correct use and installation of the various SRS diagnostic tools (SD28280B & AU485) and test lead set (KM-609-20).

### **IMPORTANT:**

**UNDER NO CIRCUMSTANCES IS**

**12 VOLTS TO BE APPLIED TO THE DUMMY LOAD; SD28280B OR AU485, AS THIS WILL DAMAGE THE INTERNAL RESISTOR IN THE LOAD, RENDERING THE DUMMY LOAD USELESS FOR ANY FURTHER DIAGNOSTIC WORK.**

**ENSURE THAT AT THE COMPLETION OF ANY DIAGNOSTIC PROCEDURE, ALL DIAGNOSTIC TOOLS ARE REMOVED AND ALL SRS COMPONENTS ARE CORRECTLY RECONNECTED.**

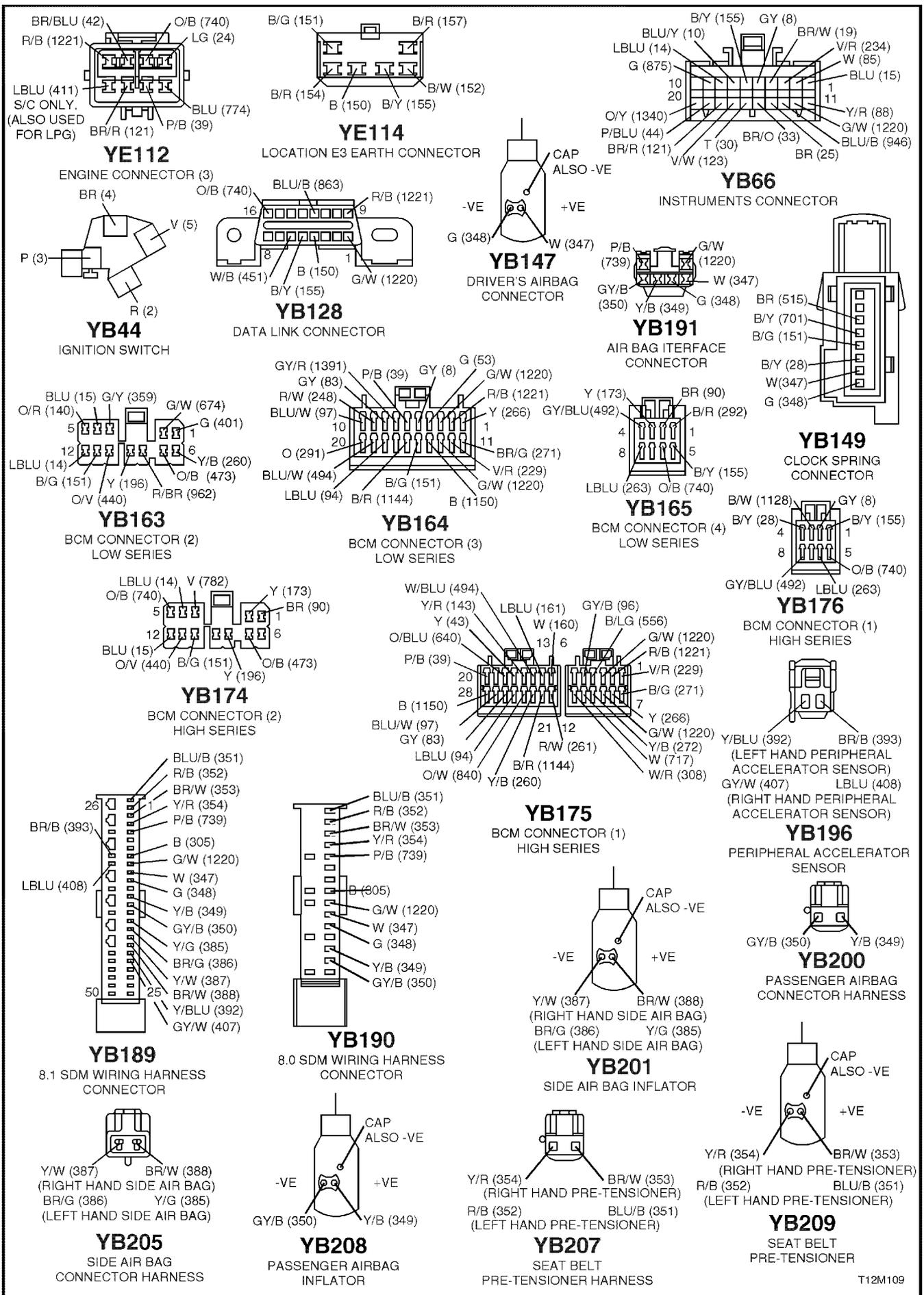
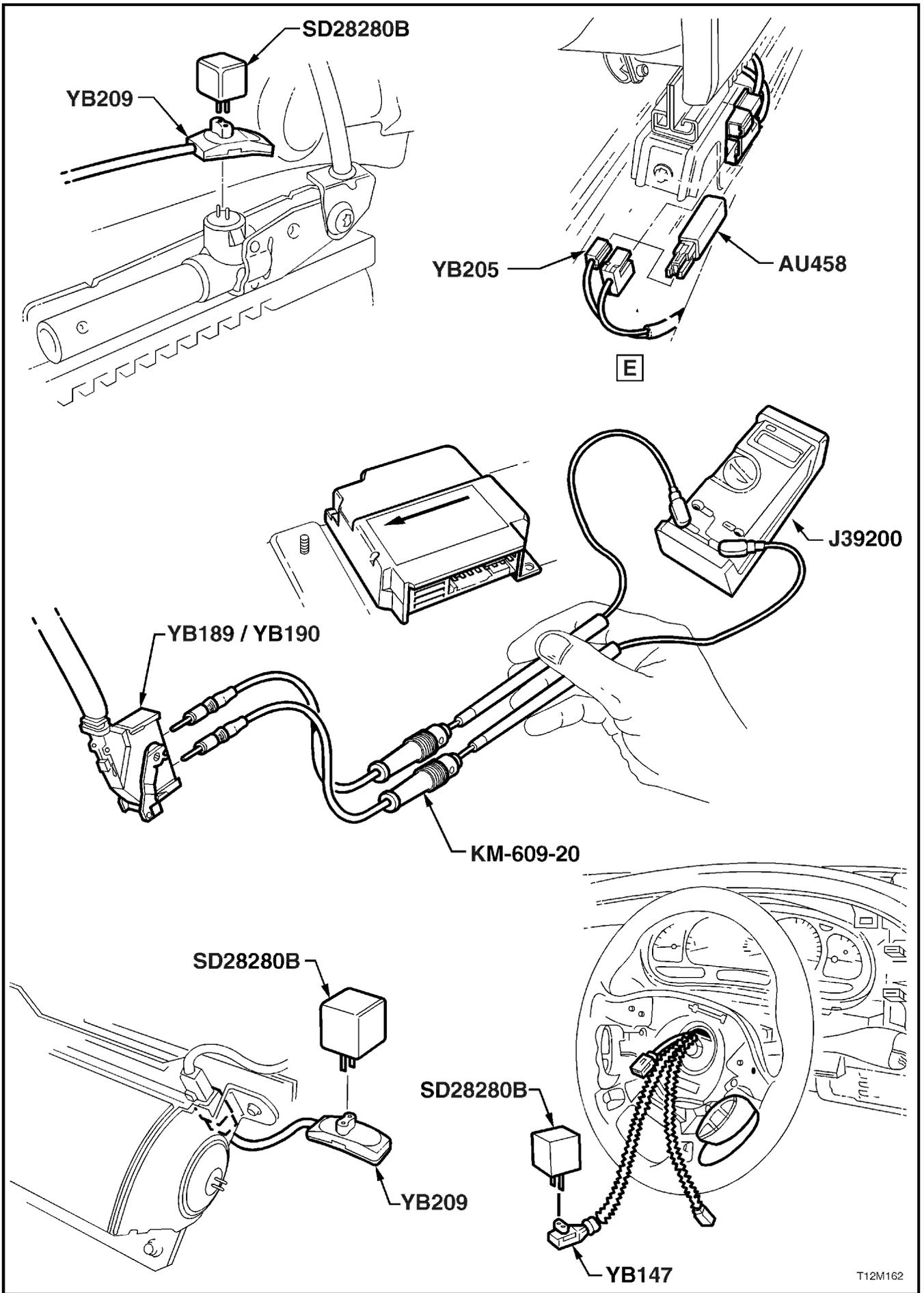


Figure 12M-72



T12M162

Figure 12M-73

**CHART A - DIAGNOSTIC CIRCUIT CHECK**

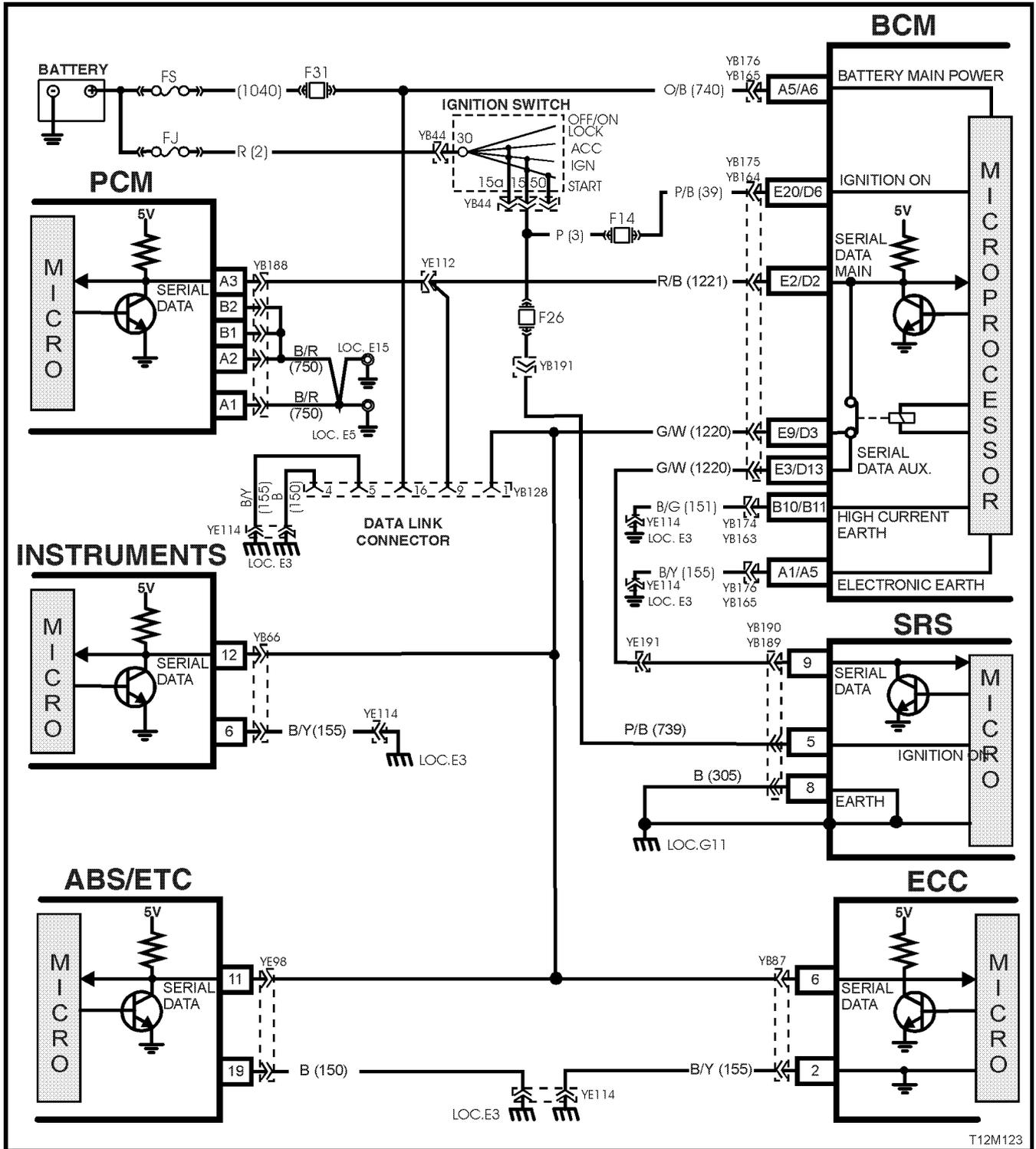


Figure 12M-74

**CIRCUIT DESCRIPTION**

When investigating any complaint of an SRS problem or malfunction, always begin diagnosis with the following diagnostic circuit check. This check is a preliminary procedure that checks to ensure the SDM is communicating on the serial data line as well as helping to identify a problem or malfunction and directing the reader to the appropriate diagnostic chart in this Section.

With TECH 2 connected to the DLC and the ignition switched on, TECH 2 should display serial data communication. If TECH 2 does not display serial data, the serial data circuit maybe open or shorted.

There are several other control modules that are connected to the serial data line (PCM, BCM, ABS/ETC, ECC, instruments and SDM). ANY one of these control modules could cause a fault on the serial data line. This fault could result in TECH 2 not being able to display serial data.

**TEST DESCRIPTION:**

The following numbers refer to step numbers in diagnostic chart 'A'

- 1-2. This test is a functional check of the SRS warning lamp during a system self check.
3. Checks to see if TECH 2 can communicate with the SDM.
4. Uses TECH 2 to check for DTCs.
5. If TECH 2 is unable to communicate with the BCM and PCM, there is a fault (short to earth) in the serial data communication circuit (circuits 1220 or 1221).
6. Checks fuse F26 and circuit 739 for short to earth.
7. Checks for power to SDM.
8. Checks continuity of earth circuit 305.
9. Checks earth connection at SDM.
10. Checks for continuity in circuit 1220 between SDM and BCM to determine if SDM is faulty.
11. Checks if fault is with BCM or open in circuit 1220 between BCM and SDM.

**NOTES ON DIAGNOSTIC CHART:**

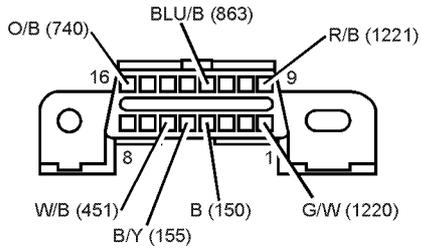
1. Refer to **3.4 TECH 2 DIAGNOSTICS** in this Section for connecting and using TECH 2.
2. Refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD for procedures on checking wiring faults.
3. To ensure none of the other control modules on the serial data circuit are causing this voltage problem, unplug each control module, one at a time, to isolate the short to voltage.

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Turn ignition on while monitoring the SRS warning lamp in the instrument cluster.</li> <li>· Does the SRS warning lamp illuminate?</li> </ul>		Go to Step 2.	Go to CHART B - 'SRS' WARNING LAMP INOPERATIVE, in this Section.
2.	<ul style="list-style-type: none"> <li>· After five seconds of the ignition being switched on, does the SRS warning lamp turn off and remain off?</li> </ul>		Fault not present.	Go to Step 3
3.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC (refer to NOTE 1 above).</li> <li>· Select Body / SRS / Turn ignition ON.</li> <li>· Does TECH 2 display System Identification (ie. SDM part number)?</li> </ul>		Go to Step 4.	Go to Step 5.
4.	<ul style="list-style-type: none"> <li>· With TECH 2 connected, select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Are there any DTCs set?</li> </ul>		Check and repair fault causing DTC to set, refer to relevant diagnostic chart in this Section.	Go to CHART C 'SRS' WARNING LAMP ILLUMINATED (NO DTC'S STORED), in this Section.

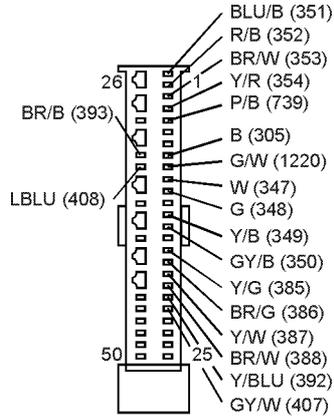
<b>STEP</b>	<b>ACTION</b>	<b>VALUE</b>	<b>YES</b>	<b>NO</b>
<b>5.</b>	<ul style="list-style-type: none"> <li>· With TECH 2 connected and ignition on, select Body / DTC Check / F0: DTC Check and press the 'Confirm' soft key as instructed.</li> <li>· Can TECH 2 communicate with the BCM and PCM of the vehicle (if NO DATA is displayed next to a control module, then there is no communication between TECH 2 and that particular control module)?</li> </ul>		Go to Step 6.	Go to BCM diagnostics in Section 12J-1 LOW SERIES BCM or 12J-2 HIGH SERIES BCM.
<b>6.</b>	<ul style="list-style-type: none"> <li>· Check SDM fuse F26 in instrument panel compartment.</li> <li>· Is fuse OK?</li> </ul>		Go to Step 7.	Check and repair short to earth in circuit 739. Replace fuse F26. Recheck and verify repair.
<b>7.</b>	<ul style="list-style-type: none"> <li>· Turn Ignition off.</li> <li>· Disconnect SDM connector YB189/YB190.</li> <li>· Using SRS test lead set KM-609-20, turn ignition ON and measure voltage between the SDM connector YB189/YB190, terminal 5, circuit 739 (Pink/Black wire) and earth (refer to NOTE 2 above).</li> <li>· Is voltage as specified?</li> </ul>	Battery +	Go to Step 8.	Check and repair open in circuit 739. Recheck and verify repair.
<b>8.</b>	<ul style="list-style-type: none"> <li>· Turn ignition OFF.</li> <li>· With SDM connector YB189/YB190 disconnected, and using SRS test lead set KM-609-20, check for continuity between SDM connector YB189/YB190, terminal 8, circuit 305 (Black wire) and earth at location G11(refer to NOTE 2 above).</li> <li>· Does continuity exist?</li> </ul>		Go to Step 9.	Repair open in earth circuit 305 as necessary. Recheck and verify repair.

STEP	ACTION	VALUE	YES	NO
9.	<ul style="list-style-type: none"> <li>· Turn ignition OFF.</li> <li>· Check for continuity between SDM earth (location G11) and a known good earth (refer to NOTE 2 above).</li> <li>· Does continuity exist?</li> </ul>		Go to Step 10.	Repair earth as necessary. Recheck and verify repair.
10.	<ul style="list-style-type: none"> <li>· Disconnect SDM connector YB189/YB190.</li> <li>· Check for continuity in circuit 1220 (Green/White wire) between BCM and SDM by back probing BCM connector YB164, terminal 3 (Low Series BCM) or YB175, terminal 9 (High Series BCM) and using SRS test lead set KM-609-20, probe SDM connector YB189/YB190, terminal 9 (refer to NOTE 2 above).</li> </ul> <p><b>NOTE:</b> Use SRS test lead set KM-609-20 to probe terminals on connector YB189/YB190.</p> <ul style="list-style-type: none"> <li>· Does continuity exist?</li> </ul>		Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.  Recheck circuit to verify repair.	Go to Step 11.
11.	<ul style="list-style-type: none"> <li>· Disconnect BCM connector YB164 (Low Series BCM) or YB175 (High Series BCM).</li> <li>· With SDM connector YB189/YB190 disconnected, check for continuity between BCM connector YB164, terminal 13 or YB175, terminal 3 and SDM connector YB189/YB190, terminal 9 (refer to NOTE 2 above).</li> </ul> <p><b>NOTE:</b> Use SRS test lead set KM-609-20 to probe terminals on connector YB189/YB190.</p> <ul style="list-style-type: none"> <li>· Does continuity exist?</li> </ul>		Replace BCM, refer to Section 12J-1 LOW SERIES BCM or Section 12J-2 HIGH SERIES BCM.	Repair open in circuit 1220 between SDM and BCM.  Recheck and verify repair.

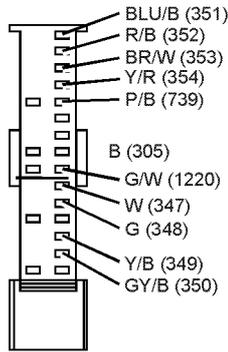
**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**



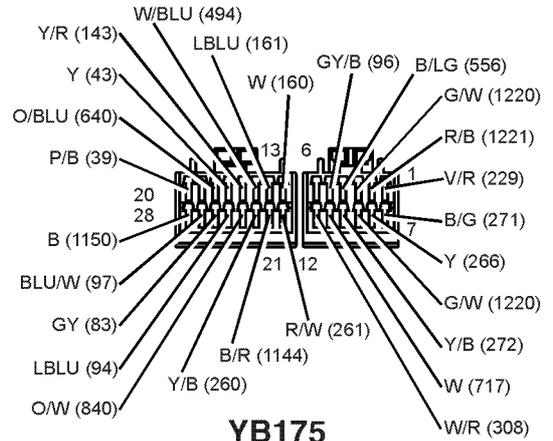
**YB128**  
DATA LINK CONNECTOR



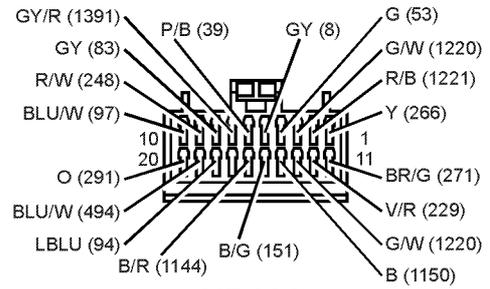
**YB189**  
8.1 SDM WIRING HARNESS CONNECTOR



**YB190**  
8.0 SDM WIRING HARNESS CONNECTOR



**YB175**  
BCM CONNECTOR (1)  
(HIGH SERIES)



**YB164**  
BCM CONNECTOR (3)  
(LOW SERIES)

Figure 12M-75



STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information (refer to NOTE 1 above).</li> <li>Are any DTCs set?</li> </ul>		Repair conditions which set DTCs.  Recheck and verify repair.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Body / Instruments / Miscellaneous Tests / Lamps and command the SRS warning lamp on (refer to NOTE 1 above).</li> <li>Does SRS warning lamp illuminate?</li> </ul>		Replace SDM, refer to 2.7 SENSING & DIAGNOSTIC MODULE (SDM) in this Section.  Recheck circuit to verify repair.	Go to Step 3.
3.	<ul style="list-style-type: none"> <li>Disconnect TECH 2 from DLC.</li> <li>Turn ignition on whilst observing ABS warning lamp.</li> <li>Does ABS warning lamp illuminate for approximately 5 seconds then turn off?</li> </ul>		Go to Step 4.	Go to Step 5.
4.	<ul style="list-style-type: none"> <li>Remove instrument cluster, refer to Section 12C INSTRUMENTS, WIPERS/WASHERS AND HORN.</li> <li>Remove SRS warning lamp bulb and socket from instrument cluster and check warning lamp bulb condition.</li> <li>Is bulb and socket OK?</li> </ul>		Replace instrument cluster, refer to 12C INSTRUMENTS, WIPERS / WASHERS AND HORNS.	Replace SRS warning lamp bulb and/or socket.  Recheck and verify repair.
5.	<ul style="list-style-type: none"> <li>Remove instrument cluster, refer to Section 12C INSTRUMENTS, WIPERS/WASHERS AND HORN.</li> <li>Switch ignition on and measure voltage between connector YB66, terminal 19, circuit 44 (Pink/Blue wire) and earth (refer to NOTE 2 above).</li> <li>Is voltage as specified?</li> </ul>	Battery +	Fault not present. Check all system wiring harness connectors and terminals. Repair as necessary and recheck system to verify repair.	Check fusible link FJ and fuse F13. Check wiring between ignition switch and instrument cluster connector YB66. Check ignition switch contacts.  Recheck circuit to verify repair.

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

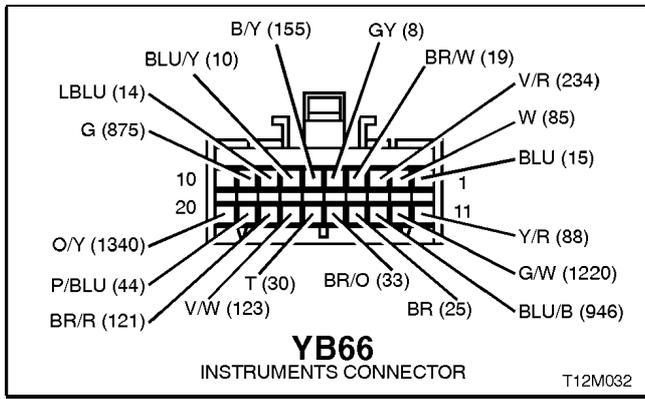


Figure 12M-77

## CHART C - SRS WARNING LAMP ILLUMINATED (NO DTC'S STORED)

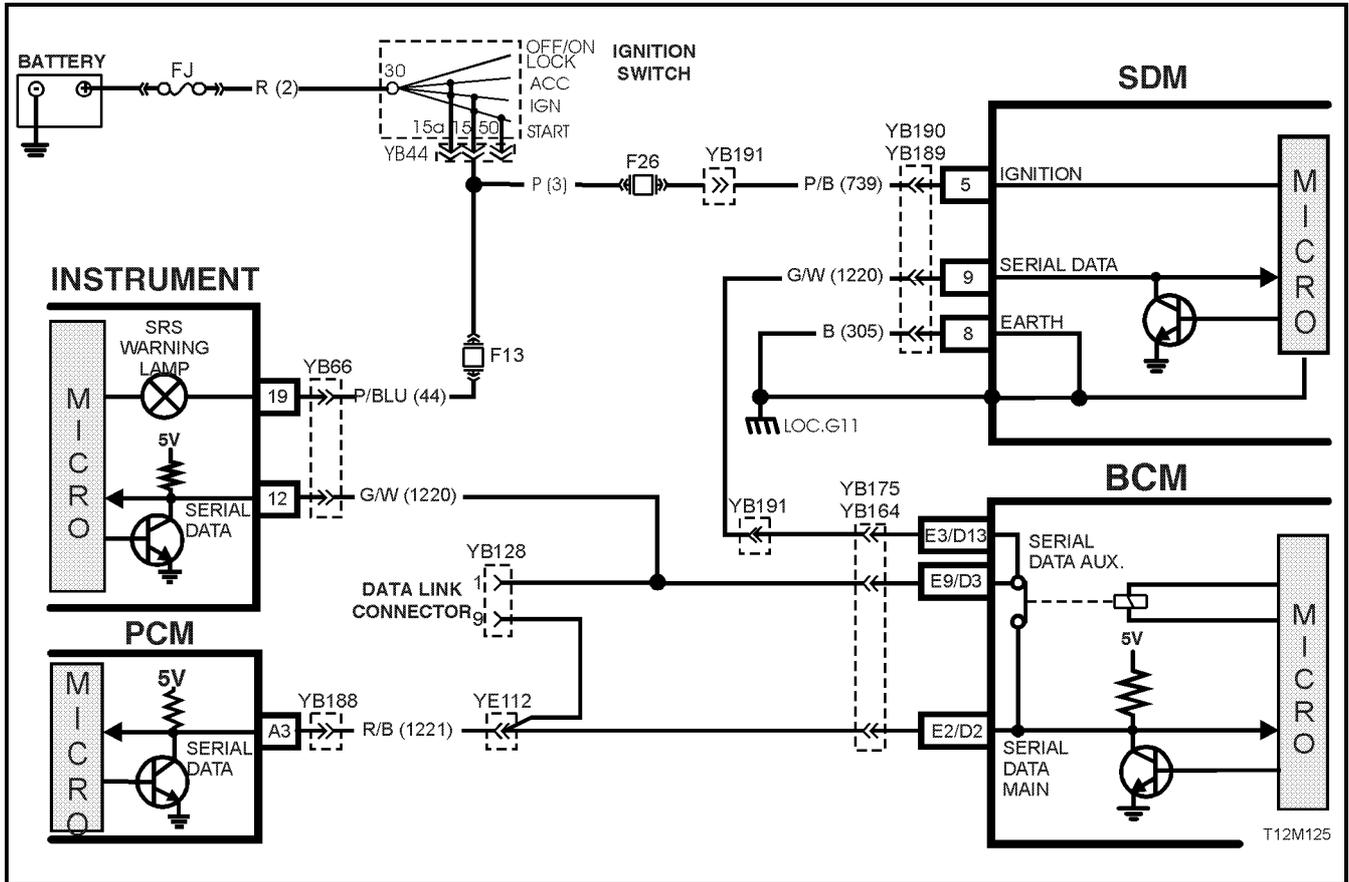


Figure 12M-78

### CIRCUIT DESCRIPTION

Battery voltage is supplied to the SRS warning lamp with the ignition switch in the IGN or START positions through fuse F13 (located in the passenger compartment fuse panel). To illuminate the lamp, the SDM sends a serial data message to the instrument cluster (circuit 1220), requesting the SRS lamp to illuminate.

When the ignition is switched on, the SRS warning lamp should illuminate for approximately five seconds to indicate the system start up sequence / system wiring and self check. If no system faults are detected, the SRS warning lamp will be switched off.

If a fault is detected (either during this system check or during the ignition cycle), the SRS warning lamp will either remain on until the fault is remedied or if a DTC is set, until it is cleared. If a fault is remedied during an ignition cycle, unless the fault caused a DTC to set, the SRS warning lamp will turn off immediately.

The SRS SDM will send a serial data message to the instrument cluster requesting the lamp be illuminated if it detects any of the following: If battery voltage is below 8 volts or above 21.2 volts. If the energy reserve in the SDM is switched on (battery voltage less than 7.5 volts). If the SRS is deployed. If the SDM does not receive a poll from the BCM. If one or more current or history DTCs are detected when the ignition is switched ON. During an ignition cycle, if the SDM detects a current DTC, the SRS warning lamp will be illuminated.

The SRS warning lamp will also be illuminated if communication is lost (no serial data) between the SDM and the instrument cluster.

### TEST DESCRIPTION:

The following numbers refer to step numbers in diagnostic chart 'C'

1. Ensures the Diagnostic Circuit Check was performed which determines if there is a serial data communication fault and checks if any DTCs are set.
2. Checks if fault is current or intermittent.
3. Using TECH 2, this step checks the voltage supply to the SDM. If battery voltage to the SDM falls below 8 volts or above 21.2 volts for more than 3 seconds, the SRS warning lamp is switched on.
4. Checks generator output.
5. Determines if the ignition input voltage at the SDM is approximately the same as what the generator output voltage was during Step 5.
6. Checks continuity of earth circuit 305.
7. Checks earth connection at SDM, location G11.
8. Using TECH 2, this step checks if the energy reserve has been switched on. If the voltage supply to the SDM falls below 7.5 volts, the energy reserve in the SDM is switched on.

9. Using TECH 2, this step checks if the SDM has deployed the SRS.
10. If TECH 2 is unable to dive the SRS warning lamp on and off, it indicates fault is within the instrument cluster.

**NOTES ON DIAGNOSTIC CHART:**

1. Refer to **3.4 TECH 2 DIAGNOSTICS** in this Section for connecting and using TECH 2.
2. Refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD for procedures on checking wiring faults.
3. Fault Intermittent; connect TECH 2 to DLC, select F3 Body / SRS / DATA DISPLAY and monitor the following to see if TECH 2 display changes state while wiggling circuit wires and/or road testing vehicle:
  - BATTERY VOLTAGE (AFTER 3 SEC)
  - MODULE DEPLOYED
  - ENERGY RESERVE
  - CONFIGURATION FROM INSTRUMENTS
  - BCM POLL
 Repair fault as necessary, recheck circuit to verify repair.
4. Refer to **Section 6D1-1 CHARGING SYSTEM - V6 ENGINE** or **Section 6D2-1 CHARGING SYSTEM - V8 ENGINE** in this Service Information CD for generator testing details.
5. If the vehicle is involved in an accident in which the SRS was deployed (even if only pre-tensioners where deployed) refer to **2.6 REPAIRS AND INSPECTIONS REQUIRED AFTER AN ACCIDENT** for information on system components that need to be replaced.

