

2014 ELECTRICAL

Power Distribution - Compass & Patriot

DESCRIPTION

DESCRIPTION

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

- Totally Integrated Power Module (TIPM)
- Fuse Block

For specific fuse location and types, refer to **FUSE - RELAY LOCATIONS AND TYPES, SPECIFICATIONS** .

OPERATION

OPERATION

The power distribution system for this vehicle is designed to provide safe, reliable, centralized, and convenient to access, distribution of the electrical current required to operate all of the many standard and optional factory-installed electrical and electronic powertrain, chassis, safety, comfort and convenience systems. At the same time, these systems were designed to provide centralized locations for conducting diagnosis of faulty circuits, and for sourcing the additional current requirements of many aftermarket vehicle accessory and convenience items.

These power distribution systems also incorporate various types of circuit control and protection features, including fuses and relays.

BLOCK, FUSE

DESCRIPTION

DESCRIPTION

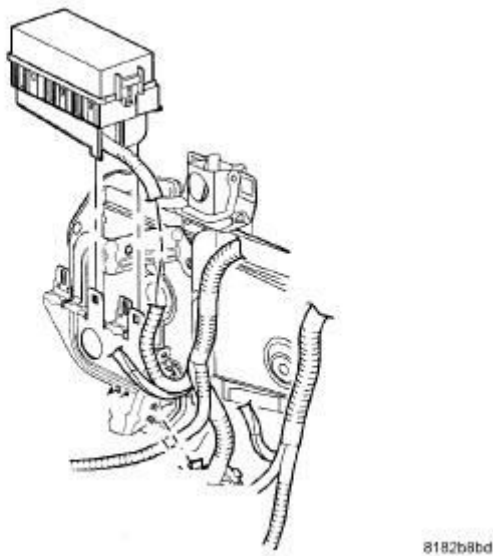


Fig. 1: Locating Fuse Block
Courtesy of CHRYSLER GROUP, LLC

An electrical Fuse Block is located in the left front bumper fascia. It serves to simplify and centralize numerous electrical components, as well as to distribute electrical current to many of the accessory systems in the vehicle.

There are two clips that retain the fuse block cover to the fuse block. The cover can be removed to service the fuses and relays by depressing the clips and lifting off the cover. If fuse block wire terminal or insulator service is required the complete fuse block assembly must be removed. Refer to **BLOCK, FUSE, REMOVAL**.

OPERATION

OPERATION

The fuse block houses relays and blade-type fuses. The fuses, relays and fuse block unit are available for service replacement. Refer to **SYSTEM WIRING DIAGRAMS** for complete circuit diagrams.

REMOVAL

REMOVAL

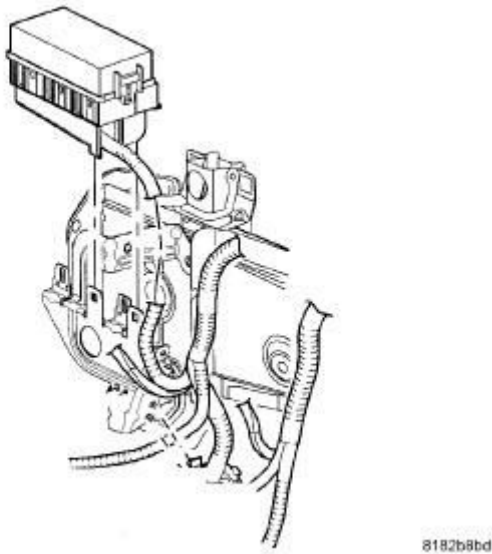


Fig. 2: Locating Fuse Block
Courtesy of CHRYSLER GROUP, LLC

WARNING: ON VEHICLES EQUIPPED WITH AIRBAGS, REFER TO RESTRAINTS - SERVICE INFORMATION BEFORE ATTEMPTING ANY STEERING COLUMN OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIRBAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

1. Disconnect and isolate the battery negative cable.
2. Remove the front bumper fascia. Refer to **FASCIA, FRONT, INSTALLATION** .
3. Depress mounting clips and lift the fuse block off the bracket.
4. Remove the wire harness and fuse block.

