

# EPS DRIVE KIT



P/N 2884379

## IMPORTANT

Due to the technical nature of this kit, GEM® insists this installation be performed by a certified GEM® Technician.

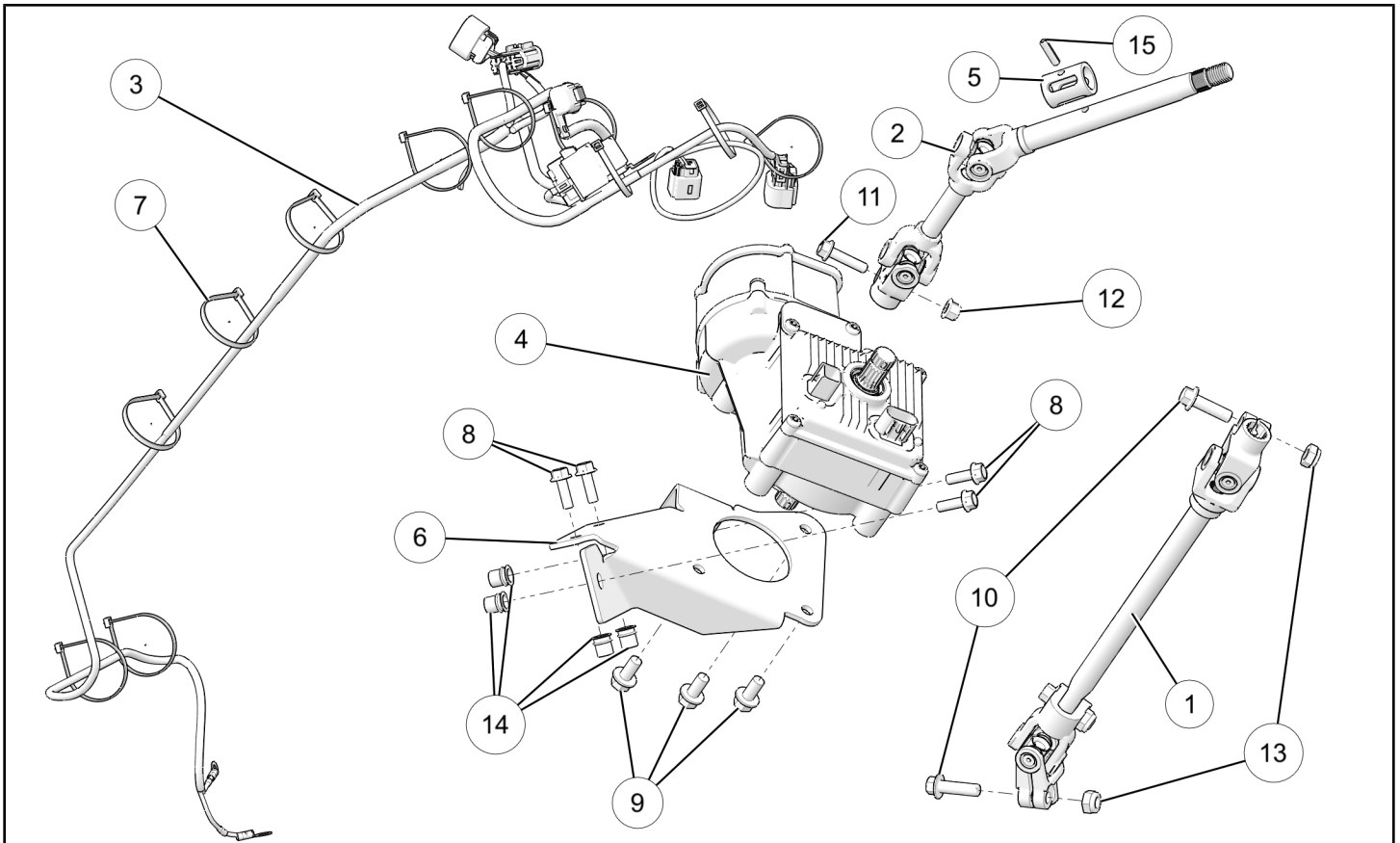
## APPLICATION

Verify accessory fitment at [GEMCAR.COM](http://GEMCAR.COM).

## BEFORE YOU BEGIN

Read these instructions and check to be sure all parts and tools are accounted for. Please retain these installation instructions for future reference and parts ordering information.

## KIT CONTENTS

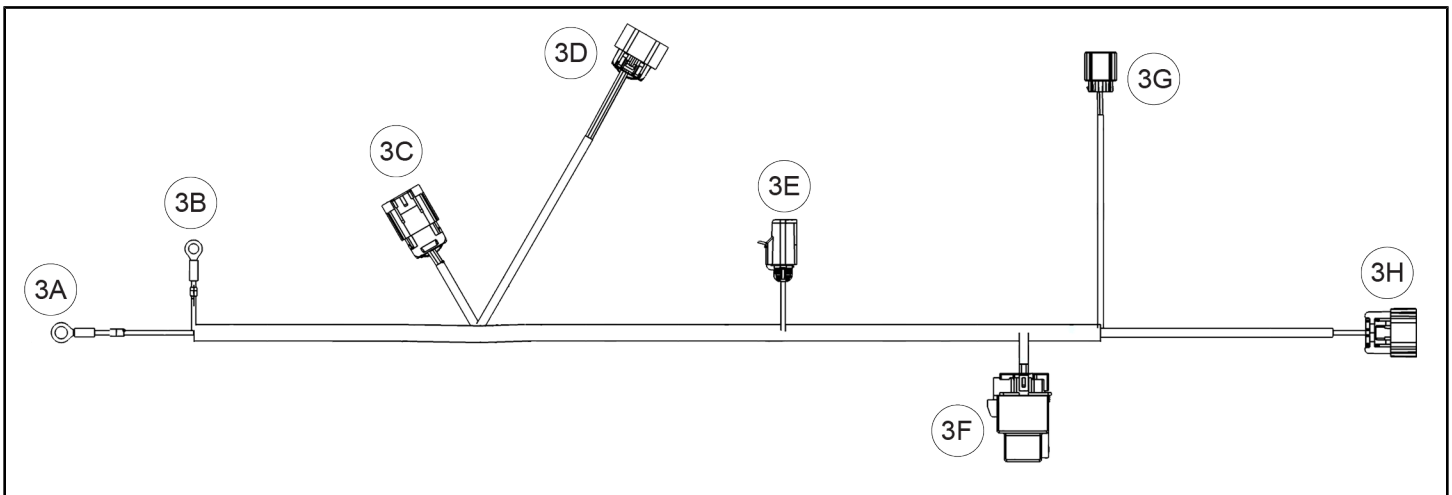


REF	QTY	PART DESCRIPTION	P/N AVAILABLE SEPARATELY
1	1	Steering Shaft, Lower	1824483
2	1	Steering Shaft, Upper	1824589
3	1	Harness, EPS	2413353
4	1	Assembly, Power Steering	2415051