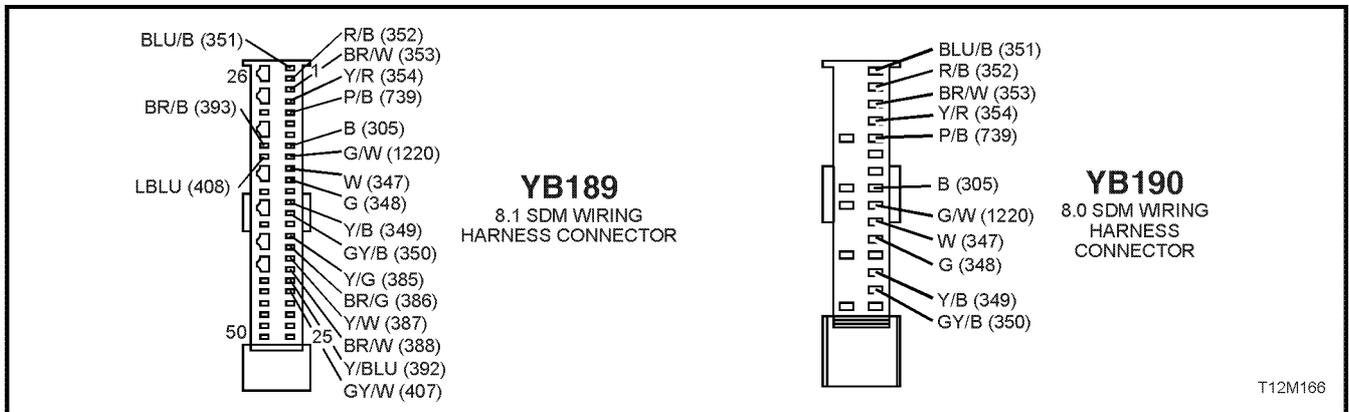


Figure 12M-79

STEP	ACTION	VALUE	YES	NO
1.	Was the Diagnostic Circuit Check preformed?		Go to Step 2.	Go to CHART A - <b>DIAGNOSTIC CIRCUIT CHECK</b> in this Section.
2.	Turn ignition on. Does SRS warning lamp remain illuminated after 5 seconds?		Go to Step 3.	Fault intermittent, refer to NOTE 3 above.
3.	With TECH 2 connected, and Body / SRS / Data Display selected, scroll to BATTERY VOLTAGE (AFTER 3 SEC). Does TECH 2 display battery voltage (after 3 sec) is OKAY?		Go to Step 8.	Go to Step 4.
4.	Carry out checks of generator output (refer to NOTE 4 above). Is generator output OK?		Go to Step 5.	Repair generator as necessary. Recheck and verify repair.

STEP	ACTION	VALUE	YES	NO
5.	<ul style="list-style-type: none"> <li>· Disconnect SDM connector YB189/YB190.</li> <li>· Start engine, turn headlamps on and raise engine idle speed to approximately 2500 RPM.</li> <li>· Using Tool KM-609-20, check voltage between SDM wiring harness connector YB189/YB190, terminal 5, circuit 739 and a known good earth (refer to NOTE 2 above).</li> <li>· Is the voltage measured approximately the same as measured during Step 4 (generator output tests)?</li> </ul>		Go to Step 6.	<p>Check and repair circuit 739 as necessary.</p> <p>Recheck and verify repair.</p>
6.	<ul style="list-style-type: none"> <li>· Turn ignition off.</li> <li>· With SDM connector YB189/YB190 disconnected, and using SRS test lead set KM-609-20, check for continuity between SDM connector YB189/YB190, terminal 8, circuit 305 (Black wire) and earth at location G11(refer to NOTE 2 above).</li> <li>· Does continuity exist?</li> </ul>		Go to Step 7.	<p>Repair open in earth circuit 305 as necessary.</p> <p>Recheck and verify repair.</p>
7.	<ul style="list-style-type: none"> <li>· Check for continuity between SDM earth location G11 and a known good earth (refer to NOTE 2 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Repair earth as necessary.</p> <p>Recheck and verify repair.</p>
8.	<ul style="list-style-type: none"> <li>· With TECH 2 connected, and Body / SRS / Data Display selected, scroll to ENERGY RESERVE.</li> <li>· Does TECH 2 display energy reserve off?</li> </ul>		Go to Step 9.	Go to Step 4.

STEP	ACTION	VALUE	YES	NO
9.	<ul style="list-style-type: none"> <li>· With TECH 2 connected, and Body / SRS / Data Display selected, scroll to MODULE HAS DEPLOYED.</li> <li>· Does TECH 2 display MODULE HAS DEPLOYED YES?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section. (see NOTE 5 above).</p> <p>Recheck circuit to verify repair.</p>	Go to Step 10.
10.	<ul style="list-style-type: none"> <li>· With TECH 2 connected, select Body / Instruments / Miscellaneous Tests / Lamps / SRS Lamp.</li> <li>· Using the UP and DOWN keys on TECH 2, drive the SRS warning lamp on and off.</li> <li>· Is TECH 2 able to drive the SRS warning lamp on and off?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Replace instrument cluster assembly, refer Section 12C INSTRUMENTS, WIPERS / WASHERS &amp; HORN.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				



STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 17 current ?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove steering column upper and lower cover.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the clock spring coil and monitor TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer NOTE 2 &amp; 4 above). Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors and terminals, refer to NOTE 5 above.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Remove horn bar and driver's air bag inflator module, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2).</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 10 and 11 and driver's air bag connector YB147, circuits 347 (White wire) and 348 (Green wire) for short to battery + (refer to NOTES 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 18 - DRIVER AIR BAG CIRCUIT SHORT TO EARTH

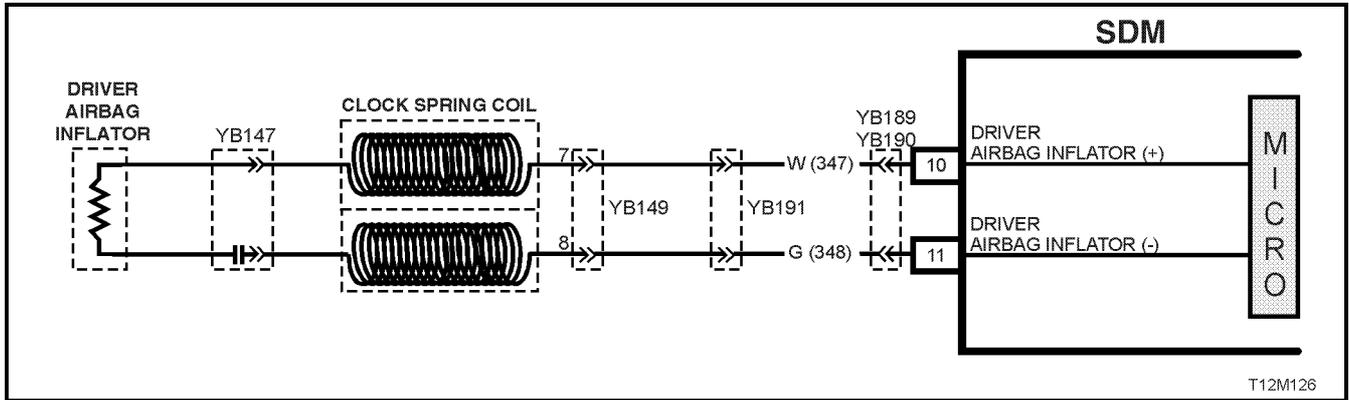


Figure 12M-82

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative inflator circuit for more than 3 - 5 seconds, a current DTC 18 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 18 will set if circuits 347 (driver's air bag positive side) and/or 348 (driver's air bag negative side) are shorted to earth.

When DTC 18 sets, the SDM illuminates the SRS warning lamp and sets a 'current' DTC 18. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 18. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 18 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 18 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 18 is set, the SRS, including the driver's air bag, will still be operational.

### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if DTC 18 is current or history.
2. TECH 2 in this mode should display approximately 2.0 - 6.4 ohms if the driver's air bag loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool SD28280B is a dummy load taking the place of the horn bar and driver's air bag inflator module. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the horn bar and driver's air bag inflator module assembly.
5. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 10 and the horn bar and driver's air bag inflator module connector YB147 for faults.
6. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 11 and the horn bar and driver's air bag inflator module connector YB147 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2), of this Service Information CD before conducting any SRS wiring harness repairs.
3. Refer to [Section 12N FUSES & WIRING HARNESSES](#) in this Service Information CD for SRS wiring harness routing.
4. Resistance cannot be measured between the two terminals in connector YB147 as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.
5. Wiring should be checked at point where TECH 2 screen display changed. If necessary, split open wiring harness.
6. If the fault cannot be identified, the wiring harness should be replaced.

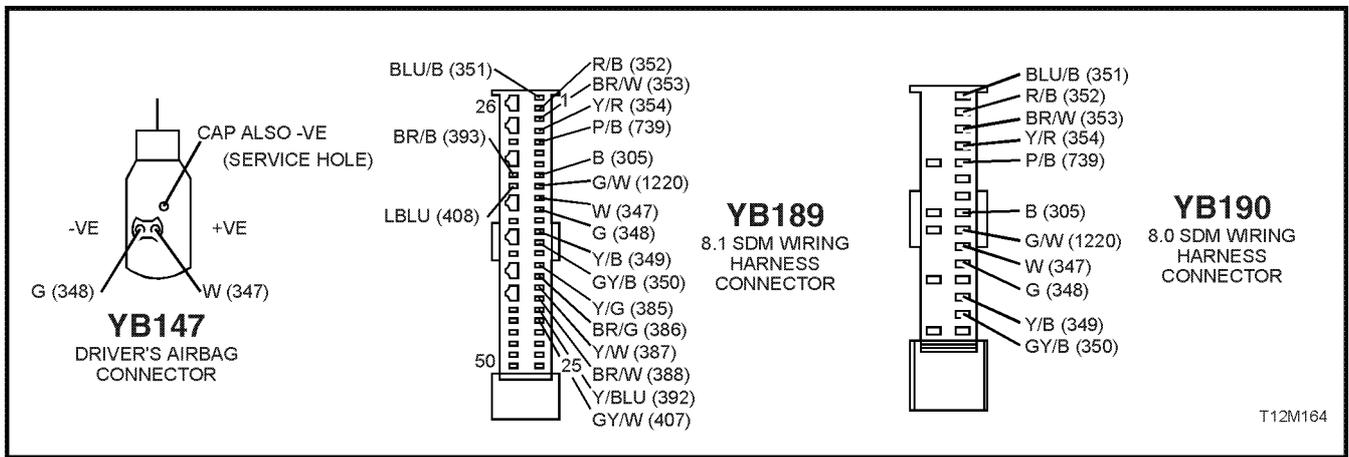


Figure 12M-83

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 18 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Body / SRS / Data Display and scroll to DRIVER AIR BAG LOOP RESISTANCE.</li> <li>Is value displayed on TECH 2 as specified?</li> </ul>	Approx. 2.0 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>Remove steering column upper and lower cover.</li> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the clock spring coil and monitor TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 5 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals, refer to NOTE 6 above.</p> <p>Clear DTC and recheck system.</p>

T12M164

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Remove horn bar and driver's air bag inflator module, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENT RESTRAINT SYSTEM - VERSION 6.2, in this Service Information CD.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB147.</li> <li>· Enable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· With TECH 2 still connected, select Body / SRS / Data Display and scroll to DRIVER AIR BAG LOOP RESISTANCE.</li> <li>· Is value displayed on TECH 2 as specified?</li> </ul>	Approx. 3.0 Ohms	<p>Replace horn bar and driver air bag inflator module assembly, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M, SUPPLEMENT RESTRAINT SYSTEM - VERSION 6.2, in this Service Information CD.</p> <p>Clear DTC and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Remove Tool SD28280B from YB147.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 10 and driver's air bag inflator module connector YB147, circuits 347 (White wire) for short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
6.	<p>With system disabled, SDM wiring harness connector YB189/YB190 disconnected and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/ YB190, terminal 11 and driver's air bag inflator module connector YB147, circuit 348 (Green wire) for a short to earth (refer to NOTES 1 and 4 above).</p> <p>Is all OK?</p>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 19 - DRIVER AIR BAG CIRCUIT CAPACITANCE TOO HIGH

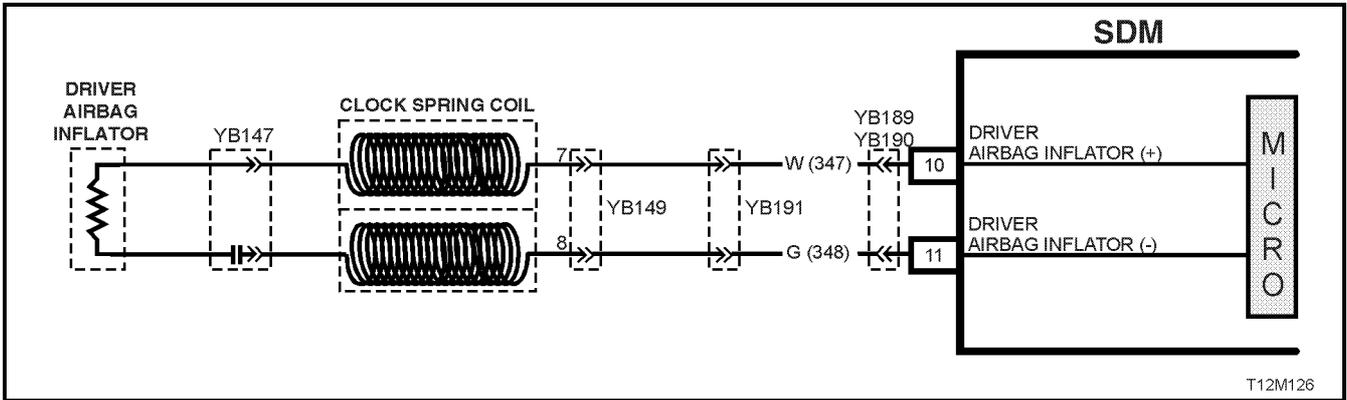


Figure 12M-84

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the driver's air bag circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 19 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 19 will set if the in-built capacitor in the SRS wiring harness connector YB147 is faulty.

When DTC 19 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 19. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 19. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 19 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 19 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 19 is set, the driver's air bag may not operate and therefore, the clock spring coil assembly must be replaced (connector YB147 with the in-built capacitor is part of the clockspring coil assembly). Refer to [2.6 CLOCK SPRING COIL](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2), in this Service Information CD for the correct procedure on replacing the clock spring coil assembly.

After the clock spring coil assembly has been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## DTC 20 - DRIVER AIR BAG CIRCUIT CAPACITANCE TOO LOW

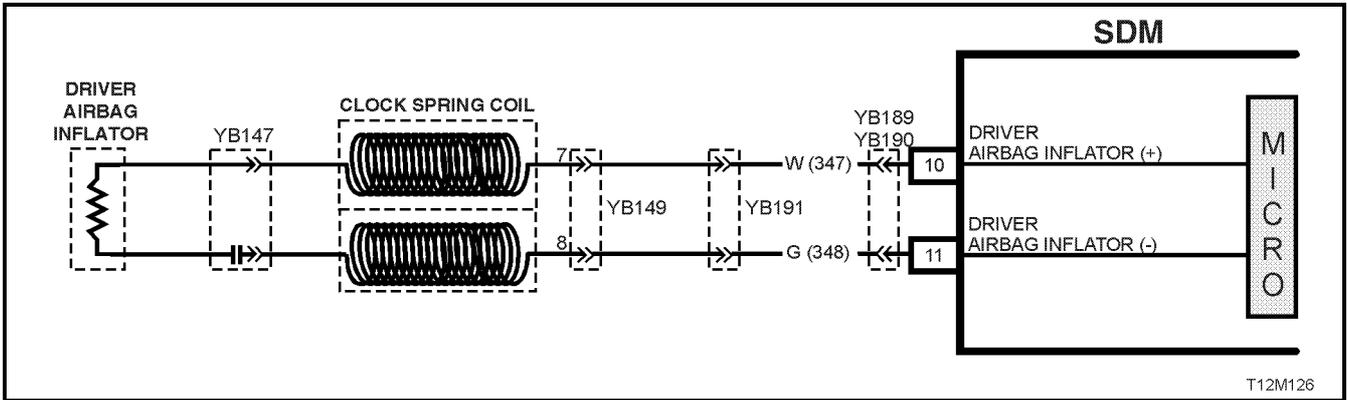


Figure 12M-85

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the driver's air bag circuit is too low (less than 390 nF) for longer than 3 - 5 seconds, a current DTC 20 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 20 will set if the in-built capacitor in the SRS wiring harness connector YB147 is faulty.

When DTC 20 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 20. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 20. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 20 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 20 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 20 is set, the driver's air bag may not operate and therefore, the clock spring coil assembly must be replaced (connector YB147 with the in-built capacitor is part of the clockspring coil assembly). Refer to [2.6 CLOCK SPRING COIL](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2), in this Service Information CD for the correct procedure on replacing the clock spring coil assembly.

After the clock spring coil assembly has been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## DTC 21 - DRIVER AIR BAG CIRCUIT RESISTANCE TOO HIGH

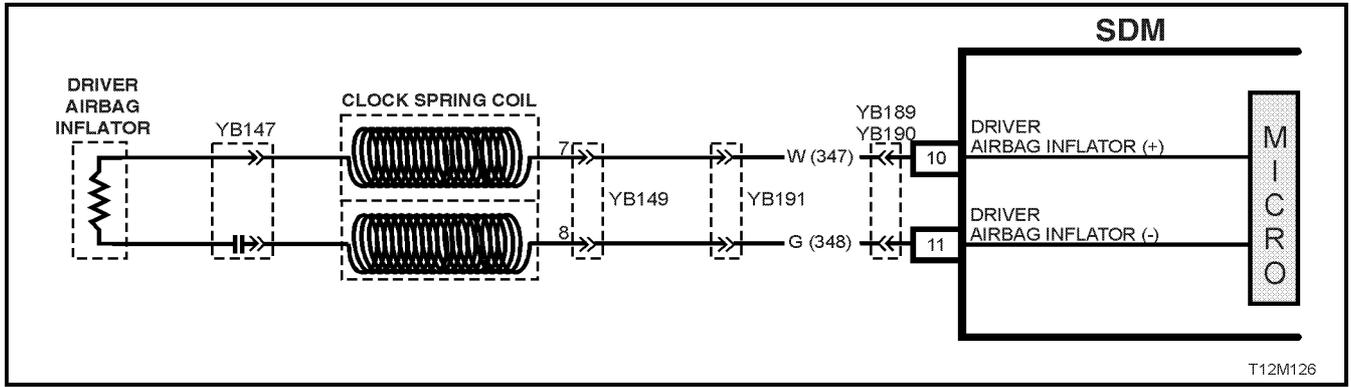


Figure 12M-86

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the driver's air bag circuit that is too high (greater than 8.4 ohm) for longer than 3 - 5 seconds, a current DTC 21 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 21 will set if circuits 347 or 348, (including the horn bar and air bag assembly and the clock spring coil) are open circuited.

When DTC 21 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 21. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 21. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 21 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 21 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 21 is set, dependent on where the fault is, the driver's air bag may not operate.

### TEST DESCRIPTION

The following number refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if DTC 21 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the driver's horn bar and air bag assembly. If DTC 21 becomes a history DTC with dummy load connected, the system fault is in the driver's horn bar and air bag assembly.
4. Checks if open circuit is in the clock spring coil. If the clock spring coil is disconnected from the system, and terminals 7 & 8 in connector YB149 bridged together, DTC 21 will become a history DTC if the clock spring coil is faulty.
5. Checks circuit 347 for open circuit.
6. Checks circuit 348 for open circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) in this Service Information CD before conducting any SRS wiring harness repairs.

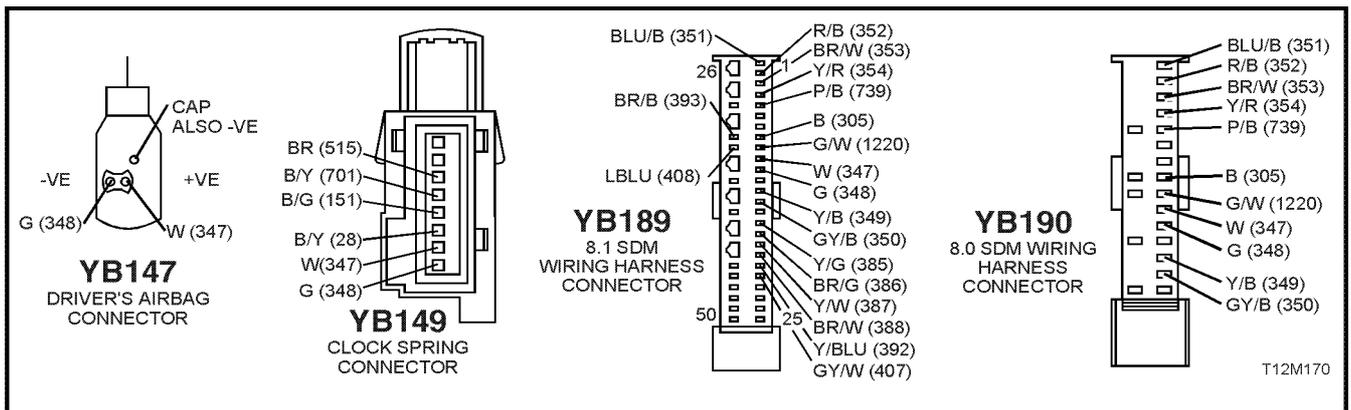


Figure 12M-87

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 21 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove steering column upper and lower cover.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the clock spring coil while monitoring the TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Remove horn bar and driver's air bag inflator module, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENT RESTRAINT SYSTEM - (VERSION 6.2).</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB147.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 21 still current?</li> </ul>		Go to Step 4.	<p>Replace horn bar and driver's air bag inflator module assembly, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENT RESTRAINT SYSTEM - (VERSION 6.2).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB149 from clock spring coil assembly.</li> <li>· Reconnect battery.</li> <li>· Using a suitable jumper wire from KM-609, bridge connector YB149, terminals 7 and 8 together. <b>(NOTE:</b> This step may set a current DTC 22).</li> <li>· With TECH 2 still connected, select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Does DTC 21 become history?</li> </ul>		<p>Replace clock spring coil assembly, refer to 2.6 CLOCK SPRING COIL in Section 12M SUPPLEMENT RESTRAINT SYSTEM - (VERSION 6.2).</p> <p>Clear all DTCs and recheck system to verify repair.</p>	Go to Step 5
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 10 and clock spring coil connector YB149, terminal 7, circuit 347 (White wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
6.	<p>With system disabled, SDM wiring harness connector YB189/ YB190 disconnected and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/ YB190, terminal 11 and clock spring coil connector YB149, terminal 8, circuit 348 (Green wire) for open circuit (refer to NOTE 1 above).</p> <p>Is all OK?</p>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 22 - DRIVER AIR BAG CIRCUIT RESISTANCE TOO LOW

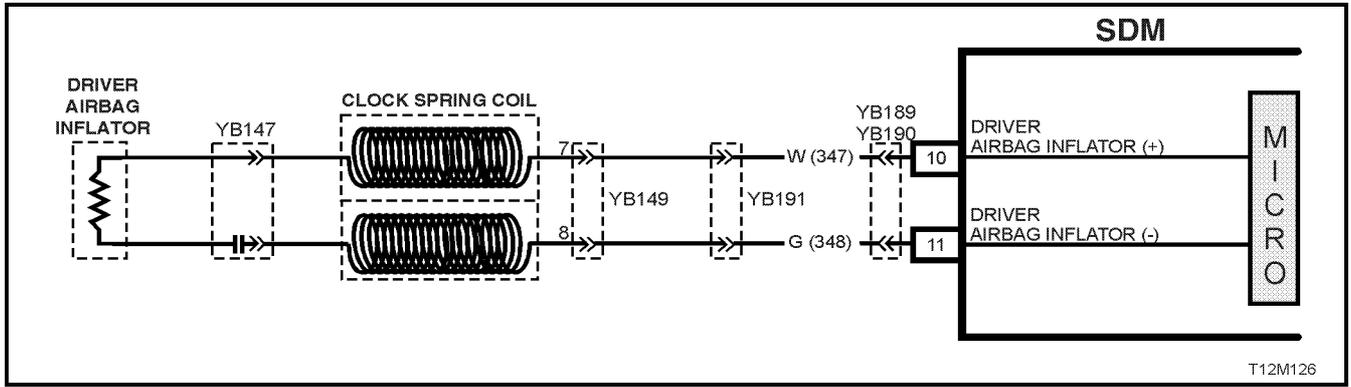


Figure 12M-88

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the driver's air bag circuit that is too low (less than 1 ohm) for longer than 3 - 5 seconds, a current DTC 22 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 22 will set if circuits 347 or 348, (including the horn bar and air bar assembly and the clock spring coil) are shorted together.

When DTC 22 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 22. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 22. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 22 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 22 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 22 is set, dependent on where the fault is, the driver's air bag may not operate.

### TEST DESCRIPTION

The following numbers refer to step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if DTC 22 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the driver's horn bar and air bag assembly. If DTC 22 becomes a history DTC with dummy load connected, the system fault is in the driver's horn bar and air bag assembly.
4. Checks if short circuit is in the clock spring coil. If the clock spring coil is disconnected from the system, a DTC 21 (open circuit) will set and DTC 22 will become history. If DTC 21 sets and DTC 22 becomes history, the clock spring coil is faulty.
5. This test checks the wiring between the SDM harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM) and SRS connector YB149 for a short circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) in this Service Information CD before conducting any SRS wiring harness repairs.

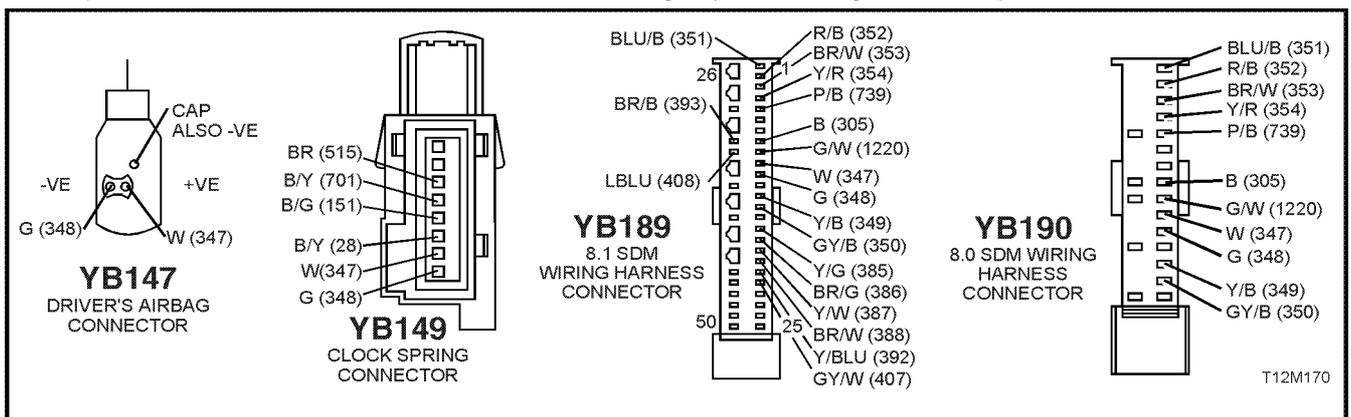


Figure 12M-89

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 22 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove steering column upper and lower cover.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the clock spring coil while monitoring the TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Remove horn bar and driver's air bag inflator module, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2).</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB147.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 22 still current?</li> </ul>		Go to Step 4.	<p>Replace horn bar and driver's air bag inflator module assembly, refer to 2.3 HORN BAR AND AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB149 from clock spring coil assembly.</li> <li>· Reconnect battery.</li> <li>· With TECH 2 still connected, select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 21 current and DTC 22 history?</li> </ul>		<p>Replace clock spring coil assembly, refer to 2.6 CLOCK SPRING COIL in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2).</p> <p>Clear all DTCs and recheck system to verify repair.</p>	Go to Step 5
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· With SRS wiring harness connector YB149 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189/YB190, terminal 10, circuit 347 (White wire) and terminal 11, circuit 348 (Green wire) (refer to NOTE 1 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 347 and 348, between SDM wiring harness connector YB189/YB190 and YB149 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - DRIVER'S AIR BAG CIRCUIT POWER STAGE ERROR

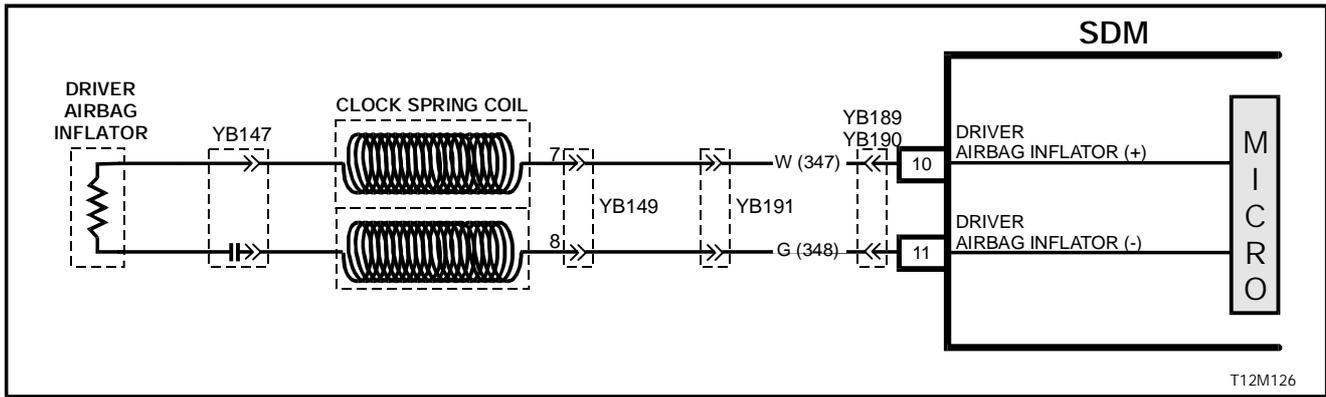


Figure 12M-90

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the driver's air bag power stage a current DTC 247 Driver's Air Bag Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Driver's Air Bag Circuit. If the SDM detects a problem with this circuit the associated Driver's Air Bag Circuit DTC will be set and the DTC 247 Driver's Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Driver's Air Bag Circuit Power Stage Error will set if a fault occurs in the driver's air bag circuit, clock spring coil assembly with the in-built capacitor connector YB147, connector YB149, connector YB191, the SRS wiring harness, connector YB189/YB190 or SDM.

When a history DTC 247 Driver's Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Driver's Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Driver's Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Driver's Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Driver's Air Bag Circuit Power Stage Error is cleared.

If a DTC 247 Driver's Air Bag Circuit Power Stage is set, dependent on where the fault is, the driver's air bag may not operate.

### ACTION REQUIRED

If DTC 247 Driver's Air Bag Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Driver's Air Bag Circuit Power Stage Error and a DTC 21 Driver's Air Bag Circuit Resistance High are set, the diagnostics for a DTC 21 Driver's Air Bag Circuit Resistance High should be carried out first.

