

SECTION 01-20B Restraints, Passive—Supplemental Air Bag System—Early Production

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VEHICLE APPLICATION

Capri. For late production vehicles using an internal back-up power supply refer to Section 01-20C.

DESCRIPTION

The Supplemental Driver Air Bag Restraint System is designed to provide increased frontal collision protection for the driver IN ADDITION TO that provided by the safety belt system. **FORD RECOMMENDS THE USE OF SAFETY BELTS FOR ALL VEHICLE OCCUPANTS.**

The system uses a series of sensors to monitor the deceleration rates of the vehicle. If a crash occurs at a speed in excess of 22.5 km/h (14 mph) the sensors will close and deploy the air bag. The air bag is designed to fully inflate before the driver moves forward, and to deflate slowly when struck by the driver.

The Air Bag System consists of two basic subsystems:

1. The driver air bag.
2. The electrical system which includes impact sensors and a diagnostic monitor.

Driver Air Bag

The driver air bag is mounted in the center of the steering wheel. The unit consists of:

DESCRIPTION (Continued)

- Inflator.
- Mounting plate and retainer ring.
- Bag assembly.
- Steering wheel trim cover.

NOTE: The driver air bag unit is not a serviceable item, and must be serviced as a complete assembly.

Inflator

The inflator is a lightweight aluminum housing which contains the materials that generate the gases required for air bag inflation.

The chemicals which generate the gas are normally very stable. In order for the chemical reaction to be initiated, an igniter is installed to the center of the inflator. The igniter converts the electrical signal to thermal energy, causing the ignition of the inflator gas generant. This ignition reaction combusts the sodium azide / copper oxide gas generant in the inflator, producing nitrogen gas, which inflates the air bag.

WARNING: THE AIR BAG INFLATOR CONTAINS MATERIALS THAT ARE TOXIC PRIOR TO COMBUSTION. IF THE METAL CANISTER IS RUPTURED, DIRECT CONTACT WITH THE GENERANT MAY BE MADE, AND MAY BE ABSORBED THROUGH THE SKIN. IN THE EVENT OF EXPOSURE, SEEK FRESH AIR, CONTACT A DOCTOR, AND WASH THOROUGHLY. DO NOT USE NEAR HEAT, ELECTRIC SPARKS OR FLAME.

Air Bag

The air bag is constructed of neoprene coated nylon, is 710mm (28 inch) in diameter and fills a volume of about 65 l (2.3 cu ft) in approximately 40 milliseconds.

Mounting Plate and Retainer Ring

The mounting plate and retainer ring attach and seal the base assembly to the inflator. The mounting bracket is also used to attach the trim cover and to mount the entire unit to the steering wheel by means of four nuts.

Steering Wheel Trim Cover

The cover encases the air bag assembly. When the air bag is activated, a tear seam moulded into the steering wheel trim cover separates to allow inflation of the bag assembly.

Diagnostic Monitor

The diagnostic monitor assembly contains a microcomputer that monitors the electrical system components and connections. The monitor performs a self-check of its internal circuits and energizes the system readiness air bag indicator during prove out and whenever a fault occurs. System electrical faults can be detected and are translated into coded air bag indicator displays. If certain faults occur, the system will be disarmed by a firing disarm device built into the monitor. If a system fault exists and the air bag indicator is malfunctioning, an audible tone will be heard indicating the need for service.

System Readiness Air Bag Indicator

The system readiness indicator is located on the instrument cluster. "AIR BAG" will momentarily illuminate whenever the ignition switch is turned from the OFF position to the RUN position if the air bag system is functioning properly. If the system is not functioning properly, the indicator will either fail to illuminate, stay on continuously, or flash (if a system fault exists and the indicator is malfunctioning, a warning tone will be heard indicating the need for service). If a fault occurs after prove out, the indicator will either illuminate continuously or flash a code.

Tone Generator

The air bag readiness indicator is the prime means of determining the air bag system condition. However, a series of five sets of five tones will be heard if the indicator lamp is out and a fault occurs in the system. This means that the air bag system is in need of service. The tone pattern will repeat periodically until the lamp failure is serviced. Unless serviced, the system may not function properly in the event of collision.

Wiring

The wiring harness of the system is integral with the main vehicle harness.

Clockspring Assembly

The steering column has a clockspring assembly to transfer electrical signals from the steering wheel to the steering column. The clockspring has plugs which connect with the column harness and with the inflator assembly. Between them is a long flexible ribbon conductor which allows approximately five and one-half turns of the steering wheel. During installation, it is essential that the clockspring is installed so that its center position is aligned with the center position of the steering gear assembly.

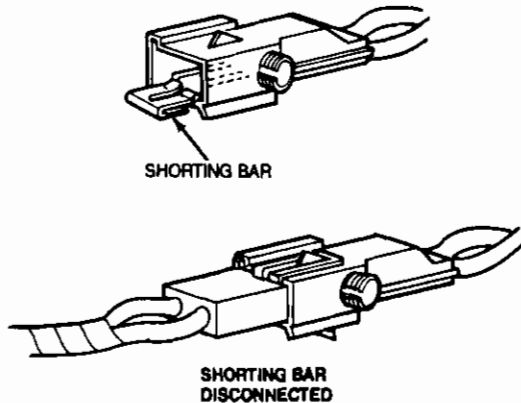
Igniter

The igniter is used to convert the electrical signal from the diagnostic monitor into heat energy to activate the inflator.

The igniter requires a nominal 3.1 amps for 3 milliseconds to activate. However, it will operate on a much smaller current than this.

DESCRIPTION (Continued)

Both the igniter lead and the clockspring lead have plugs into which shorting bars are installed. When the plug is disconnected, the shorting bar shorts the other two igniter leads to each other to prevent collisional electrical connection and subsequent inflation of the air bag.



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Electrical System

The air bag system is powered directly from the battery. The system can function with the ignition switch in any position, including OFF and LOCK. The system can also function when the driver's seat is unoccupied. The electrical system performs three main functions:

- Monitors the system to determine readiness
- Detects an impact
- Switches electrical power to the igniter

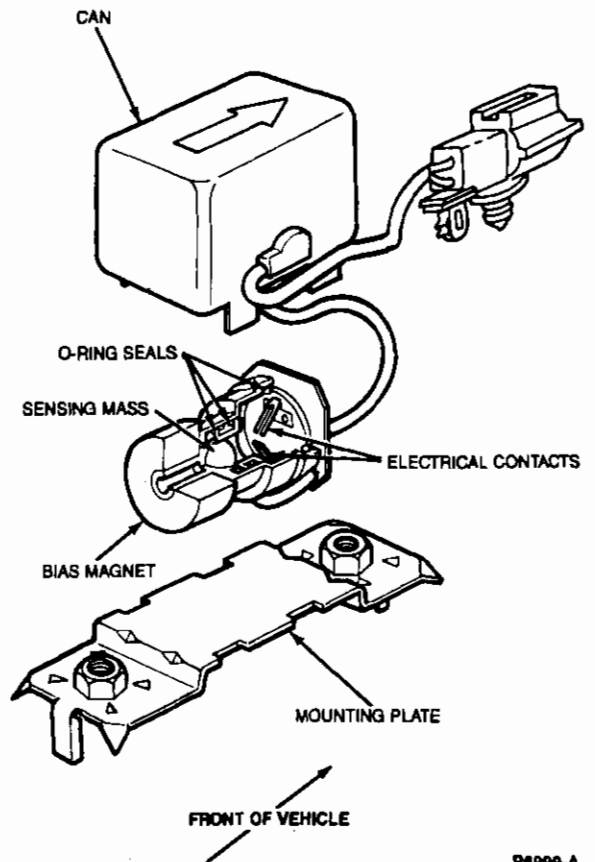
The electrical components include:

- Electronic diagnostic monitor
- Air bag system readiness indicator lamp
- Wiring harness
- Clockspring Assembly
- Sensors
- Igniter assembly
- Backup power supply

Sensors

The sensor assembly is a switch which reacts to impacts according to direction and force. It discriminates between impacts that require air bag inflation and those which do not. When an impact occurs that requires air bag inflation, the sensor contacts close, completing the electrical circuit necessary for air bag deployment.

The crash sensor is constructed of a ball in a tube with contacts at one end.



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The ball is held away from the contacts by a magnet at the opposite end of the tube. During an impact, if the change in vehicle's velocity is great enough, the ball will break away from the magnetic attraction and travel down the tube and close the contacts.

The travel of the ball in the tube is air-damped by having a very small gap between the ball and the tube. This prevents closure of the contacts during short duration velocity changes. The major difference between a crash sensor and a safing sensor is the ball-to-contact distance which is reduced in the safing sensor.

There are four sensors located in the vehicle:

- At the LH tow bracket.
- At the RH tow bracket.
- A dual sensor at the radiator support.
- Under the console behind the hand brake lever (safing sensor).

At least two sensors, one safing and one front crash sensor, must be activated to inflate the air bag.

DESCRIPTION (Continued)**Backup Power Supply**

A backup power supply is included in the system to provide air bag firing circuit power if the battery or battery cables are damaged or cut very early in a collision before the sensors can close. The battery backup contains a 3300 micro-farad (μF), 25 volt capacitor that takes approximately 15 minutes to discharge after the battery is disconnected.

WARNING: THE BACKUP POWER SUPPLY MUST BE DISCONNECTED BEFORE ANY AIR BAG SYSTEM COMPONENT IS SERVICED.

PARTS REPLACEMENT

The various major assemblies in the air bag system have been designed to be tamper-resistant and are not intended to be disassembled for service. Component assemblies should be removed and replaced as required. Information on proper handling, storage and disposal of the air bag inflator assemblies is provided in this section.

Service of Air Bag Equipped Vehicles Involved in Collisions

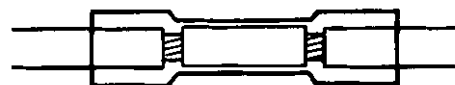
While servicing an air bag equipped vehicle that has been involved in a collision, check sensors and wiring. Sensor-to-vehicle positioning is critical for proper system operation. If a vehicle equipped with an air bag system is involved in a crash where the mud guards or grille area have been damaged, inspect the sensor mounting brackets for damage. If damaged, the sensor should be replaced whether or not the air bag has been deployed. In addition, make sure that the body structure in the area of the sensor has been restored to its original condition.

Inspect the sensor wiring and the wiring harness for any damage that may have occurred due to the collision. Service or replace any damaged wiring, terminals, insulation or connectors as required. If splices are required in adjacent wiring, they should be staggered by 50mm (2 inch).

A waterproof butt splice has been released that should be used for all service to wiring located in the engine compartment. The "DURASEAL" heat shrinkable nylon splice provides a long lasting joint that can withstand water, salt, condensation, corrosion and heat, all of which cause concerns for conventional unsealed splices.

The inner wall of the splice is lined with a special adhesive that melts as the splice is heated and flows under pressure from the tubing, filling voids and sealing the splice.

The "DURASEAL" splice can be easily installed using a standard crimp tool and a heat gun. They are also color coded for easy identification of sizes, yet are transparent for visual inspection of the finished splice.

INSTALLATION INSTRUCTIONS

1. STRIP WIRES 7.6mm (0.3 INCH)
INSERT INTO CRIMP BARREL



2. CRIMP USING CRIMP TOOL FOR
PREINSULATED CRIMPS.



3. HEAT SPLICE WITH HEAT GUN UNTIL
TUBING SHRINKS AND ADHESIVE
FLOWS FROM EACH END.

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Part Number	Part Name	Class
E6FZ-14488-A	Butt Connector Gauge: 18-22, Color: Red	C
E6FZ-14488-B	Butt Connector Gauge: 14-16, Color: Blue	C
E6FZ-14488-C	Butt Connector Gauge: 10-12, Color: Yellow	C

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If the collision involved deployment of the air bag, the steering column may have been loaded sufficiently to deform the steering column mounting brackets or damage the column wiring. An inspection should be made of the column structure and clockspring wiring to make sure that any damaged components are replaced. Refer to Section 11-04.

After all service, verify the air bag indicator lamp. Refer to Diagnosis and Testing.

OPERATION

When the ignition switch is turned to the RUN position, a yellow AIR BAG indicator will illuminate in the instrument cluster for approximately six seconds. If the indicator goes out and stays out, the air bag system is fully serviceable. If there is a fault in the system, the indicator will then flash a code corresponding to the fault present. Depending on the nature of the fault, the system may still be operational.

OPERATION (Continued)

It is important to understand that the system is operational regardless of the ignition switch position. The air bag system obtains its power from its own circuit independent of the ignition/accessory circuits. It is only necessary to have the ignition switch set to the RUN position to obtain a system OK or the diagnostic trouble codes.

If a vehicle is involved in a crash, one of the front crash sensors and one of the safing sensors must close in order for the system to inflate the air bag.

When a crash sensor and a safing sensor close at the same time, battery power will flow to the air bag inflator. Inside the inflator, an igniter will then heat the gas generant and cause it to ignite. This ignition will cause the sodium azide/copper oxide gas generant to produce nitrogen gas which will inflate the air bag. The air bag will fully inflate in less than 40 milliseconds.

SERVICE PRECAUTIONS

WARNING: SAFE HANDLING OF THE AIR BAG REQUIRES FOLLOWING THE PROCEDURES DESCRIBED BELOW FOR BOTH LIVE AND DEPLOYED AIR BAGS. ALWAYS WEAR SAFETY GLASSES WHEN SERVICING AN AIR BAG SYSTEM, AND WHEN HANDLING AN AIR BAG.

Live Air Bags

WHEN CARRYING A LIVE AIR BAG, MAKE SURE THE BAG AND TRIM COVER ARE POINTED AWAY FROM YOUR BODY. IN THE UNLIKELY EVENT OF AN ACCIDENTAL DEPLOYMENT, THE BAG WILL THEN DEPLOY WITH MINIMAL CHANCE OF INJURY. IN ADDITION, WHEN PLACING A LIVE AIR BAG ON A BENCH OR OTHER SURFACE, ALWAYS FACE THE BAG AND TRIM COVER UP, AWAY FROM THE SURFACE. THIS WILL REDUCE THE MOTION OF THE UNIT IF IT IS ACCIDENTALLY DEPLOYED.

Deployed Air Bag

SAFETY PRECAUTIONS MUST ALSO BE OBSERVED WHEN HANDLING A DEPLOYED AIR BAG. AFTER DEPLOYMENT, THE AIR BAG SURFACE MAY BE CONTAMINATED WITH DEPOSITS OF SODIUM HYDROXIDE, A PRODUCT OF THE GAS GENERANT COMBUSTION THAT IS IRRITATING TO THE SKIN. ALWAYS WEAR GLOVES AND SAFETY GLASSES WHEN HANDLING A DEPLOYED AIR BAG, AND WASH HANDS WITH SOAP AND WATER AFTERWARD.

General Information

BECAUSE OF THE CRITICAL OPERATION REQUIREMENTS OF THE SYSTEM, DO NOT ATTEMPT TO SERVICE THE SENSORS, CLOCKSPRING, MONITOR, BATTERY BACKUP OR THE AIR BAG. CORRECTIONS ARE MADE BY REPLACEMENT ONLY.

IF EVER A PART IS REPLACED AND THE NEW PART DID NOT CORRECT THE CONDITION, INSTALL THE ORIGINAL PART AND PERFORM THE DIAGNOSTIC PROCEDURE AGAIN.

WARNING: NEVER PROBE THE CONNECTIONS OF THE AIR BAG. DOING SO MAY RESULT IN DEPLOYMENT OF THE AIR BAG AND PERSONAL INJURY. ALL COMPONENT REPLACEMENTS AND WIRING REPAIRS MUST BE MADE WITH THE BATTERY GROUND AND THE BATTERY BACKUP DISCONNECTED.

General Instructions

- Air bag modules with discolored or damaged cover deployment doors must be replaced, not repainted.
- Because of the critical operating requirements of the system, do not attempt to service sensors, clockspring, monitor, back-up power supply or air bag. Service is made by replacement only.
- If a part is replaced and the new part does not correct the condition, install the original part and perform the diagnostic procedure again.
- Never probe the connectors on the air bags. Doing so may result in the air bag deployment which could result in personal injury.
- All component replacements and wiring being serviced must be made with the positive battery cable and the back-up power supply (if equipped) disconnected for a minimum of one minute before service or replacement is attempted.
- The instruction "disconnect" always refers to the connector. Never remove a component from the vehicle when instructed to "disconnect".
- Vehicle sensor positioning is critical for proper system operation. If a vehicle equipped with an air bag system is involved in a crash where the fenders or grille area have been damaged, inspect the sensor mounting brackets for damage. If damaged, the sensor should be replaced whether or not the air bag is deployed. In addition, ensure that body structure in the area of the sensor mounting is restored to its original condition. Sensors that are not physically damaged do not need to be replaced regardless of whether the air bags deployed. The sensors and the diagnostic monitor can withstand multiple deployments provided they were not physically damaged during a crash or otherwise.

DIAGNOSIS AND TESTING

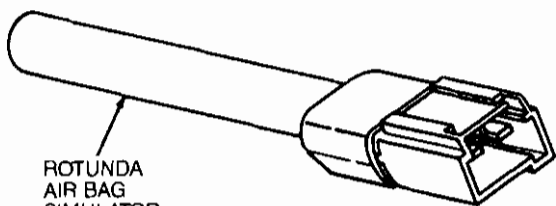
Diagnosing Customer Concern Without Hard Diagnostic Trouble Codes

If a diagnostic trouble code is reported by the customer but is not present when the vehicle comes in for service, pinpoint diagnostics cannot be used. Following the pinpoint tests of fault tree diagnosis when the code is not flashing will result in needless replacement of the air bag system and repeat service. The diagnostic monitor does not contain any memory of the diagnostic trouble code after the key is turned off. If the diagnostic trouble code is unknown, instruct the customer on how to count a diagnostic trouble code. Demonstrate a diagnostic trouble code by disconnecting a primary crash sensor, turn the ignition to the ON position, and allow customer to count diagnostic trouble code. Reconnect the primary crash sensor and instruct customer to return when the code is known. Once the code is known, read the "Normal Operation" section for the diagnostic trouble code involved. Study the circuit schematic and determine the location of component(s) that are involved in creating that diagnostic trouble code. Do a thorough visual inspection of components, connectors, splices and wiring harnesses, looking for pinched wires, worn insulation on conductors, opens, shorts, or loosely mounted sensors. The section "Possible Causes" lists the common concerns that relate to each diagnostic trouble code. Concerns are listed in the order that they are most likely to occur.

Diagnosing Customer Concerns With Hard Diagnostic Trouble Codes

Most air bag system diagnostic procedures will require the use of the System Deactivation and System Reactivation Procedures outlined in this Section. These procedures require the removal of the air bags from the vehicle thereby removing the risk of air bag deployment while diagnostics are performed.

The Rotunda Air Bag Simulator 105-00008 or equivalent is required to perform diagnosis and testing of the air bag system. The air bag simulator is a 1 ohm resistor that must be used to simulate an air bag connection in the system as specified in the deactivation procedure.



