DESCRIPTION

The Vehicle Identification Number (VIN) plate is located on the lower windshield fence next to the left a-pillar. The VIN contains 17 characters that provide data concerning the vehicle. Refer to the VIN DECODING INFORMATION table to determine the identification of a vehicle.

To protect the consumer from theft and possible fraud the manufacturer is required to include a Check Digit at the ninth position of the Vehicle Identification Number. The check digit is used by the manufacturer and government agencies to verify the authenticity of the vehicle and official documentation. The formula to use the check digit is not released to the general public.

VIN DECODING INFORMATION

POSITION	INTERPRETATION	CODE = DESCRIPTION
1, 2 & 3	World Manufacturer Code	WDX = Incomplete vehicle/DodgeWD0 = Truck /DodgeWD8 = Multi-purpose passenger vehicle/DodgeWDW = Bus/DodgeWDP = Incomplete vehicle/FreightlinerWDY = Truck/FreightlinerWDR = Multi-purpose passenger vehicle/FreightlinerWCD = Bus/Freightliner
4	Chassis Configuration	B = All 4x2 vehicle types/CanadaP = All 4x2 vehicle types/USA
5 & 6	Model, Cab, Weight	E7 = C2500/P2500, 3665 mm (144 in.) wheelbase, 8,000 lbs. up to 9,000 lbs. Class GE8 = C2500/P2500, 4325 mm (170 in.) wheelbase, 8,000 lbs. up to 9,000 lbs. Class GF0 = C3500, 3665 mm (144 in.) wheelbase, 9,000 lbs. up to 10,000 lbs. Class HF1 = C3500, 4325 mm (170 in.) wheelbase, 9,000 lbs. up to 10,000 lbs. Class H F3 = C3500/3500C, 3665 mm (144 in.) wheelbase, 10,000 lbs. up to 14,000 lbs. Class 3F4 = C3500/3500C, 4325 mm (170 in.) wheelbase, 10,000 lbs. up to 14,000 lbs. Class 3
7 & 8	Engine	45 = MB OM642 (50-State) Diesel 3.0L/V6, Hydraulic Brakes46 = MB M272 (50-State) Gasoline 3.5L/V6, Hydraulic Brakes
9	Check Digit	
10	Model Year	7 = 2007
11	Assembly Plant	5 = Düsseldorf, Germany9 = Ludwigsfelde, Germany

12 Thru 17	Vehicle Build Sequence

RECOMMENDED FLUIDS, LUBRICANTS AND GENUINE PARTS

ENGINE

Component	Fluids, Lubricants and Genuine Parts
Engine Coolant	Mopar ® Antifreeze/Coolant 5 Year/100,000 Mile Formula HOAT (Hybrid Organic Additive Technology) or equivalent.
Gasoline Engine Oil	See list below MB 229.3, 229.31, 229.5, 229.51
Diesel Engine Oil	Mopar 68001334AA Mobil 1 ESP Formula MB MB 288.51, 229.31, 299.51
Engine Oil Filter	Mopar ® Engine Oil Filter or equivalent.
Spark Plugs	Refer to the Vehicle Emission Control Information label in the engine compartment.
Fuel Selection 3.5 Liter	91 Octane, (R+M)/2 Method
Fuel Selection 3.0 Liters	Use good quality diesel fuel from a reputable supplier. Must meet, No. 2 Ultra Low Sulfur diesel fuel requirements ASTM specification D-975 (0.0015% Sulfur Level). Commercially available vehicular ULTRA-LOW SULFUR HIGHWAY DIESEL FUEL may contain up to 5% bio diesel. This proportion will not have an effect on performance and wear.

The following oils have been determined to meet the DaimlerChrysler requirements as shown below:

MB approved engine oil	SAE	MB sheet
Castrol Syntec 5W-40	5W-40	229.3
Castrol Syntec 0W-30 European Formula	0W-30	229.5
Chevron Supreme Synthetic Motor Oil SAE 5W-40	5W-40	229.31
Havoline Ultra S 5W-30	5W-30	229.31
Havoline Ultra S 5W-40	5W-40	229.31
High Star	5W-30	229.3
Mobil 1 0W-40	0W-40	229.3, 229.5

Mobil 1 5W-50	5W-50	229.3
Mobil 1 ESP Formula MB	5W-40	229.51
Pennzoil European Formula Ultra	5W-30	229.5
Pennzoil Platinum European Formula	5W-40	229.3
Pento High Performance 5W-30 LA	5W-30	229.31
Q Diesel Plus	5W-30	229.51
Q European Engine	5W-40	229.3
Q European Engine Ultra	5W-30	229.5
Shell Helix Ultra AX	5W-30	229.51
Shell Rimula Signia	10W-40	228.51
Texaco Havoline Synthetic Motor Oil SAE 5W-40	5W-40	229.31
Valvoline SynPower MST	5W-30	229.51

	Service interval	**Product name/product number**	**MB sheet**
Air conditioning The air conditioning system of your vehicle contains R-134a, a refrigerant that does not deplete the ozone layer in the upper atmosphere.			
Refrigerant R-134a		Refrigerant R-134a	361.0
Automatic transmission			
Automatic transmission fluid	10 years 60,000 mi (96,000 km)	MOPAR ® Part No. 05127382AB Shell ATF 3603/M-115 Shell ATF 3353 or equivalent	236.10 236.12
Brakes Use brake fluid approved for DaimlerChrysler standard MB 331.0 and/or DaimlerChrysler material standard MS-9971, brake fluid certified to DOT 4 Plus standards, that also maintains a minimum dry boiling point (ERBP) of 500°F (260°C), a minimum wet boiling point (WERBP) of 356°F (180°C) and a maximum viscosity of 1500 mm2/s, conforming to FMVSS 116 and ISO 4925.			
Brake fluid	2 years	Intac B026E Dry boiling point:500°F(260°C) Wet boiling point:356°F(180°C) MOPAR® MS-9971 Part No. 04549625AC or equivalent	331.0

CAPACITIES

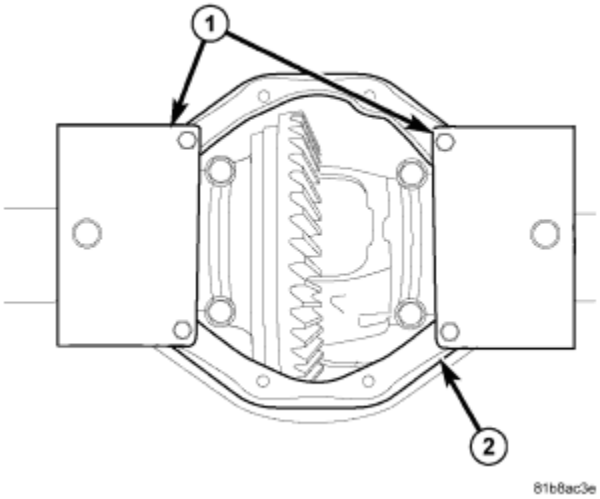
Vehicle	Engine with oil filter	Fuel Tank		Cooling system	Windshield washer/headlamp cleaning system
	Engine oil	Capacity	Including reserve fuel	Coolant	Water with MB windshield washer fluid
2500 CDI, 3500 CDI (3.0 Liter Diesel)	13.21 Quarts. (12.5 Liters)	26.42 Gallons (100 Liters)	5.3 Gallons (20 Liters)	10.75 Quarts (10.0 Liters)	approx. 7.40 Quarts (7.0 Liters)
2500, 3500 (3.5 Liter Gas)	10.04 Quarts. (9.5 Liters)	26.42 Gallons (100 Liters)	5.3 Gallons (20 Liters)	7.40 Quarts (7.0 Liters)	approx. 7.40 Quarts (7.0 Liters)

AUTOMATIC TRANSMISSION		MB sheet
Service Fill - NAG1	5.0 Liter (10.6 Pints)	236.10, 236.1
O-haul Fill - NAG1	7.7 Liter (16.3 Pints)	

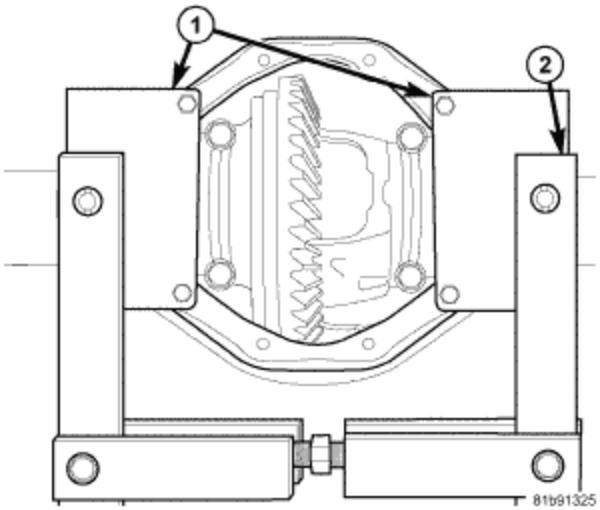
REAR AXLE ± 0.03 Liter (1 oz.)		MB sheet
8 1/2	1.8 Liter (4.0 Pints.)	235.0

POWER STEERING SYSTEM	MB sheet
Power steering fluid capacities are dependent on engine/chassis options as well as steering gear/cooler options. Depending on type and size of internal cooler, length and inside diameter of cooler lines, or use of an auxiliary cooler, these capacities may vary. Refer to 19, Steering for proper fill and bleed procedures.	236.3

REMOVAL



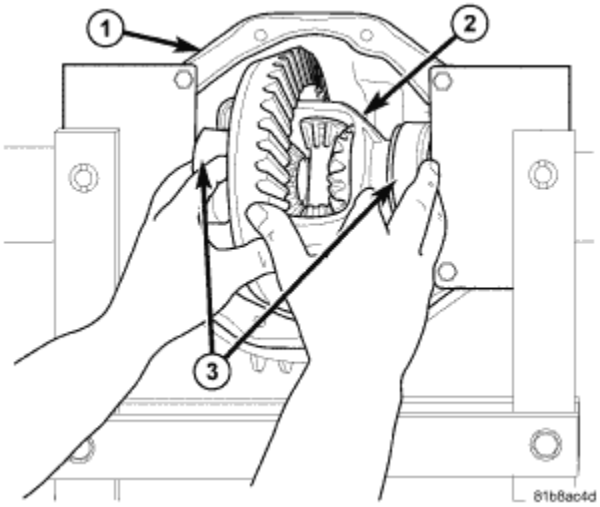
1. Remove differential fill plug.
2. Remove differential cover and drain fluid.
3. Remove axle shafts.
4. Mark bearing caps and housing for installation reference.
5. Remove differential bearing cap bolts.
6. Mount Adapters 10004 (1) on differential housing (2).



7. Position Spreader W-129-B (2) on adapters (1). Mount dial indicator on housing to measure housing spread.

CAUTION: Never spread over 0.3 mm (0.011 in). If the housing is over-spread, it

could be distorted or damaged.



8. Remove differential (2) with bearings, cups (3) and differential shims.
9. Mark bearings and shims for installation reference.
10. Clean the housing cavity with flushing oil, light engine oil or lint free cloth.

NOTE: Do not use water, steam, kerosene or gasoline for cleaning.

TRAILER TOWING - NAFTA

In this section you will find safety tips and information on limits to the type of towing you can reasonably do with your vehicle. Before towing a trailer carefully review this information to tow your load as efficiently and safely as possible.

To maintain warranty coverage, follow the requirements and recommendations in this manual concerning vehicles used for trailer towing.

WARNING: Failure to use proper equipment and driving technique can result in a loss of vehicle control when towing a trailer. Improper towing or failure to follow the instructions contained in this guide can result in serious injury. Follow the guidelines below carefully to assure safe trailer operation. Ask your authorized Sprinter Dealer if you require an explanation of information contained in this guide.

Common Towing Definitions

The following trailer towing related definitions will assist you in understanding the following information:

Gross Vehicle Weight Rating (GVWR)

The GVWR is the total allowable weight of your vehicle. This includes driver, passengers, cargo and tongue weight. The total load must be limited so that you do not exceed the GVWR.

CAUTION:

For vehicles model type 3500, the allowable GCWR is less than the combined maximum weight of the GVWR and the GTW. Exceeding the CWR can cause damage to the drive train, the transmission, or the trailer hitch.

Thus, the permissible values for GVWR and/or the GTW are reduced when either the trailer or the vehicle is fully laden. You may therefor only partly load the vehicle and/or the trailer.

Gross Trailer Weight (GTW)

The gross trailer weight (GTW) is the weight of the trailer plus the weight of all cargo, consumables and equipment (permanent or temporary) loaded in or on the trailer in its "loaded and ready for operation" condition. The recommended way to measure GTW is to put your fully loaded trailer on a vehicle scale. The entire weight of the trailer must be supported by the scale.

CAUTION: Cargo vans with a long wheelbase of 170.3 in (4325 mm) and an overall vehicle length of 289.1 in. (7344 mm) have a reduced GTW and TWR.

Gross Combination Weight Rating (GCWR)

The gross combination weight rating (GCWR) is the total permissible weight of your vehicle and trailer when weighed in combination. (Note that GCWR ratings include a 150 lbs (68 kg) allowance for the presence of a driver).

Gross Axle Weight Rating (GAWR)

The GAWR is the maximum capacity of the front and rear axles. Distribute the load over the front (FA) and rear (RA) axles evenly. Make sure that you do not exceed either front or rear GAWR.

WARNING:

It is important that you do not exceed the maximum front or rear GAWR. A dangerous driving condition can result if either rating is exceeded. You could lose control of the vehicle and have an accident.

Tongue Weight Rating (TWR)

The downward force exerted on the hitch ball by the trailer. In most cases it should not be less than 10% or more than 15% of the trailer load. You must consider this as part of the load on your vehicle.

Frontal Area

The maximum height and maximum width of the front of a trailer.

Trailer Sway Control

The trailer sway control is a telescoping link that can be installed between the hitch receiver and the trailer tongue that typically provides adjustable friction associated with the telescoping motion to dampen any unwanted trailer swaying motions while traveling.

Trailer hitches

Only install a trailer hitch receiver approved for your vehicle. For information on availability and installation, please see your authorized Sprinter Dealer.

The bumpers on your vehicle are not designed for use with clamp-type hitches. Do not attach rental hitches or other bumper-type hitches to them.

To reduce the possibility of damage, remove the hitch ball adaptor from the receiver when not in use.

The Sprinter is available with a variety of pre-installed conditions (lines and turn signal indicator and brake module installed and / or not installed). Make sure that the correct trailer hitch receiver kit is used. For further information, please see your authorized Sprinter Dealer.

In order to prevent possible damage to the vehicle?s electrical system by incorrectly installing the trailer wiring plug, we recommend having the harness connected at an authorized Sprinter Dealer.

Vehicle and trailer weights and ratings

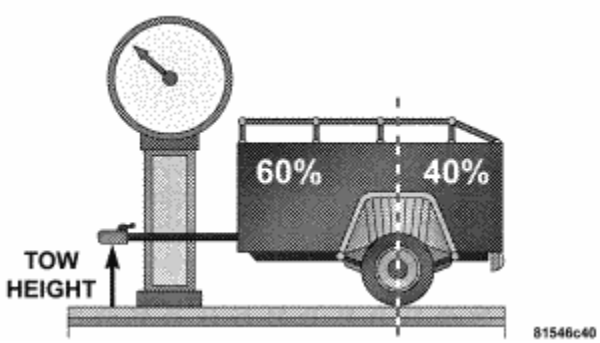
Sprinter type	GVWR	GAWR (FA)	GAWR (RA)	GCWR	GTW	TWR
2500	8550 lbs. (3878 kg)	3970 lbs (1801 kg)	5360 lbs (2431 kg)	13500 lbs (6123 kg)	5000 lbs (2268 kg)	500 lbs (227 kg)
3500	9990 lbs (4531 kg)	4080 lbs (1851 kg) 4410 lbs (2000 kg) *	7060 lbs (3202 kg)	15250 lbs (6917 kg)	7500 lbs (3402 kg) or 5000 lbs (2268 kg)1	750 lbs (340 kg) or 500 lbs (227 kg) 1
3500	11030 lbs (5003 kg)	4080 lbs (1851 kg) 4410 lbs (2000 kg) *	7720 lbs (3502 kg)	15250 lbs (6917 kg)	7500 lbs (3402 kg) or 5000 lbs (2268 kg)1	750 lbs (340 kg) or 500 lbs (227 kg) 1
1 Cargo vans with a long wheelbase of 170.3 in. (4325 mm) and an overall vehicle length of 289.1 in. (7344 mm) only						
* optional equipment						

NOTE: The trailer tongue weight must be considered as part of the combined weight of occupants and cargo, and should never exceed the weight referenced on the Tire and Loading Information placard. The addition of passengers and cargo may require reducing tongue load and Gross Trailer Weight (GTW). Redistributing cargo (to the trailer) may be necessary to avoid exceeding Rear Gross Axle Weight Rating. Refer to the Tire-Safety Information section in this manual.

Trailer and Tongue Weight

Always load a trailer with 60% to 65% of the weight in the front of the trailer. This places 10% to 15% of the Gross Trailer Weight (GTW) on the tow hitch of your vehicle. Loads balanced over the wheels or heavier in the rear can cause the trailer to sway **severely** side to side which will cause loss of control of the vehicle and trailer. Failure to load trailers heavier in front is the cause of many trailer accidents.

Never exceed the maximum tongue weight stamped on your bumper or trailer hitch.



Consider the following items when computing the weight on the rear axle of the vehicle:

- The tongue weight of the trailer.
- The weight of any other type of cargo or equipment put in or on your vehicle.
- The weight of the driver and all passengers.

NOTE: Remember that everything put into or on the trailer adds to the load on your vehicle. Also, additional factory-installed options, or dealer-installed options, must be considered as part of the total load on your vehicle. Refer to the Tire and Loading Information placard in the Tire Safety Information Section of this manual for the maximum combined weight of occupants and cargo for your vehicle.

Trailer sway control and a weight distributing (load equalizing) hitch are recommended for Tongue Weights (TW) above 150 lbs (68 kg) and required for Tongue Weights above 300 lbs (136 kg).

Loading a trailer

When loading a trailer, you should observe that neither the permissible GTW, nor the GVWR are exceeded.

Maximum permissible values are listed on the safety compliance certification labels for the vehicle and for the trailer to be towed. The lowest value listed must be selected when determining how the vehicle and trailer are loaded.

Load the trailer in such a manner that it has a tongue weight (TW) of 10% of the GTW.

The tongue weight at the hitch ball must be added to the GVW to prevent exceeding your Sprinter tow vehicle?s rear GAWR.

Checking weights of vehicle and trailer

To assure that the tow vehicle and trailer are in compliance with the maximum permissible weight limits, and to know the actual weights, have the loaded vehicle-trailer combination (tow vehicle including driver, passengers and cargo, trailer fully loaded) weighed on a commercial scale.

Check the vehicle?s front and rear Gross Axle Weight (GAW), the GTW and TW. The values as measured must not be exceeded, according to the weights listed under "Vehicle and trailer weights and ratings".

Towing Requirements

To promote proper break-in of your new vehicle drivetrain components the following guidelines are recommended:

CAUTION:

- **Avoid towing a trailer for the first 500 miles (805 km) of vehicle operation. Doing so may damage your vehicle.**
- **During the first 500 miles (805 km) of trailer towing, limit your speed to 50 mph (80 km/h).**

When towing a trailer, never exceed the GAWR, or GCWR, ratings.

WARNING:

Improper towing can lead to an injury accident. Follow these guidelines to make your trailer towing as safe as possible:

Make certain that the load is secured in the trailer and will not shift during travel. When trailering cargo that is not fully secured, dynamic load shifts can occur that may be difficult for the driver to control. You could lose control of your vehicle and have an accident.

- When hauling cargo or towing a trailer, do not overload your vehicle or trailer. Overloading can cause a loss of control, poor performance or damage to brakes, axle, engine, transmission, steering, suspension, chassis structure or tires.
- Safety chains must always be used between your vehicle and trailer. Always connect the chains to the frame or hook retainers of the vehicle hitch. Cross the chains under the trailer tongue and allow enough slack for turning corners.
- Vehicles with trailers should not be parked on a grade. When parking, apply the parking brake on the tow vehicle. Put the tow vehicle automatic transmission in P for Park. Always, block or "chock" the trailer wheels.
- GCWR must not be exceeded.
- **Total weight must be distributed between the tow vehicle and the trailer such that the following four ratings are not exceeded:**
- GVWR
- GTW
- GAWR

 Tongue weight rating for the trailer hitch utilized (This requirement may limit the ability to always achieve the 10% range of tongue weight as a percentage of total trailer weight).

Towing Requirements - Tires

 Do not attempt to tow a trailer while using a compact spare tire.
 Proper tire inflation pressures are essential to the safe and satisfactory operation of your vehicle.
 Also, check the trailer tires for proper tire inflation pressures before trailer usage.
 Check for signs of tire wear or visible tire damage before towing a trailer. Refer to the (Refer to 22 - TIRES/WHEELS/TIRES - DESCRIPTION) section of this manual on Tread Wear Indicators for the proper inspection procedure.
 When replacing tires refer to (Refer to 22 - TIRES/WHEELS/TIRES - DESCRIPTION) section of this manual on Replacement Tires for proper tire replacement procedures. Replacing tires with a higher load carrying capacity will not increase the vehicle's GVWR and GAWR limits.

Towing Requirements - Trailer Brakes

 Do **not** interconnect the hydraulic brake system or vacuum system of your vehicle with that of the trailer. This could cause inadequate braking and possible personal injury.
 An electronically actuated trailer brake controller is required when towing a trailer with electronically actuated brakes. When towing a trailer equipped with a hydraulic surge actuated brake system, an electronic brake controller is not required.
 Trailer brakes are recommended for trailers over 1,000 lbs (454 kg) and required for trailers in excess of 2,000 lbs (907 kg).

CAUTION:

If the trailer weighs more than 1,000 lbs (454 kg) loaded, it should have its own brakes and they should be of adequate capacity. Failure to do this could lead to accelerated brake lining wear, higher brake pedal effort, and longer stopping distances.

WARNING:

Do not connect trailer brakes to your vehicle's hydraulic brake lines. It can overload your brake system and cause it to fail. You might not have brakes when you need them and could have an accident.

Towing any trailer will increase your stopping distance. When towing you should allow for additional space between your vehicle and the vehicle in front of you. Failure to do so could result in an accident.

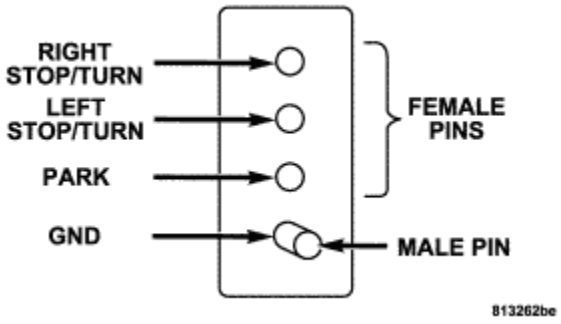
Towing Requirements - Trailer Lights & Wiring

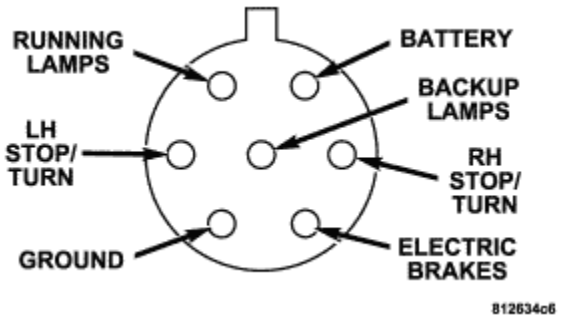
Whenever you pull a trailer, regardless of the trailer size, stop lights and turn signals on the trailer are required for motoring safety.

The Trailer Tow Package may include a 4 and 7 pin wiring harness. Use a factory approved trailer harness and connector.

NOTE: Do not cut or splice wiring into the vehicles wiring harness.

The electrical connections are all complete to the vehicle but you must mate the harness to a trailer connector. Refer to the following illustrations.





Towing Tips

Before setting out on a trip, practice turning, stopping and backing the trailer in an area away from heavy traffic.

Towing Tips - Automatic Transmission

The ?D? range can be selected when towing. However, if frequent shifting occurs while in this range, the ?3? range should be selected.

Using the ?3? range while operating the vehicle under heavy operating conditions will improve performance and extend transmission life by reducing excessive shifting and heat build up. This action will also provide better engine braking.
NOTE: Check the automatic transmission fluid level before towing.

Towing Tips - Electronic Speed Control (If Equipped)

 Don't use in hilly terrain or with heavy loads.
 When using the speed control, if you experience speed drops greater than 10 mph (16 km/h), disengage until you can get back to cruising speed.
 Use speed control in flat terrain and with light loads to maximize fuel efficiency.

Towing Tips - Cooling System

To reduce potential for engine and transmission overheating, take the following actions:

 City Driving - When stopped for short periods of time, put transmission in neutral and increase engine idle speed.
 Highway Driving - Reduce speed.
 Air Conditioning - Turn off temporarily.
 Refer to Cooling System Operating information in the Maintenance section of this manual for more information.

DESCRIPTION

Several combinations of radio receivers and speaker systems are offered. The audio system uses an ignition switched source of battery current so that the system will only operate when the ignition switch is in the RUN or ACCESSORY positions.

The audio system includes the following components:

 Antenna
 Radio receiver
 Remote radio switches (if equipped)

- Speakers
- CD Changer (if equipped)

AUDIO

Any diagnosis of the Audio system should begin with the use of the scan tool. For information on the use of the scan tool, refer to the appropriate Diagnostic Service information.

For complete circuit diagrams, refer to the appropriate wiring information.

WARNING: Disable the airbag system before attempting any steering wheel, steering column, seat belt tensioner, side airbag, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the airbag system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the airbag system. Failure to take the proper precautions could result in accidental airbag deployment and possible personal injury.

AUDIO SYSTEM DIAGNOSIS

CONDITION	POSSIBLE CAUSES	CORRECTION
NO AUDIO AT SOME SPEAKERS - RADIO DISPLAY AND CONTROLS ARE OPERATIONAL	1. Wiring faulty between radio and speaker.	1. Check wiring for open or short, repair wiring as necessary.
	2. Speaker(s) faulty.	2. Refer to speaker diagnostics.
	3. Radio faulty.	3. Refer to appropriate Diagnostic Service Manual.
POOR AUDIO AT SOME SPEAKERS - RADIO DISPLAY AND CONTROLS ARE OPERATIONAL	1. Wiring faulty between radio and speaker.	1. Check wiring for open or short, repair wiring as necessary.
	2. Speakers faulty.	2. Refer to speaker diagnostics.
	3. Radio faulty.	3. Refer to appropriate Diagnostic Service

		Manual.
SOUND DISTORTION (VIBRATION FROM SPEAKER AREA, BUZZING - HUMMING)	1. Door trim panel loose or missing fasteners.	1. Inspect door trim panel and correct as necessary. Replace any missing fasteners.
	2. Water shield loose or misaligned.	2. Inspect water shield and adjust as required.
	3. Items placed in door trim panel map pockets vibrating or moving from side to side.	3. Remove items from door trim panel. Ensure that vibration is no longer present.
NO RADIO DISPLAY - AUDIO AND CONTROLS ARE OPERATIONAL	1. Radio faulty.	1. Refer to appropriate Diagnostic Service Manual.
NO RADIO DISPLAY - AUDIO AND CONTROLS ARE NOT OPERATIONAL	1. Fuse faulty.	1. Check radio fuse and Ignition-Off Draw (IOD) fuse in Junction Block (JB). Replace fuses, if required.
	2. Radio connector faulty.	2. Check for loose or corroded radio connector. Repair, if required.
POOR RADIO RECEPTION WITH KEY IN ACCESSORY OR IGNITION ON POSTION	1. Antenna faulty.	1. Replace the antenna. (Refer to 8 - ELECTRICAL/AUDIO/ANTENNA BODY & CABLE - REMOVAL) .
	2. Radio ground faulty.	2. Check for continuity between radio chassis and a known good ground. There should be continuity. Repair ground, if required.
	3. Radio noise suppression faulty.	3. Repair or replace ground strap as necessary.
	4. Radio faulty.	4. Refer to appropriate Diagnostic Service Manual.

NO COMPACT DISC OR DVD OPERATION	1. Faulty CD/DVD.	1. Insert known good CD/DVD and test operation.
	2. Foreign material on CD/DVD.	2. Clean CD/DVD and test operation.
	3. Condensation on CD/DVD or optics.	3. Allow temperature of vehicle interior to stabilize and test operation.
	4. Faulty CD/DVD player.	4. Refer to appropriate Diagnostic Service Manual.

DESCRIPTION

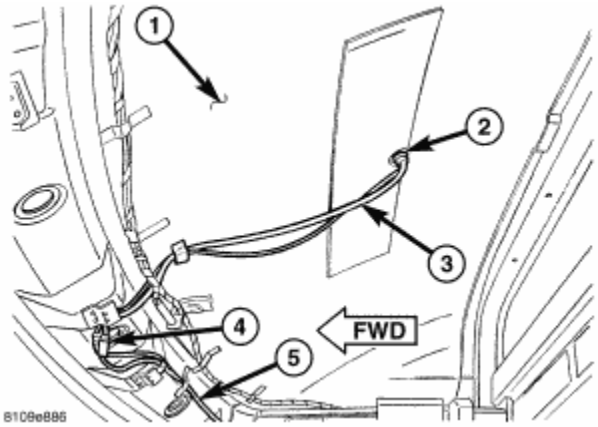
The antenna amplifier consists of the standard antenna for radio reception, radio, telephone and global positioning system (GPS) reception. The antenna amplifier is located on the front of the roof.

The antenna amplifier consists of the following antenna variations:
- Standard antenna for radio reception.
- Radio, telephone and global positioning system (GPS) reception.
- Radio/telephone antenna.

OPERATION

The telephone antenna, which is integrated in the antenna amplifier, transmits and receives telephone signals (data and voice output). This done by converting electromagnetic radio waves into electric voltage and vice-versa. The GPS antenna integrated in the antenna amplifier is used for receiving and for amplifying the GPS satellite signals. No signals are transmitted. The satellite signals received by the GPS antenna integrated in the antenna amplifier are amplified by the antenna amplifier. The FM/AM amplifier integrated in the antenna amplifier has the task of amplifying the signals of the radio reception antenna integrated in the antenna amplifier and relaying them to the radio.