If only a DTC 247 Driver's Air Bag Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the driver's air bag circuit may cause a DTC 247 Driver's Air Bag Circuit Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

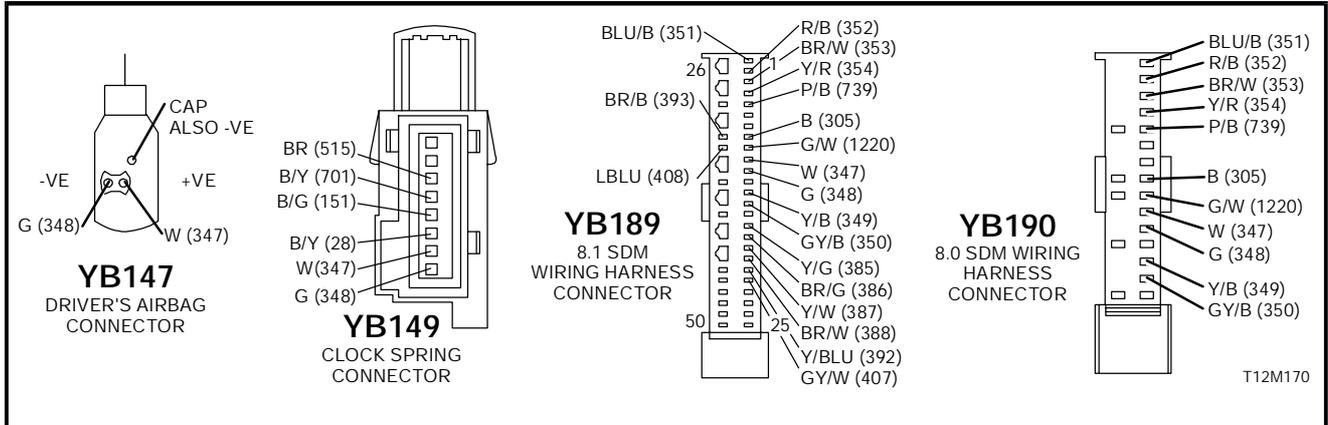
### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Driver's Air Bag Circuit Power Stage Error is history code, and if any other driver's air bag circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. If no other DTCs are set and there are no intermittents in the driver's air bag circuit then the SDM should be replaced.

**NOTES ON DIAGNOSTIC CHART**

1. For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
2. Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-91**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is a DTC 247 Driver's Air Bag Circuit Power Stage Error a history DTC, and are any other driver's air bag circuit DTCs set?</li> </ul>		Go to other driver's air bag circuit DTC diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>Remove steering column upper and lower cover.</li> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the clock spring coil while monitoring the TECH 2 screen display.</li> <li>Jack up the front of the vehicle and turn the steering wheel from lock to lock while monitoring the TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			
<b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b>				

## DTC 33 - PASSENGER AIR BAG CIRCUIT SHORT TO BATTERY

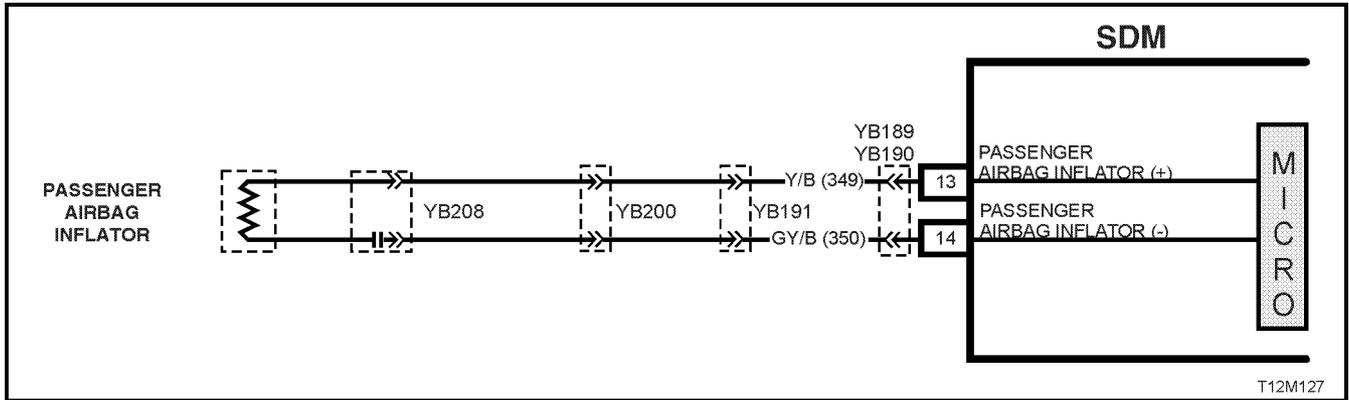


Figure 12M-92

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance to battery supply is less than 5 kohms in either the positive and/or negative circuit for more than 3 - 5 seconds, a current DTC 33 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 33 will set if circuits 349 (passenger's air bag positive side) and/or 350 (passenger's air bag negative side) are shorted to battery +.

When DTC 33 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 33. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 33. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 33 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 33 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 33 is set, the SRS, including the passenger's air bag, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 33 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen display. If screen display changes during a 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuit 349 and 350 for a short to battery +.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2), in this Service Information CD before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB208, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section for more details on this type of connector.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open the harness.
5. If the fault can not be identified, the harness should be replaced.

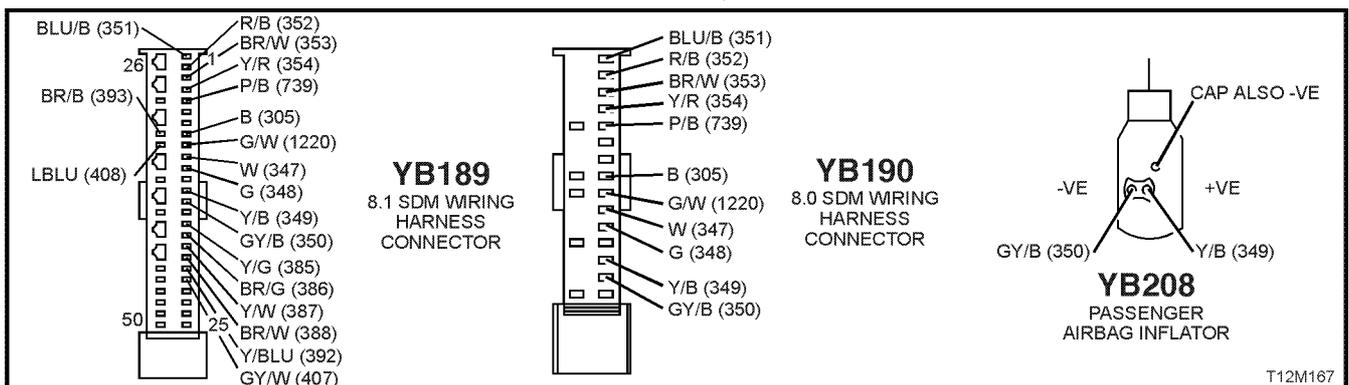


Figure 12M-93

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 33 current ?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove instrument panel compartment to gain access to passenger's air bag, refer to Section 1A3 INSTRUMENT PANEL AND CONSOLE.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the passenger's air bag wiring harness connector YB208, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals (refer to NOTE 5 above).</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE.</li> <li>· Disconnect passenger's air bag inflator module wiring harness connector YB208.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 13 and 14 and passenger's air bag connector YB208, circuits 349 (Yellow/Black wire) and 350 (Grey/Black wire) for short to battery + (refer to NOTES 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this section.</p> <p>Recheck circuit and verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 34 - PASSENGER AIR BAG CIRCUIT SHORT TO EARTH

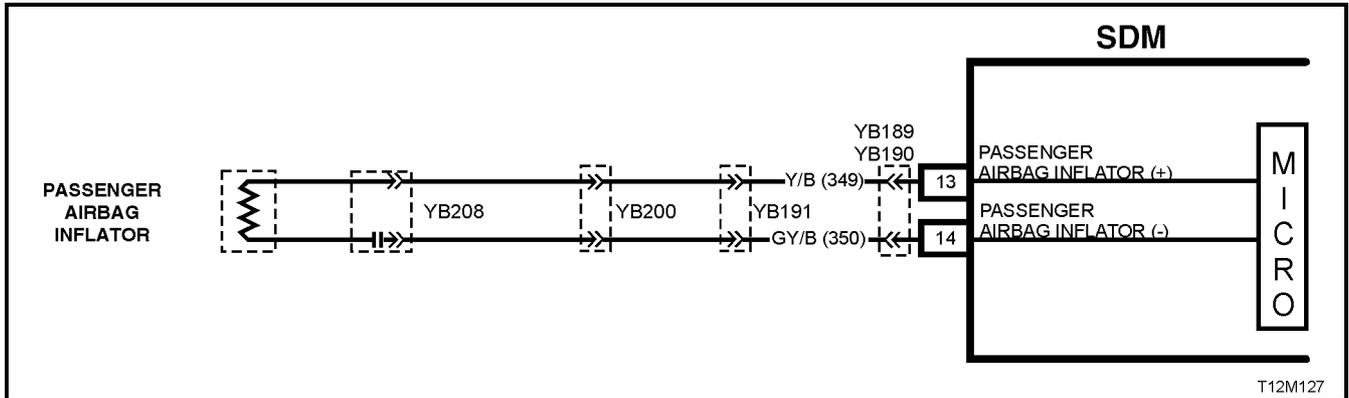


Figure 12M-94

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative inflator circuit for more than 3 - 5 seconds, a current DTC 34 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 34 will set if circuits 349 (passenger's air bag positive side) and/or 350 (passenger's air bag negative side) are shorted to earth.

When DTC 34 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 34. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 34. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 34 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 34 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 34 is set, the SRS, including the passenger's air bag, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 34 is current or history.
2. TECH 2 in this mode should display approximately 1.6 - 6.4 ohms if the passenger's air bag loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool SD28280B is a dummy load taking the place of the passenger's air bag inflator module. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the passenger's air bag inflator module assembly.
5. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 13 and the passenger's air bag inflator module connector YB208 for faults.
6. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 14 and the passenger's air bag inflator module connector YB208 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) in this Service Information CD before conducting any SRS wiring harness repairs.
3. Refer to [Section 12N FUSES & WIRING HARNESSSES](#) in this Service Information CD for SRS wiring harness routing.
4. Resistance cannot be measured between the two terminals in connector YB208 as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS](#), WIRING HARNESS in this Section for more details on this type of connector.
5. Wiring should be checked at point where TECH 2 screen display changed. If necessary, split open wiring harness.
6. If fault cannot be identified, the wiring harness should be replaced.

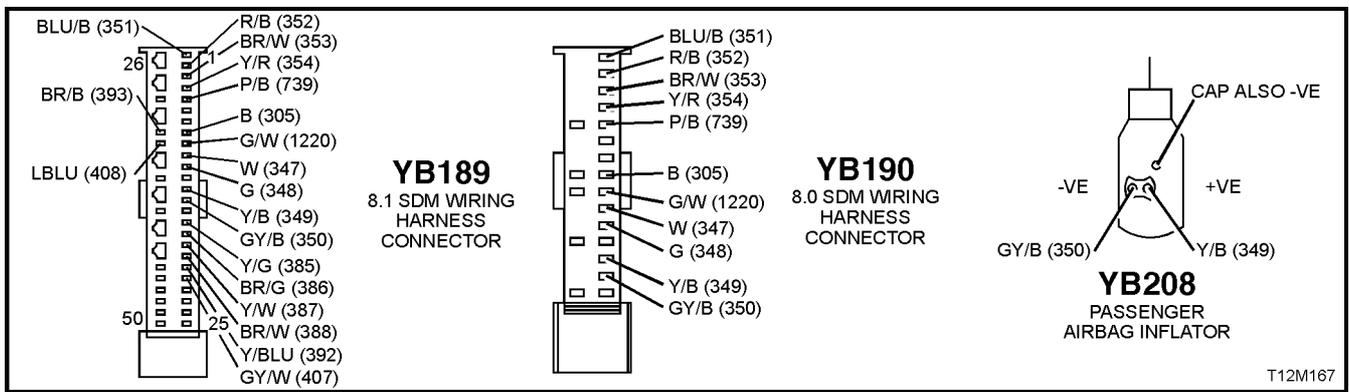


Figure 12M-95

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 34 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected to DLC, select Body / SRS / Data Display and scroll to PASSENGER'S AIR BAG LOOP RESISTANCE'.</li> <li>Is value displayed on TECH 2 as specified?</li> </ul>	Approx. 1.6 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>Remove instrument panel compartment to gain access to passenger's air bag, refer to Section 1A3 INSTRUMENT PANEL AND CONSOLE.</li> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the passenger's air bag wiring harness connector YB208, while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE to 2 &amp; 5 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals (refer to NOTE 6 above).</p> <p>Clear DTC and recheck system.</p>

T12M167

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect passenger's air bag inflator module wiring harness connector YB208.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB208.</li> <li>· With TECH 2 still connected, select Body / SRS / Data Display and scroll to PASSENGER'S AIR BAG LOOP RESISTANCE'.</li> <li>· Is value displayed on TECH 2 as specified?</li> </ul>	Approx. 3.0 Ohms	Replace passenger's air bag inflator module assembly, refer to 2.4 FRONT PASSENGER'S AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2). Clear DTC and recheck system to verify repair.	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Remove Tool SD28280B from YB208.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 13 and passenger's air bag inflator module connector YB208, circuit 349 (Yellow/Black wire) for short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	Make repairs as necessary (refer to NOTE 2 above). Clear DTC and recheck system to verify repair.
6.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189/ YB190 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/ YB190, terminal 14 and passenger's air bag inflator module connector YB208, circuit 350 (Grey/Black wire) for a short to earth (refer to NOTES 1 and 4 above).</li> <li>· Is all OK?</li> </ul>		Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section. Recheck circuit to verify repair.	Make repairs as necessary (refer to NOTE 2 above). Clear DTC and recheck system to verify repair.
<b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b>				

## DTC 35 - PASSENGER AIR BAG CIRCUIT CAPACITANCE TOO HIGH

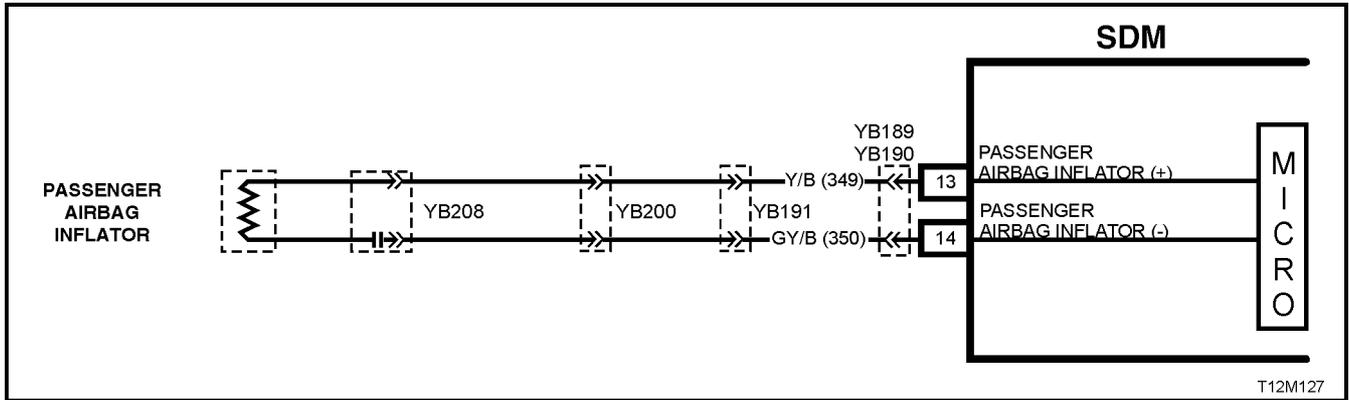


Figure 12M-96

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the passenger's air bag circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 35 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 35 will set if the in-built capacitor in the SRS wiring harness connector YB208 is faulty.

When DTC 35 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 35. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 35. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 35 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 35 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 35 is set, the passenger's air bag may not operate and therefore, the SRS 'pigtail' wiring harness with connector YB208 (between passenger air bag and SRS wiring harness) must be replaced.

After the SRS 'pigtail' wiring harness between the passenger air bag and the SRS wiring harness has been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## DTC 36 - PASSENGER AIR BAG CIRCUIT CAPACITANCE TOO LOW

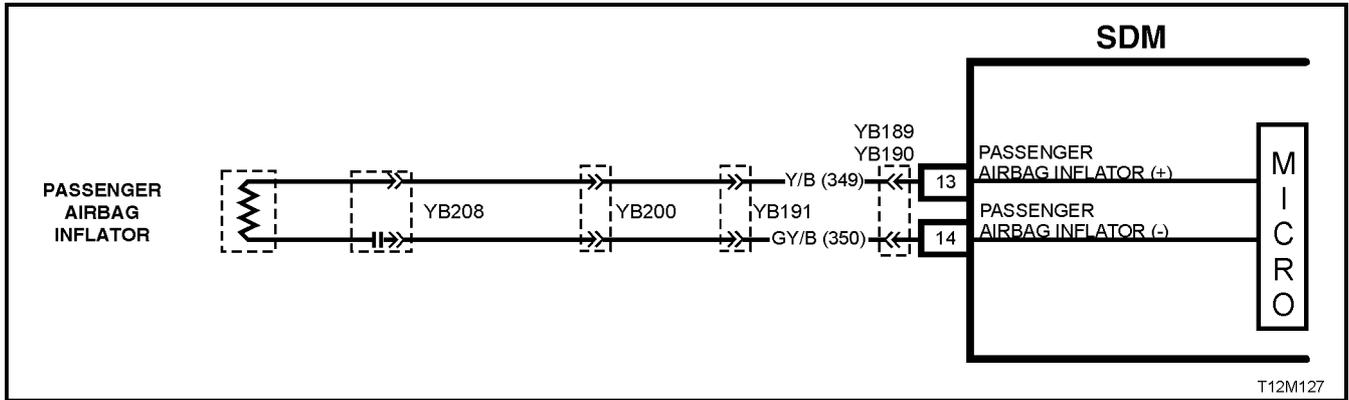


Figure 12M-97

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the passenger's air bag circuit is too low (less than 390 nF) for longer than 3 - 5 seconds, a current DTC 36 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 36 will set if the in-built capacitor in the SRS wiring harness connector YB208 is faulty.

When DTC 36 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 36. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 36. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 36 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 36 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 36 is set, the passenger's air bag may not operate and therefore, the SRS 'pigtail' wiring harness with connector YB208 (between passenger air bag and SRS wiring harness) must be replaced.

After the SRS 'pigtail' wiring harness between the passenger air bag and the SRS wiring harness has been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## DTC 37 - PASSENGER AIR BAG CIRCUIT RESISTANCE TOO HIGH

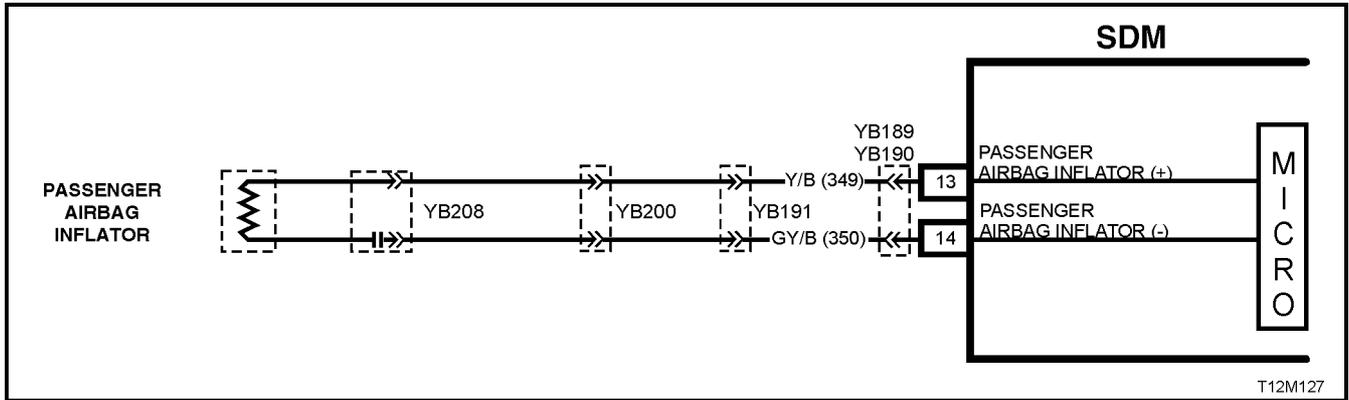


Figure 12M-98

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the passenger's air bag circuit that is too high (greater than 8.4 ohm) for longer than 3 - 5 seconds, a current DTC 37 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 37 will set if circuits 349 or 350 (including the passenger's air bag inflator module) are open circuit.

When DTC 37 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 37. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 37. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 37 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 37 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 37 is set, dependent on where the fault is, the passenger's air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 37 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the passenger's air bag inflator module. If DTC 37 becomes a history DTC with dummy load connected, the system fault is in the passenger's air bag inflator module.
4. Checks circuit 349 for open circuit.
5. Checks circuit 350 for open circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in this Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) in this Service Information CD before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB208, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section for more details on this type of connector.

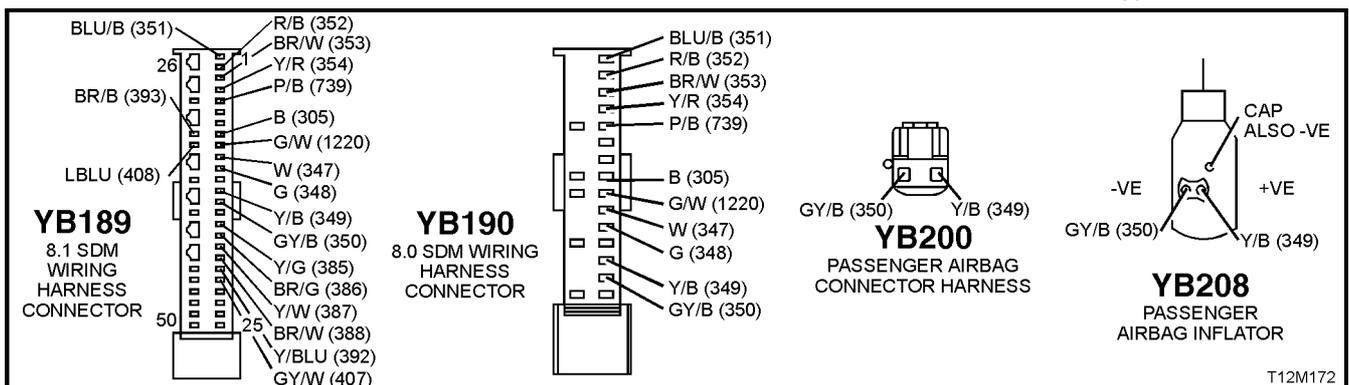


Figure 12M-99

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 37 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove instrument panel compartment to gain access to passenger's air bag, refer to Section 1A3 INSTRUMENT PANEL AND CONSOLE.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the passenger's air bag wiring harness connector YB208, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the passenger's air bag inflator module wiring harness connector YB208.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB208.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 37 still current?</li> </ul>		Go to Step 4.	<p>Replace passenger's air bag inflator module assembly, refer to 2.4 FRONT PASSENGER'S AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Remove Tool No. SD28280B from SRS wiring harness connector YB208.</li> <li>· With SRS wiring harness connector YB208 disconnected, and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 13 and SRS wiring harness connector YB208, circuit 349 (Yellow/Black wire) for open circuit (refer to NOTE 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 5.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
5.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189/YB190 and SRS wiring harness connector YB208 disconnected from and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 14 and SRS wiring harness connector YB208, circuit 350 (Grey / Black wire) for open circuit (refer to NOTE 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 38 - PASSENGER AIR BAG CIRCUIT RESISTANCE TOO LOW

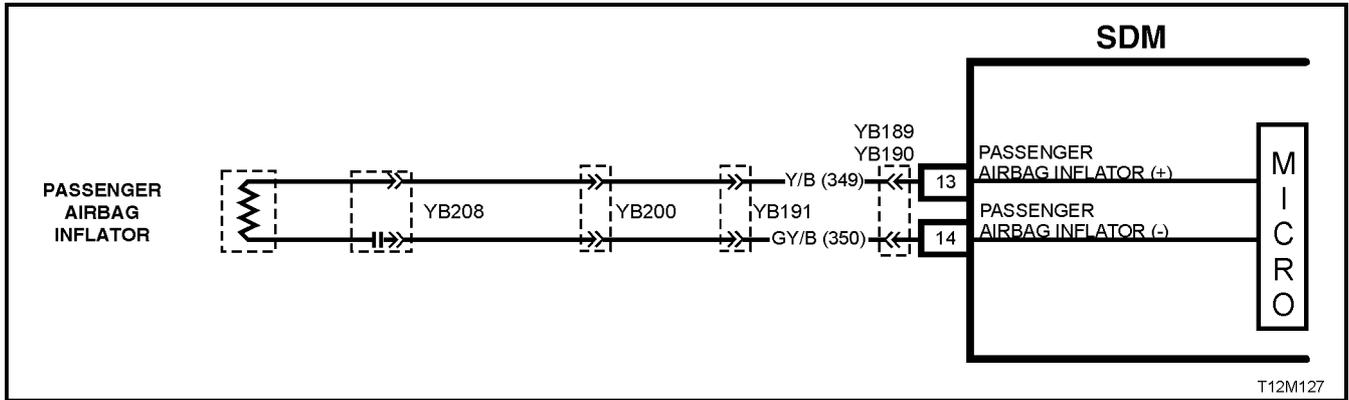


Figure 12M-100

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the passenger's air bag circuit that is too low (less than 0.6 ohm) for longer than 3 - 5 seconds, a current DTC 38 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 38 will set if circuits 349 or 350, (including the passenger's air bag inflator module assembly) are shorted together.

When DTC 38 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 38. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 38. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 38 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 38 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 38 is set, dependent on where the fault is, the passenger's air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 38 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the passenger's air bag inflator module. If DTC 34 becomes a history DTC with dummy load connected, the system fault is in the passenger's air bag inflator module.
4. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM) and SRS wiring harness connector YB208 for a short circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in this Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB208, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section for more details on this type of connector.

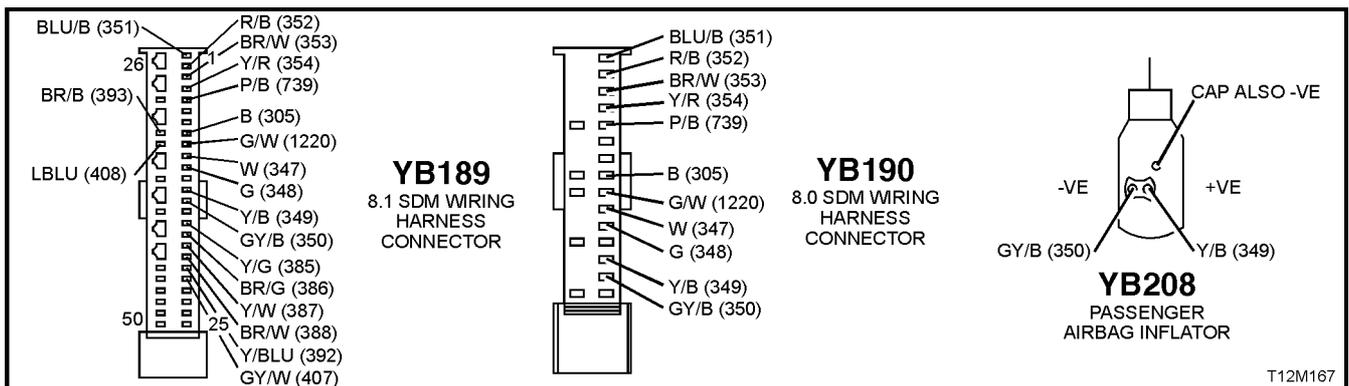


Figure 12M-101

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 38 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· Remove instrument panel compartment to gain access to passenger's air bag, refer to Section 1A3 INSTRUMENT PANEL AND CONSOLE.</li> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the passenger's air bag wiring harness connector YB208, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the passenger's air bag inflator module wiring harness connector YB208.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB208.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 38 still current?</li> </ul>		Go to Step 4.	<p>Replace passenger's air bag inflator module assembly, refer to 2.4 FRONT PASSENGER'S AIR BAG MODULE ASSEMBLY in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM.</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Disconnect Tool No. SD28280B from SRS wiring harness connector YB208.</li> <li>· With SRS wiring harness connector YB208 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189/ YB190, terminal 13, circuit 349 (Yellow/Black wire) and terminal 14, circuit 350 (Grey/Black wire)(refer to NOTES 1 and 3 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 349 and 350, between SDM wiring harness connector YB189/YB190 and YB208 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - PASSENGER AIR BAG CIRCUIT POWER STAGE ERROR

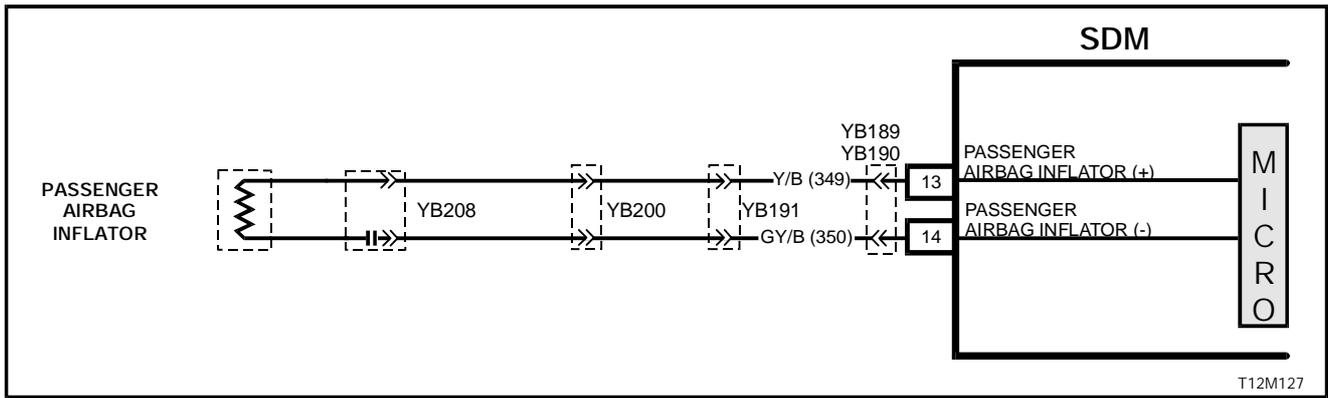


Figure 12M-102

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the passenger air bag power stage a current DTC 247 Passenger Air Bag Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Passenger Air Bag Circuit. If the SDM detects a problem with this circuit the associated Passenger Air Bag Circuit DTC will be set and the DTC 247 Passenger Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Passenger Air Bag Circuit Power Stage Error will set if a fault occurs in the passenger air bag circuit, connector YB208 with the in-built capacitor, connector YB200, connector YB191, the SRS wiring harness, connector YB189/YB190 or SDM.

When a history DTC 247 Passenger Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Passenger Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Passenger Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Passenger Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Passenger Air Bag Circuit Power Stage Error is cleared.

If a DTC 247 Passenger Air Bag Circuit Power Stage is set, dependent on where the fault is, the passenger air bag may not operate.

### ACTION REQUIRED

If DTC 247 Passenger Air Bag Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Passenger Air Bag Circuit Power Stage Error and a DTC 37 Passenger Air Bag Circuit Resistance High are set, the diagnostics for a DTC 37 Passenger Air Bag Circuit Resistance High should be carried out first.