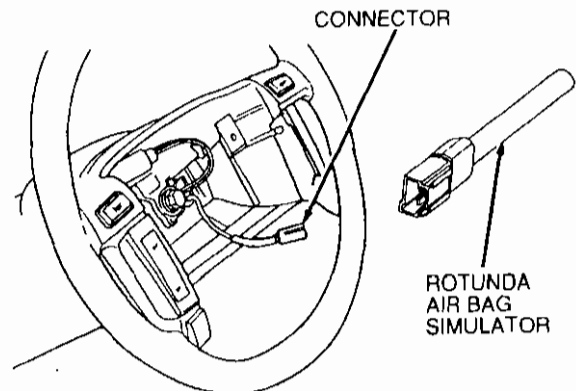
ROTUNDA
AIR BAG
SIMULATOR

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Deactivation Procedure

1. Disconnect positive battery cable and back-up power supply.

2. Remove four nut and washer assemblies retaining the driver air bag module to the steering wheel. Disconnect the driver air bag connector. Connect Rotunda Air Bag Simulator 105-00008 or equivalent to the clockspring connector in the base of the steering wheel.



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3. Reconnect the positive battery cable and the back-up power supply (if equipped).

Reactivation Procedure

1. Disconnect positive battery cable and back-up power supply (if equipped).
2. Remove the Rotunda Air Bag Simulator 105-00008 or equivalent from the clockspring connector at the base of the steering wheel. Reconnect driver air bag connector. Position driver air bag on the steering wheel and secure with four nut and washer assemblies (10mm). Tighten nut and washer assemblies to 2.7-3.7 N·m (24-34 lb-in).
3. Reconnect positive battery cable and the back-up power supply (if equipped).
4. Prove out system.

WARNING: THE AIR BAG SIMULATOR MUST BE REMOVED AND THE AIR BAG RECONNECTED BEFORE THE SYSTEM IS REACTIVATED.

Diagnostic Monitor

The air bag diagnostic monitor continually monitors all air bag system components and wiring connections for possible faults in the system. If the diagnostic monitor detects a fault in the air bag system when the ignition switch is in the ON position, a diagnostic trouble code will be flashed on the air bag warning indicator. Performing system diagnostics is the main purpose of the diagnostic monitor. THE DIAGNOSTIC MONITOR DOES NOT DEPLOY THE AIR BAGS IN THE EVENT OF A CRASH. The crash sensors are "hard wired" to the air bags, and therefore, the crash sensors determine when to deploy the air bags.

DIAGNOSIS AND TESTING (Continued)

Several important features of the air bag diagnostic monitor and its functions within the system are described below. It is necessary that you understand these key features and functions. They will enable you to better understand and perform more efficient air bag system diagnostics.

Features and Functions

- **The diagnostic monitor illuminates the air bag indicator for approximately six seconds when the ignition switch is turned to the ON position and then turns it off.** This indicates that the air bag indicator is operational. If the air bag indicator does not illuminate or if the lamp stays on or flashes at any time, a fault has been detected by the diagnostic monitor.
 - **Fault codes are displayed after the initial illumination of the air bag indicator for six seconds.** This is the amount of time it takes the monitor to perform all tests and verify system faults, if present.
 - **Fault codes are displayed as a series of flashes and pauses of the air bag indicator.** Each diagnostic trouble code, or series of flashes represents a number. For example, a Diagnostic Trouble Code 3 is displayed as follows:

Flash flash flash - (one second pause) - flash flash flash - etc.
 - **If a system fault exists AND the indicator is malfunctioning, an audible tone will be heard indicating the need for service.** The tone is a series of five sets of five beeps. This DOES NOT indicate a Diagnostic Trouble Code 5. It means that the indicator lamp is out and a system fault exists that requires service.
 - **If a fault exists that makes unwanted air bag deployment possible, the air bag diagnostic monitor has an internal thermal fuse that will blow automatically.** This removes all power to the air bag deployment circuit. The air bag indicator will flash the appropriate code to indicate the suspect circuit.
- NOTE: The internal thermal fuse is controlled by the diagnostic monitor. The diagnostic monitor will blow the thermal fuse whenever a short on the deployment circuits occurs (the fuse is not serviceable). **The thermal fuse does not blow because of excessive current flowing through it. DO NOT attempt to jumper out the thermal fuse with a circuit breaker or any other type of fuse.**
- **Fault codes are prioritized so that if two or more different faults occur at the same time, the fault having the highest priority will be displayed first.** The highest priority fault will be displayed until it is corrected. After it has been corrected, the next highest priority fault will be displayed (refer to the Diagnostic Trouble Code Priority Table outlined under Air Bag Diagnosis and Testing).

- **The 1990 to early production 1993 air bag system includes a back-up power supply.** This feature provides sufficient back up power to deploy the air bags in the event that the battery or battery cables are damaged in a collision before the crash sensors close. The back-up power supply will deplete its stored energy approximately twenty minutes after the positive battery cable is disconnected.

WARNING: THE BACK-UP POWER SUPPLY ENERGY MUST BE DEPLETED BEFORE ANY AIR BAG COMPONENT SERVICE IS PERFORMED. TO DEplete BACK UP POWER SUPPLY ENERGY, DISCONNECT THE POSITIVE BATTERY CABLE AND WAIT TWENTY MINUTES OR LOCATE AND DISCONNECT THE BACK-UP POWER SUPPLY FROM THE HARNESS CONNECTOR.

System Reconnect Check List

The check list below should be completed following diagnosis or service of any air bag system concern.

1. Are all crash sensors connected and mounted to the vehicle?
2. Is safing sensor connected and mounted to the vehicle?
3. Is gray three-way connector at base of steering column connected?
4. Is air bag or air bag simulator connected?
5. Is diagnostic monitor connected?
6. Is vehicle battery connected?
7. Is back-up power supply (if equipped) connected?

Diagnostic Procedure Glossary

The terms below are used to direct actions during diagnostic procedures. They are provided here with a thorough description of the action intended.

Air Bag Simulator

Rotunda Air Bag Simulator 105-00008 or equivalent is used to simulate air bag connection to the system.

Disconnect Component

Disconnect component means disconnect component connector and vehicle harness connector. It does not mean remove component. Also, a disconnected component should not be reconnected unless instructions state otherwise.

Deactivate System

Deactivate system means to perform the Deactivation Procedure outlined under Diagnostic Procedures.

DIAGNOSIS AND TESTING (Continued)**Prove Out System**

Prove out system means to turn the ignition switch from OFF to ON and observe the air bag indicator. The diagnostic monitor illuminates the air bag indicator for approximately six seconds and then turns off. This indicates that the air bag indicator is operational. If the air bag indicator does not illuminate or if the air bag indicator stays on or flashes at any time, a fault has been detected by the diagnostic monitor. For further information about air bag indicator operation, refer to Diagnostic Monitor outlined under Description.

Reactivate System

Reactivate system means to perform the Reactivation Procedure outlined under Diagnostic Procedures. **THE AIR BAG SIMULATOR(S) MUST BE REMOVED AND THE AIR BAG(S) RECONNECTED BEFORE THE SYSTEM IS REACTIVATED.**

Reconnect System

Reconnect system means to reconnect all system components. Refer to Air Bag System Reconnect Check List.

Replace Component

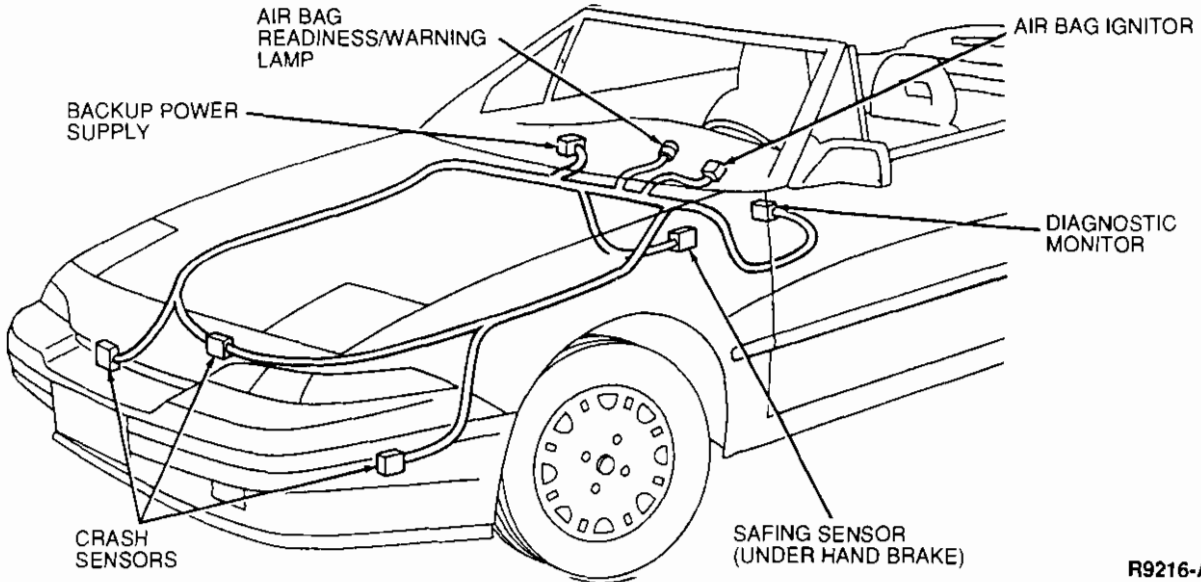
Replace component means to remove the existing component and replace it with an authorized replacement part obtained from Ford Parts and Service Division. Also, the replacement component should be installed on the vehicle and all necessary electrical connections must be completed.

Verify System

Verify system means to prove out system with air bag simulator(s) in place of air bag(s).

Service of the Air Bag System After a Collision

After a collision (whether or not the air bag(s) deployed), all crash and safing sensors should be inspected for bent brackets, cut wires, etc. Only the sensors that are physically damaged need to be replaced. It is not necessary to replace the sensors or the diagnostic monitor after a collision, unless they are damaged. Both the crash sensors and the diagnostic monitor are designed to withstand several air bag deployments without degradation. Sensor integrity may be verified by measuring the resistance across the sensor contacts and ensuring that all the internal wiring of the crash and safing sensors are connected as specified (refer to vehicle wiring schematic).

Component Location and Identification

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DIAGNOSTIC TROUBLE CODE PRIORITY TABLE

Priority	Code	Description
Highest	No Lamp	Diagnostic Monitor Unable to Light Air Bag Lamp
	Continuous Lamp	Diagnostic Monitor Unable to Flash Diagnostic Trouble Code
	3	Low Battery or Backup Power Voltage
	5	Air Bag Deployment Circuit Shorted to Ground
	10	Air Bag Deployment Circuit Intermittent Short to Ground
	4	Safing Sensor Diagnostic Circuit Open or Low Resistance in Crash Sensor

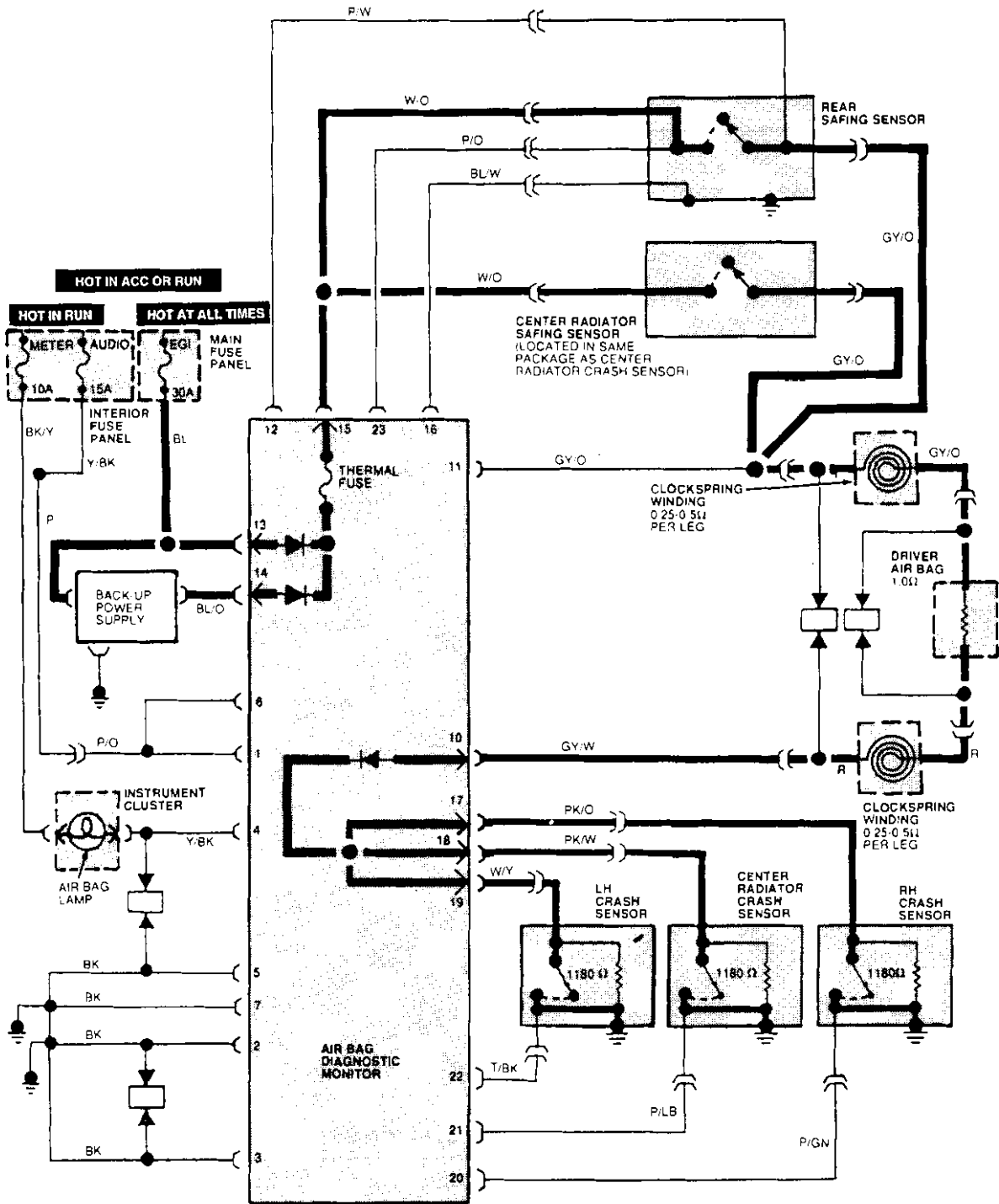
(Continued)

DIAGNOSIS AND TESTING (Continued)**DIAGNOSTIC TROUBLE CODE PRIORITY TABLE (Cont'd)**

Priority	Code	Description
	6	Driver Air Bag Circuit High Resistance
	7	Passenger Air Bag Circuit High Resistance
	8	Crash Sensor Not Mounted to Vehicle Properly
	9	Crash Sensor High Resistance
Lowest	2	All Primary Crash Sensors Disconnected

DIAGNOSIS AND TESTING (Continued)

Electrical Schematic — Air Bag System

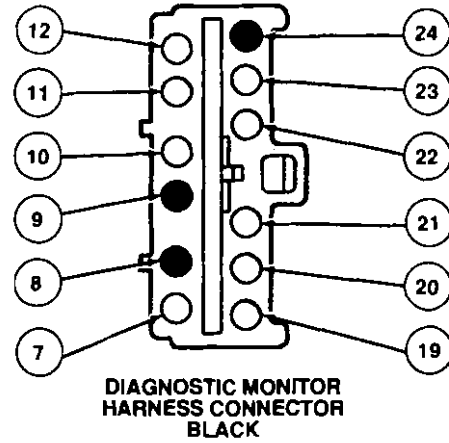
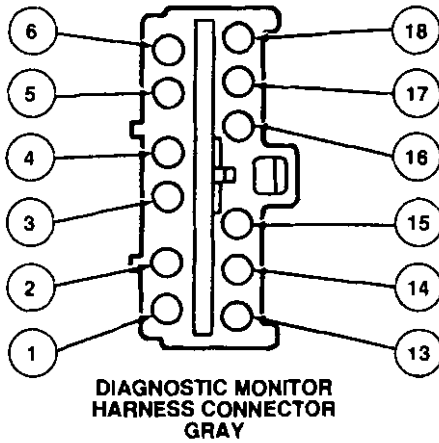


— DENOTES AIR BAG DEPLOYMENT CIRCUITS.
 — DENOTES SHORTING BAR SHORTS TERMINALS TOGETHER WHEN CONNECTOR IS DISCONNECTED.
 — DENOTES HARNESS CONNECTOR

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DIAGNOSIS AND TESTING (Continued)

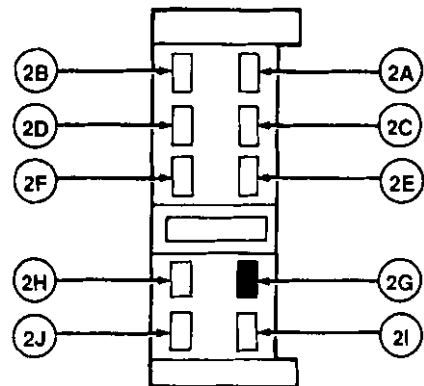
Diagnostic Monitor Connector



R8155-A

Pin No.	Circuit	Circuit Function
1	P/O	Power Input
2	BK	Ground
3	BK	Ground
4	Y/BK	Air Bag Indicator Control
5	BK	Ground
6	P/O	Power Input
7	BK	Ground
8	—	Not Used
9	—	Not Used
10	GY/W	Steering Column Air Bag
11	GY/O	Steering Column Air Bag
12	P/W	Rear Safing Sensor Monitor
13	BL	Power Input
14	BL/O	Back-Up Power Supply Input
15	W/O	Rear Safing Sensor Deploy
16	BL/W	Rear Safing Sensor Ground
17	PK/O	RH Forward Sensor Deploy
18	PK/W	Center Forward Sensor Deploy
19	W/Y	LH Forward Sensor Deploy
20	P/GN	RH Forward Sensor Monitor
21	P/LB	Center Forward Sensor Monitor
22	T/BK	LH Forward Sensor Monitor
23	P/O	Rear Safing Sensor Monitor
24	—	Not Used

Instrument Cluster Connector



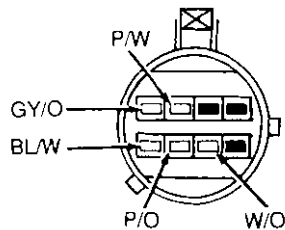
L8225-A

Pin Number	Wire Color	Circuit Function
2A	GN/R	Vehicle Speed Sensor (VSS)
2B	Y/BK	Air Bag Diagnostic Module Indicator
2C	BK	Ground (Vehicle Speed Sensor)
2D	BK/Y	Safety Belt Warning Indicator Lamp Power
2E	BK	Ground
2F	GN/O	Safety Belt Warning Indicator Lamp Ground
2G	—	Not Used
2H	BK/Y	Gauge Power
2I	Y/BL	Ignition Coil (Tachometer Pulse)
2J	BK/GN	Ground (Voltage Gauge, Tachometer)

TL8225A

DIAGNOSIS AND TESTING (Continued)