REF	QTY	PART DESCRIPTION	P/N AVAILABLE SEPARATELY
5	1	Collar-Lock	5142291
6	1	Bracket, Steering	5268035
7	11	Cable Tie, 11"	7080492
8	4	Screw, Hex Flange - M8 X 1.25 X 25	7518514
9	3	Screw, Hex Flange - M10 X 1.25 X 20	7518558
10	2	Screw, Hex Flange - M10 X 1.50 X 35	7518644
11	1	Screw, Hex Flange - M8 X 1.25 X 35	7519052
12	1	Nut, Flange - M8 X 1.25	7547332
13	2	Nut, Hex - M10 X 1.5	7547385
14	4	Nut Inserts - M8 X 1.25	7547788
15	1	Pin, Spring, M6 X 26	7662315

## HARNES DETAIL

### EPS HARNESS



REF	PART DESCRIPTION	WIRE COLOR	PIN QTY/ GENDER	CONNECTS TO
3A	Battery Management Controller (BMC) Negative Terminal Connector	Brown	1	BMC Negative Terminal
3B	BMC Positive Terminal Connector	Red	1	BMC Positive Terminal
3C	Diagnostic Connector Link	-	8 / Male	Diagnostic Connector on Vehicle
3D	Diagnostic Connector Port	-	8 /Female	Clips to Chassis
3E	Fuse Holder	-	2	n/a
3F	EPS Power Relay/Connector	-	4	Cable tie to Dash Weldment
3G	EPS Signal Connector	-	3 / Female	EPS Module ④
3H	EPS Power Connector	-	2 / Female	EPS Module ④

## TOOLS REQUIRED

- Safety Glasses
- Hammer or Air Hammer
- Nut Insert Tool
- Panel Clip Tool
- Side Cutter
- Screw Driver, Phillips
- Screw Driver, Standard
- Screwdriver Set, Torx®
- Socket Set, Hex Bit, Metric
- Socket Set, Metric
- Socket Set, SAE
- Steel Punch
- Torque Wrench
- Wrench Set, Metric

## IMPORTANT

Your EPS Drive Kit is exclusively designed for your vehicle. Please read the installation instructions thoroughly before beginning. Installation is easier if the vehicle is clean and free of debris. For your safety, and to ensure a satisfactory installation, perform all installation steps correctly in the sequence shown.

## INSTALLATION INSTRUCTIONS

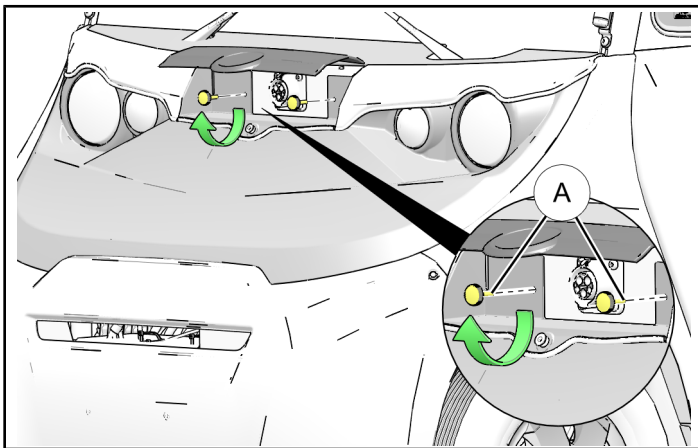
### VEHICLE PREPARATION

#### GENERAL

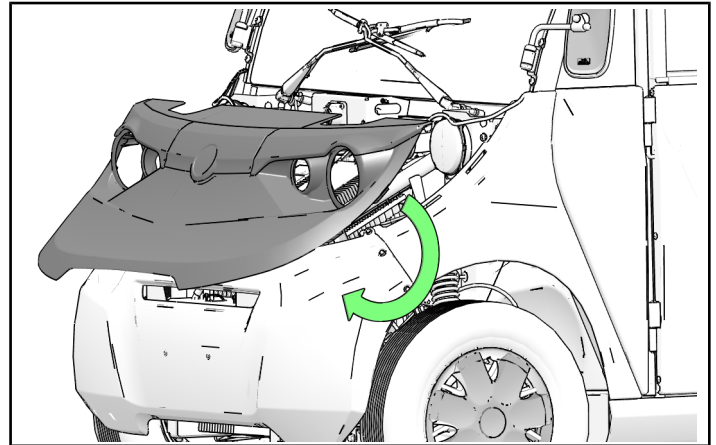
1. Park vehicle on a flat surface.
2. Place gear sector in "N". Apply parking brake. Turn key to "OFF" position and remove from vehicle