If only a DTC 247 Passenger Air Bag Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the passenger air bag circuit may cause a DTC 247 Passenger Air Bag Circuit Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

### TEST DESCRIPTION

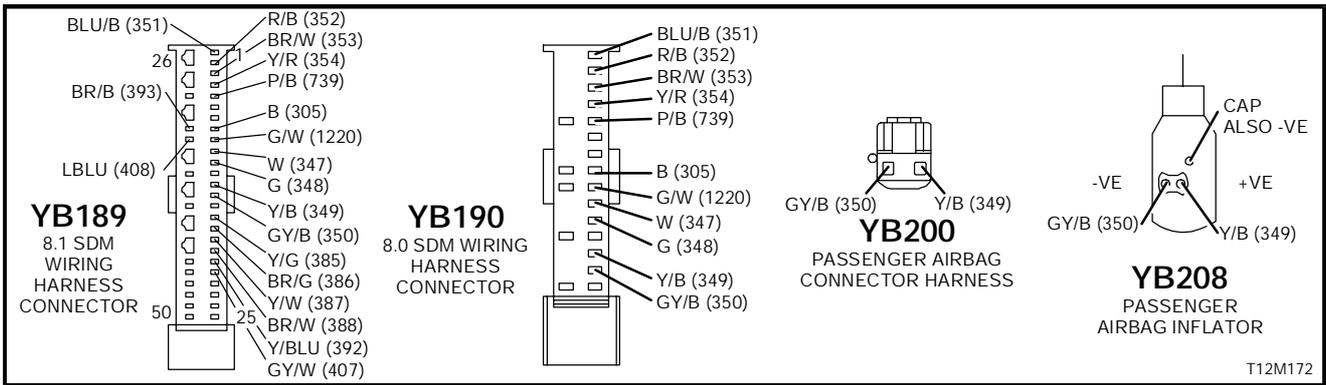
The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Passenger Air Bag Circuit Power Stage Error is history code, and if any other passenger air bag circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.

**IF NO OTHER DTCS ARE SET AND THERE ARE NO INTERMITTENTS IN THE PASSENGER AIR BAG CIRCUIT THEN THE SDM SHOULD BE REPLACED.**

**NOTES ON DIAGNOSTIC CHART**

- For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
- Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-103**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is a DTC 247 Passenger Air Bag Circuit Power Stage Error a history DTC, and are any other passenger air bag circuit DTCs set?</li> </ul>		Go to other passenger air bag circuit DTC diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>Remove instrument panel compartment to gain access to passenger air bag, refer to Section 1A3 INSTRUMENT PANEL AND CONSOLE.</li> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the passenger air bag wiring harness connector YB208, while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 49 - LEFT HAND PRE-TENSIONER CIRCUIT SHORT TO BATTERY

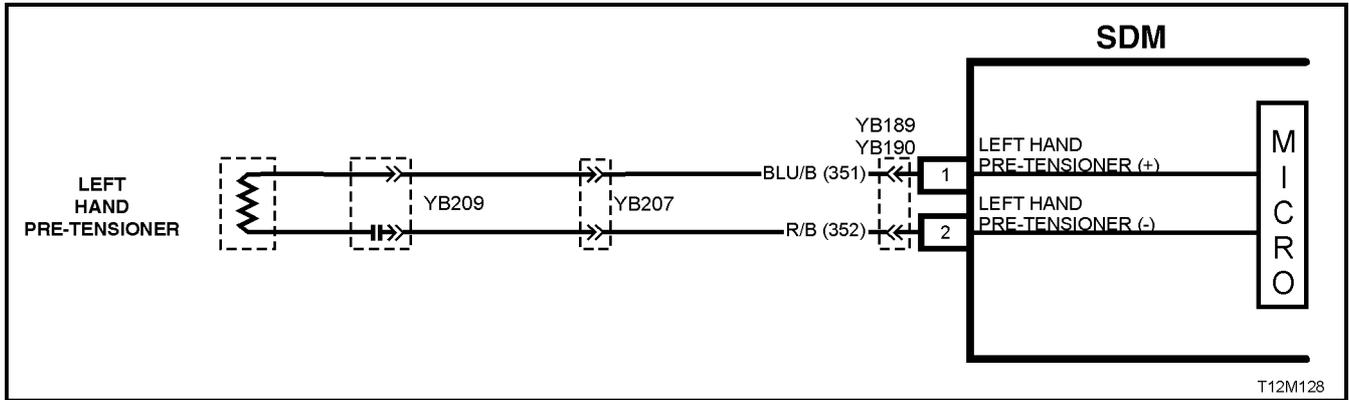


Figure 12M-104

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance to battery supply is less than 5 kohms in either the positive and/or negative circuit for more than 3 - 5 seconds, a current DTC 49 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 49 will set if circuits 351 (left hand pre-tensioner positive side) and/or 352 (left hand pre-tensioner negative side) are shorted to battery +.

When DTC 49 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 49. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 49. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 49 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 49 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 49 is set, the SRS, including the left hand pre-tensioner, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 49 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuits 351 and 352 for a short to battery +.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB209, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to **1.1 SYSTEM COMPONENTS, WIRING HARNESS** in this Section for more details on this type of connector.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open the harness.
5. If the fault can not be identified, the harness should be replaced.

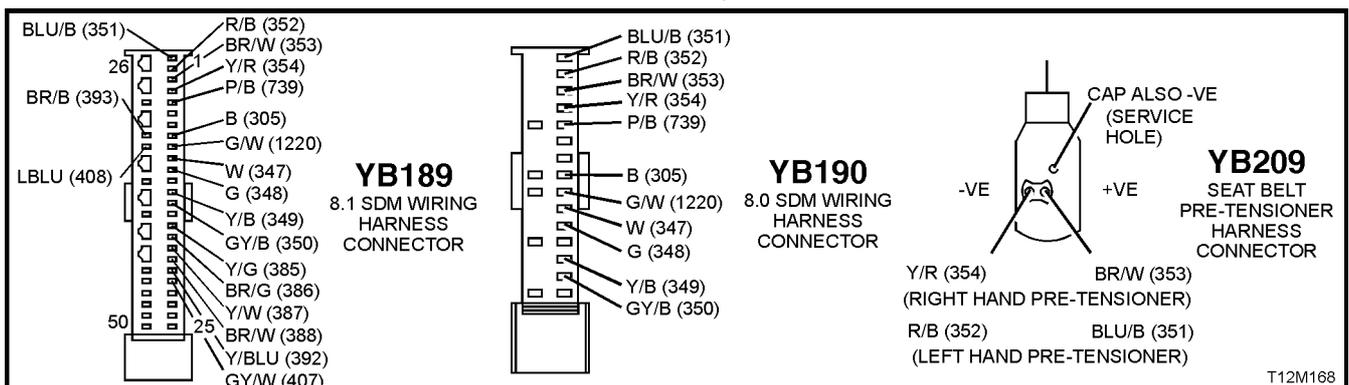


Figure 12M-105

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 49 current ?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals, refer to NOTE 5 above.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the SRS wiring harness connector YB209 from the left hand pre-tensioner assembly.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 1 and 2 and left hand pre-tensioner connector YB209, circuits 351 (Blue/Black wire) and 352 (Red/Black wire) for short to battery + (refer to NOTES 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 50 - LEFT HAND PRE-TENSIONER CIRCUIT SHORT TO EARTH

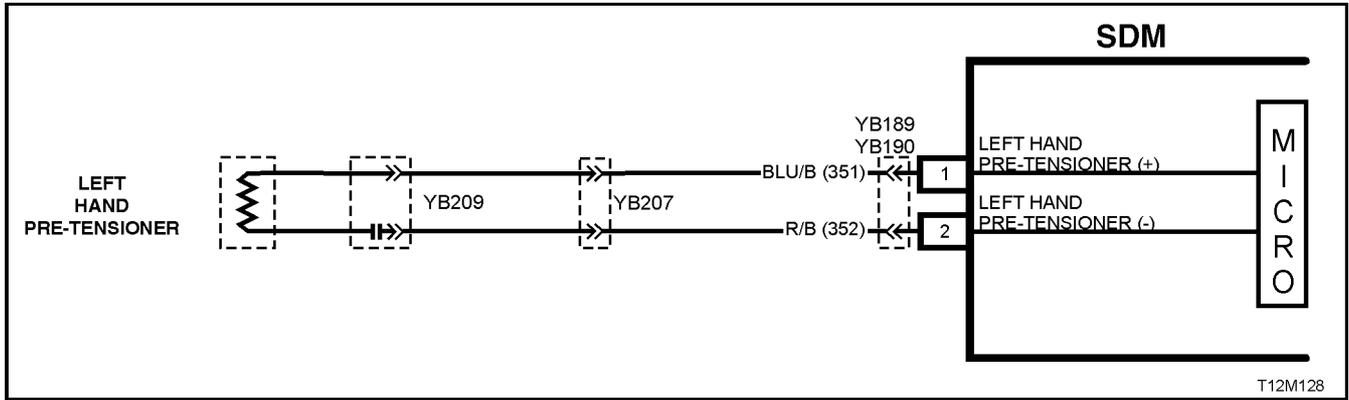


Figure 12M-106

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative circuit for more than 3 - 5 seconds, a current DTC 50 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 50 will set if circuits 351 (left hand pre-tensioner positive side) and/or 352 (left hand pre-tensioner negative side) are shorted to earth.

When DTC 50 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 50. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 50. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 50 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 50 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 50 is set, the SRS, including the left hand pre-tensioner, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to determine if DTC 50 is current or history.
2. TECH 2 in this mode should display approximately 1.6 - 6.4 ohms if the left hand pre-tensioner loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool SD28280B is a dummy load taking the place of the pre-tensioner assembly. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the pre-tensioner assembly.
5. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 1 and the left hand pre-tensioner connector YB209 for faults.
6. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 2 and the left hand pre-tensioner connector YB209 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in this Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Refer to [Section 12N FUSES & WIRING HARNESSES](#) in this Service Information CD for SRS wiring harness routing.
4. Resistance cannot be measured between the two terminals in connector YB209 as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.
5. Wiring should be checked at point where TECH 2 screen display changed. If necessary, split open wiring harness.
6. If fault cannot be identified, the wiring harness should be replaced.

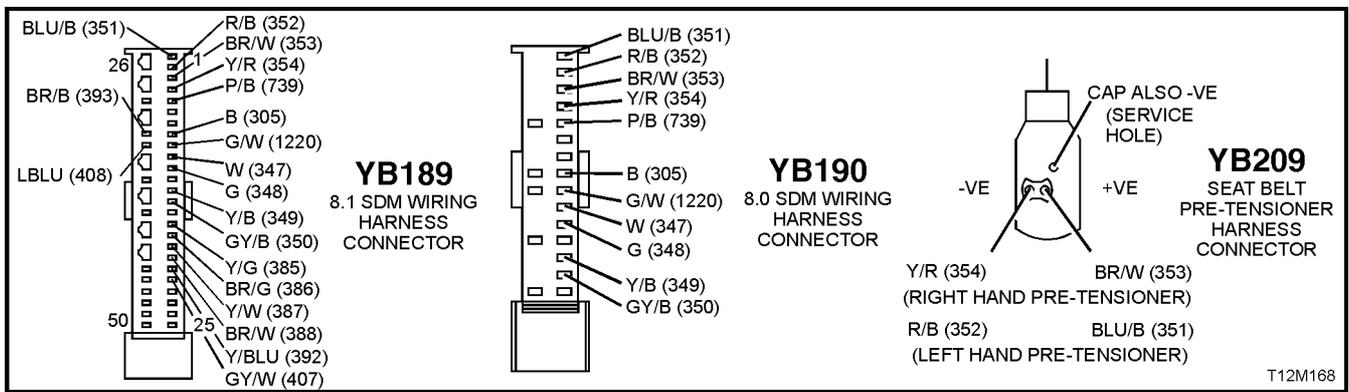


Figure 12M-107

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 50 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Body / SRS / Data Display and scroll to LEFT HAND PRE-TENSIONER LOOP RESISTANCE'.</li> <li>Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 1.6 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 5 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals, refer to NOTE 6 above.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect left hand pre-tensioner wiring harness connector YB209 from pre-tensioner.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· With TECH 2 still connected, select Body / SRS / Data Display and scroll to LEFT HAND PRE-TENSIONER LOOP RESISTANCE'.</li> <li>· Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 3.0 Ohms	<p>Replace left hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Remove Tool SD28280B from YB209.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 1 and left hand pre-tensioner connector YB209, circuit 351 (Blue/ Brown wire) for short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
6.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189/YB190 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 2 and left hand pre-tensioner connector YB209, circuit 352 (Red/Black wire) for a short to earth (refer to NOTES 1 and 4 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 51 - LEFT HAND PRE-TENSIONER CIRCUIT CAPACITANCE TOO HIGH

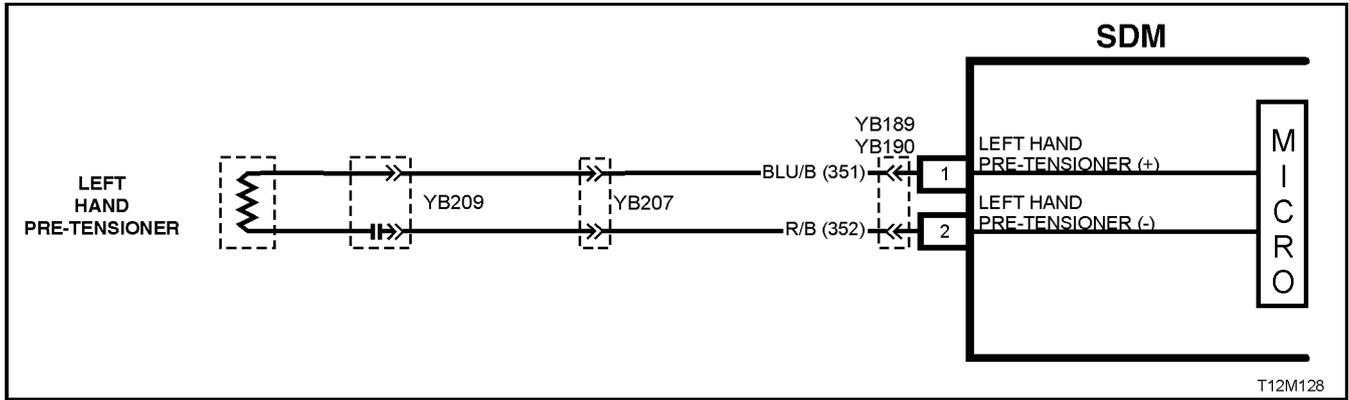


Figure 12M-108

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the left hand pre-tensioner circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 51 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 51 will set if the in-built capacitor in the SRS wiring harness connector YB209 is faulty.

When DTC 51 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 51. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 51. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 51 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 51 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 51 is set, the left hand pre-tensioner may not operate and therefore, the SRS pre-tensioner wiring harness, with connector YB209 (between left hand pre-tensioner and SRS connector YB207) must be replaced.

#### NOTE:

Before removing the SRS pre-tensioner wiring harness, take note of wiring harness routing and how it is retained to the front seat.

After the SRS pre-tensioner wiring harness, between the pre-tensioner and SRS wiring harness connector YB207 has been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After the wiring harness has been replaced, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.



## DTC 53 - LEFT HAND PRE-TENSIONER CIRCUIT RESISTANCE TOO HIGH

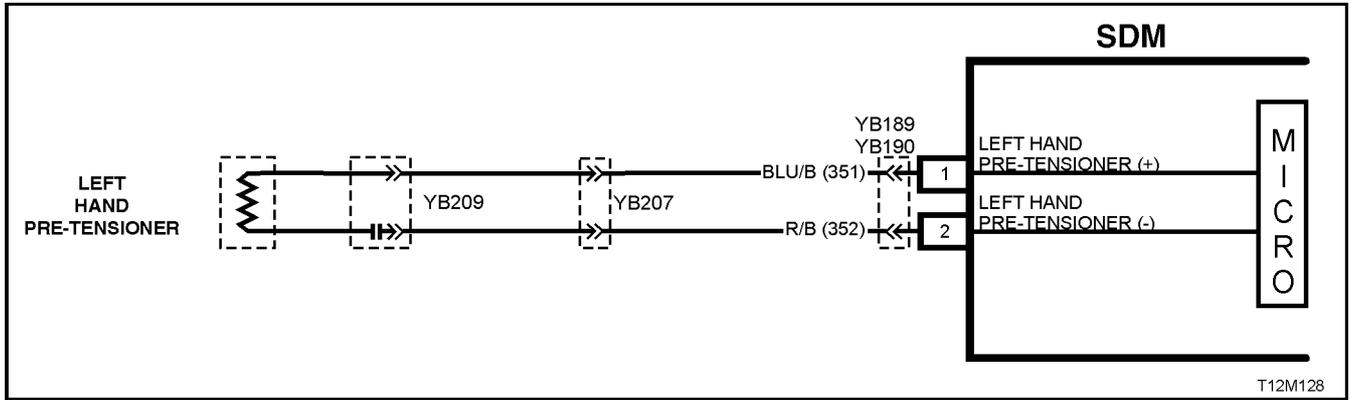


Figure 12M-110

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the left hand pre-tensioner circuit that is too high (greater than 8.4 ohm) for longer than 3 - 5 seconds, a current DTC 53 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 53 will set if circuits 351 or 352 (including the left hand pre-tensioner assembly) are open circuit.

When DTC 53 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 53. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 53. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 53 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 53 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 53 is set, dependent on where the fault is, the left hand pre-tensioner may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 53 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the left hand pre-tensioner assembly. If DTC 53 becomes a history DTC with dummy load connected, the system fault is in the left hand pre-tensioner assembly.
4. Checks if open circuit is in the SRS connector harness. If connector YB207 is disconnected and it's terminal's are bridged together, DTC 53 will become a history DTC if this connector harness is faulty.
5. Checks circuit 351 for open circuit.
6. Checks circuit 352 for open circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.

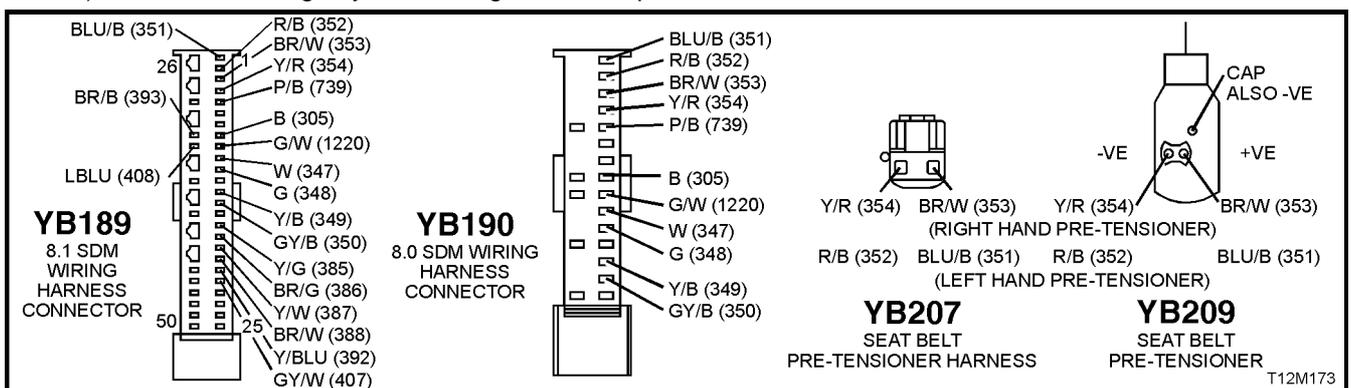


Figure 12M-111

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 53 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the left hand pre-tensioner wiring harness connector YB209.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 53 still current?</li> </ul>		Go to Step 4.	<p>Replace left hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB207 (located next to left hand front seat) from left hand pre-tensioner connector harness.</li> <li>· Reconnect battery.</li> <li>· Using a suitable jumper wire from KM-609, bridge terminals in connector YB207 together. <b>(NOTE:</b> This step may set a current DTC 54).</li> <li>· With TECH 2 still connected, select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Does DTC 53 become history?</li> </ul>		<p>Replace SRS connector harness (harness between left hand pre-tensioner and connector YB207).</p> <p>Clear all DTCs and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 1 and SRS wiring harness connector YB207, circuit 351 (Blue/Black wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
6.	<p>With SDM wiring harness connector YB189/YB190 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 2 and SRS wiring harness connector YB207, circuit 352 (Red/Black wire) for open (refer to NOTE 1 above).</p> <p>Is all OK?</p>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 54 - LEFT HAND PRE-TENSIONER CIRCUIT RESISTANCE TOO LOW

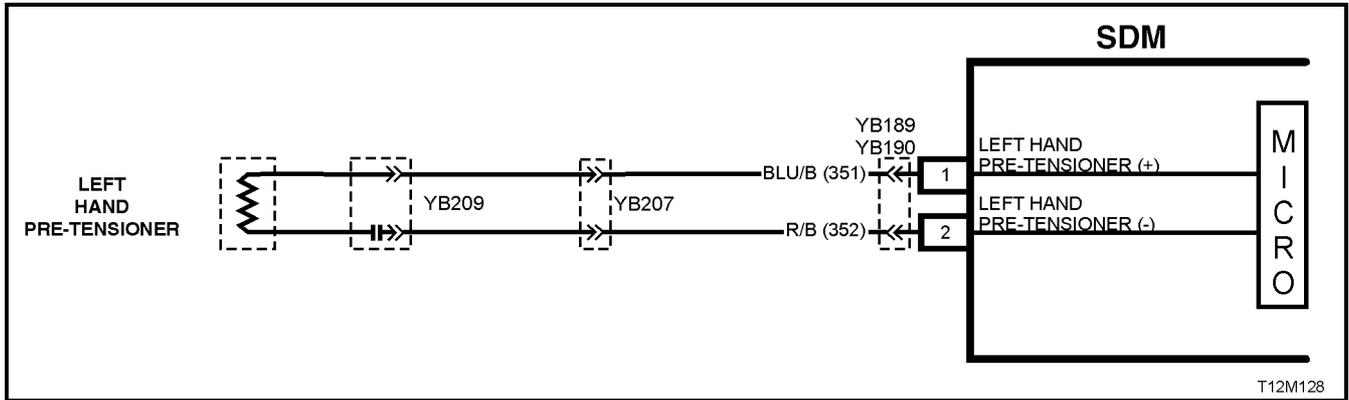


Figure 12M-112

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the left hand pre-tensioner circuit that is too low (less than 0.6 ohm) for longer than 3 - 5 seconds, a current DTC 54 will set (refer TO [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 54 will set if circuits 351 or 352, (including the pre-tensioner assembly) are shorted together.

When DTC 54 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 54. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 54. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 54 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 54 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 54 is set, dependent on where the fault is, the passenger's belt pre-tensioner may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 54 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the left hand pre-tensioner assembly. If DTC 54 becomes a history DTC with dummy load connected, the system fault is in the left hand pre-tensioner assembly.
4. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM) and SRS wiring harness connector YB209 for a short circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB209, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.

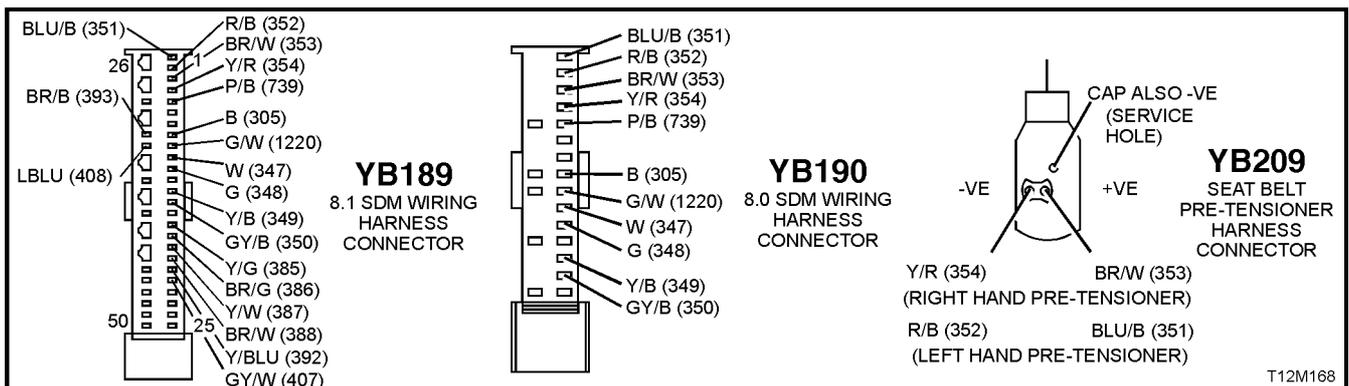


Figure 12M 113

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 54 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the left hand pre-tensioner wiring harness connector YB209.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 54 still current?</li> </ul>		Go to Step 4.	<p>Replace left hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Disconnect Tool No. SD28280B from SRS wiring harness connector YB209.</li> <li>· With SRS wiring harness connector YB209 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189/YB190, terminal 1, circuit 351 (Blue/Black wire) and terminal 2, circuit 352 (Red/Black wire) (refer to NOTES 1 and 3 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 351 and 352, between SDM wiring harness connector YB189/YB190 and YB209 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - LEFT HAND PRE-TENSIONER CIRCUIT POWER STAGE ERROR

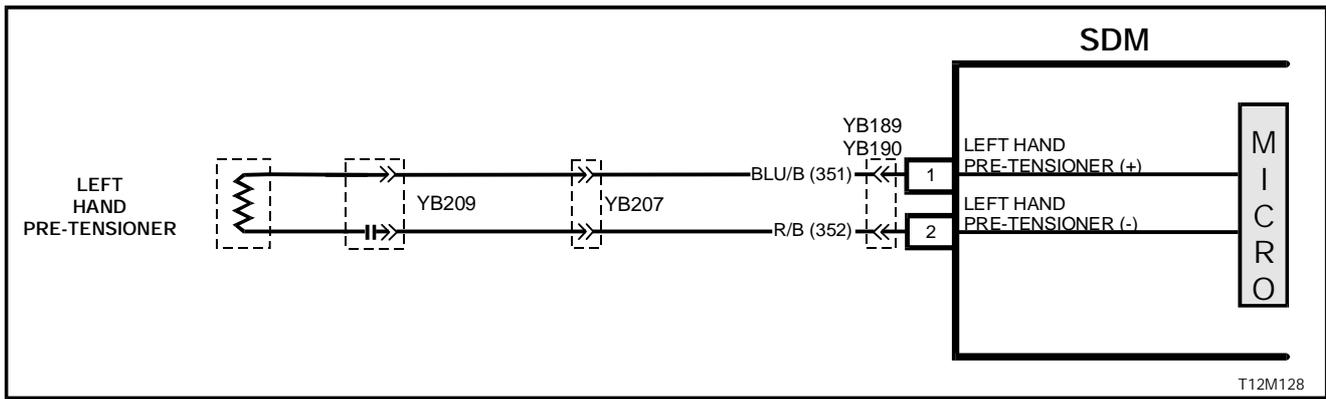


Figure 12M-114

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the Left Hand Pre-Tensioner Circuit power stage a current DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Left Hand Pre-Tensioner Circuit. If the SDM detects a problem with this circuit the associated Left Hand Pre-Tensioner Circuit DTC will be set and the DTC 247 Left Hand Pre-Tensioner Circuit Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error will set if a fault occurs in the Left Hand Pre-Tensioner, connector YB209 with the in-built capacitor, connector YB207, the SRS wiring harness, connector YB189/YB190 or SDM.

When a history DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error is cleared.

If a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage is set, dependent on where the fault is, the Left Hand Pre-Tensioner may not operate.

### ACTION REQUIRED

If DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error and a DTC 53 Left Hand Pre-Tensioner Circuit Resistance High are set, the diagnostics for a DTC 53 Left Hand Pre-Tensioner Circuit Resistance High should be carried out first.

If only a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the Left Hand Pre-Tensioner Circuit may cause a DTC 247 Left Hand Pre-Tensioner Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

**NOTE:** After the wiring harness has been replaced, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

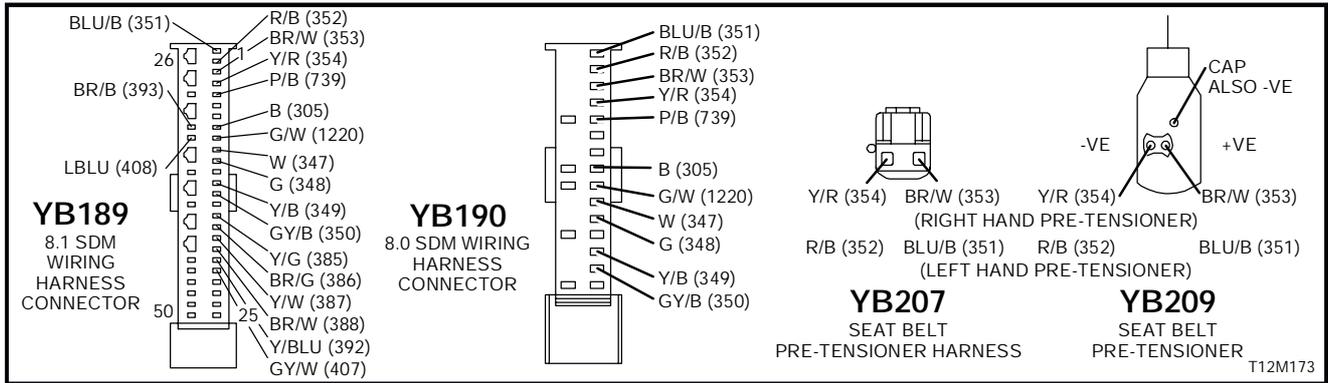
### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error is history code, and if any other Left Hand Pre-Tensioner Circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. If no other DTCs are set and there are no intermittents in the Left Hand Pre-Tensioner Circuit then the SDM should be replaced.

**NOTES ON DIAGNOSTIC CHART**

- For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
- Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-115**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is a DTC 247 Left Hand Pre-Tensioner Circuit Power Stage Error a history DTC, and are any other Left Hand Pre-Tensioner Circuit DTCs set?</li> </ul>		Go to other Left Hand Pre-Tensioner Circuit DTC diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 65 - RIGHT HAND PRE-TENSIONER CIRCUIT SHORT TO BATTERY

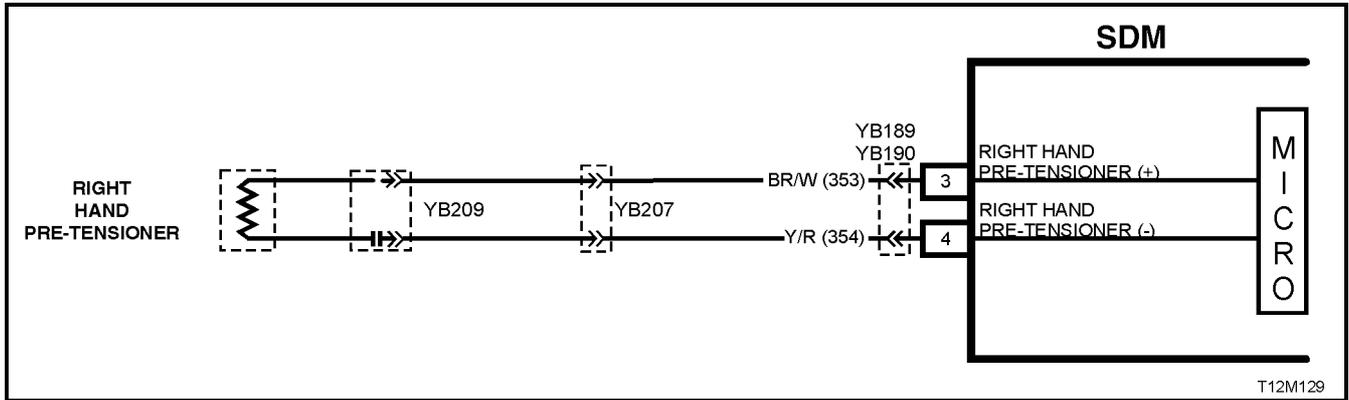


Figure 12M-116

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to battery supply is less than 5 kohms in either the positive and/or negative circuit for more than 3 - 5 seconds, a current DTC 65 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 65 will set if circuits 353 (right hand pre-tensioner positive side) and/or 354 (right hand pre-tensioner negative side) are shorted to battery +.

When DTC 65 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 65. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 65. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 65 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 65 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 65 is set, the SRS, including the right hand pre-tensioner, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 65 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuits 353 and 354 for a short to battery +.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB209, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open the harness.
5. If the fault can not be identified, the harness should be replaced.

