

# 69889

## HARNESS KIT

### 3-PORT ISOLATION MODULE

### LIGHT SYSTEM

#### Parts List and Installation Instructions

**⚠ CAUTION**

Read this document before installing the snowplow.

**⚠ CAUTION**

See your sales outlet/Web site for specific vehicle application recommendations before installation. The online selection tool has specific vehicle and snowplow requirements.

PARTS LIST

69889 Plug-In Harness Kit			
Part	Description	Qty	
		69889	29047
69792	Vehicle Lighting Harness – 11-Pin w/Relays	1	
69888	Plug-In Harness	1	
29047	Adapter, 3-Port to 26345/26346 Vehicle Control Harness		1
76272	Adapter, 10-Pin Harness w/Soft-Start Module	1	
–	Reclosable Fasteners	4	

## SAFETY DEFINITIONS

### WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious personal injury.

### CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTE:** Indicates a situation or action that can lead to damage to your snowplow and vehicle or other property. Other useful information can also be described.

## FUSES

The snowplow electrical and hydraulic systems contain several blade-style automotive fuses. If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the original. Installing a fuse with a higher rating can damage the system and could start a fire. Fuse Replacement, including fuse ratings and locations, is located in the Maintenance section of the Owner's Manual.

## BATTERY SAFETY

### CAUTION

Batteries normally produce explosive gases, which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Batteries contain sulfuric acid, which burns skin, eyes and clothing.
- Disconnect the battery before removing or replacing any electrical components.