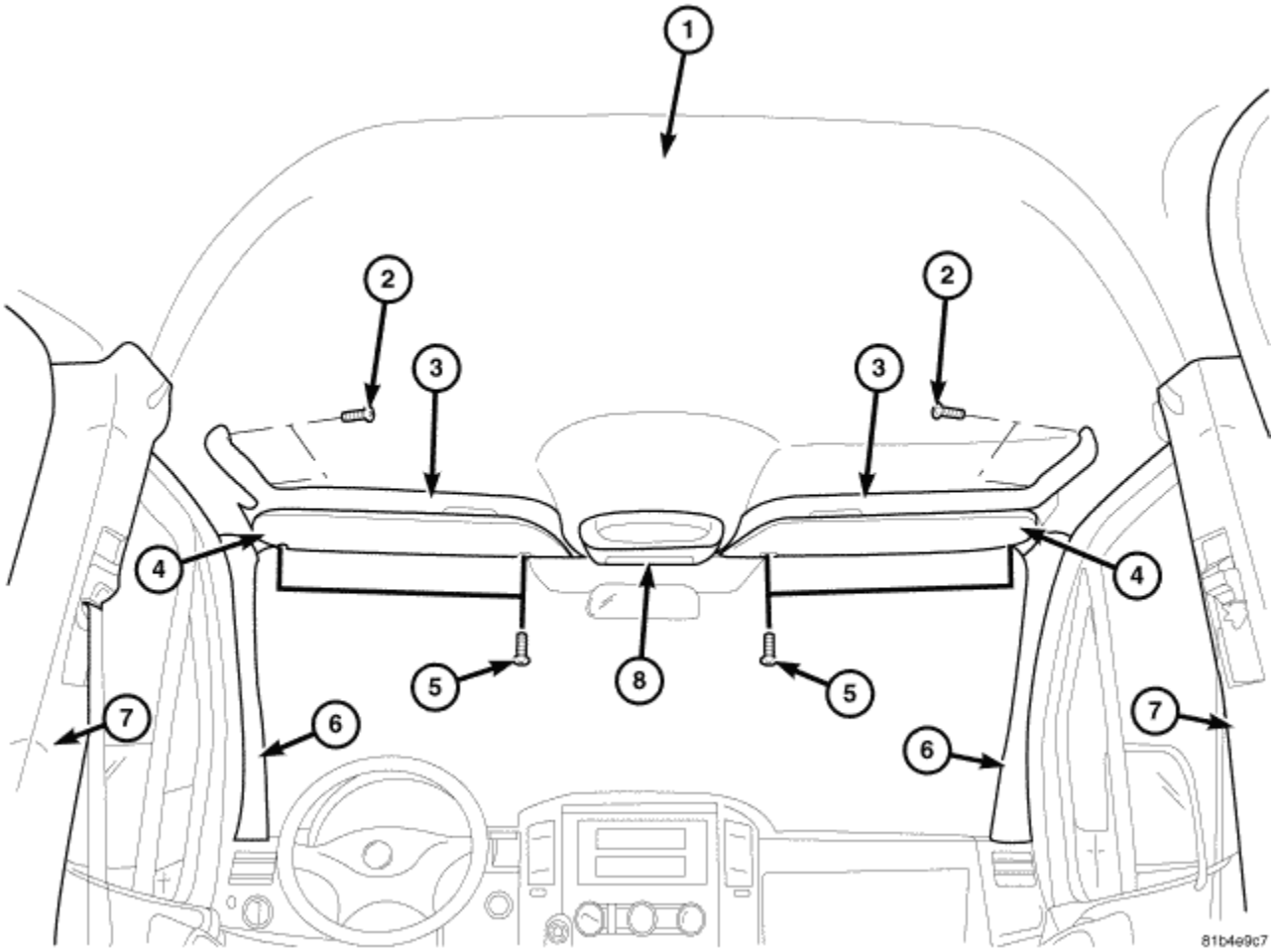
REMOVAL



1. Disconnect and isolate the battery negative cable.
2. Remove the portion of the headliner (1) over the front seats. (Refer to 23 - BODY/INTERIOR/HEADLINER - REMOVAL) .
3. Disconnect the antenna and electrical connections near the windshield (4).
4. Remove the mounting nut (2).
5. Remove the antenna assembly from the roof and pull wire harness and cable (3) through roof opening.

REMOVAL

Cab Section



1. Remove the a-pillar trim (6), (Refer to 23 - BODY/INTERIOR/A-PILLAR TRIM - REMOVAL)
2. Remove the sun visors (4) and the storage trays (3).
3. Remove the B-pillar trim. (Refer to 23 - BODY/INTERIOR/B-PILLAR TRIM - REMOVAL)
4. Remove the dome light.
5. Carefully separate the headliner (1) and remove.

Number 2 Section

1. Disconnect and isolate battery negative cable.
2. Remove the second and third row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.

5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

Number 3 Section

1. Disconnect and isolate battery negative cable.
2. Remove the third and fourth row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.
5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

Number 4 Section

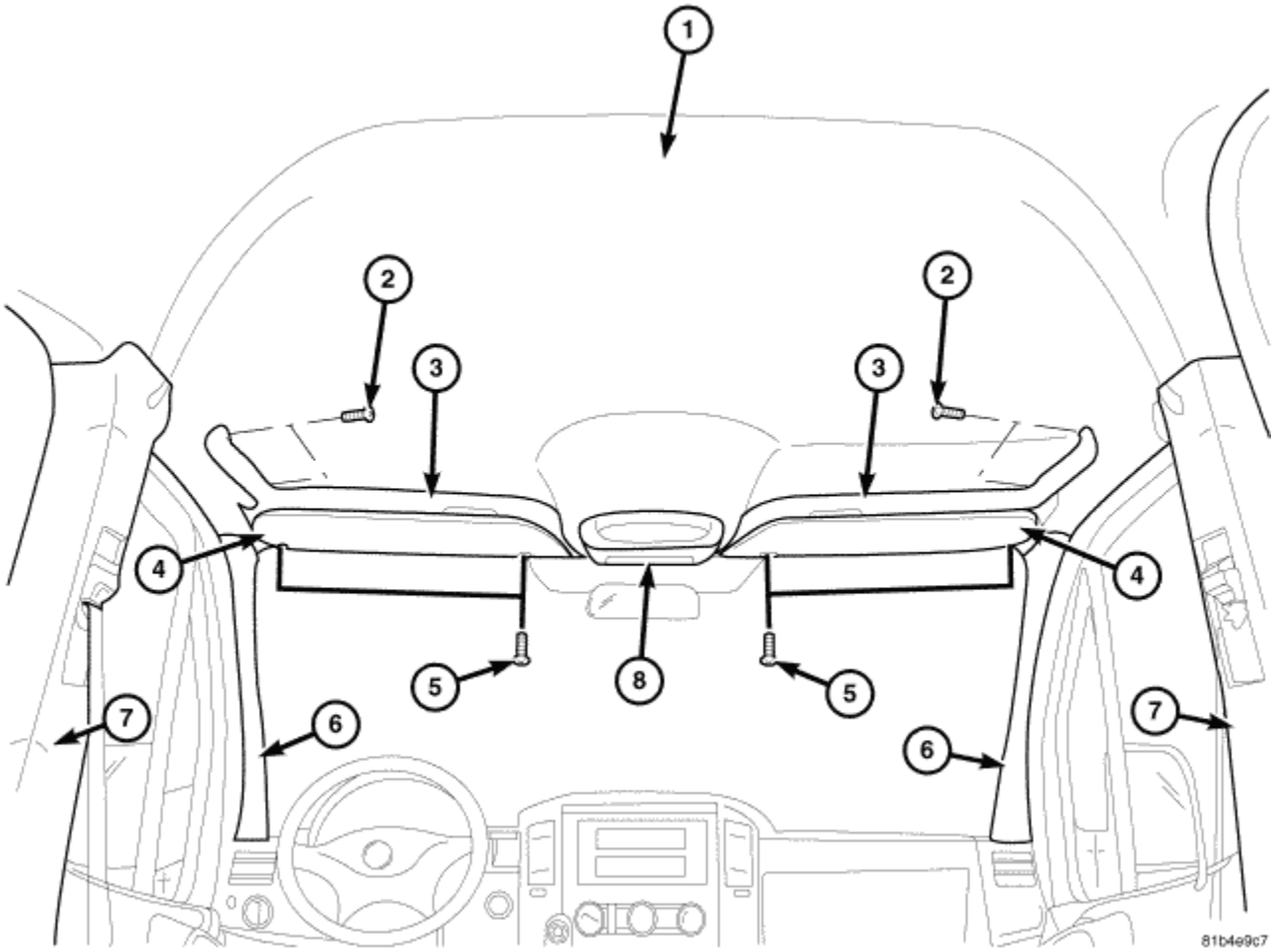
1. Disconnect and isolate battery negative cable.
2. Remove the third and fourth row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.
5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

REMOVAL

Cab Section



1. Remove the a-pillar trim (6), (Refer to 23 - BODY/INTERIOR/A-PILLAR TRIM - REMOVAL)
2. Remove the sun visors (4) and the storage trays (3).
3. Remove the B-pillar trim. (Refer to 23 - BODY/INTERIOR/B-PILLAR TRIM - REMOVAL)
4. Remove the dome light.
5. Carefully separate the headliner (1) and remove.

Number 2 Section

1. Disconnect and isolate battery negative cable.
2. Remove the second and third row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.

5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

Number 3 Section

1. Disconnect and isolate battery negative cable.
2. Remove the third and fourth row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.
5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

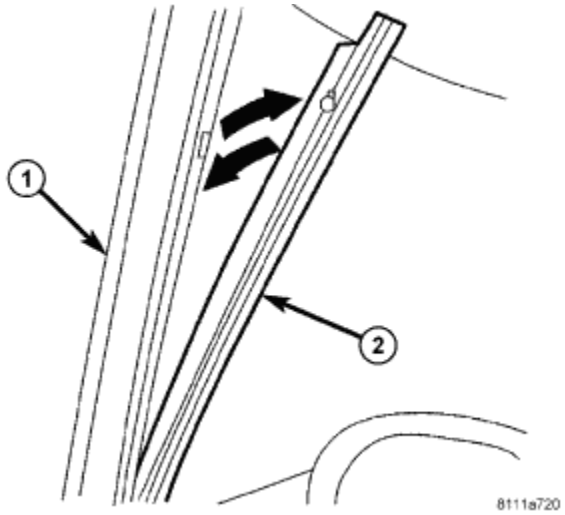
Number 4 Section

1. Disconnect and isolate battery negative cable.
2. Remove the third and fourth row seats. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL)

NOTE: If vehicle is not equipped with rear air conditioning unit, skip to step 8.

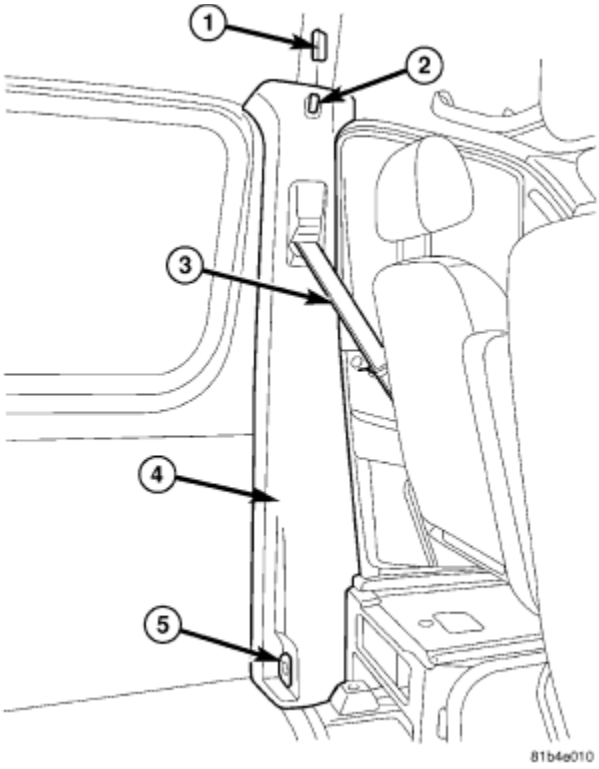
3. Remove the push pin fasteners and remove the rear air front duct cover.
4. Disconnect the electrical connector at front of cover.
5. Remove the push pin fasteners and remove the rear air middle duct cover.
6. Disconnect the electrical connector.
7. Remove the three push-pins and three screws and remove the rear air cover.
8. Remove the duct work.
9. Release clips at front and rear of headliner and remove.

INSTALLATION



1. Connect the tether to the A-pillar and install the screw.
2. Install the a-pillar trim bottom and push the top in toward a-pillar.
3. Seat the retaining clips fully.

REMOVAL



1. Pull coat hook (1) upward and remove.
2. Remove the eyelet (5) or cover.
3. Remove the seat belt (3) from the seat, (Refer to 8 - ELECTRICAL/RESTRAINTS/FRONT OUTBOARD SEAT BELT & RETRACTOR - REMOVAL)
4. Remove the assist handle covers and remove the screws.
5. Remove the assist handle from the passenger side B-pillar.
6. Pull the trim (4) on the B-pillar out of clip connections starting at top and remove upward.
7. Remove the seat belt (3) from the trim (4).

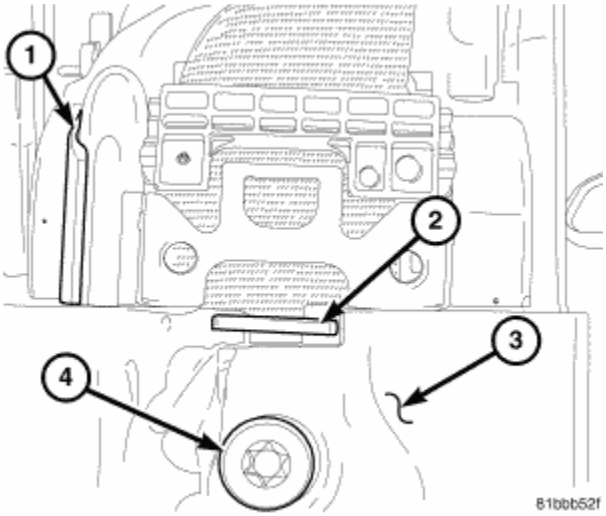
FRONT CENTER

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in

accidental airbag deployment.

WARNING: To avoid serious or fatal injury during and following any seat belt or child restraint anchor service, carefully inspect all seat belts, buckles, mounting hardware, retractors, tether straps, and anchors for proper installation, operation, or damage. Replace any belt that is cut, frayed, or torn. Straighten any belt that is twisted. Tighten any loose fasteners. Replace any belt that has a damaged or ineffective buckle or retractor. Replace any belt that has a bent or damaged latch plate or anchor plate. Replace any child restraint anchor or the unit to which the anchor is integral that has been bent or damaged. Never attempt to repair a seat belt or child restraint component. Always replace damaged or ineffective seat belt and child restraint components with the correct, new and unused replacement parts listed in the DaimlerChrysler Mopar® Parts Catalog.

NOTE: The following procedure is for replacement of an ineffective or damaged seat belt and retractor unit. The front center retractor also includes a seat belt tensioner. If the front center seat belt or retractor is ineffective or damaged, but the seat belt tensioner is not deployed, review the recommended procedures for handling non-deployed supplemental restraints. (Refer to 8 - ELECTRICAL/RESTRAINTS - STANDARD PROCEDURE - HANDLING NON-DEPLOYED SUPPLEMENTAL RESTRAINTS) . If the seat belt tensioner has been deployed, review the recommended procedures for service after a supplemental restraint deployment before removing the unit from the vehicle. (Refer to 8 - ELECTRICAL/RESTRAINTS - STANDARD PROCEDURE - SERVICE AFTER A SUPPLEMENTAL RESTRAINT DEPLOYMENT) .



1. Remove the two-position front passenger bench seat from the vehicle and place it face

down on a suitable work surface. Be certain to take the proper precautions to protect the seat from cosmetic damage.(Refer to 23 - BODY/SEATS/SEAT - FRONT BENCH - REMOVAL) .

2. Working from the underside of the seat cushion, remove the screw that secures the front center seat belt lower anchor to the seat frame.
3. Remove the front center seat belt lower anchor from the seat frame.
4. Remove the screw that secures the rear of the seat belt trim bezel to the top of the seat back frame.
5. Disengage the J-clips that secure the front and back panels of the seat back trim cover to each other at the base of the seat back.
6. Pull the back panel of the seat trim cover upward far enough to access the center retractor (1).
7. Route the seat belt latch plate, lower anchor, trim bezel and webbing through the top of the seat back frame.
8. Remove the screw (4) that secures the center retractor to the bracket (3) on the back of the seat back frame.
9. Slide the retractor upward far enough to disengage the retractor tab (2) from the notch in the seat back frame bracket.

CAUTION: Do not pull on the wires to disengage the connector from the seat belt tensioner initiator connector receptacle. Improper removal of the connector insulator can result in damage to the seat belt tensioner circuits or the connector insulator.

10. Pull the retractor out from under the seat trim cover far enough to access and disconnect the vehicle wire harness connector for the seat belt tensioner from the initiator receptacle of the retractor located on the upper right corner of the retractor. To disconnect the connector:
    a. Slide the orange Connector Position Assurance (CPA) lock on the connector toward the top of the connector.
    b. Depress the connector latch tab and pull the connector straight away from the inflator initiator.
11. Remove the front center seat belt and retractor from the seat back frame as a unit.

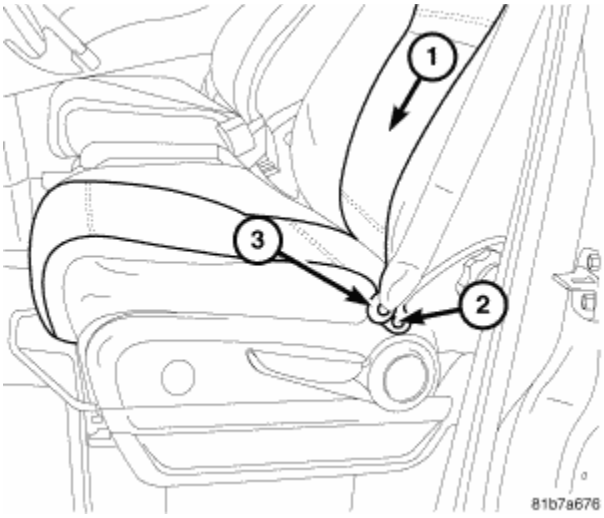
FRONT OUTBOARD

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before

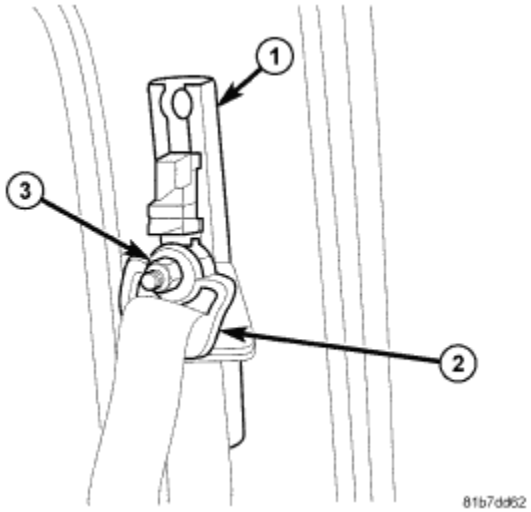
performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

WARNING: To avoid serious or fatal injury during and following any seat belt or child restraint anchor service, carefully inspect all seat belts, buckles, mounting hardware, retractors, tether straps, and anchors for proper installation, operation, or damage. Replace any belt that is cut, frayed, or torn. Straighten any belt that is twisted. Tighten any loose fasteners. Replace any belt that has a damaged or ineffective buckle or retractor. Replace any belt that has a bent or damaged latch plate or anchor plate. Replace any child restraint anchor or the unit to which the anchor is integral that has been bent or damaged. Never attempt to repair a seat belt or child restraint component. Always replace damaged or ineffective seat belt and child restraint components with the correct, new and unused replacement parts listed in the DaimlerChrysler Mopar® Parts Catalog.

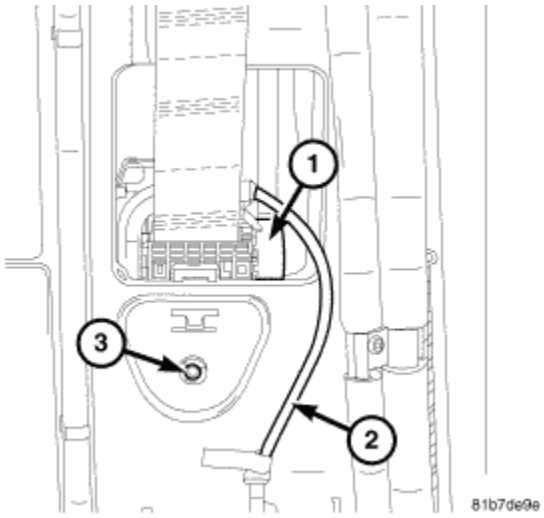
NOTE: The following procedure is for replacement of an ineffective or damaged seat belt and retractor unit. The front outboard retractor also includes a seat belt tensioner. If the front outboard seat belt or retractor is ineffective or damaged, but the seat belt tensioner is not deployed, review the recommended procedures for handling non-deployed supplemental restraints. (Refer to 8 - ELECTRICAL/RESTRAINTS - STANDARD PROCEDURE - HANDLING NON-DEPLOYED SUPPLEMENTAL RESTRAINTS) . If the seat belt tensioner has been deployed, review the recommended procedures for service after a supplemental restraint deployment before removing the unit from the vehicle. (Refer to 8 - ELECTRICAL/RESTRAINTS - STANDARD PROCEDURE - SERVICE AFTER A SUPPLEMENTAL RESTRAINT DEPLOYMENT) .



1. Disconnect and isolate the battery negative cable. Wait two minutes for the system capacitor to discharge before further service.
2. On the driver side and on vehicles equipped with a passenger side bucket seat, adjust the front seat (1) to its most forward position for easiest access to the B-pillar trim.
3. On the driver side and on vehicles equipped with a passenger side bucket seat, unsnap and remove the plastic cover from the screw (2) that secures the front outboard seat belt lower anchor (3) to the outboard side of the seat frame.
4. Remove the screw that secures the lower anchor to the seat frame.
5. On the driver side and on vehicles equipped with a passenger side bucket seat, pull the outboard side shield away from the seat cushion far enough to disengage the lower anchor from the seat frame.
6. Remove the trim from the inside of the B-pillar. (Refer to 23 - BODY/INTERIOR/B-PILLAR TRIM - REMOVAL) .



7. Remove the screw (3) that secures the front outboard seat belt turning loop (2) to the height adjuster (1) on the upper inner B-pillar.
8. Remove the turning loop from the height adjuster.



CAUTION: Do not pull on the wires to disengage the connector from the seat belt tensioner initiator connector receptacle. Improper removal of the connector insulator can result in damage to the seat belt tensioner circuits or the connector insulator.

9. Disconnect the vehicle wire harness (2) connector for the seat belt tensioner from the

initiator receptacle of the retractor (1) located within the lower B-pillar. To disconnect the connector:

a. Slide the orange Connector Position Assurance (CPA) lock on the connector toward the top of the connector.

b. Depress the connector latch tab and pull the connector straight away from the inflator initiator.

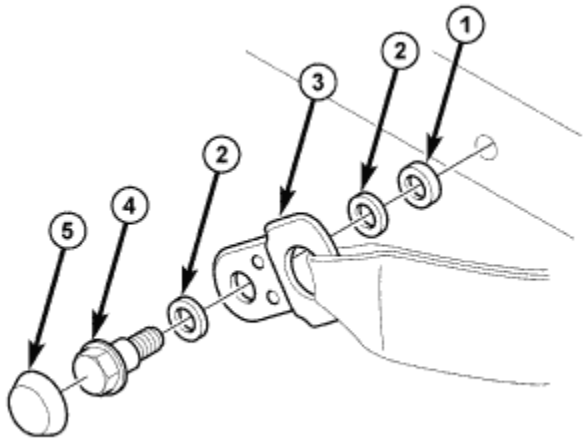
10. Remove the screw (3) that secures the retractor to the lower inner B-pillar.

11. Remove the front seat belt and retractor from the B-pillar as a unit.

REAR

WARNING: To avoid serious or fatal injury during and following any seat belt or child restraint anchor service, carefully inspect all seat belts, buckles, mounting hardware, retractors, tether straps, and anchors for proper installation, operation, or damage. Replace any belt that is cut, frayed, or torn. Straighten any belt that is twisted. Tighten any loose fasteners. Replace any belt that has a damaged or ineffective buckle or retractor. Replace any belt that has a bent or damaged latch plate or anchor plate. Replace any child restraint anchor or the unit to which the anchor is integral that has been bent or damaged. Never attempt to repair a seat belt or child restraint component. Always replace damaged or ineffective seat belt and child restraint components with the correct, new and unused replacement parts listed in the DaimlerChrysler Mopar® Parts Catalog.

NOTE: The following procedure applies to the seat belt retractors used on any two-position or three-position rear passenger bench seat.



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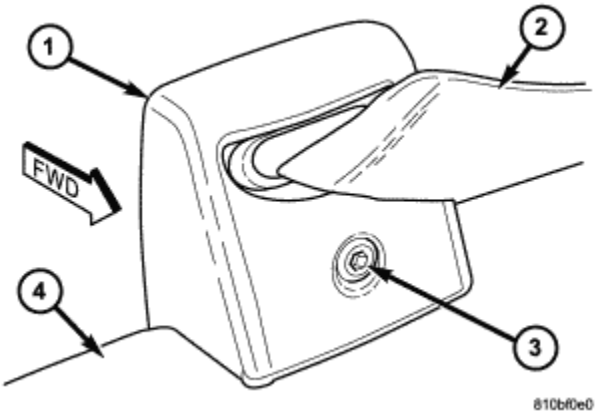
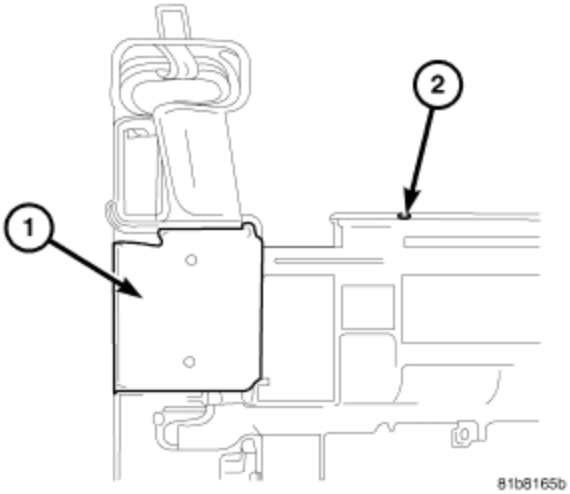
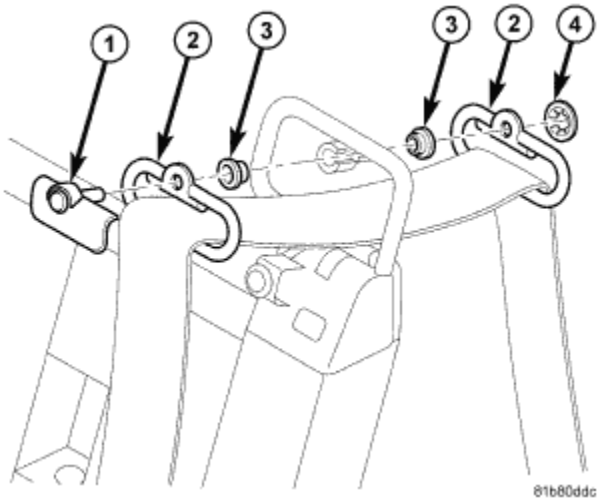
1. Remove from the vehicle the rear passenger bench seat that contains the seat belt and retractor unit to be serviced. (Refer to 23 - BODY/SEATS/SEAT - REAR - REMOVAL) .
2. Remove the molded plastic shield from the back of the rear seat. (Refer to 23 - BODY/SEATS/REAR SEAT BACK SHIELD - REMOVAL) .
3. Remove the seat belt buckle on the right outboard end of the rear seat. (Refer to 8 - ELECTRICAL/RESTRAINTS/SEAT BELT BUCKLE - OUTBOARD REAR - REMOVAL) .
4. For the left outboard seating position only, unsnap and remove the plastic trim cap (5) from the screw (4) that secures the seat belt lower anchor (3) to the left outboard end of the seat cushion frame.
5. Remove the screws that secure each seat belt lower anchor to the seat cushion frame.
6. Remove each seat belt lower anchor with two washers (2) and a spacer (1) from the seat cushion frame.



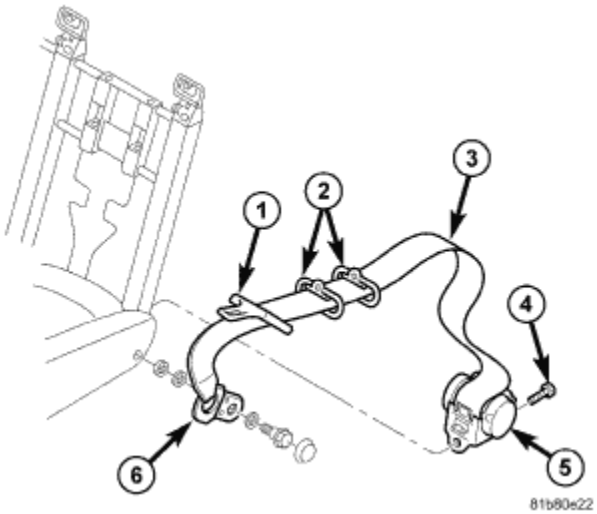
7. Lift the webbing (2) for each seat belt to access and remove the plastic push pin fastener (3) that secures the rear seat belt turning loop trim cover (1) to the turning loop bracket at the top of the seat back (4).
8. Remove the trim covers from the turning loop brackets and the seat belts.
9. Remove the trim cover and padding from the rear seat back. (Refer to 23 - BODY/SEATS/SEAT BACK CUSHION / COVER - REAR - REMOVAL) .