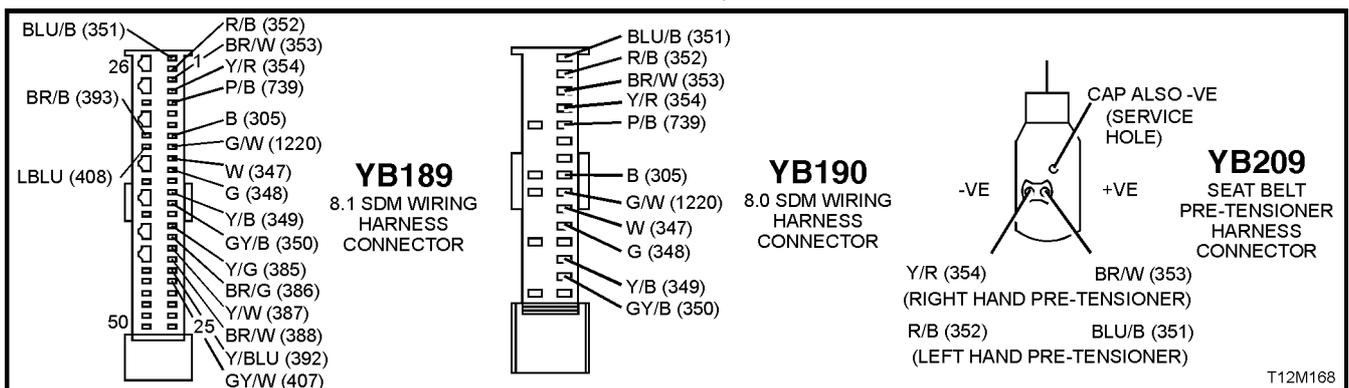


Figure 12M-117

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 65 current ?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals, refer to NOTE 5 above.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect right hand pre-tensioner wiring harness connector YB209 from pre-tensioner.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminals 3 and 4 and right hand pre-tensioner connector YB209, circuits 353 (Brown/White wire) and 354 (Yellow/Red wire) for short to battery + (refer to NOTES 1 and 3 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 66 - RIGHT HAND PRE-TENSIONER CIRCUIT SHORT TO EARTH

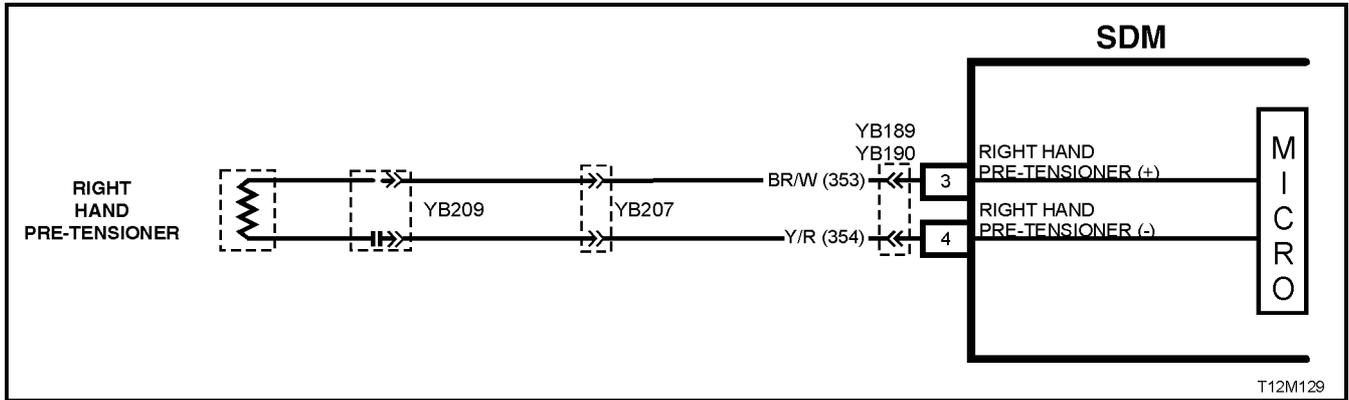


Figure 12M-118

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative circuit for more than 3 - 5 seconds, a current DTC 66 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 66 will set if circuits 353 (right hand pre-tensioner positive side) and/or 354 (right hand pre-tensioner negative side) are shorted to earth.

When DTC 66 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 66. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 66. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 66 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 66 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 66 is set, the SRS, including the right hand pre-tensioner, will still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to determine if DTC 66 is current or history.
2. TECH 2 in this mode should display approximately 1.6 - 6.4 ohms if the right hand pre-tensioner loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool SD28280B is a dummy load taking the place of the pre-tensioner assembly. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the pre-tensioner assembly.
5. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 3 and the right hand pre-tensioner connector YB209 for faults.
6. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM), terminal 4 and the right hand pre-tensioner connector YB209 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Refer to [Section 12N FUSES & WIRING HARNESSES](#) in this Service Information CD for SRS wiring harness routing.
4. Resistance cannot be measured between the two terminals in connector YB209 as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.
5. Wiring should be checked at point where TECH 2 screen display changed. If necessary, split open wiring harness.
6. If fault cannot be identified, the wiring harness should be replaced.

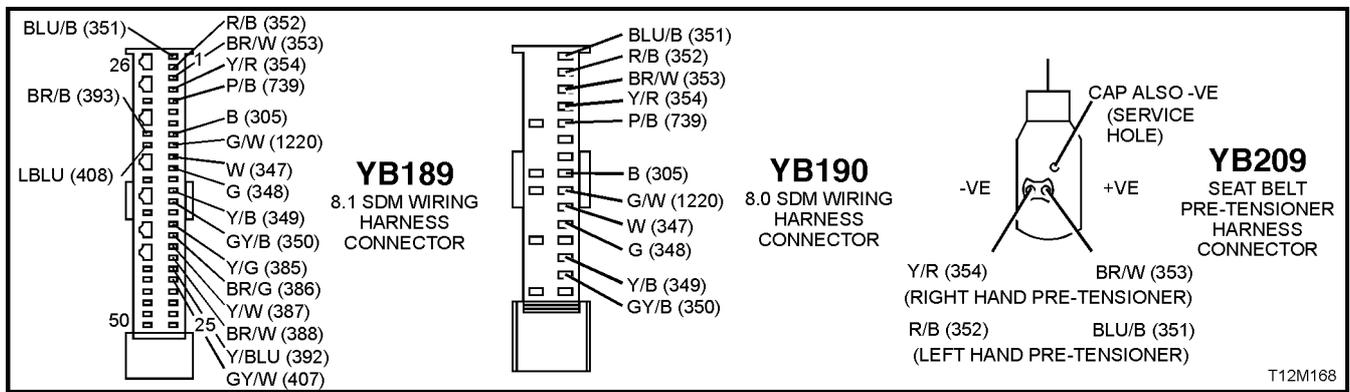


Figure 12M-119

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 66 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected to DLC, select Body / SRS / Data Display and scroll to RIGHT HAND PRE-TENSIONER LOOP RESISTANCE.</li> <li>Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 1.6 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the pre-tensioner while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 5 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals (refer to NOTE 6 above).</p> <p>Clear DTC and recheck system.</p>

<p><b>4.</b></p>	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect right hand pre-tensioner wiring harness connector YB209 from pre-tensioner.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· Reconnect battery.</li> <li>· With TECH 2 still connected, select Body / SRS / Data Display and scroll to RIGHT HAND PRE-TENSIONER LOOP RESISTANCE.</li> <li>· Is the resistance value displayed on TECH 2 as specified?</li> </ul>	<p>Approx. 3.0 Ohms</p>	<p>Replace right hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Go to Step 5.</p>
<p><b>5.</b></p>	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Remove Tool SD28280B from YB209.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 3 and right hand pre-tensioner connector YB209, circuit 353 (Brown/White wire) for short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Go to Step 6.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

6.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189/YB190 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 4 and right hand pre-tensioner connector YB209, circuit 354 (Yellow/Red wire) for a short to earth (refer to NOTES 1 and 4 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
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**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 67 - RIGHT HAND PRE-TENSIONER CIRCUIT CAPACITANCE TOO HIGH

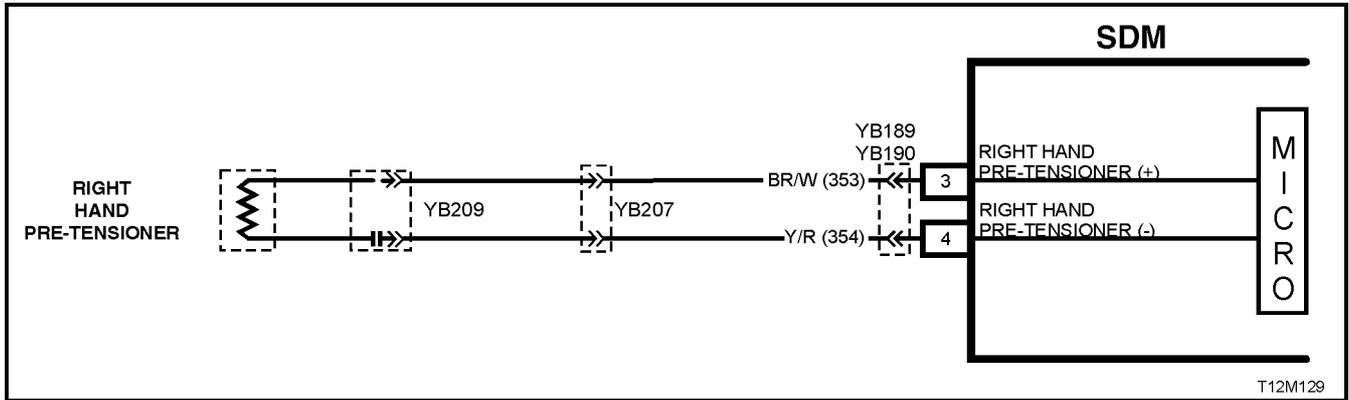


Figure 12M-120

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the right hand pre-tensioner circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 67 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 67 will set if the in-built capacitor in the SRS wiring harness connector YB209 is faulty.

When DTC 67 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 67. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 67. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 67 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 67 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 67 is set, the right hand pre-tensioner may not operate and therefore, the SRS pre-tensioner wiring harness, with connector YB209 (between right hand pre-tensioner and SRS connector YB207) must be replaced.

#### NOTE:

Before removing the SRS pre-tensioner wiring harness, take note of wiring harness routing and how it is retained to the front seat.

After the SRS pre-tensioner wiring harness, between the pre-tensioner and SRS wiring harness connector YB207 has been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After the wiring harness has been replaced, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

## DTC 68 - RIGHT HAND PRE-TENSIONER CIRCUIT CAPACITANCE TOO LOW

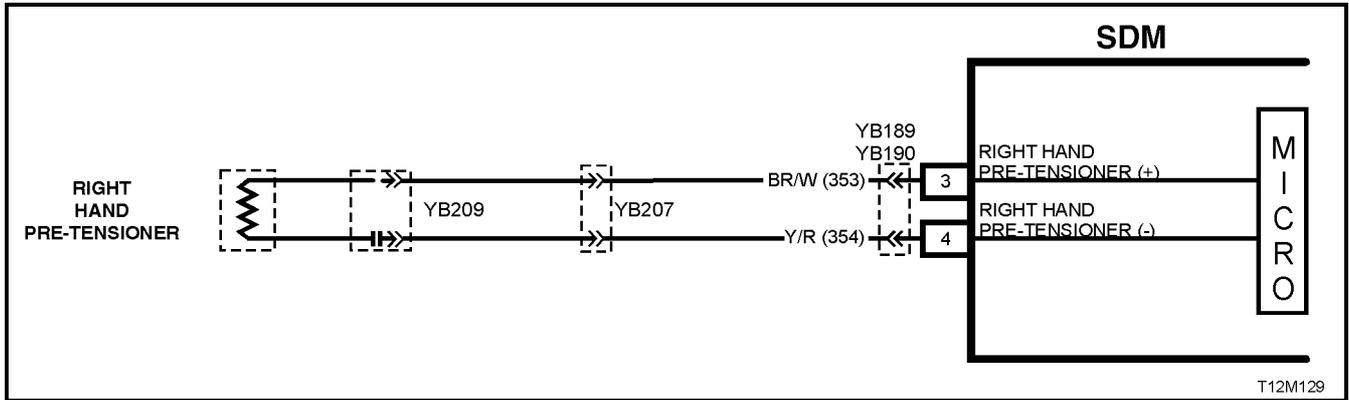


Figure 12M-121

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the right hand pre-tensioner circuit is too low (less than 390 nF) for longer than 3 - 5 seconds, a current DTC 68 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 68 will set if the in-built capacitor in the SRS wiring harness connector YB209 is faulty.

When DTC 68 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 68. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 68. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 68 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 68 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 68 is set, the right hand pre-tensioner may not operate and therefore, the SRS pre-tensioner wiring harness, with connector YB209 (between right hand pre-tensioner and SRS connector YB207) must be replaced.

#### NOTE:

Before removing the SRS pre-tensioner wiring harness, take note of wiring harness routing and how it is retained to the front seat.

After the SRS pre-tensioner wiring harness, between the pre-tensioner and SRS wiring harness connector YB207 has been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After the wiring harness has been replaced, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.



STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 69 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the right hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the right hand pre-tensioner wiring harness connector YB209.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 69 still current?</li> </ul>		Go to Step 4.	<p>Replace right hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB207 (located next to right hand front seat) from right hand pre-tensioner connector harness.</li> <li>· Reconnect battery.</li> <li>· Using a suitable jumper wire from KM-609, bridge terminals in connector YB207 together. <b>(NOTE:</b> This step may set a current DTC 70).</li> <li>· With TECH 2 still connected, select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Does DTC 69 become history?</li> </ul>		<p>Replace SRS connector harness (harness between right hand pre-tensioner and connector YB207).</p> <p>Clear all DTCs and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 3 and SRS wiring harness connector YB207, circuit 353 (Brown/White wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
6.	<p>With SDM wiring harness connector YB189/YB190 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189/YB190, terminal 4 and SRS wiring harness connector YB207, circuit 354 (Yellow / Red wire) for open (refer to NOTE 1 above).</p> <p>Is all OK?</p>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 70 - RIGHT HAND PRE-TENSIONER CIRCUIT RESISTANCE TOO LOW

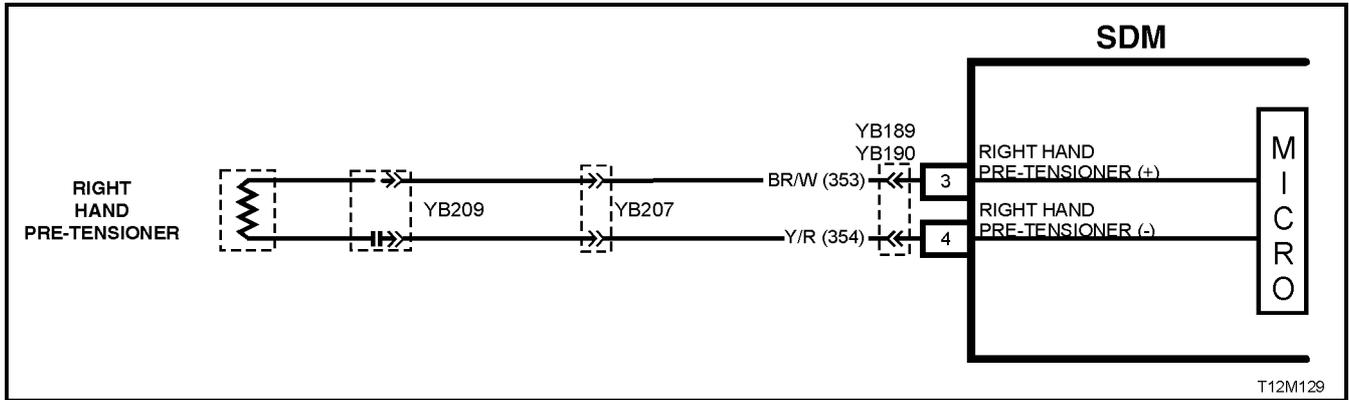


Figure 12M-124

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the right hand pre-tensioner circuit that is too low (less than 0.6 ohm) for longer than 3 - 5 seconds, a current DTC 70 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 70 will set if circuit 353 or 354, (including the pre-tensioner assembly) is shorted together.

When DTC 70 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 70. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 70. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 70 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 70 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 70 is set, dependent on where the fault is, the right hand belt pre-tensioner may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 70 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool SD28280B is a dummy load taking the place of the right hand pre-tensioner assembly. If DTC 70 becomes a history DTC with dummy load connected, the system fault is in the right hand pre-tensioner assembly.
4. This test checks the wiring between the SDM wiring harness connector YB189 (8.1 SDM) or YB190 (8.0 SDM) and SRS wiring harness connector YB209 for a short circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Resistance cannot be measured between the two terminals in connector YB209, as the in-built capacitor blocks measurement. Therefore, a 'service hole' is incorporated into the connector for fault tracing. Refer to [1.1 SYSTEM COMPONENTS, WIRING HARNESS](#) in this Section for more details on this type of connector.

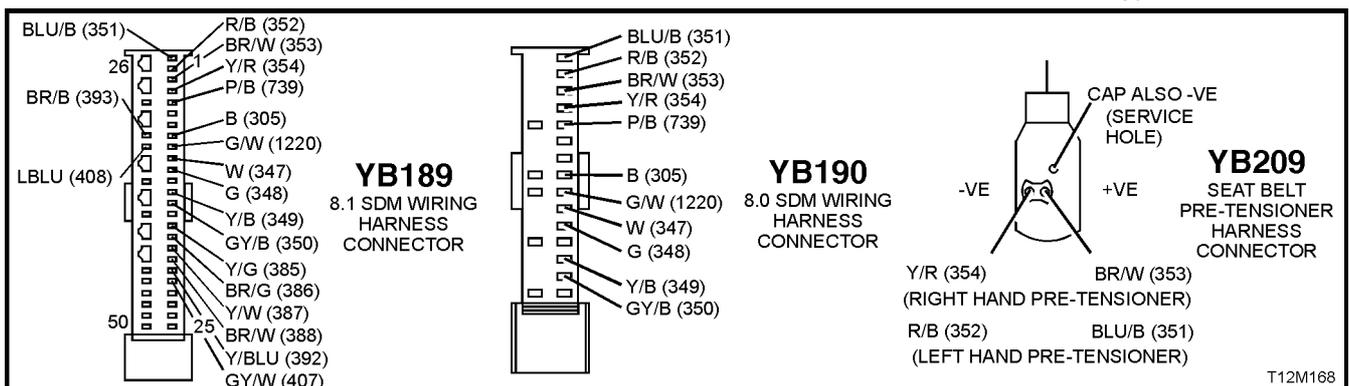


Figure 12M-125

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 70 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the right hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect the right hand pre-tensioner wiring harness connector YB209.</li> <li>· Connect Tool No. SD28280B to SRS wiring harness connector YB209.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 70 still current?</li> </ul>		Go to Step 4.	<p>Replace right hand pre-tensioner assembly, refer to Section 1A7 SEAT AND SEAT BELT ASSEMBLIES.</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189/YB190 from the SDM.</li> <li>· Disconnect Tool No. SD28280B from SRS wiring harness connector YB209.</li> <li>· With SRS wiring harness connector YB209 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189/YB190, terminal 3, circuit 353 (Brown/White wire) and terminal 4, circuit 354 (Yellow/Red wire) (refer to NOTES 1 and 3 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 353 and 354, between SDM wiring harness connector YB189/YB190 and YB209 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - RIGHT HAND PRE-TENSIONER CIRCUIT POWER STAGE ERROR

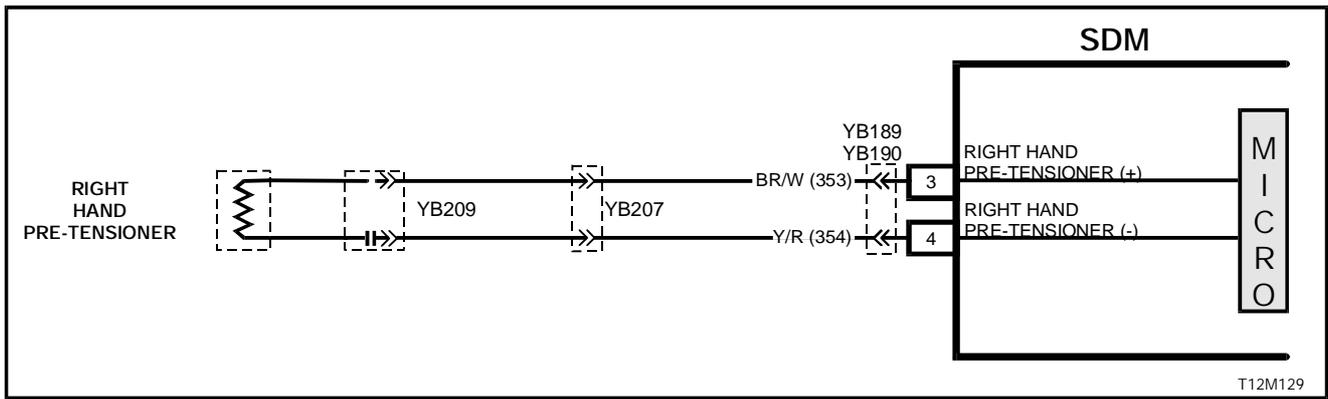


Figure 12M-126

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the Right Hand Pre-Tensioner Circuit power stage a current DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Right Hand Pre-Tensioner Circuit. If the SDM detects a problem with this circuit the associated Right Hand Pre-Tensioner Circuit DTC will be set and the DTC 247 Right Hand Pre-Tensioner Circuit Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error will set if a fault occurs in the Right Hand Pre-Tensioner, connector YB209 with the in-built capacitor, connector YB207, the SRS wiring harness, connector YB189/190 or SDM.

When a history DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error is cleared.

If a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage is set, dependent on where the fault is, the Right Hand Pre-Tensioner may not operate.

### ACTION REQUIRED

If DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error and a DTC 69 Right Hand Pre-Tensioner Circuit Resistance High are set, the diagnostics for a DTC 69 Right Hand Pre-Tensioner Circuit Resistance High should be carried out first.

If only a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the Right Hand Pre-Tensioner Circuit may cause a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

**NOTE:** After the wiring harness has been replaced, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

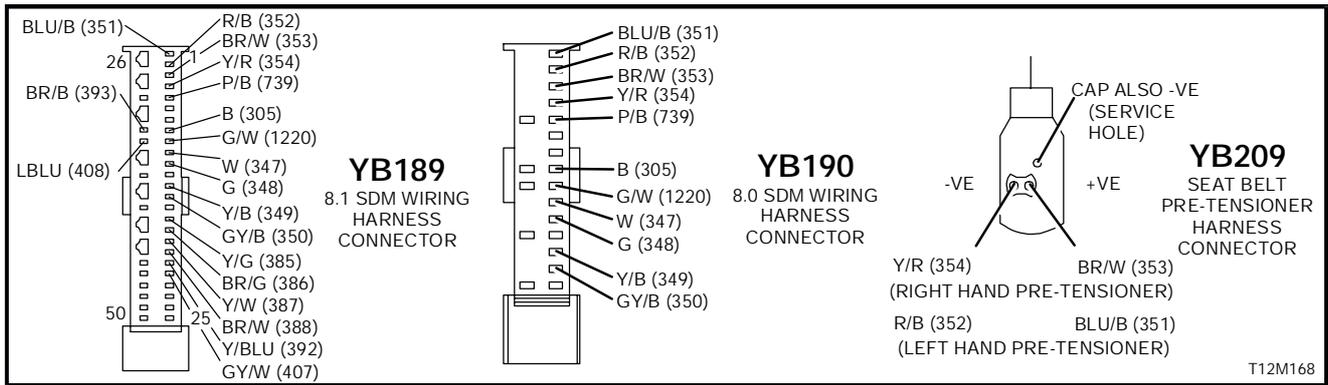
### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error is history code, and if any other Right Hand Pre-Tensioner Circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. If no other DTCs are set and there are no intermittents in the Right Hand Pre-Tensioner Circuit then the SDM should be replaced.

**NOTES ON DIAGNOSTIC CHART**

- For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
- Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-127**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is a DTC 247 Right Hand Pre-Tensioner Circuit Power Stage Error a history DTC, and are any other Right Hand Pre-Tensioner Circuit DTCs set?</li> </ul>		Go to other Right Hand Pre-Tensioner Circuit DTC diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the right hand pre-tensioner wiring harness connector YB209, while monitoring TECH 2 screen display.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			
<b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b>				

## DTC 81 - LEFT HAND SIDE AIR BAG CIRCUIT SHORT TO BATTERY

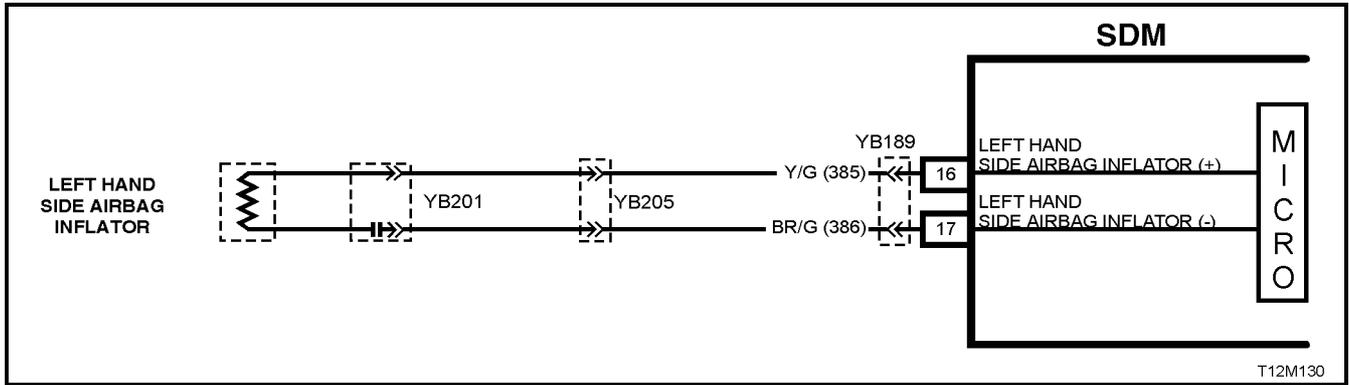


Figure 12M-128

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance to battery supply is less than 5 kohms in either the positive and/or negative circuit for more than 3 - 5 seconds, a current DTC 81 will set (refer [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 81 will set if circuits 385 (side air bag positive side) and/or 386 (side air bag negative side) are shorted to battery +.

When DTC 81 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 81. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 81. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 81 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 81 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 81 is set, the SRS, including the left hand side air bag, may still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 81 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the left hand side air bag inflator module assembly. If DTC 81 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. Checks circuit 385 and 386 for short to battery +.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 SRS WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

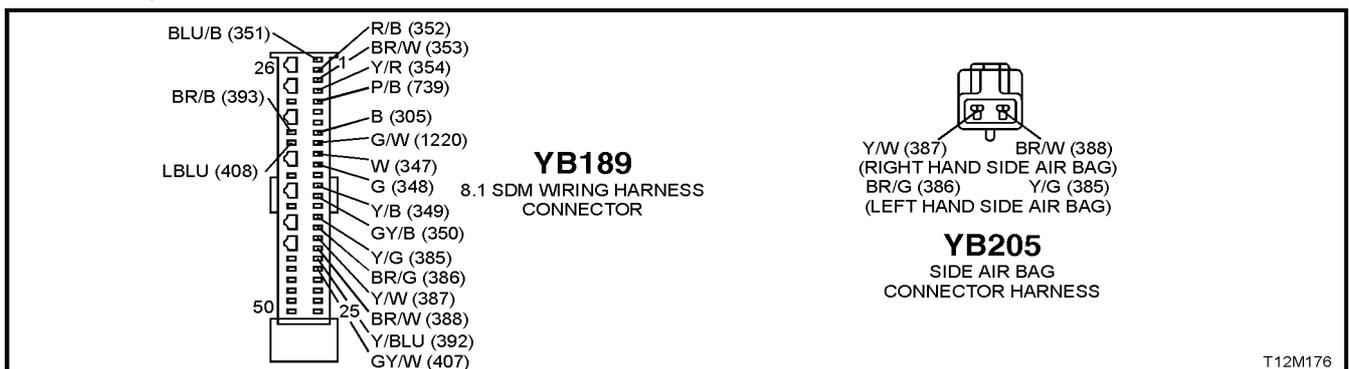


Figure 12M-129

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 81 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put left hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2 &amp; 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the left hand front seat) from the left hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select: Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 81 still current?</li> </ul>		Go to Step 4.	<p>Replace left hand side air bag and "pigtail" wiring harness assembly, refer 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer to NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminals 16 and 17 and SRS connector YB205, circuits 385 (Yellow/Green wire) and 386 (Brown/Green wire) for short to battery + (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 82 - LEFT HAND SIDE AIR BAG CIRCUIT SHORT TO EARTH

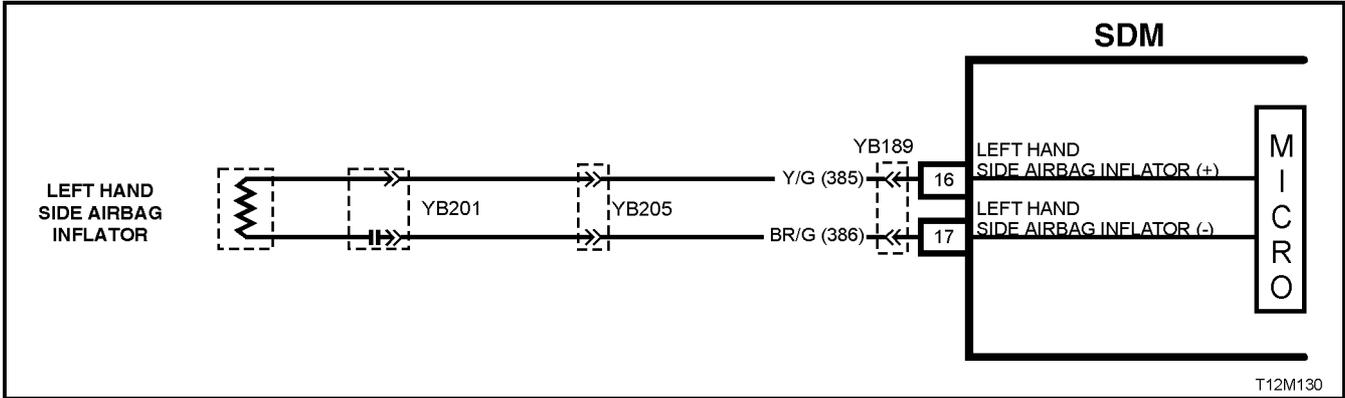


Figure 12M-130

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative inflator circuit for more than 3 - 5 seconds, a current DTC 82 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 82 will set if circuits 385 (side air bag positive side) and/or 386 (side air bag negative side) are shorted to earth.

When DTC 82 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 82. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 82. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 82 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 82 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 82 is set, the SRS, including the left hand side air bag, may still be operational.