#### HOOD REMOVAL

1. Open charge port door. Remove and retain two knob screws **A**.



2. Slide hood down and away to remove from vehicle. Carefully set aside, ensuring hood is not damaged.



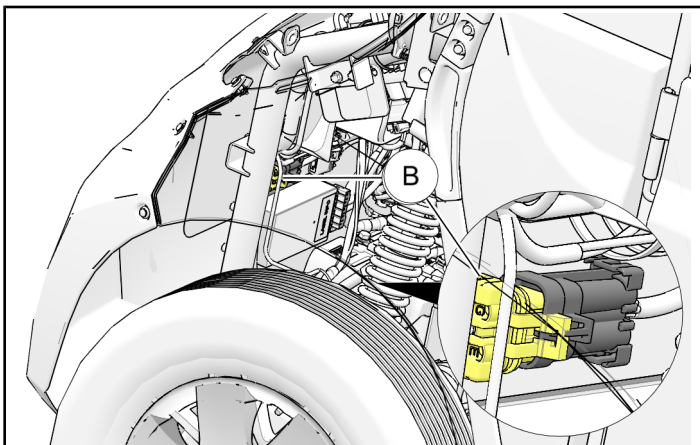
## SERVICE DISCONNECT

### WARNING

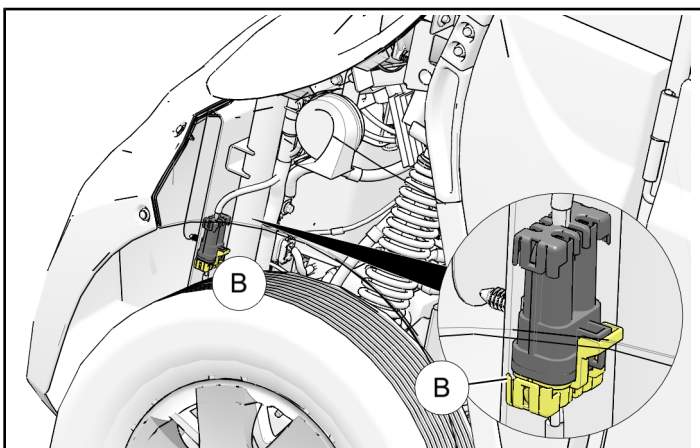
Electrical shock or circuit damage may occur if service disconnect is not disconnected.

1. Carefully pull back tab on main electrical harness connector and disconnect from vehicle main connector as per owner's manual.

- **US: September 2017 and older:**  
**EU and Canada: December 2017 and older**



- **US: October 2017 and newer:**  
**EU and Canada: January 2018 and newer**



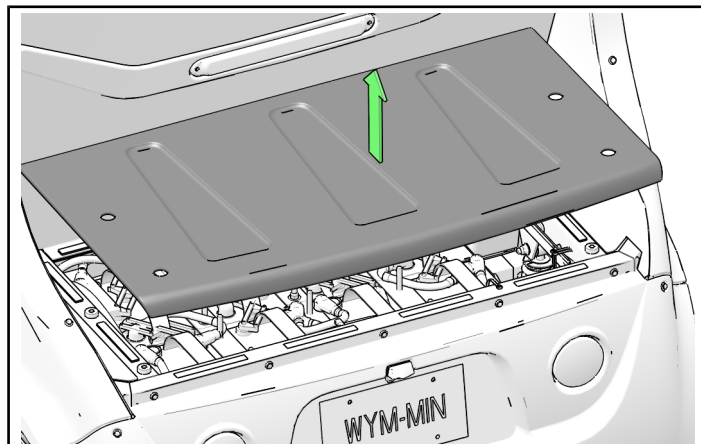
## BATTERY ACCESS COVER

### NOTE

Additional steps may be required to accommodate accessories.

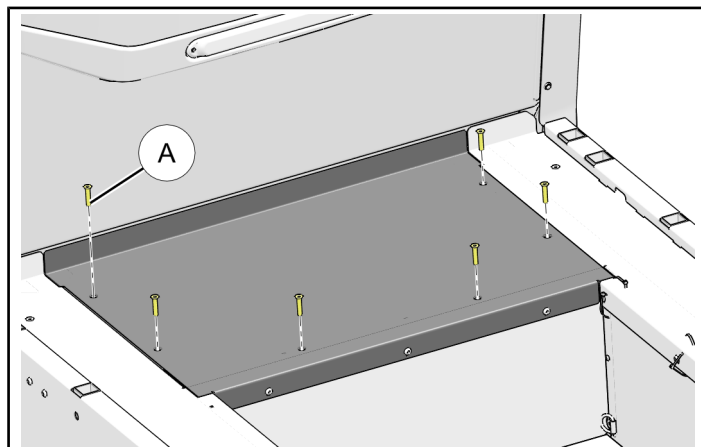
### e2, e4, e6®:

1. Pull up on battery access cover, held by hook-and-loop fasteners.

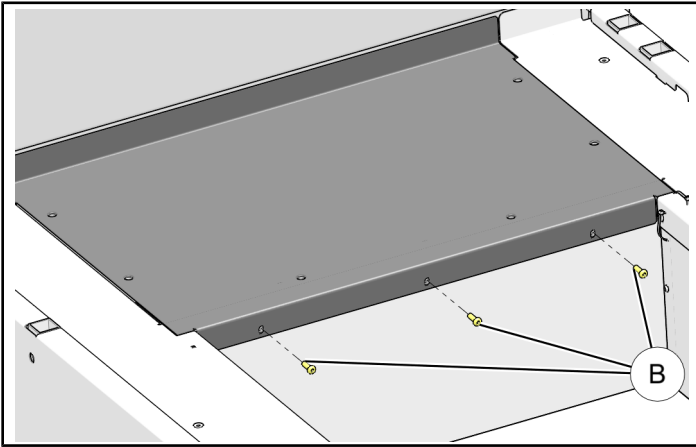


### eL XD:

1. Remove and retain six screws (A) from top of battery access cover.



- Remove and retain three screws (B) from rear-side of battery access cover.

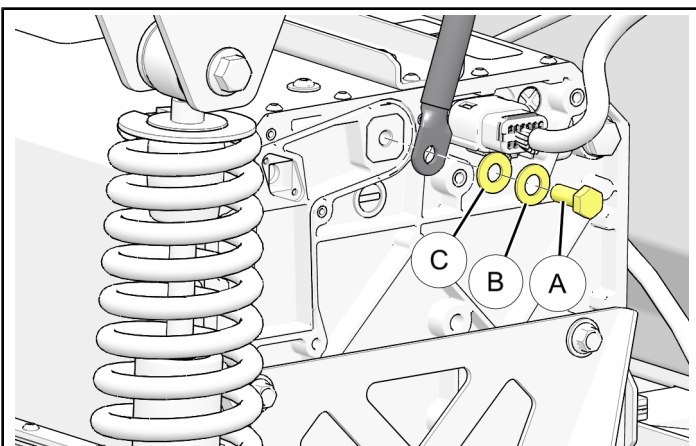


### LITHIUM-ION BATTERY DISCONNECT

Refer to table below when disconnecting battery cables in this section.