INSTALLATION

INSTALLATION

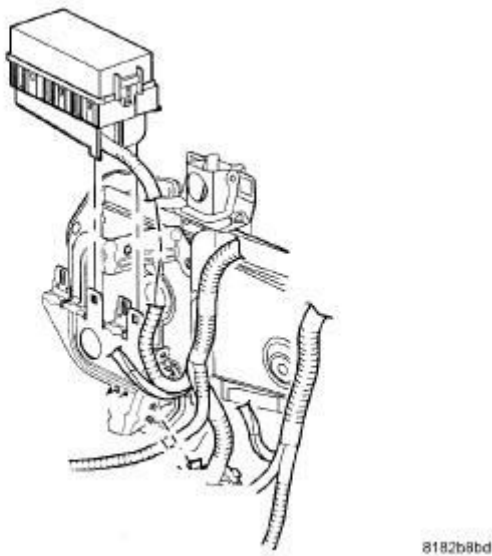


Fig. 3: Locating Fuse Block
Courtesy of CHRYSLER GROUP, LLC

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1. Install the new wire harness and fuse block into the vehicle.
2. Position the fuse block onto the mounting bracket and push down until the mounting clips are fully seated.
3. Install the front bumper fascia. Refer to **FASCIA, FRONT, REMOVAL** .
4. Connect the battery negative cable.

FUSE, IOD

DESCRIPTION

DESCRIPTION

All vehicles are equipped with an Ignition-Off Draw (IOD) fuse that is disconnected within the Totally Integrated Power Module (TIPM) when the vehicle is shipped from the factory. Dealer personnel are to reconnect the IOD

fuse in the TIPM as part of the preparation procedures performed just prior to new vehicle delivery.

OPERATION

OPERATION

The term ignition-off draw identifies a normal condition where power is being drained from the battery with the ignition switch in the Off position. The IOD fuse feeds the memory and sleep mode functions for some of the electronic modules in the vehicle as well as various other accessories that require battery current when the ignition switch is in the Off position, including the clock. The only reason the IOD fuse is disconnected is to reduce the normal IOD of the vehicle electrical system during new vehicle transportation and pre-delivery storage to reduce battery depletion, while still allowing vehicle operation so that the vehicle can be loaded, unloaded and moved as needed by both vehicle transportation company and dealer personnel.

The IOD fuse is disconnected from Totally Integrated Power Module (TIPM) fuse cavities 7 and 8 in a preset fuse holder. when the vehicle is shipped from the assembly plant. Dealer personnel must reconnect the IOD fuse when the vehicle is being prepared for delivery in order to restore full electrical system operation. Once the vehicle is prepared for delivery, the IOD function of this fuse becomes transparent and the fuse that has been assigned the IOD designation becomes only another Fused B(+) circuit fuse. The IOD fuse serves no useful purpose to the dealer technician in the service or diagnosis of any vehicle system or condition, other than the same purpose as that of any other standard circuit protection device.

The IOD fuse can be used by the vehicle owner as a convenient means of reducing battery depletion when a vehicle is to be stored for periods not to exceed about thirty days. However, it must be remembered that disconnecting the IOD fuse will not eliminate IOD, but only reduce this normal condition. If a vehicle will be stored for more than about thirty days, the battery negative cable should be disconnected to eliminate normal IOD; and, the battery should be tested and recharged at regular intervals during the vehicle storage period to prevent the battery from becoming discharged or damaged.

REMOVAL

REMOVAL

NOTE: When removing or installing the IOD fuse, it is important that the ignition switch be in the Off position. Failure to place the ignition switch in the Off position can cause the radio display to become scrambled when the IOD fuse is installed. Removing and installing the IOD fuse again with the ignition switch in the Off position will usually correct the scrambled radio display condition.

1. Turn the ignition switch to the Off position.
2. Remove the cover from the Totally Integrated Power Module (TIPM).
3. Remove fuse 7/8 from the TIPM.

INSTALLATION

INSTALLATION

CAUTION: It is extremely important that the Ignition Off Draw (IOD) fuses are fully seated into the Totally Integrated Power Module (TIPM) fuse cavities. Failure to install the fuses correctly could result in erratic electrical systems behavior.

1. Remove TIPM cover.
2. Insert fuse 7/8 into the TIPM. Push fuses down until they are fully seated in the TIPM cavities.
3. Install the cover to the TIPM.

MODULE, POWER INVERTER

DESCRIPTION

DESCRIPTION

The inverter module is located in the instrument panel. The A/C outlet is mounted in the center console. The inverter module provides A/C power for user accessories. The inverter converts the 12 Volt DC from the battery system to a 110 Volt AC output.