10. Remove the cover (1) from the back of the rear seat back frame (2).



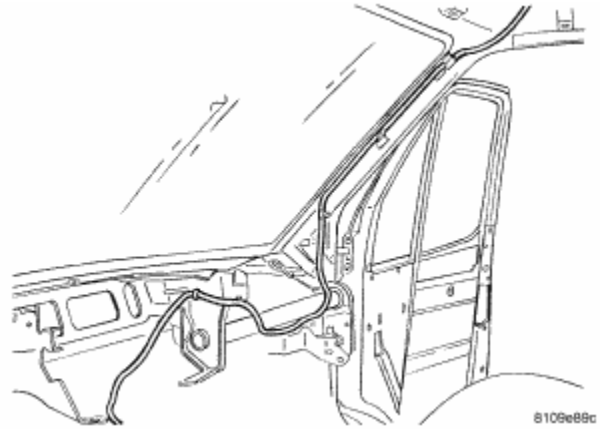
11. Remove and discard the push nut (4) from the pivot pin (1) at the back of the rear seat back frame turning loop bracket that secures the two turning loops (2) and the two bushings (3).
12. Remove the pin, the two turning loops and the two bushings from the turning loop bracket.



13. Route the seat belt latch plate (1), lower anchor (6) and webbing (3) through the two turning loops (2) and the turning loop bracket at the top of the seat back frame.

14. Remove the screw (4) that secures the rear seat belt retractor (5) to the bracket on the back of the rear seat cushion frame.
15. Remove the rear seat belt and retractor as a unit from the bracket on the rear seat cushion frame.

REMOVAL



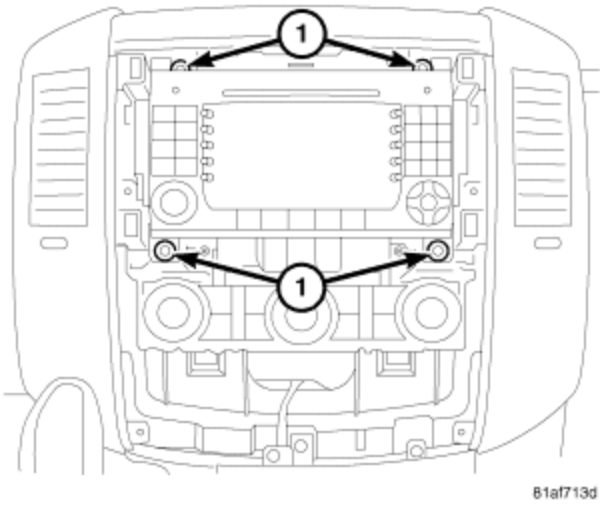
1. Disconnect and isolate the battery negative cable.
2. Remove the A-pillar trim (Refer to 23 - BODY/INTERIOR/A-PILLAR TRIM - REMOVAL) .
3. Remove the portion of the headliner over the front seat passengers (Refer to 23 - BODY/INTERIOR/HEADLINER - REMOVAL) .
4. Disconnect the antenna and electrical connections near the windshield.
5. Remove the glove box (Refer to 23 - BODY/INSTRUMENT PANEL/GLOVE BOX - REMOVAL) .
6. Remove the radio (Refer to 8 - ELECTRICAL/AUDIO/RADIO - REMOVAL) .
7. Cut both ends of existing cable close to the instrument panel.

REMOVAL

1. Remove the trim below the air outlet.
2. Open the glove box, push up on the two rear stops and fold the box down completely.

3. Remove the hinge screws and remove the glove box.
4. Remove the screws and remove the inner compartment liner.
5. Disconnect the glove box light electrical connector and remove the coolant air hose.

REMOVAL



1. Disconnect and isolate the battery negative cable.
2. Remove the instrument panel center bezel.
3. Remove the radio mounting fasteners and remove the radio.
4. Disconnect wire harness connector and antenna from radio.

REMOVAL

CENTER FRONT SPEAKER	Refer to the CENTER FRONT SPEAKER removal procedure.
FRONT DOOR MIDRANGE SPEAKERS	Refer to the FRONT DOOR MIDRANGE SPEAKERS removal procedure.
FRONT DOOR TWEETERS	Refer to the FRONT DOOR TWEETERS removal procedure.
REAR SIDE WALL MIDRANGE SPEAKERS	Refer to the REAR SIDE WALL MIDRANGE SPEAKERS removal procedure.

REAR SIDE WALL TWEETERS	Refer to the REAR SIDE WALL TWEETERS removal procedure.
SIDE WALL MIDRANGE SPEAKERS	Refer to the SIDE WALL MIDRANGE SPEAKERS removal procedure.
SIDE WALL TWEETERS	Refer to the SIDE WALL TWEETERS removal procedure.

CENTER FRONT SPEAKER

1. Disconnect and isolate the battery negative cable.
2. Remove the speaker cover.
3. Remove the mounting fasteners and disconnect the electrical connector.
4. Remove the speaker.

FRONT DOOR MIDRANGE SPEAKERS

1. Disconnect and isolate the battery negative cable.
2. Remove the door panel trim.
3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

FRONT DOOR TWEETERS

1. Disconnect and isolate the battery negative cable.
2. Remove the door panel trim.
3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

REAR SIDE WALL MIDRANGE SPEAKERS

1. Disconnect and isolate the battery negative cable.
2. Remove the quarter trim panel. (Refer to 23 - BODY/INTERIOR/QUARTER TRIM PANEL - REMOVAL) .
3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

REAR SIDE WALL TWEETERS

1. Disconnect and isolate the battery negative cable.
2. Remove the quarter trim panel. (Refer to 23 - BODY/INTERIOR/QUARTER TRIM PANEL - REMOVAL) .

3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

SIDE WALL MIDRANGE SPEAKERS

1. Disconnect and isolate the battery negative cable.
2. Remove the quarter trim panel. (Refer to 23 - BODY/INTERIOR/QUARTER TRIM PANEL - REMOVAL) .
3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

SIDE WALL TWEETERS

1. Disconnect and isolate the battery negative cable.
2. Remove the quarter trim panel. (Refer to 23 - BODY/INTERIOR/QUARTER TRIM PANEL - REMOVAL) .
3. Remove the mounting fasteners and remove the speaker.
4. Disconnect the electrical connector.

REMOVAL

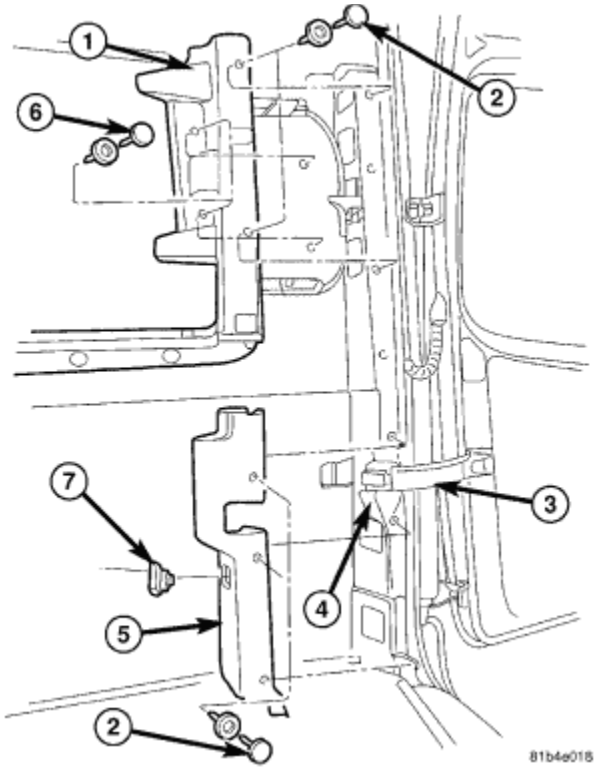
Passenger Van

1. Remove seats as necessary. (Refer to 23 - BODY/SEATS/SEAT - REMOVAL)
2. Remove d-pillar trim if necessary. (Refer to 23 - BODY/INTERIOR/D-PILLAR TRIM - REMOVAL)
3. Using a trim stick C-4755 or equivalent, separate the push-pin fasteners and remove trim panels.

Cargo Van

1. Remove bolts and remove tie down rings, if equipped.
2. Remove rivets and remove paneling

REMOVAL



1. Using a trim stick C-4755 or equivalent, pry expansion clips (2, 6) out for upper rear pillar panel (1).
2. Pull rear upper pillar panel upward.
3. Pry expansion clips (2) out for the lower rear pillar panel (5).
4. Release the door check (3).
5. Remove the bottom rear pillar panel (5).
6. Disconnect the electrical connector for the load compartment socket (7).

DESCRIPTION

The battery system for this vehicle covers the following related components, which are covered in further detail later in this section:

- **Starter Battery (also referred to as the main vehicle battery)** - The starter battery provides a reliable means of storing a renewable source of electrical energy within the vehicle.
- **Auxiliary Battery** - The auxiliary battery is designed to provide small amounts of current over a long time period to power optional equipment such as trailers, lift gates, refrigeration units, and service and emergency vehicles.

- **Battery Cables** - The battery cables connect the battery terminal posts to the vehicle electrical system.
- **Battery Holddown** - The battery holddown hardware secures the starter battery in the battery well in front of the driver seat and the auxiliary battery in the battery tray in the engine compartment.
- **Auxiliary Battery Tray** - The auxiliary battery tray provides a secure mounting location in the vehicle for the battery and an anchor point for the battery holddown hardware.

STARTER BATTERY

The starter battery (also referred to as the main vehicle battery) is located in a floor well forward of the driver seat. A metal cover retained by four screws protects the top of the battery. To access the battery and battery cover the left floor covering must be removed. A breather line runs from the battery through the bottom of the recess well to the outside of the vehicle.

The battery negative cable is routed out of the well to a isolating connector on the left side of the instrument panel center stack, above the accelerator pedal. When vehicle service requires disconnecting the battery this connector provides a convenient method of isolation.

A 300 amp melting fuse is incorporated into the battery positive cable. If the fuse melts, the battery positive cable must be replaced. The main reason this fuse would melt is from reversing polarity while jump starting the vehicle.

NOTE: Removing this isolating connector only disconnects power to the starter battery. If the vehicle is equipped with an auxiliary battery, that must also be disconnected prior to vehicle service.

When optional equipment is installed, the standard 12-volt 100Amp battery may be replaced with a 12-volt 95Amp Absorbent Glass Mat (AGM) battery. Electrolyte levels for AGM batteries should be checked every 25,000 miles or every two years. (Refer to 8 - ELECTRICAL/BATTERY SYSTEM/BATTERY - STANDARD PROCEDURE - CHECKING BATTERY ELECTROLYTE LEVEL) for the appropriate procedure.

AUXILIARY BATTERY

WARNING: The auxiliary battery should only be charged and tested with the OTC One Step Battery Analyzer and Charger or equivalent. Never test the auxiliary battery with a Midtronics Micro 420 battery tester.

WARNING: Never jump start the vehicle with the auxiliary battery. Vehicle jump

starting should only be performed at the remote battery terminals in the engine compartment or at the starter battery itself.

The auxiliary battery is located in the left side of the engine compartment. The battery is designed to provide small amounts of current over a long time period, and is not designed for high currents. The auxiliary battery is used to power optional equipment such as trailers, lift gates, refrigeration units, and service and emergency vehicles.

A auxiliary battery cutoff relay is used to prevent discharging the starting battery while operating optional equipment. The relay is located in the driver seat riser. The relay coil is grounded to the vehicle chassis on one side and receives power from the Body Control Module (BCM) on the other. The battery terminal of the relay is connected to fuse four in the fuse/relay block #1. When the engine is running the BCM powers the coil and energizes the auxiliary battery relay. This connects the auxiliary battery to the vehicle battery.

Refer to the Lubrication and Maintenance section of the service manual for the recommended battery maintenance schedules and for the proper battery jump starting procedure. While battery charging can be considered a maintenance procedure, the battery charging procedure and related information are located later in this section of the service manual. The battery must be fully-charged before any battery system diagnosis or testing procedures can be performed.

DESCRIPTION

WARNING: The auxiliary battery should only be charged and tested with the OTC One Step Battery Analyzer and Charger or equivalent. Never test the auxiliary battery with a Midtronics Micro 420 battery tester.

WARNING: Never jump start the vehicle with the auxiliary battery. Vehicle jump starting should only be performed at the remote battery terminals in the engine compartment or at the starter battery itself.

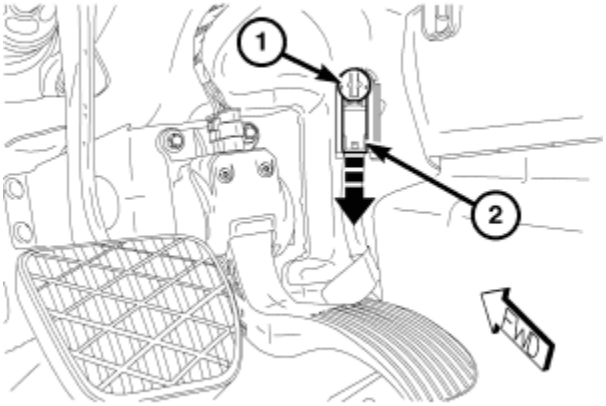
The auxiliary battery is located in the left side of the engine compartment. The battery is a Semi-Traction battery designed to provide small amounts of current over a long time period, and is not designed for high currents. The auxiliary battery is used to power optional equipment such as trailers, lift gates, refrigeration units, and service and emergency vehicles.

A auxiliary battery cutoff relay is used to prevent discharging the starting battery while operating optional equipment. The relay is located in the driver seat riser. The relay coil is grounded to the vehicle chassis on one side and receives power from the Body Control Module (BCM) on the other. The battery terminal of the relay is connected to fuse four in the fuse/relay block #1. When the engine is running the BCM powers the coil and

energizes the auxiliary battery relay. This connects the auxiliary battery to the vehicle battery.

The battery is used to store electrical energy potential in a chemical form. When an electrical load is applied to the battery terminals, an electrochemical reaction occurs within the battery. This reaction causes the battery to discharge electrical current.

DESCRIPTION



NOTE: Removing this isolating connector only disconnects power to the starter battery. If the vehicle is equipped with an auxiliary battery, that must also be disconnected prior to vehicle service.

The battery cables are large gauge, stranded copper wires sheathed within a heavy plastic or synthetic rubber insulating jacket. The wire used in the battery cables combines excellent flexibility and reliability with high electrical current carrying capacity.

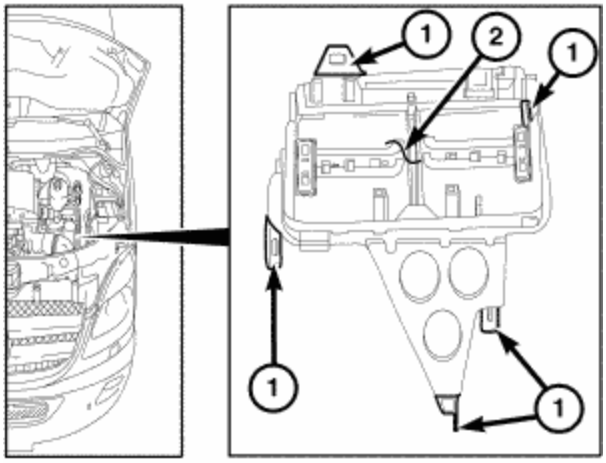
The battery negative cable is routed out of the well to a isolating connector (1) on the left side of the instrument panel center stack, above the accelerator pedal. When vehicle service requires disconnecting the starter battery this connector provides a convenient method of isolation. To disconnect the connector pull down on the locking tab (2), and pull the connector (1) off the ground pin.

A 300 amp melting fuse is incorporated into the battery positive cable. If the fuse melts, the battery positive cable must be replaced. The main reason this fuse would melt is from reversing polarity while jump starting the vehicle.

The battery cables feature a stamped brass clamping type female battery terminal crimped onto one end of the battery cable wire and then solder-dipped. A square headed pinch-bolt and hex nut are installed at the open end of the female battery terminal clamp. The battery positive cable also includes a red molded rubber protective cover for the female battery terminal clamp. Large eyelet type terminals are crimped onto the opposite end of the battery cable wire and then solder-dipped. The battery positive cable wires have a red insulating jacket to provide visual identification and feature a larger female battery terminal clamp to allow connection to the larger battery positive terminal post. The battery negative cable wires have a black insulating jacket and a smaller female battery terminal clamp.

The battery cables cannot be repaired and, if damaged or faulty they must be replaced. Both the battery positive and negative cables are available for service replacement only as a unit with the battery positive cable wire harness or the battery negative cable wire harness, which may include portions of the wiring circuits for the generator and other components on some models.

REMOVAL



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1. Remove the auxiliary battery from the auxiliary battery tray. (Refer to 8 - ELECTRICAL/BATTERY SYSTEM/AUXILIARY BATTERY - REMOVAL) .
2. Remove the bolts (1) that secure the battery tray to the left front wheelhouse inner steel panel.
3. Remove the battery tray (2) from the vehicle.

DESCRIPTION

This section provides illustrations identifying connector, ground, and splice locations in the vehicle. Connector, ground, and splice indexes are provided. Use the wiring diagrams in each section for connector, ground, and splice identification. Refer to the appropriate index for the proper figure number. For items that are not shown in this section N/S is placed in the Fig. column.

CONNECTOR NAME/NUMBER	COLOR	LOCATION	FIG.
Actuator-Blend Door	Black	HVAC (LU KLIMA Harness)	N/S
Actuator-Blend Door 1	Black	HVAC Unit (LU KLIMA VORN Harness)	N/S
Actuator-Blend Door 1-Roof	Black	Roof HVAC Unit (LU KLIMA DACH Harness)	N/S
Actuator-Blend Door 2	Black	HVAC Unit (LU KLIMA VORN Harness)	N/S
Actuator-Blend Door 2-Roof	Black	Roof HVAC Unit (LU KLIMA DACH Harness)	N/S
Actuator-Blend Door-Center	Black	Instrument Panel (CLS Harness)	N/S
Actuator-Mode Door	Black	HVAC (LU KLIMA Harness)	N/S
Actuator-Recirculation Door	Black	HVAC (LU KLIMA Harness)	N/S
Actuator-Recirculation Door-Rear 1 C1	Black	Front Body (HLS Harness)	N/S
Actuator-Recirculation Door-Rear 1 C2	Black	Front Body (HLS Harness)	N/S
Actuator-Recirculation Door-Rear 2 C1	Black	Body (DLS Harness)	N/S
Actuator-Recirculation Door-Rear 2 C2	Black	Body (DLS Harness)	N/S
Actuator-Recirculation Door-Rear 2 C3	Black	Body (DLS Harness)	N/S
Actuator-VNT	Black	Diesel Engine (OM642 Harness)	N/S
Airbag-Driver Squib	Green	Steering Wheel	N/S

Airbag-Passenger C1	Black	Right Instrument Panel (CLS Harness)	N/S
Airbag-Passenger C2	Black	Right Left Instrument Panel (LU AIRBAG BF Harness)	N/S
Airbag-Side Curtain-Left C1	Black	Left A-Pillar (HLS Harness)	N/S
Airbag-Side Curtain-Left C2	Black	Left A-Pillar (HLS Harness)	N/S
Airbag-Side Curtain-Right C1	Black	Right A-Pillar (HLS Harness)	N/S
Airbag-Side Curtain-Right C2	Black	Right A-Pillar (HLS Harness)	N/S
Airbag-Thorax-Driver C1	Green	Driver Seat (LU SITZ FA Harness)	N/S
Airbag-Thorax-Driver C2	Black	Driver Seat (LU SITZ FA Harness)	N/S
Airbag-Thorax-Passenger C1	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Airbag-Thorax-Passenger C2	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Antenna-FBS-Hatch	Black	Instrument Panel (CLS Harness)	N/S
Antenna-Tire Pressure Monitor	Black	Front Body (HLS Harness)	N/S
Assembly-Antenna Booster C1	Black	Instrument Panel (CLS Harness)	N/S
Assembly-Antenna Booster C2	Black	Instrument Panel (CLS Harness)	N/S
Assembly-Antenna Booster C3	Black	Instrument Panel (CLS Harness)	N/S
Assembly-Antenna Booster C4	Black	Instrument Panel (CLS Harness)	N/S
Assembly-Antenna Booster C5	Black	Instrument Panel (CLS Harness)	N/S
Assembly-Electrohydraulic Control Unit (Nag1)	Black	Front Body (HLS Harness)	N/S

Assembly-Shifter Lever	Black	Instrument Panel (CLS Harness)	N/S
Backlite-Electric Heated-Left C1	Black	Left Rear Door (HDT LI Harness)	N/S
Backlite-Electric Heated-Left C2	Black	Left Rear Door (HDT LI Harness)	N/S
Backlite-Electric Heated-Right C1	Black	Right Rear Door (HDT RE Harness)	N/S
Backlite-Electric Heated-Right C2	Black	Right Rear Door (HDT RE Harness)	N/S
Battery	Black	Left Front Body Floor (LU MASSE Harness)	N/S
Battery-Auxiliary	Black	Front Body (HLS Harness)	N/S
Battery-Auxiliary	Black	Engine Compartment (LU MASSE ZUSATZBATTERIE Harness)	N/S
C100	Black	Engine (LU SENSOR M272 Harness to M272 Harness Inline)	N/S
C101	Black	Engine Compartment (HLS Harness to M272 Harness Inline)	N/S
C102	Black	Front Body (HLS Harness to LU KLIMA VORN Harness Inline)	N/S
C103	Black	Front Body (HLS Harness to M272 Harness Inline)	N/S
C104	Black	Center Underbody (LU TANK Harness to HLS Harness Inline)	N/S
C105	Black	Engine Compartment (HLS Harness to OM642 Harness Inline)	N/S
C109		Diesel Engine (OM642 Harness to EKAS Harness Inline)	N/S
C110		Diesel Engine (OM642 Harness to EKAS Harness Inline)	N/S
C200	Black	Front Body (HLS Harness) to Driver Door (FT Harness) Inline	N/S
C201	Black	Front Body (HLS Harness) to Driver Door (FT Harness) Inline	N/S

C202	Black	Instrument Panel (CLS Harness) to Body (DLS Harness) Inline	N/S
C203	Black	Instrument Panel (CLS Harness) to Body (DLS Harness) Inline	N/S
C204	Black	Passenger Door (BFT Harness) to Front Body (HLS Harness) Inline	N/S
C205	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C206	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C207	Black	Front Body (HLS Harness)	N/S
C208	Black	Instrument Panel (CLS Harness) to HVAC (LU KLIMA Harness) Inline	N/S
C300	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C301	Black	Driver Door (FT Harness) to Front Body (HLS Harness) Inline	N/S
C302	Black	Passenger Door (BFT Harness) to Front Body (HLS Harness) Inline	N/S
C303	Black	Front Body (HLS Harness) to Driver Seat (LU GURTSCHLOSS Harness) Inline	N/S
C304	Black	Front Body (HLS Harness) to Driver Seat (LU SITZ FA Harness) Inline	N/S
C305	Black	Front Body (HLS Harness) to Passenger Seat (LU SITZ BF Harness) Inline	N/S
C306	Black	Front Body (HLS Harness) to Center Seat (LU SITZ DFN Harness) Inline	N/S
C307	Black	Instrument Panel (CLS Harness) to Left Instrument Panel (LU AIRBAG BF Harness) Inline	N/S

C308	Black	Body (HLS Harness) to Rear Bumper (LU PTS HI Harness) Inline	N/S
C312	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C313	Black	Instrument Panel (CLS Harness) to HVAC (LU KLIMA Harness) Inline	N/S
C314	Black	Instrument Panel (CLS Harness) to Body (DLS Harness) Inline	N/S
C315	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C316	Black	Driver Door (FT Harness) to Front Body (HLS Harness) Inline	N/S
C317	Black	Body (DLS Harness) to Front Body (HLS Harness) Inline	N/S
C319	Black	Body (DLS Harness)	N/S
C320	Black	Body (DLS Harness) to Left Rear Door (HDT_LI Harness) Inline	N/S
C321	Black	Left Rear Door (HDT_LI Harness)	N/S
C322	Black	Right Rear Door (HDT_RE Harness)	N/S
C323	Black	Body (DLS Harness) to Right Rear Door (HDT_RE Harness) Inline	N/S
C324	Black	Body (DLS Harness)	N/S
C325	Black	Body (DLS Harness) to Roof HVAC Unit (LU KLIMA DACH Harness) Inline	N/S
C326	Black	Instrument Panel (CLS Harness) to Body (DLS Harness) Inline	N/S
C327	Black	Instrument Panel (CLS Harness) to Front Body (LU MONITOR Harness) Inline	N/S
C328	Black	Front Body (HLS Harness)	N/S

C329	Black	Front Body (HLS Harness) to LU KETTE LST LI Harness Inline	N/S
C330	Black	Passenger Door (BFT Harness) to Front Body (HLS Harness) Inline	N/S
C331	Black	Left Rear Door (DOKA_LI Harness) toFront Body (HLS Harness) Inline	N/S
C332	Black	Front Body (HLS Harness) to Front Underbody (LU ALS VO Harness) Inline	N/S
C333	Black	Front Body (HLS Harness) to Front Underbody (LU ALS VO Harness) Inline	N/S
C334	Black	Front Body (HLS Harness) to Rear Underbody (LU ALS HI Harness) Inline	N/S
C335	Black	Front Body (HLS Harness) to Rear Underbody (LU ALS HI Harness) Inline	N/S
C336	Black	Body (DLS Harness) to Right Rear Door (HDT_RE Harness) Inline	N/S
C337	Black	Instrument Panel (CLS Harness) to Front Body (HLS Harness) Inline	N/S
C338	Black	Body (DLS Harness) to Rear Body (LU KAMERA Harness) Inline	N/S
C339	Black	LU KETTE LST LI Harness	N/S
C340	Black	Front Body (HLS Harness) to LU KETTE LST RE Harness Inline	N/S
C341	Black	LU KETTE LST RE Harness	N/S
C342	Black	Front Body (HLS Harness)	N/S
C343	Black	Front Body (HLS Harness)	N/S
C380	Black	LST RE to LU KETTE LST RE Inline	N/S
C381	Black	LU KETTE LST RE to Body (HLS harness) Inline	N/S

C382	Black	LU KETTE LST LI to Body (HLS Harness) Inline	N/S
C387	Black	LU LW VORN to Body (HLS Harness) Inline	N/S
C388	Black	DOKA_RE to Body (HLS Harness) Inline	N/S
C389	Black	LST_LI to LU KETTE LST LI Inline	N/S
Camera-Rear C1	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C2	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C3	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C4	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C5	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C6	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C7	Black	Rear Body (LU KAMERA Harness)	N/S
Camera-Rear C8	Black	Rear Body (LU KAMERA Harness)	N/S
Capacitor-Ignition-Left C1	Black	Gas Engine (M272 Harness)	N/S
Capacitor-Ignition-Left C2	Black	Gas Engine (M272 Harness)	N/S
Capacitor-Ignition-Right C1	Black	Gas Engine (M272 Harness)	N/S
Capacitor-Ignition-Right C2	Black	Gas Engine (M272 Harness)	N/S
CD Changer	Black	Instrument Panel (CLS Harness)	N/S
CD Changer (Most)	Black	Instrument Panel (CLS Harness)	N/S
Cigar Lighter	Black	Instrument Panel (CLS Harness)	N/S
Cluster	Black	Left Side of Instrument Panel	N/S

		(CLS Harness)	
Coil-Ignition 1	Black	Gas Engine (M272 Harness)	N/S
Coil-Ignition 2	Black	Gas Engine (M272 Harness)	N/S
Coil-Ignition 3	Black	Gas Engine (M272 Harness)	N/S
Coil-Ignition 4	Black	Gas Engine (M272 Harness)	N/S
Coil-Ignition 5	Black	Gas Engine (M272 Harness)	N/S
Coil-Ignition 6	Black	Gas Engine (M272 Harness)	N/S
Connector-Trailer Tow	Black	Rear Body	N/S
Connector-Upfitters X145/6	Black	Body (HLS Harness)	N/S
Connector-Upfitters X178	Black	Body (DLS Harness)	N/S
Connector-Upfitters X52/10	Black	Front Body (HLS Harness)	N/S
Connector-Upfitters X52/9	Black	Front Body (HLS Harness)	N/S
Control-A/C-Heater C1	Black	HVAC (LU KLIMA Harness)	N/S
Control-A/C-Heater C2	Black	HVAC (LU KLIMA Harness)	N/S
Control-A/C-Heater C3	White	Center of Instrument Panel (CLS Harness)	N/S
Control-A/C-Heater C4	Black	Center of Instrument Panel (CLS Harness)	N/S
Control-A/C-Heater C5	Black	HVAC (LU KLIMA Harness)	N/S
Control-A/C-Heater C6	Black	Center of Instrument Panel (CLS Harness)	N/S
Control-A/C-Heater C7	Black	Center of Instrument Panel (CLS Harness)	N/S
Control-A/C-Heater C8	Black	Center of Instrument Panel (CLS Harness)	N/S
Control-A/C-Heater C9	Black	Center of Instrument Panel (CLS Harness)	N/S
D2192	Black	Front Body (HLS Harness)	N/S
D2223	Black	OM642 engine harness	N/S
D2224	Black	OM642 engine harness	N/S

Data Link Connector	Black	Left Kick Panel (HLS Harness)	N/S
Diagnostic Junction Block 24 C1	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C2	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C3	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C4	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C5	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C6	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C7	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C8	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 24 C9	Black	Right Lower Front Body (HLS Harness)	N/S
Diagnostic Junction Block 25 C1	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 25 C2	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 25 C3	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 25 C4	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 25 C6	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 25 C7	Black	Instrument Panel (CLS Harness)	N/S
Diagnostic Junction Block 26 C1	Black	Front Body (HLS Harness)	N/S
Diagnostic Junction Block 26 C2	Black	Front Body (HLS Harness)	N/S
Diagnostic Junction	Black	Front Body (HLS Harness)	N/S

Block 26 C3			
Diagnostic Junction Block 26 C4	Black	Front Body (HLS Harness)	N/S
Diagnostic Junction Block 27 C1	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C2	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C3	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C4	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C5	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C6	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C8	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C9	Black	Right Lower Front Body (CLS Harness)	N/S
Diagnostic Junction Block 27 C10	Black	Right Lower Front Body (CLS Harness)	N/S
Fuse/Relay Block C1	Black	Left Kick Panel (CLS Harness)	FUSE/RELAY BLOCK
Fuse/Relay Block C2	Black	Left Kick Panel (HLS Harness)	FUSE/RELAY BLOCK
Fuse/Relay Block C3	Black	Left Kick Panel (HLS Harness)	FUSE/RELAY BLOCK
Fuse/Relay Block C4	Black	Left Kick Panel (HLS Harness)	FUSE/RELAY BLOCK
Fuse/Relay Block C5	Black	Left Kick Panel (HLS Harness)	FUSE/RELAY BLOCK
Generator	Black	Engine (LU GENERATOR Harness)	N/S
Generator (BBS Interface)	Black	Engine (LU GENERATOR Harness)	N/S
Generator (LT3)	Black	Engine (LU GENERATOR	N/S