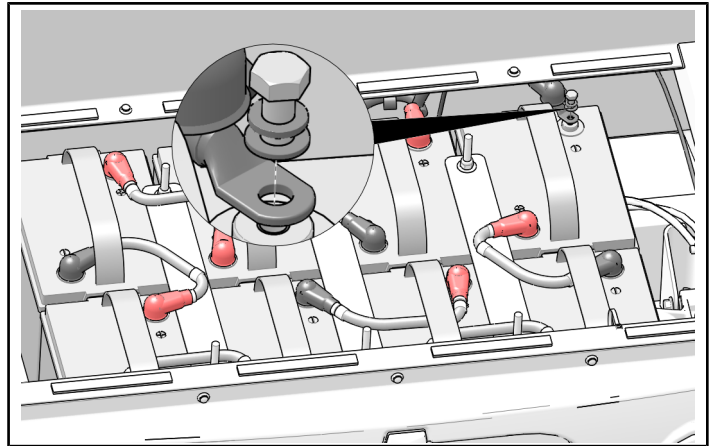
Lithium Battery Terminal Locations		
	8.9kW Battery Pack	12.4kW Battery Pack
<b>Negative (-)</b>	RH-side of large battery	RH-side of large battery
<b>Positive (+)</b>	LH-side of large battery	RH-side of small battery

- Move cable boot from **Negative (-)** terminal. Remove and retain one bolt (A), one lock washer (B), and one flat washer (C) to disconnect negative cable and smaller wire (if equipped) from lithium ion battery.



### LEAD ACID BATTERY DISCONNECT

- Disconnect farthest-forward, right-most negative terminal of your battery pack and temperature sensor by removing screw and washers.



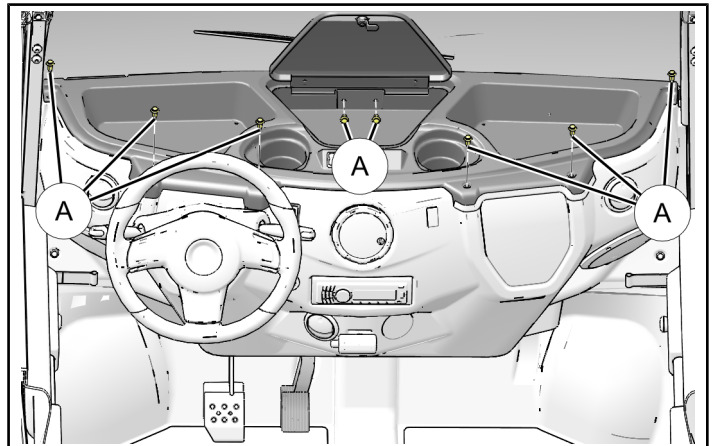
- Ensure cable is set aside and will not make contact with negative terminal.

### TOP DASHBOARD REMOVAL

- Remove and retain eight push-pin rivets (A) from top dashboard panel.

#### NOTE

Two push-pin rivets (A) are located in glove box.



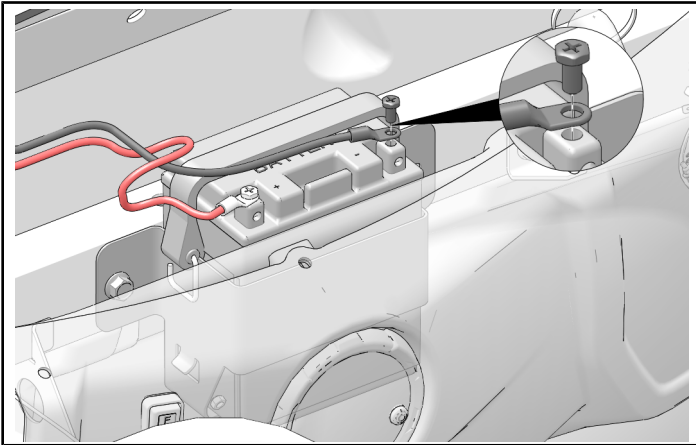
- Ensure all under-dashboard accessories (if equipped) are disconnected:

- Heater
- Dome Light
- Roof Beacon
- Defrost Heater

- Remove top dashboard panel from vehicle and set aside.

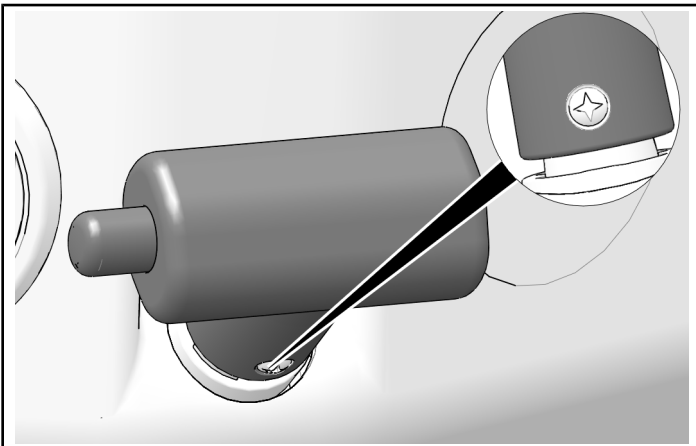
## DISCONNECT AUXILIARY BATTERY

1. Remove and retain negative (-) terminal bolt and negative (-) cable from auxiliary battery, located under front dashboard or in rear battery tray (dependent on initial installation position).