OPERATION

OPERATION

The AC power outlet receives 12 volts from the Totally Integrated Power Module (TIPM) and passes it as an enable signal to the inverter module. The inverter module also receives 12 volts via the TIPM and inverts this to a 110 volt AC output. The enable signal received from the power outlet enables the inverter to convert the received voltage and pass it to the power outlet to power external devices.

DIAGNOSIS AND TESTING

DIAGNOSIS AND TESTING - INVERTER MODULE

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 negative battery (ground) cable. 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 follow these instructions may result in accidental airbag deployment and possible serious or fatal injury.

110 VOLT POWER OUTLET DIAGNOSIS

| CONDITION | POSSIBLE CAUSES | CORRECTION |
|---------------------------------------|---------------------------------------|--|
| NO POWER AT THE 110 VOLT POWER OUTLET | 1. Fuse inoperative. | 1. Check Totally Integrated Power Module (TIPM) fuse number 37. Replace fuse, if required. |
| | 2. Power outlet connector damaged. | 2. Check for loose or corroded power outlet connector. Repair, if required. |
| | 3. Inverter module connector damaged. | 3. Check for loose or corroded inverter module connector. Repair, if required. |
| | 4. Wiring damaged. | 4. Check for shorted or open |

| | | |
|--|------------------------------------|--|
| | | wires. Repair wiring, if required. |
| | 5. Inverter module ground damaged. | 5. Check for continuity between the inverter module and a known good ground. There should be continuity. Repair ground, if required. |
| | 6. Power outlet inoperative. | 6. Replace the power outlet. |
| | 7. Inverter module inoperative. | 7. Replace the inverter module. |

REMOVAL**REMOVAL**

WARNING: Disable the airbag system before attempting any steering wheel, steering column or instrument panel component diagnosis or service. Disconnect and isolate the negative battery (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 follow these instructions may result in accidental airbag deployment and possible serious or fatal injury.

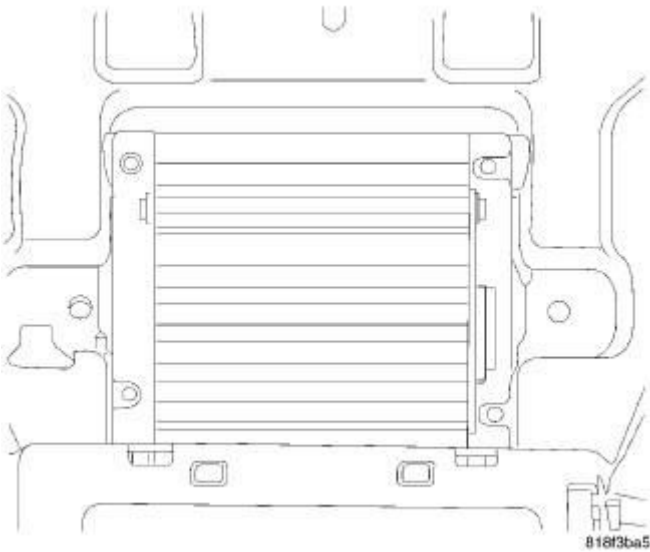


Fig. 4: Locating Inverter Module
Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative battery cable.
2. Remove the shift bezel. Refer to **BEZEL, SHIFTER, REMOVAL** .
3. Remove the center bezel from the instrument panel. Refer to **BEZEL, INSTRUMENT PANEL, CENTER, REMOVAL** .
4. Remove the fasteners from the mounting brackets of the inverter module.
5. Disconnect the electrical connectors and remove the inverter module.