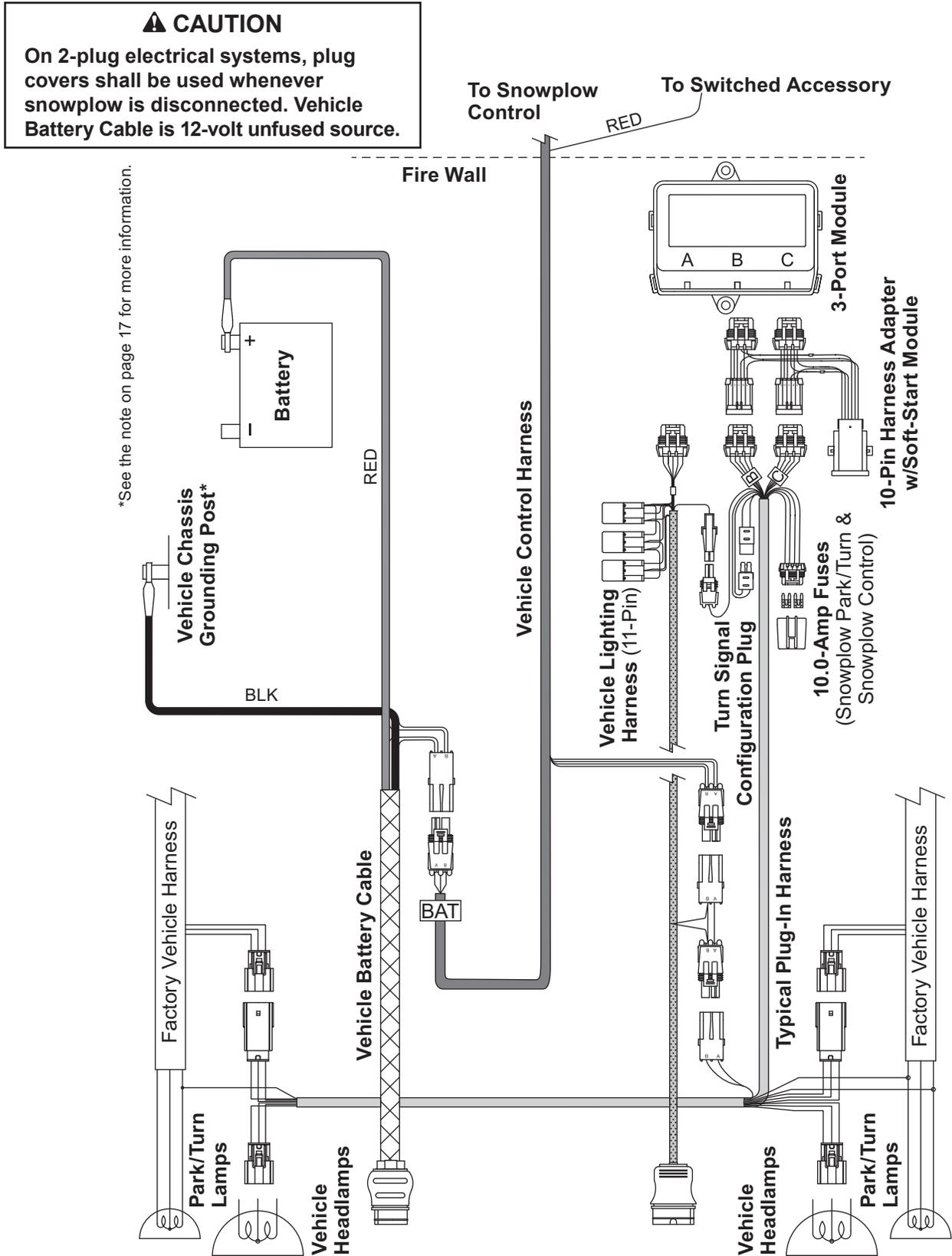
## TORQUE CHART

### CAUTION

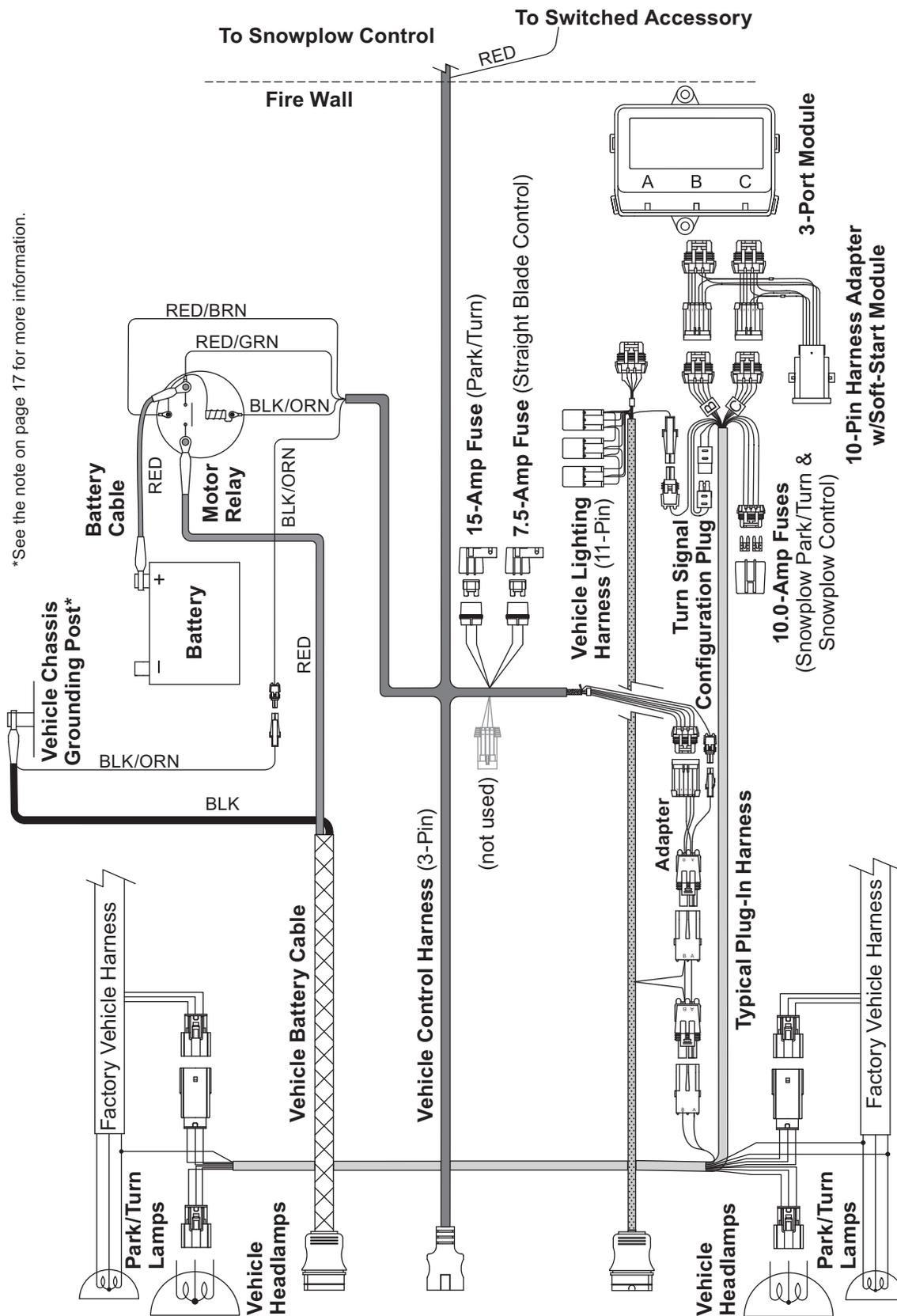
Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to the torque chart. Use standard methods and practices when attaching snowplow, including proper personal protective safety equipment.

Recommended Fastener Torque Chart					
Inch Fasteners Grade 5 and Grade 8					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Grade 5	 Grade 8		 Grade 5	 Grade 8
1/4-20	8.4	11.9	9/16-12	109	154
1/4-28	9.7	13.7	9/16-18	121	171
5/16-18	17.4	24.6	5/8-11	150	212
5/16-24	19.2	27.3	5/8-18	170	240
3/8-16	30.8	43.6	3/4-10	269	376
3/8-24	35.0	49.4	3/4-16	297	420
7/16-14	49.4	69.8	7/8-9	429	606
7/16-20	55.2	77.9	7/8-14	474	669
1/2-13	75.3	106.4	1-8	644	909
1/2-20	85.0	120.0	1-12	704	995
Metric Fasteners Class 8.8 and 10.9					
Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	 Class 8.8	 Class 10.9		 Class 8.8	 Class 10.9
M6 x 1.00	7.7	11.1	M20 x 2.50	325	450
M8 x 1.25	19.5	26.9	M22 x 2.50	428	613
M10 x 1.50	38.5	53.3	M24 x 3.00	562	778
M12 x 1.75	67	93	M27 x 3.00	796	1139
M14 x 2.00	107	148	M30 x 3.50	1117	1545
M16 x 2.00	167	231	M33 x 3.50	1468	2101
M18 x 2.50	222	318	M36 x 4.00	1952	2701
These torque values apply to fasteners except those noted in the instructions.					

TYPICAL 2-PLUG, 3-PORT MODULE SYSTEM DIAGRAM



TYPICAL 3-PLUG, 3-PORT MODULE SYSTEM DIAGRAM



\*See the note on page 17 for more information.

## TWO-PLUG SYSTEM

### Vehicle Battery Cable Installation

#### **⚠ CAUTION**

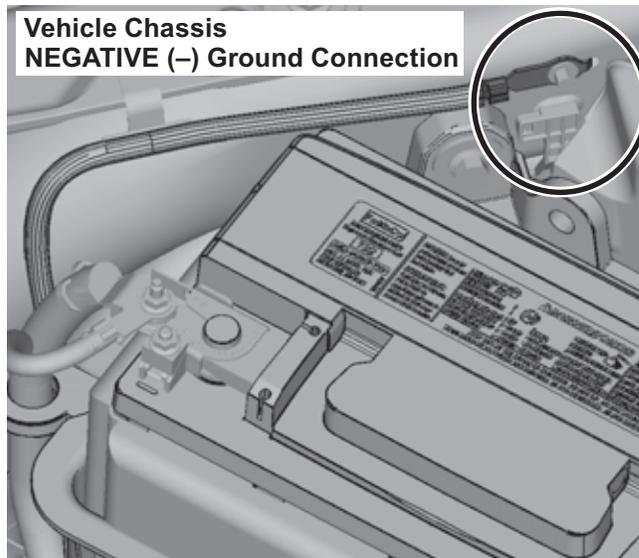
Batteries normally produce explosive gases, which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Batteries contain sulfuric acid, which burns skin, eyes and clothing.
- Disconnect the battery before removing or replacing any electrical components.