Rear Safing Sensor



R9248-A

**AIR BAG DIAGNOSTIC MONITOR
TYPICAL PIN VOLTAGES WITH SYSTEM CONNECTED AND ENGINE RUNNING**

VEHICLE CHARGING SYSTEM VOLTAGE	PIN NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
9.0	9.0	0.0	0.0	9.0	0.0	9.0	5.0	3.7	3.7	3.7	3.7	3.7
9.5	9.5	0.0	0.0	9.5	0.0	9.5	5.0	3.9	3.9	3.9	3.9	3.9
10.0	10.0	0.0	0.0	10.0	0.0	10.0	5.0	4.1	4.1	4.1	4.1	4.1
10.5	10.5	0.0	0.0	10.5	0.0	10.5	5.0	4.3	4.3	4.3	4.3	4.3
11.0	11.0	0.0	0.0	11.0	0.0	11.0	5.0	4.5	4.5	4.5	4.5	4.5
11.5	11.5	0.0	0.0	11.5	0.0	11.5	5.0	4.7	4.7	4.7	4.7	4.7
12.0	12.0	0.0	0.0	12.0	0.0	12.0	5.0	4.9	4.9	4.9	4.9	4.9
12.5	12.5	0.0	0.0	12.5	0.0	12.5	5.0	5.1	5.1	5.1	5.1	5.1
13.0	13.0	0.0	0.0	13.0	0.0	13.0	5.0	5.3	5.3	5.3	5.3	5.3
13.5	13.5	0.0	0.0	13.5	0.0	13.5	5.0	5.5	5.5	5.5	5.5	5.5
14.0	14.0	0.0	0.0	14.0	0.0	14.0	5.0	5.7	5.7	5.7	5.7	5.7
14.5	14.5	0.0	0.0	14.5	0.0	14.5	5.0	5.9	5.9	5.9	5.9	5.9
15.0	15.0	0.0	0.0	15.0	0.0	15.0	5.0	6.1	6.1	6.1	6.1	6.1
15.5	15.5	0.0	0.0	15.5	0.0	15.5	5.0	6.3	6.3	6.3	6.3	6.3
16.0	16.0	0.0	0.0	16.0	0.0	16.0	5.0	6.5	6.5	6.5	6.5	6.5

**AIR BAG DIAGNOSTIC MONITOR
TYPICAL PIN VOLTAGES WITH SYSTEM CONNECTED AND ENGINE RUNNING**

VEHICLE CHARGING SYSTEM VOLTAGE	PIN NUMBER											
	13	14	15	16	17	18	19	20	21	22	23	24
9.0	9.0	9.0	8.5	0.0	3.2	3.2	3.2	0.0	0.0	0.0	8.5	NC
9.5	9.5	9.5	9.0	0.0	3.4	3.4	3.4	0.0	0.0	0.0	9.0	NC
10.0	10.0	10.0	9.5	0.0	3.6	3.6	3.6	0.0	0.0	0.0	9.5	NC
10.5	10.5	10.5	10.0	0.0	3.8	3.8	3.8	0.0	0.0	0.0	10.0	NC
11.0	11.0	11.0	10.5	0.0	4.0	4.0	4.0	0.0	0.0	0.0	10.5	NC
11.5	11.5	11.5	11.0	0.0	4.2	4.2	4.2	0.0	0.0	0.0	11.0	NC
12.0	12.0	12.0	11.5	0.0	4.4	4.4	4.4	0.0	0.0	0.0	11.5	NC
12.5	12.5	12.5	12.0	0.0	4.6	4.6	4.6	0.0	0.0	0.0	12.0	NC
13.0	13.0	13.0	12.5	0.0	4.8	4.8	4.8	0.0	0.0	0.0	12.5	NC
13.5	13.5	13.5	13.0	0.0	5.0	5.0	5.0	0.0	0.0	0.0	13.0	NC
14.0	14.0	14.0	13.5	0.0	5.2	5.2	5.2	0.0	0.0	0.0	13.5	NC
14.5	14.5	14.5	14.0	0.0	5.4	5.4	5.4	0.0	0.0	0.0	14.0	NC
15.0	15.0	15.0	14.5	0.0	5.6	5.6	5.6	0.0	0.0	0.0	14.5	NC
15.5	15.5	15.5	15.0	0.0	5.8	5.8	5.8	0.0	0.0	0.0	15.0	NC
16.0	16.0	16.0	15.5	0.0	6.0	6.0	6.0	0.0	0.0	0.0	15.5	NC

NC = No harness connection

DIAGNOSIS AND TESTING (Continued)

No Air Bag Lamp

Inoperative Lamp Circuit Or No Ignition Voltage To Diagnostic Monitor

Normal Operation

The air bag indicator is designed to illuminate for approximately six seconds when the ignition key is turned to the ON position. This initial six seconds of air bag indicator illumination (continuous lamp) is considered normal operation and is called "prove-out" of the air bag indicator.

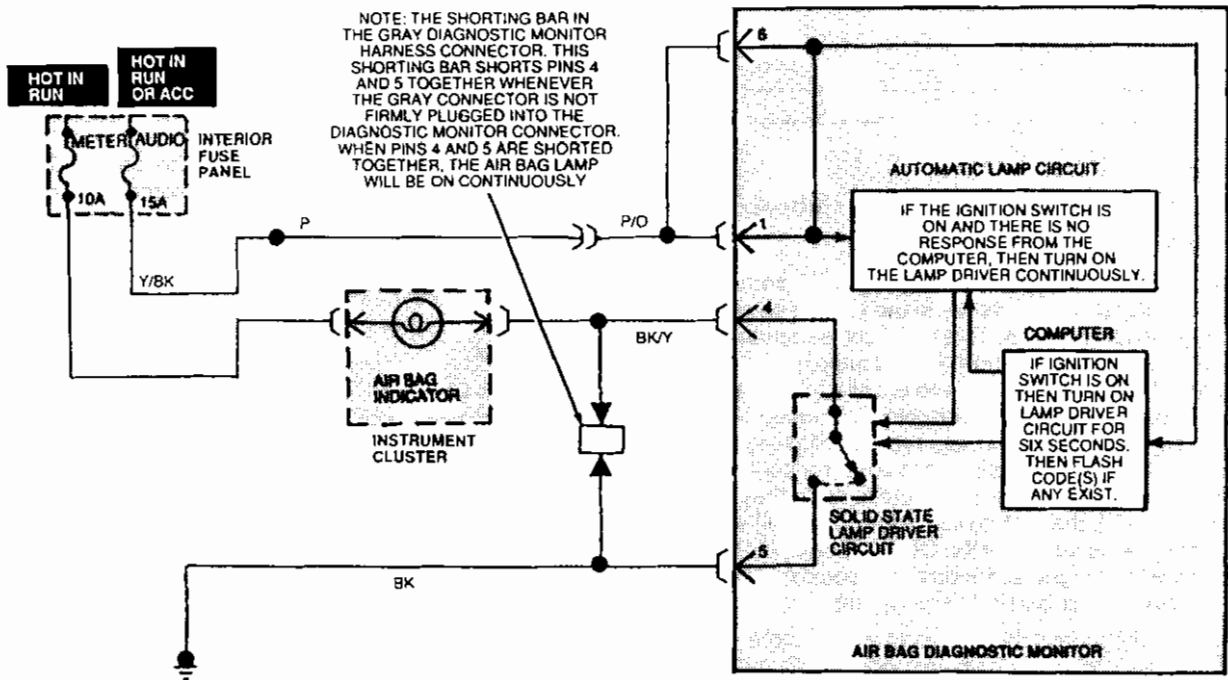
The diagnostic monitor requires power on Pin 1 in order to energize the air bag indicator circuit. If the air bag indicator circuit is open or the diagnostic monitor does not have ignition voltage at Pin 1, the air bag indicator will not light.

Possible Causes

A No Air Bag Indicator condition can be caused by:

1. **A burned out bulb or open wiring in the air bag indicator circuit.**
2. **Loss of ignition voltage at Pin 1 and Pin 6 of the diagnostic monitor.**

Electrical Schematic—No Air Bag Lamp



RS190-A

Pinpoint Tests—No Air Bag Lamp

PINPOINT TEST NAB: NO AIR BAG LAMP

TEST STEP	RESULT	ACTION TO TAKE
NAB-1 CHECK FOR IGNITION VOLTAGE <ul style="list-style-type: none"> ● Deactivate system. ● Disconnect diagnostic monitor. ● Turn ignition switch to RUN. ● Measure voltage between Pins 1 (+) and 3 (-). ● Is voltage measured equal to battery voltage? 	Yes No	<ul style="list-style-type: none"> ▶ GO to NAB-2. ▶ SERVICE open circuit in "HOT IN RUN" circuit from fuse panel. CHECK for proper ground on Pin 3 of diagnostic monitor connector. RECONNECT system. VERIFY system. REACTIVATE system.

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST NAB: NO AIR BAG LAMP (Continued)

TEST STEP		RESULT	ACTION TO TAKE
NAB-2	CHECK FOR OPEN LAMP CIRCUIT		
	<ul style="list-style-type: none"> ● Leave diagnostic monitor disconnected and key ignition switch in RUN. ● Is air bag indicator on? 	Yes	<ul style="list-style-type: none"> ▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.
		No	<ul style="list-style-type: none"> ▶ LOCATE and SERVICE open circuit in air bag indicator circuitry. CHECK for burned out indicator bulb, open connectors, pushed out pins, blown fuses, etc. RECONNECT system. VERIFY system. REACTIVATE system.

Continuous Air Bag Lamp**Diagnostic Monitor Disconnected Or Inoperative****Normal Operation**

The air bag indicator lamp is designed to illuminate for approximately six seconds when the ignition key is turned to the ON position. This initial six seconds of air bag indicator illumination (continuous lamp) is considered normal operation and is called "prove-out" of the air bag indicator. If the diagnostic monitor detects any faults in the air bag system following prove out, it will flash the air bag indicator a series of times to indicate the diagnostic trouble code that has been detected. If the air bag indicator comes on when the ignition key is turned to the ON position and stays on for more than eight seconds continuously, then a fault exists in the air bag indicator circuit.

The air bag diagnostic monitor uses a solid state circuit that shorts the air bag indicator line (Circuit BK/Y) to ground to turn the air bag indicator on. When the gray diagnostic monitor harness connector is unplugged from the diagnostic monitor, a shorting bar within the harness connector connects Pins 4 (air bag indicator) and 5 (ground) together. Therefore, the shorting bar will turn the air bag indicator on whenever the gray diagnostic monitor harness connector is disconnected. Because the shorting bar makes a continuous connection between Pins 4 and 5 when the connector is disconnected, the air bag indicator will not flash—instead, it will glow continuously.

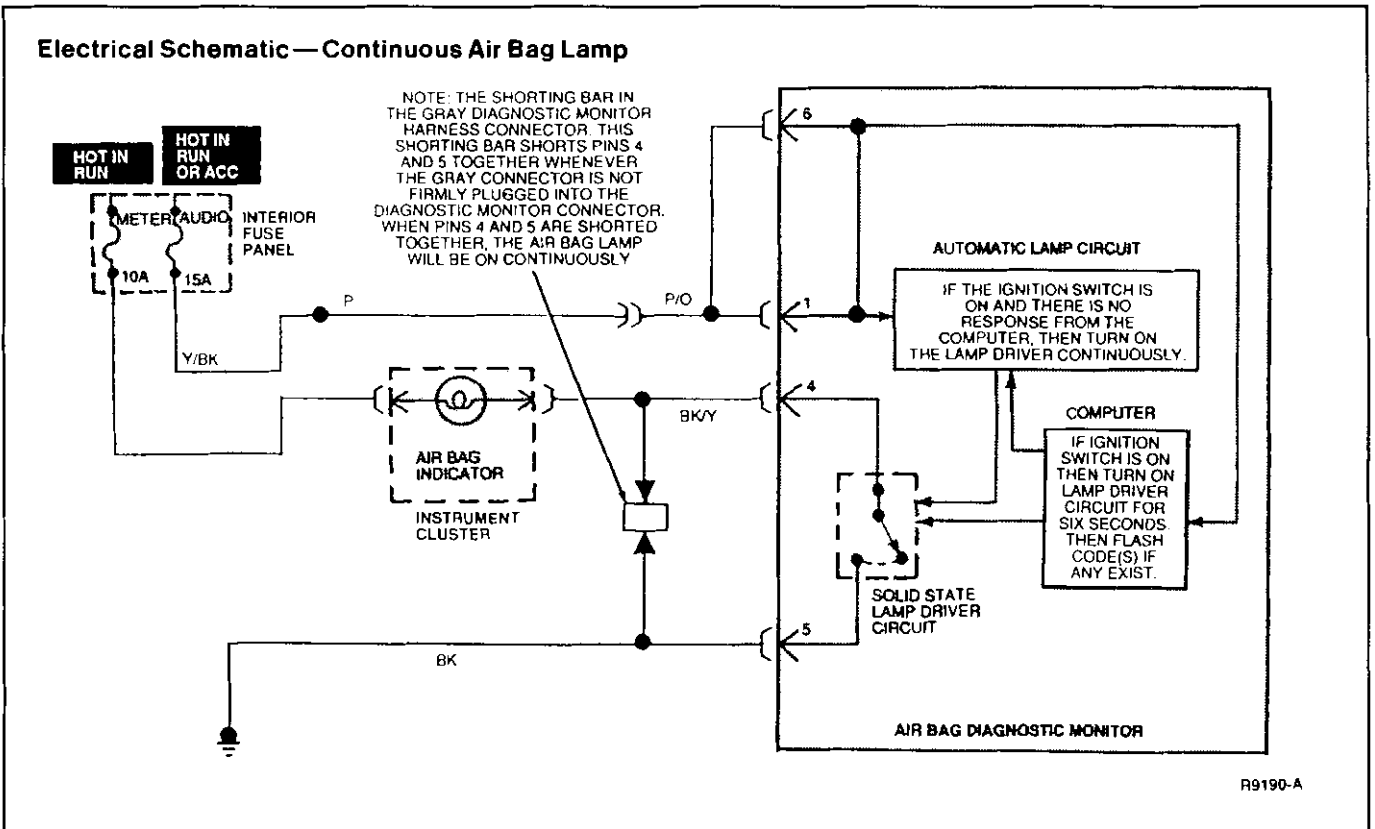
When the ignition key is turned ON, the diagnostic monitor "wakes up" and after approximately six seconds turns the air bag indicator OFF. If the diagnostic monitor fails to "wake up", the lamp driver circuit will automatically turn the air bag indicator ON continuously indicating a concern in the air bag diagnostic monitor or at the gray diagnostic monitor connector.

Possible Causes

Continuous glowing of the air bag indicator can be caused by:

1. **A disconnected or poorly connected diagnostic monitor may not push the shorting bar between Pins 4 and 5 into its fully retracted position.** This pulls the air bag indicator circuit to ground and causes the air bag indicator to glow continuously.
2. **Shorted air bag lamp wiring between Circuit (BK/Y) and ground.**
3. **A damaged or worn diagnostic monitor.**

DIAGNOSIS AND TESTING (Continued)



Pinpoint Test—Continuous Air Bag Lamp

CONTINUOUS AIR BAG LAMP

TEST STEP		RESULT	ACTION TO TAKE
CAB-1	CHECK IF DIAGNOSTIC MONITOR IS CONNECTED		
	<ul style="list-style-type: none"> Deactivate system. Inspect connectors on diagnostic monitor. Are connectors fully pushed together? 	Yes No	GO to CAB-2 . Firmly MATE connectors to diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.
CAB-2	CHECK LAMP CIRCUITRY		
	<ul style="list-style-type: none"> Disconnect diagnostic monitor. Remove plastic locking wedge from gray diagnostic monitor harness connector. Turn ignition switch to RUN. Is air bag indicator on? 	Yes No	SERVICE short to ground in Circuit (BK / Y) between lamp and diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system. GO to CAB-3 .
CAB-3	INSPECT SHORTING BAR		
	<ul style="list-style-type: none"> Inspect shorting bars on plastic locking wedge for proper operation. Is shorting bar in good working order? 	Yes No	REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system. REPLACE plastic locking wedge. Make sure replacement has shorting bars on the locking wedge. RECONNECT system. VERIFY system. REACTIVATE system.

DIAGNOSIS AND TESTING (Continued)**Diagnostic Trouble Code 2****All Primary Crash Sensors Disconnected****Normal Operation**

Each primary crash sensor has two wires. One wire is used for air bag deployment and the other wire is used for monitoring the mounting (ground) of the primary crash sensor to sheet metal (refer to Diagnostic Trouble Codes 8 and 9 as outlined). If the diagnosis reveals that ALL THREE primary crash sensors are not connected **AND** ALL THREE primary crash sensors are not properly grounded, the diagnostic monitor will flash Diagnostic Trouble Code 2.

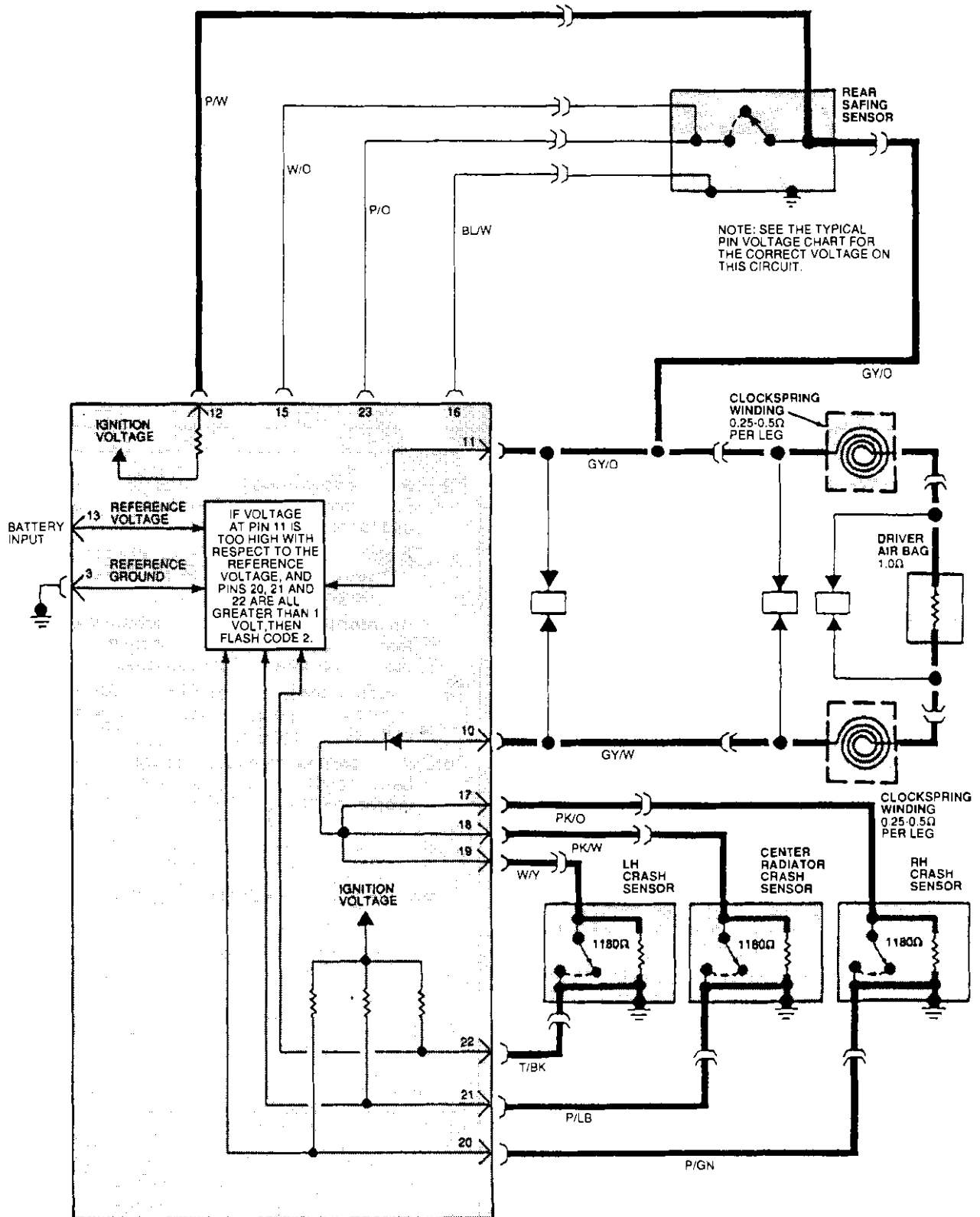
Possible Causes

Diagnostic Trouble Code 2 can be caused by:

1. **All primary crash sensors disconnected from wiring harness or main wiring harness not connected with engine compartment wiring harness.**

DIAGNOSIS AND TESTING (Continued)

Electrical Schematic—Diagnostic Trouble Code 2



NOTE: SEE THE TYPICAL PIN VOLTAGE CHART FOR THE CORRECT VOLTAGE ON THIS CIRCUIT.