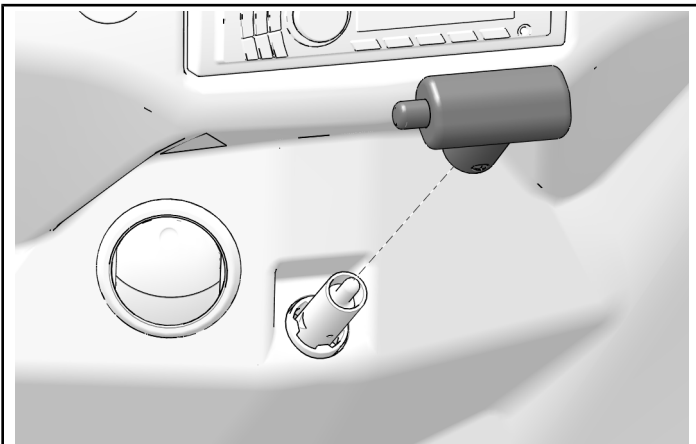


## REMOVE PARKING BRAKE HANDLE

1. Remove and retain screw from parking brake handle.

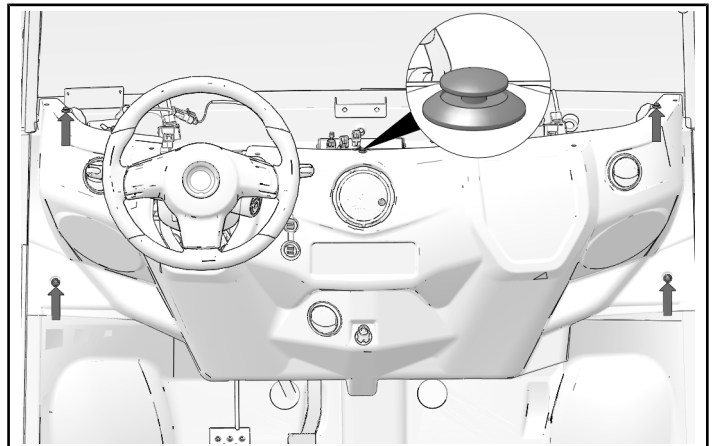


2. Pull on handle to remove.



## REMOVE LOWER DASH PANEL

1. Remove and retain five push-pin rivets from lower dash panel.



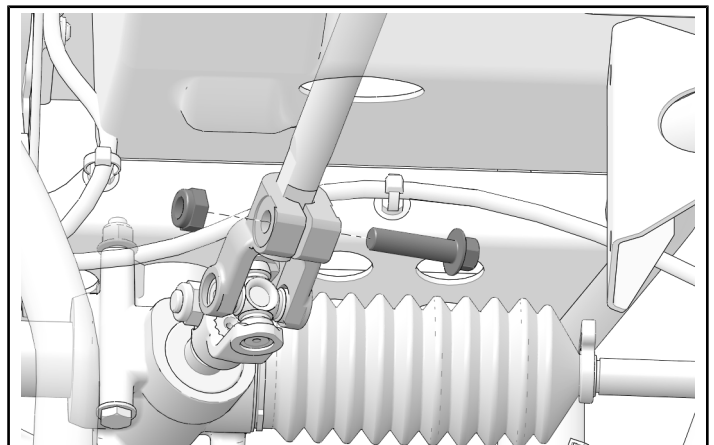
2. Disconnect any electrical connectors, switches, gauges, vents, or accessories that pass through lower dash panel and pull lower panel off vehicle.

## REMOVE STEERING WHEEL (NON-EPS)

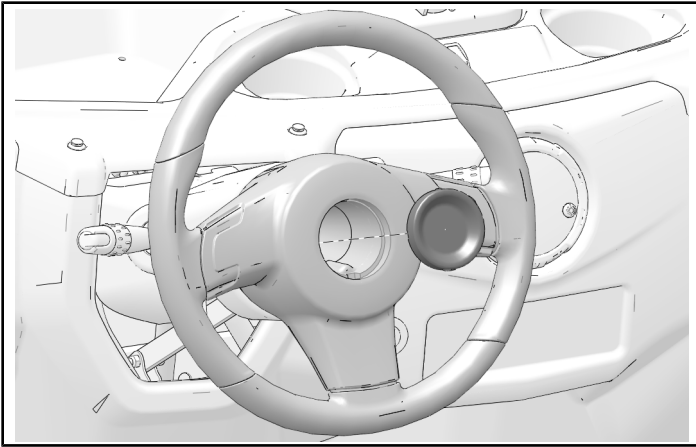
### CAUTION

This procedure requires replacement of a fastener, please review procedure to identify fastener needed and verify it is readily available before proceeding. Failure to replace fastener can result in injury or death.

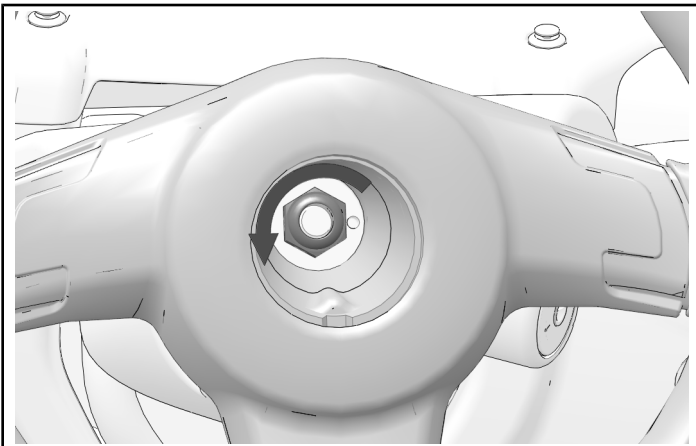
1. Loosen and discard pinch bolt and nut at steering rack.



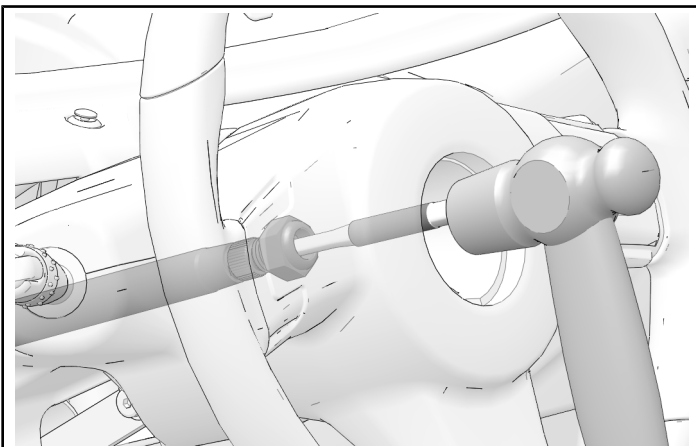
- Carefully remove steering wheel nut cover.



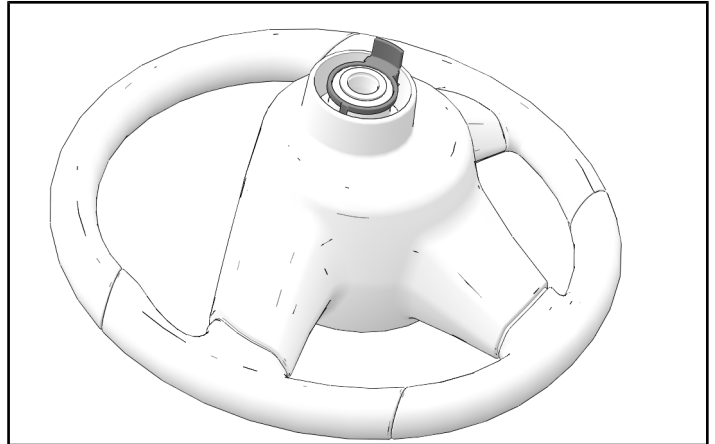
- Loosen steering wheel nut leaving 2-3 threads engaged to steering shaft for next step. Make sure key is out of ignition as it will help to use steering lock to loosen steering nut.