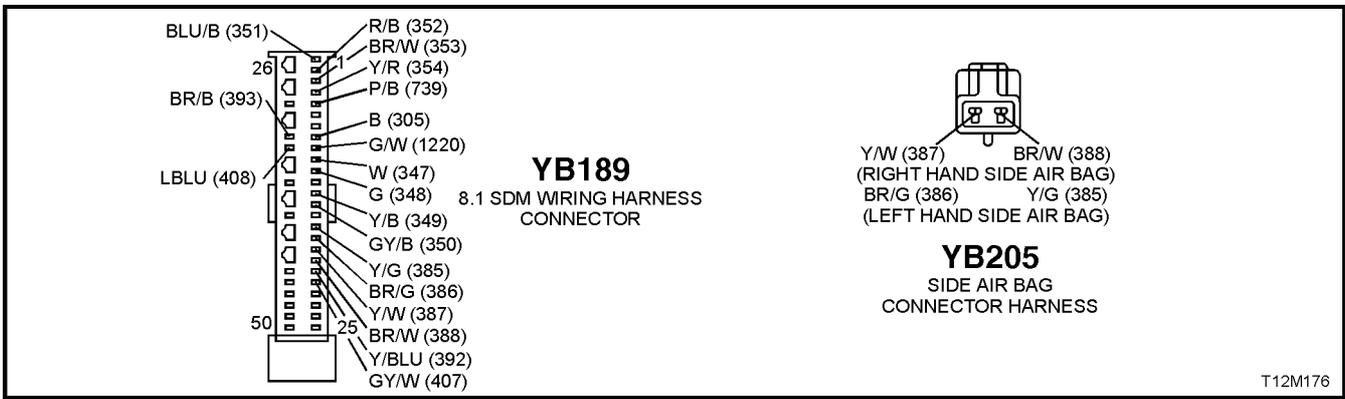
### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 82 is current or history.
2. TECH 2 in this mode should display approximately 1.6 - 6.4 ohms if the passenger's air bag loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
6. This test checks the wiring between the SDM wiring harness connector YB189, terminal 16 and the left hand side air bag inflator module connector YB205 for faults.
7. This test checks the wiring between the SDM wiring harness connector YB189, terminal 17 and the left hand side air bag inflator module connector YB205 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that runs through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.



T12M176

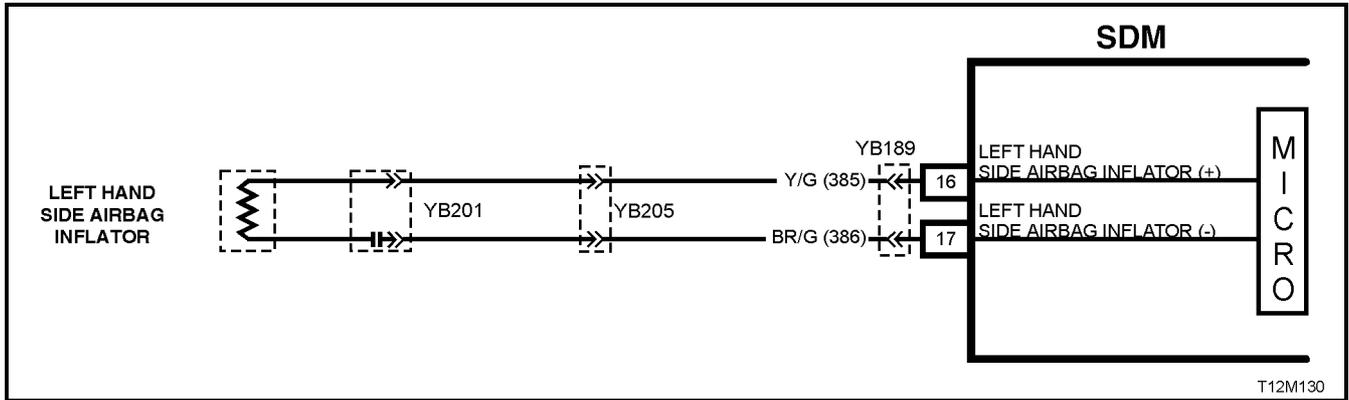
Figure 12M-131

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 82 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected to DLC, select Body / SRS / Data Display and scroll to LEFT HAND SIDE AIR BAG LOOP RESISTANCE.</li> <li>Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 1.6 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put left hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the left hand front seat) from the left hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Data Display and scroll to LEFT HAND SIDE AIR BAG LOOP RESISTANCE.</li> <li>· Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 2.0 Ohms	<p>Replace left hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer to NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Remove Tool AU485 from YB205.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 16 and SRS connector YB205, circuit 385 (Yellow/Green wire) for short to earth (refer NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 7.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
6.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 17 and SRS connector YB205, circuit 386 (Brown/ Green wire) for a short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 83 - LEFT HAND SIDE AIR BAG CIRCUIT CAPACITANCE TOO HIGH



### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the left hand side air bag circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 83 will set (refer [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 83 will set if the in-built capacitor in the SRS wiring harness connector YB201 is faulty.

When DTC 83 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 83. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 83. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 83 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 83 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 83 is set, the left hand side air bag may not operate and therefore, the SRS side air bag and 'pigtail' wiring harness assembly must be replaced. Refer to [2.3 SIDE AIR BAG MODULE ASSEMBLY](#) in this Section for the correct procedure on replacing the side air bag and 'pigtail' wiring harness connector.

#### NOTE:

Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted (this includes the capacitor in connector YB201). If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

After the SRS side air bag and 'pigtail' wiring harness assembly have been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

## DTC 84 - LEFT HAND SIDE AIR BAG CIRCUIT CAPACITANCE TOO LOW

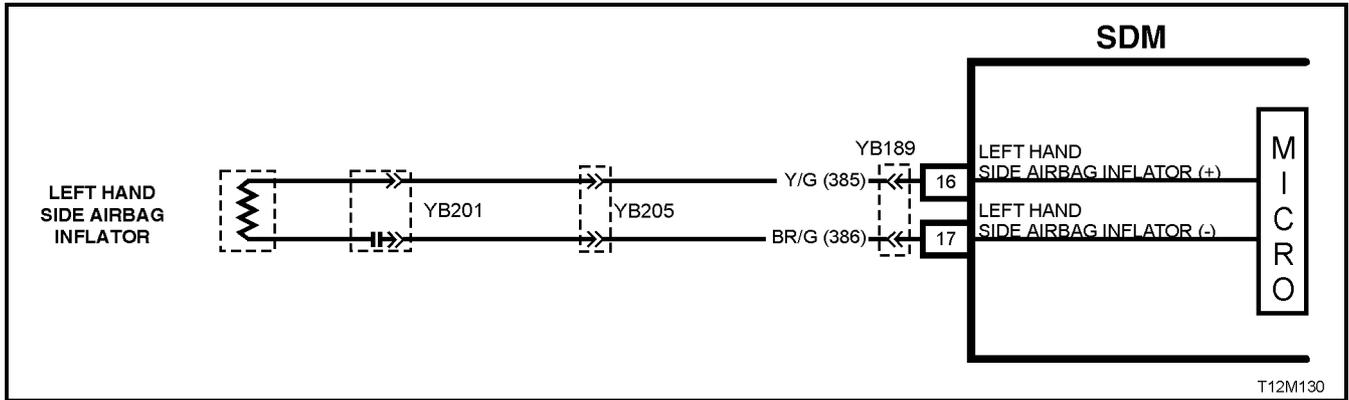


Figure 12M-133

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the left hand side air bag circuit is too low (less than 390 nF) for longer than 3 - 5 seconds, a current DTC 84 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 84 will set if the in-built capacitor in the SRS wiring harness connector YB201 is faulty.

When DTC 84 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 84. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 84. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 84 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 84 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 84 is set, the left hand side air bag may not operate and therefore, the SRS side air bag and 'pigtail' wiring harness assembly must be replaced. Refer to [2.3 SIDE AIR BAG MODULE ASSEMBLY](#) in this Section for the correct procedure on replacing the side air bag and 'pigtail' wiring harness connector.

#### NOTE:

Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted (this includes the capacitor in connector YB201). If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

After the SRS side air bag and 'pigtail' wiring harness assemblies have been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure the wiring harness does not foul with any of the seat components.

## DTC 85 - LEFT HAND SIDE AIR BAG CIRCUIT RESISTANCE TOO HIGH

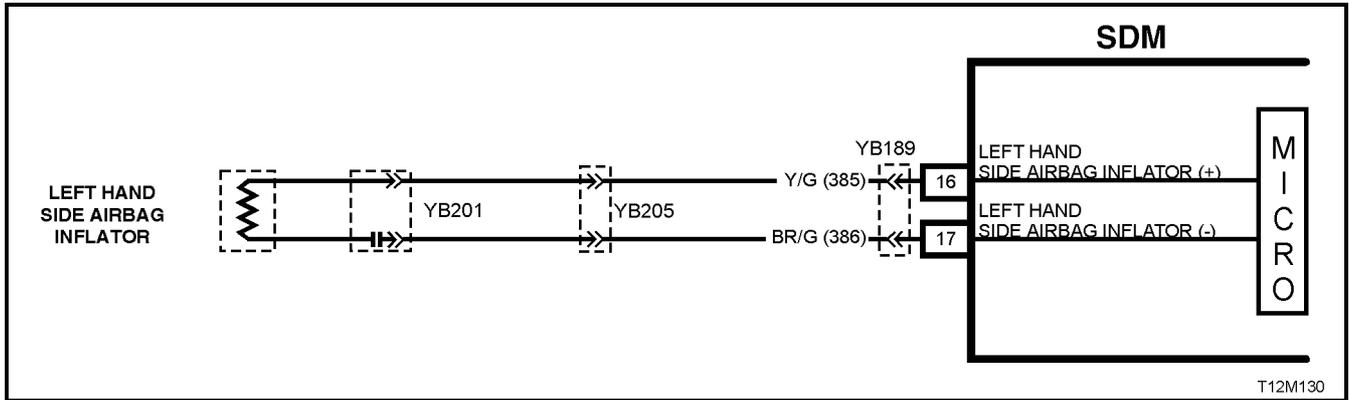


Figure 12M-134

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the left hand side air bag circuit that is too high (greater than 8.4 ohm for longer than 3 - 5 seconds, a current DTC 85 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 85 will set if circuits 385 or 386 (including the side air bag inflator module) are open circuit.

When DTC 85 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 85. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 85. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 85 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 85 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 85 is set, dependent on where the fault is, the left hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 85 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If DTC 85 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. Checks circuit 385 for open circuit.
5. Checks circuit 386 for open circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.

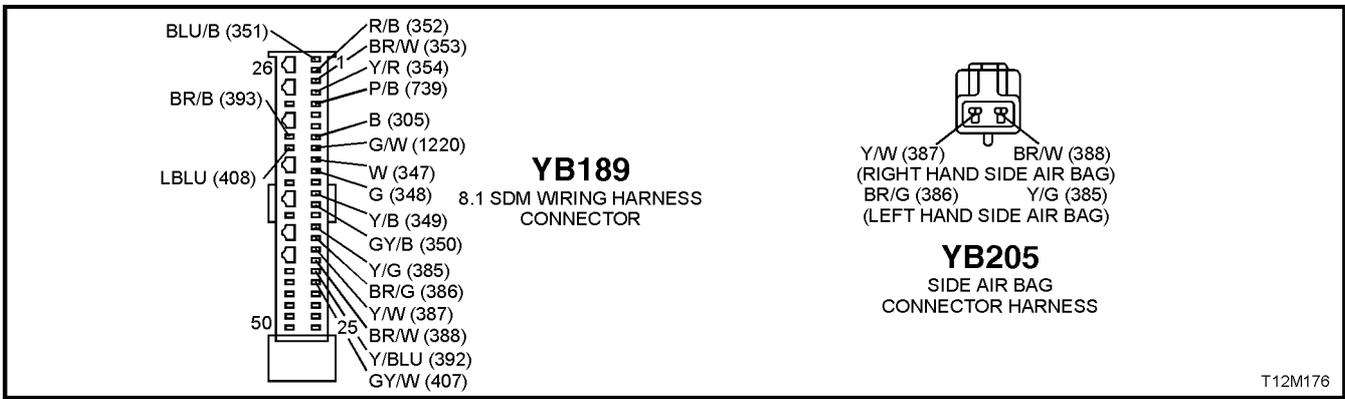


Figure 12M-135

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is DTC 85 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put left hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the left hand front seat) from the left hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information</li> <li>· Is DTC 85 still current?</li> </ul>		Go to Step 4.	<p>Replace left hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 16 and SRS wiring harness connector YB205, circuit 385 (Yellow/Green wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 5.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
5.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 17 and SRS wiring harness connector YB205, circuit 386 (Brown / Green wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 86 - LEFT HAND SIDE AIR BAG CIRCUIT RESISTANCE TOO LOW

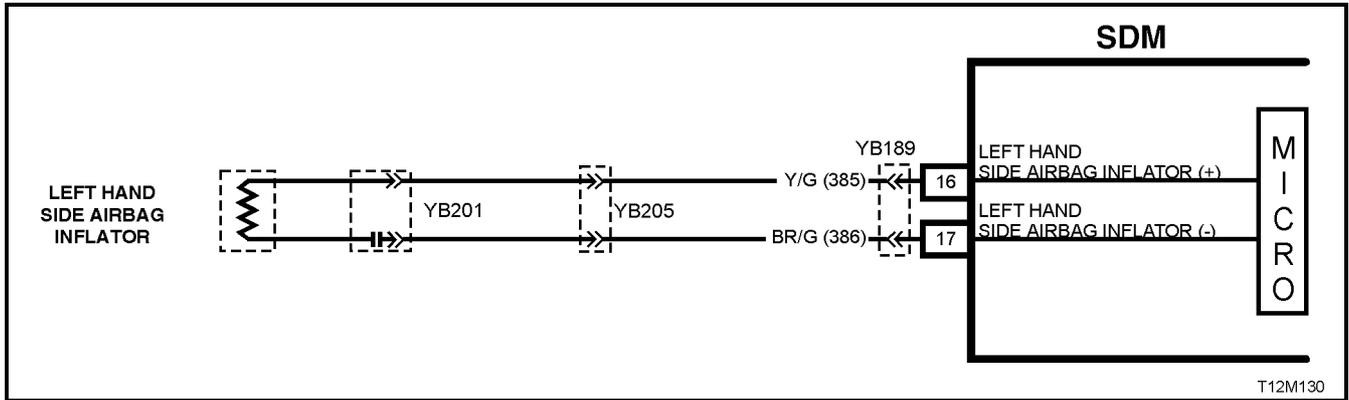


Figure 12M-136

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the left hand side air bag circuit that is too low (less than 0.6 ohm) for longer than 3 - 5 seconds, a current DTC 86 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 86 will set if circuits 385 or 386, (including the side air bag inflator module assembly) are shorted together.

When DTC 86 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 86. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 86. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 86 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 86 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 86 is set, dependent on where the fault is, the left hand side air bag may not operate.

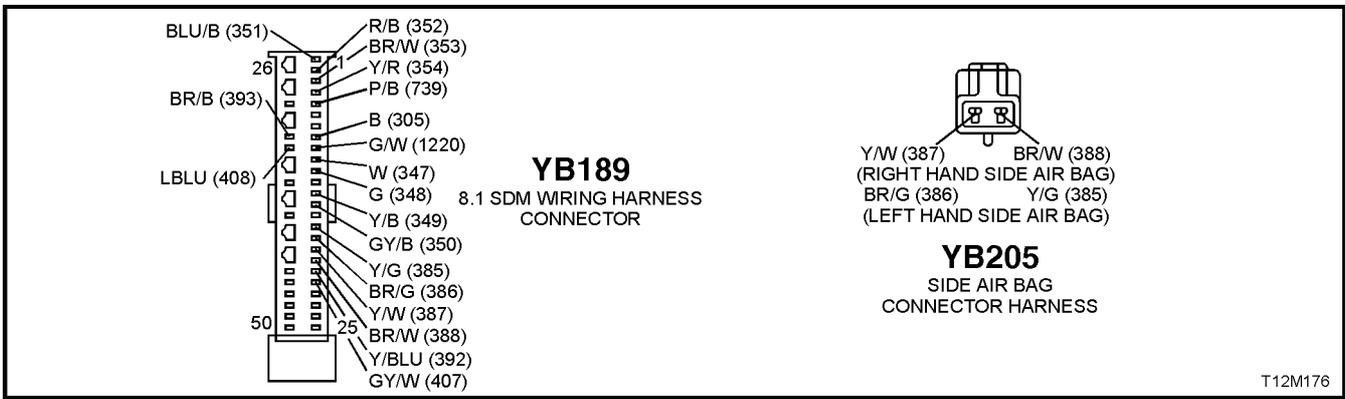
### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 86 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If DTC 85 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. This test checks the wiring between the SDM wiring harness connector YB189 and SRS wiring harness connector YB205 for a short circuit..

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.



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Figure 12M-137

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is DTC 86 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put left hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the left hand front seat) from the left hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information</li> <li>· Is DTC 86 still current?</li> </ul>		Go to Step 4.	<p>Replace left hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Disconnect Tool No. AU485 from SRS wiring harness connector YB205.</li> <li>· With SRS wiring harness connector YB205 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189, terminal 17, circuit 386 (Brown/Green wire) and terminal 16, circuit 385 (Yellow/Green wire) (refer to NOTES 1 and 3 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 386 and 385, between SDM wiring harness connector YB189 and YB205 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - LEFT HAND SIDE IMPACT AIR BAG CIRCUIT POWER STAGE ERROR

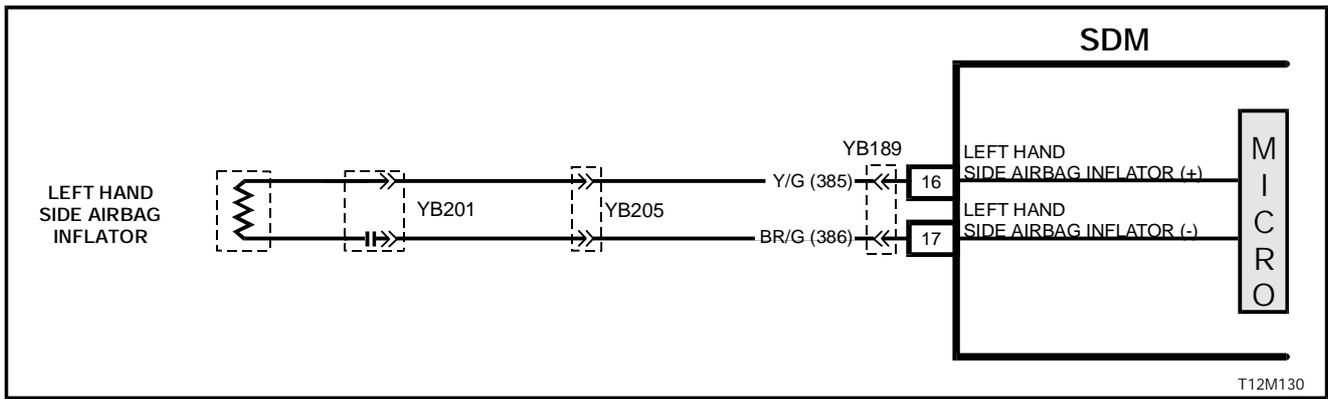


Figure 12M-138

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the Left Hand Side Impact Air Bag Circuit power stage a current DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Left Hand Side Impact Air Bag Circuit. If the SDM detects a problem with this circuit the associated Left Hand Side Impact Air Bag Circuit DTC will be set and the DTC 247 Left Hand Side Impact Air Bag Circuit Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error will set if a fault occurs in the Left Hand Side Impact Air Bag, connector YB201 with the in-built capacitor, connector YB205, the SRS wiring harness, connector YB189/190 or SDM.

When a history DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error is cleared.

If a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage is set, dependent on where the fault is, the Right Hand Pre-Tensioner may not operate.

### ACTION REQUIRED

If DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error and a DTC 85 Left Hand Side Impact Air Bag Circuit Resistance High are set, the diagnostics for a DTC 85 Left Hand Side Impact Air Bag Circuit Resistance High should be carried out first.

If only a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the Left Hand Side Impact Air Bag Circuit may cause a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

**NOTE:** After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure the wiring harness does not foul with any of the seat components.

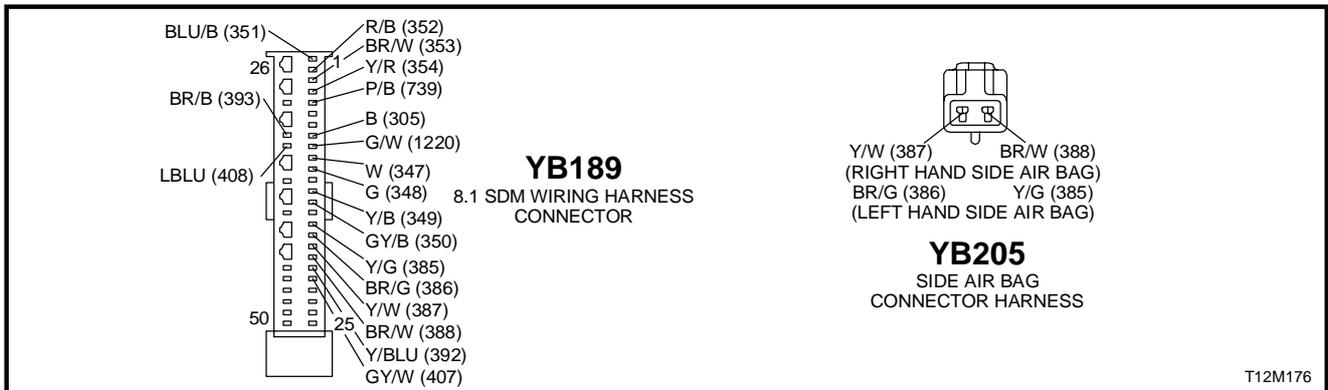
### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error is history code, and if any other Left Hand Side Impact Air Bag Circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. If no other DTCs are set and there are no intermittents in the Left Hand Side Impact Air Bag Circuit then the SDM should be replaced.

**NOTES ON DIAGNOSTIC CHART**

1. For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
2. Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-139**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>• Install TECH 2 to DLC.</li> <li>• Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>• Is a DTC 247 Left Hand Side Impact Air Bag Circuit Power Stage Error a history DTC, and are any other Left Hand Side Impact Air Bag Circuit DTCs set?</li> </ul>		Go to other Left Hand Side Impact Air Bag Circuit DTC diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>• With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>• Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put left hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness, at all accessible locations between the SDM and the side impact air bag wiring harness connector YB205.</li> <li>• Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>• Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			
<b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b>				

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## DTC 97 - RIGHT HAND SIDE AIR BAG CIRCUIT SHORT TO BATTERY

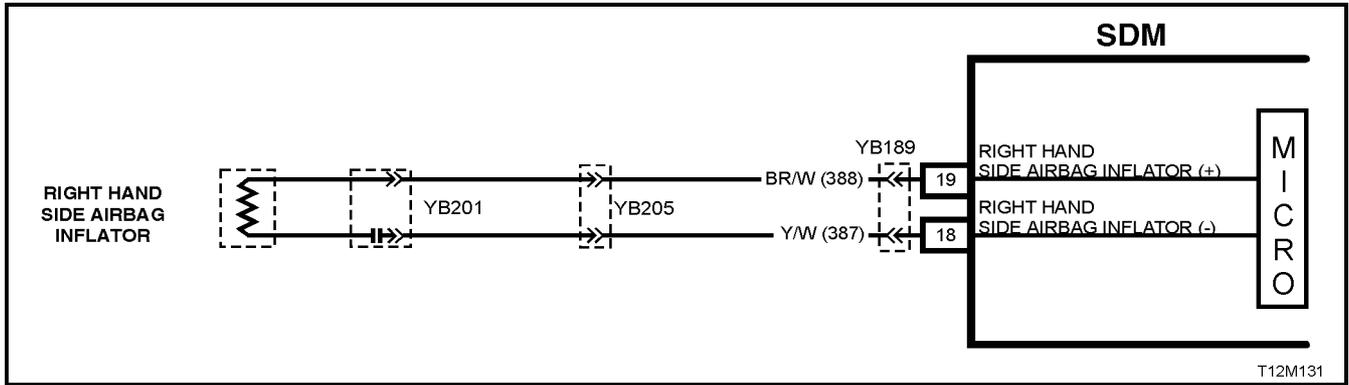


Figure 12M-140

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance to battery supply is less than 5 kohms in either the positive and/or negative circuit for more than 3 - 5 seconds, a current DTC 97 will set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 97 will set if circuits 388 (side air bag positive side) and/or 387 (side air bag negative side) are shorted to battery +.

When DTC 97 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 97. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 97. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 97 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 97 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 97 is set, the SRS, including the right hand side air bag, may still be operational.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 97 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the right hand side air bag inflator module assembly. If DTC 97 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. Checks circuit 388 and 387 for short to battery +.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.7 SRS WIRING REPAIR** in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

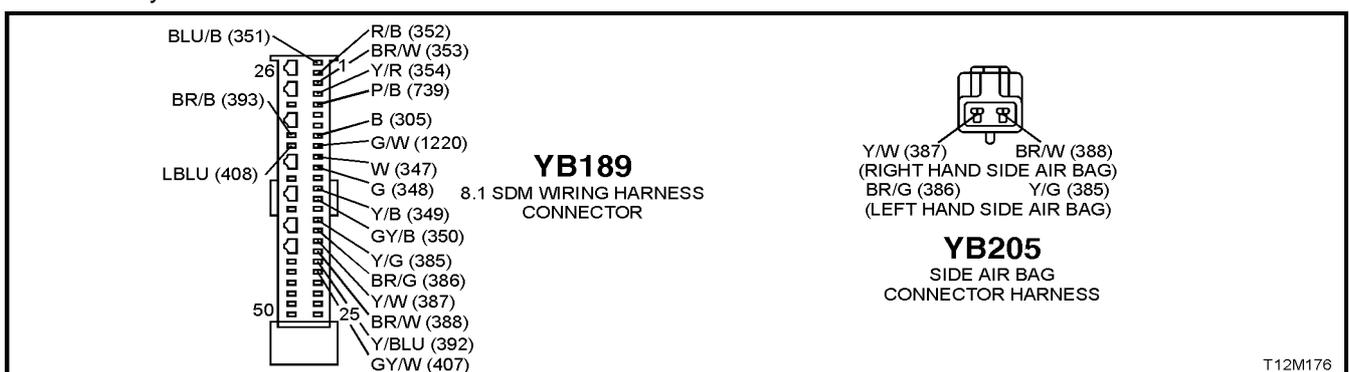


Figure 12M-141

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Connect TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 97 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put right hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 &amp; 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the right hand front seat) from the left hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select: Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 97 still current?</li> </ul>		Go to Step 4.	<p>Replace right hand side air bag and "pigtail" wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer to NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Reconnect battery.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminals 16 and 17 and SRS connector YB205, circuits 385 (Yellow/Green wire) and 386 (Brown/Green wire) for short to battery + (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 98 - RIGHT HAND SIDE AIR BAG CIRCUIT SHORT TO EARTH

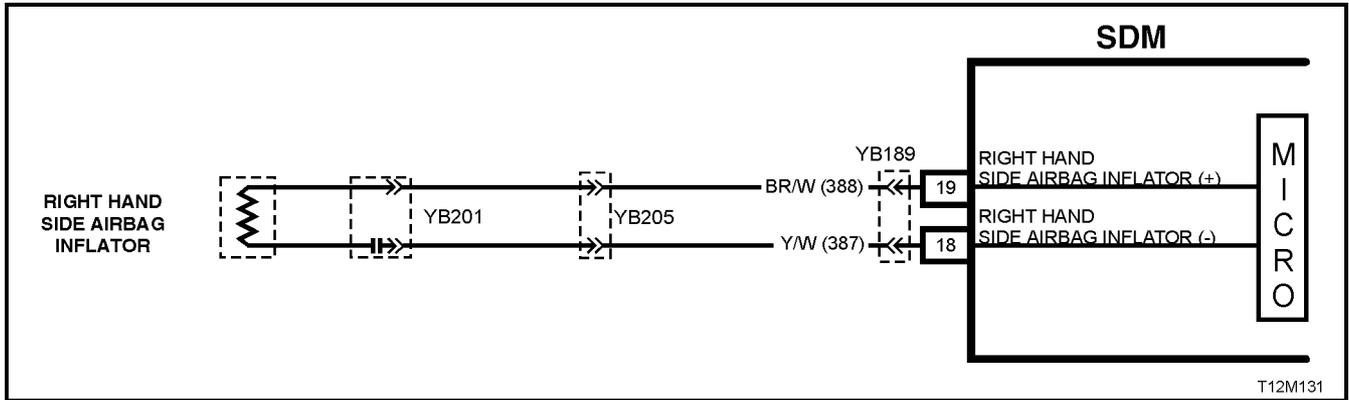


Figure 12M-142

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SDM detects a resistance to earth of less than 3 kohms in either the positive or negative inflator circuit for more than 3 - 5 seconds, a current DTC 98 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 98 will set if circuits 388 (side air bag positive side) and/or 387 (side air bag negative side) are shorted to earth.

When DTC 98 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 98. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 98. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 98 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 98 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 98 is set, the SRS, including the right hand side air bag, may still be operational.

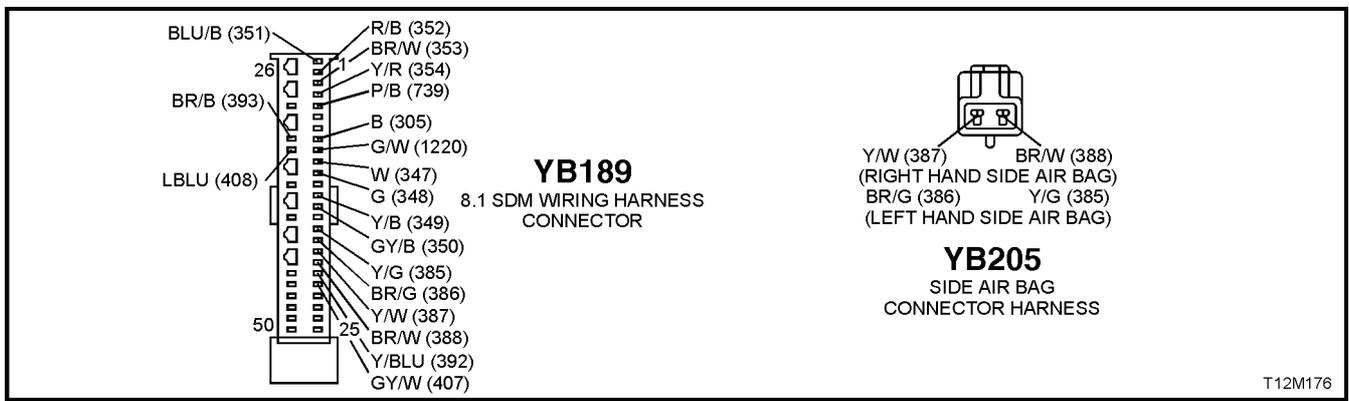
### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 98 is current or history.
2. TECH 2 in this mode should display approximately 1.6 - 6.4 ohms if the passenger's air bag loop circuit is OK.
3. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
4. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If TECH 2 displays the correct resistance of the dummy load, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
6. This test checks the wiring between the SDM wiring harness connector YB189, terminal 18 and the right hand side air bag inflator module connector YB205 for faults.
7. This test checks the wiring between the SDM wiring harness connector YB189, terminal 19 and the right hand side air bag inflator module connector YB205 for faults.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.