		Harness)	
Generator C1 (LIN Interface)	Black	Gas Engine (M272 Harness)	N/S
Generator C2 (LIN Interface)	Black	Engine (LU GENERATOR Harness)	N/S
Glow Plug 1	Black	Diesel Engine (OM642 Harness)	N/S
Glow Plug 2	Black	Diesel Engine (OM642 Harness)	N/S
Glow Plug 3	Black	Diesel Engine (OM642 Harness)	N/S
Glow Plug 4	Black	Diesel Engine (OM642 Harness)	N/S
Glow Plug 5	Black	Diesel Engine (OM642 Harness)	N/S
Glow Plug 6	Black	Diesel Engine (OM642 Harness)	N/S
Heater-Crankcase Vent	Black	Diesel Engine (OM642 Harness)	N/S
Heater-Cushion Pad-Driver C1	Black	Driver Seat (LU SITZ FA Harness)	N/S
Heater-Cushion Pad-Driver C2	Black	Driver Seat (LU SITZ FA Harness)	N/S
Heater-Cushion Pad-Passenger C1	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Heater-Cushion Pad-Passenger C2	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Heater-Radio Signal Receiver	Black	Instrument Panel (CLS Harness)	N/S
Heater-Seat Back-Driver C1	Black	Driver Seat (LU SITZ FA Harness)	N/S
Heater-Seat Back-Driver C2	Black	Driver Seat (LU SITZ FA Harness)	N/S
Heater-Seat Back-Passenger C1	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Heater-Seat Back-Passenger C2	Black	Passenger Seat (LU SITZ BF Harness)	N/S
Holder-Cellphone (Unlinked)	Black	Left Instrument Panel (LU HANDY AUFNAHME Harness)	N/S
Holder-Cellphone C1	Black	Instrument Panel (CLS Harness)	N/S
Horn 1	Black	Engine Compartment (HLS Harness)	N/S

Horn-Reverse	Black	Body (HLS Harness)	N/S
Injector-Fuel 1	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 1	Black	Diesel Engine (OM642 Harness)	N/S
Injector-Fuel 2	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 2	Black	Diesel Engine (OM642 Harness)	N/S
Injector-Fuel 3	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 3	Black	Diesel Engine (OM642 Harness)	N/S
Injector-Fuel 4	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 4	Black	Diesel Engine (OM642 Harness)	N/S
Injector-Fuel 5	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 5	Black	Diesel Engine (OM642 Harness)	N/S
Injector-Fuel 6	Black	Gas Engine (M272 Harness)	N/S
Injector-Fuel 6	Black	Diesel Engine (OM642 Harness)	N/S
Interface-Universal Cellphone (Except MOST)	Black	Instrument Panel (CLS Harness)	N/S
Interface-Universal Cellphone (MOST)	Black	Instrument Panel (CLS Harness)	N/S
Lamp And Switch-Ceiling 1-Rear	Black	Body Ceiling (DLS Harness)	N/S
Lamp And Switch-Ceiling 2-Rear	Black	Body Ceiling (DLS Harness)	N/S
Lamp And Switch-Ceiling 3-Rear	Black	Body Ceiling (DLS Harness)	N/S
Lamp And Switch-Ceiling-Front	Black	Front Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 2-Rear C1	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 2-Rear C2	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 3-Rear C1	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 3-Rear C2	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 4-Rear C1	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling 4-Rear C2	Black	Rear Body Ceiling (DLS Harness)	N/S
Lamp-Ceiling-Rear	Black	Rear Body Ceiling (DLS Harness)	N/S

Lamp-Entry-Driver C1	Black	Driver Door (FT Harness)	N/S
Lamp-Entry-Driver C2	Black	Driver Door (FT Harness)	N/S
Lamp-Entry-Left Rear	Black	Body (HLS Harness)	N/S
Lamp-Entry-Passenger C1	Black	Passenger Door (BFT Harness)	N/S
Lamp-Entry-Passenger C2	Black	Passenger Door (BFT Harness)	N/S
Lamp-Entry-Right Rear	Black	Body (HLS Harness)	N/S
Lamp-Fog-Left Front	Black	Engine Compartment (HLS Harness)	N/S
Lamp-Fog-Right Front	Black	Engine Compartment (HLS Harness)	N/S
Lamp-Glove Box	Black	Right Instrument Panel (CLS Harness)	N/S
Lamp-Headlamp-Left	Black	Engine Compartment (HLS Harness)	N/S
Lamp-Headlamp-Right	Black	Engine Compartment (HLS Harness)	N/S
Lamp-Identification-Center Front	Black	Center Front Body (DLS Harness)	N/S
Lamp-Identification-Left Front	Black	Left Front Body (DLS Harness)	N/S
Lamp-Identification-Right Front	Black	Right Front Body (DLS Harness)	N/S
Lamp-License-Left	Black	Left Rear Door (HDT_LI Harness)	N/S
Lamp-License-Right	Black	Left Rear Door (HDT_LI Harness)	N/S
Lamp-Load Area 1-Left C1	Black	Rear Body (DLS Harness)	N/S
Lamp-Load Area 1-Left C2	Black	Rear Body (DLS Harness)	N/S
Lamp-Load Area 1-Right C1	Black	Rear Body (DLS Harness)	N/S
Lamp-Load Area 1-Right C2	Black	Rear Body (DLS Harness)	N/S

Lamp-Load Area 2-Right C1	Black	Rear Body (DLS Harness)	N/S
Lamp-Load Area 2-Right C2	Black	Rear Body (DLS Harness)	N/S
Lamp-Load Area-Rear	Black	Rear Body (DLS Harness)	N/S
Lamp-Tail Stop 3	Black	Rear Body (DLS Harness)	N/S
Lamp-Tail-Left (Chassis-Cab)	Black	Rear Body (HLS Harness)	N/S
Lamp-Tail-Left (Except Chassis-Cab)	Black	Rear Body (DLS Harness)	N/S
Lamp-Tail-Right (Chassis-Cab)	Black	Rear Body (HLS Harness)	N/S
Lamp-Tail-Right (Except Chassis-Cab)	Black	Rear Body (DLS Harness)	N/S
Lamp-Working 1 C1	Black	Body (DLS Harness)	N/S
Lamp-Working 1 C2	Black	Body (DLS Harness)	N/S
Lamp-Working 2 C1	Black	Body (DLS Harness)	N/S
Lamp-Working 2 C2	Black	Body (DLS Harness)	N/S
Latch-Door-Driver	Black	Driver Door (FT Harness)	N/S
Latch-Door-Left Sliding	Black	Left Sliding Door (LST_LI Harness)	N/S
Latch-Door-Passenger	Black	Passenger Door (BFT Harness)	N/S
Latch-Door-Rear	Black	Right Rear Door (HDT_RE Harness)	N/S
Latch-Door-Right Sliding	Black	Right Sliding Door (LST_RE Harness)	N/S
Microphone-Hands Free	Black	Instrument Panel (CLS Harness)	N/S
Mirror-Outside Rearview-Left C1	Black	Driver Door (FT Harness)	N/S
Mirror-Outside Rearview-Left C2	White	Driver Door (FT Harness)	N/S
Mirror-Outside Rearview-Right C1	Black	Passenger Door (BFT Harness)	N/S
Mirror-Outside Rearview-Rght C2	Yellow	Passenger Door (BFT Harness)	N/S

Module-Adaptive Lighting	Black	Front Body (HLS Harness)	N/S
Module-Additional Turn Signal Control	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Anti-Lock Brakes	Black	Front Body (HLS Harness)	N/S
Module-Auxiliary Heater 1 C1	Black	Front Body (HLS Harness)	N/S
Module-Auxiliary Heater 1 C2	Black	Front Body (HLS Harness)	N/S
Module-Auxiliary Heater 2 C1	Black	Front Body (HLS Harness)	N/S
Module-Auxiliary Heater 2 C2	Black	Front Body (HLS Harness)	N/S
Module-Body Control C1	Brown	Instrument Panel (CLS Harness)	BODY CONTROL MODULE
Module-Body Control C3	Black	Front Body (HLS Harness)	BODY CONTROL MODULE
Module-Body Control C6	Black	Body (DLS Harness)	BODY CONTROL MODULE
Module-Body Control C7	Black	Front Body (HLS Harness)	BODY CONTROL MODULE
Module-Body Control C9	Brown	Front Body (HLS Harness)	BODY CONTROL MODULE
Module-Door-Driver C1	Black	Driver Door (FT Harness)	N/S
Module-Door-Driver C2	Black	Driver Door (FT Harness)	N/S
Module-Door-Driver C3	Black	Driver Door (FT Harness)	N/S
Module-Engine Control C1	Black	Diesel Engine (OM642 Harness)	N/S
Module-Engine Control C2	Black	Front Body (HLS Harness)	N/S
Module-Fuel Pump	Black	Center Underbody (LU TANK	N/S

(Diesel)		Harness)	
Module-Fuel Pump (Gas)	Black	Center Underbody (LU TANK Harness)	N/S
Module-Glow Plug C1	Black	Engine (LU GZE KL30 Harness)	N/S
Module-Glow Plug C2	Black	Diesel Engine (OM642 Harness)	N/S
Module-Hands Free C1	Black	Left Instrument Panel (LU HANDY AUFNAHME Harness)	N/S
Module-Occupant Restraint Controller C1 (Highline)	Black	Front Body (HLS Harness)	N/S
Module-Occupant Restraint Controller C1 (Lowline)	Black	Front Body (HLS Harness)	N/S
Module-Occupant Restraint Controller C2 (Highline)	Black	Instrument Panel (CLS Harness)	N/S
Module-Occupant Restraint Controller C2 (Lowline)	Black	Instrument Panel (CLS Harness)	N/S
Module-Park Assist C1	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Park Assist C2	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Powertrain Control C1	Black	Engine Compartment (HLS Harness)	N/S
Module-Powertrain Control C2	Black	Gas Engine (M272 Harness)	N/S
Module-Programmable Special C1	Gray	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Programmable Special C2	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Roof Control C1	Black	Body (DLS Harness)	N/S
Module-Roof Control C2	Black	Body (DLS Harness)	N/S
Module-Roof Control C3	Black	Body (DLS Harness)	N/S
Module-Roof Control C4	Black	Roof (LU DBE Harness)	N/S
Module-Roof Control C5	Black	Body (DLS Harness)	N/S

Module-Roof Control C6	Black	Body (DLS Harness)	N/S
Module-Steering Column Lock	Black	Instrument Panel (CLS Harness)	N/S
Module-Steering Control C1	Black	Instrument Panel (CLS Harness)	N/S
Module-Steering Control C2	Black	Instrument Panel (CLS Harness)	N/S
Module-Switch Bank C1	Black	Instrument Panel (CLS Harness)	N/S
Module-Switch Bank C2	Black	Instrument Panel (CLS Harness)	N/S
Module-Tire Pressure Monitor	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Trailer Tow Lighting C1	Black	Front Body (HLS Harness)	N/S
Module-Trailer Tow Lighting C2	Black	Front Body (HLS Harness)	N/S
Module-Trailer Tow Lighting C3	Black	Front Body (HLS Harness)	N/S
Module-Trailer Tow Lighting C4	Black	Front Body (HLS Harness)	N/S
Module-Transmission Control C1	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Module-Transmission Control C2	Black	Front Body (HLS Harness)	BELOW DRIVER SEAT
Motor-Blower	Black	HVAC (LU KLIMA Harness)	N/S
Motor-Headlamp Washer	Black	Front Body (HLS Harness)	N/S
Motor-Roof Ventilator	Black	Body (DLS Harness)	N/S
Motor-Sunroof	Black	Body (DLS Harness)	N/S
Motor-Vent Window-Left Rear	Natural	Body (DLS Harness)	N/S
Motor-Vent Window-Right Rear	Natural	Body (DLS Harness)	N/S
Motor-Window-Driver	Black	Driver Door (FT Harness)	N/S
Motor-Window-Passenger	Black	Passenger Door (BFT Harness)	N/S

Motor-Wiper-Front	Black	Front Body (HLS Harness)	N/S
Motor-Wiper-Rear Door-Left	White	Left Rear Door (HDT_LI Harness)	N/S
Motor-Wiper-Rear Door-Right	White	Right Rear Door (HDT_RE Harness)	N/S
no_name_D1022	Black	Front Body (HLS Harness)	N/S
no_name_D1123	Black	Passenger Door (BFT Harness)	N/S
no_name_D1137	Black	Right Sliding Door (LST_RE Harness)	N/S
no_name_D1148	Black	Left Sliding Door (LST_LI Harness)	N/S
no_name_D1318	Black	Front Body (HLS Harness)	N/S
Power Outlet-Box Seat Left	Black	Left Seat	N/S
Power Outlet-Front	Black	Instrument Panel (CLS Harness)	N/S
Power Outlet-Left Rear	Black	Left Rear Body	N/S
Power Outlet-Right Rear	Black	Right Rear Body	N/S
PTC-Heater C1	Black	HVAC (LU KLIMA Harness)	N/S
PTC-Heater C2	Black	Instrument Panel (CLS Harness)	N/S
PTC-Heater C3	Black	Instrument Panel (CLS Harness)	N/S
Pump-Common Rail	Black	Diesel Engine (OM642 Harness)	N/S
Pump-Dosing-Auxiliary Heat C1	Black	Front Body (HLS Harness)	N/S
Pump-Dosing-Auxiliary Heat C2	Black	Front Body (HLS Harness)	N/S
Pump-Electric Air	Black	Gas Engine (M272 Harness)	N/S
Pump-Transmission C1	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Pump-Transmission C2	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Pump-Washer-Rear Door	Black	Engine Compartment (HLS Harness)	N/S
Pump-Washer-Windshield	Black	Engine Compartment (HLS Harness)	N/S

Radio C1	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C2	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C3	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C4	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C5	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C6	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C7	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C8	Lt. Green	Center Instrument Panel (CLS Harness)	N/S
Radio C9	Black	Center Instrument Panel (CLS Harness)	N/S
Radio C10	Black	Center Instrument Panel (CLS Harness)	N/S
Radio Preinstallation Connector	Black	Center Instrument Panel (CLS Harness)	N/S
Regulator-Blower Motor	Black	Instrument Panel (CLS Harness)	N/S
Relay-Additional-Terminal 15	Black	Front Body (HLS Harness)	N/S
Relay-Auxiliary Fan	Black	HVAC Unit (LU KLIMA VORN Harness)	N/S
Relay-Auxiliary Fan-Roof	Black	Roof HVAC Unit (LU KLIMA DACH Harness)	N/S
Relay-Battery Isolator C1	Black	Front Body (HLS Harness)	N/S
Relay-Battery Isolator C2	Black	Front Body (HLS Harness)	N/S
Relay-Battery Isolator C3	Black	Front Body (HLS Harness)	N/S
Relay-Blower Vent	Black	Front Body (HLS Harness)	N/S

Relay-Electric Air Pump	Black	Front Body (HLS Harness)	N/S
Relay-Heated Windshield	Black	Front Body (HLS Harness)	N/S
Relay-Rear Window Defogger 1	Black	Front Body (HLS Harness)	N/S
Relay-Rear Window Defogger 2	Black	Front Body (HLS Harness)	N/S
Relay-Relief-Terminal 15	Black	Front Body (HLS Harness)	N/S
Resistor-Blower Motor-Additional	Black	HVAC (LU KLIMA Harness)	N/S
Seat Belt-Retractor Tensioner-Driver	Black	Front Body (HLS Harness)	N/S
Seat Belt-Retractor Tensioner-Front Center	Black	Center Seat (LU SITZ DFN Harness)	N/S
Seat Belt-Retractor Tensioner-Passenger	Black	Front Body (HLS Harness)	N/S
Sensor-A/C Pressure	Black	Front Body (HLS Harness)	N/S
Sensor-A/C Pressure-Roof	Black	Body (DLS Harness)	N/S
Sensor-Accelerator Pedal Position	Black	Front Body (HLS Harness)	N/S
Sensor-Air Pump Flow	Black	Gas Engine (M272 Harness)	N/S
Sensor-Ambient Air Temperature	Black	Front Body (HLS Harness)	N/S
Sensor-Boost Pressure	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Brake-Left Front	Black	Front Underbody (LU ALS VO Harness)	N/S
Sensor-Brake-Left Rear	Black	Rear Underbody (LU ALS HI Harness)	N/S
Sensor-Brake-Right Front	Black	Front Underbody (LU ALS VO Harness)	N/S
Sensor-Brake-Right Rear	Black	Rear Underbody (LU ALS HI Harness)	N/S
Sensor-Camshaft Position (Diesel)	Black	Diesel Engine (OM642 Harness)	N/S

Sensor-Camshaft Position 1/1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Camshaft Position 1/2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Camshaft Position 2/1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Camshaft Position 2/2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Clutch Position	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Sensor-Clutch Speed	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Sensor-Crankshaft Position (Diesel)	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Crankshaft Position (Gas)	Black	Gas Engine (M272 Harness)	N/S
Sensor-Dynamics	Black	Front Body (HLS Harness)	N/S
Sensor-EGR Position	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-EGR Temperature	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Engine Coolant Temperature	Black	Engine Harness	N/S
Sensor-Evaporator Temperature	Black	HVAC (LU KLIMA Harness)	N/S
Sensor-Exhaust Differential Pressure	Black	Front Body (HLS Harness)	N/S
Sensor-Exhaust Pressure	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Exhaust Temperature 1/1	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Exhaust Temperature 1/2	Black	Front Body (HLS Harness)	N/S
Sensor-Exhaust Temperature 1/3	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Fuel Pressure	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Fuel Tank Pressure	Black	Center Underbody (LU TANK Harness)	N/S

Sensor-Fuel Temperature	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Headlamp Level-Front	Black	Front of Vehicle (LU LW VORN Harness)	N/S
Sensor-Headlamp Level-Rear	Black	Front Body (HLS Harness)	N/S
Sensor-Inlet Air Pressure	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Intake Air Temperature	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Intrusion	Black	Body (DLS Harness)	N/S
Sensor-Intrusion 1 C1	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C2	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C3	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C4	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C5	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C6	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 1 C7	Black	Roof (LU DBE Harness)	N/S
Sensor-Intrusion 2	Black	Body (DLS Harness)	N/S
Sensor-Intrusion 3	Black	Body (DLS Harness)	N/S
Sensor-Knock 1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Knock 2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Line Pressure	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Sensor-Manifold Absolute Pressure	Black	Gas Engine (M272 Harness)	N/S
Sensor-Manifold Swirl Valve Position 1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Manifold Swirl Valve Position 2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Mass Airflow (Diesel)	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Mass Airflow (Gas)	Black	Gas Engine (M272 Harness)	N/S
Sensor-Oil Pressure	Black	Gas Engine (M272 Harness)	N/S

Sensor-Oil Temperature	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Oxygen	Black	Under Front Body (HLS Harness)	N/S
Sensor-Oxygen 1/1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Oxygen 1/2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Oxygen 2/1	Black	Gas Engine (M272 Harness)	N/S
Sensor-Oxygen 2/2	Black	Gas Engine (M272 Harness)	N/S
Sensor-Park Assist 1	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 2	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 3	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 4	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 5	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 6	Black	Front Fascia (LU PTS VO Harness)	N/S
Sensor-Park Assist 7	Black	Rear Bumper (LU PTS HI Harness)	N/S
Sensor-Park Assist 8	Black	Rear Bumper (LU PTS HI Harness)	N/S
Sensor-Park Assist 9	Black	Rear Bumper (LU PTS HI Harness)	N/S
Sensor-Park Assist 10	Black	Rear Bumper (LU PTS HI Harness)	N/S
Sensor-Rain/Light	Black	Body (DLS Harness)	N/S
Sensor-Shaft Speed C1 (Awd Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Shaft Speed C2 (Awd Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Shaft Speed C3 (Awd Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Shaft Speed C4 (Awd Dtco)	Black	Under Front Body (HLS Harness)	N/S

Sensor-Side Impact-Left 1	Yellow	Front Body (HLS Harness)	N/S
Sensor-Side Impact-Left 2	Yellow	Driver Door (FT Harness)	N/S
Sensor-Side Impact-Right 1	Yellow	Front Body (HLS Harness)	N/S
Sensor-Side Impact-Right 2	Yellow	Passenger Door (BFT Harness)	N/S
Sensor-Swirl-Left	Black	On Engine (EKAS Harness)	N/S
Sensor-Swirl-Right	Black	On Engine (EKAS Harness)	N/S
Sensor-Transmission Range	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Sensor-Vehicle Speed C1 (A/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C1 (M/T Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C1 (M/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C2 (A/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C2 (M/T Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C2 (M/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C3 (A/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C3 (M/T Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C4 (A/T)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Vehicle Speed C4 (M/T Dtco)	Black	Under Front Body (HLS Harness)	N/S
Sensor-Water In Fuel	Black	Diesel Engine (OM642 Harness)	N/S
Sensor-Wheel Speed-Left Front	Black	Front Body (HLS Harness)	N/S
Sensor-Wheel Speed-	Black	Front Body (HLS Harness)	N/S

Left Rear			
Sensor-Wheel Speed-Right Front	Black	Rear Body (HLS Harness)	N/S
Sensor-Wheel Speed-Right Rear	Black	Rear Body (HLS Harness)	N/S
Siren	Black	Body (HLS Harness)	N/S
Solenoid-Auxiliary Drive	Black	Front Body (HLS Harness)	N/S
Solenoid-Brake	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Solenoid-Camshaft 1/1 Position	Black	Gas Engine (M272 Harness)	N/S
Solenoid-Camshaft 1/2 Position	Black	Gas Engine (M272 Harness)	N/S
Solenoid-Camshaft 2/1 Position	Black	Gas Engine (M272 Harness)	N/S
Solenoid-Camshaft 2/2 Position	Black	Gas Engine (M272 Harness)	N/S
Solenoid-Fuel Pressure	Black	Diesel Engine (OM642 Harness)	N/S
Solenoid-Manifold Flow Valve	Black	Engine (LU SENSOR M272 Harness)	N/S
Solenoid-Manifold Swirl Valve	Black	Engine (LU SENSOR M272 Harness)	N/S
Speaker-Center C1	Black	Center Instrument Panel (CLS Harness)	N/S
Speaker-Center C2	Black	Center Instrument Panel (CLS Harness)	N/S
Speaker-Left Door	Black	Driver Door (FT Harness)	N/S
Speaker-Left Rear C1	White	Left Rear Body (DLS Harness)	N/S
Speaker-Left Rear C2	White	Left Rear Body (DLS Harness)	N/S
Speaker-Left Sidewall C1	White	Left Body (DLS Harness)	N/S
Speaker-Left Sidewall C2	White	Left Body (DLS Harness)	N/S
Speaker-Left Sliding	White	Left Sliding Door (LST_LI	N/S

Door C1		Harness)	
Speaker-Left Sliding Door C2	White	Left Sliding Door (LST_LI Harness)	N/S
Speaker-Right Door	Black	Passenger Door (BFT Harness)	N/S
Speaker-Right Rear C1	White	Right Rear Body (DLS Harness)	N/S
Speaker-Right Rear C2	White	Right Rear Body (DLS Harness)	N/S
Speaker-Right Sidewall C1	White	Right Body (DLS Harness)	N/S
Speaker-Right Sidewall C2	White	Right Body (DLS Harness)	N/S
Speaker-Right Sliding Door C1	White	Right Sliding Door (LST_RE Harness)	N/S
Speaker-Right Sliding Door C2	White	Right Sliding Door (LST_RE Harness)	N/S
Speaker-Tweeter-Left Door	Black	Left Instrument Panel (CLS Harness)	N/S
Speaker-Tweeter-Left Sidewall	Black	Left Body (DLS Harness)	N/S
Speaker-Tweeter-Left Sliding Door	Black	Left Sliding Door (LST_LI Harness)	N/S
Speaker-Tweeter-Right Door	Black	Right Instrument Panel (CLS Harness)	N/S
Speaker-Tweeter-Right Rear C1	Black	Right Body (DLS Harness)	N/S
Speaker-Tweeter-Right Rear C2	Black	Right Body (DLS Harness)	N/S
Speaker-Tweeter-Right Sidewall	Black	Right Body (DLS Harness)	N/S
Speaker-Tweeter-Right Sliding Door	Black	Right Sliding Door (LST_RE Harness)	N/S
Starter (LT3)	Black	Engine (LU GENERATOR Harness)	N/S
Starter C1	Black	Engine (LU GENERATOR Harness)	N/S
Starter C2	Black	Engine (LU GENERATOR Harness)	N/S

Switch-Auxiliary Drive-On	Black	Instrument Panel (CLS Harness)	N/S
Switch-Auxiliary Drive-Stop	Black	Front Body (HLS Harness)	N/S
Switch-Backup Lamp	Black	Instrument Panel (CLS Harness)	N/S
Switch-Bank (ASR)	Black	Instrument Panel (CLS Harness)	N/S
Switch-Body Electrical-Upfitters	Black	Instrument Panel (CLS Harness)	N/S
Switch-Brake Fluid Level	Black	Front Body (HLS Harness)	N/S
Switch-Clutch Pedal	Black	Front Body (HLS Harness)	N/S
Switch-Coolant Level	Black	Engine Compartment (HLS Harness)	N/S
Switch-Dimmer	Black	Instrument Panel (CLS Harness)	N/S
Switch-Headlamp Leveling	Black	Instrument Panel (CLS Harness)	N/S
Switch-Hood Ajar	Black	Engine Compartment (HLS Harness)	N/S
Switch-Ignition C1	Black	Instrument Panel (CLS Harness)	N/S
Switch-Ignition C2	Black	Instrument Panel (CLS Harness)	N/S
Switch-Ignition C3	Black	Instrument Panel (CLS Harness)	N/S
Switch-Ignition C4	Black	Instrument Panel (CLS Harness)	N/S
Switch-Liftgate	Black	Instrument Panel (CLS Harness)	N/S
Switch-Oil Level	Black	Gas Engine (M272 Harness)	N/S
Switch-Parking Brake C1	White	Front Body (HLS Harness)	N/S
Switch-Parking Brake C2	White	Front Body (HLS Harness)	N/S
Switch-Parking Heater	Black	Instrument Panel (CLS Harness)	N/S
Switch-Parking Heater Warm Water	Black	Instrument Panel (CLS Harness)	N/S
Switch-Power Window-Passenger	Black	Passenger Door (BFT Harness)	N/S
Switch-Power	Black	Driver Door (FT Harness)	N/S

Window/Mirror-Driver C1			
Switch-Power Window/Mirror-Driver C2	Black	Driver Door (FT Harness)	N/S
Switch-Power Window/Mirror-Driver C3	Black	Driver Door (FT Harness)	N/S
Switch-Roof Lamp-Rear	Black	Instrument Panel (CLS Harness)	N/S
Switch-Roof Ventilator	Black	Instrument Panel (CLS Harness)	N/S
Switch-Seat Belt-Driver	Black	Driver Seat (LU GURTSCHLOSS Harness)	N/S
Switch-Speed Control	Black	Instrument Panel (CLS Harness)	N/S
Switch-Steering Wheel	Black	On Steering Wheel	N/S
Switch-Stop Lamp	Black	Front Body (HLS Harness)	N/S
Switch-Washer Fluid Level	Black	Engine Compartment (HLS Harness)	N/S
Thermostat	Black	Gas Engine (M272 Harness)	N/S
Throttle Body	Black	Engine Harness	N/S
Transponder-Tire Pressure-Front	Green	Front Body (HLS Harness)	N/S
Transponder-Tire Pressure-Rear	Green	Body (HLS Harness)	N/S
Valve-Clutch C1	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Valve-Clutch C2	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Valve-Clutch C3	Black	Transmission (LU GETRIEBELTGS Harness)	N/S
Valve-EGR (Diesel)	Black	Engine (OM642 Harness)	N/S
Valve-EGR Switch-Over (Diesel)	Black	Engine Compartment (HLS Harness)	N/S
Valve-Electric Air Pump Switchover	Black	Gas Engine (M272 Harness)	N/S
Valve-Heater Control	Black	Front Body (HLS Harness)	N/S

Valve-Power Steering Pump	Black	Gas Engine (M272 Harness)	N/S
Valve-Purge Control	Black	Engine Compartment (HLS Harness)	N/S
Valve-Shut-Off	Black	Engine Compartment (HLS Harness)	N/S
Warning Unit-Park Assist-Front Center	Black	Instrument Panel (CLS Harness)	N/S
Warning Unit-Park Assist-Rear Center	Lt. Blue	Front Body (HLS Harness)	N/S
Windshield-Electric Heated 1 C1	Black	Front Body (HLS Harness)	N/S
Windshield-Electric Heated 1 C2	Black	Front Body (HLS Harness)	N/S
Windshield-Electric Heated 2 C1	Black	Body (DLS Harness)	N/S
Windshield-Electric Heated 2 C2	Black	Body (DLS Harness)	N/S

GROUNDS

GROUND NUMBER	LOCATION	FIG.
G100	Left Rear Engine Compartment	GROUNDS - LEFT
G101	Left Rear Engine Compartment	GROUNDS - LEFT
G102	Right Front Engine Compartment	GROUNDS - RIGHT
G103	Left Rear Engine Compartment	GROUNDS - LEFT
G104	Left Side Engine Compartment	GROUNDS - LEFT
G105	Right Side Engine Compartment	GROUNDS - RIGHT
G106	Left Front Engine Compartment	GROUNDS - LEFT
G107	Left Side Engine Compartment	GROUNDS - LEFT
G108	Right Front Engine Compartment	GROUNDS - RIGHT

G109	Left Front Engine Compartment	GROUNDS - LEFT
G200	Right Rear Engine Compartment	GROUNDS - RIGHT
G201	Front Center Headliner	GROUNDS - LEFT
G300	Left Front Headliner	GROUNDS - LEFT
G301	Lower Left Side of Vehicle	GROUNDS - LEFT
G302	Left Rear Engine Compartment	GROUNDS - LEFT
G303	Upper Left of Left Rear Door	BODY - REAR
G304	Lower Left Center Body	GROUNDS - LEFT
G305	Lower Left Side of Vehicle	GROUNDS - LEFT
G306	Left Rear Engine Compartment	GROUNDS - LEFT
G307	Right Rear Engine Compartment	GROUNDS - RIGHT
G308	On Transmission (LU GETRIEBELTGS Harness)	N/S