- Center punch on steering shaft and make sure steering wheel nut **Ⓜ** is still on to prevent damage to steering shaft threads. Strike punch until you feel steering wheel pop off of steering shaft taper (usually this takes a large amount of force).



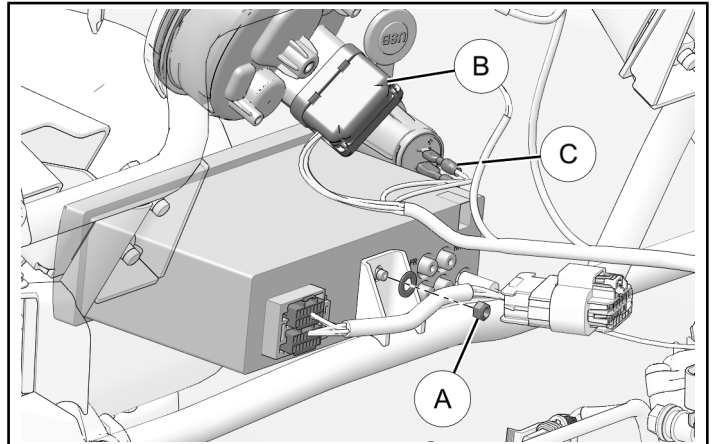
- Remove steering wheel nut and steering wheel and set aside. Be careful to not break self-cancelling turn signal tab on back of steering wheel.



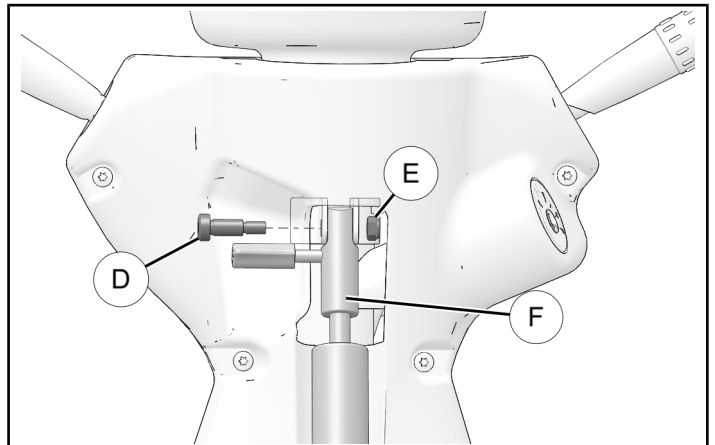
## ACCESSORY INSTALLATION

### STOCK STEERING SHAFT REMOVAL

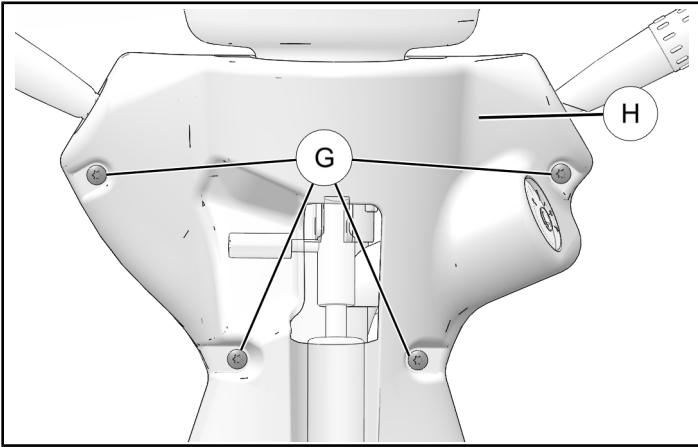
- Dismantle radio (if equipped) by removing nut and washer **Ⓐ** and disconnect CPI gauge connector **Ⓑ** along with USB port connectors **Ⓒ** and remove lower dash.



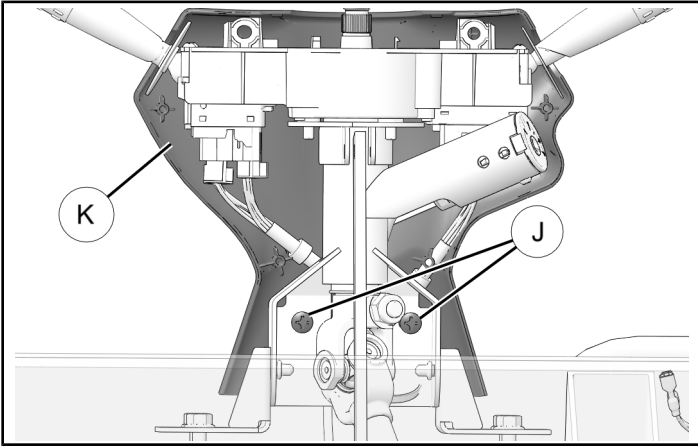
- Remove and retain bolt **Ⓓ** and nut **Ⓔ** and lower attachment of steering shock/brace **Ⓕ**.



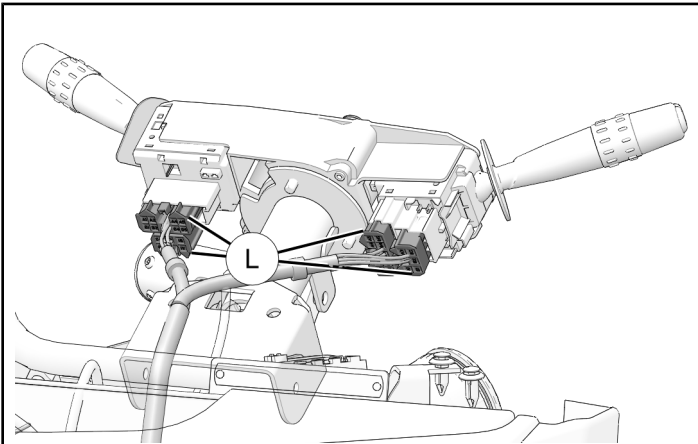
- Remove and retain four screws (G), and lower steering column cover (H).