IF VOLTAGE AT PIN 11 IS TOO HIGH WITH RESPECT TO THE REFERENCE VOLTAGE, AND PINS 20, 21 AND 22 ARE ALL GREATER THAN 1 VOLT, THEN FLASH CODE 2.

R9191-A

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests—Diagnostic Trouble Code 2

DIAGNOSTIC TROUBLE CODE 2

TEST STEP		RESULT	ACTION TO TAKE
2-1	CHECK DIAGNOSTIC MONITOR CONNECTORS		
	<ul style="list-style-type: none"> ● Deactivate system. ● Disconnect diagnostic monitor. ● Inspect diagnostic monitor harness connectors. ● Are both connectors fully inserted? 	Yes No	GO to 2-2. Firmly MATE both connectors. RECONNECT system. VERIFY system. REACTIVATE system.
2-2	CHECK VOLTAGE AT PIN 11		
	<ul style="list-style-type: none"> ● Turn ignition switch from OFF to RUN. ● Measure voltage at Pin 11 (Circuit GY / O) to ground. NOTE: Use voltage table to determine if the voltage is within specification.	Yes No	INSPECT and RECONNECT all primary crash sensors. RECONNECT system. VERIFY system. REACTIVATE system. REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.
	<ul style="list-style-type: none"> ● Is voltage within specification? 		

Diagnostic Trouble Code 3

Air Bag Deployment Circuit Low Battery Or Back-Up Power Supply Voltage

Normal Operation

The diagnostic monitor measures the voltage at Pins 13 and 14 of the diagnostic monitor connector. Pin 13 is connected to a fuse (HOT AT ALL TIMES) either in the instrument panel fuse panel or in the power distribution box. On early production 1993 vehicles, Pin 14 is connected to the output pin of the air bag back-up power supply. The voltage at both Pin 13 and Pin 14 should be equal to battery voltage. If the voltage measured at either Pin 13 or Pin 14 drops to less than 9 volts, the diagnostic monitor will flash out Diagnostic Trouble Code 3.

Possible Causes

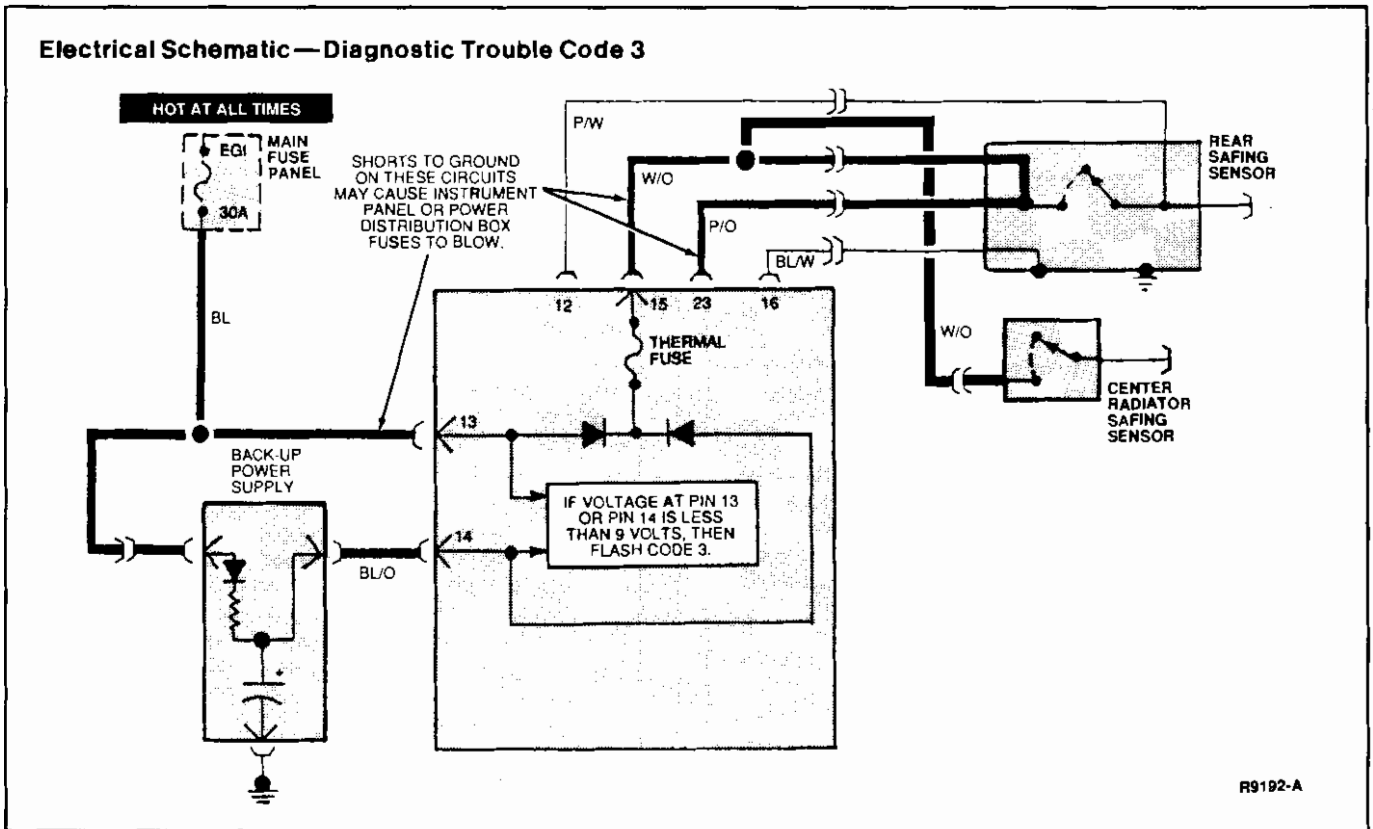
Low voltage at diagnostic monitor Pin 13 or Pin 14 can be caused by:

1. **An open circuit** that would prevent battery voltage from reaching diagnostic monitor Pin 13 and the back-up power supply.

NOTE: If the instrument panel fuse and/or the power distribution fuse are blown, be sure to diagnose the system for Possible Causes 2, 3 and 4.

2. **A short to ground in Circuits (W/O) and (P/O)** may result in a blown instrument panel fuse and/or power distribution fuse.
3. **A short to ground on the battery feed circuit between the fuse and Pin 13 of the diagnostic monitor.**
4. **An internal short to ground within the safing sensor** may result in a blown instrument panel fuse and/or power distribution fuse.
5. **A disconnected or poorly connected back-up power supply** may cause low voltage on Pin 14 of the diagnostic monitor.
6. **A concern in the charging system** causing battery and back-up power supply voltage to drop below 9 volts.

DIAGNOSIS AND TESTING (Continued)



Pinpoint Tests—Diagnostic Trouble Code 3

DIAGNOSTIC TROUBLE CODE 3

TEST STEP		RESULT	ACTION TO TAKE
3-1	<p>VERIFY CONDITION</p> <ul style="list-style-type: none"> Deactivate system. Disconnect diagnostic monitor. Allow 2 minutes for back-up power supply (BPS) to recharge. Start engine and measure voltage at both Pins 13 (+) and 14 (+) to Pin 3 (-). <p>NOTE: Use voltage table to determine correct voltages for Pins 13 and 14.</p> <ul style="list-style-type: none"> Is voltage at Pins 13 and 14 within specification? 	<p>Yes</p> <p>No</p>	<ul style="list-style-type: none"> REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system. If Pin 13 is normal but Pin 14 is low, GO to 3-2. If Pins 13 and 14 are low, GO to 3-3. If Pins 13 is low and Pin 14 is normal, LOCATE and SERVICE open circuit between fuse panel and Pin 13 of diagnostic monitor harness connector or CHECK splice to back-up power supply for possible open circuit. RECONNECT system. VERIFY system. REACTIVATE system.

DIAGNOSIS AND TESTING (Continued)

DIAGNOSTIC TROUBLE CODE 3 (Continued)

TEST STEP		RESULT	ACTION TO TAKE
3-2	CHECK FOR OPEN CIRCUITS		
	<ul style="list-style-type: none"> ● Disconnect back-up power supply. ● Check for open circuit(s) between power fuse and back-up power supply harness connector. ● Check for open circuit between back-up power supply output and Pin 14 of the diagnostic monitor harness connector. ● Were any open circuits found? 	<p>Yes</p> <p>No</p>	<p>▶ SERVICE open circuit(s). RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ REPLACE back-up power supply. RECONNECT system. VERIFY system. REACTIVATE system.</p>
3-3	CHECK FUSE		
	<ul style="list-style-type: none"> ● Check power feed circuit fuse. ● Is fuse blown? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE fuse. If fuse blows immediately, LOCATE and SERVICE short to ground between fuse panel and diagnostic monitor or back-up power supply. If fuse does not blow, GO to 3-4.</p> <p>▶ LOCATE and SERVICE open circuit between the fuse panel and Pins 13 and 14 of diagnostic monitor harness connector. RECONNECT system. VERIFY system. REACTIVATE system.</p>
3-4	CHECK FOR SHORT TO GROUND		
	<ul style="list-style-type: none"> ● Reconnect diagnostic monitor. ● Does fuse blow? 	<p>Yes</p> <p>No</p>	<p>▶ LOCATE and SERVICE short to ground in Circuit (W/O), Circuit (P/O), safing sensor (5-wire) or center front safing sensor (if equipped). RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ LOCATE and SERVICE intermittent short to ground in power feed "HOT AT ALL TIMES" circuit and back-up power supply, or in Circuit (W/O), Circuit (P/O) or the safing sensor(s) wiring. RECONNECT system. VERIFY system. REACTIVATE system.</p>

DIAGNOSIS AND TESTING (Continued)**Diagnostic Trouble Code 4****Sensor Circuits Fault In Sensor Circuit****Normal Operation**

The rear safing sensor is located either inside the passenger compartment or attached to the cowl area (depending on vehicle application). Of the 5-wires of this sensor, two wires are used for deployment circuits and three wires are used for diagnostic circuits. Circuits W/O and GY/O are the deployment circuits and Circuits P/O, BL/W and P/W are the diagnostic circuits.

NOTE: An additional safing sensor is packaged inside the center radiator crash sensor along with the crash sensor. The safing sensor in this package utilizes only two circuits: Circuit W/O and Circuit GY/O.

The rear safing sensor consists of a normally open set of contacts that are responsible for delivering battery positive voltage to the plus (+) terminal of the air bag(s) during a frontal impact. Since the safing sensor is a momentary contact switch, the safing sensor will automatically return to the open state after a collision.

The diagnostic monitor provides the battery voltage to one side of the safing sensor contacts and monitors the other side for the correct diagnostic voltage. There are four different concerns that may cause Diagnostic Trouble Code 4 to flash on the Air Bag Indicator.

Diagnostic Trouble Code 4A**Safing Sensor Diagnostic Circuit Open Or Low Resistance In A Crash Sensor****Normal Operation**

Each crash sensor has an internal resistor. The diagnostic monitor uses the resistor in the primary crash sensors in combination with the resistor inside the diagnostic monitor to create a tightly controlled diagnostic voltage at Pin 11 (Circuit GY/O). The primary crash sensors are tied together inside the diagnostic monitor at Pins 17 (Circuit PK/O), 18 (Circuit PK/W) and 19 (Circuit W/Y). Therefore, the resistors in the sensors are connected in parallel. The parallel combination of all three crash sensors resistance should be equal to 393 ohms. Each crash sensor should have an individual resistance of 1180 ohms \pm 25 ohms.

Note that Pin 11 is connected to Circuit GY/O in the vehicle wiring harness. Circuit GY/O is connected to Circuit P/W inside the rear safing sensor. Circuit P/W is connected to Pin 12 of the diagnostic monitor. Circuits GY/O and P/W are connected together in the rear safing sensor and therefore, the voltage on Circuits GY/O and P/W should be identical. Current flows from the ignition voltage within the diagnostic monitor, through the resistor, out to Circuit (P/W) on Pin 12, through the rear safing sensor and out to the driver side air bag on Circuit GY/O. Current flows through the driver side air bag and into Pin 10 (Circuit GY/W). Current then flows from Pin 10 through the diode inside the diagnostic monitor and out to the crash sensors through Pins 17, 18, and 19. The current flows through each crash sensor resistor and terminates at the case ground of each sensor. Pin 11 is the midpoint of the resistor network and voltage at Pin 11 will change with vehicle charging system voltage. The expected voltage at Pin 11 is shown in the table below. The diagnostic monitor measures the vehicle charging system voltage at Pin 13 (battery input). By measuring the voltage at Pin 13, the diagnostic monitor can accurately predict what the voltage at Pin 11 should be in a normal functioning system.

If the connection between Circuits GY/O and P/W inside the rear safing sensor is broken, then the resistor on Pin 12 is no longer in the diagnostic circuit explained above. Without the resistor on Pin 12 in the circuit, current will not flow through circuits P/W and GY/O and therefore, the voltage on Pin 11 will be lower than the normal expected voltage and the voltage on Pin 12 will be approximately equal to the vehicle charging system voltage. The diagnostic monitor does not measure the voltage on Pin 12, so the monitor bases its decision strictly on the voltage at Pin 11. If the voltage at Pin 11 is lower than it should be, the monitor will flash Diagnostic Trouble Code 4. Another situation that can cause low voltage at Pin 11 is a decrease in crash sensor resistance (resistance is too low). If this occurs, the voltage at Pin 11 will be pulled down to a lower than normal value because the parallel combination of the three crash sensors' resistance will be less than 393 ohms. In this situation, the voltage at Pins 11 and 12 will be identical, but the monitor does not measure the voltage at Pin 12. Therefore, a crash sensor with low resistance may cause low voltage at Pin 11 and the monitor will flash Diagnostic Trouble Code 4. Note that if the voltage goes too low, such as if a short to ground exists in the circuit, a Diagnostic Trouble Code 5 will be displayed.

DIAGNOSIS AND TESTING (Continued)

Since the diagnostic monitor must know the vehicle charging system voltage (battery voltage) in order to be able to predict what the voltage on Circuit GY/O-P/W should be, the diagnostic monitor measures the voltage between Pin 11 and Pin 3 (ground) and compares this voltage to the voltage between Pin 13 (battery) and Pin 3 (ground). If the voltage at Pin 11 is too low then the diagnostic monitor will flash Diagnostic Trouble Code 4 on the air bag indicator, indicating an open between Circuits GY/O and P/W or low resistance in one or more of the crash sensors. The resistance of the crash sensors is 1180 ohms \pm 25 ohms. If the resistance of one or more of the crash sensors is too low, this will tend to pull the voltage on Circuit GY/O-P/W down.

Possible Causes

Low voltage at Pin 11 and high voltage at Pin 12 can be caused by:

1. **An open circuit or high resistance in the wiring harness in Circuit GY/O or P/W.**
2. **An open circuit or high resistance inside the rear safing sensor across Circuit GY/O and Circuit P/W.**

Low voltage on both Pins 11 and 12 can be caused by:

3. **Resistance to ground on Circuit GY/O or P/W.** Circuits GY/O and P/W should be open circuits to ground when the diagnostic monitor is disconnected from the harness. Resistance to ground on these circuits can cause a drop in the diagnostic voltage on both circuits.

NOTE: Circuit GY/O runs to the radiator safing sensor (located in the same package as the center radiator crash sensor) as well as the rear safing sensor.

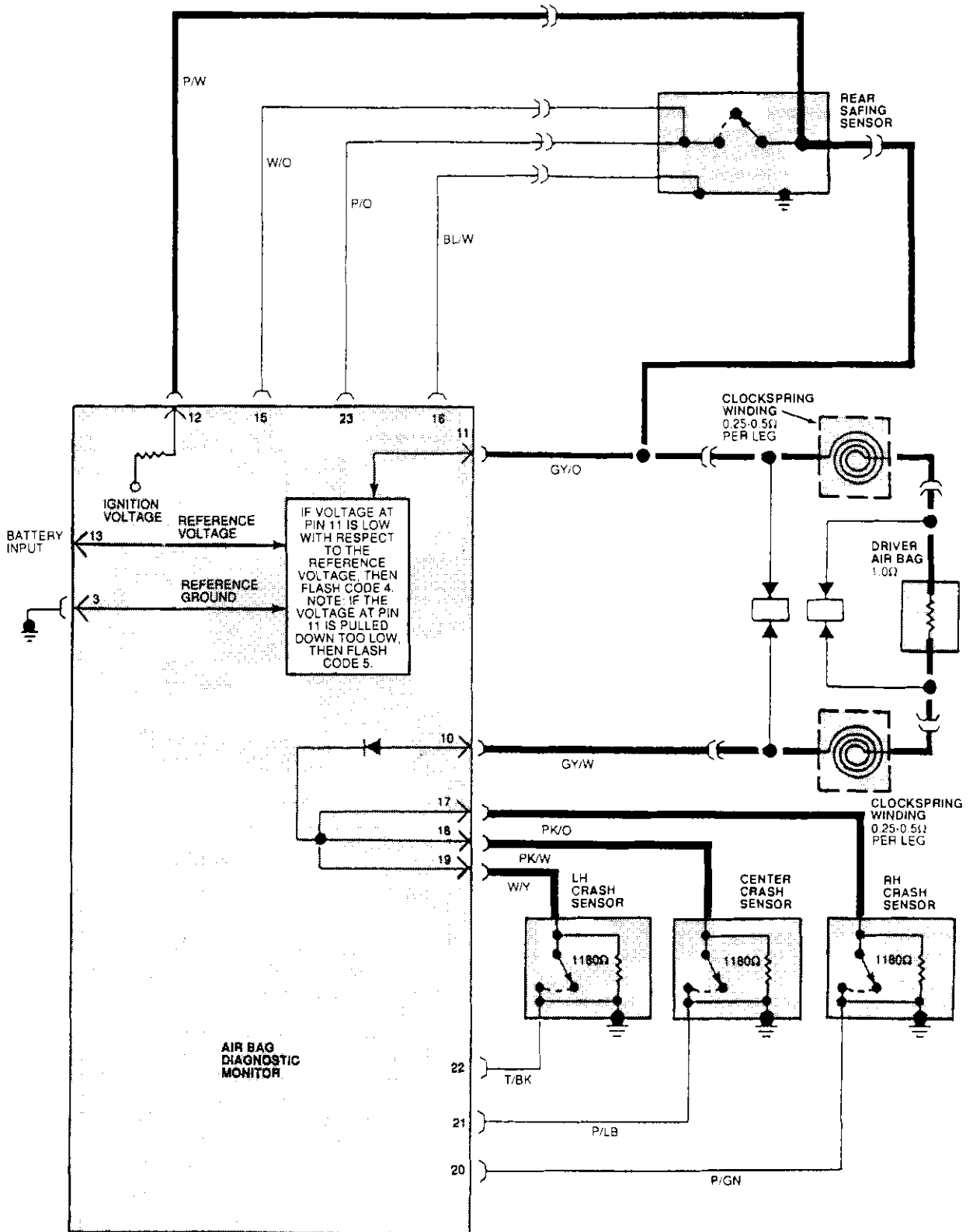
4. **Low resistance in one or more of the primary crash sensors.** If the resistance of one or more of the primary crash sensors is lower than normal, the voltage on Pin 11 will be pulled down too low.
5. **Intermittent battery voltage at Pin 13** can cause the reference voltage inside the diagnostic monitor to fluctuate and can cause Diagnostic Trouble Code 4 in some circumstances.
6. **A poor ground on Pin 3 of the diagnostic monitor** may cause voltage to appear on the diagnostic monitor ground reference. Any voltage on the ground reference will cause the diagnostic monitor to measure the voltage at Pin 11 as low, even though the voltage on Pin 11 with respect to sheet metal is normal.