INSTALLATION

INSTALLATION

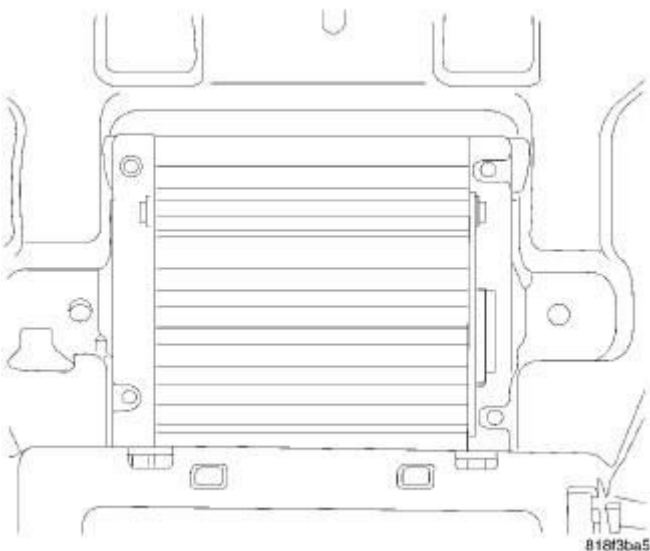


Fig. 5: Locating Inverter Module
Courtesy of CHRYSLER GROUP, LLC

1. Connect the electrical connectors to the inverter module.
2. Install the fasteners to the mounting brackets.
3. Install the center bezel to the instrument panel. Refer to **BEZEL, INSTRUMENT PANEL, CENTER, INSTALLATION** .
4. Install the shift bezel. Refer to **BEZEL, SHIFTER, INSTALLATION** .
5. Connect the battery negative cable.

MODULE, TOTALLY INTEGRATED POWER (TIPM)

DESCRIPTION

DESCRIPTION

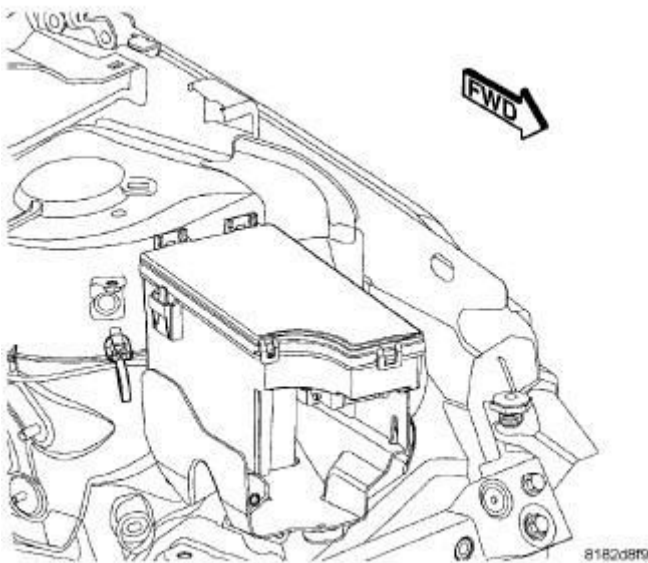


Fig. 6: Locating Power Distribution Center
Courtesy of CHRYSLER GROUP, LLC

All of the electrical current distributed throughout this vehicle is directed through the standard equipment Totally Integrated Power Module (TIPM). The molded plastic TIPM housing is located in the left front corner of the engine compartment, just behind the air cleaner housing and the battery. The TIPM housing has a molded plastic cover. The TIPM cover is easily removed for service access and has a convenient fuse layout label affixed to the inside surface of the cover to ensure proper component identification.

The TIPM housing is secured to the TIPM mounting bracket by three clips integral to the TIPM housing. All of the TIPM outputs are through the integral engine compartment wire harness.

OPERATION

OPERATION

All of the current to the Totally Integrated Power Module (TIPM) comes directly from the positive battery cable to a stud located on the bottom of the TIPM. The cable is secured to the TIPM stud with a nut. Internal connection of all the Totally Integrated Power Module (TIPM) circuits is accomplished by an intricate network of hard wiring and bus bars. Refer to **SYSTEM WIRING DIAGRAMS** for complete circuit diagrams.

The fuses and TIPM housing assembly are available for service replacement.

STANDARD PROCEDURE

STANDARD PROCEDURE - PROGRAMMING

1. Install a battery charger.
2. Verify that the charging rate provides approximately 13.5 volts.

NOTE: Do not allow the charger to time out during the reconfiguration process. Set the battery charger timer (if so equipped) to continuous charge.

3. Connect the CH9410 StarSCAN ethernet cable to the StarSCAN and the dealer's network drop.
4. Connect the CH9404 StarSCAN vehicle cable to the StarSCAN and the vehicle.
5. Place the Ignition in the "RUN" position, then Power "ON" the StarSCAN.
6. Select "ECU View".
7. Select "TIPMCGW" or "FCMCGW".
8. Select "MISC".
9. Select "Restore Vehicle Configuration".
10. Follow prompts on StarSCAN to complete the reconfigure procedure.
11. Once complete, Wait one minute and turn the ignition key to the "OFF"

position.