1. Turn OFF the vehicle ignition.
2. Disconnect both the NEGATIVE (-) and the POSITIVE (+) battery cables.
3. Route the supplied vehicle battery cable from the grille or bumper to the battery, avoiding any sharp edges and hot or moving parts. Cable tie only the end section closest to the grille. The vehicle battery cable may need to be lengthened on vehicles with batteries located under or behind the cab.
4. Route the red wire from the vehicle battery cable to the POSITIVE (+) battery terminal. Do not connect at this time.

**NOTE: Use dielectric grease on all electrical connections to prevent corrosion. Fill receptacles and lightly coat ring terminals and blades before assembly.**

5. Route the black wire from the vehicle battery cable to the vehicle chassis NEGATIVE (-) ground connection shown. Do not connect at this time. Prior to attaching, clean away any paint or dirt to ensure a good ground connection. The 4-position connector from the vehicle battery cable will connect to the mating connector (labeled "BAT") on the end of the vehicle control harness.



**NOTE: Do NOT route the black vehicle battery cable wire to the negative battery post. See the note on page 17 for more information.**

## Vehicle Lighting and Vehicle Control Harness Installation

1. Route both harnesses around or through the radiator bulkhead to the Isolation Module.
2. Connect the 4-position connector from the vehicle lighting harness to the matching 4-position connector from the vehicle control harness.
3. Connect the vehicle lighting harness to position A on the 3-port Isolation Module.\*
4. Route the end of the vehicle control harness with the white, 4-pin connector to the fire wall.
5. Connect the black 4-position connector (labeled "BAT") from the end of the vehicle control harness to the 4-position connector from the vehicle battery cable. Do not cable tie the harness at this time.

### **⚠ CAUTION**

**Before installing self-drilling screws or drilling mounting holes, check the selected mounting area for any wires, hoses or other obstructions.**

6. On the driver's side, locate an existing hole through the fire wall for the vehicle control harness. If access through the fire wall does not exist, drill a 5/8" hole through the fire wall of the vehicle in a convenient location away from sharp edges, and hot or moving parts.
7. Push the braided harness breakout with the cab control connector through the fire wall hole into the cab. Use a grommet, existing plug cover, or proper chafing material to protect the harness where it passes through the fire wall. Route the harness to the selected control mounting location.

To mount the control, follow the instructions supplied with the control.

8. Locate the supplied yellow and orange snowplow control feed wire behind the left side of the driver-side dash panel. It is taped to the headlamp switch harness. Activating the snowplow mode switch on the dash will provide 12V power to the snowplow control feed.



9. Route the red "ACC" wire from the vehicle control harness to this location and trim away excess length.
10. Following the instructions in the Recommended Splicing Procedure section, splice the red "ACC" wire into the yellow and orange snowplow control feed wire using the supplied parallel splices and heatshrink tubing.

\*For installations requiring an adapter, follow the instructions included with the adapter.

## THREE-PLUG SYSTEM

### Motor relay and Vehicle Battery Cable Installation

#### ⚠ CAUTION

Batteries normally produce explosive gases, which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Batteries contain sulfuric acid, which burns skin, eyes and clothing.
- Disconnect the battery before removing or replacing any electrical components.

1. Turn OFF the vehicle ignition.
2. Disconnect both the NEGATIVE (–) and the POSITIVE (+) battery cables.
3. Choose a location on the vehicle where the motor relay will be protected from road splash and debris. Motor relay must be within 18" of the vehicle battery. (The motor relay can be farther from the battery if the battery cable provided with either the plug-in harness or adapter kit is longer than 22".)

**NOTE: Position motor relay terminals up, horizontal or in between.**

#### ⚠ CAUTION

Before installing self-drilling screws or drilling mounting holes, check the selected mounting area for any wires, hoses or other obstructions.

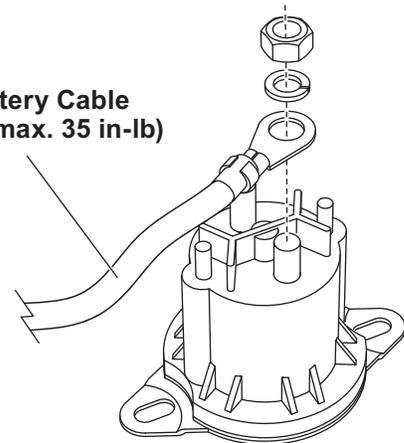
4. Drill two 9/32" mounting holes using the motor relay mounting plate as a template. Mount the motor relay using 1/4" x 3/4" cap screws, washers and locknuts.
5. Route the supplied vehicle battery cable from the grille or bumper to the location chosen for mounting the motor relay, avoiding any sharp edges and hot or moving parts. Cable tie only the end section closest to the grille. The vehicle battery cable may need to be lengthened on vehicles with batteries located under or behind the cab. If lengthening is necessary, use the same gauge wire as the vehicle battery cable, and cover all connections with dual-wall heatshrink tubing to prevent shorting.

#### ⚠ CAUTION

Overtightening terminal attaching nuts may cause seal failure, resulting in premature failure of motor relay.

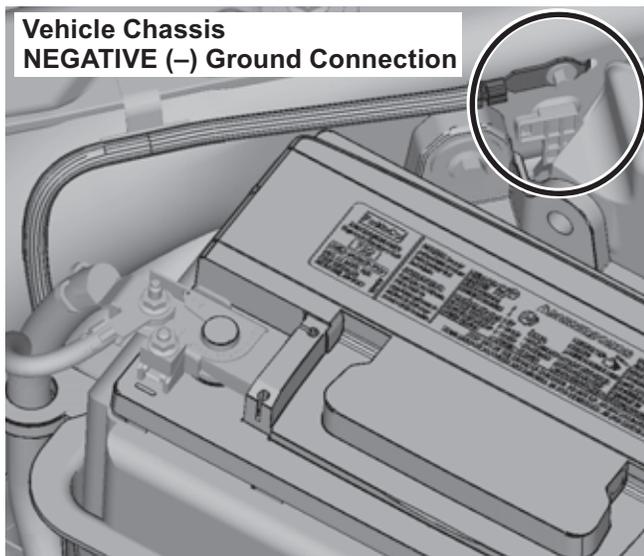
6. Attach the red wire from the vehicle battery cable to the one of the large terminals on the motor relay. Secure with a lock washer and 5/16" nut, and tighten to a maximum of 35 in-lb.