VEHICLE CHARGING SYSTEM VOLTAGE

PIN NO.	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
11	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5
12	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5

DIAGNOSIS AND TESTING (Continued)

Electrical Schematic—Diagnostic Trouble Code 4A



R9193-A

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code 4B

Rear Safing Sensor Not Mounted to Vehicle Properly

Normal Operation

Circuit BL/W is riveted to the side of the rear safing sensor housing. The housing is normally mounted to the sheet metal of the vehicle and is therefore grounded. A resistor inside the diagnostic monitor is connected to Pin 16 (Circuit BL/W) and has a 5-volt reference voltage (see schematic). If Circuit BL/W is properly grounded, the voltage on Pin 16 will be 0 volts. If the voltage on Circuit BL/W is greater than 0.7 volt the diagnostic monitor may flash Diagnostic Trouble Code 4 on the air bag indicator, indicating that the rear safing sensor is not attached to the sheet metal.

Possible Causes

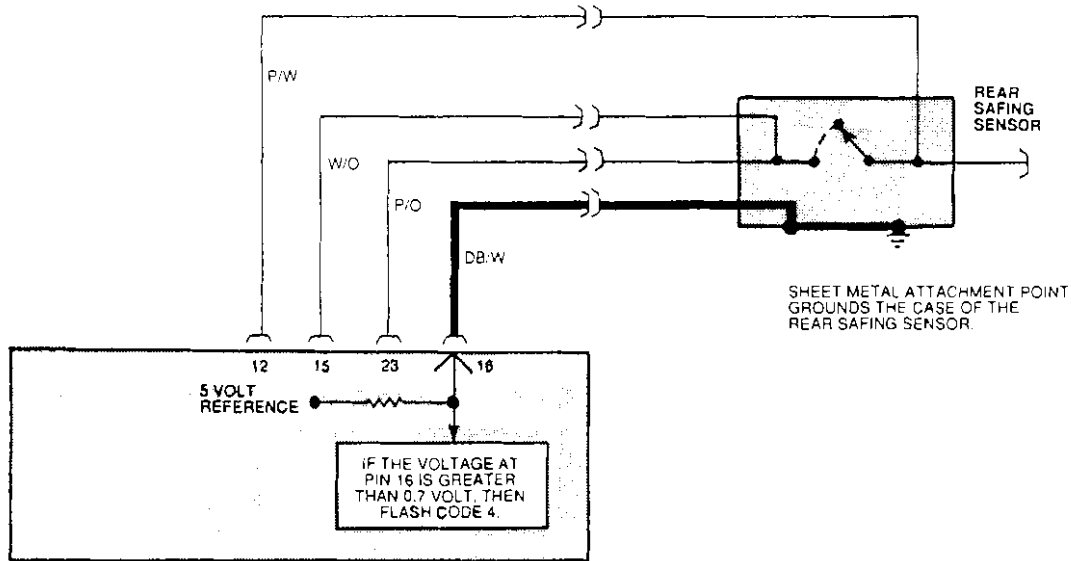
Greater than 0.7 volt on Pin 16 can be caused by:

1. **A poor connection due to loose mounting, dirt or corrosion on the rear safing sensor mounting surface.**
2. **An open or damaged wire in Circuit BL/W from Pin 16 of the diagnostic monitor connector to the rear safing sensor.**
3. **An open wire or loose rivet inside the rear safing sensor.**

VEHICLE CHARGING SYSTEM VOLTAGE

PIN NO.	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
15	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5
23	8.5	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5

Electrical Schematic—Diagnostic Trouble Code 4B



R9194-A

DIAGNOSIS AND TESTING (Continued)

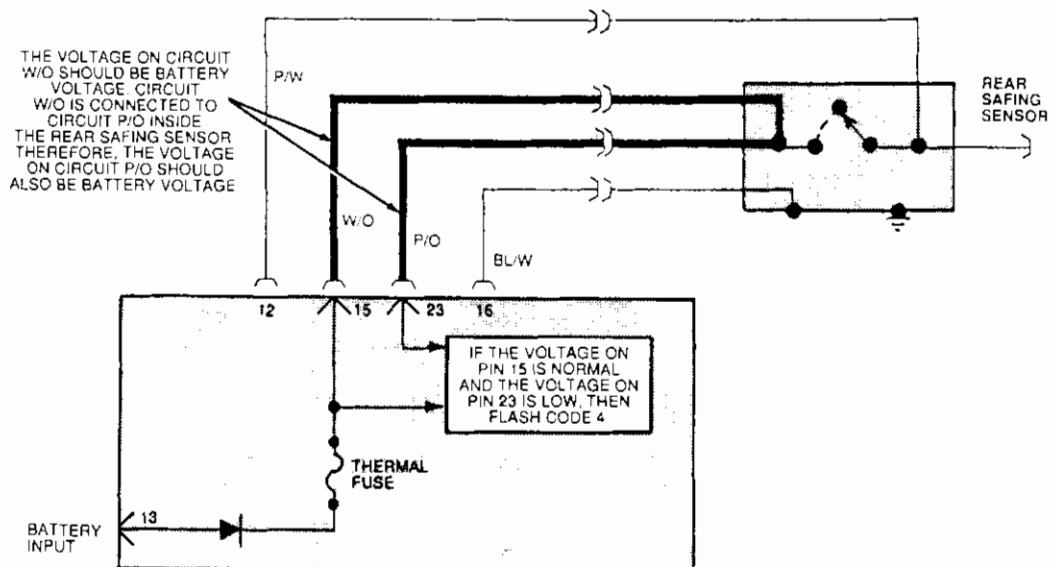
Diagnostic Trouble Code 4C

Rear Safing Sensor Battery Feed Circuit Open

Normal Operation

The diagnostic monitor has battery voltage on Pin 15 (Circuit W/O) at all times. Circuit W/O is connected to Circuit P/O inside the rear safing sensor. Therefore, if the rear safing sensor is properly connected, the voltage on Circuits W/O and P/O will be the same. Circuit P/O is connected to Pin 23 of the diagnostic monitor. If the voltage at Pin 15 (Circuit W/O) is normal, and the voltage at Pin 23 (Circuit P/O) is low, then the diagnostic monitor will flash Diagnostic Trouble Code 4 on the air bag indicator, indicating an open across Circuits W/O and P/O.

Electrical Schematic—Diagnostic Trouble Code 4C



R9195-A

Diagnostic Trouble Code 4D

Safing Sensor Circuit Shorted To Battery Voltage

Normal Operation

The diagnostic monitor measures voltage at Pin 11 (Circuit GY/O). The voltage at Pin 11 is controlled by a resistor inside the diagnostic monitor (along with the resistors inside the crash sensors - refer to Fault 4A Normal Operation) and this voltage varies with charging system voltage. (Refer to the Typical Air Bag Diagnostic Monitor Pin Voltages Chart). If Circuit GY/O is shorted to battery voltage, the voltage at Pin 11 of the diagnostic monitor will be battery voltage and the diagnostic monitor will flash Diagnostic Trouble Code 4 on the air bag indicator.

Possible Causes

Battery voltage on Pin 11 can be caused by:

Possible Causes

Normal voltage at Pin 15 and low voltage at Pin 23 can be caused by:

1. An open circuit or high resistance in the wiring harness in Circuit W/O or P/O.
2. An open circuit or high resistance inside the rear safing sensor across the W/O and P/O wires.

1. A short in the wiring harness between Circuits GY/O or P/W and another wire can cause high voltage on these circuits.

NOTE: The wiring leading to the safing sensor has higher voltage wires bundled in the harness with Circuits GY/O and P/W.

2. A short in the clockspring between Circuit GY/O and some of the horn or speed control wiring.
3. A short across the normally open contacts of the rear safing sensor.

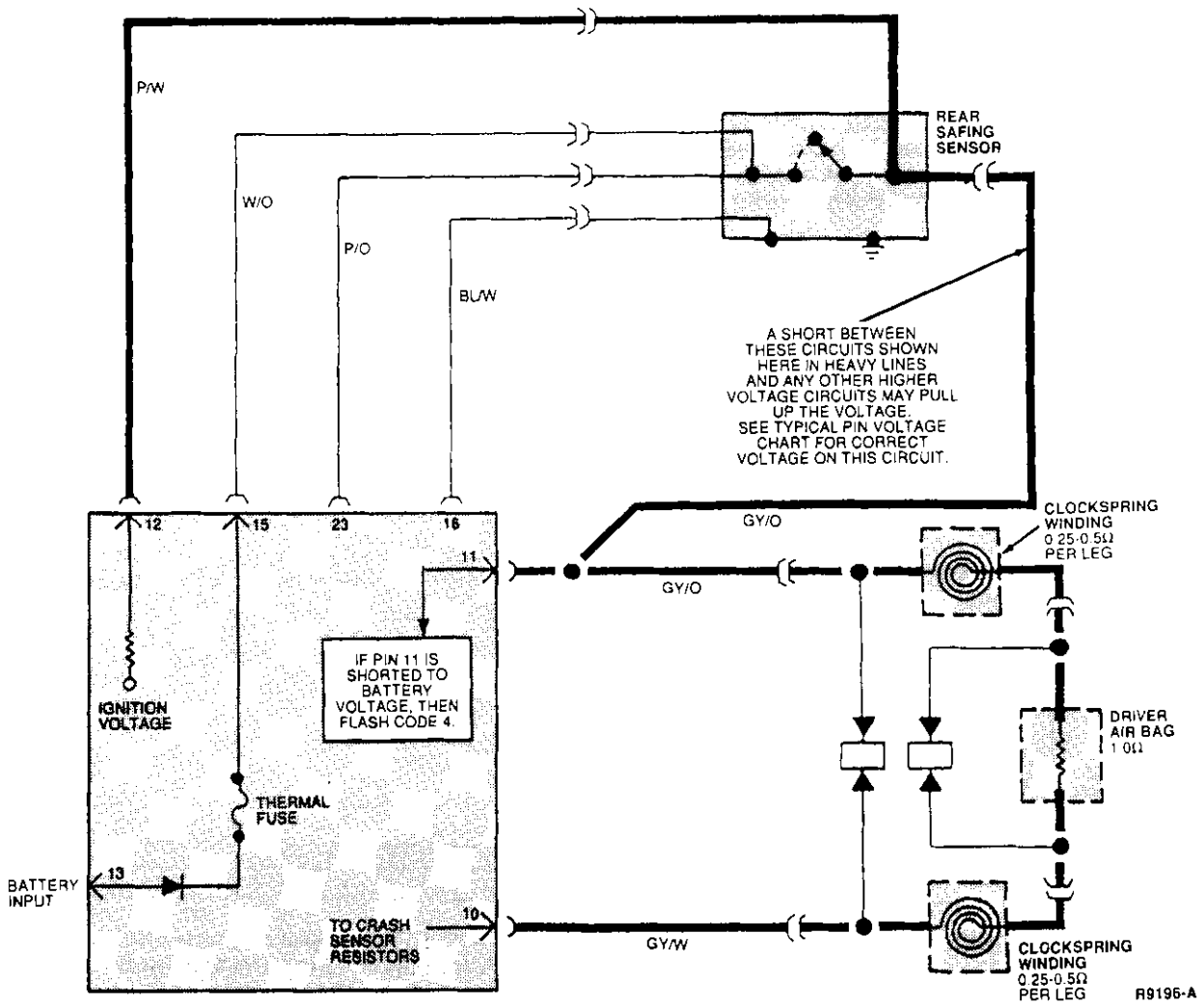
NOTE: The voltage on Circuits W/O and P/O inside the rear safing sensor is usually battery voltage. There should be an open circuit across the contacts of the rear safing sensor if the sensor is operating normally. If the sensor contacts are closed, the voltage on Circuit GY/O would be high (battery voltage).

DIAGNOSIS AND TESTING (Continued)

VEHICLE CHARGING SYSTEM VOLTAGE

PIN NO.	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
11	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5

Electrical Schematic—Diagnostic Trouble Code 4D



DIAGNOSIS AND TESTING (Continued)

DIAGNOSTIC TROUBLE CODE 4 (Continued)		
TEST STEP	RESULT	ACTION TO TAKE
4-8 MEASURE RESISTANCE OF SENSOR <ul style="list-style-type: none"> ● Disconnect sensor with incorrect reading. ● Measure resistance of sensor at its connector. ● Is resistance equal to 1180 ohms \pm25? 	<p>Yes</p> <p>No</p>	<p>▶ LOCATE and SERVICE short to ground in wiring harness of the affected circuit. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ REPLACE sensor. RECONNECT system. VERIFY system. REACTIVATE system.</p>
4-9 MEASURE RESISTANCE OF CIRCUIT BL/W <ul style="list-style-type: none"> ● Disconnect rear safing sensor. ● Measure resistance of Pin 13 (Circuit BL/W) in sensor connector to Pin 3 (ground). ● Is resistance less than 2 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ LOCATE and SERVICE open circuit in Circuit BL/W in wiring harness. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ REMOVE rear safing sensor from vehicle. CLEAN sensor and sheet metal mounting areas. REMOUNT sensor. GO to 4-10.</p>
4-10 MEASURE RESISTANCE OF CIRCUIT BL/W <ul style="list-style-type: none"> ● Measure resistance of Pin 16 (Circuit BL/W) to Pin 3 (ground). ● Is resistance less than 2 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ RECONNECT system. VERIFY system. REACTIVATE system. GO to 4-1.</p> <p>▶ REPLACE rear safing sensor. RECONNECT system. VERIFY system. REACTIVATE system.</p>
4-11 MEASURE RESISTANCE OF CIRCUIT P/O <ul style="list-style-type: none"> ● Measure resistance between Pin 15 (Circuit W/O) to Pin 23 (Circuit P/O) of diagnostic monitor connector. ● Is resistance less than 1 ohm? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ GO to 4-12.</p>
4-12 CIRCUIT RESISTANCE OF REAR SAFING SENSOR <ul style="list-style-type: none"> ● Disconnect rear safing sensor. ● Measure resistance between Circuit W/O and Circuit P/O on sensor connector. ● Is resistance less than 1 ohm? 	<p>Yes</p> <p>No</p>	<p>▶ LOCATE and SERVICE open circuit in either Circuit W/O or P/O in wiring harness. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ REPLACE rear safing sensor. RECONNECT system. VERIFY system. REACTIVATE system.</p>
4-13 CHECK FOR OPEN BETWEEN CIRCUIT W/O AND GY/O <ul style="list-style-type: none"> ● Turn ignition OFF. ● Set ohmmeter on highest ohm scale available (200,000 ohms or higher). ● Measure resistance across Pin 15 (Circuit W/O) to Pin 11 (Circuit GY/O). ● Is resistance reading greater than 200,000 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to 4-14.</p> <p>▶ GO to 4-15.</p>

Attach to page 01-20B-28 of: Capri Service Manual - Refer to TSB 94-17B-6 for Revised Air Bag Diagnostic And Testing Information

DIAGNOSIS AND TESTING (Continued)

DIAGNOSTIC TROUBLE CODE 4 (Continued)		
TEST STEP	RESULT	ACTION TO TAKE
4-14 CHECK FOR SHORT-TO-BATTERY VOLTAGE <ul style="list-style-type: none"> ● Turn ignition ON. ● Measure voltage on Pin 11 (Circuit GY/O), Pin 17 (Circuit PK/O), Pin 18 (Circuit PK/W), and Pin 19 (Circuit W/Y) in diagnostic monitor harness connector. ● Is voltage less than 1 volt on all circuits? 	Yes No	▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system. ▶ LOCATE and SERVICE short to battery voltage on any circuit that measured greater than 1 volt. RECONNECT system. VERIFY system. REACTIVATE system.
4-15 MEASURE RESISTANCE <ul style="list-style-type: none"> ● Disconnect center radiator crash sensor. ● Measure resistance across Circuit W/O and GY/O in the sensor connector. ● Is resistance greater than 200,000 ohms? 	Yes No	▶ GO to 4-16. ▶ REPLACE the center radiator crash sensor. RECONNECT system. VERIFY system. REACTIVATE system.
4-16 MEASURE RESISTANCE <ul style="list-style-type: none"> ● Disconnect rear safing sensor. ● Measure resistance across Circuits W/O and GY/O in sensor connector. ● Is resistance reading greater than 200,000 ohms? 	Yes No	▶ LOCATE and SERVICE short between Circuit W/O and Circuit GY/O in the wiring harness. RECONNECT system. VERIFY system. REACTIVATE system. ▶ REPLACE rear safing sensor. RECONNECT system. VERIFY system. REACTIVATE system.

Diagnostic Trouble Code 5**Air Bag Or Crash Sensor Circuit Short To Ground
Normal Operation**

The diagnostic monitor measures the voltage at Pin 11 of the diagnostic monitor connector. The voltage at Pin 11 varies with charging system voltage (the expected voltage at Pin 11 is shown in the following chart). If the diagnostic monitor measures a voltage of 2.0 volts or less at Pin 11, the module will flash Diagnostic Trouble Code 5 to indicate a possible short to ground on this circuit (refer to Possible Causes for additional circuits that may be shorted to ground). When flashing Diagnostic Trouble Code 5, the diagnostic monitor provides a signal to blow its internal thermal fuse. This disables the air bag deployment circuit. If the short to ground is corrected the voltage at Pin 11 will return to normal and a Diagnostic Trouble Code 10 will flash indicating an open thermal fuse (refer to Diagnostic Trouble Code 10 for details).