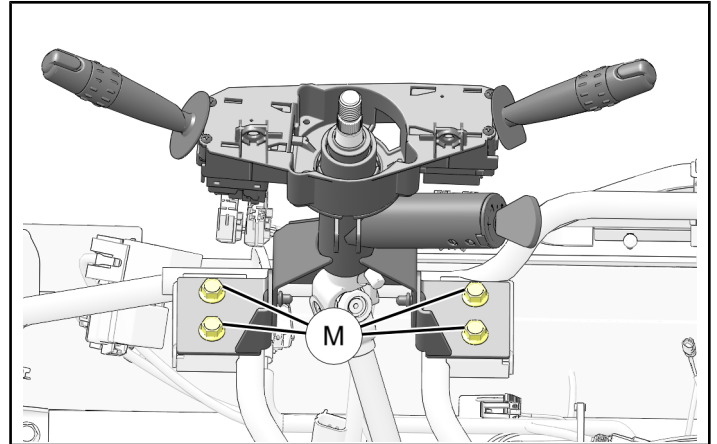
- Remove and retain two screws (J) and upper steering column upper cover (K).



- Unplug four connectors (L) on rear of stalk assembly.

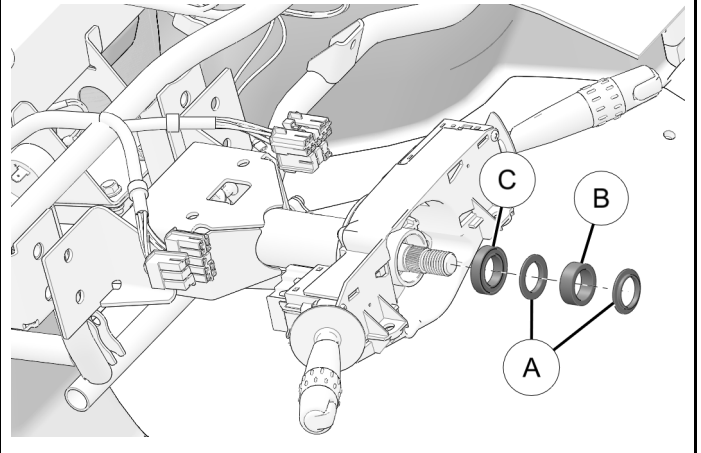


- Install key in ignition and turn to "ON" position to disengage steering lock. Remove and retain four bolts (M). Remove steering column weldment from front steel dash frame.

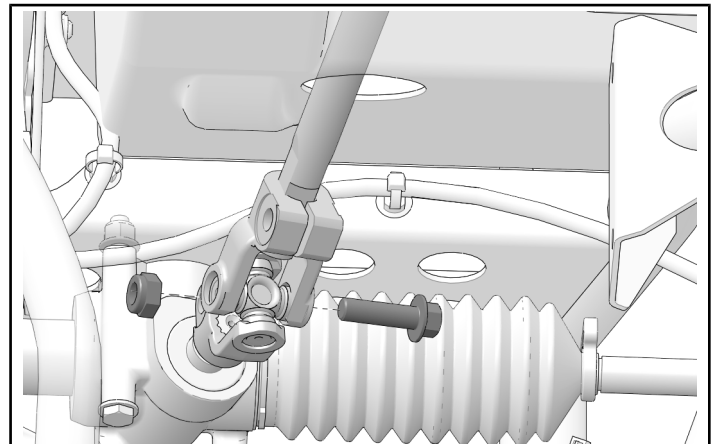


### IMPORTANT

Steering shaft washers (A), bushing (B), and bearing (C) will all come out with weldment. Retain parts for reassembly.

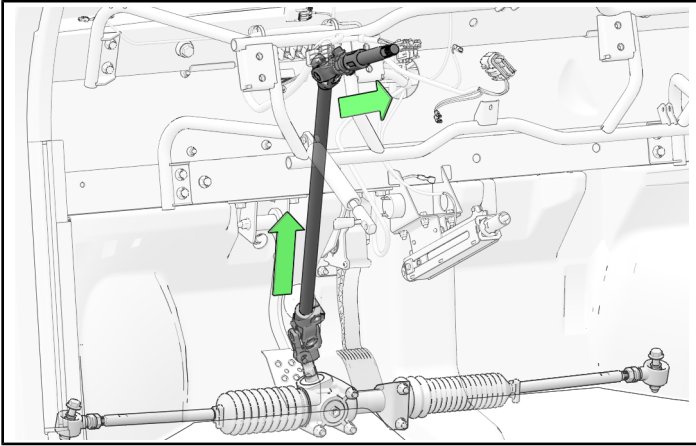


- Remove and discard remaining lower steering shaft nut and bolt. Pull shaft free from steering rack.

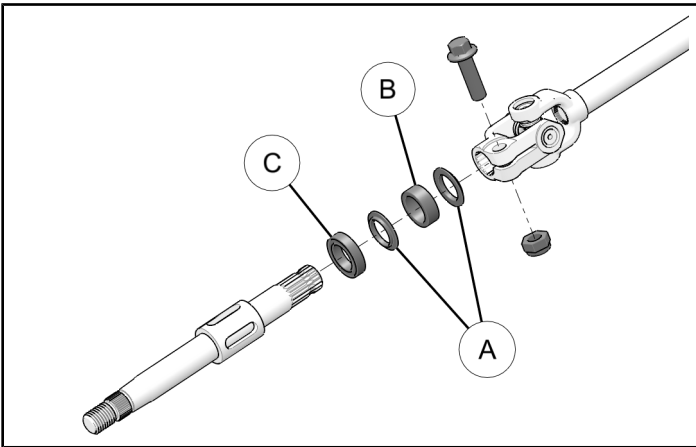




- Remove fixed steering shaft by pulling it up and through splash guard towards driver's seat as shown.



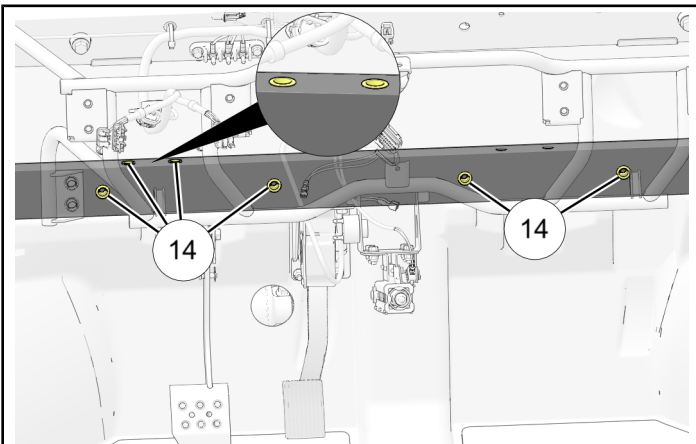
- Remove nut and bolt from upper steering shaft joint. Slide upper shaft from joint. Slide steering shaft washers (A), bushing (B), and bearing (C) from upper steering shaft. Retain parts for reassembly.