**Red Vehicle Battery Cable  
(Tighten nut to max. 35 in-lb)**



**NOTE: Use dielectric grease on all electrical connections to prevent corrosion. Fill receptacles and lightly coat ring terminals before assembly.**

7. Route the black wire from the vehicle battery cable to the vehicle chassis NEGATIVE (–) ground connection. Do not connect at this time. Prior to attaching, clean away any paint or dirt to ensure a good ground connection. The black/orange wire from the vehicle battery cable will connect to the mating connector on the vehicle control harness.



**NOTE: Do NOT route the black vehicle battery cable wire to the negative battery post. See the note on page 17 for more information.**

## Vehicle Lighting and Vehicle Control Harness Installation

The vehicle lighting and vehicle control harnesses are designed to plug into one another when the snowplow is not attached. To ensure adequate length, plug the harnesses together before cable tying them.

1. Route both harnesses around or through the radiator bulkhead to the Isolation Module.
2. Make the following connections:
  - 10-position connector from vehicle control harness to 10-position connector from the 3-port adapter (PN 29047).
  - Single-wire connector from vehicle control harness to single-wire connector from the 3-port adapter.
  - 4-position connector from adapter included with hydraulic kit to 4-position connector from vehicle lighting harness.
  - Vehicle lighting harness to position "A" on the 3-port Isolation Module.\*

**NOTE: The 3-position connector on the vehicle control harness (4-port module configuration plug) will not be used. Cover the terminals with dielectric grease and cap off with electrical tape.**

3. Route the end of the vehicle control harness with the white 6-pin connector to the fire wall. Route the vehicle control harness breakout with four wires to the motor relay.

### Motor relay small terminal connections:

Straight blades — brown/red and black/orange  
V-plows — brown/red and brown/green

\*For installations requiring an adapter, follow the instructions included with the adapter.

**⚠ CAUTION**

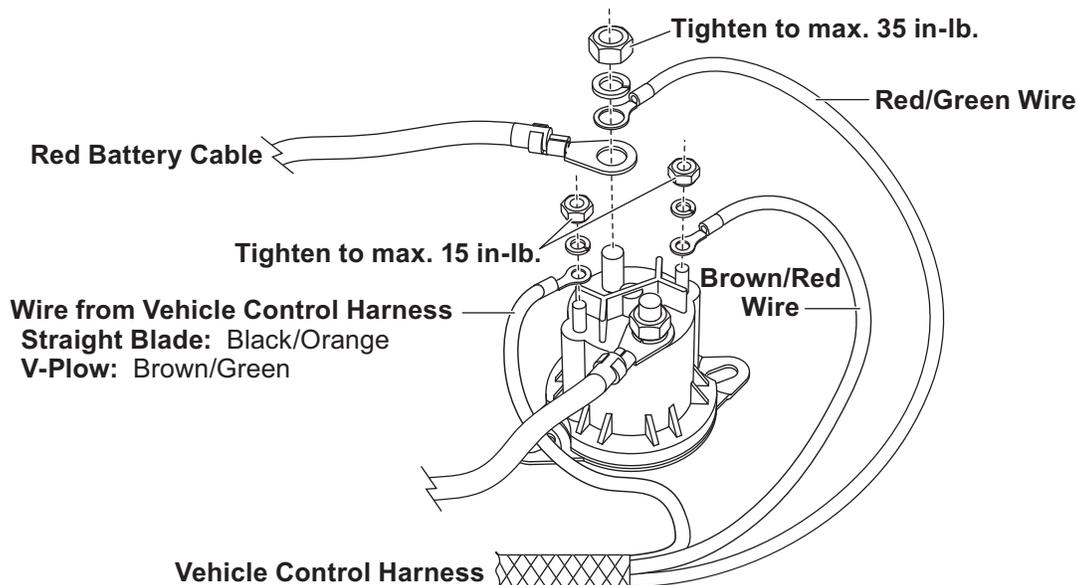
Overtightening terminal attaching nuts may cause seal failure, resulting in premature failure of motor relay.

4. Secure the wires to the small terminals of the motor relay with #10 lock washers and 10-32 nuts, and tighten to a maximum 15 in-lb.
5. Connect the single-wire connector (black/orange wire) from the vehicle control harness breakout to the single-wire connector (black/orange wire) from the vehicle battery cable. Do not cable tie the harness at this time.
6. Attach the supplied red battery cable and the red/green wire from the vehicle control harness to a large terminal on the motor relay with a lock washer and 5/16" nut, and tighten to a maximum 35 in-lb. Route the supplied red battery cable between motor relay terminal and POSITIVE (+) battery terminal, avoiding sharp edges and hot or moving parts. Do not make battery connection at this time.

**⚠ CAUTION**

Before installing self-drilling screws or drilling mounting holes, check the selected mounting area for any wires, hoses or other obstructions.

7. On the driver's side, locate an existing hole through the fire wall for the vehicle control harness. If access through the fire wall does not exist, drill a 5/8" hole through the fire wall of the vehicle in a convenient location away from sharp edges and hot or moving parts.
8. Carefully push the end of the harness through fire wall hole into the cab. Use a grommet, existing plug cover, or proper chafing material to protect the harness where it passes through the fire wall. Route the harness to the selected control mounting location.
9. To mount the control, follow the instructions supplied with the control.



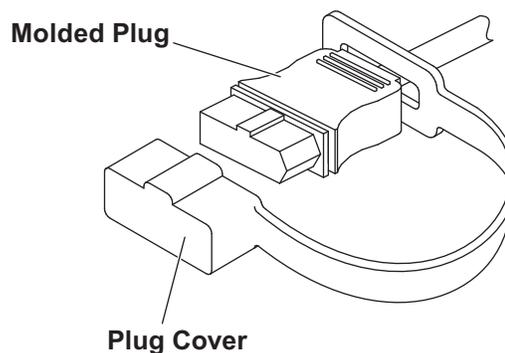
10. Locate the supplied yellow and orange snowplow control feed behind the left side of the driver-side dash panel. It is taped to the headlamp switch harness. Activating the snowplow mode switch on the dash will provide 12V power to the snowplow control feed.