Possible Causes

Low voltage at diagnostic monitor Pin 11 can be caused by:

1. **A short to ground within the wiring harness on Circuits GY/O, GY/W, P/W, PK/O, PK/W or W/Y causing the diagnostic voltage to drop.**
2. **An internal short to ground within the clockspring assembly causing the driver side air bag circuit(s) to be shorted to ground).**
3. **An internal short to ground within the safing sensor causing Circuit GY/O or P/W to be shorted to ground.**
4. **An internal short to ground within one or more of the crash sensors causing Circuits PK/O, PK/W and W/Y to be shorted to ground.**
NOTE: Circuits PK/O, PK/W and W/Y are all connected together inside the diagnostic monitor. Therefore, a short to ground on any of these circuits will short all of the circuits to ground.
5. **An internal short to case ground within the driver side air bag.**

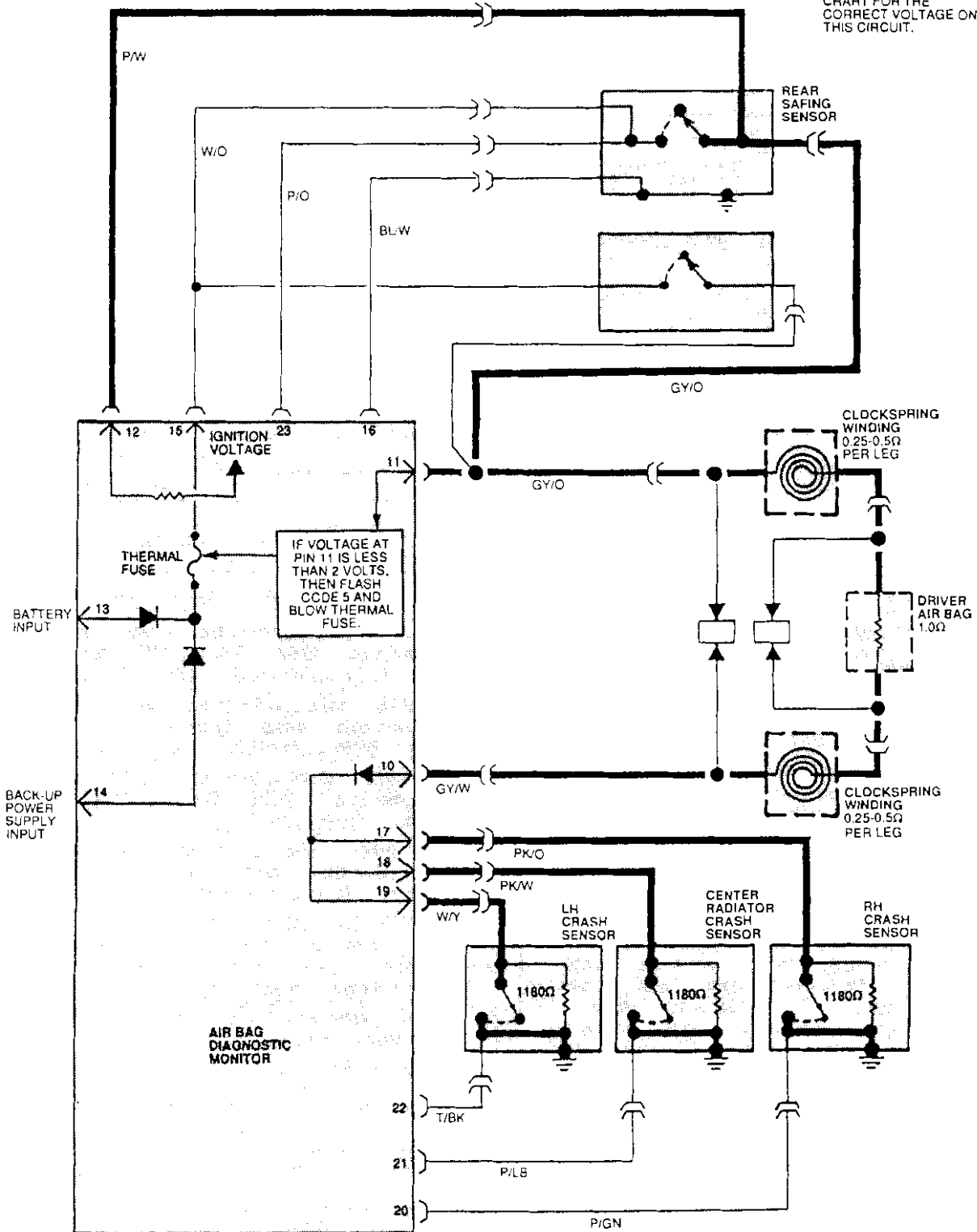
DIAGNOSIS AND TESTING (Continued)

VEHICLE CHARGING SYSTEM VOLTAGE

PIN NO.	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
11	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5

Electrical Schematic—Diagnostic Trouble Code 5

NOTE: SEE THE TYPICAL PIN VOLTAGE CHART FOR THE CORRECT VOLTAGE ON THIS CIRCUIT.



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DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests—Diagnostic Trouble Code 5

DIAGNOSTIC TROUBLE CODE 5

TEST STEP		RESULT	ACTION TO TAKE
5-1	CHECK FOR SHORTED AIR BAG <ul style="list-style-type: none"> Deactivate system. Carefully disconnect diagnostic monitor. Be very careful not to disturb wiring. Turn key to RUN position. Is code 5 still flashing? 	Yes	▶ GO to 5-2.
		No	▶
		No	▶ EXAMINE clockspring wiring in steering wheel hub for pinched or chafed wires. REPLACE clockspring if damaged wires are located. REPLACE driver side air bag if clockspring is not damaged. GO to Diagnostic Trouble Code 10.
5-2	CHECK FOR SHORTED WIRING <ul style="list-style-type: none"> Set ohmmeter to 2000 ohm scale or AUTO. Disconnect negative battery cable. Measure resistance between Pin 3 (ground) and each of the following: <ul style="list-style-type: none"> Pin 11 (Circuit GY/O) Pin 17 (Circuit PK/O) Pin 18 (Circuit PK/W) Pin 19 (Circuit W/Y) Normal resistance for these pins are as follows: <ul style="list-style-type: none"> Pin 11 - Open (Infinite Resistance) Pin 17 - 1180 ohms ± 25 ohms Pin 18 - 1180 ohms ± 25 ohms Pin 19 - 1180 ohms ± 25 ohms Are any of these circuits shorted to ground? 	Yes	▶ If Pin 11 is shorted to ground, GO to 5-3. If Pin 17, 18 or 19 is shorted to ground, GO to 5-4.
		No	▶ GO to Diagnostic Trouble Code 10.
5-3	CHECK FOR SHORT IN CLOCKSPRING <ul style="list-style-type: none"> Examine wiring and connector where clockspring mates to main vehicle harness underneath steering column. Check for pinched and/or chafed wires. Service any damaged wiring. GO to 5-4 if damaged wiring is located. If no damaged wiring is located, disconnect clockspring from main harness. Connect air bag simulator to main vehicle harness in place of clockspring. Measure resistance of Pin 11 to ground. Is Pin 11 still shorted to ground? 	Yes	▶ LOCATE and SERVICE short to ground in Circuits: P/W, GY/O or GY/W CHECK OASIS for potential locations where shorts may occur. When short has been serviced, GO to Diagnostic Trouble Code 10.
		No	▶ REPLACE clockspring. GO to Diagnostic Trouble Code 10.
5-4	LOCATE SHORTED SENSOR WIRING <ul style="list-style-type: none"> Locate and disconnect crash sensor that was shorted to ground. Measure resistance across sensor contacts at sensor connector. Normal resistance for a crash sensor is 1180 ± 25 ohms. <p>NOTE: Be sure to measure across the PK/W and P/LB wires in center radiator crash sensor.</p> <ul style="list-style-type: none"> Is sensor shorted? 	Yes	▶ REPLACE crash sensor. GO to Diagnostic Trouble Code 10.
		No	▶ LOCATE and SERVICE short to ground in wiring harness on shorted Circuit. GO to Diagnostic Trouble Code 10.

DIAGNOSIS AND TESTING (Continued)

Diagnostic Trouble Code 6**Driver Side Air Bag High Resistance Or Open In Circuit****Normal Operation**

The diagnostic monitor measures the resistance across Pin 10 (Circuit GY/W) and Pin 11 (Circuit GY/O) every time the ignition switch is turned to the ON position. Normal resistance across these circuits is between 1.5 and 2.0 ohms. This resistance comes from the air bag itself (approximately 1.0 ohm) and the clockspring windings (approximately 0.3 to 0.4 ohm per winding, two windings in all). If the resistance across these two circuits exceeds 4.0 ohms, this indicates a high resistance and the diagnostic monitor will flash Diagnostic Trouble Code 6.

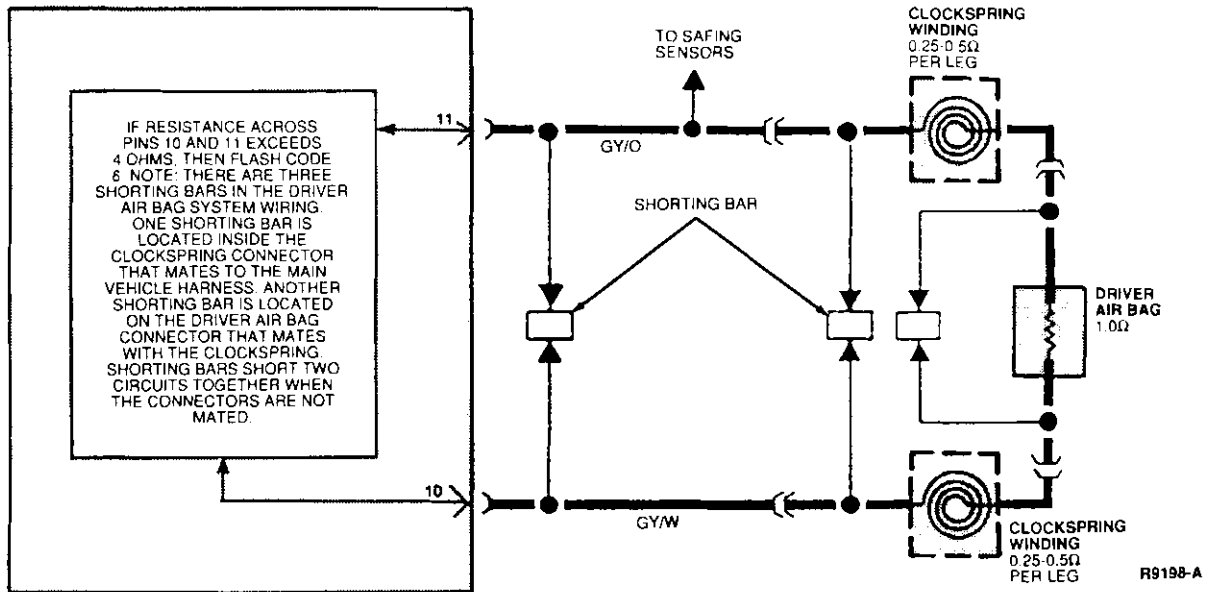
NOTE: The connectors for the air bag, the clockspring and the diagnostic monitor harness connector have metal spring clips that act as shorting bars. These shorting bars are built into the plastic hardshell connectors. The shorting bars are designed to short Circuits GY/O and GY/W together when the connectors are not mated. **Do not attempt to remove the air bag shorting bar and measure the resistance of the air bag.**

The clockspring shorting bar and the monitor harness connector locking wedge may be removed to measure the clockspring resistance. Use extreme care when reinstalling the shorting bar to ensure it is installed correctly.

Possible Causes

Excessive resistance across Pins 10 and 11 can be caused by:

1. **A poor connection or corrosion where the clockspring connects into the main wiring harness.** The clockspring connector at the base of the steering column may have excessive resistance between the male and female terminals in the connector. Also, corrosion may occur on the terminal crimps on both the clockspring terminals and the main wiring harness terminals. Refer to TSB 91-23-2.
2. **An open circuit or high resistance in the clockspring windings** inside the clockspring assembly.
3. **An open circuit or high resistance in the wiring harness in either Circuit GY/O or Circuit GY/W.**
4. **An open circuit or high resistance in the driver side air bag.** **DO NOT** attempt a direct resistance measurement of the air bag. Follow the diagnostic procedures to determine if the air bag resistance is higher than normal.

Electrical Schematic—Diagnostic Trouble Code 6

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests—Diagnostic Trouble Code 6

DIAGNOSTIC TROUBLE CODE 6

TEST STEP		RESULT	ACTION TO TAKE
6-1	MEASURE RESISTANCE		
	<ul style="list-style-type: none"> ● Deactivate system. ● Disconnect diagnostic monitor. ● Set ohmmeter on lowest scale possible (200 ohms for most meters). ● "Zero" ohmmeter by touching leads together and record resistance reading. ● Remove plastic locking wedge from Black harness connector. ● Measure resistance across Pin 11 (Circuit GY/O) and Pin 10 (Circuit GY/W). Record measurement. Subtract this reading from reading made when zeroing ohmmeter. ● Is result less than 1.5 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ MAKE SURE that locking wedge has been removed from Black harness connector. MAKE SURE to use 1 ohm air bag simulator and not a jumper wire.</p> <p>▶ GO to 6-2.</p>
6-2	VERIFY RESISTANCE READING		
	<ul style="list-style-type: none"> ● Is result greater than 1.9 ohms? 	<p>Yes</p> <p>No</p>	<p>▶ GO to 6-4.</p> <p>▶ GO to 6-3.</p>
6-3	VERIFY RESISTANCE		
	<ul style="list-style-type: none"> ● Reconnect diagnostic monitor. ● Turn ignition switch OFF, then to RUN. ● Is Diagnostic Trouble Code 6 still flashing? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ INSPECT diagnostic monitor harness connector for improperly retained Pins 10 and 11. If OK, REFER to TSB 91-23-2.</p>
6-4	MEASURE RESISTANCE		
	<ul style="list-style-type: none"> ● Disconnect clockspring at base of steering column. ● Install air bag simulator on main wiring harness at base of steering column. ● Measure resistance across Pin 10 (Circuit GY/W) and Pin 11 (Circuit GY/O) on diagnostic monitor harness connector. ● Subtract this reading from reading made when zeroing ohmmeter. ● Is result equal to 1 ohm ± 0.2 ohm? 	<p>Yes</p> <p>No</p>	<p>▶ REFER to TSB 91-23-2.</p> <p>▶ LOCATE and SERVICE open in Circuit GY/O or GY/W. RECONNECT system. VERIFY system. REACTIVATE system.</p>

Diagnostic Trouble Code 7

Pin 7 Not Grounded at Diagnostic Monitor or Open in Circuit

Normal Operation

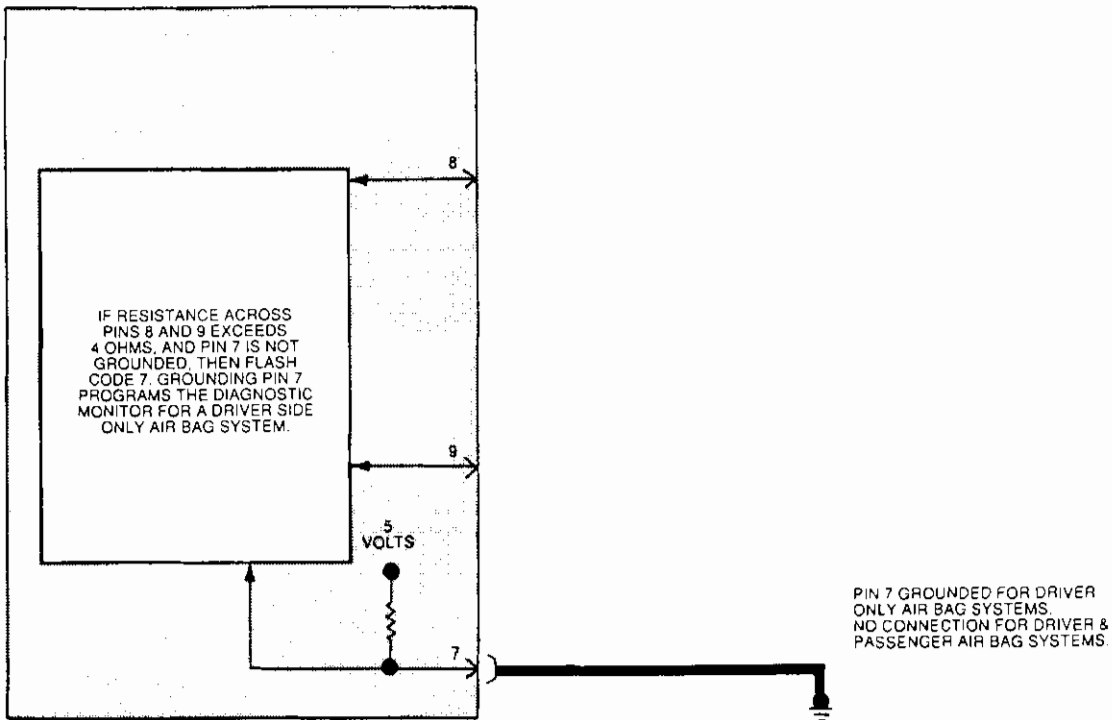
NOTE: A DTC 7 may occur even though the vehicle is not equipped with a passenger side air bag due to the internal logic of the diagnostic monitor.

DIAGNOSIS AND TESTING (Continued)

The diagnostic monitor measures the resistance across Pin 8 (Circuit GY/O) and Pin 9 (Circuit PK/BK) every time the ignition switch is turned to the ON position. Normal resistance across these circuits is between 0.9 and 1.2 ohms. This resistance comes from the passenger side air bag itself. If the vehicle is NOT equipped with a passenger side air bag, Pin 7 of the diagnostic monitor should be connected to ground. Connecting Pin 7 to ground programs the diagnostic monitor to ignore high resistance on the passenger side air bag circuits. If the resistance across these two circuits exceeds 4.0 ohms and Pin 7 is not grounded, the diagnostic monitor will flash Diagnostic Trouble Code 7.

NOTE: The connectors for the air bag and the diagnostic monitor have metal spring clips that act as shorting bars. Both shorting bars are designed to short the air bag terminals together when the connector is not mated. **Do not attempt to remove the air bag shorting bar and measure the resistance of the air bag.**

Electrical Schematic—Diagnostic Trouble Code 7



R9199-A

DIAGNOSIS AND TESTING (Continued)**Pinpoint Tests—Diagnostic Trouble Code 7****DIAGNOSTIC TROUBLE CODE 7**

TEST STEP		RESULT	ACTION TO TAKE
7-1	CHECK FOR GROUND AT PIN 7 OF DIAGNOSTIC MONITOR		
	<ul style="list-style-type: none"> ● Deactivate system. ● Disconnect diagnostic monitor. ● Measure resistance between diagnostic monitor harness Pin 7 and Pin 3 (ground). ● Is resistance less than 10 ohms? (Is Pin 7 grounded?) 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY lamp. REACTIVATE system.</p> <p>▶ LOCATE and CONNECT wire in Pin 7 to ground. MAKE SURE to connect it in proper area of sheet metal for future technicians. (Safety critical!)</p>

Diagnostic Trouble Code 8**Crash Sensor Not Mounted To Vehicle Properly****Normal Operation**

The crash sensors use their metal cases as a ground path for deploying the air bags. The crash sensor cases are mounted (grounded) to the vehicle. The diagnostic monitor checks the connection between the crash sensors and the vehicle ground. Each crash sensor has a ground module wire that is riveted to the inside case of the sensor. The diagnostic monitor has pull-up resistors on these wires that attempt to raise the voltage on these circuits. If the ground monitor wire is properly grounded, no voltage will appear at the diagnostic monitor pin. If the ground monitor wire is not grounded properly, there will be some voltage at the ground monitor pins. The diagnostic monitor uses Pin 3 as a reference ground. If the module measures enough voltage between the ground monitor wires and the reference ground, the air bag indicator will flash Diagnostic Trouble Code 8. The crash sensor ground monitor circuits are as follows:

- RH crash sensor - Diagnostic monitor Pin 20 (Circuit P/GN).
- Center radiator sensor - Diagnostic monitor Pin 21 (Circuit P/LB).
- LH crash sensor - Diagnostic monitor Pin 22 (Circuit T/BK).