12. Remove the StarSCAN unit, cable and charger from the vehicle.
13. Verify proper operation.

REMOVAL

REMOVAL

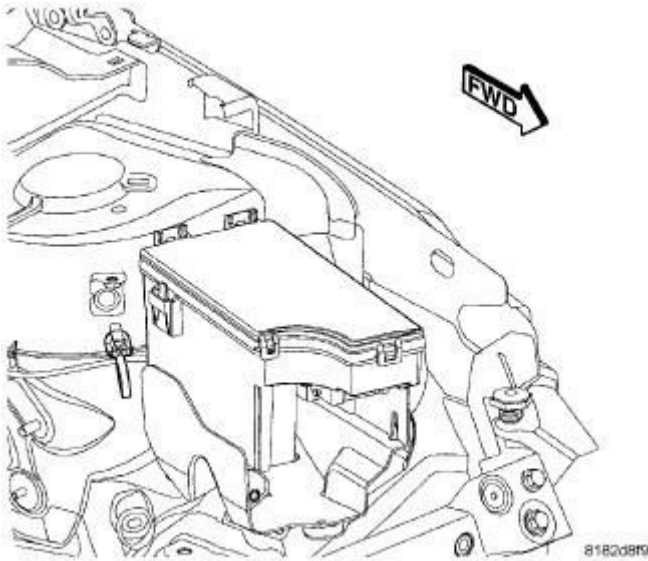


Fig. 7: Locating Power Distribution Center
Courtesy of CHRYSLER GROUP, LLC

1. Open hood.
2. Disconnect and isolate the battery negative cable.
3. Disconnect each of the Totally Integrated Power Module (TIPM) wire harness connectors.
4. Remove the TIPM positive cable retaining nut and remove the cable from the stud.
5. Depress the three mounting clips to disengage and remove the TIPM housing from its mounting bracket.
6. Remove the TIPM from the vehicle.

INSTALLATION

INSTALLATION

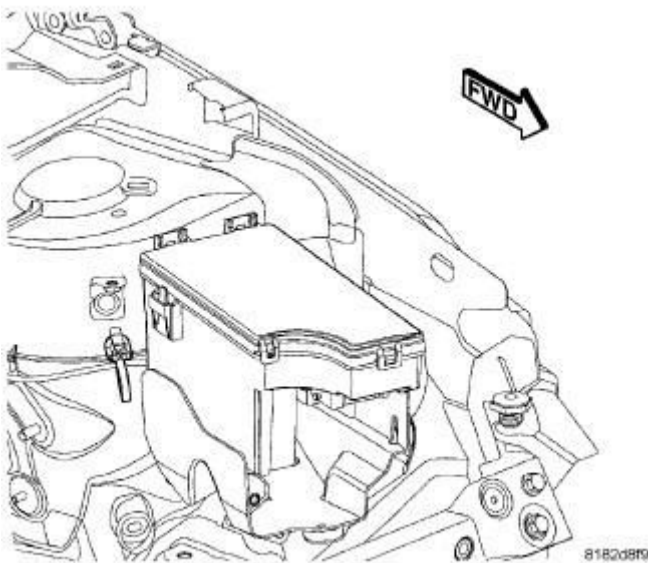


Fig. 8: Locating Power Distribution Center
Courtesy of CHRYSLER GROUP, LLC

CAUTION: The original Cabin Compartment Node (CCN) and Powertrain Control Module (PCM) must be installed and functioning properly prior to powering up the new Totally Integrated Power Module (TIPM). The TIPM receives vehicle configuration data from the CCN and Vehicle Identification Number (VIN) information from the PCM. If configuration information becomes lost or corrupted, the data can be obtained from DealerCONNECT

1. Position the TIPM onto the mounting bracket and push down until the mounting clips are fully seated.
2. Position the TIPM positive cable onto the mounting stud and install the retaining nut. Torque nut 9 - 11 N.m (80 - 100 in. lbs.).
3. Connect each of the TIPM wire harness connectors.
4. Remove TIPM cover and fully seat the Airbag fuse holder (two fuses in one yellow carrier). Fully seat the Ignition Off Draw (IOD) fuses (two fuses in a white/natural carrier).
5. Connect the battery negative cable.
6. Close hood.
7. Insert the ignition key and turn it to the "RUN" position and wait twelve

seconds. The TIPM will collect the necessary vehicle configuration and VIN data from the CCN and PCM at this time. After twelve seconds turn the ignition key to the "OFF" position and then back to the "ON" position and verify proper vehicle systems operation.