SPLICES

SPLICE NUMBER	LOCATION	FIG.
S100	Left Side Engine Compartment	SPLICES - LEFT FRONT
S101	Left Side Engine Compartment	SPLICES - LEFT FRONT
S102	Left Side Engine Compartment	SPLICES - LEFT FRONT
S103	Left Side Engine Compartment	SPLICES - LEFT FRONT
S104	Right Side Engine Compartment	SPLICES - FRONT
S105	Left Side Engine Compartment	SPLICES - FRONT
S106	Right Side Engine Compartment	SPLICES - FRONT
S107	Rear Engine Compartment	NSPLICES - FRONT
S108	Left Side Engine Compartment	SPLICES - FRONT
S109	Left Side Engine Compartment	SPLICES - FRONT
S110	Right Side Engine Compartment	SPLICES - FRONT
S111	Left Side Engine Compartment	SPLICES - FRONT

S112	Rear Engine Compartment	SPLICES - FRONT
S113	Left Side Engine Compartment	SPLICES - FRONT
S114	Right Side Engine Compartment	SPLICES - FRONT
S115	Left Side Engine Compartment	SPLICES - FRONT
S116	Left Side Engine Compartment	SPLICES - FRONT
S117	On Generator Harness	N/S
S118	Near Left Center Side Marker Lamp	N/S
S119	Near Right Center Side Marker Lamp	N/S
S120	On Diesel Engine	N/S
S121	On Transmission	N/S
S122	On Transmission	N/S
S123	Left Front Headliner	N/S
S200	Instrument Panel	SPLICES - INSTRUMENT PANEL
S201	Right Side Instrument Panel	SPLICES - INSTRUMENT PANEL
S202	Instrument Panel	SPLICES - INSTRUMENT PANEL
S203	Instrument Panel	SPLICES - INSTRUMENT PANEL
S204	Instrument Panel	SPLICES - INSTRUMENT PANEL
S205	Instrument Panel	SPLICES - INSTRUMENT PANEL
S206	Instrument Panel	SPLICES - INSTRUMENT PANEL
S207	Instrument Panel	SPLICES - INSTRUMENT PANEL
S208	Instrument Panel	SPLICES - INSTRUMENT PANEL
S209	Instrument Panel	SPLICES - INSTRUMENT PANEL

S210	Instrument Panel	SPLICES - INSTRUMENT PANEL
S211	On Front HVAC Unit	N/S
S212	On Front HVAC Unit	N/S
S213	Instrument Panel	SPLICES - INSTRUMENT PANEL
S214	Instrument Panel	SPLICES - INSTRUMENT PANEL
S215	Instrument Panel	SPLICES - INSTRUMENT PANEL
S216	Instrument Panel	SPLICES - INSTRUMENT PANEL
S217	Instrument Panel	SPLICES - INSTRUMENT PANEL
S218	Instrument Panel	SPLICES - INSTRUMENT PANEL
S219	Instrument Panel	SPLICES - INSTRUMENT PANEL
S220	Right Side Instrument Panel	SPLICES - INSTRUMENT PANEL
S221	Instrument Panel	SPLICES - INSTRUMENT PANEL
S222	Left Side Instrument Panel	SPLICES - INSTRUMENT PANEL
S223	Instrument Panel	SPLICES - INSTRUMENT PANEL
S224	In Instrument Panel	SPLICES - INSTRUMENT PANEL
S225	In Instrument Panel	N/S
S301	Center of Cab Overhead	SPLICES - OVERHEAD
S302	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S303	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S304	Center of Cab Overhead	SPLICES - OVERHEAD
S305	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S306	Left Rear Engine Compartment	SPLICES - LEFT FRONT

S307	Center of Cab Overhead	SPLICES - OVERHEAD
S308	Center of Cab Overhead	SPLICES - OVERHEAD
S309	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S310	Center of Cab Overhead	SPLICES - OVERHEAD
S311	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S312	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S313	Center of Cab Overhead	SPLICES - OVERHEAD
S314	Center of Cab Overhead	SPLICES - OVERHEAD
S315	Center of Cab Overhead	SPLICES - OVERHEAD
S316	Upper Left Rear Engine Compartment	SPLICES - LEFT FRONT
S317	Upper Left Rear Engine Compartment	SPLICES - LEFT FRONT
S318	Upper Left Rear Engine Compartment	SPLICES - LEFT FRONT
S319	Center of Cab Overhead	SPLICES - OVERHEAD
S320	Center of Cab Overhead	SPLICES - OVERHEAD
S321	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S322	Center of Cab Overhead	SPLICES - OVERHEAD
S323	Center of Cab Overhead	SPLICES - OVERHEAD
S324	Center of Cab Overhead	SPLICES - OVERHEAD
S325	Center of Cab Overhead	SPLICES - OVERHEAD
S326	Center of Cab Overhead	SPLICES - OVERHEAD
S327	On on Main Body (HLS) Harness	N/S
S328	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S329	Left Rear Engine Compartment	SPLICES - LEFT FRONT
S330	Left Rear Headliner	SPLICES - ROOF
S331	Left Center Headliner	SPLICES - ROOF
S332	Left Center Headliner	SPLICES - ROOF
S333	Left Center Headliner	SPLICES - ROOF
S334	Left Center Headliner	SPLICES - ROOF

S335	Left Rear Headliner	SPLICES - ROOF
S336	Left Rear Headliner	SPLICES - ROOF
S337	Left Center Headliner	SPLICES - ROOF
S338	Front Center Headliner	SPLICES - ROOF
S339	Left Front Headliner	SPLICES - ROOF
S340	Left Rear Headliner	SPLICES - ROOF
S341	Left Rear Headliner	SPLICES - ROOF
S342	Left Front Headliner	SPLICES - ROOF
S343	Left Center Headliner	SPLICES - ROOF
S344	Left Rear Headliner	SPLICES - ROOF
S345	On Overhead (DLS) Harness	SPLICES - ROOF
S346	Left Center Headliner	SPLICES - ROOF
S347	Left Rear Headliner	SPLICES - ROOF
S348	Left Rear Headliner	SPLICES - ROOF
S349	On on Main Body (HLS) Harness	N/S
S350	On Overhead (DLS) Harness	N/S
S351	Left Center Headliner	SPLICES - ROOF
S352	Left Center Headliner	SPLICES - ROOF
S353	Driver Door	SPLICES - LEFT BODY
S354	Passenger Door	SPLICES - RIGHT BODY
S355	Left Sliding Door	SPLICES - LEFT BODY
S356	Right Sliding Door	SPLICES - RIGHT BODY
S357	Left Sliding Door	SPLICES - LEFT BODY
S358	Right Sliding Door	SPLICES - RIGHT BODY
S359	Left Sliding Door	SPLICES - LEFT BODY
S360	Right Sliding Door	SPLICES - RIGHT BODY
S361	Left Sliding Door	SPLICES - LEFT BODY
S362	Right Sliding Door	SPLICES - RIGHT BODY
S363	On Left Rear Cargo Door	N/S
S364	Right Rear Cargo Door	BODY - REAR

S365	On Left Rear Cargo Door	N/S
S366	On Right Rear Cargo Door	N/S
S367	Left Rear Truck Door	TRUCK - LEFT SIDE
S368	Right Rear Truck Door	TRUCK - RIGHT SIDE
S369	Rear Bumper	SPLICES - BUMPERS
S370	Rear Bumper	SPLICES - BUMPERS
S371	Lower Left Front Fascia	SPLICES - BUMPERS
S372	Lower Left Front Fascia	SPLICES - BUMPERS
S373	Right Sliding Door	SPLICES - RIGHT BODY
S374	Right Sliding Door	SPLICES - RIGHT BODY
S375	Right Sliding Door	SPLICES - RIGHT BODY
S376	Left Sliding Door	SPLICES - LEFT BODY
S377	Left Sliding Door	SPLICES - LEFT BODY
S378	Left Sliding Door	SPLICES - LEFT BODY