Possible Causes

Excessive voltage on Pins 20, 21, or 22 can be caused by:

1. **A poor ground connection due to loose mounting, dirt, or corrosion at the crash sensor mounting location.**
2. **An open or damaged wire in Circuit P/LG, Circuit P/LB or Circuit T/BK somewhere between Pin 20, 21 or 22 and one or more of the crash sensors.**
3. **An open wire or loose wire attachment inside a crash sensor.**

DIAGNOSIS AND TESTING (Continued)**Diagnostic Trouble Code 9****Crash Sensor Open In Circuit****Normal Operation**

Each crash sensor has an internal resistor. The diagnostic monitor uses the resistor in the crash sensors in combination with the resistor inside the diagnostic monitor to create a tightly controlled diagnostic voltage at Pin 11 (Circuit GY/O). The crash sensors are tied together inside the diagnostic monitor at Pins 17 (Circuit PK/O), 18 (Circuit PK/W) and 19 (Circuit W/Y). Therefore, the resistors in the sensors are connected in parallel. The parallel combination of all three crash sensors' resistance should be equal to 393 ohms. Each primary crash sensor should have an individual resistance of 1180 ohms \pm 25 ohms.

Note that Pin 11 is connected to Circuit GY/O in the vehicle wiring harness. Circuit GY/O is connected to Circuit P/W inside the rear safing sensor. Circuit P/W is connected to Pin 12 of the diagnostic monitor. Circuits GY/O and P/W are connected together in the rear safing sensor and therefore, the voltage on Circuits GY/O and P/W should be identical. Current flows from the ignition voltage within the diagnostic monitor, through the resistor, out to Circuit P/W on Pin 12, through the rear safing sensor and out to the driver side air bag on Circuit GY/O. Current flows through the driver side air bag and into Pin 10 (Circuit GY/W). Current then flows from Pin 10 through the diode inside the diagnostic monitor and out to the crash sensors through Pins 17, 18 and 19. The current flows through each crash sensor resistor and ends at the case ground of each sensor. Pin 11 is the midpoint of the resistor network and voltage at Pin 11 will change with vehicle charging system voltage. The expected voltage at Pin 11 is shown in the following chart. The diagnostic monitor measures the vehicle charging system voltage at Pin 13 (battery input). By measuring the voltage at Pin 13, the diagnostic monitor can accurately predict what the voltage at Pin 11 should be in a normal functioning system.

If the resistance of one or more of the crash sensors has increased in value, then the equivalent resistance of the crash sensors will be greater than 393 ohms. When crash sensor resistance increases, there is less overall resistance pulling the diagnostic voltage down. Therefore, the voltage at Pin 11 will increase and the air bag indicator will flash Diagnostic Trouble Code 9 to indicate high resistance (or an open circuit) in one of the crash sensor circuits. Another situation that may cause high voltage on Pin 11 is if resistance builds up across the normally open safing sensor contacts. Safing sensor(s) do not normally have resistance across their contacts. If resistance appears across the safing sensor(s) contacts, then current will flow from Pin 15 (Circuit W/O) through the abnormal resistance across the safing sensor(s) contacts and into Circuit GY/O. Since the voltage at Pin 15 is battery voltage or higher, this will also cause an increase in voltage at Pin 11 and the air bag indicator will flash Diagnostic Trouble Code 9.

Possible Causes

Higher than normal voltage on Pin 11 can be caused by:

1. **An open in one or more of the circuits between the diagnostic monitor and the crash sensors.** Circuits PK/O, PK/W or W/Y may have an open in the wiring.
2. **An abnormally high resistance value across one or more of the crash sensors.** One or more of the crash sensor resistors may have too high resistance or may have a completely open circuit.
3. **Resistance across the safing sensor(s).** The safing sensor is a normally open switch with infinite resistance across its contacts. If the safing sensor is damaged or worn and some resistance builds up across the open contacts, the voltage on Circuit W/O will pull up the voltage on Circuit GY/O. Note that there are two safing sensors, one located inside the same package as the center radiator crash sensor and the other located under the center console. Refer to the vehicle wiring schematic. Note that resistance across **either** normally open safing sensor contact can raise the voltage on Pin 11 to a higher than normal level.
4. **An intermittent open between the positive terminal of the battery and Pin 13** may cause the reference voltage to fluctuate and the diagnostic monitor to determine that voltage on Pin 11 is too high with respect to the voltage on Pin 13. Check all crimps on fuses, splices and interconnects between the battery and Pin 13 of the diagnostic monitor. Refer to vehicle wiring schematic.

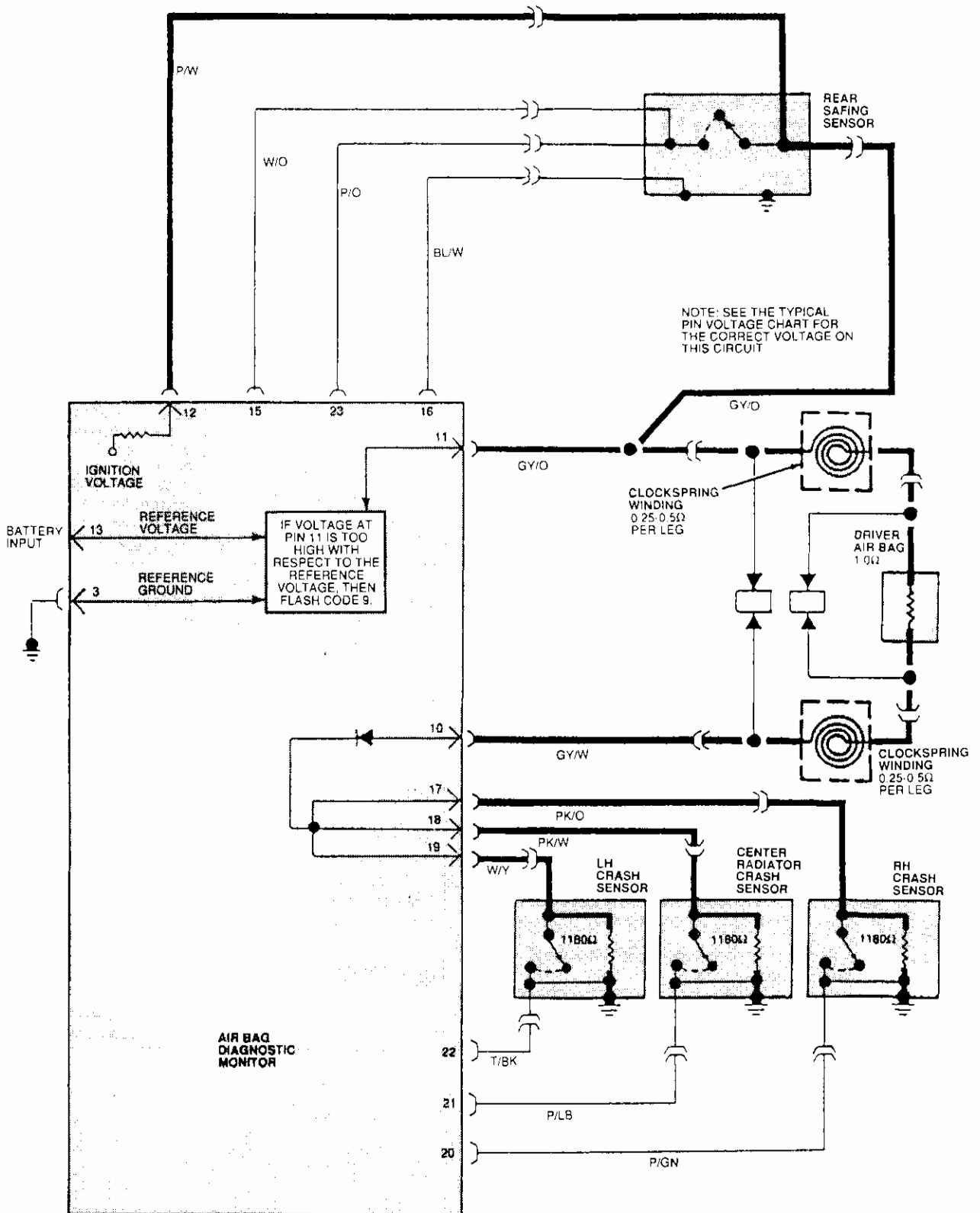
DIAGNOSIS AND TESTING (Continued)

VEHICLE CHARGING SYSTEM VOLTAGE

PIN NO.	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
10	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5
11	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3	6.5
17	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0
18	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0
19	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0

DIAGNOSIS AND TESTING (Continued)

Electrical Schematic—Diagnostic Trouble Code 9



R9201-A

DIAGNOSIS AND TESTING (Continued)

Pinpoint Tests—Diagnostic Trouble Code 9

DIAGNOSTIC TROUBLE CODE 9

TEST STEP		RESULT	ACTION TO TAKE
9-1	MEASURE VOLTAGE		
	<ul style="list-style-type: none"> ● Deactivate system. ● Turn ignition OFF, then to RUN. ● Measure voltage at Pin 11 (Circuit GY/O). <p>NOTE: Use voltage table to determine if voltage at Pin 11 is normal.</p> <ul style="list-style-type: none"> ● Is voltage at Pin 11 too high? 	<p>Yes</p> <p>No</p>	<p>▶ GO to 9-2.</p> <p>▶ GO to 9-5.</p>
9-2	MEASURE RESISTANCE		
	<ul style="list-style-type: none"> ● Turn ignition OFF, then to RUN. ● Disconnect diagnostic monitor. ● Disconnect negative ground cable. ● Measure resistance from Pin 3 to Pin 17 (Circuit PK/O), Pin 18 (Circuit PK/W) and Pin 19 (Circuit W/Y) of diagnostic monitor harness connector. ● Are all resistances 1180 ohms (±25 ohms)? 	<p>Yes</p> <p>No</p>	<p>▶ GO to 9-3.</p> <p>▶ REPLACE any sensor out of specification. RECONNECT system. VERIFY system. REACTIVATE system.</p>
9-3	CHECK TYPE OF SENSOR		
	<ul style="list-style-type: none"> ● Does center radiator crash sensor have two wires? 	<p>Yes</p> <p>No</p>	<p>▶ LOCATE and SERVICE short to battery positive in Circuit GY/O, GY/W, PK/O, PK/W, W/Y or P/W. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ GO to 9-4.</p>
9-4	MEASURE VOLTAGE		
	<ul style="list-style-type: none"> ● Disconnect center radiator sensor. ● Remove GY/O and W/O wires from sensor connector. ● Reconnect sensor to harness (GY/O and W/O wires loose). ● Reconnect all other sensors. ● Reconnect diagnostic monitor. ● Turn ignition OFF, then to RUN. ● Measure voltage between Circuit 614 (GY/O) and Pin 11 (+) and also Pin 3 (-). <p>NOTE: Use voltage table to determine if voltages at pins are within specifications.</p> <ul style="list-style-type: none"> ● Are measured voltages within specification? 	<p>Yes</p> <p>No</p>	<p>▶ REPLACE center radiator crash sensor. RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ LOCATE and SERVICE short to battery positive in Circuit GY/O, GY/W, PK/O, PK/W, W/Y or P/W. RECONNECT system. VERIFY system. REACTIVATE system.</p>
9-5	CHECK FOR DAMAGED OR WORN CONNECTIONS		
	<ul style="list-style-type: none"> ● Inspect all connections between positive battery terminal and Pin 13 of diagnostic monitor harness connector. ● Check fuse, fuse terminal crimps, three-way connectors and splices. ● Check for corrosion or improper termination or splice. ● Were any connections damaged or worn? 	<p>Yes</p> <p>No</p>	<p>▶ SERVICE connections(s). RECONNECT system. VERIFY system. REACTIVATE system.</p> <p>▶ REPLACE diagnostic monitor. RECONNECT system. VERIFY system. REACTIVATE system.</p>

DIAGNOSIS AND TESTING (Continued)**Diagnostic Trouble Code 10****Diagnostic Monitor Internal Thermal Fuse Blown and Short to Ground No Longer Exists****(Short to Ground Was Serviced or is Intermittent)****Normal Operation**

NOTE: The diagnostic monitor contains an internal thermal fuse that is not serviceable. The thermal fuse is controlled by the diagnostic monitor. The diagnostic monitor will blow its thermal fuse whenever a short on the deployment circuits occurs. **The thermal fuse does not blow because of excessive current flowing through it. DO NOT attempt to jumper out the thermal fuse with a circuit breaker or any other type of fuse.**

NOTE: **DO NOT install a new diagnostic monitor until the short has been located and corrected. If a short to ground has not been located and corrected, then the short to ground is intermittent and IS NOT PRESENT AT THIS TIME.** Installing a new diagnostic monitor with an intermittent short in the system will result in repeat blown diagnostic monitors and repeat service.

The diagnostic monitor measures the voltages at the diagnostic monitor connector pins. When certain air bag deployment wires are shorted to ground (heavy lines in the schematic), the system may become susceptible to unwanted deployment of the air bag(s). The diagnostic monitor senses a short to ground on any of these circuits and helps prevent unwanted air bag deployment by blowing the diagnostic monitor thermal fuse. Blowing this fuse removes all power (battery and back-up power) from the air bag deployment circuits. While the short to ground exists, the module will flash Diagnostic Trouble Code 5. If the short to ground is intermittent and temporarily corrects itself, the diagnostic monitor will flash Diagnostic Trouble Code 10.

NOTE: If the short to ground returns, the higher priority Diagnostic Trouble Code 5 will flash instead of 10.

If the air bag indicator is flashing Diagnostic Trouble Code 10 and a short to ground has not been serviced, this means that an **intermittent** short to ground exists in the air bag system. The diagnostic monitor should only be replaced after service to the intermittent short to ground has been completed.

Some service tips for finding an intermittent short to ground are:

1. Consult OASIS (Restraint Systems Service Code 104000) for up-to-date diagnostics and descriptions of wiring concern locations for the vehicle (VIN number) you are working on. OASIS is updated daily using concern descriptions from engineering and Dealership Service sources.
2. Inspect wiring and harnesses in areas where they pass through or are located next to metal components (i.e. engine compartment bulkhead, body sheet metal, component mounting brackets, etc).

Diagnostic Trouble Code 10 After Air Bag Deployment

Occasionally, after an air bag deploys, the internal wiring of the air bag(s) may become shorted to the metal housing of the air bag(s). This internal air bag short is detected by the diagnostic monitor as short to ground in the air bag deployment wiring. Since the diagnostic monitor is still operating immediately after most deployments, the module will detect the shorted wiring and will flash Diagnostic Trouble Code 5 and blow the internal thermal fuse. After the deployment, as the air bag(s) cool off, the internal shorted wiring may correct itself, therefore the short to ground will no longer exist and the diagnostic monitor will flash Diagnostic Trouble Code 10. If a vehicle with a deployed air bag is flashing Diagnostic Trouble Code 10, inspect and replace all the damaged areas of the vehicle with crushed wiring, sensors, etc. If no damage is found, assume that the deployed air bag was the cause for the intermittent short and replace the diagnostic monitor when the new air bag(s) are installed.

NOTE: Diagnostic monitors can withstand several air bag deployments and do not need to be replaced after every deployment. Only replace the diagnostic monitor if it is damaged.

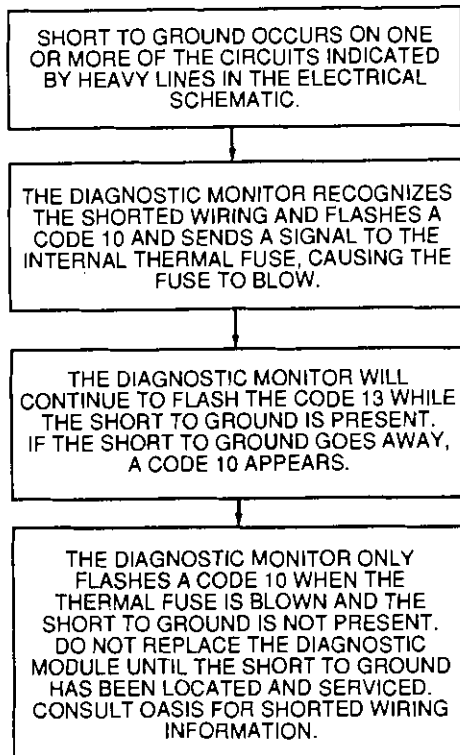
After a short to ground has been corrected, the diagnostic monitor will flash out Diagnostic Trouble Code 10. Diagnostic Trouble Code 10 indicates that the fuse inside the diagnostic monitor is blown and the short to ground no longer exists.

If a short to ground has not been located and serviced (short to ground corrected itself), consult OASIS for potential wiring shorts.

If a short to ground has been correctly located and serviced then replace the diagnostic monitor.

DIAGNOSIS AND TESTING (Continued)

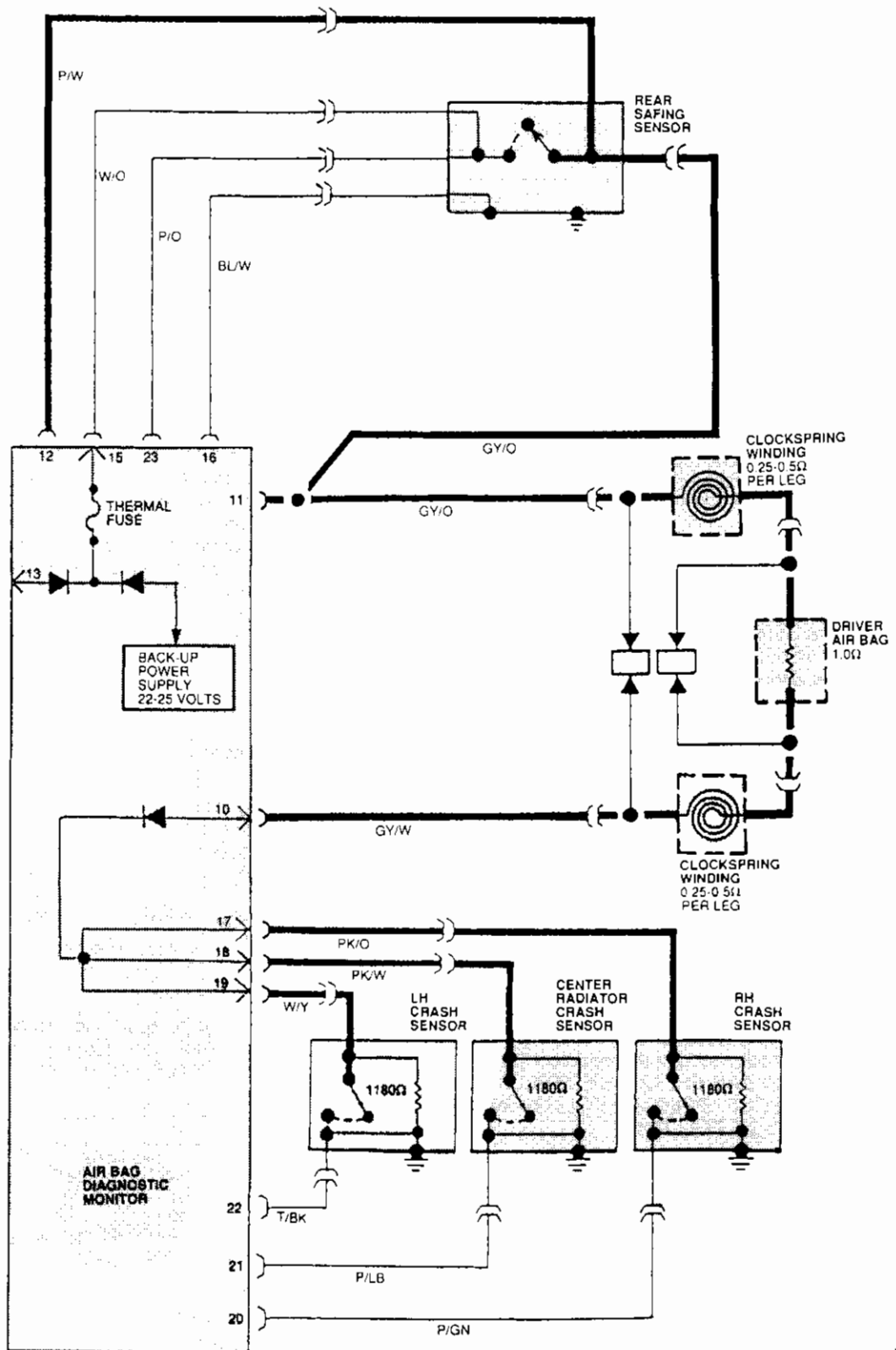
DO NOT replace the diagnostic monitor until the short to ground has been positively located and serviced. Replacing the diagnostic monitor before servicing a short to ground will result in repeat service.