OUTLET, POWER

DESCRIPTION

DESCRIPTION

INSTRUMENT PANEL MOUNTED

An instrument panel mounted cigar lighter/power outlet receptacle is optional equipment on this model. On models equipped with the optional Smoker's Package, the cigar lighter knob and heating element are included. On models without the Smoker's Package, the cigar lighter receptacle is equipped with a snap fit plastic cap and is treated as an auxiliary power outlet. The cigar lighter receptacle is installed in the instrument panel accessory switch bezel, which is located near the bottom of the instrument panel center stack area, below the radio. The cigar lighter base is secured by a snap fit within the center lower bezel. This power outlet has a constant 12 volt battery feed.

The cigar lighter receptacle is serviced with the accessory switch bezel and if defective, the entire switch bezel must be replaced. The plastic cap and the knob and heating element unit are available for service replacement. These components cannot be repaired and, if faulty or damaged, they must be replaced.

FRONT CONSOLE AND REAR CARGO MOUNTED

A front console mounted power outlet is standard equipment and a rear cargo area power outlet is optional equipment on this model. The front console mounted power outlet is mounted near the front of the console just in front of the cup holders. This outlet can be used as a cigar lighter or power outlet, but only has 12 volt battery voltage when the ignition is in the ON or ACC positions. The rear power outlet is installed in the right rear quarter trim panel, near the spare tire jack. The power outlet base and mount are secured by a snap fit within the quarter trim panel. A plastic protective cap snaps into the power outlet base when the power outlet is not being used, and hangs from the power outlet base mount by an integral bail strap while the power outlet is in use. 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. It has 12 volt battery voltage when the ignition is in the ON or ACC positions.

OPERATION

OPERATION

CIGAR LIGHTER/POWER OUTLET

The cigar lighter consists of two major components: a knob and heating element unit, and the cigar lighter base or receptacle shell. The receptacle shell is connected to ground, and an insulated contact in the bottom of the shell is connected to battery current.

The cigar lighter knob and heating element are encased within a spring-loaded housing, which also features a sliding protective heat shield. When the knob and heating element are inserted in the receptacle shell, the heating element resistor coil is grounded through its housing to the receptacle shell. If the cigar lighter knob is pushed inward, the heat shield slides up toward the knob exposing the heating element, and the heating element extends from the housing toward the insulated contact in the bottom of the receptacle shell.

Two small spring-clip retainers are located on either side of the insulated contact inside the bottom of the receptacle shell. These clips engage and hold the heating element against the insulated contact long enough for the resistor coil to heat up. When the heating element is engaged with the contact, battery current can flow through the resistor coil to ground, causing the resistor coil to heat.

When the resistor coil becomes sufficiently heated, excess heat radiates from the heating element causing the spring-clips to expand. Once the spring-clips expand far enough to release the heating element, the spring-loaded housing forces the knob and heating element to pop back outward to their relaxed position. When the cigar lighter knob and element are pulled out of the receptacle shell, the protective heat shield slides downward on the housing so that the heating element is recessed and shielded around its circumference for safety.

POWER OUTLET

The power outlet base or receptacle shell is connected to ground, and an insulated contact in the bottom of the shell is connected to battery current. The power outlet receives battery voltage from a fuse in the Totally Integrated Power

Module (TIPM) through a fuse in the fuse block when the ignition is in the ON or ACC positions.