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Figure 12M-143

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Connect TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Does TECH 2 display DTC 98 as a Current DTC?</li> </ul>		Go to Step 2.	Go to Step 3.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected to DLC, select Body / SRS / Data Display and scroll to RIGHT HAND SIDE AIR BAG LOOP RESISTANCE.</li> <li>Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 1.6 - 6.4 Ohms	Go to Step 3.	Go to Step 4.
3.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put right hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the right hand front seat) from the right hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Data Display and scroll to RIGHT HAND SIDE AIR BAG LOOP RESISTANCE'.</li> <li>· Is the resistance value displayed on TECH 2 as specified?</li> </ul>	Approx. 2.0 Ohms	<p>Replace right hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	Go to Step 5.
5.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Remove Tool AU485 from YB205.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 18 and SRS connector YB205, circuit 387 (Yellow/White wire) for short to earth (refer NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 6.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
6.	<ul style="list-style-type: none"> <li>• With SDM wiring harness connector YB189 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 19 and SRS connector YB205, circuit 388 (Brown/ White wire) for a short to earth (refer to NOTE 1 above).</li> <li>• Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 99 - RIGHT HAND SIDE AIR BAG CIRCUIT CAPACITANCE TOO HIGH

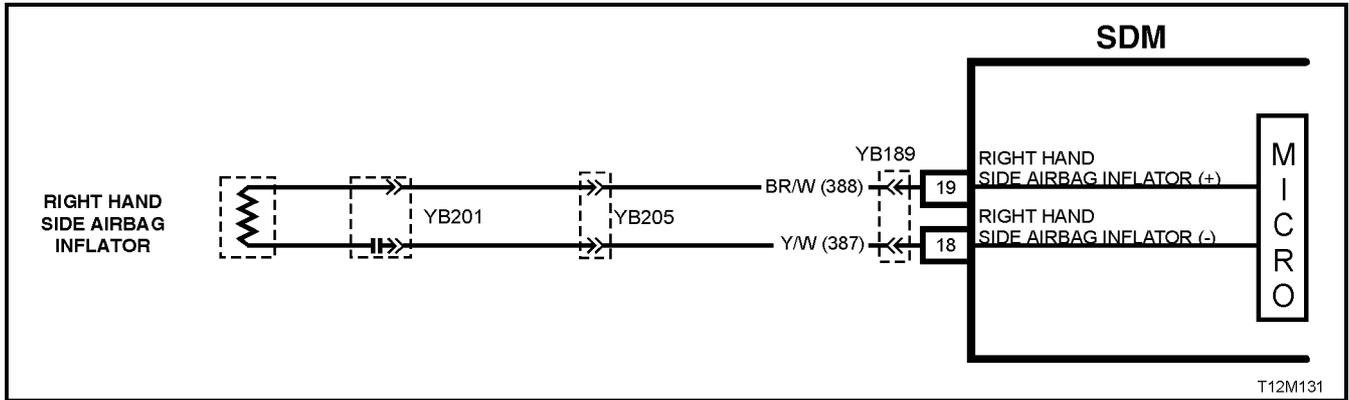


Figure 12M-144

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the right hand side air bag circuit is too high (greater than 550 nF) for longer than 3 - 5 seconds, a current DTC 99 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 99 will set if the in-built capacitor in the SRS wiring harness connector YB201 is faulty.

When DTC 99 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 99. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 99. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 99 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 99 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 99 is set, the right hand side air bag may not operate and therefore, the SRS side air bag and 'pigtail' wiring harness assembly must be replaced. Refer to [2.3 SIDE AIR BAG MODULE ASSEMBLY](#) in this Section for the correct procedure on replacing the side air bag and 'pigtail' wiring harness connector.

#### NOTE:

Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted (this includes the capacitor in connector YB201). If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

After the SRS side air bag and 'pigtail' wiring harness assemblies have been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

## DTC 100 - RIGHT HAND SIDE AIR BAG CIRCUIT CAPACITANCE TOO LOW

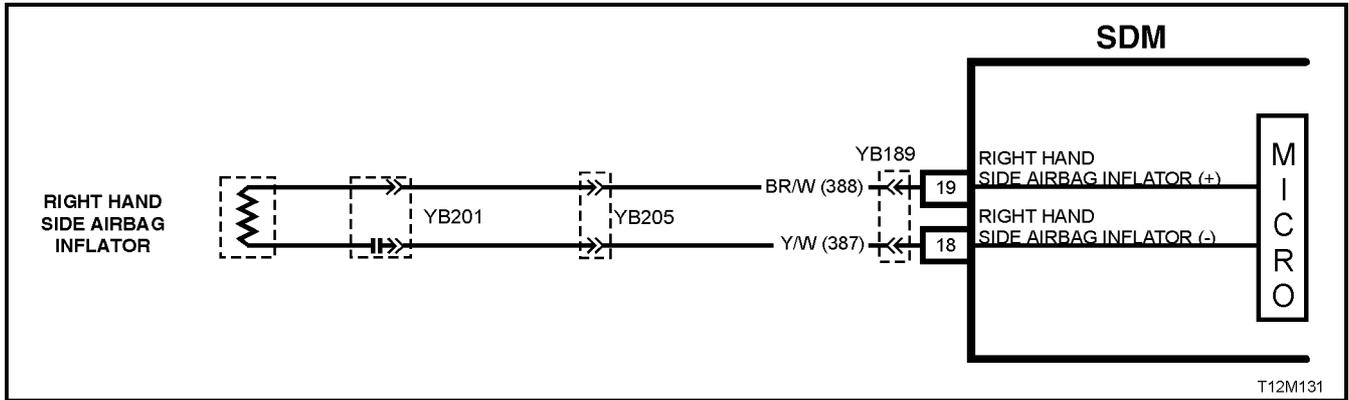


Figure 12M-145

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects the capacitance in the right hand side air bag circuit is too low (less than 390 nF) for longer than 3 - 5 seconds, a current DTC 100 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 100 will set if the in-built capacitor in the SRS wiring harness connector YB201 is faulty.

When DTC 100 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 100. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 100. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 100 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 100 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

### ACTION REQUIRED

If DTC 100 is set, the right hand side air bag may not operate and therefore, the SRS side air bag and 'pigtail' wiring harness assembly must be replaced. Refer to [2.3 SIDE AIR BAG MODULE ASSEMBLY](#) in this Section for the correct procedure on replacing the side air bag and 'pigtail' wiring harness connector.

#### NOTE:

Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted (this includes the capacitor in connector YB201). If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.

After the SRS side air bag and 'pigtail' wiring harness assemblies have been replaced, ensure all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

#### NOTE:

After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure that the wiring harness does not foul with any of the seat components.

## DTC 101 - RIGHT HAND SIDE AIR BAG CIRCUIT RESISTANCE TOO HIGH

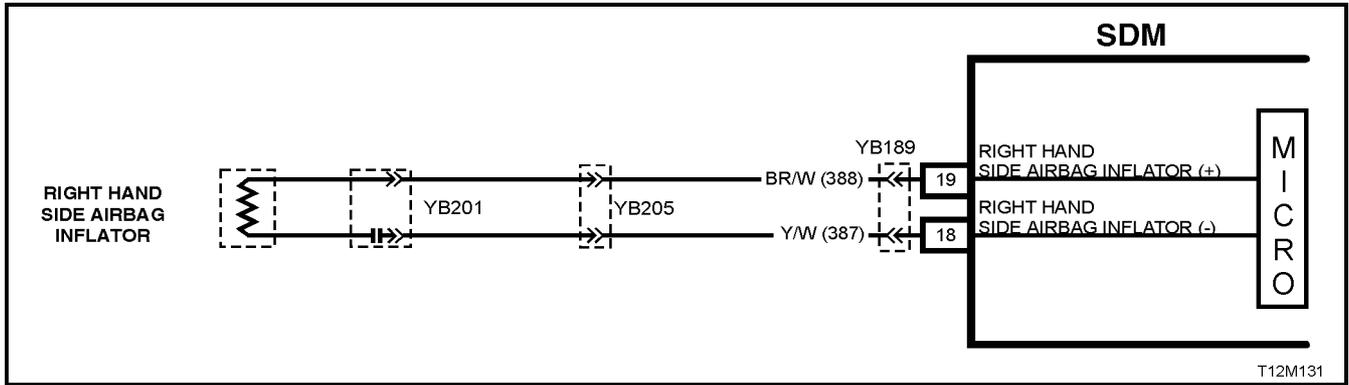


Figure 12M-146

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the right hand side air bag circuit that is too high (greater than 8.4 ohm for longer than 3 - 5 seconds, a current DTC 101 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 101 will set if circuits 387 or 388 (including the side air bag inflator module) are open circuit.

When DTC 101 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 101. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 101. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 101 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 101 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 101 is set, dependent on where the fault is, the right hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 101 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If DTC 101 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. Checks circuit 388 for open circuit.
5. Checks circuit 387 for open circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.



Figure 12M-147

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STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is DTC 101 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put right hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the right hand front seat) from the right hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information</li> <li>· Is DTC 101 still current?</li> </ul>		Go to Step 4.	<p>Replace right hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer to NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 19 and SRS wiring harness connector YB205, circuit 388 (Brown/White wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 5.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
5.	<ul style="list-style-type: none"> <li>· With SDM wiring harness connector YB189 disconnected from the SDM and using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 18 and SRS wiring harness connector YB205, circuit 387 (Yellow/White wire) for open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 102 - RIGHT HAND SIDE AIR BAG CIRCUIT RESISTANCE TOO LOW

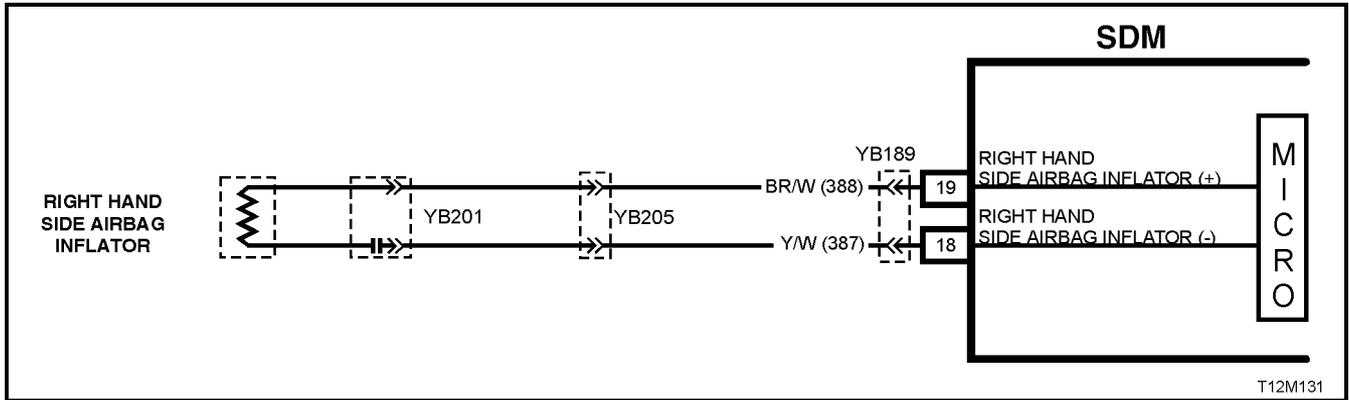


Figure 12M-148

### CIRCUIT DESCRIPTION

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check.

If the SDM detects a resistance in the right hand side air bag circuit that is too low (less than 0.6 ohm) for longer than 3 - 5 seconds, a current DTC 102 will set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 102 will set if circuits 387 or 388, (including the side air bag inflator module assembly) are shorted together.

When DTC 102 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 102. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 102. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 102 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 102 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 102 is set, dependent on where the fault is, the right hand side air bag may not operate.

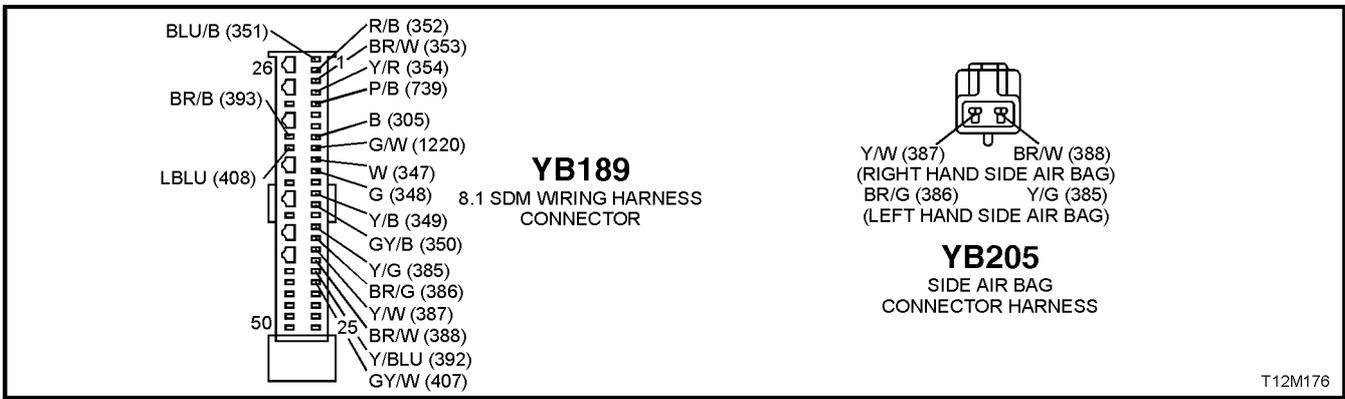
### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 102 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Tool AU485 is a dummy load taking the place of the side air bag inflator module. If DTC 102 becomes a history DTC with dummy load connected, the system fault is in the side air bag inflator module assembly (or the 'pigtail' wiring harness that connects to the side air bag module).
4. This test checks the wiring between the SDM wiring harness connector YB189 and SRS wiring harness connector YB205 for a short circuit.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.7 WIRING REPAIR](#) in this Section before conducting any SRS wiring harness repairs.
3. Due to the design of the anti-back-out connector on the side air bag module assembly, connector YB201 can not be disconnected from the side air bag module assembly without damaging the assembly. Therefore, repairs to the SRS 'pigtail' wiring harness that run through the front seat are not to be attempted. If this 'pigtail' harness is damaged in any way, the harness and side air bag module assembly must be replaced as an assembly.
4. Wiring should be checked at point where TECH 2 screen display changed status. If necessary, split open wiring harness.



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Figure 12M-149

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>Install TECH 2 to DLC.</li> <li>Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>Is DTC 102 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following: Put right hand front seat through it's full adjustment (forward / backward, up / down and full recline). 'Wiggle' SRS wiring harness at all accessible locations between the SDM and the side air bag wiring harness connector YB205.</li> <li>Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTES 2, 3 &amp; 4 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>

STEP	ACTION	VALUE	YES	NO
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB205 (located next to the right hand front seat) from the right hand side air bag inflator module 'pigtail' harness.</li> <li>· Connect Tool No. AU485 to SRS wiring harness connector YB205.</li> <li>· Reconnect battery.</li> <li>· Connect TECH 2 to DLC and select Body / SRS / Diagnostic Trouble Codes / Read DTC Information</li> <li>· Is DTC 102 still current?</li> </ul>		Go to Step 4.	<p>Replace right hand side air bag inflator module and 'pigtail' wiring harness assembly, refer to 2.3 SIDE AIR BAG MODULE ASSEMBLY in this Section (refer to NOTE 3 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Disconnect Tool No. AU485 from SRS wiring harness connector YB205.</li> <li>· With SRS wiring harness connector YB205 disconnected, and using Tool KM-609-20, check for continuity between SDM wiring harness connector YB189, terminal 18, circuit 387 (Yellow/White wire) and terminal 19, circuit 388 (Brown/White wire)(refer to NOTES 1 and 3 above).</li> <li>· Does continuity exist?</li> </ul>		<p>Repair short in circuits 387 and 388, between SDM wiring harness connector YB189 and YB205 as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE (SDM) in this Section.</p> <p>Recheck circuit to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 247 - RIGHT HAND SIDE IMPACT AIR BAG CIRCUIT POWER STAGE ERROR

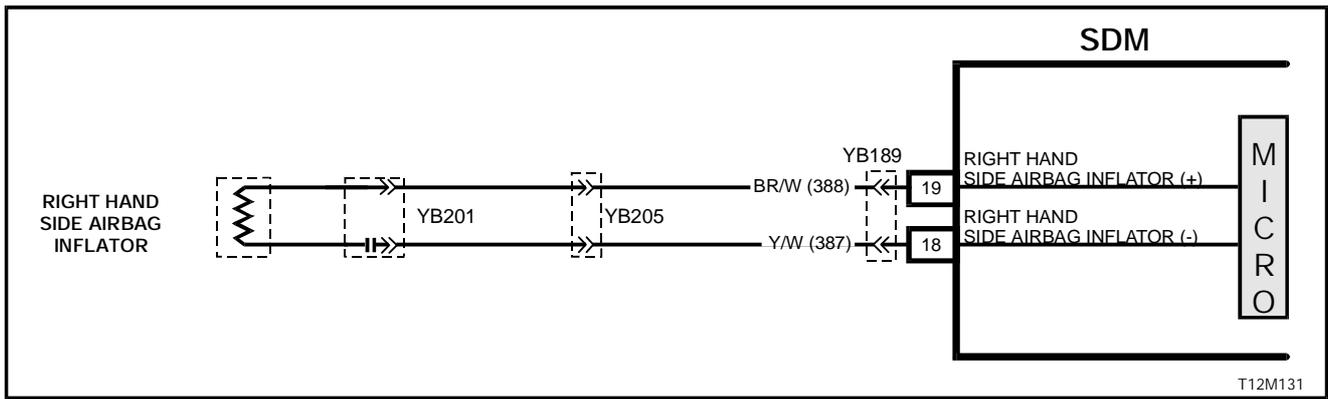


Figure 12M-150

### CIRCUIT DESCRIPTION

At ignition on, the SDM performs an initial system self check of the SDM power stages. If during this initial self test the SDM detects a fault with the Right Hand Side Impact Air Bag Circuit power stage a current DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error will set. On completion of the initial system self test the SDM then performs a test of the Right Hand Side Impact Air Bag Circuit. If the SDM detects a problem with this circuit the associated Right Hand Side Impact Air Bag Circuit DTC will be set and the DTC 247 Right Hand Side Impact Air Bag Circuit Air Bag Circuit Power Stage Error will become a history DTC.

DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error will set if a fault occurs in the Right Hand Side Impact Air Bag, connector YB201 with the in-built capacitor, connector YB205, the SRS wiring harness, connector YB189/YB190 or SDM.

When a history DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will remain on for the remainder of the ignition cycle.

When a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error sets, the SDM illuminates the SRS warning lamp for the remainder of the ignition cycle. Should the fault conditions detected by the SDM clear during the same ignition cycle the code will remain a history DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error for all ignition cycles until cleared. The SRS warning lamp will also remain illuminated until the history DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error is cleared.

If a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage is set, dependent on where the fault is, the Right Hand Pre-Tensioner may not operate.

### ACTION REQUIRED

If DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error and any other DTC is set then the diagnostics for the other DTC should be carried out first. For example if a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error and a DTC 101 Right Hand Side Impact Air Bag Circuit Resistance High are set, the diagnostics for a DTC 101 Right Hand Side Impact Air Bag Circuit Resistance High should be carried out first.

If only a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error is set then the SDM should be replaced.

**NOTE:** An intermittent in the Right Hand Side Impact Air Bag Circuit may cause a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error to set.

After the fault has been rectified, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

**NOTE:** After replacement, the front seat should be put through its full adjustment (forward/backwards, full recline and up and down) to ensure the wiring harness does not foul with any of the seat components.

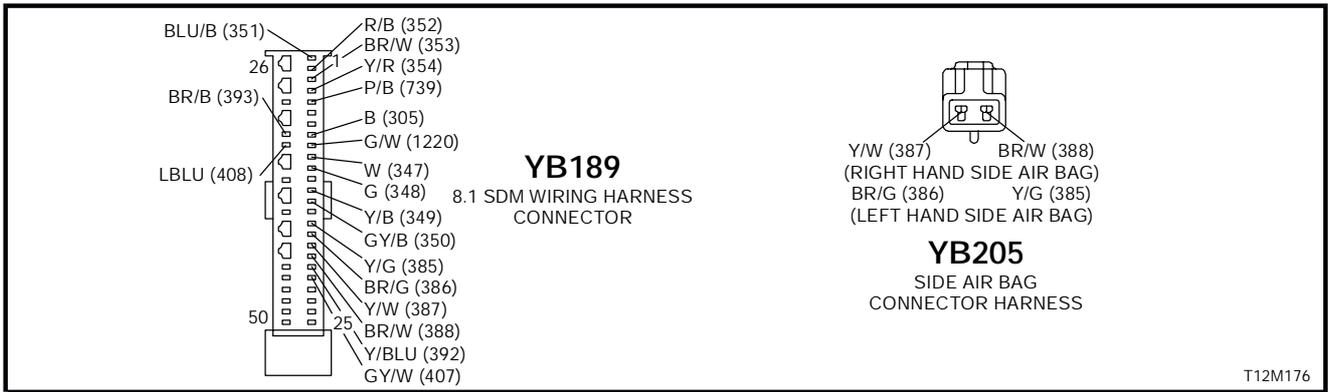
### TEST DESCRIPTION

The following numbers refer to Step numbers in the following diagnostic chart.

1. Uses TECH 2 to check if a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error is history code, and if any other Right Hand Side Impact Air Bag Circuit current or history DTCs are set. If any other DTCs are set refer to these DTCs first.
2. Checks for intermittent fault by monitoring TECH 2 screen during ignition on cycle. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. If no other DTCs are set and there are no intermittents in the Right Hand Side Impact Air Bag Circuit then the SDM should be replaced.

**NOTES ON DIAGNOSTIC CHART**

1. For all wiring harness checking procedures, refer to VT Series 1 Service Information, WIRING DIAGRAMS, **SECTION 12P**.
2. Refer to VT Series 1 Service Information Section 12M, SRS VERSION 6.2, **2.8 SRS WIRING REPAIR** before conducting any SRS wiring harness repairs.



**Figure 12M-151**

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>• Install TECH 2 to DLC.</li> <li>• Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>• Is a DTC 247 Right Hand Side Impact Air Bag Circuit Power Stage Error a history DTC, and are any other Right Hand Side Impact Air Bag Circuit DTCs set?</li> </ul>		Go to other Right Hand Side Impact Air Bag Circuit diagnostic chart in this Section.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>• With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>• Select Diagnostic Trouble Codes / Read DTC Information and monitor the TECH 2 screen display to see if it changes status while performing the following:</li> <li>• Put right hand front seat through it's full adjustment (forward / backward, up / down and full recline).</li> <li>• 'Wiggle' SRS wiring harness, at all accessible locations between the SDM and the side impact air bag wiring harness connector YB205.</li> <li>• Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		Go to applicable DTC chart in this Section.	Go to step 3.
3	<ul style="list-style-type: none"> <li>• Replace SDM, refer to VT Series 1 Service Information Section 12M, SRS VERSION 8.0 &amp; 8.1, 2.4 SENSING AND DIAGNOSTIC MODULE (SDM). Recheck circuit to verify repair.</li> </ul>			
<b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b>				

## DTC 129 - LEFT PERIPHERAL ACCELERATION SENSOR LINE FAULT

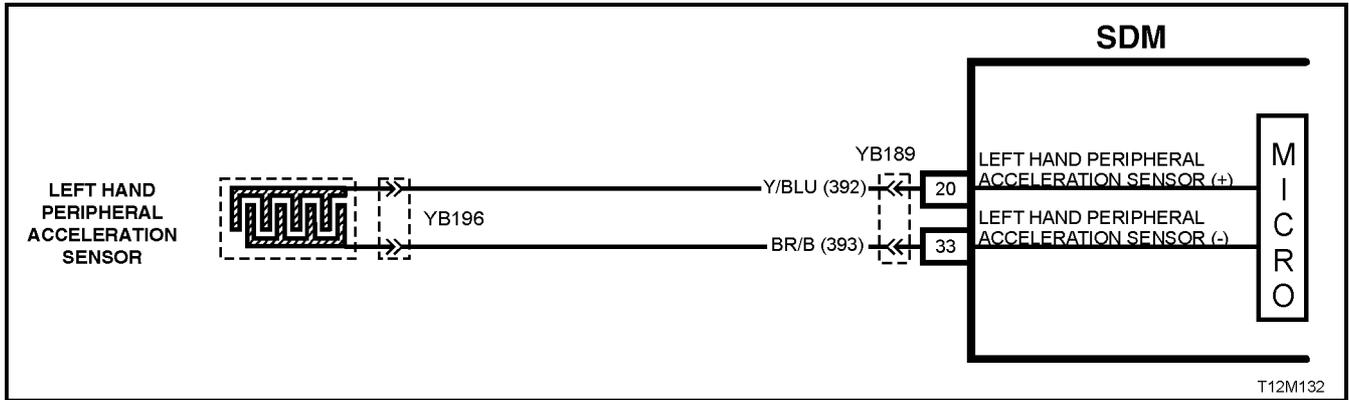


Figure 12M-152

### CIRCUIT DESCRIPTION

The peripheral acceleration sensor communicates continuously with the SDM by modulating the consumed current at a constant voltage.

If this communication is interrupted or disturbed by a short circuit to earth, between the SDM and the left hand peripheral acceleration sensor, for longer than 3 - 5 seconds, a current DTC 129 is set (refer to **3.3 SRS SELF DIAGNOSTICS** in this Section for more details).

DTC 129 will set if circuit 392 is shorted to earth.

When DTC 129 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 129. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 129. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 129 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 129 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 129 is set the left hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 129 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuit 392 for short to earth.
4. By swapping the left hand peripheral acceleration sensor with a known good one (right hand side peripheral acceleration sensor), determines whether the peripheral acceleration sensor or the SDM is causing the problem.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to **Section 12P WIRING DIAGRAMS** in this Service Information CD.
2. Refer to **2.8 SRS WIRING REPAIR** in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Do not loosen or unscrew the two nuts retaining the peripheral acceleration sensor to the mounting bracket. The peripheral acceleration sensor must only be removed from the B pillar with the mounting bracket attached, refer to **2.5 PERIPHERAL ACCELERATION SENSOR** in this Section for the correct removal procedure.

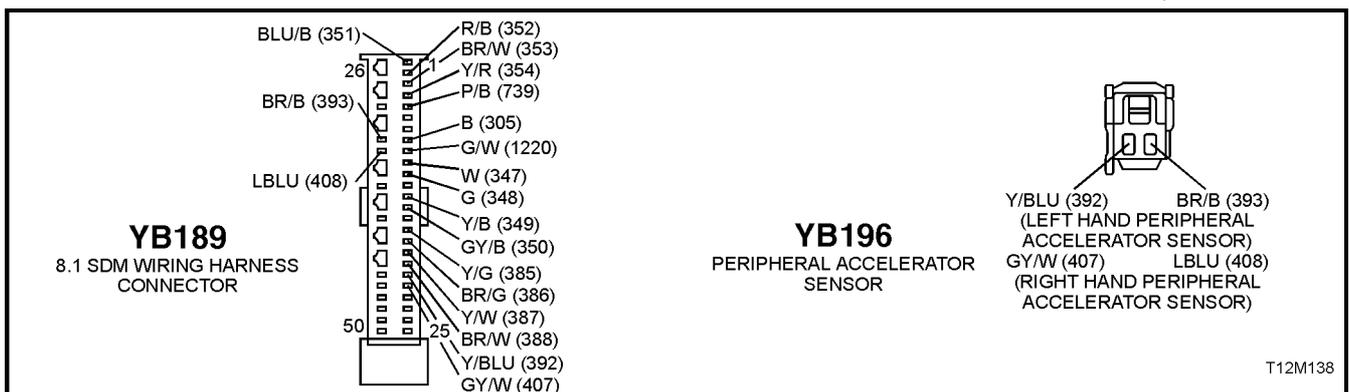


Figure 12M-153

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 129 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand peripheral acceleration sensor wiring harness connector YB196, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB196 from the left hand peripheral acceleration sensor.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 20 and SRS wiring harness connector YB196, circuit 392 (Yellow/Blue wire) for a short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 4.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Reconnect SRS wiring harness connector YB189 to the SDM.</li> <li>· Disconnect the left hand peripheral acceleration sensor from connector YB196 and install a known good peripheral acceleration sensor into connector YB196 (right peripheral acceleration sensor and bracket assembly). Refer to NOTE 3 above.</li> <li>· Reconnect battery.</li> <li>· Install TECH 2 to DLC</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 129 current?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Replace left hand peripheral acceleration sensor and bracket assembly (refer to 2.5 PERIPHERAL ACCELERATION SENSOR in this Section).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 130 - RIGHT PERIPHERAL ACCELERATION SENSOR LINE FAULT

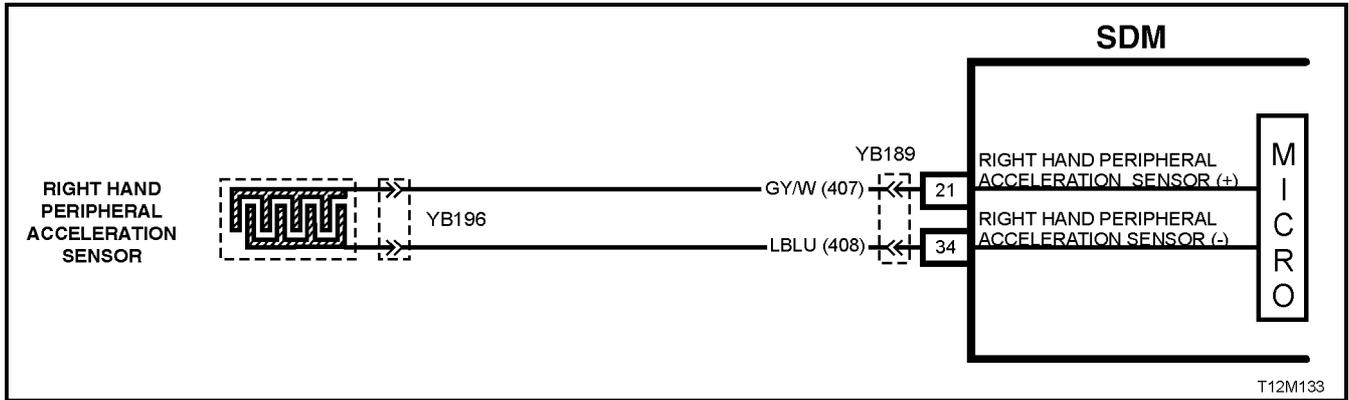


Figure 12M-154

### CIRCUIT DESCRIPTION

The peripheral acceleration sensor communicates continuously with the SDM by modulating the consumed current at a constant voltage.

If this communication is interrupted or disturbed by a short circuit to earth, between the SDM and the right hand peripheral acceleration sensor, for longer than 3 - 5 seconds, a current DTC 130 is set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 130 will set if circuit 407 is shorted to earth.

When DTC 130 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 130. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 130. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 130 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 130 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 130 is set the right hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 130 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuit 407 for short to earth.
4. By swapping the right hand peripheral acceleration sensor with a known good one (left hand side peripheral acceleration sensor), determines whether the peripheral acceleration sensor or the SDM is causing the problem.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Do not loosen or unscrew the two nuts retaining the peripheral acceleration sensor to the mounting bracket. The peripheral acceleration sensor must only be removed from the B pillar with the mounting bracket attached, refer to [2.5 PERIPHERAL ACCELERATION SENSOR](#) in this Section for the correct removal procedure.