CODE 10 SEQUENCE OF EVENTS

R8164-A

DIAGNOSIS AND TESTING (Continued)

Electrical Schematic—Diagnostic Trouble Code 10



R9202-A

DISPOSAL PROCEDURES

Several situations may arise when some form of disposal action must be undertaken; scrapping a vehicle containing a deployed air bag, scrapping a vehicle with a live air bag, disposal of a live but electrically inoperative air bag module, and scrapping a deployed monitor. These situations and the disposal recommendations are shown in the following chart and discussed in detail below.

AIR BAG DISPOSAL RECOMMENDATIONS

CONDITION	INSTRUCTIONS
1. Vehicle to be Scrapped; Live Air Bag.	Electrically Deploy Using Procedures 1 or 2 as Required.
2. Vehicle to be Scrapped; Deployed Air Bag.	Scrap Vehicle in the Usual Manner.
3. Monitor Replaced; Faulty but Live Air Bag.	Package and Label Properly. Return Per Instructions with New Air Bag.
4. Monitor Replaced; Deployed Air Bag.	Scrap Monitor in the Usual Manner.

Deployed Air Bag

To service a vehicle in which the air bag has been deployed, the deployed air bag must be replaced with a new air bag assembly. The deployed air bag can be disposed of in the same manner as any other part to be scrapped.

Undeployed Air Bag—Faulty

In the event that an air bag is diagnosed as being faulty, the faulty air bag must be replaced with a new air bag assembly. The faulty air bag **CANNOT BE DISPOSED OF IN THE NORMAL MANNER**, and must be returned to Ford Motor Company for proper disposal.

Air bags must be packaged and shipped in compliance with the relevant government transport regulations. Retain the packaging used for the new air bag, including the label. Return the faulty air bag according to the instructions provided with the new air bag.

Scrapped Vehicle

Some vehicles may be damaged or inoperable to the point that service cannot be made, but still contain an undeployed air bag. This condition could occur with side or rear impacts, rollover, or if the vehicle is past its useful life. **THE AIR BAG SHOULD BE DEPLOYED PRIOR TO VEHICLE SCRAPPING BY FOLLOWING PROCEDURE 1 OR 2 AS FOLLOWS:**

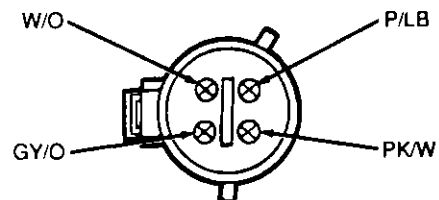
Air Bag Disposal

Procedure 1

Electronic Deployment with Intact Wiring

This procedure assumes that the air bag wiring is intact, and that no diagnostic trouble codes are indicated, and that a battery is connected to the vehicle. This procedure is to be performed outdoors away from other personnel, since the deploying air bag makes a loud report on actuation. It is advisable to wear hearing protection during this procedure.

1. Check and clear the front seat of all loose objects.
2. Do not permit any occupants to remain in the vehicle.
3. Open the hood and check for a properly connected battery.
4. Turn the ignition switch to the RUN position and observe the air bag readiness indicator. If the system proves out normally, go to Step 5. If a diagnostic trouble code is displayed go to Procedure 2 to deploy the air bag. Turn the ignition switch to the OFF position.
5. Locate the center crash sensor at the top of the radiator support. Locate the connector on the wiring from the sensor.
6. Pull the connector apart and examine the wiring harness end (not the sensor end). Identify circuits W/O, GY/O, P/LB, and PK/W.



R7002-B

DISPOSAL PROCEDURES (Continued)

7. Using a 152mm (6 inch) length of bared wire, short pin PK / W to ground. Then, with another piece of wire, short pin W / O to pin GY / O. The air bag should deploy. If the air bag does not deploy, go to Procedure 2.
8. If successful, a loud report will be heard and the bag material will be visible in the center of the steering wheel. Allow at least 10 minutes before approaching the air bag to allow for cooling and dispersal of the gases.

The air bag is now inoperative and the vehicle may be disposed in the normal manner.

Procedure 2**Remote Deployment of Air Bag**

This procedure is to be used in the event that a vehicle with a live air bag is to be scrapped, but the vehicle wiring, or the air bag system, is faulty.

WARNING: REMOTE DEPLOYMENT IS TO BE PERFORMED OUTDOORS WITH ALL PERSONNEL AT LEAST 7 METERS (22 FEET) AWAY TO ENSURE PERSONAL SAFETY AND DUE TO THE LOUD REPORT WHICH OCCURS WHEN THE AIR BAG IS DEPLOYED.

1. Remove the air bag from the vehicle as outlined.
2. Remove the connector by cutting the wires to the air bag, and strip the insulation from the ends. Using two wires 20 feet long, connect one wire to each of the air bag wires.
3. Place the air bag with the trim cover facing upward on a flat surface in a remote area such as a parking lot or field.

WARNING: DO NOT PLACE THE AIR BAG WITH THE TRIM FACING DOWN AS THE DEPLOYING AIR BAG MAY RICOCHET AND CAUSE PERSONAL INJURY.

4. Remaining at least 7 m (22 ft) away from the air bag, deploy it by touching the other ends of the wire to a 12 volt battery. If the air bag does not deploy, follow the procedure for **FAULTY UNDEPLOYED AIR BAGS**.
5. If successful, a loud report will be heard and the bag material will be visible. Allow at least 10 minutes before approaching the air bag to allow for cooling and dispersal of the gases.

The air bag is now inoperative and both the vehicle and the air bag may be scrapped in the normal manner.

Deactivating the System

1. Disconnect battery ground cable and battery backup power supply.

2. Remove the four nut and washer assemblies securing the air bag to the steering wheel.
3. Disconnect the air bag connector from the clockspring.
4. Attach Rotunda Air Bag Simulator 105-00008 or equivalent to the air bag terminals on the clockspring.
5. Connect battery ground cable and battery backup.

Reactivating the System

1. Disconnect battery ground cable and battery backup power supply.
2. Remove Rotunda Air Bag Simulator 105-00008 or equivalent from air bag terminals on clockspring, if connected.
3. Connect air bag to the clockspring.
4. Position air bag on steering wheel and secure with four nut and washer assemblies. Tighten nuts to 2-3 N·m (17-26 lb-in).
5. Connect battery ground cable and battery backup power supply.
6. Verify air bag indicator lamp.

REMOVAL AND INSTALLATION

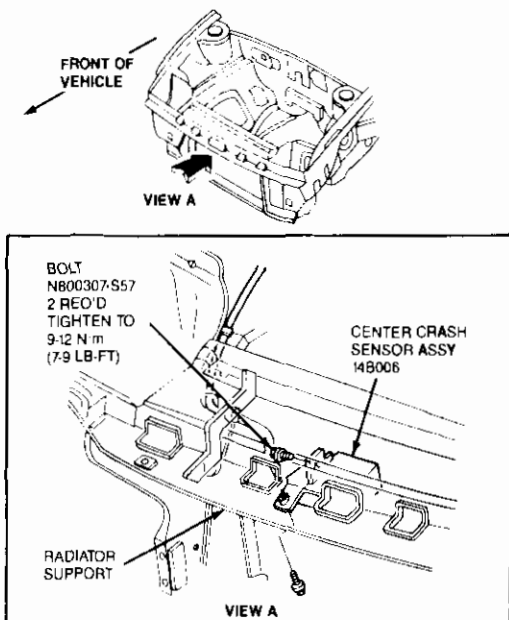
WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING ANY SYSTEM COMPONENTS.

Sensor, Center Radiator**Removal**

1. Disconnect battery ground cable and battery backup power supply.
2. Remove front bumper assembly. Refer to Section 01-19.
3. Disconnect center radiator sensor connector from wiring harness connector.

REMOVAL AND INSTALLATION (Continued)

- Remove the two bolts retaining the sensor to the radiator support. Remove the sensor from the vehicle.

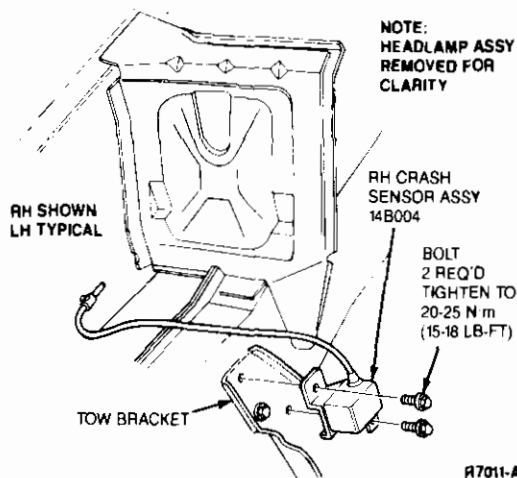


R700-A

Installation

- Position the sensor with the arrow on top pointing toward the front of the vehicle and secure to the radiator support with two bolts. Tighten bolts to 9-12 N·m (7-9 lb-ft).
- Connect sensor lead to the wiring harness connector.
- Install front bumper assembly. Refer to Section 01-19.
- Connect battery ground cable and battery backup.
- Verify air bag indicator.

- Disconnect battery ground cable and battery backup power supply.
- Remove electrical connector retaining clip from the apron under headlamp.
- Disconnect the electrical connector.
- Remove the two bolts retaining the sensor and remove the sensor.



R7011-A

Installation

- Position the sensor in the vehicle, ensuring that the arrow faces to the front of the vehicle. Install sensor retaining bolts and tighten to 20-25 N·m (15-18 lb-ft).
- Connect the sensor lead to the wiring harness connector.
- Install the connector retaining clip into the hole in the apron. If servicing LH sensor, install LH headlamp splash shield and bezel.
- Connect battery ground cable and battery backup power supply.
- Lower the headlamps.
- Verify air bag indicator lamp.

Sensor, Front, Left or Right**Removal**

WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING OR REPLACING ANY SYSTEM COMPONENTS.

- Raise the headlamps by using the service switch. If servicing LH sensor, remove LH headlamp bezel and splash shield.

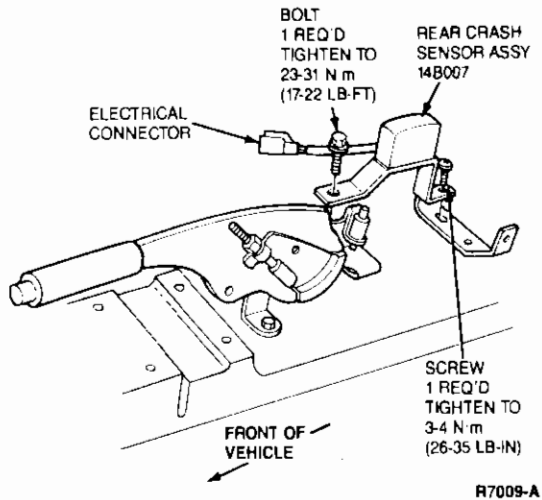
Sensor, Rear Saging**Removal**

WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING OR REPLACING ANY SYSTEM COMPONENTS.

- Disconnect battery ground cable and battery backup power supply.
- Remove center console. Refer to Section 01-12.
- Remove sensor retaining screw and bolt.

REMOVAL AND INSTALLATION (Continued)

4. Disconnect sensor lead from wiring harness connector.
5. Remove sensor.

**Installation**

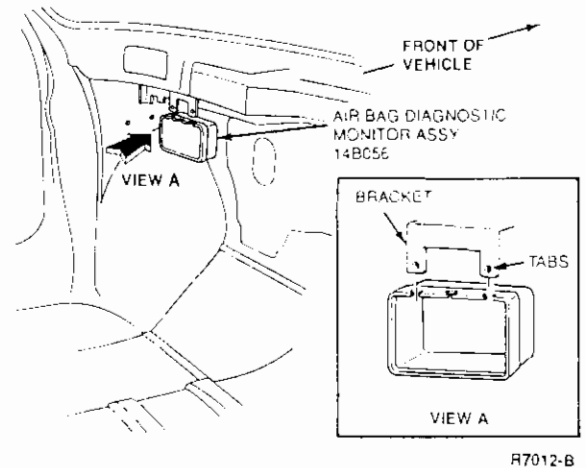
1. Connect the sensor lead to the wiring harness connector.
2. Position the sensor and make sure the arrow faces to the front of the vehicle.
3. Install sensor retaining bolt and screw. Tighten screw to 3-4 N·m (26-35 lb-in). Tighten bolt to 23-31 N·m (17-22 lb-ft).
4. Install console. Refer to Section 01-12.
5. Connect battery ground cable and battery backup power supply.
6. Verify air bag indicator lamp.

Diagnostic Monitor Assembly**Removal**

WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING OR REPLACING ANY SYSTEM COMPONENTS.

1. Disconnect battery ground cable and battery backup power supply.
2. Locate diagnostic monitor (a blue box) mounted behind the fuse panel in the instrument panel.

3. Depress the two tabs retaining the monitor and remove monitor.
4. Disconnect the connector and remove the monitor.

**Installation**

1. Connect connector to the monitor.
2. Position the monitor on the bracket. Ensure tabs lock into place.
3. Connect battery ground cable and battery backup power supply.
4. Verify air bag indicator.

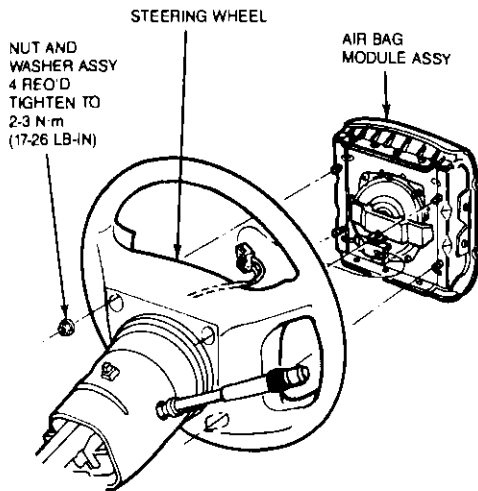
Air Bag Module**Removal**

WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING ANY SYSTEM COMPONENTS.

1. Disconnect battery ground cable and battery backup power supply.
2. Remove the four nut and washer assemblies securing the air bag to the steering wheel.

REMOVAL AND INSTALLATION (Continued)

3. Disconnect the air bag connector to the clockspring and remove air bag.



R7013-A

CAUTION: Follow air bag handling procedures.

Installation

1. Connect the air bag connector to the clockspring.
2. Position the air bag on the steering wheel, and install four nut and washer assemblies. Tighten to 2-3 N·m (17-26 lb-in).
3. Connect battery ground cable and battery backup power supply.
4. Verify air bag indicator.

Air Bag Clockspring

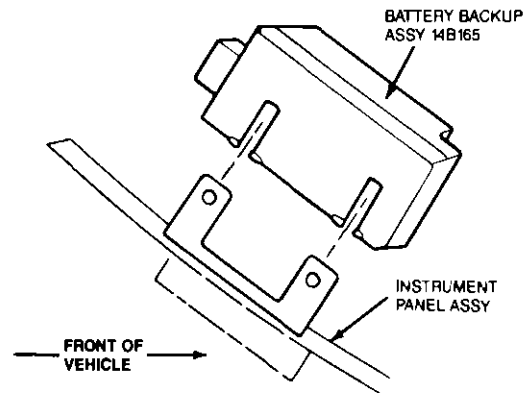
Refer to Section 11-04.

Backup Power Supply**Removal**

WARNING: THE ELECTRICAL CIRCUIT NECESSARY FOR SYSTEM DEPLOYMENT IS POWERED DIRECTLY FROM THE BATTERY. TO AVOID ACCIDENTAL DEPLOYMENT AND POSSIBLE PERSONAL INJURY, THE BATTERY GROUND CABLE AND THE BATTERY BACKUP MUST BE DISCONNECTED PRIOR TO SERVICING ANY SYSTEM COMPONENTS.

1. Disconnect battery ground cable.
2. Lower the glove compartment door fully by depressing the stops.

3. Detach the battery backup which is a blue rectangular box on the outer LH side of the glove compartment and attached to the instrument panel.
4. Disconnect electrical connector.
5. Remove the backup power supply assembly by depressing the tabs and pulling the assembly up and away from the instrument panel.



R7014-A

Installation

1. Connect the electrical connector.
2. Attach the battery backup to the instrument panel.
3. Install and close the glove compartment.
4. Connect battery ground cable.
5. Verify air bag indicator.

SPECIFICATIONS**MAJOR SYSTEM COMPONENT PART NUMBERS**

Component	Part Number
Air Bag Module Assy	T043B13A
Sensor and Bracket Assy, Front Right	14B004 A
Sensor and Bracket Assy, Front Left	14B005 A
Sensor and Bracket Assy, Center	14B006 A
Sensor and Bracket Assy, Rear	14B007 A
Monitor Assy, Air Bag Diagnostic	14B056 A
Backup Power Supply	14B165 A

TORQUE SPECIFICATIONS

Description	N·m	Lb·Ft
Air Bag Module	2-3	17-26 (Lb-In)
Crash Sensor, Center	9-12	7-9
Crash Sensor, RH/LH	20-25	15-18
Crash Sensor, Rear—Bolt	23-31	17-22
Crash Sensor, Rear—Screw	3-4	26-35 (Lb-In)

SPECIAL SERVICE TOOLS**ROTUNDA EQUIPMENT**

Model	Description
059-00010	Inductive Dwell-Tach-Volts-Ohms Tester
105-00008	Rotunda Air Bag Simulator