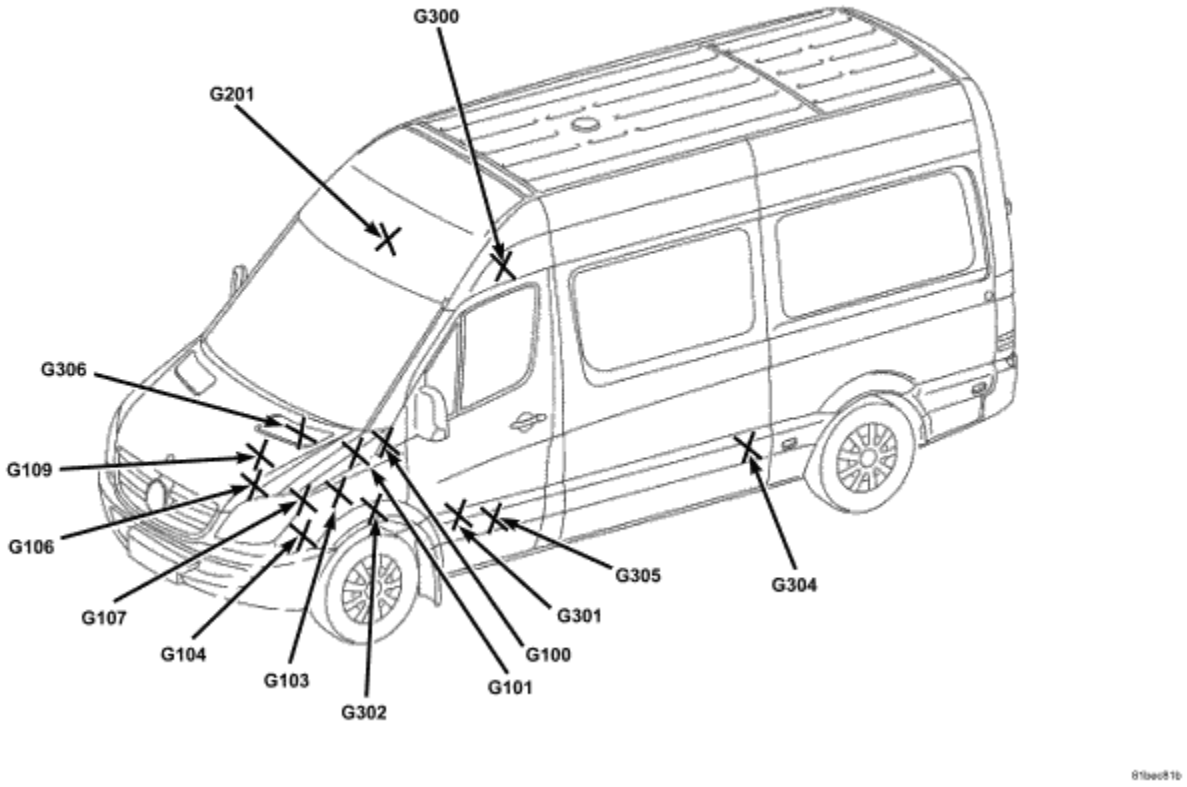

Figure. 1 GROUNDS - LEFT

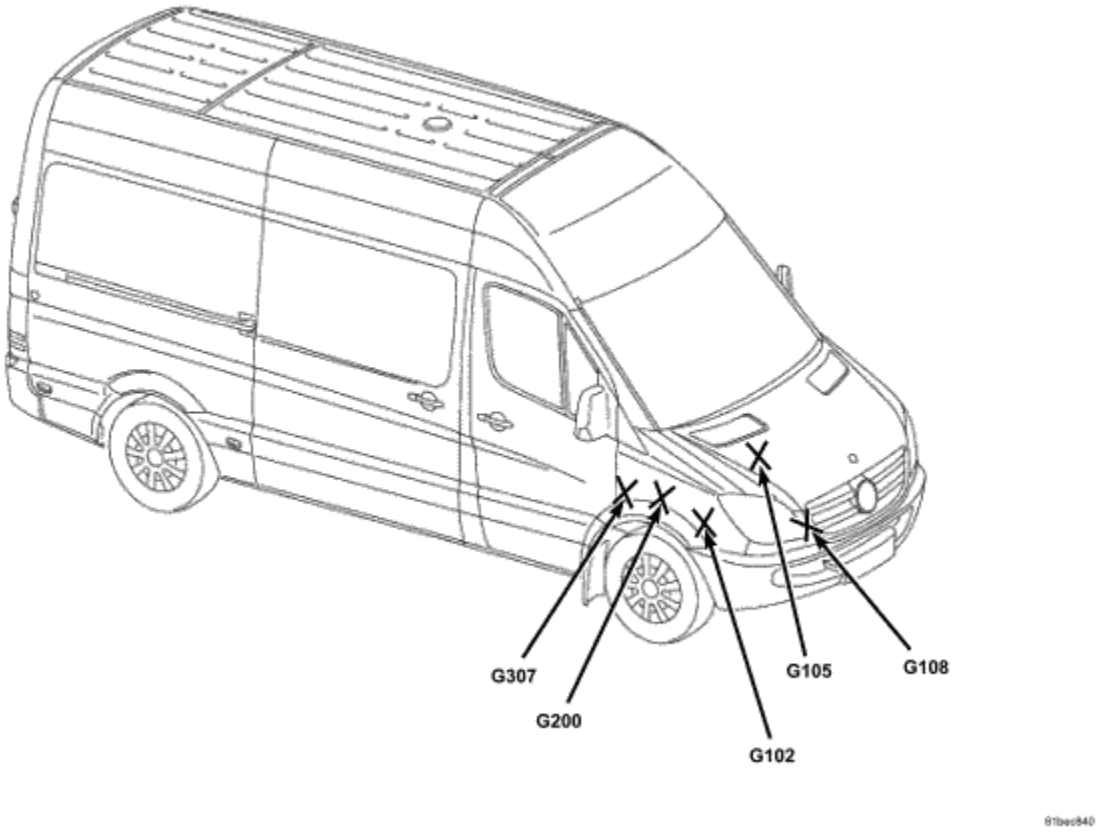

Figure. 2 GROUNDS - RIGHT

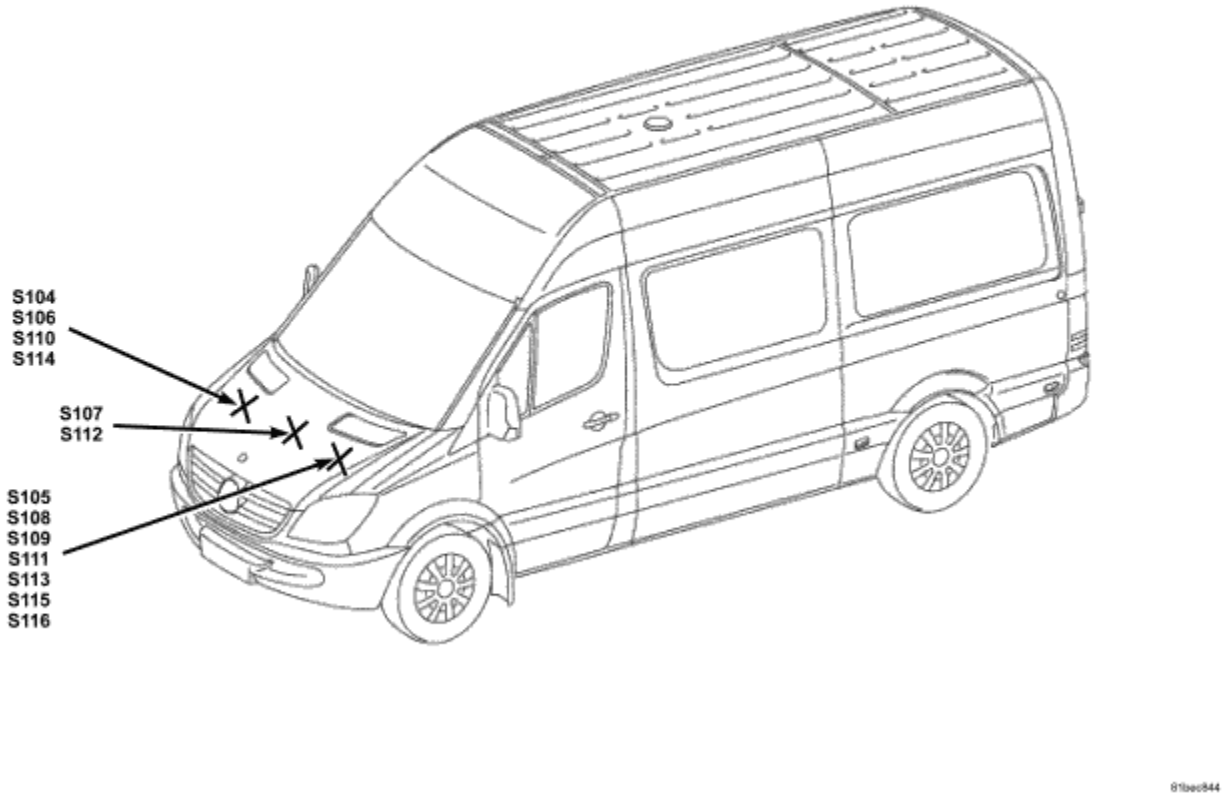

Figure. 3 SPLICES - FRONT

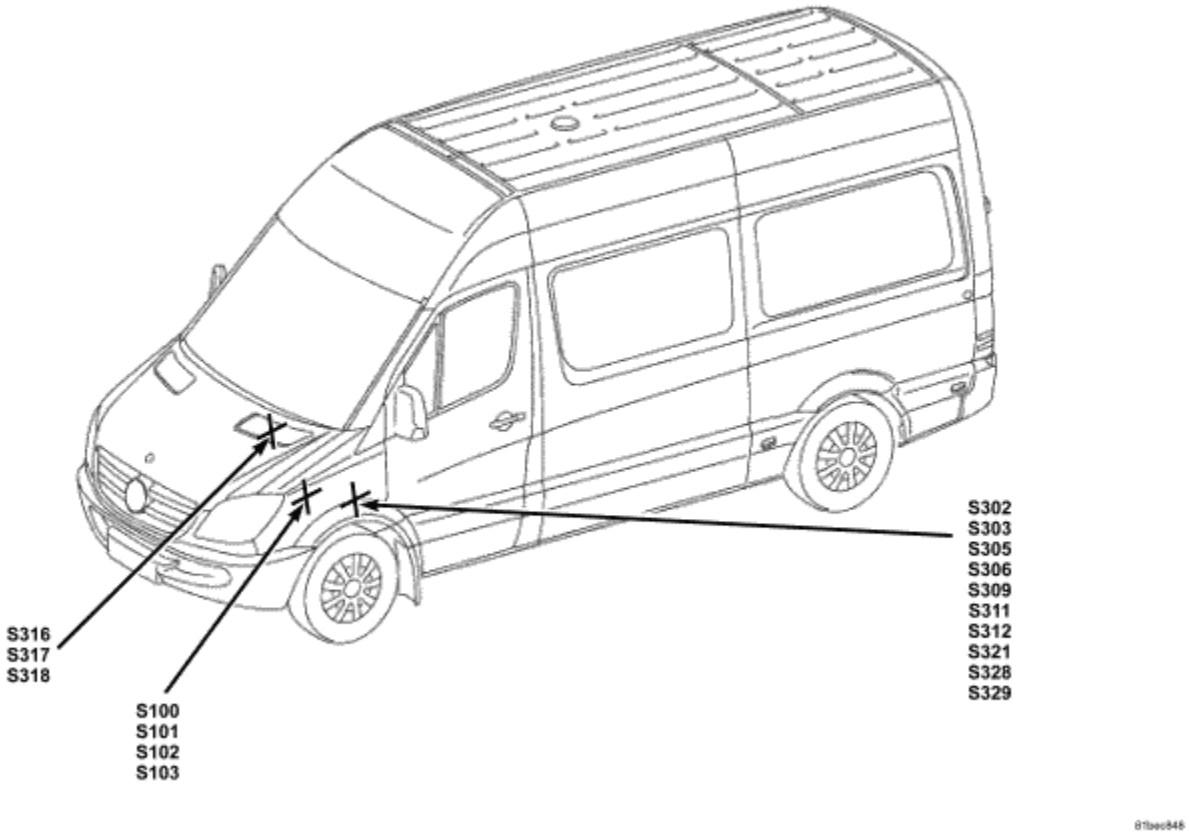

Figure. 4 SPLICES - LEFT FRONT

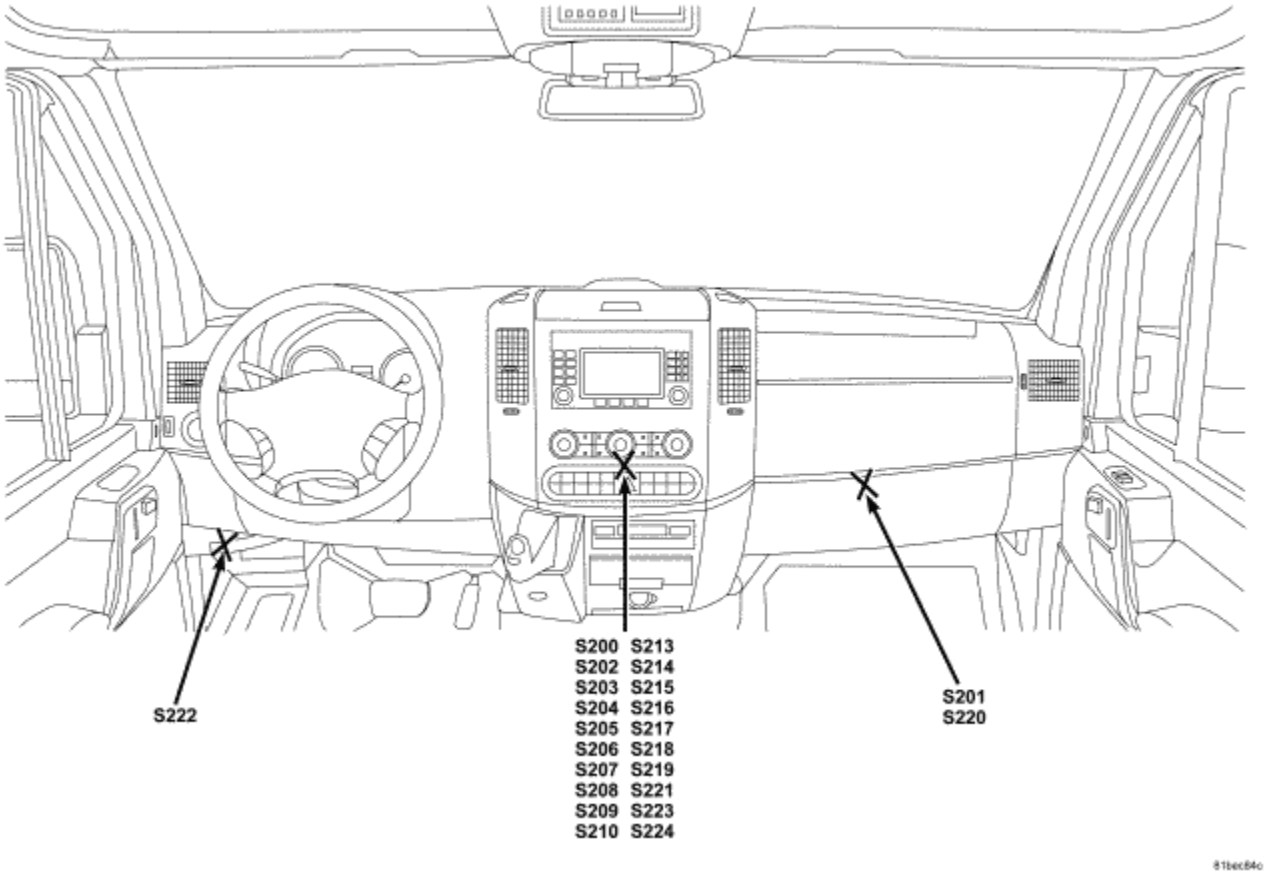

Figure. 5 SPLICES - INSTRUMENT PANEL

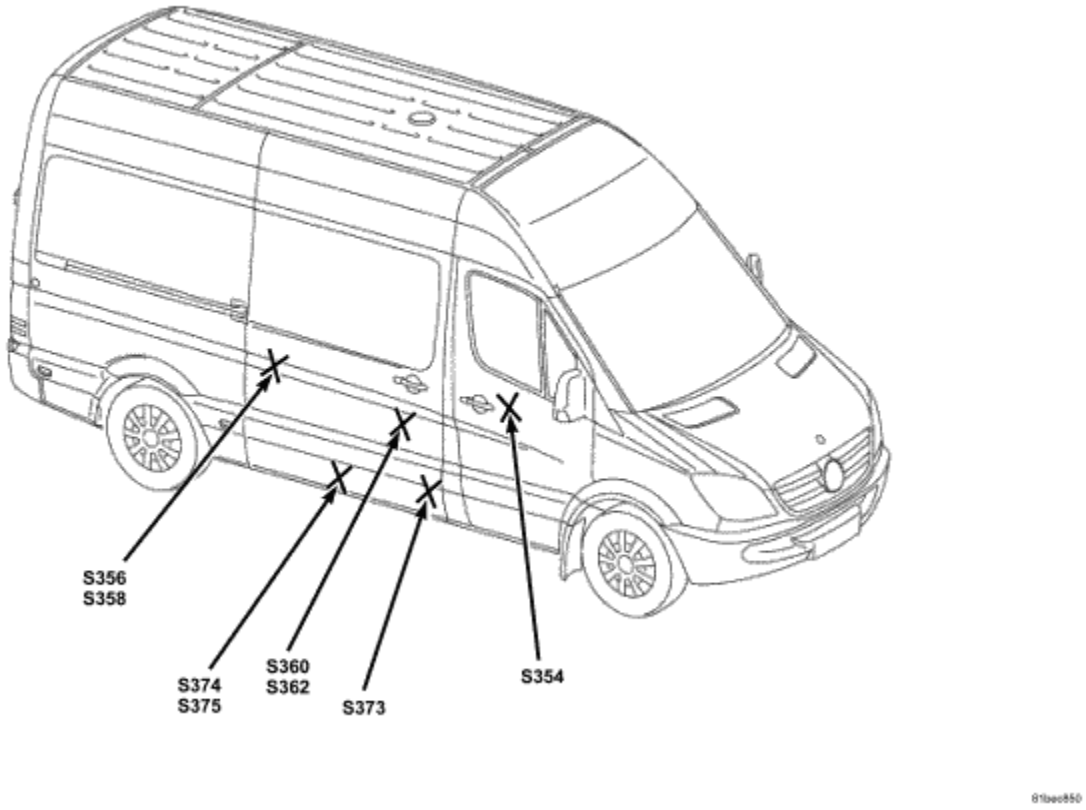

Figure. 6 SPLICES - RIGHT BODY

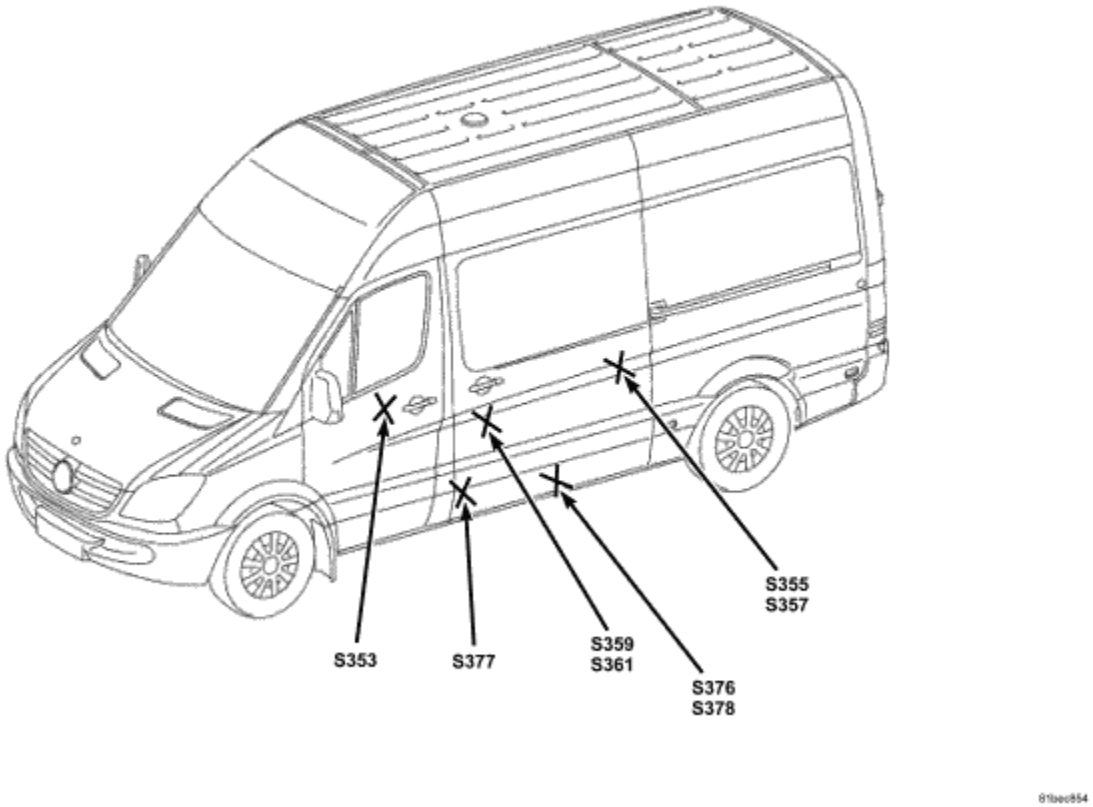

Figure. 7 SPLICES - LEFT BODY

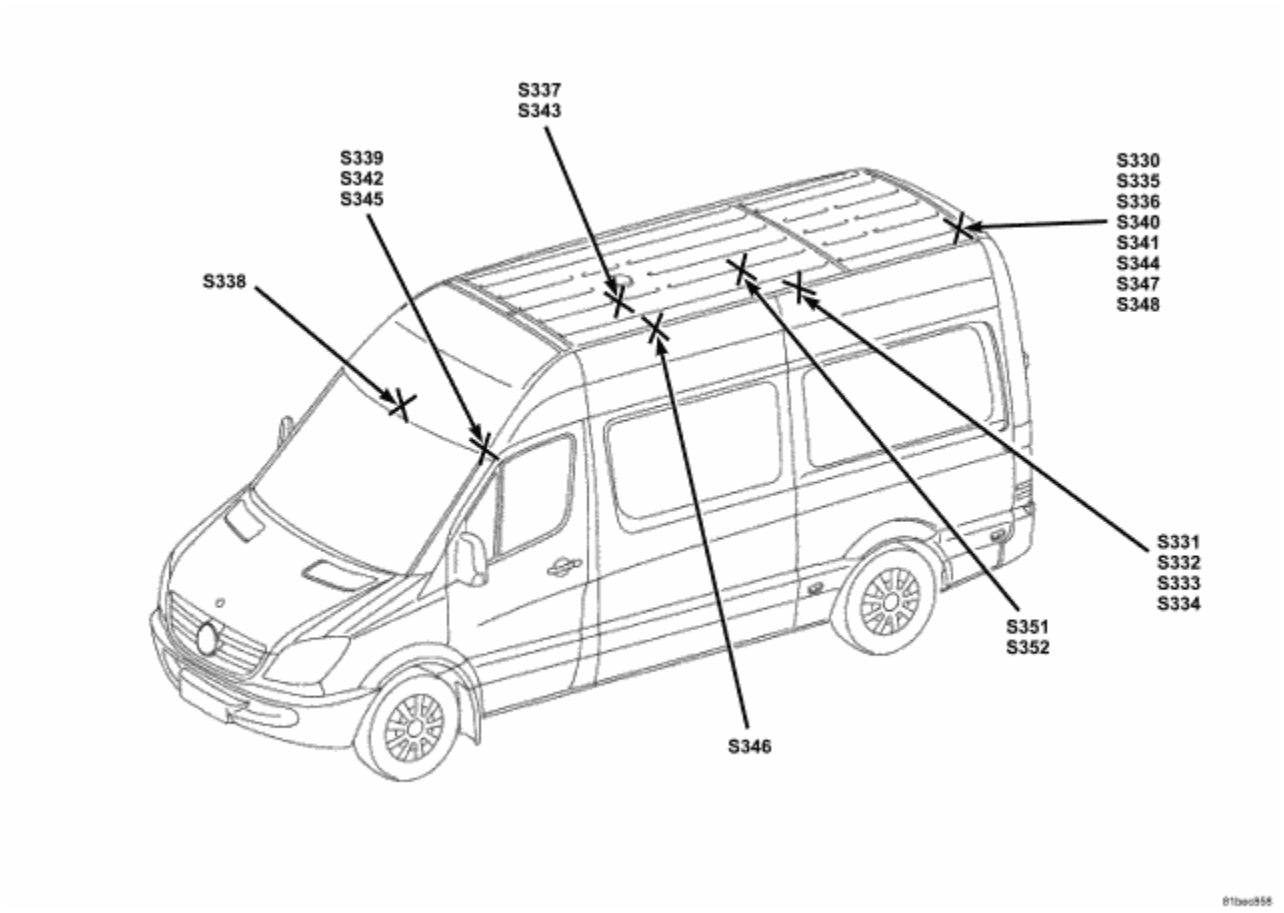

Figure. 8 SPLICES - ROOF

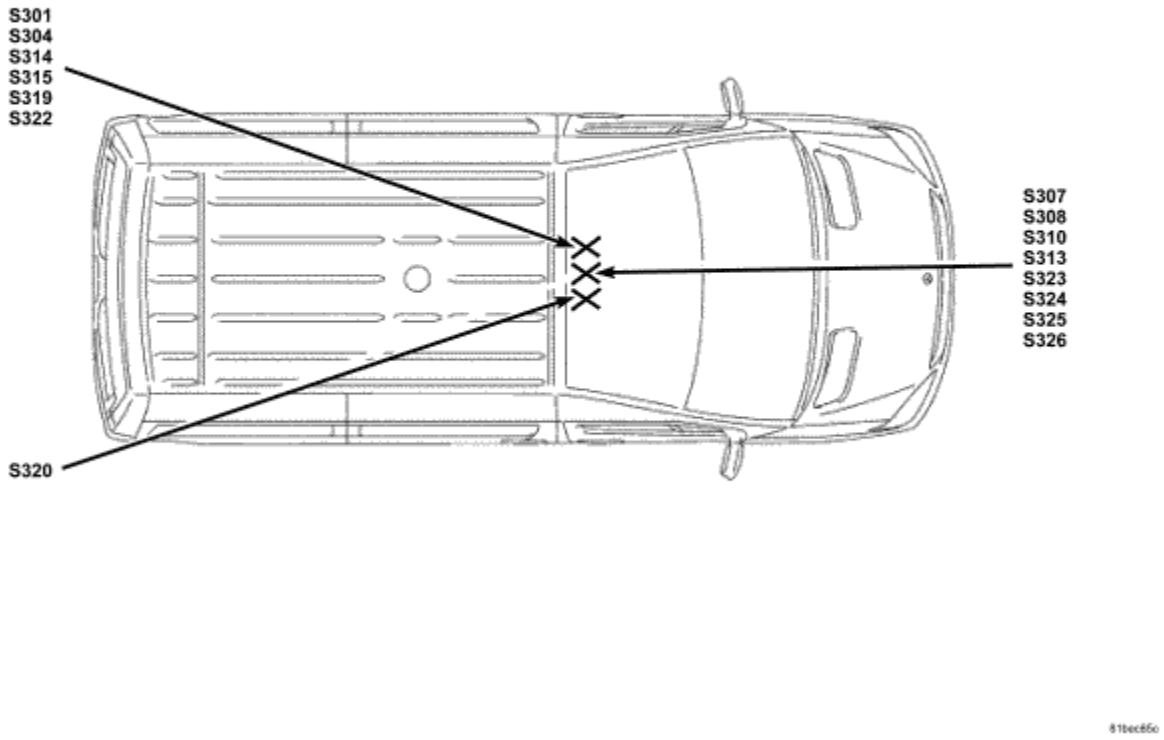

Figure. 9 SPLICES - OVERHEAD

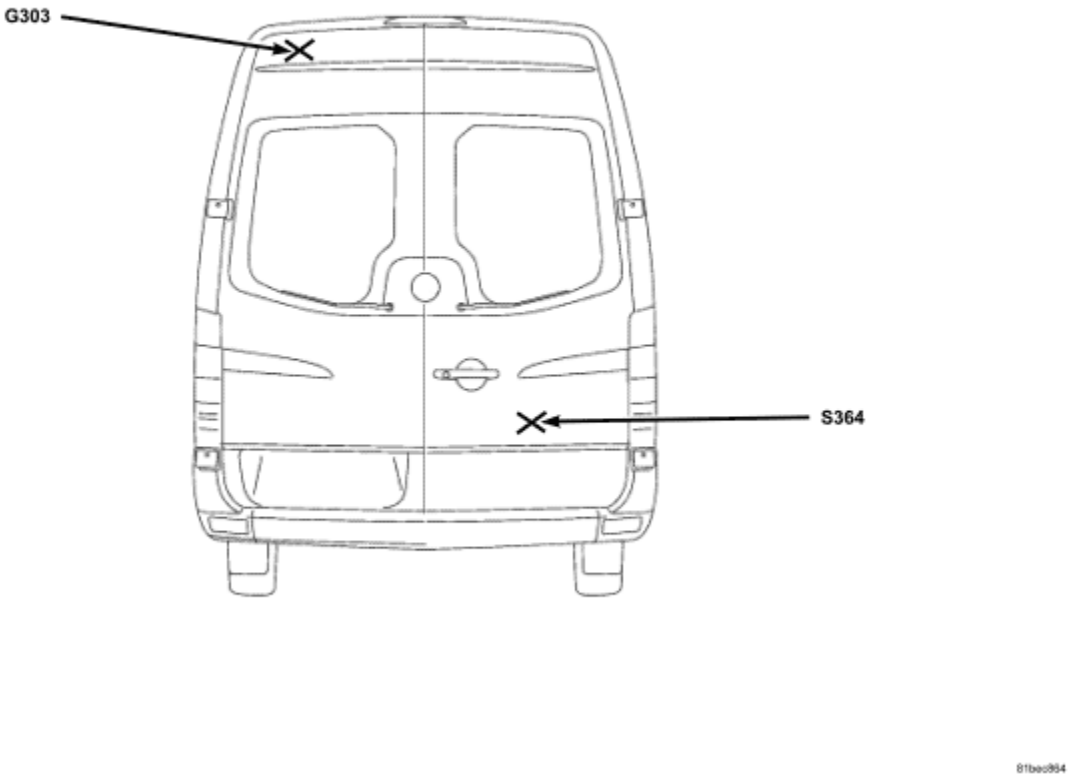

Figure. 10 BODY - REAR

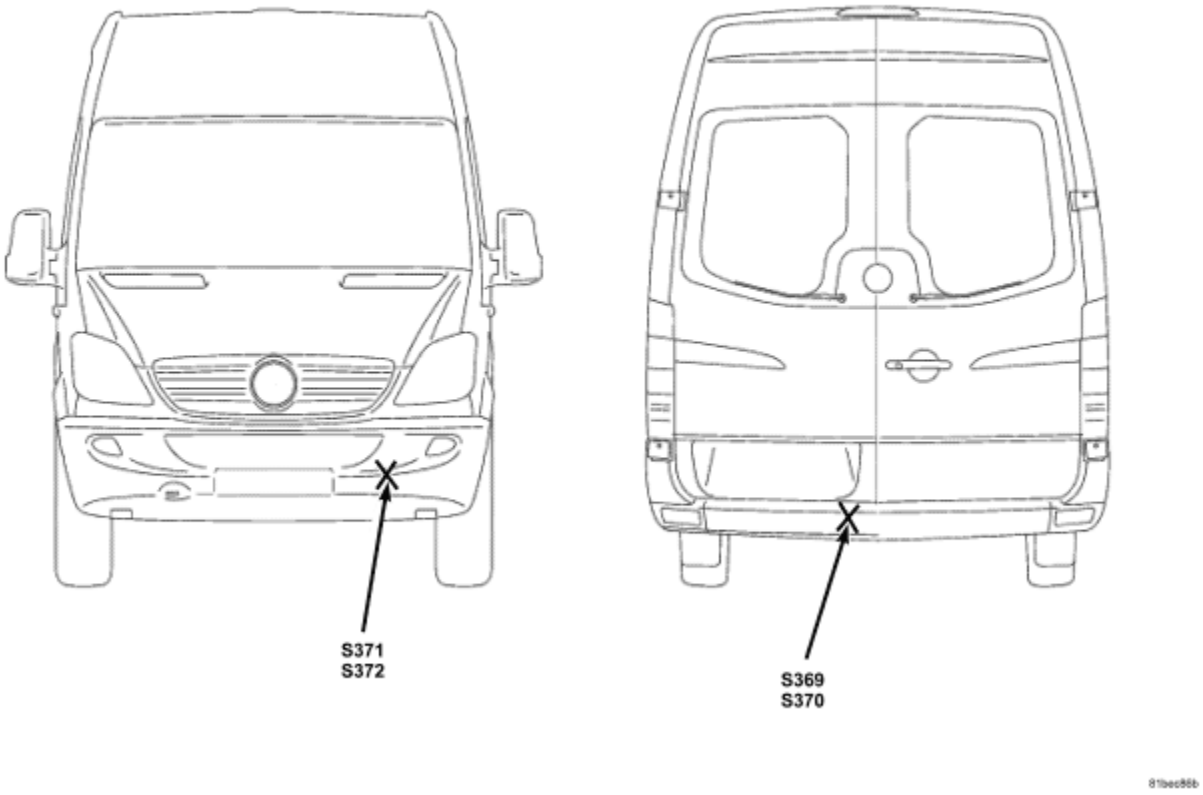

Figure. 11 SPLICES - BUMPERS

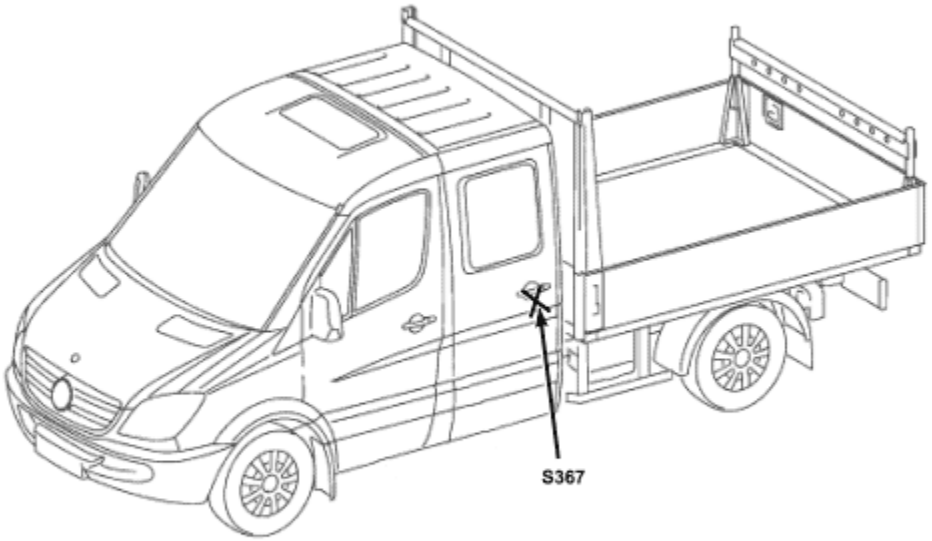

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Figure. 12 TRUCK - LEFT SIDE

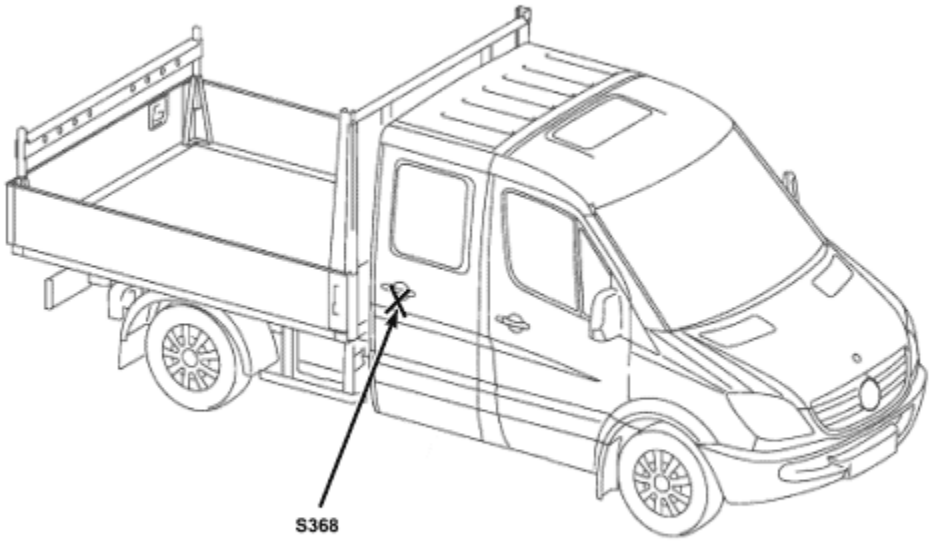

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Figure. 13 TRUCK - RIGHT SIDE

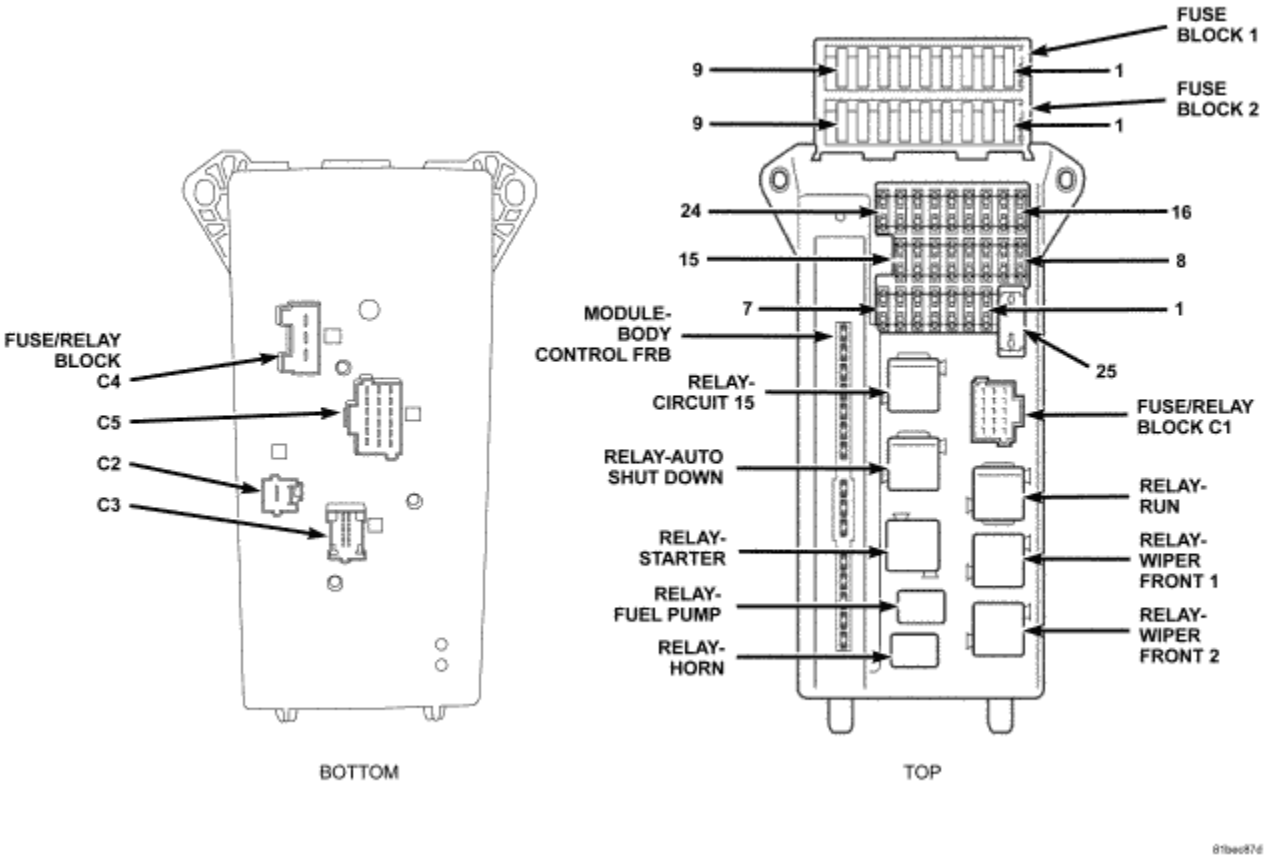


Figure. 14 FUSE/RELAY BLOCK

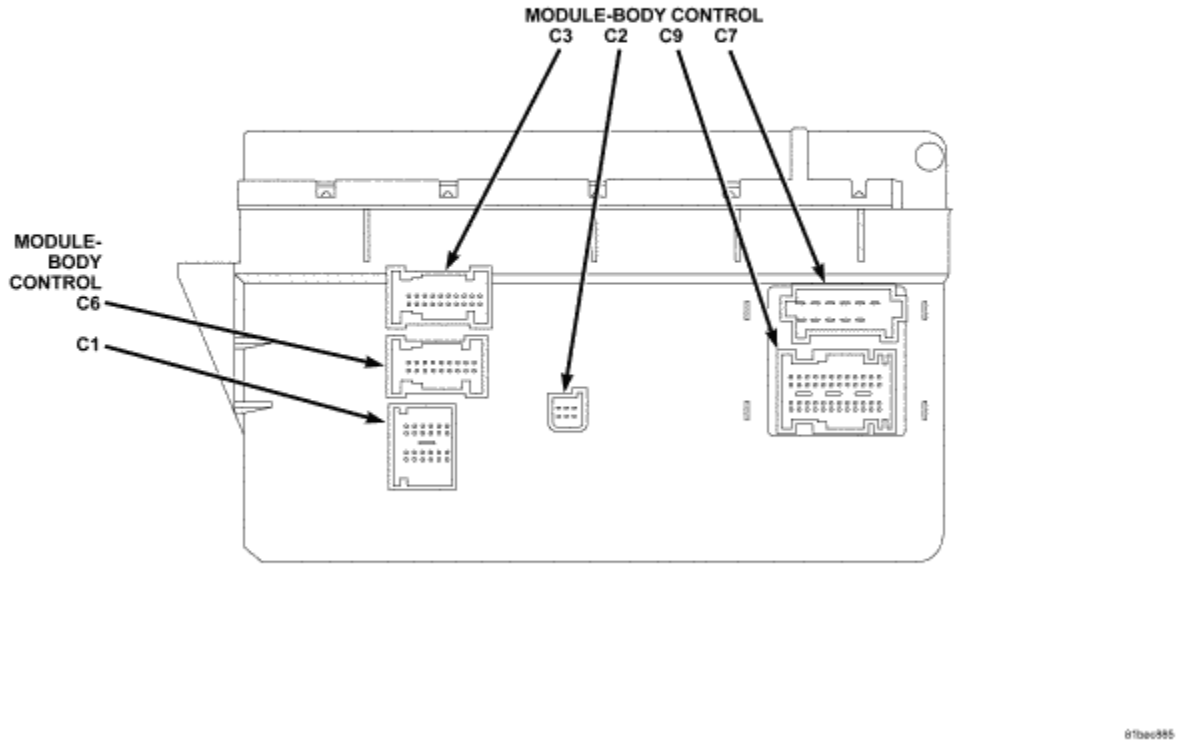


Figure. 15 BODY CONTROL MODULE

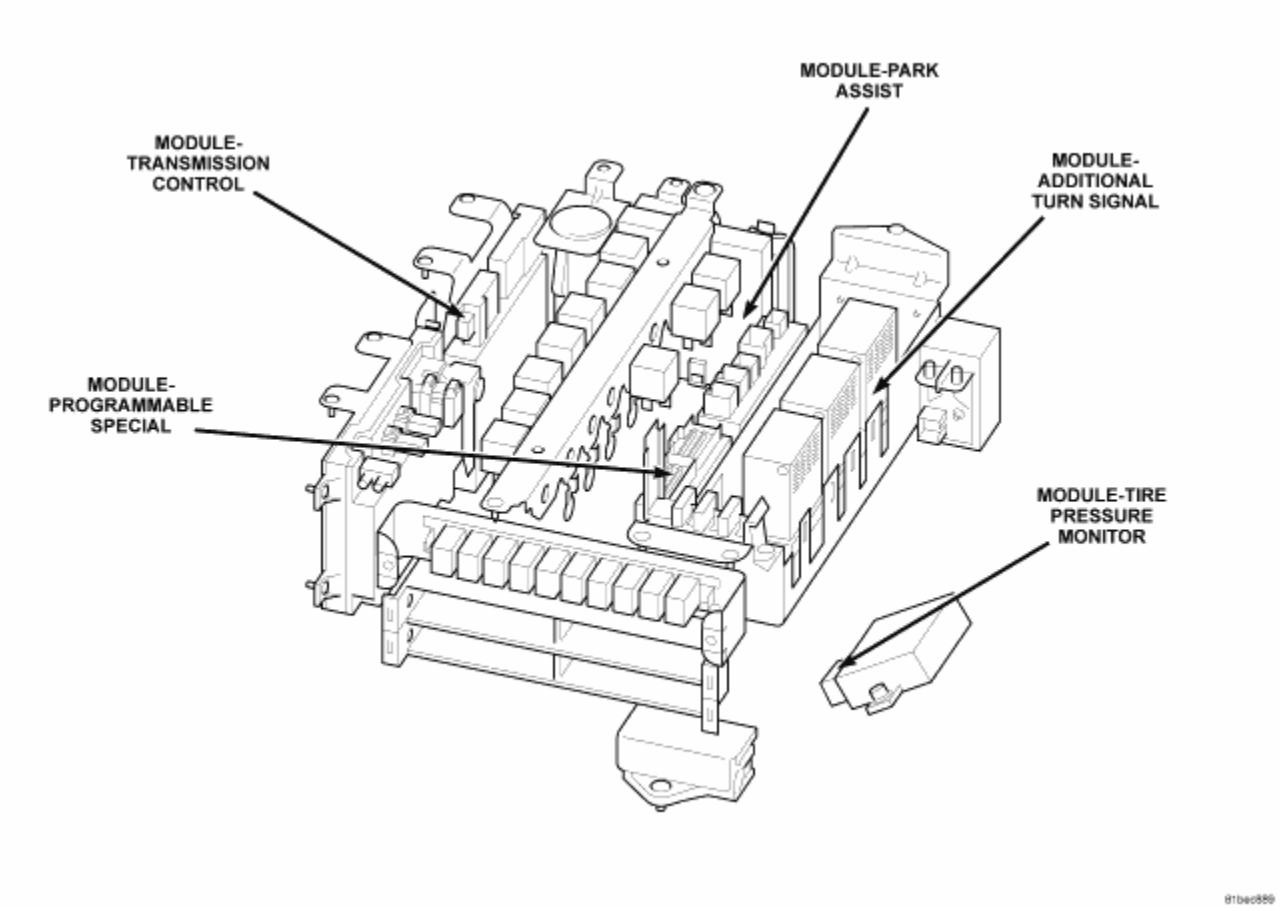
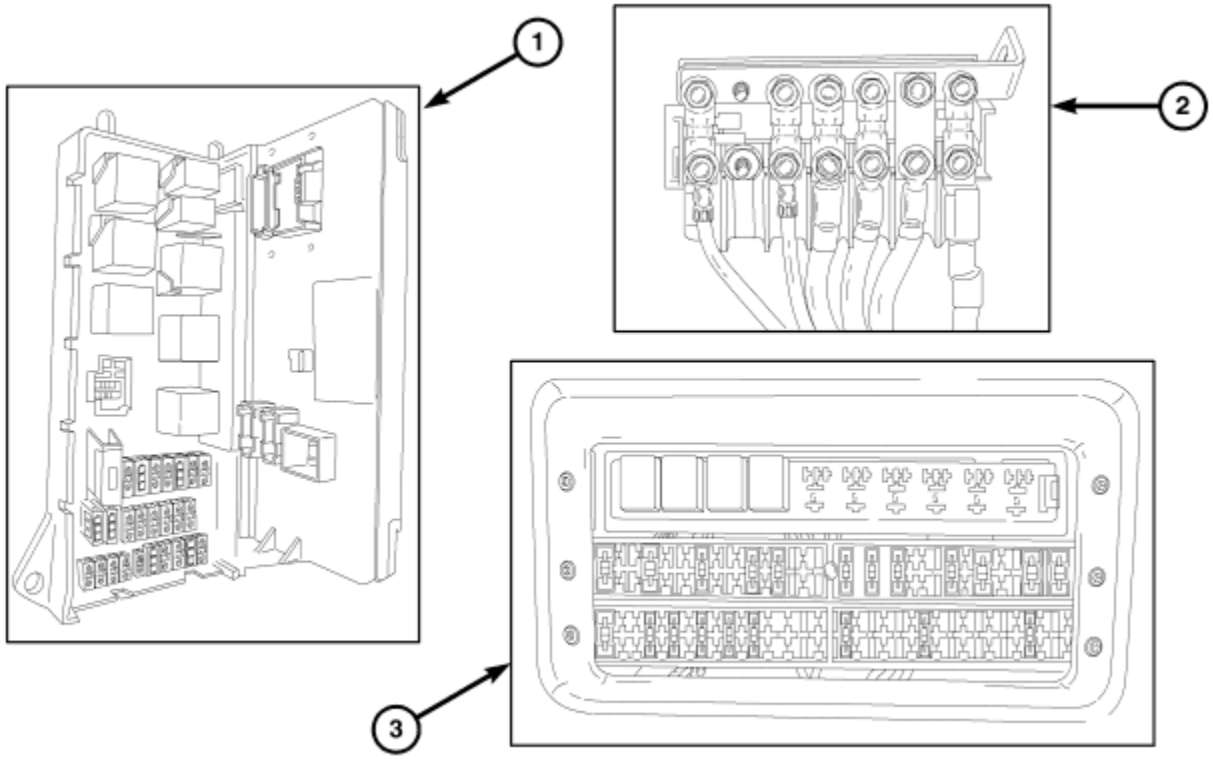


Figure. 16 BELOW DRIVER SEAT

POWER DISTRIBUTION



This section describes the power distribution components used on this model as well as the methods in which battery voltage and charging system voltage is distributed throughout the vehicle. All vehicles are equipped with a starter battery located in a floor well forward of the driver front seat and some vehicles may be equipped with an optional auxiliary battery located in the left engine compartment. The actual configuration of the power distribution components depends on the vehicle specific equipment, option level and add on accessories.