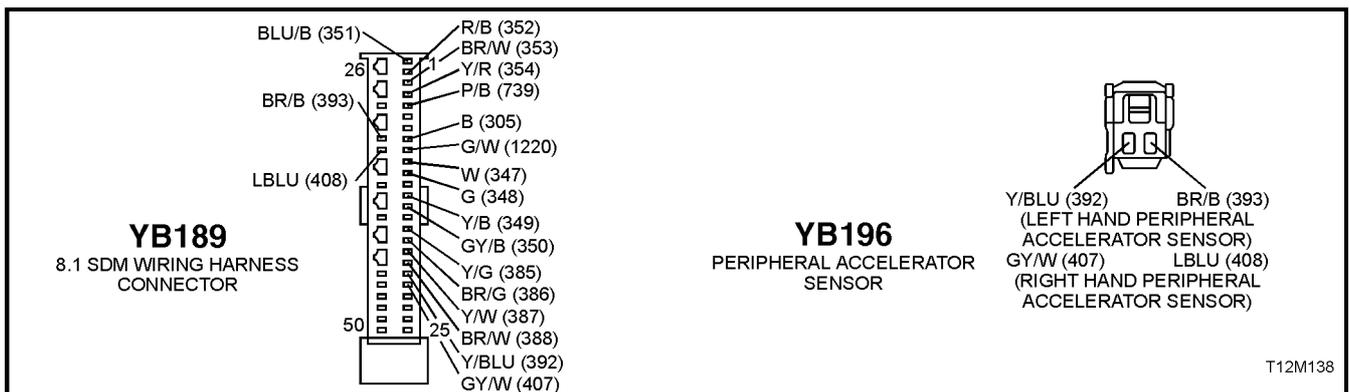


Figure 12M-155

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 130 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the right hand peripheral acceleration sensor wiring harness connector YB196, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB196 from the right hand peripheral acceleration sensor.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 21 and SRS wiring harness connector YB196, circuit 407 (Grey/White wire) for a short to earth (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 4.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Reconnect SRS wiring harness connector YB189 to the SDM.</li> <li>· Disconnect the right hand peripheral acceleration sensor from connector YB196 and connect a known good peripheral acceleration sensor into connector YB196 (left peripheral acceleration sensor and bracket assembly). Refer to NOTE 3 above.</li> <li>· Reconnect battery.</li> <li>· Install TECH 2 to DLC</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 129 current?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Replace right hand peripheral acceleration sensor and bracket assembly (refer to 2.5 PERIPHERAL ACCELERATION SENSOR in this Section).</p> <p>Clear DTC and recheck system to verify repair.</p>
<p><b>WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION</b></p>				

## DTC 131 - LEFT PERIPHERAL ACCELERATION SENSOR COMMUNICATION FAULT

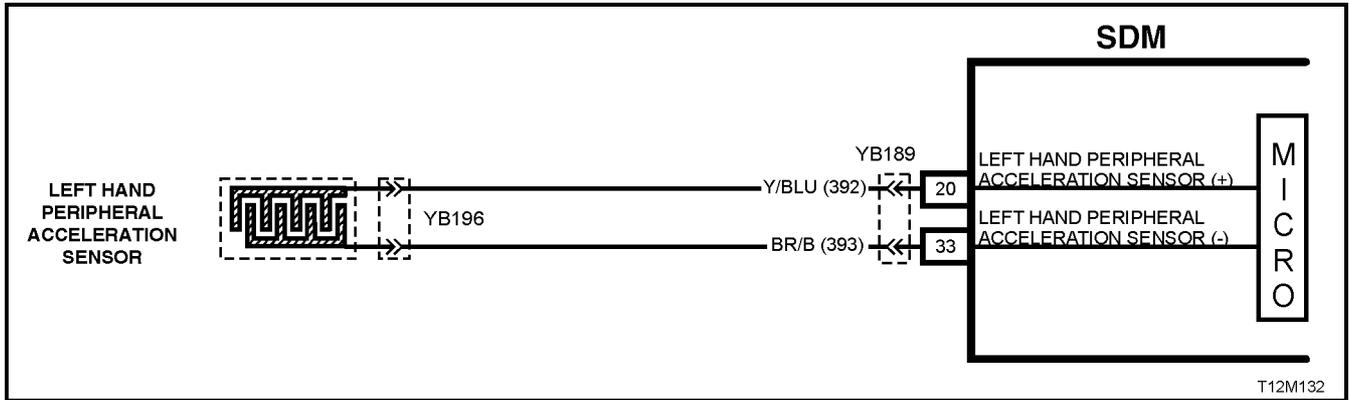


Figure 12M-156

### CIRCUIT DESCRIPTION

The peripheral acceleration sensor communicates continuously with the SDM by modulating the consumed current at a constant voltage.

If this communication is interrupted between the SDM and the left hand peripheral acceleration sensor for longer than 3 - 5 seconds, a current DTC 131 is set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 131 will set if circuits 392 or 393 (including the peripheral acceleration sensor) are open circuit.

When DTC 131 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 131. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 131. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 131 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 131 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 131 is set, the left hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 131 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuit 392 for an open circuit.
4. Checks circuit 393 for an open circuit.
5. By swapping the left hand peripheral acceleration sensor with a known good one (right hand side peripheral acceleration sensor?), determines whether the peripheral acceleration sensor or the SDM is causing the problem.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Do not loosen or unscrew the two nuts retaining the peripheral acceleration sensor to the mounting bracket. The peripheral acceleration sensor must only be removed from the B pillar with the mounting bracket attached, refer to [2.5 PERIPHERAL ACCELERATION SENSOR](#) in this Section for the correct removal procedure.

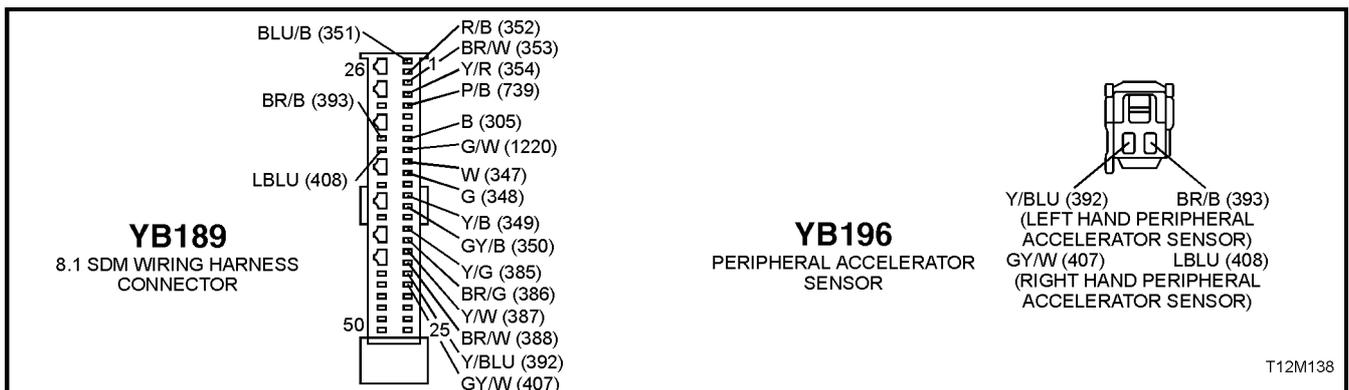


Figure 12M-157

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 131 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the left hand peripheral acceleration sensor wiring harness connector YB196, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB196 from the left hand peripheral acceleration sensor.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 20 and SRS wiring harness connector YB196, circuit 392 (Yellow/Blue wire) for an open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 4.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· With the SRS disabled and connectors YB189 and YB196 disconnected, use Tool KM-609-20 to check wiring between SDM wiring harness connector YB189, terminal 33 and SRS wiring harness connector YB196, circuit 393 (Brown/Black wire) for an open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 5.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
5.	<ul style="list-style-type: none"> <li>· With the SRS disabled reconnect SRS wiring harness connector YB189 to the SDM.</li> <li>· Disconnect the left hand peripheral acceleration sensor from connector YB196 and connect a known good peripheral acceleration sensor into connector YB196 (right peripheral acceleration sensor and bracket assembly). Refer to NOTE 3 above.</li> <li>· Reconnect battery.</li> <li>· Install TECH 2 to DLC</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 131 current?</li> </ul>		<p>Replace SDM, refer to 2.4 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Replace left hand peripheral acceleration sensor and bracket assembly (refer to 2.5 PERIPHERAL ACCELERATION SENSOR in this Section).</p> <p>Clear DTC and recheck system to verify repair.</p>

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## DTC 132 - RIGHT PERIPHERAL ACCELERATION SENSOR COMMUNICATION FAULT

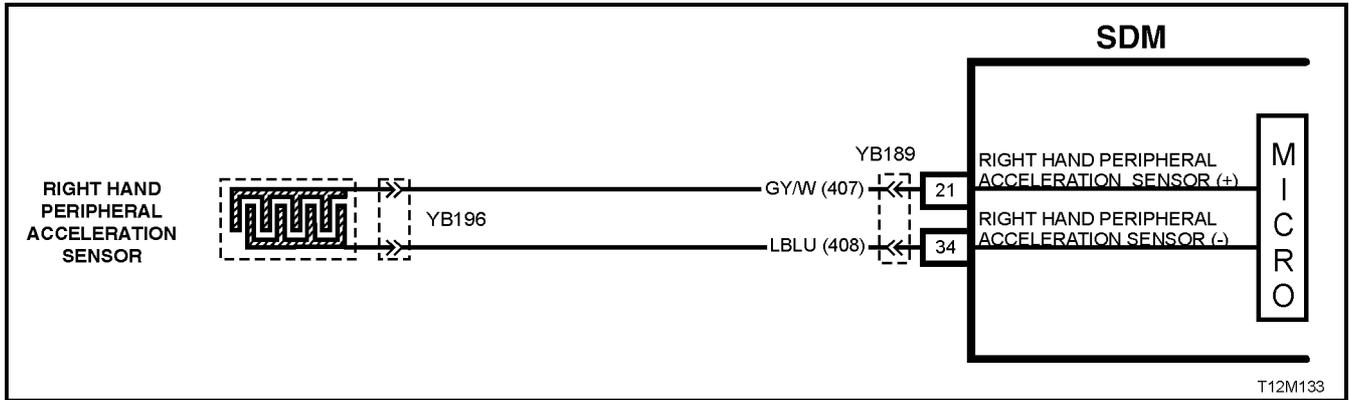


Figure 12M-158

### CIRCUIT DESCRIPTION

The peripheral acceleration sensor communicates continuously with the SDM by modulating the consumed current at a constant voltage.

If this communication is interrupted between the SDM and the right hand peripheral acceleration for longer than 3 - 5 seconds, a current DTC 132 is set (refer to [3.3 SRS SELF DIAGNOSTICS](#) in this Section for more details).

DTC 132 will set if circuits 407 or 408 (including the peripheral acceleration sensor) are open circuit.

When DTC 132 sets, the SDM illuminates the SRS warning lamp and sets a current DTC 132. Should the fault conditions detected by the SDM clear during the same ignition cycle, the current code will clear and become a history DTC 132. The SRS warning lamp will remain on for the remainder of the ignition cycle.

If a DTC 132 is set, the SRS warning lamp is illuminated on each ignition cycle, even if the DTC is set as a history DTC, until the fault conditions for setting DTC 132 are rectified and the DTC (current or history) can then be cleared from the SDM via TECH 2.

If DTC 132 is set, the right hand side air bag may not operate.

### TEST DESCRIPTION

The following number refer to step numbers in the following diagnostic chart:

1. Uses TECH 2 to check if DTC 132 is current or history.
2. Checks for intermittent fault by monitoring TECH 2 screen. If screen display changes during a wiring 'wiggle' test, a fault with the wiring is at that location.
3. Checks circuit 407 for an open circuit.
4. Checks circuit 408 for an open circuit.
5. By swapping the right hand peripheral acceleration sensor with a known good one (left hand side peripheral acceleration sensor), determines whether the peripheral acceleration sensor or the SDM is causing the problem.

### NOTES ON DIAGNOSTIC CHART

1. For all wiring harness checking procedures, refer to [Section 12P WIRING DIAGRAMS](#) in this Service Information CD.
2. Refer to [2.8 SRS WIRING REPAIR](#) in Section 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) before conducting any SRS wiring harness repairs.
3. Do not loosen or unscrew the two nuts retaining the peripheral acceleration sensor to the mounting bracket. The peripheral acceleration sensor must only be removed from the B pillar with the mounting bracket attached, refer to [2.5 PERIPHERAL ACCELERATION SENSOR](#) in this Section for the correct removal procedure.

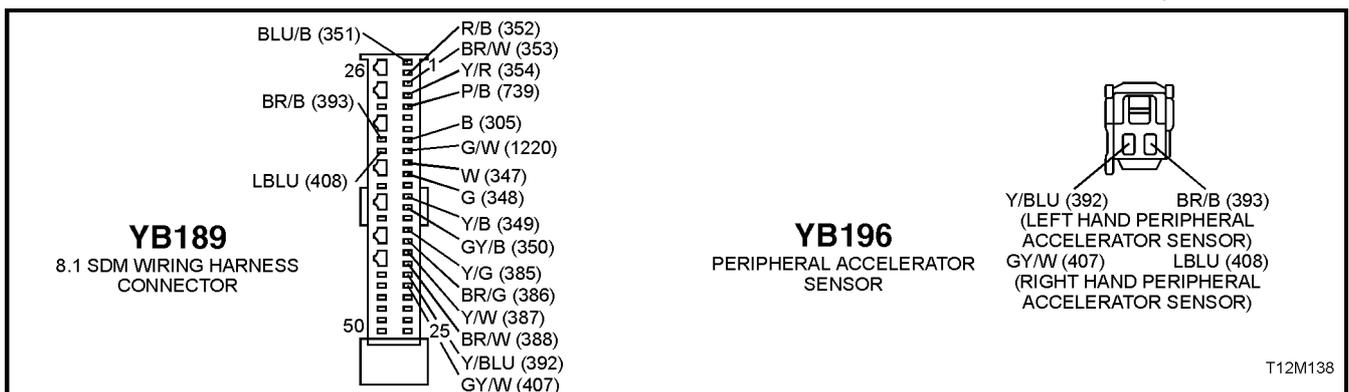


Figure 12M-159

STEP	ACTION	VALUE	YES	NO
1.	<ul style="list-style-type: none"> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 132 current?</li> </ul>		Go to Step 3.	Go to Step 2.
2.	<ul style="list-style-type: none"> <li>· With TECH 2 still connected, select Diagnostic Trouble Codes / Clear DTC Information and clear all (if any) DTCs.</li> <li>· Select Diagnostic Trouble Codes / Read DTC Information, 'wiggle' SRS wiring harness at all locations between the SDM and the right hand peripheral acceleration sensor wiring harness connector YB196, while monitoring TECH 2 screen display.</li> <li>· Does TECH 2 screen display change status from No Diagnostic Trouble Codes?</li> </ul>		<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>	<p>Fault not present. Check all system wiring harness connectors, and terminals.</p> <p>Clear DTC and recheck system.</p>
3.	<ul style="list-style-type: none"> <li>· Disable the SRS, refer to 2.2 SYSTEM DISABLING AND ENABLING PROCEDURE in this Section.</li> <li>· Disconnect SRS wiring harness connector YB196 from the right hand peripheral acceleration sensor.</li> <li>· Disconnect SDM wiring harness connector YB189 from the SDM.</li> <li>· Using Tool KM-609-20, check wiring between SDM wiring harness connector YB189, terminal 21 and SRS wiring harness connector YB196, circuit 407 (Grey/White wire) for an open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 4.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>

STEP	ACTION	VALUE	YES	NO
4.	<ul style="list-style-type: none"> <li>· With the SRS disabled and connectors YB189 and YB196 disconnected, use Tool KM-609-20 to check wiring between SDM wiring harness connector YB189, terminal 34 and SRS wiring harness connector YB196, circuit 408 (Light Blue wire) for an open circuit (refer to NOTE 1 above).</li> <li>· Is all OK?</li> </ul>		Go to Step 5.	<p>Make repairs as necessary (refer to NOTE 2 above).</p> <p>Clear DTC and recheck system to verify repair.</p>
5.	<ul style="list-style-type: none"> <li>· With the SRS disabled reconnect SRS wiring harness connector YB189 to the SDM.</li> <li>• Disconnect the right hand peripheral acceleration sensor from connector YB196 and connect a known good peripheral acceleration sensor into connector YB196 (left peripheral acceleration sensor and bracket assembly). Refer to NOTE 3 above.</li> <li>· Reconnect battery.</li> <li>· Install TECH 2 to DLC.</li> <li>· Select Body / SRS / Diagnostic Trouble Codes / Read DTC Information.</li> <li>· Is DTC 132 current?</li> </ul>		<p>Replace SDM, refer to 2.7 SENSING AND DIAGNOSTIC MODULE in this Section.</p> <p>Recheck circuit to verify repair.</p>	<p>Replace right hand peripheral acceleration sensor and bracket assembly (refer to 2.5 PERIPHERAL ACCELERATION SENSOR in this Section).</p> <p>Clear DTC and recheck system to verify repair.</p>

**WHEN ALL DIAGNOSIS AND REPAIRS ARE COMPLETED, ENSURE ALL SRS COMPONENTS ARE RECONNECTED, CLEAR ALL DTC'S, ENABLE THE SRS AND VERIFY CORRECT OPERATION**

## **DTC 133 - LEFT PERIPHERAL ACCELERATION SENSOR IDENTIFICATION FAULT**

### **CIRCUIT DESCRIPTION**

Peripheral acceleration sensors are programmed during manufacture for a particular vehicle / application type. During this process, the peripheral acceleration sensor is given a unique identification code which corresponds with the SDM. If this code does not correspond with the SDM, a current DTC 133 will be set and the SRS warning lamp will be illuminated with the ignition on.

### **ACTION REQUIRED**

If DTC 133 is set, the left hand side air bag may not operate and therefore, the left hand side peripheral acceleration sensor and bracket assembly must be replaced with the correct peripheral acceleration sensor for that particular vehicle.

Always refer to the latest Holden spare parts information (Part Finder) for the correct part number of the peripheral acceleration sensor and bracket assembly for that particular vehicle. To replace the peripheral acceleration sensor and bracket assembly, refer to **2.5 PERIPHERAL ACCELERATION SENSOR (SIDE AIR BAG SENSOR)** in this Section.

After the peripheral acceleration sensor and bracket assembly have been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## **DTC 134 - RIGHT PERIPHERAL ACCELERATION SENSOR IDENTIFICATION FAULT**

### **CIRCUIT DESCRIPTION**

Peripheral acceleration sensors are programmed during manufacture for a particular vehicle / application type. During this process, the peripheral acceleration sensor is given a unique identification code which corresponds with the SDM. If this code does not correspond with the SDM, a current DTC 134 will be set and the SRS warning lamp will be illuminated with the ignition on.

### **ACTION REQUIRED**

If DTC 134 is set, the right hand side air bag may not operate and therefore, the right hand side peripheral acceleration sensor and bracket assembly must be replaced with the correct peripheral acceleration sensor for that particular vehicle.

Always refer to the latest Holden spare parts information (Part Finder) for the correct part number of the peripheral acceleration sensor and bracket assembly for that particular vehicle. To replace the peripheral acceleration sensor and bracket assembly, refer to **2.5 PERIPHERAL ACCELERATION SENSOR (SIDE AIR BAG SENSOR)** in this Section.

After the peripheral acceleration sensor and bracket assembly have been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## **DTC 135 - LEFT PERIPHERAL ACCELERATION SENSOR HARDWARE FAULT**

### **CIRCUIT DESCRIPTION**

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SMD detects an internal fault in the left hand side peripheral acceleration sensor, a DTC 135 will be set and the SRS warning lamp will be illuminated continuously with the ignition on.

### **ACTION REQUIRED**

If DTC 135 is set, the left hand side air bag may not operate and therefore, the left hand side peripheral acceleration sensor and bracket assembly must be replaced. Refer to [2.5 PERIPHERAL ACCELERATION SENSOR \(SIDE AIR BAG SENSOR\)](#) in this Section for the correct replacement procedure.

After the peripheral acceleration sensor and bracket assembly have been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## **DTC 136 - RIGHT PERIPHERAL ACCELERATION SENSOR HARDWARE FAULT**

### **CIRCUIT DESCRIPTION**

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SMD detects an internal fault in the right hand side peripheral acceleration sensor, a DTC 136 will be set and the SRS warning lamp will be illuminated continuously with the ignition on.

### **ACTION REQUIRED**

If DTC 136 is set, the right hand side air bag may not operate and therefore, the right hand side peripheral acceleration sensor and bracket assembly must be replaced. Refer to [2.5 PERIPHERAL ACCELERATION SENSOR \(SIDE AIR BAG SENSOR\)](#) in this Section for the correct replacement procedure.

After the peripheral acceleration sensor and bracket assembly have been replaced, ensure that all SRS components are reconnected, clear DTCs, enable the SRS and verify the correct operation of the system (i.e. warning lamp not illuminated after five seconds of ignition being switched ON).

## DTC 161 - CONFIGURATION MISMATCH: TOO LITTLE OR TOO MANY LOOPS IN SRS

### CIRCUIT DESCRIPTION

#### NOTE 1:

DTC 161 will only be set and displayed by TECH 2 as a history DTC even if it is current.

#### NOTE 2:

The instruments must be programmed for the correct vehicle configuration, refer to [Section 12C INSTRUMENTS, WIPERS/WASHERS AND HORN](#) in this Service Information CD for the procedure on programming the instruments.

The SDM will set a history DTC 161 because it has been internally configured for a two, three, four or six loop system but at the same time has detected a mismatch with the actual vehicle configuration.

To identify the different SDMs, refer to the identification label on the top of the SDM. The last digit of the part number identifies the number of loops the SDM is designed for: 2, 3, 4 or 6.

2 Loop System	Seat Belt Pre-tensioners only
3 Loop System	Seat Belt Pre-tensioners and Driver's Air Bag Only
4 Loop System	Seat Belt Pre-tensioners, Driver's and Front Passenger's Air Bag Only
6 Loop System	Seat Belt Pre-tensioners, Driver's, Front Passenger's and Side Air Bags

#### NOTE:

Always refer to the latest VT spare parts microfiche / Part Finder information for the latest part numbers when ordering SRS components.

TECH 2 is capable of displaying the SDM part number; connect TECH 2 to DLC, select Diagnosis / Body / SRS / Turn Ignition ON and the system identification screen will display the SDM part number.

As an aid to the technician to diagnose the source of the mismatch, always check for other DTC set in the system first. Faults setting other DTCs should be rectified first, all DTCs cleared from the SDM and system retested to determine if DTC 161 will set again. If DTC sets again, install the correct SDM.

## DTC 163 - SDM INTERNAL FAULT

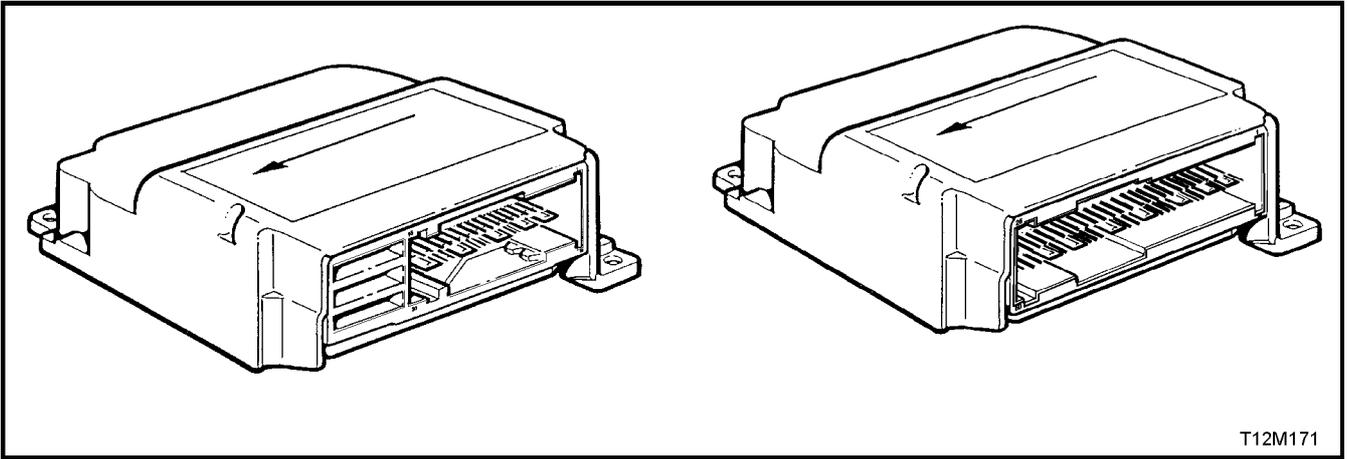


Figure 12M-160

### CIRCUIT DESCRIPTION

#### NOTE:

DTC 163 will only be set and displayed by TECH 2 as a history DTC even if it is current.

At ignition on, and on a constant monitoring cycle of every 500 milliseconds during the ignition cycle, the SDM performs a system self check. If the SMD detects a fault in itself, a DTC 163 will be set and the SRS warning lamp will be illuminated continuously with the ignition on.

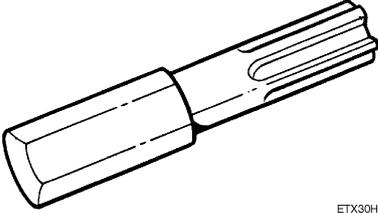
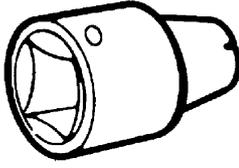
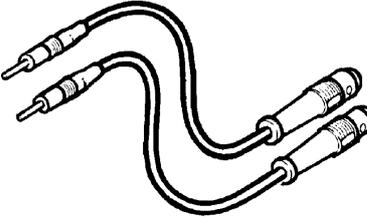
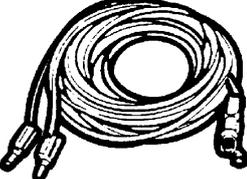
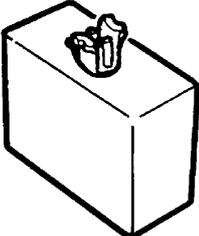
#### ACTION REQUIRED

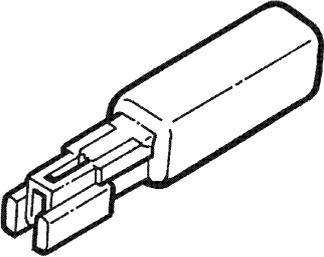
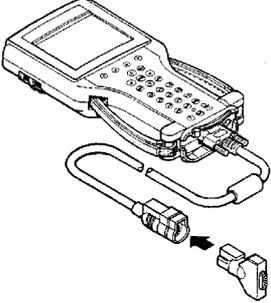
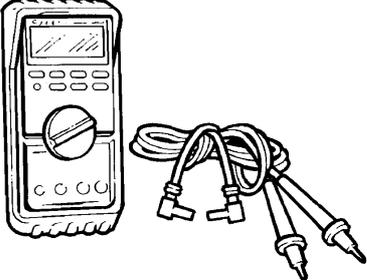
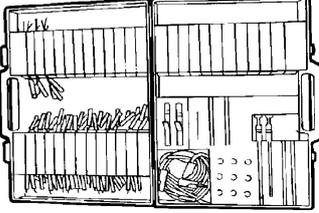
If DTC 163 is set, the SRS may not operate and therefore, the SDM must be replaced.

## 4. TORQUE WRENCH SPECIFICATIONS

	Nm
Front Passenger's Air Bag Inflator Module Assembly to Dash Panel Attaching Nut	15 - 25
Front Seat to Floor Securing Bolt	30 - 50
Horn Bar and Air Bag Inflator Module Assembly to Steering Wheel Securing Screws	10 - 14
Peripheral Acceleration Sensor and Bracket Assembly Retaining Bolt (Front Seat Belt Retractor Bolt)	35 - 50
Seat Belt Buckle and Pre-tensioner Assembly Retaining Bolt	45
Sensing and Diagnostic Module to Floor Attaching Screw	7 - 11
Steering wheel retaining bolt	40 - 50
Side Air Bag Assembly to Front Seat Back Frame Retaining Nut	5 - 6

## 5. SPECIAL TOOLS

TOOL NO. REF IN TEXT	TOOL DESCRIPTION	COMMENTS
ETX30H	T30H TORX BIT  <small>ETX30H</small>	USE IN CONJUNCTION WITH J25359-8, (OR ETX55HLD) TORX BIT HOLDER  USED FOR REMOVING SDM TO FLOOR ATTACHING SCREWS AND HORN BAR AND AIR BAG INFLATOR MODULE ASSEMBLY TO STEERING WHEEL SECURING SCREWS
J25359-8	TORX BIT HOLDER  <small>J253598</small>	PREVIOUSLY RELEASED FOR V CAR
KM-609-20	SRS TEST LEAD SET  <small>KM-609-20</small>	PREVIOUSLY RELEASED
E1992	DEPLOYMENT HARNESS ADAPTOR  <small>E1992</small>	PREVIOUSLY RELEASED  USED IN CONJUNCTION WITH DEPLOYMENT HARNESS J38826-1 FOR DEPLOYING SRS COMPONENTS WHEN REMOVED FROM THE VEHICLE
J38826-1	DEPLOYMENT HARNESS  <small>J388261</small>	PREVIOUSLY RELEASED  USED IN CONJUNCTION WITH DEPLOYMENT HARNESS ADAPTOR E1992 FOR DEPLOYING SRS COMPONENTS WHEN REMOVED FROM THE VEHICLE
SD28280B	DUMMY LOAD  <small>SD28280B</small>	FOR SEAT BELT PRE-TENSIONERS, AND DRIVER'S AND FRONT PASSENGER'S AIR BAGS

TOOL NO. REF IN TEXT	TOOL DESCRIPTION	COMMENTS
AU485	DUMMY LOAD  <small>AU485</small>	FOR SIDE AIR BAG
J38125-A	TERMINAL REPAIR KIT  <small>J38125A</small>	PREVIOUSLY RELEASED. MUST BE USED WHEN REPAIRING SRS WIRING, REFER TO 2.8, SRS WIRING REPAIR IN SECTION 12M SUPPLEMENTAL RESTRAINT SYSTEM - (VERSION 6.2) OF THIS SERVICE INFORMATION CD.
TECH 2	DIAGNOSTIC SCAN TOOL  <small>TECH2</small>	PREVIOUSLY RELEASED
J39200	DIGITAL MULTIMETER 	TOOL NO. J39200 PREVIOUSLY RELEASED, OR USE COMMERCIALY AVAILABLE EQUIVALENT. MUST HAVE 10 MOHM INPUT IMPEDANCE AND BE CAPABLE OF READING CAPACITANCE
KM-609	ELECTRONIC KIT 	USED IN CONJUNCTION WITH A MULTIMETER FOR MEASURING VOLTAGES AND RESISTANCE'S WITHOUT DAMAGING WIRING HARNESS CONNECTORS

# SECTION 12P - WIRING DIAGRAMS ( FOR VERSION 8.0/8.1)

## 1. GENERAL INFORMATION

This section contains two Supplemental Restraint System (SRS) electrical circuit wiring diagrams, together with the corresponding wiring harness layout illustrations for VT Series Models with 8.0 and 8.1 Sensing and Diagnostic Modules (SDM):

The first wiring diagram is for VT Series Models with an 8.0 SDM fitted; this includes 2, 3, and 4 loop SRS (pre-tensioners only, pre-tensioners and driver's air bag only, and pre-tensioners, driver's and front passenger's air bag).

The second wiring diagram is for VT Series Models with an 8.1 SDM fitted; this is for vehicles with 6 loop SRS (pre-tensioners, driver's, front passenger's and left and right side air bags).

These diagrams should be referred to when diagnosing SRS electrical problems and should always be the starting point for electrical trouble shooting.

The wiring diagrams illustrate how a particular circuit should work by design, and should be understood before trying to determine why it does not work.

### NOTE:

It is important to realise that no attempt is made on the diagrams to represent components and wiring as they appear in the vehicle geographically. However, for broad indications of relays, switches or consumers, refer to [Section 12N FUSES, RELAYS & WIRING HARNESSSES](#) in the VT Series Service Information CD.

For example, a meter length of wire is treated no differently in a wiring diagram from one which is only a few centimetres long. Similarly, switches and other components are shown as simply as possible in schematic format and in an activated state, with basic function being shown.

### NOTE:

The wiring diagram on page 12P-3 may also be used for vehicles with a 6.2 SDM fitted, provided the vehicle was built after August 1 1998.

Refer to [Section 12P WIRING DIAGRAMS](#) for the latest wiring diagrams and harness connector diagrams for the Supplemental Restraint System:

Diagram No.	22A	Supplemental Restraint System - All models With 6.2 / 8.0 SDM's Wiring Harness Connectors All models With 6.2 / 8.0 SDM's
	22B	Supplemental Restraint System - All models With 8.1 SDM's (Side Air Bags) Wiring Harness Connectors All models With 8.1 SDM's (Side Air Bags)