11. Route the red wire from the vehicle control harness to this location and trim away excess length.
12. Following the instructions in the Recommended Splicing Procedure section, splice the red wire into the yellow and orange snowplow control feed wire using the supplied parallel splices and heatshrink tubing.

## PLUG COVER INSTALLATION

1. Stretch the rectangular opening of the plug cover strap over the end of the vehicle battery cable. Place the plug cover over the molded plug when snowplow is not in use.



## ISOLATION MODULE MOUNTING

### ⚠ CAUTION

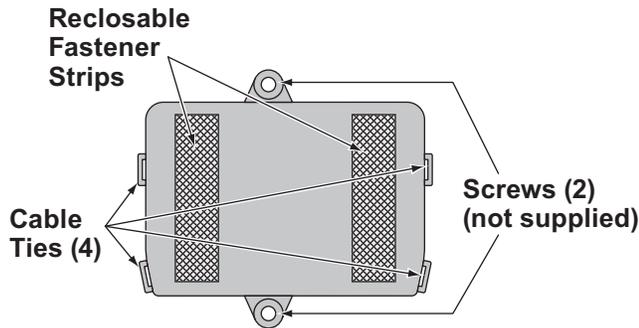
Before installing self-drilling screws or drilling mounting holes, check the selected mounting area for any wires, hoses or other obstructions.

Isolation Modules are sold separately. Check the Kit Selection Guide/Selection List for the correct module for your vehicle.

Locate a flat surface within the engine compartment of the vehicle for mounting the Isolation Module (**on the driver's side if possible**). For example, the fire wall, fender well or radiator shroud are possible mounting locations. If a flat surface cannot be located, cable tie the Isolation Module to existing brackets or harnessing.

Reclosable fastener strips and cable ties are supplied for mounting the Isolation Module, but self-drilling screws can also be used. When using the reclosable fastener strips, the mounting surface must be free of dirt and grease.

Isolation Module (bottom view)



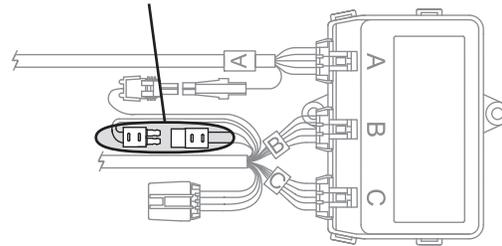
## TURN SIGNAL CONFIGURATION PLUG

### ⚠ WARNING

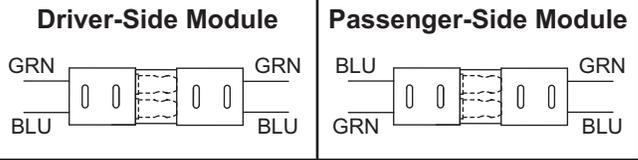
If the turn signal configuration plug is mated incorrectly, the turn signals will be reversed between the vehicle and the snowplow.

1. Mate the turn signal configuration plug located on the plug-in harness. If the Isolation Module is installed on the driver's side, mate the plug so that the wire colors match (green to green and blue to blue). If the module is installed on the passenger's side, mate the plug so that the wire colors are opposite (green to blue).

Turn Signal Configuration Plug



**B – Green & Red Wires    C – Blue & Red Wires**



2. Connect the single-wire connector from the vehicle lighting harness to the single-wire connector from the plug-in harness.

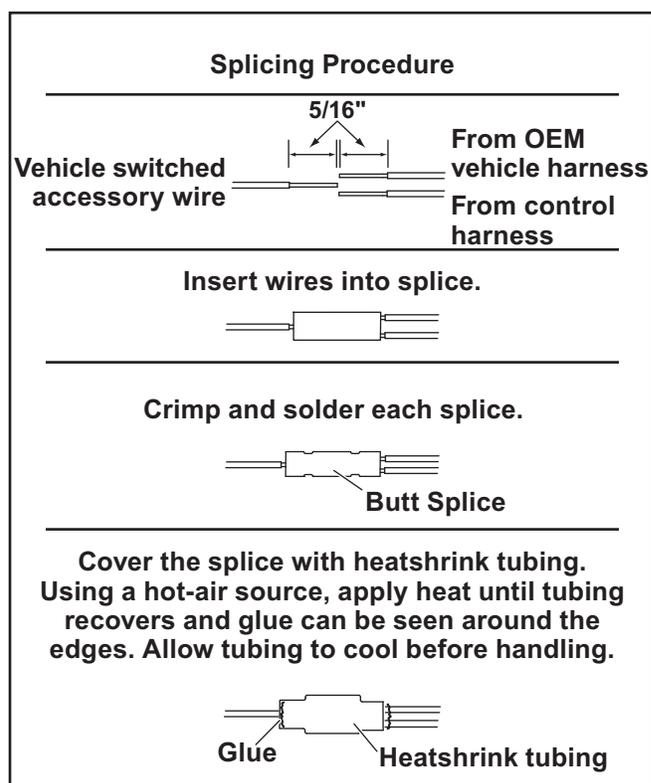
## RECOMMENDED SPLICING PROCEDURE

1. Locate wire to be spliced into.
2. Cut wire at least 1-1/2" from any other splice, connector, or terminal. If wires are covered by tubing or braid, remove enough of it to achieve the minimum clearance required.
3. Strip away 5/16" of insulation from the ends of the wires to be spliced.
4. Slide two wires into one end of the supplied parallel splice.
5. Place a piece of heatshrink tubing (3/16" x 1-1/4" long) over the remaining wire to be spliced. Cut tubing into 1-1/4" lengths if required.
6. Insert the wire into the open end of the splice and crimp using an appropriate crimp tool. One or two crimps may be necessary to ensure a good connection. No wire strands should be visible outside of the splice.
7. Preheat a soldering tool for at least one minute to help promote even solder flow.
8. Apply heat to the splice. Avoid heating too close to the insulation. Apply solder to the wires. Use just enough solder to produce an even flow through the splice. **Use rosin core solder ONLY. Do not use acid core solder.**

**NOTE: Avoid using an excessive amount of solder, as it can result in wicking. Wicking occurs when solder travels up the wire core. This may cause the wire to become stiff or brittle, which could lead to a broken or open circuit.**

9. Check the circuits for continuity.
10. Cover the splice with heatshrink tubing. The tubing should extend beyond the splice on both sides.
11. Using a hot-air source, starting in the center and working out to either side, apply heat until the tubing recovers and glue can be seen around the edges. Allow the tubing to cool before handling.