The power distribution system for this vehicle consists of the following major components:

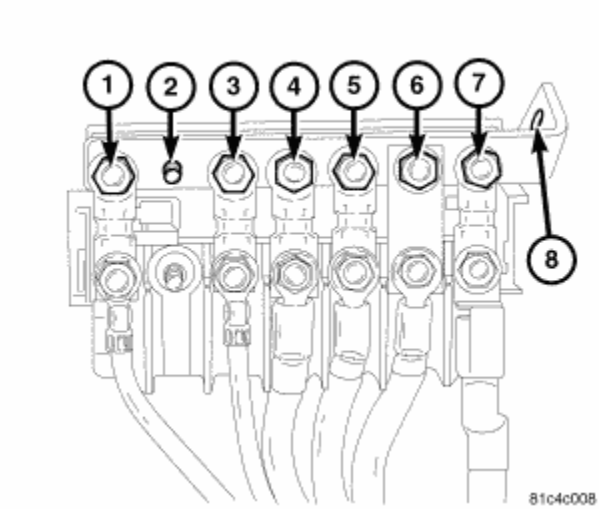
- Fuse/Relay Block #1 (1)
- Power Distribution Center (PDC) (2)
- Fuse/Relay Block #2 (3)

The power distribution system also incorporates various types of circuit control and protection devices, including:

- 300 amp melting fuse in the positive battery cable
- Micro Relays
- Cube Relays

- Automatic Resetting Circuit Breakers
- Maxi Fuses
- Standard Blade Type Fuses
- Bolt-On MIDI Fuses

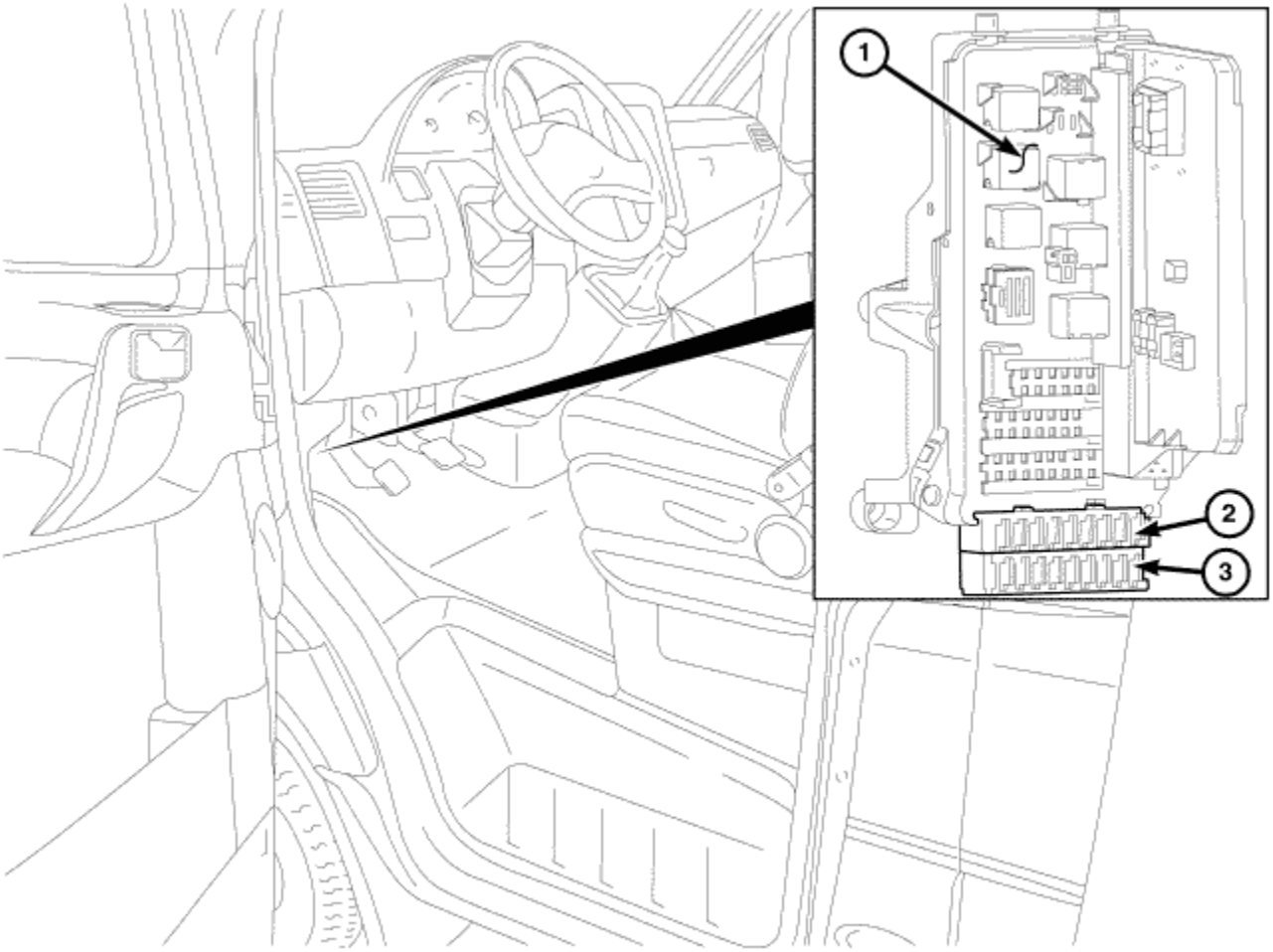
POWER DISTRIBUTION CENTER (PDC)



The Power Distribution center (PDC) is attached to a stud (8) on the positive battery clamp of the starter battery. The PDC contains six bolt-on MIDI fuses which protect components such as glow plugs, double auxiliary cooling fans and provide additional protection to the feed circuits that power the fuse/relay boxes. The PDC contains MIDI fuses for the following systems:

- Glow output stage/secondary air pump (1)
- Air conditioner additional fan (2)
- Fuse/Relay Block #1 power feed (3)
- Auxiliary battery (4)
- Instrument panel (5)
- Seat box components power feed bridged jumper (6)
- Electrical heater booster (7)

FUSE/RELAY BLOCK #1



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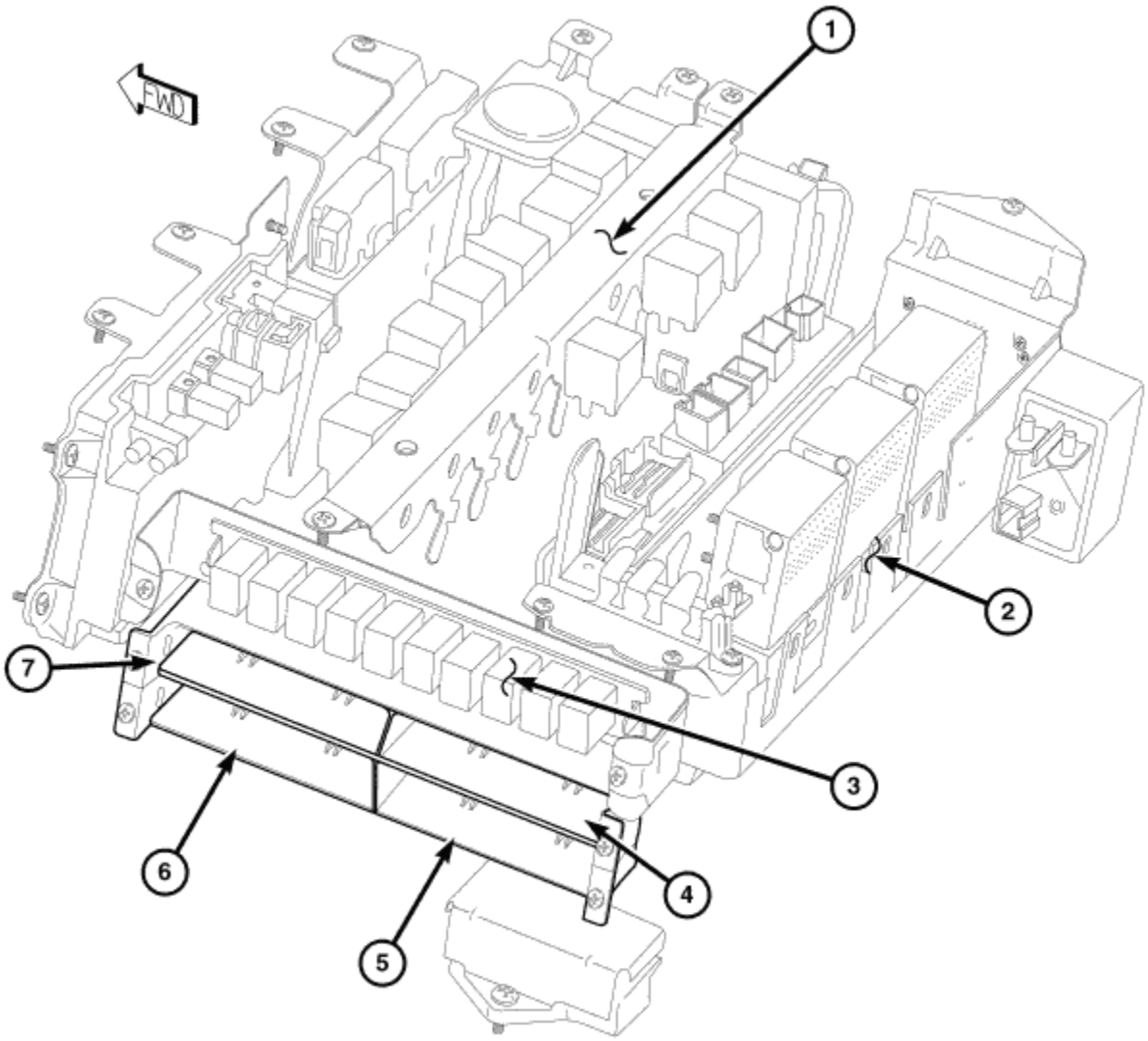
The Fuse/Relay Block #1 (also known as the SRB) (1) is located beneath the driver side end of the instrument panel in the passenger compartment. The SRB is the location for all standard fuses and relays and acts as the junction block for several of the vehicles wiring harnesses. Fuse Block #1 (3) and Fuse Block #2 (2) are both attached to the bottom of the SRB by a bracket. The Body Control Module (BCM) (also known as the Signal Acquisition and Actuation Module/SAM), is directly plugged into the right side of the SRB. (Refer to 8 - ELECTRICAL/ELECTRONIC CONTROL MODULES/BODY CONTROL/CENTRAL TIMER MODUL - DESCRIPTION) for additional information on the BCM.

FUSE/RELAY BLOCK #2



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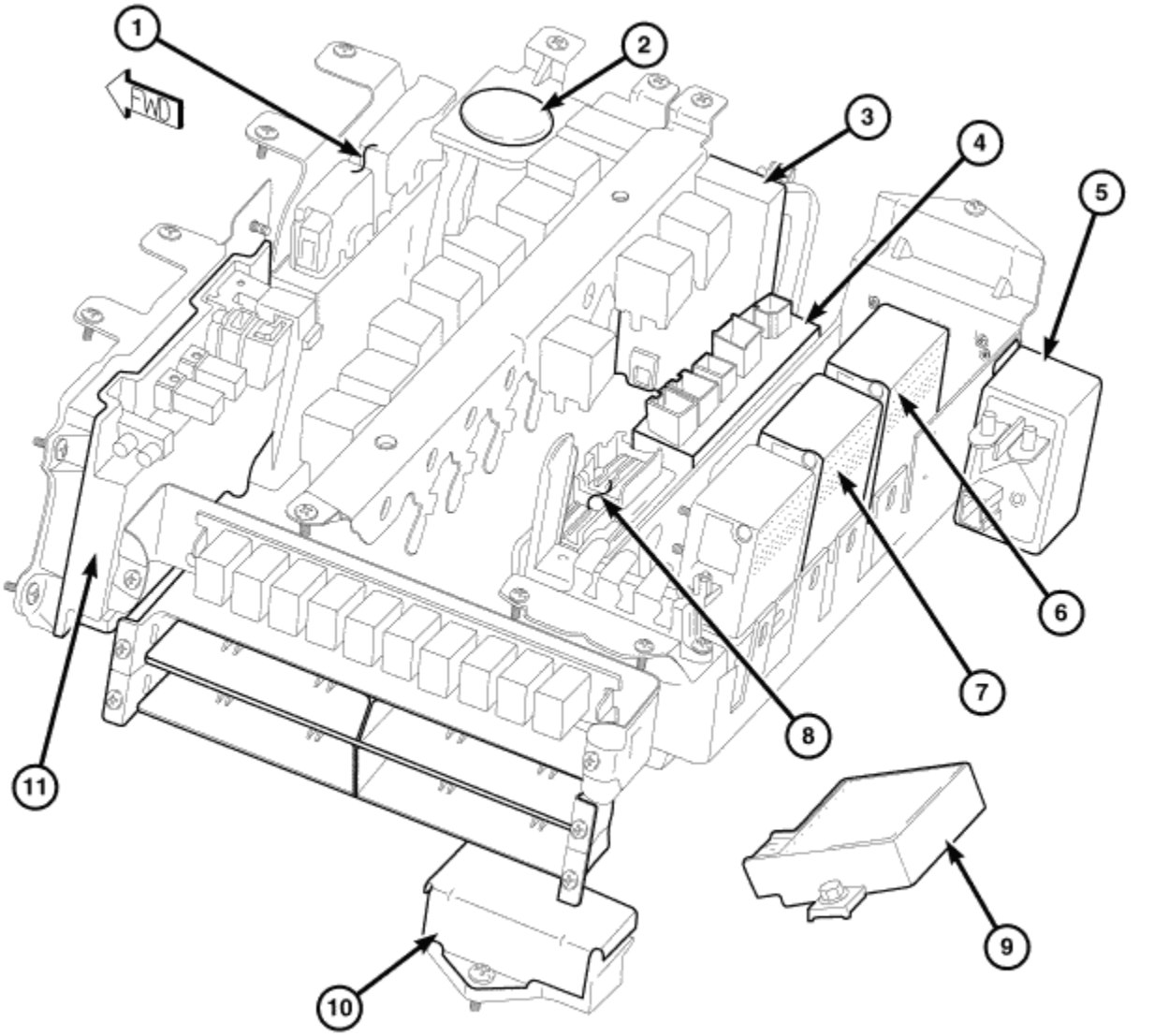
The Fuse/Relay Block #2 located on the left side of the driver seat consists of the following individual components:

- Relay Block (3)
- Fuse Block #3 (7)
- Fuse Block #4 (4)
- Fuse Block #5 (6)
- Fuse Block #6 (5)

Other power distribution components located under the driver seat are the Cube Relays (1) and the High Current Fuses (2) used for add on accessories.

MODULES UNDER DRIVER SEAT



In addition to the Fuse/Relay Block #2 there are a number of components that can be accessed under the driver front seat. Depending on the vehicle option/accessory content those components are:

- Transmission Control Module (1)
- Rear Park Assist Buzzer (2)
- Park Assist Module (3)

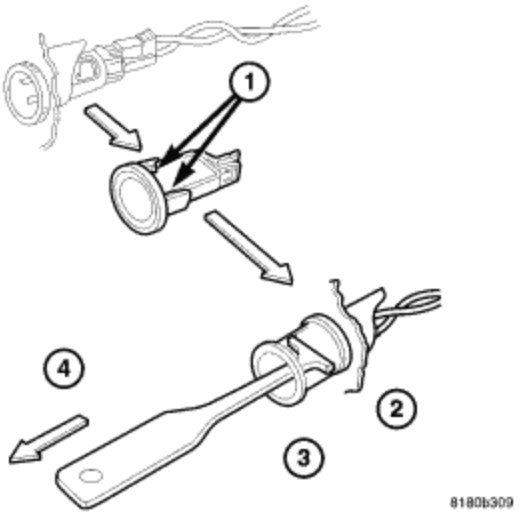
- Trailer Module (4)
- Battery Isolator Relay (5)
- Auxiliary Flasher Module (6)
- Traction Control Module (7)
- Programmable Special Module (8)
- Tire Pressure Monitor Module (9)
- Dynamics Sensor (10)

- **Remote Keyless Entry Module (11)**

OPERATION

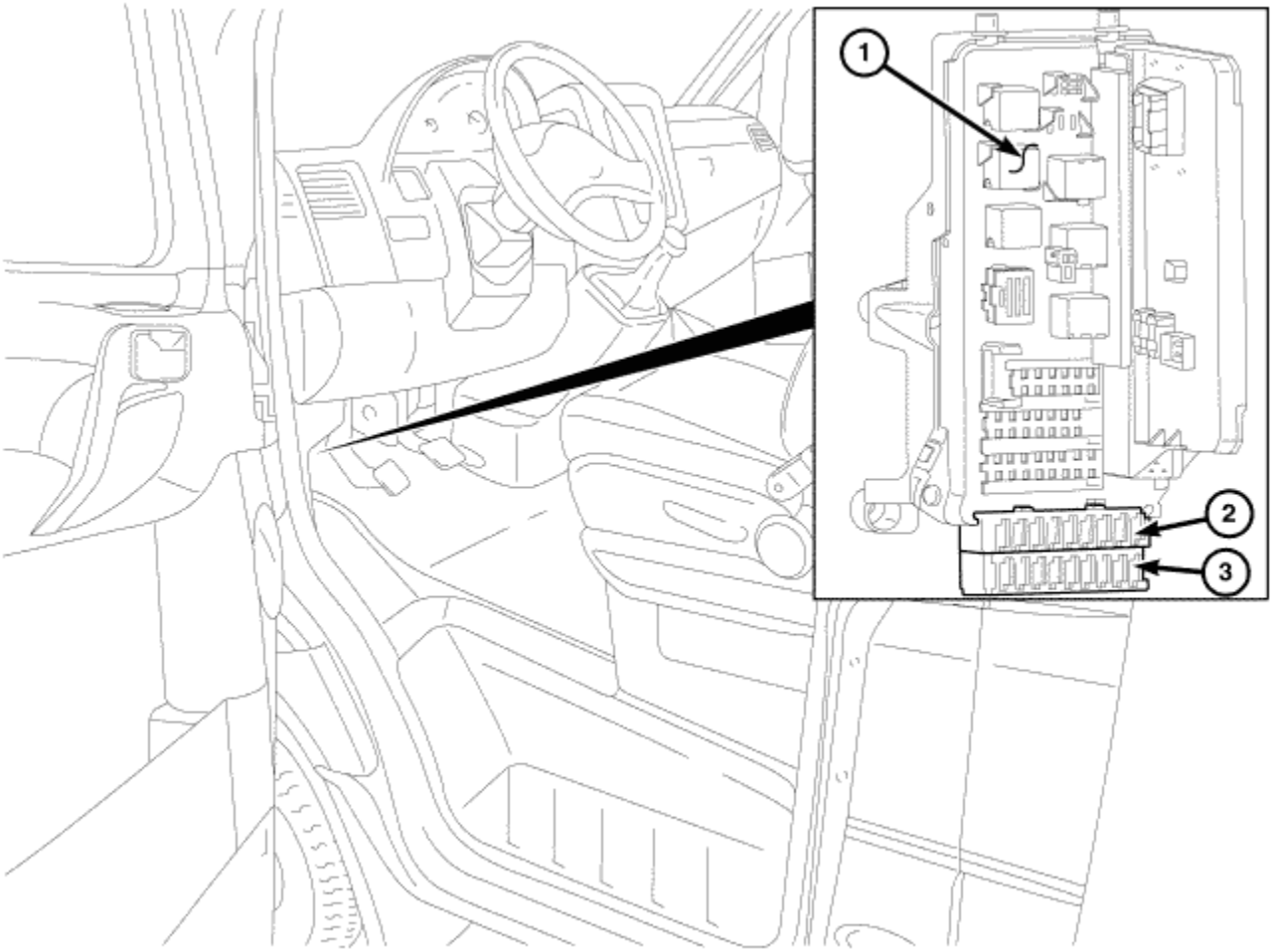
The power distribution system for this vehicle is designed to provide safe, reliable, and centralized distribution points for the electrical current required to operate all of the standard and optional factory-installed electrical and powertrain, chassis, safety, security and convenience systems. At the same time, the power distribution system was designed to provide easy access to these electrical distribution points for the vehicle technician to use when conducting diagnosis and repair of faulty circuits. The power distribution system can also prove useful for the addition of electrical circuits that may be required to operate accessories that the vehicle owner may choose to have installed in the aftermarket.

SPECIAL TOOLS



9857 Power Outlet Remover

DESCRIPTION



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Fuse Block #1 (3) and Fuse Block #2 (2) are both attached to the bottom of the Fuse/Relay Block #1 (also known as the SRB) (1) by a bracket. The SRB (1) is located beneath the driver side end of the instrument panel in the passenger compartment.

The fuse blocks serves to distribute electrical current to many of the electrical systems in the vehicle. The fuse blocks contains blade-type mini fuses that enable automatic control of some of the power distribution circuits throughout the vehicle.

The molded plastic fuse block housing snaps onto the mounting bracket that is secured to the SRB. The fuse blocks can be removed by releasing the retaining tabs at the top of the housing. The fuse allocation chart for both Fuse Block #1 (3) and Fuse Block #2 (2) is in the vehicle document wallet in the glove box and names all the numbered fuses.

The fuse block cannot be repaired, if the fuse block is inoperative or damaged, the entire fuse block must be replaced.

REMOVAL

WARNING: To avoid serious or fatal injury on vehicles equipped with airbags, disable the supplemental restraint system before attempting any steering wheel, steering column, airbag, seat belt tensioner, impact sensor, or instrument panel component diagnosis or service. Disconnect and isolate the battery negative (ground) cable, then wait two minutes for the system capacitor to discharge before performing further diagnosis or service. This is the only sure way to disable the supplemental restraint system. Failure to take the proper precautions could result in accidental airbag deployment.

1. Disconnect and isolate the battery negative cable.
2. Remove the trim from the left cowl side inner panel. (Refer to 23 - BODY/INTERIOR/COWL TRIM - REMOVAL) .
3. Release the retaining tabs at the top of the fuse block housing that secure it to the Fuse/Relay Block #1 (also known as the SRB). Pull the fuse block housing rearward to separate it from the SRB.
4. Disconnect all electrical connectors from the fuse block.
5. Remove the fuse block from the vehicle.

REMOVAL

1. Position door weatherstrip aside.
2. Remove the jack storage cover, if necessary.
3. Position aside carpet/mat, if necessary.
4. Using a trim stick C-4755 or equivalent, remove the cowl trim panel.

DESCRIPTION

CAUTION: Only connect the electric air pump to the 12 volt (25 amp) socket on the bottom of the center console. You could otherwise damage the vehicle electrical system.

This vehicle can be supplied with as many as four 12 volt power outlets depending on vehicle option content. The outlets are supplied with battery voltage regardless of ignition key position. The power outlets are available in the following locations:

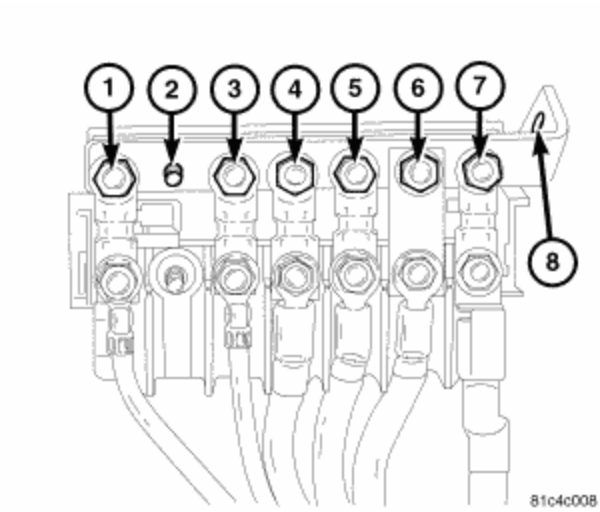
- Bottom of the center console (12 volt, 25 amp)
- inside of the driver's seat base (12 volt, 15 amp)
- corner trim next to each rear door in the passenger compartment (12 volt, 15 amp)
- load compartment next to the rear door on the left-hand side (12 volt, 15 amp)

The 12 volt, 15 amp sockets can be used for accessories with a maximum power consumption of 180 watts. You can connect accessories with a maximum power consumption of 300 watts to the 12 volt, 25 amp socket located at the bottom of the center console.

While the power outlet is very similar to a cigar lighter base unit, it does not include the two small spring-clip retainers inside the bottom of the receptacle shell that are used to secure the cigar lighter heating element to the insulated contact. A plastic protective cap snaps over the power outlet base when the power outlet is not being used.

The power outlet receptacle units are available for service. The power outlet receptacle cannot be repaired and, if faulty or damaged, it must be replaced.

POWER DISTRIBUTION CENTER (PDC)



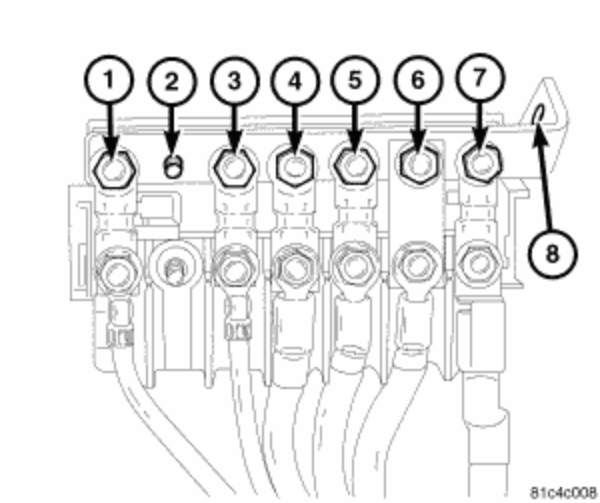
The Power Distribution center (PDC) is attached to a stud (8) on the positive battery clamp of the starter battery. The PDC contains six bolt-on MIDI fuses which protect components such as glow plugs, double auxiliary cooling fans and provide additional protection to the feed circuits that power the fuse/relay boxes. The PDC contains MIDI fuses for the following systems:

- Glow output stage/secondary air pump (1)
- Air conditioner additional fan (2)
- Fuse/Relay Block #1 power feed (3)
- Auxiliary battery (4)
- Instrument panel (5)
- Seat box components power feed bridged jumper (6)

- Electrical heater booster (7)

(Refer to 8 - ELECTRICAL/POWER DISTRIBUTION/POWER DISTRIBUTION CENTER - REMOVAL) for information on how to access the PDC for replacement or PDC MIDI fuse service.

POWER DISTRIBUTION CENTER (PDC)

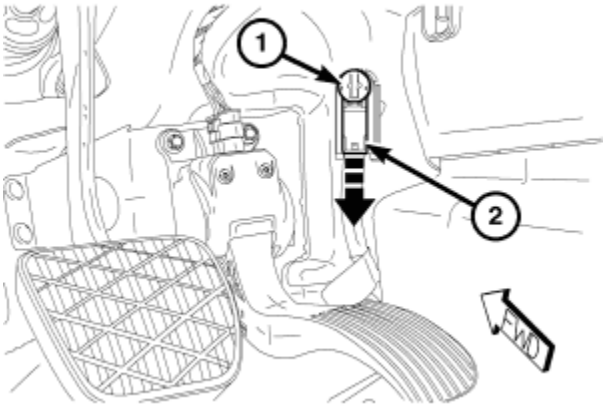


The Power Distribution center (PDC) is attached to a stud (8) on the positive battery clamp of the starter battery. The PDC contains six bolt-on MIDI fuses which protect components such as glow plugs, double auxiliary cooling fans and provide additional protection to the feed circuits that power the fuse/relay boxes. The PDC contains MIDI fuses for the following systems:

- Glow output stage/secondary air pump (1)
- Air conditioner additional fan (2)
- Fuse/Relay Block #1 power feed (3)
- Auxiliary battery (4)
- Instrument panel (5)
- Seat box components power feed bridged jumper (6)
- Electrical heater booster (7)

(Refer to 8 - ELECTRICAL/POWER DISTRIBUTION/POWER DISTRIBUTION CENTER - REMOVAL) for information on how to access the PDC for replacement or PDC MIDI fuse service.

REMOVAL



CAUTION: Make sure that the key is in the off position in the ignition lock and wait at least 20 seconds before disconnecting or connecting the battery isolating connector. You could otherwise damage electrical system components.

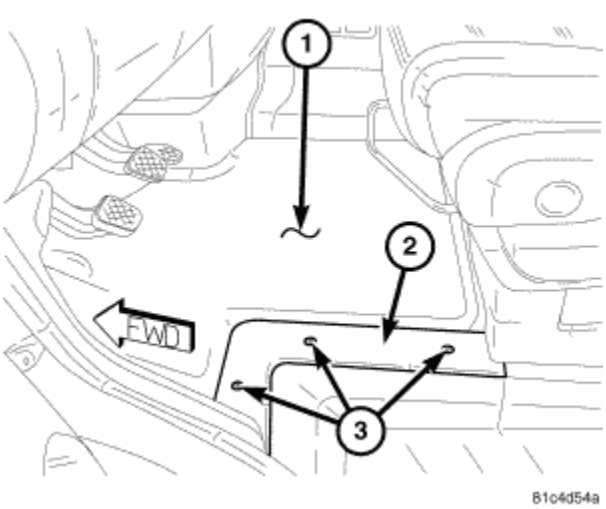
1. Isolate the starter battery from the vehicle electrical system by disconnecting the battery isolating connector.

a. Take the key out of the ignition lock and wait for approx. 20 seconds.

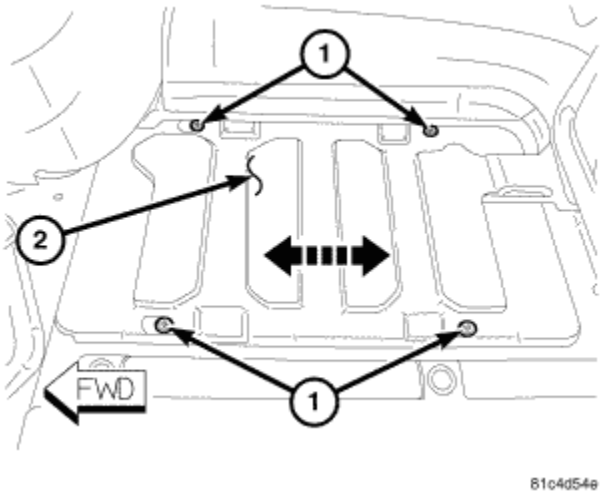
b. Pull down on the isolating connector locking tab (2).

c. Pull the connector (1) away from the grounding stud

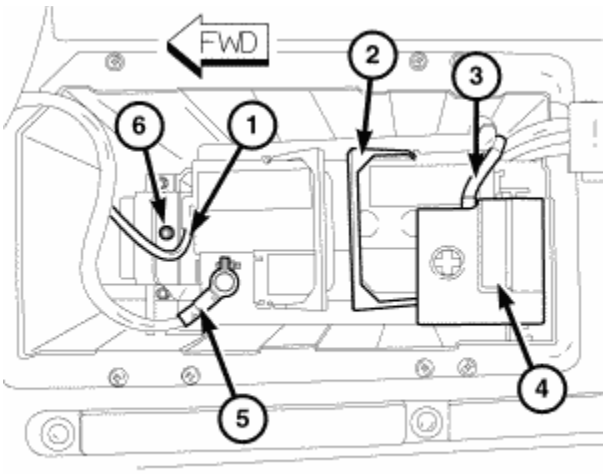
d. Clamp connector under the accelerator pedal so that it cannot make contact with the ground pin.



2. Remove the front door upper sill trim screws (3).
3. Remove the front door upper sill trim (2).
4. Remove the front driver floor covering (1).

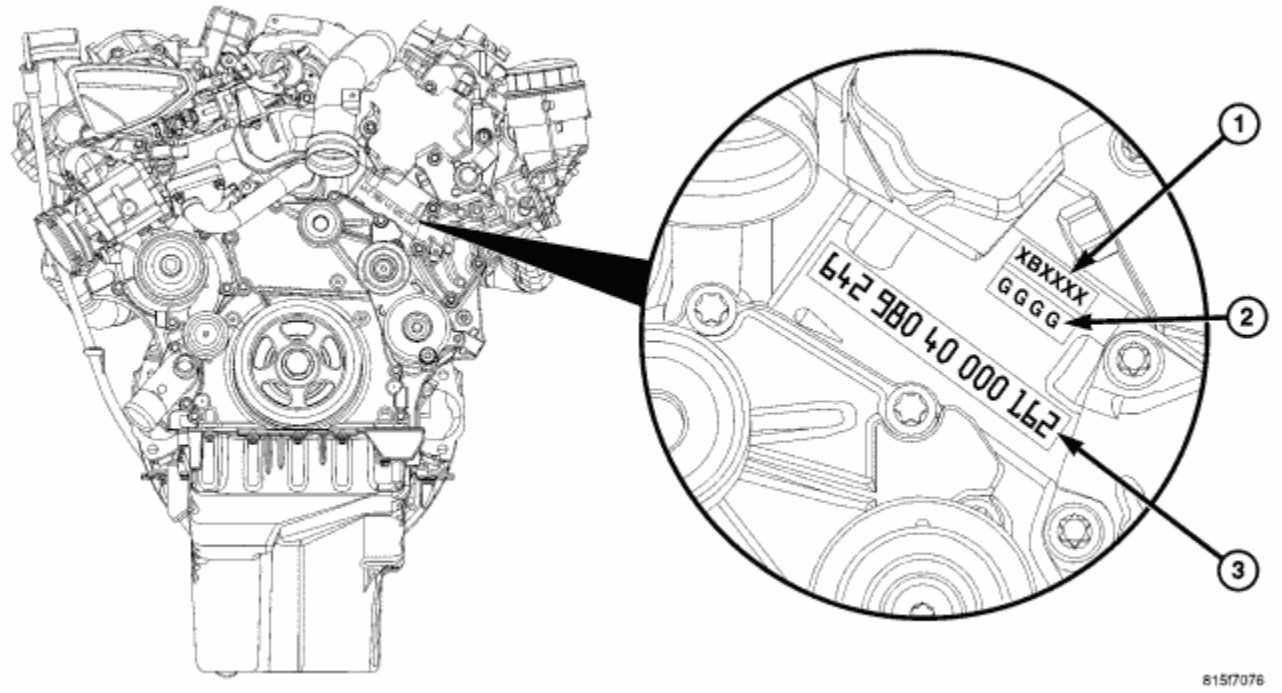


5. Remove the 4 battery access cover screws (1).
6. Remove the battery access cover (2) by sliding it rearward and up.



7. Remove the battery positive cable cover (4).
8. Remove the Power Distribution Center (PDC) to battery positive cable clamp nut.