REMOVAL

REMOVAL

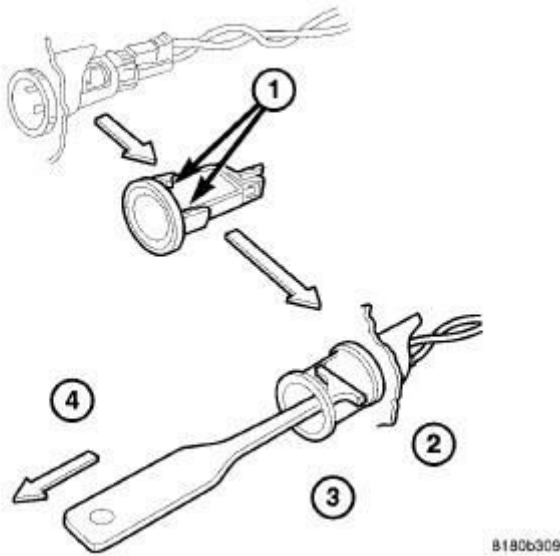


Fig. 9: Removing Cigar Lighter/Power Outlet
Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the battery negative cable.
2. Look inside and note position of the retaining bosses (1).
3. Using special tool (special tool #9857, Remover, Power Outlet) Power Outlet Remover. Insert the tool forcing the bosses out of base.
4. Pull out the base through mounting ring by gently rocking the tool (3).
5. Disconnect the base wires.
6. Set base aside and remove base mount ring.

INSTALLATION

INSTALLATION

1. Position mount ring to the instrument panel and feed the wires through ring. Index the cap and the mount ring with the index tab at 9 o'clock to the key in the instrument panel. Install the ring.
2. Connect wires to base. Orient base alignment rib at 11 o'clock to mate the groove in mount ring at the same location.

3. Push base into the bezel till it locks.
4. Install cigar lighter cap.
5. Connect the battery negative cable.

OUTLET, POWER, AC

REMOVAL

REMOVAL

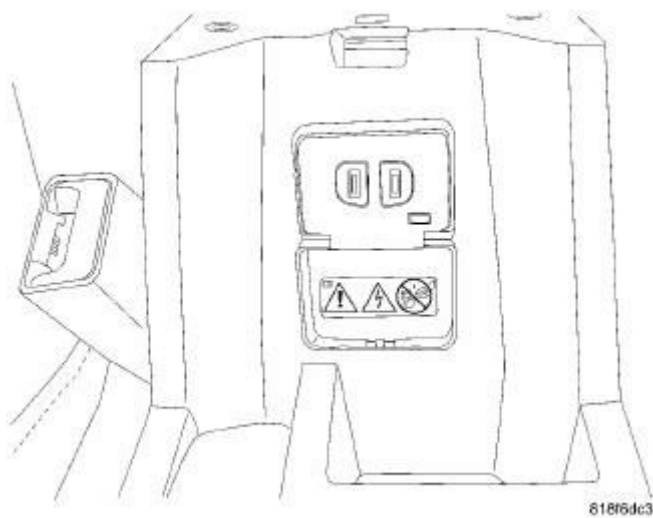


Fig. 10: Removing/Installing Power Outlet - AC
Courtesy of CHRYSLER GROUP, LLC

1. Disconnect and isolate the negative battery cable.
2. Remove the center console. Refer to **CONSOLE, FLOOR, REMOVAL** .
3. Disconnect electrical connector.
4. Remove AC power outlet.

INSTALLATION

INSTALLATION

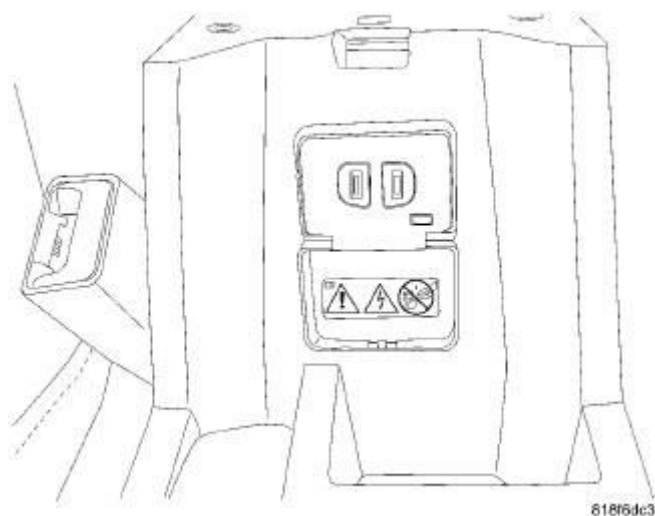


Fig. 11: Removing/Installing Power Outlet - AC
Courtesy of CHRYSLER GROUP, LLC

1. Install the AC power outlet.
2. Connect electrical connector.
3. Install the center console. Refer to **CONSOLE, FLOOR, INSTALLATION** .
4. Connect the battery negative cable.