**NOTE: The splices supplied will accommodate 18-gauge wires as shown. For larger gauge wires, cut the wire, strip the ends 3/8" to 1/2" and twist together. Apply solder to the splice and cover with heatshrink tubing.**

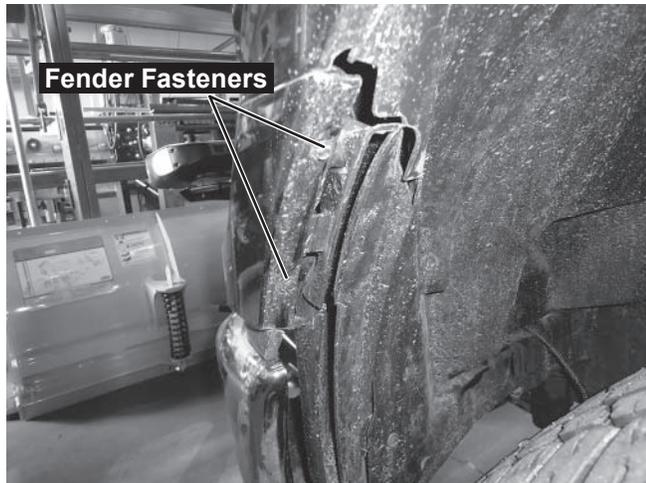


**PLUG-IN HARNESS INSTALLATION**

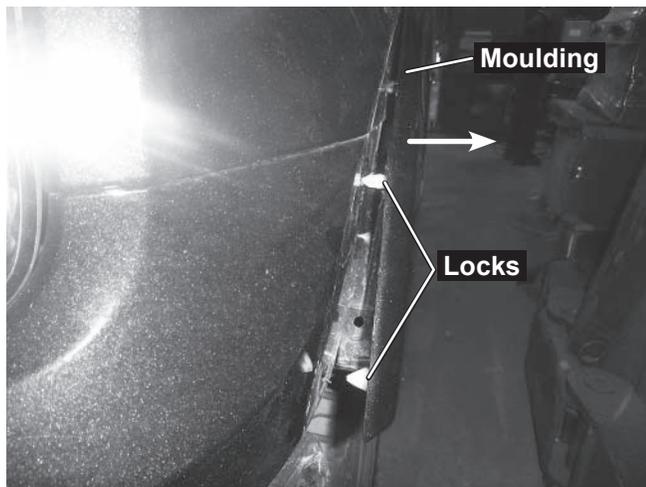
**Headlamp Removal Instructions**

**Vehicles With Fender Moulding**

1. Remove the two fender moulding fasteners shown.

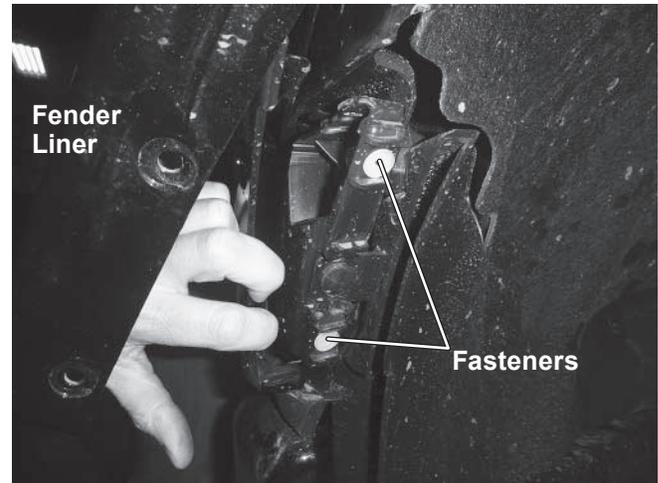


2. Release the three fender moulding locks and partially remove the fender moulding.

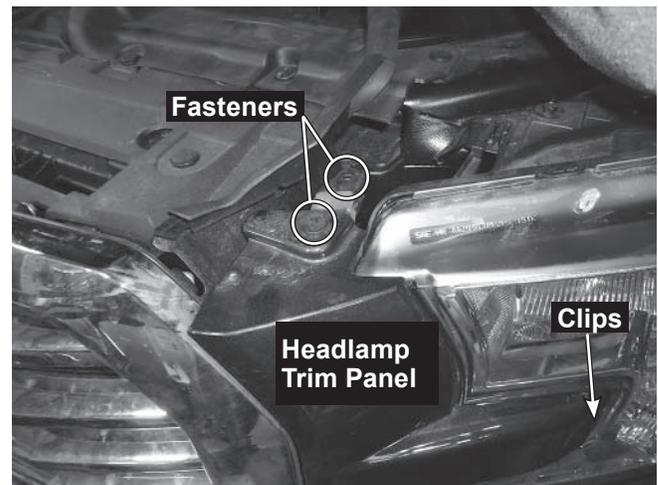


**All Vehicles**

3. Remove the fasteners. Move the fender liner to the side.



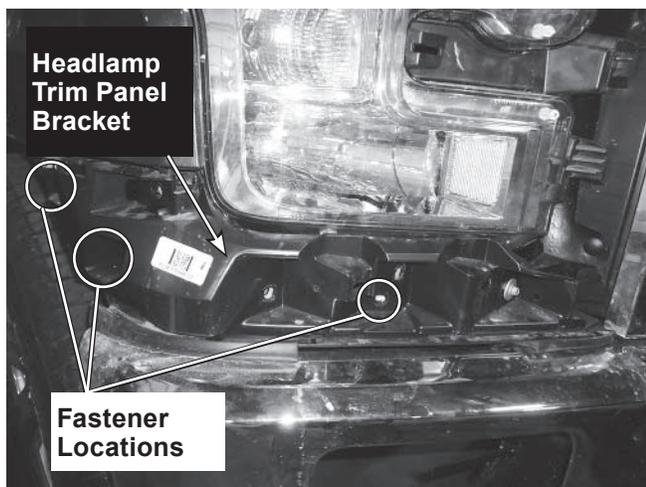
4. To remove the headlamp assembly trim panel, start by removing the fasteners shown.