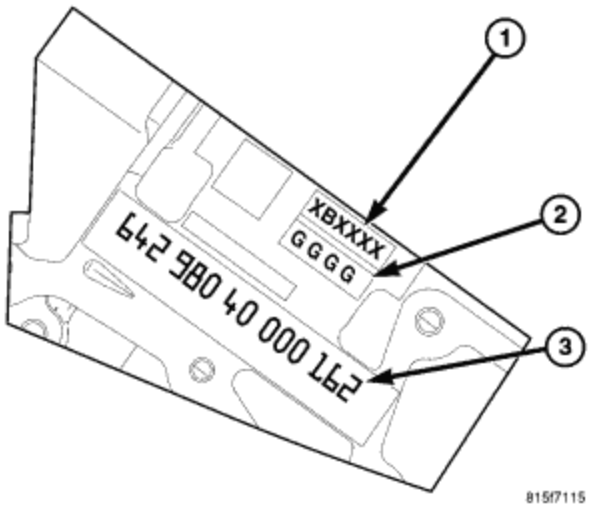
3.0L COMMON RAIL DIESEL ENGINE



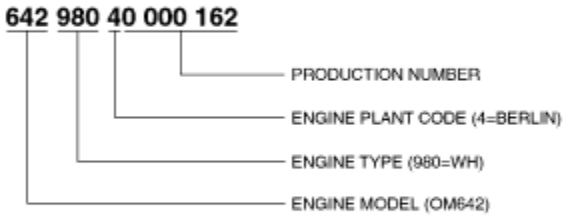
The 3.0L (183 C.I.D.) six - cylinder “common rail” direct injection engine is a 72°, overhead valve design. The engine utilize a cast aluminum cylinder block molded around cast iron piston sleeves. The engine has aluminum cross flow cylinder heads, four valves per cylinder, central injectors and dual overhead camshafts. The 3.0L is turbocharged, intercooled, and also equipped with a EGR cooler.

Additional features are:

- Finger Follower Actuated Valves with Hydraulic Adjusters
- Counter Rotating Balance Shaft
- Oil Jet Cooled Pistons
- Swirl Intake Ports
- Chain driven D.O.H.C. per bank of cylinders, with 4 valves per cylinder



The engine identification stamp (3) for the 3.0L is located on the left side of the engine block, below the high pressure pump along with the 4 digit main bearing identifying stamp (2) and the 6 digit cylinder bore identifying stamp (1).



81f7361

The engine identification number encompasses the production number, engine plant code, engine type and engine model.

ENGINE COVER

81b73043

The insulated engine cover (1) is made of composite material and used cosmetically to cover the top of the engine and greatly reduce engine noise. Three brackets secure the cover to the engine.

ENGINE COVER

81b73043

The insulated engine cover (1) is made of composite material and used cosmetically to cover the top of the engine and greatly reduce engine noise. Three brackets secure the cover to the engine.

REMOVAL

Cargo/Passenger Van - Front

1. Remove the stepwell scuff pads.
2. Remove the three bolts and tray behind drivers seat.
3. Remove cup holder.
4. Remove the jack storage cover.
5. Remove carpet/mat.

Passenger Van - Rear

1. Remove seats.
2. Remove the screws and retaining strips.
3. Remove the seat striker assemblies.
4. Remove carpet/mat.

Cargo Van - Rear

1. Remove the screws and retaining strips.
2. Remove carpet/mat.

REMOVAL

Cargo/Passenger Van - Front

1. Remove the stepwell scuff pads.
2. Remove the three bolts and tray behind drivers seat.
3. Remove cup holder.
4. Remove the jack storage cover.
5. Remove carpet/mat.

Passenger Van - Rear

1. Remove seats.
2. Remove the screws and retaining strips.
3. Remove the seat striker assemblies.
4. Remove carpet/mat.

Cargo Van - Rear

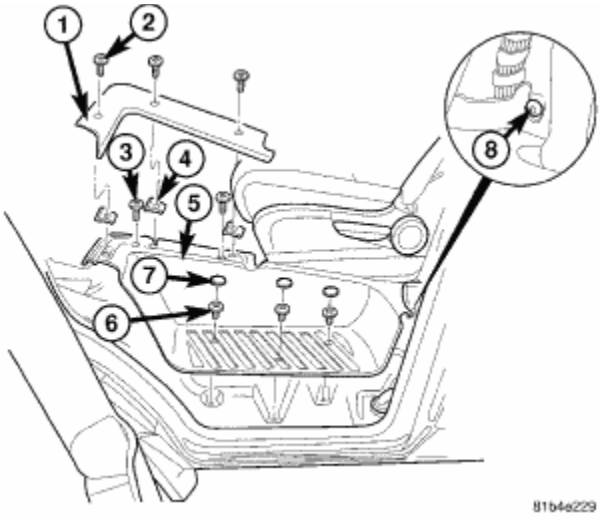
1. Remove the screws and retaining strips.
2. Remove carpet/mat.

REMOVAL

1. Position door weatherstrip aside.
2. Remove the jack storage cover, if necessary.
3. Position aside carpet/mat, if necessary.
4. Using a trim stick C-4755 or equivalent, remove the cowl trim panel.

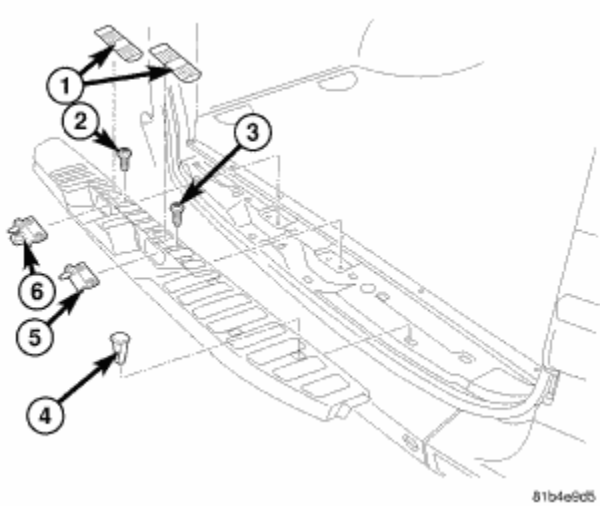
REMOVAL

Front



1. Remove the bolts (2) from the cover strip (1).
2. Using a trim stick C-4755 or equivalent, pry out plug (7).
3. Remove the bolts (3, 6) from door sill trim (5).
4. Loosen bolt (8) on B-pillar paneling.
5. Remove the door sill trim (5).

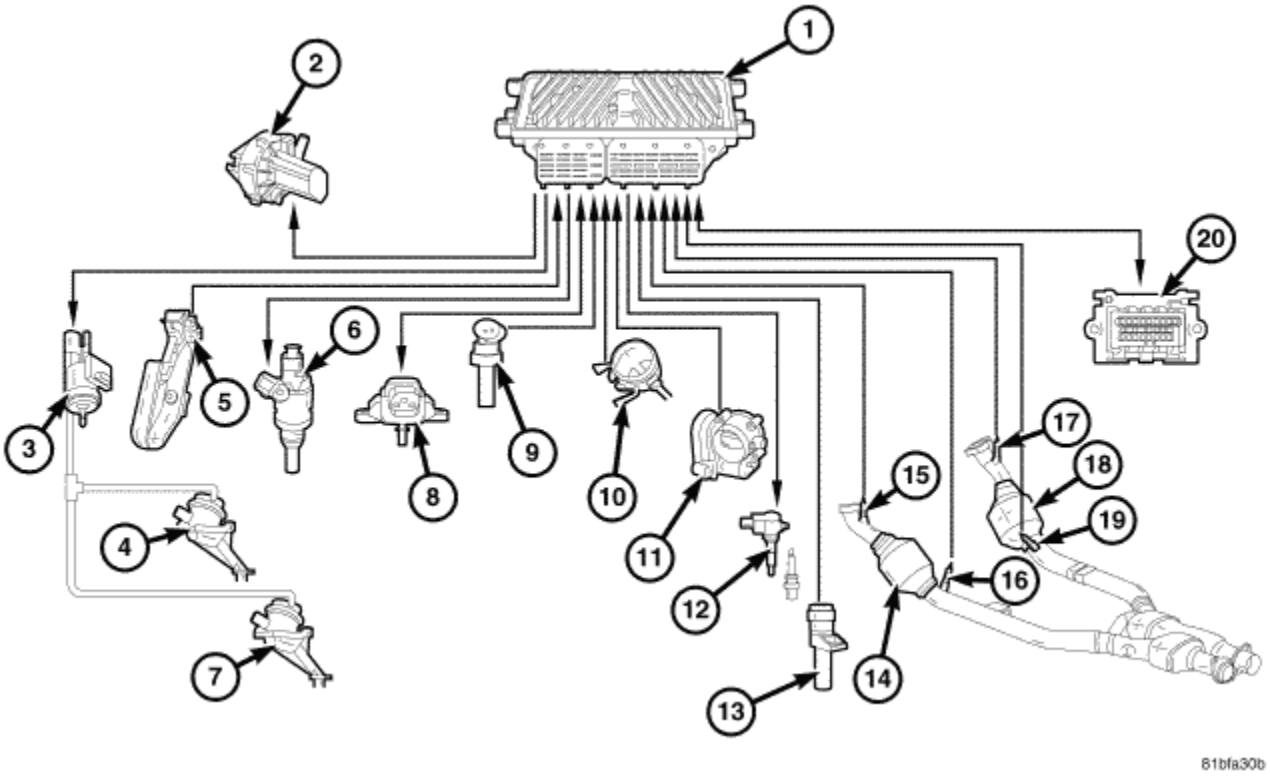
Rear



1. Remove the lower D-pillar trim, (Refer to 23 - BODY/INTERIOR/D-PILLAR TRIM - REMOVAL) .

2. Using a trim stick C-4755 or equivalent, pry out wedges (4).
3. Remove the covers (1).
4. Remove the bolts (2, 3) and remove the guide pin (5) and striker (6).
5. Remove the sill trim.

DESCRIPTION - MONITORED COMPONENTS



There are several components that will affect exhaust emissions if they malfunction. If the PCM (1) detects that one of these components has malfunctioned, the Malfunction Indicator Lamp (MIL) will illuminate. While the engine is running, the PCM (1) Monitors the following components for normal operation:

- Air Injection Motor (2)
- Air Switchover Valve (3)
- Left Air Shutoff Valve (4)
- Accelerator Pedal Position Sensor (5)
- Fuel Injectors (6)
- Right Air Shutoff Valve (7)
- Manifold Absolute Pressure (MAP) Sensor (8)

- Mass Airflow (MAF) Sensor (10)
- Throttle Valve Actuator/Throttle Position Sensor (TPS) (11)
- Ignition Coils (12)
- Crankshaft Position Sensor (13)
- Left Catalytic Converter (14)
- Left Upstream Oxygen (02) Sensor (15)
- Left Downstream 02 Sensor (16)
- Right Upstream 02 Sensor (17)
- Right Catalytic Converter (18)
- Right Downstream 02 Sensor (19)

Some of the component monitors are checking for proper operation of the part. Electrically operated components now have input (rationality) and output (functionality) checks as well as continuity tests (opens/shorts). The PCM monitors components to ensure they are working within specification. This is done by watching for a Electronic Throttle Control/TPS indication of a greater or lesser throttle opening than Manifold Absolute Pressure (MAP) and engine rpm indicate.

Refer to the appropriate Powertrain Diagnostic Procedure Manual for diagnostic procedures.

The following is a list of the monitored components:

- Catalyst Monitor
- Comprehensive Components
- Air Injection System/Catalyst startup heating
- Fuel Control (rich/lean)
- Oxygen Sensor Monitor
- Oxygen Sensor Heater Monitor
- Purge
- Misfire

COMPREHENSIVE COMPONENTS

Along with the major monitors, OBD II requires that the vehicle's on-board diagnostic system monitor any component that could affect emissions levels.

OBD II also requires that inputs from powertrain components to the PCM be tested for **rationality** and that outputs to powertrain components from the PCM be tested for **functionality** . Methods for monitoring the various Comprehensive Component monitoring include:

- Circuit Continuity
- Open
- Shorted to Voltage

- Shorted to Ground
- Rationality and Functionality
- Outputs Tested for functionality

NOTE: Comprehensive component monitors are continuous. Therefore, enabling conditions do not apply. All will set a DTC and illuminate the MIL in 1 trip.

Input Rationality - While input signals to the PCM are constantly being monitored for electrical opens and shorts, they are also tested for rationality. This means that the input signal is compared against other inputs and information to see if it makes sense under the current conditions.

PCM sensor and CAN Bus inputs that are checked for rationality include:

- Manifold Absolute Pressure (MAP) Sensor
- Oxygen Sensor (O2S) (slow response)
- Engine Coolant Temperature (ECT) Sensor
- Camshaft Position (CMP) Sensor
- Vehicle Speed
- Crankshaft Position (CKP) Sensor
- Mass Air Flow (MAF)/Intake Air Temperature (IAT) Sensor
- Accelerator Pedal Position Sensor (APPS)
- Electronic Throttle Control/Throttle Position Sensor (TPS)
- Knock Sensors
- Oxygen Sensor Heater
- PCM
- P/N Switch
- Transmission Control Module

Output Functionality - PCM outputs are tested for functionality in addition to testing for opens and shorts. When the PCM provides a voltage to an output component, it can verify that the command was carried out by monitoring specific input signals for expected changes. For example, when the PCM commands the Electronic Throttle Control (ETC) Motor to a specific position under certain operating conditions, it expects to see a specific (target) idle speed (rpm). If it does not, it stores a DTC.

PCM outputs monitored for functionality include:

- Fuel Injectors
- Air Pump Switchover Solenoid
- Manifold Flow Valve Solenoid
- Manifold Swirl Valve Solenoid
- Ignition Coils
- Throttle Body (Electronic Throttle Control/Throttle Position Sensor)
- Purge Solenoid
- Transmission Controls

OXYGEN SENSOR (O2S) MONITOR

DESCRIPTION - Effective control of exhaust emissions is achieved by an oxygen sensor feedback system. The most important element of the feedback system are the oxygen (O2) sensors. The O2 sensors are located in the exhaust path. Once they reach operating temperature 300° to 350°C (572° to 662°F), the sensors generate a voltage that is inversely proportional to the amount of oxygen in the exhaust. When there is a large amount of oxygen in the exhaust caused by a lean condition, misfire or exhaust leak, the sensors produce a low voltage, below 450mV. When the oxygen content is lower, caused by a rich condition, the sensors produce a higher voltage, above 450mV.

The exhaust oxygen levels detected by the sensors is used to calculate the fuel injector pulse width. The PCM is programmed to maintain the optimum air/fuel ratio. At this mixture ratio, the catalyst is most effective at oxidizing (burning off) hydrocarbons (HC), carbon monoxide (CO) and nitrous oxide (NOx) gasses from the exhaust.

The O2 sensors are also the main sensors that the PCM uses to monitor the EVAP Purge System, and Catalyst and Fuel Monitors.

The O2S may fail in any or all of the following manners:

- Slow response rate
- Reduced output voltage
- Heater Performance
- Shorted or open circuits

Slow Response Rate - Response rate is the time required for the sensor to switch from lean to rich signal output once it is exposed to a richer than optimum air/fuel mixture or vice versa. The PCM checks the oxygen sensor voltage in increments of a few milliseconds. As the PCM adjusts the air/fuel ratio, the sensor must be able to rapidly detect the change. As the sensor ages, it could take longer to detect the changes in the oxygen content of the exhaust gas.

Reduced Output Voltage - The output voltage of the O2S ranges from 0 to 1 volt. A good sensor can easily generate any output voltage in this range as it is exposed to different concentrations of oxygen. To detect a shift in the air/fuel mixture (lean or rich), the output voltage has to change beyond a threshold value. A malfunctioning sensor could have difficulty changing beyond the threshold value. Many times, the condition is only temporary and the sensor will recover.

OPERATION - As the Oxygen Sensor signal switches, the PCM monitors the half cycle and big slope signals from the oxygen sensor. If during the test neither counter reaches a predetermined value, a malfunction is entered and a Freeze Frame is stored. Only one counter reaching its predetermined value is needed for the monitor to pass.

The Oxygen Sensor Signal Monitor is a 2 trip monitor that is tested only once per trip. When the Oxygen Sensor fails the test in two consecutive trips, the MIL is illuminated and a DTC is set. The MIL is extinguished when the Oxygen Sensor monitor passes in three consecutive trips. The DTC is erased from memory after 40 consecutive warm-up cycles without test failure.

OXYGEN SENSOR HEATER MONITOR

DESCRIPTION - If the Oxygen Sensor (O2S) DTC as well as a O2S heater DTC is present, the O2S Heater DTC MUST be repaired first. After the O2S Heater is repaired, verify that the sensor circuit is operating correctly.

Note: The O2S Heaters are kept off at coolant temperatures below 20°C (68°F) and at high engine rpm in order to avoid damaging the heaters. The voltage reading taken from the O2S are very temperature sensitive. The readings taken from the O2S are not accurate below 300°C (572°F). Heating the O2S is done to allow the engine controller to shift to closed loop control as soon as possible. The heating element used to heat the O2S must be tested to ensure that it is heating the sensor properly. The heater resistance is checked by the PCM almost immediately after the engine is started. The same O2S heater return pin used to read the heater resistance is capable of detecting an open, shorted high or shorted low circuit.

OPERATION - The Oxygen Sensor Heater Monitor begins after the ignition has been turned OFF and the O2 sensors have cooled. As the sensor cools down, the resistance increases and the PCM reads the increase in voltage. Once voltage has increased to a predetermined amount, higher than when the test started, the oxygen sensor is cool enough to test heater operation.

When the oxygen sensor is cool enough, the PCM provides a ground path for the O2S heater circuit. Voltage to the O2 sensor begins to increase the temperature. As the sensor temperature increases, the internal resistance decreases.

The heater elements are tested each time the engine is turned OFF if all the enabling conditions are met. If the monitor fails, the PCM stores a maturing fault and a Freeze Frame is entered. If two consecutive tests fail, a DTC is stored. Because the ignition is OFF, the MIL is illuminated at the beginning of the next key cycle, after the 2nd failure.

CATALYST MONITOR

DESCRIPTION - To comply with clean air regulations, vehicles are equipped with catalytic converters. These converters reduce the emission of hydrocarbons, oxides of nitrogen and carbon monoxide.

Normal vehicle miles or engine misfire can cause a catalyst to decay. A meltdown of the ceramic core can cause a restriction of the exhaust. This can increase vehicle emissions and deteriorate engine performance, driveability and fuel economy.

The catalyst monitor uses four oxygen sensors (O2 sensors) to monitor the efficiency of the catalytic converters. The four O2 sensor strategy is based on the fact that as catalyst elements deteriorate, their oxygen storage capacity and their oxidizing (burning) efficiency are both reduced. By monitoring the oxygen storage capacity of a catalyst, its efficiency can be indirectly calculated. The upstream O2 sensors are used to detect the amount of oxygen in the exhaust gas before the gas enters the catalytic converters. The PCM calculates the air/fuel mixture from the output of the O2 sensors. A low voltage indicates high oxygen content (lean mixture). A high voltage indicates a low content of oxygen (rich mixture).

When the upstream O2 sensors detect a high oxygen condition, there is an abundance of oxygen in the exhaust gas. An efficiently functioning catalytic converter would store this oxygen so it can be used for the oxidation of HC and CO gasses in the exhaust. As the converters absorb the oxygen, there will be a lack of oxygen downstream of the converters. The output of the downstream O2S will indicate limited activity in this condition.

As the converters lose the ability to store oxygen, and become less efficient, the condition can be detected from the behavior of the downstream O2 sensors. When the efficiency drops, no chemical reaction takes place. This means the concentration of oxygen will be the same downstream as upstream. The output voltage of the downstream O2 sensors will be virtually the same as the voltage of the upstream sensors. The only difference is a time lag (seen by the PCM) between the switching of the O2 sensors.

To monitor the system, the number of lean-to-rich switches of upstream and downstream O2 sensors are counted. The ratio of downstream switches to upstream switches is used to determine whether the catalyst is operating properly. An effective catalyst will have fewer downstream switches than it has upstream switches i.e., a ratio closer to zero. For a totally ineffective catalyst, this ratio will be one-to-one, indicating that no oxidation is occurring in the catalytic converter.

The system must be monitored so that when catalyst efficiency deteriorates and exhaust emissions increase to over the legal limit, the MIL will be illuminated.

OPERATION - To monitor catalyst efficiency, the PCM expands the rich and lean switch points of the heated oxygen sensor. With extended switch points, the air/fuel mixture runs richer and leaner to overburden the catalytic converter. Once the test is started, the air/fuel mixture runs rich and lean and the O2S switches are counted. A switch is counted when an oxygen sensor signal goes from below the lean threshold to above the rich threshold. The number of Rear O2S switches is divided by the number of Front O2S switches to determine the switching ratio.

The test runs for 20 seconds. As catalyst efficiency deteriorates over the life of the vehicle, the switch rate at the downstream sensor approaches that of the upstream sensor. If at any point during the test period the switch ratio reaches a predetermined value, a counter is incremented by one. The monitor is enabled to run another test during that trip.

When the test fails three times, the counter increments to three, a malfunction is entered, and a Freeze Frame record of the engine operating conditions is stored in the PCM's memory. When the counter increments to three during the next trip, the code is matured and the MIL is illuminated. If the test passes the first, no further testing is conducted during that trip.

The MIL is turned off after three consecutive good trips.

DESCRIPTION - NON-MONITORED CIRCUITS

The PCM does not monitor all circuits, systems and conditions that could have malfunctions causing driveability problems. However, malfunctions in these systems may cause the PCM to store diagnostic trouble codes for other systems or components. For example, a fuel pressure problem will not register a fault directly but could cause a rich/lean condition or misfire. This could cause the PCM to store an oxygen sensor or misfire diagnostic trouble code.

The major non-monitored circuits are listed below along with examples of failure modes that do not directly cause the PCM to set a DTC, but instead for a system that is monitored.

FUEL PRESSURE

The fuel pressure regulator controls fuel system pressure. The PCM cannot detect a clogged fuel pump inlet filter, clogged in-line fuel filter, or a pinched fuel supply or return line. However, these could result in a rich or lean condition causing the PCM to store an oxygen sensor, fuel system, or misfire diagnostic trouble code.

SECONDARY IGNITION CIRCUIT

The PCM cannot detect an inoperative ignition coil, fouled or worn spark plugs, ignition cross firing, or open spark plug cables. The misfire will, however, increase the oxygen content in the exhaust, causing the PCM to store an oxygen sensor, fuel system, or misfire diagnostic trouble code. Also see misfire detection.

CYLINDER COMPRESSION

The PCM cannot detect uneven, low, or high engine cylinder compression. Low compression lowers oxygen (O2) content in the exhaust, leading to a fuel system, oxygen sensor or misfire detection fault.

EXHAUST SYSTEM

The PCM cannot detect a plugged, restricted or leaking exhaust system. It may set an Air Injection System, Fuel system or O2 sensor fault.

FUEL INJECTOR MECHANICAL MALFUNCTIONS

The PCM cannot determine if a fuel injector is clogged, the needle is sticking or if the wrong injector is installed. However, these could result in a rich or lean condition causing the PCM to store a diagnostic trouble code for either misfire, an oxygen sensor or the fuel system.

EXCESSIVE OIL CONSUMPTION

Although the PCM monitors engine exhaust oxygen content when the system is in closed loop, it cannot determine excessive oil consumption.

THROTTLE BODY AIR FLOW

The PCM cannot detect a clogged or restricted air cleaner inlet or filter element.

VACUUM ASSIST

The PCM cannot detect leaks or restrictions in the vacuum circuits of vacuum assisted engine control system devices or vacuum assisted accessories. However, these could cause the PCM to store a MAP sensor diagnostic trouble code and cause a high idle condition.

PCM SYSTEM GROUND

The PCM cannot determine a poor system ground. However, one or more diagnostic trouble codes may be generated as a result of this condition.

PCM CONNECTOR ENGAGEMENT

The PCM may not be able to determine spread or damaged connector pins. However, it might store diagnostic trouble codes as a result of pins not making good contact.

OPERATION - EMISSION CONTROLS

The Powertrain Control Module (PCM) monitors many different circuits in the fuel injection, ignition, emission and engine systems. If the PCM senses a problem with a monitored circuit often enough to indicate an actual problem, it stores a Diagnostic Trouble Code (DTC) in the PCM's memory. If the code applies to a non-emissions related component or system and the problem is repaired or ceases to exist, the PCM cancels the code after 40 warmup cycles. Diagnostic trouble codes that affect vehicle emissions illuminate the Malfunction Indicator Lamp (MIL).

Certain criteria must be met before the PCM stores a DTC in memory. The criteria may be a specific range of engine RPM, engine temperature, and/or input voltage to the PCM.

The PCM might not store a DTC for a monitored circuit even though a malfunction has occurred. This may happen because one of the DTC criteria for the circuit has not been met. **For example** , assume the diagnostic trouble code criteria requires the PCM to monitor the circuit only when the engine operates between 750 and 2000 rpm. Suppose the sensor's output circuit shorts to ground when the engine operates above 2400 rpm (resulting in 0 volt input to the PCM). Because the condition happens at an engine speed above the maximum threshold (2000 rpm), the PCM will not store a DTC.

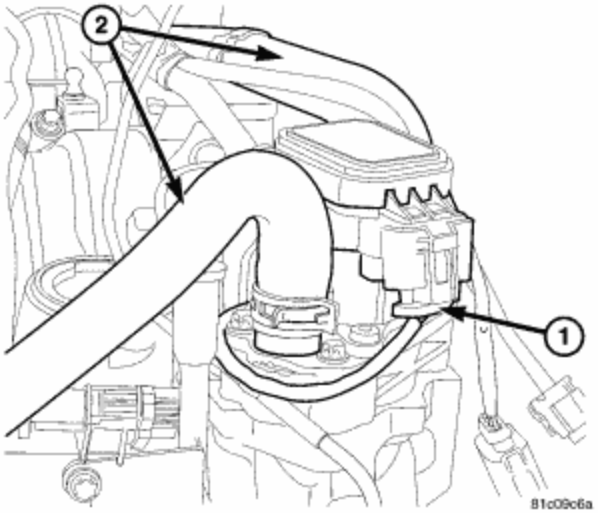
There are several operating conditions for which the PCM monitors and sets DTCs. Refer to Monitored Systems, Monitored Components, and Non-Monitored Circuits in this section.

NOTE: Various diagnostic procedures may actually cause a diagnostic monitor to set a DTC. For instance, pulling a spark plug wire to perform a spark test may set the misfire code. When a repair is completed and verified, use the Scan Tool to erase all DTCs and turn the MIL off.

OBD II compatible scan tools can retrieve stored DTCs. For obtaining the DTC information, connect a scan tool to the Data Link Connector (DLC).

REMOVAL - 3.0L DIESEL

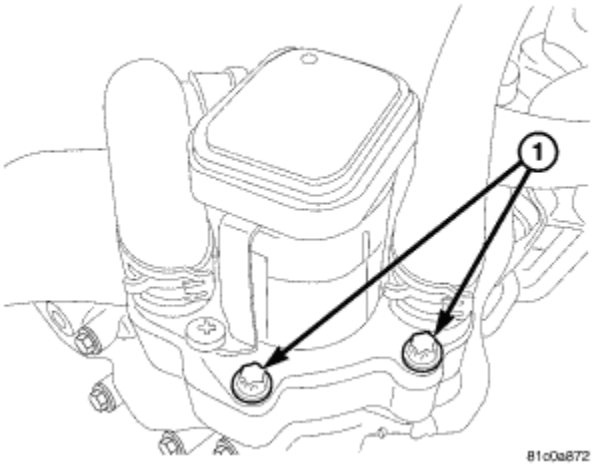
1. Disconnect the negative battery cable.
2. Remove engine cover.



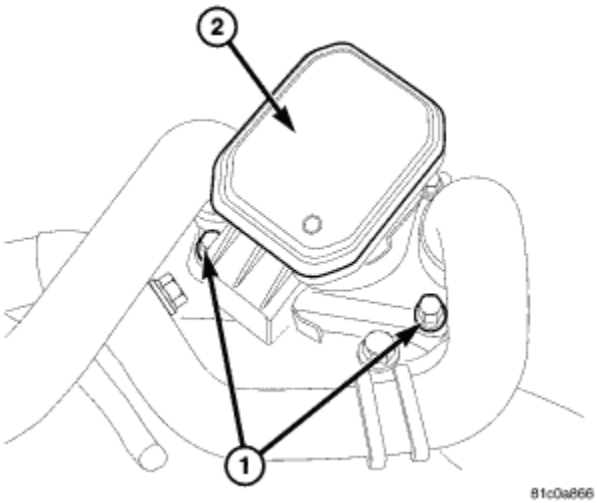
3. Disconnect the EGR valve harness connector (1).

WARNING: Do not remove the coolant hoses or open the cooling system when it is hot and under pressure. Serious burns from coolant can occur.

4. Disconnect the coolant hoses (2) from the EGR valve.



5. Remove the rear EGR valve retaining bolts (1).



6. Remove the front EGR valve retaining bolts (1) and valve (2), discard the gasket.