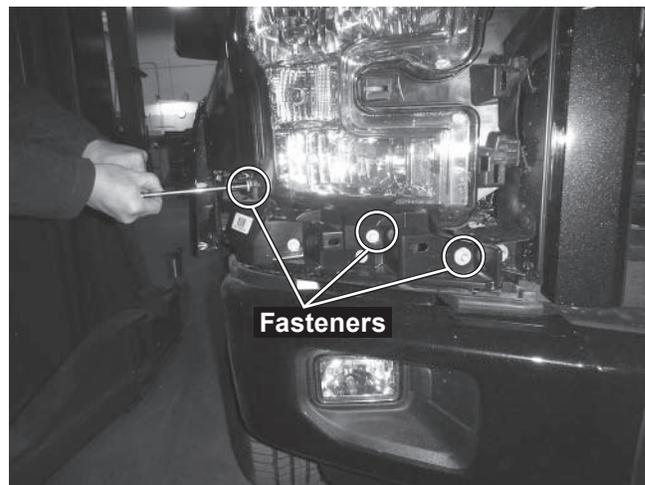
- From the inner edge, release the headlamp assembly trim panel clips. Start at the outer edge of the assembly to release the headlamp assembly trim panel.



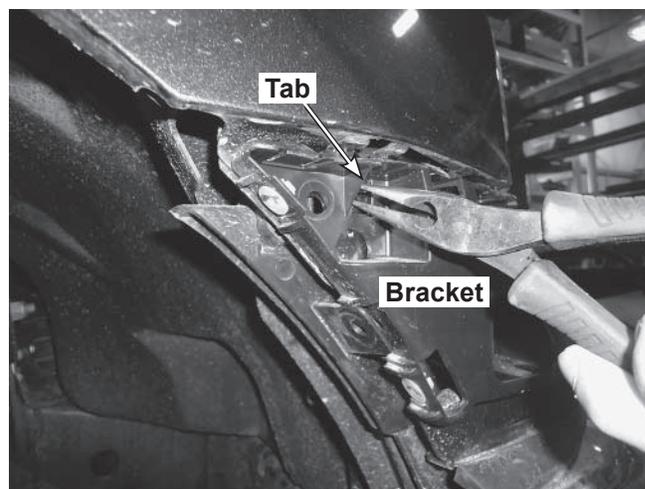
- Use a flat-blade screwdriver to release the four locking tabs along the bottom to completely remove the headlamp assembly trim panel.
- Remove the three fasteners on the headlamp trim panel bracket.



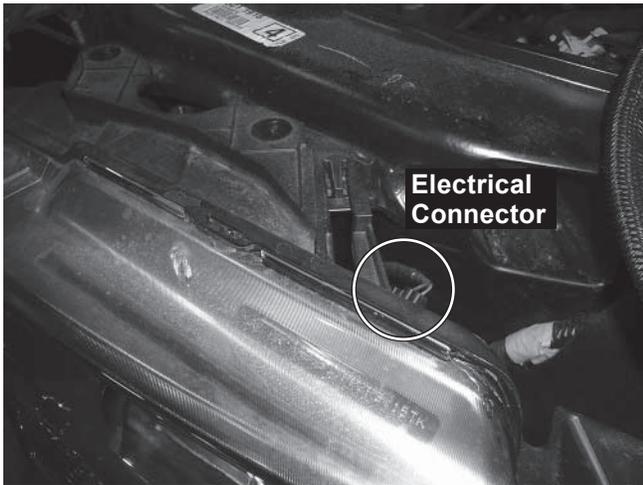
- Release the two tabs to remove the air channel.
- Remove the three headlamp assembly trim panel bracket fasteners.



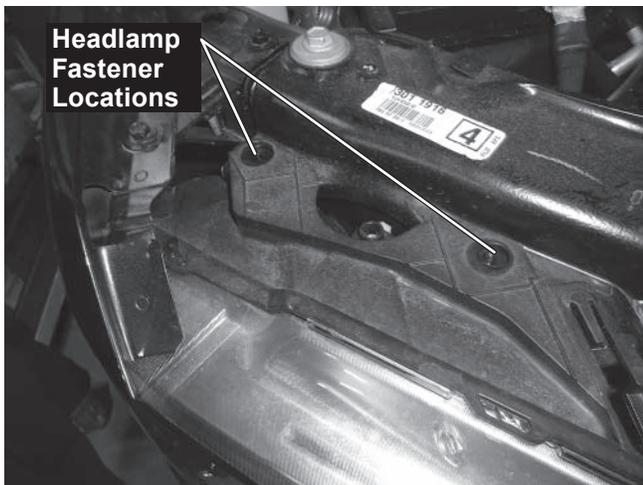
- Squeeze the tabs to remove the headlamp assembly trim panel bracket.



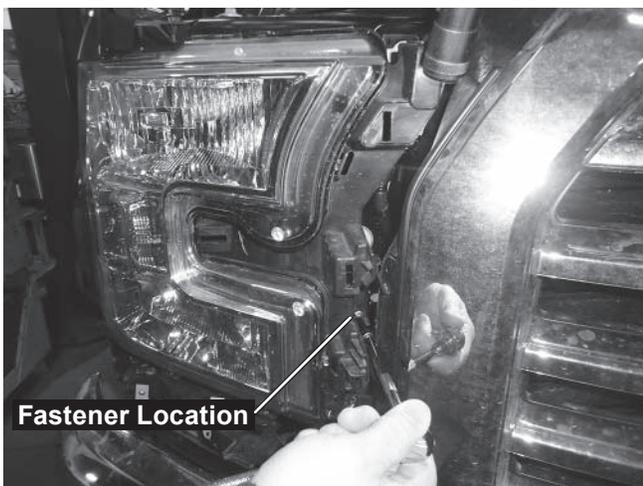
11. Disconnect the marker lamp electrical connector.



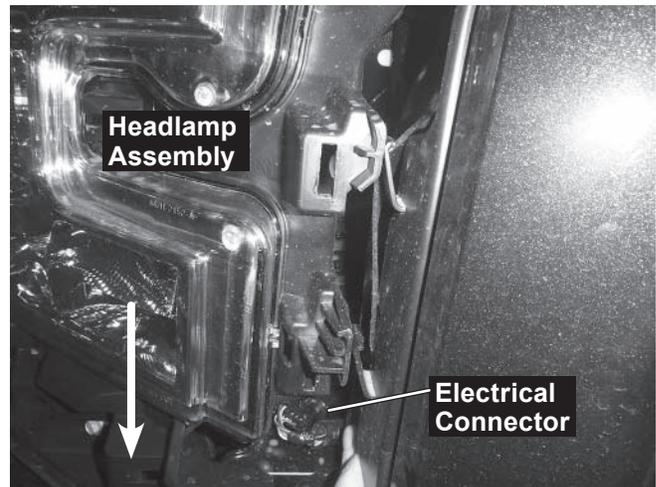
12. Remove the two fasteners on the top of the headlamp assembly.



13. Remove the fastener on the side of the headlamp.



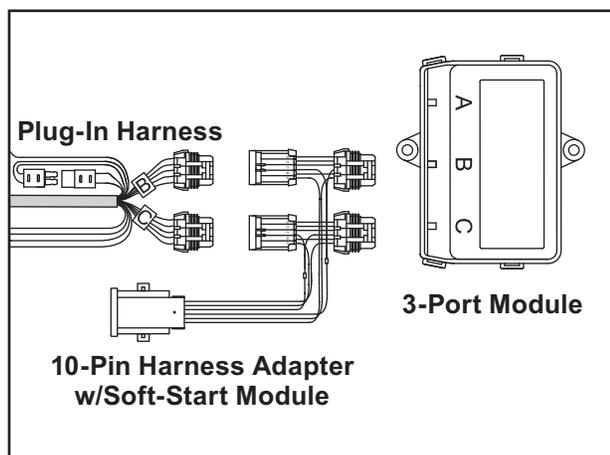
14. Position the headlamp assembly forward and disconnect the remaining electrical connectors.



15. Remove the headlamp assembly.

## Harness Installation

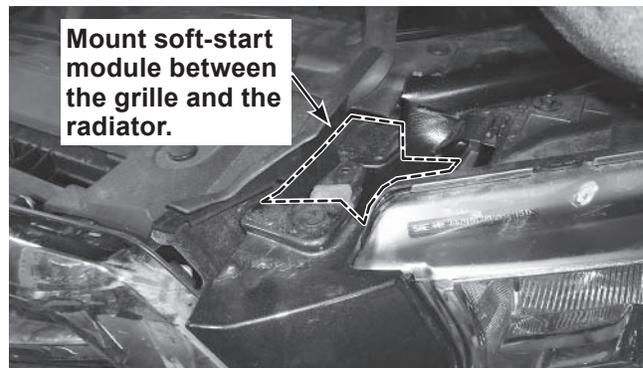
1. Connect the plug-in harness to the mating connectors removed from the headlamps or headlamp housings.\* Connect the plug-in harness to the mating connections at the headlamps or headlamp housings. Route the plug-in harness to the 3-port Isolation Module. Connect the plug-in harness to the adapter by matching harness connector B with adapter port B and harness connector C with adapter port C. Connect the adapter to the module by matching adapter connector B with module port B and adapter connector C with module port C.



**For vehicles with headlamp bulb or turn signal DRLs:** The DRL wire from the plug-in harness will not be used. Coil and cable tie the DRL wire.

2. Connect the black 4-position connector from the middle of the vehicle control harness to the 4-position connector from the plug-in harness.
3. Locate the turn signal wire on each side of the vehicle. Splice the "TURN" wire from the plug-in harness into the signal wire on the corresponding side following the instructions in the Recommended Splicing Procedure section.
4. Splice the "PARK" wire from the plug-in harness into the parking light wire following the instructions in the Recommended Splicing Procedure section.
5. Cable tie the vehicle control harness, vehicle lighting harness, and plug-in harness away from any sharp, hot or moving parts.

6. Mount the soft-start module in an area that receives good airflow, such as the cavity between the grille and the radiator.

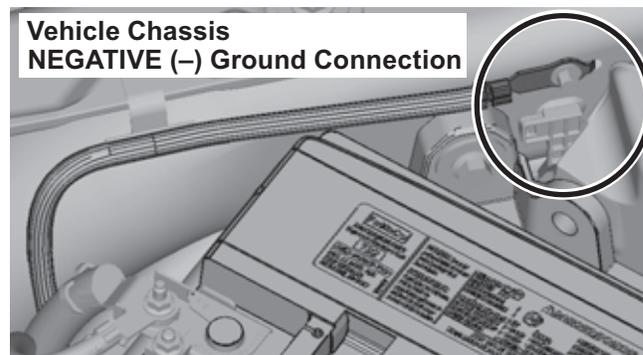


## BATTERY CONNECTIONS

**NOTE:** Cable tie the control harness and accessory tap away from the brake, clutch, gas or parking brake pedals, and any moving parts.

**NOTE:** Do NOT connect ground wires directly to the negative battery post. Direct connections to the negative battery post will cause the charging system to malfunction and shorten battery life. The NEGATIVE (–) cables should be connected to the vehicle chassis grounding point shown. See Ford Special Vehicle Engineering Bulletin Q-231 for more information.

1. Attach the POSITIVE (+) OEM cable to the battery. Attach the RED vehicle battery cable to the POSITIVE (+) battery terminal following OEM battery cable connection recommendations.
2. Attach the NEGATIVE (–) OEM cable to the vehicle chassis NEGATIVE (–) ground connection shown. Attach the BLACK vehicle battery cable to the vehicle chassis NEGATIVE (–) ground connection following OEM battery cable connection recommendations.



\*For installations requiring an adapter, follow the instructions included with the adapter.

The company reserves the right under its product improvement policy to change construction or design details and furnish equipment when so altered without reference to illustrations or specifications used. This equipment manufacturer or the vehicle manufacturer may require or recommend optional equipment for snow removal. Do not exceed vehicle ratings with a snowplow. The company offers a limited warranty for all snowplows and accessories. See separately printed page for this important information.

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