10.

### EPS KIT INSTALLATION

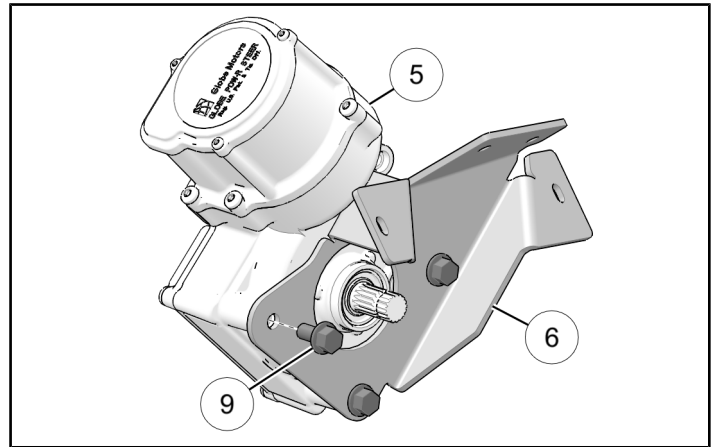
- Install six nut inserts (14) into precut holes in frame tube.



- Install EPS mounting plate (6) to EPS Unit (4) using three bolts (9). Torque to specification.

### TORQUE

EPS Unit to Bracket Bolts (9)  
30 ft-lbs (40 N·m)



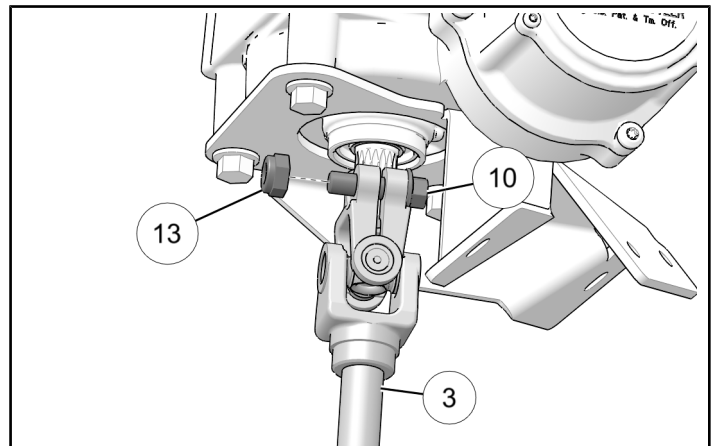
- Install lower EPS steering shaft (1) to EPS with screw (10) and nut (13) outside of vehicle. Make sure to align slit on knuckle with skip tooth on steering rack. Torque to specification.

### TORQUE

Lower EPS Shaft Bolt (10)  
47 ft-lbs (64 N·m)

### NOTE

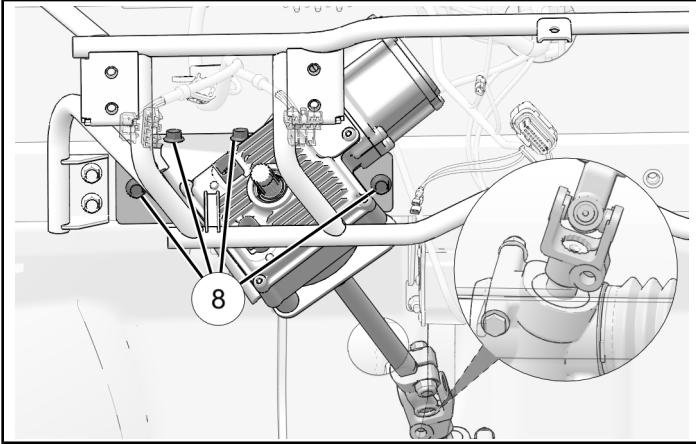
Failing to properly align steering can result in improper phasing causing steering to feel uneven.



4. Install EPS with bracket and shaft into vehicle and secure with four bolts ⑧. Slip steering shaft onto rack during install. Torque to specification.

**TORQUE**

Eps Unit Bracket Screw ⑧  
**18 ft-lbs (24 N·m)**



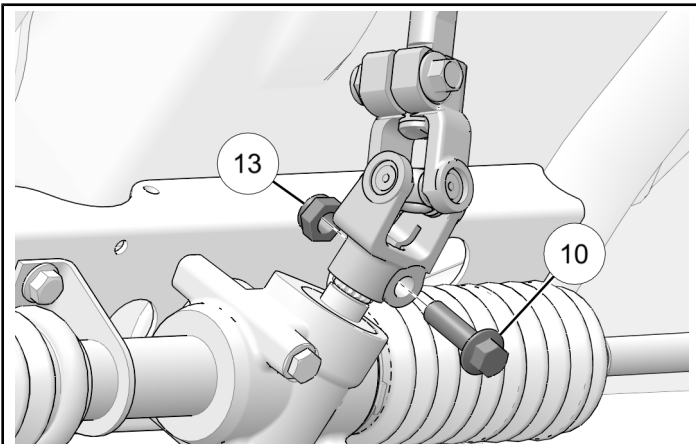
5. Tighten lower steering shaft bolt ⑩ and nut ⑬. Torque to specification.

**TORQUE**

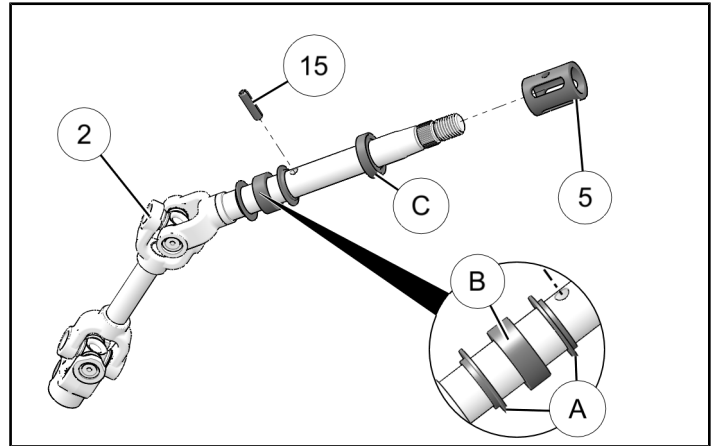
Steering Shaft to Rack Bolt ⑩  
**47 ft-lbs (64 N·m)**

**NOTE**

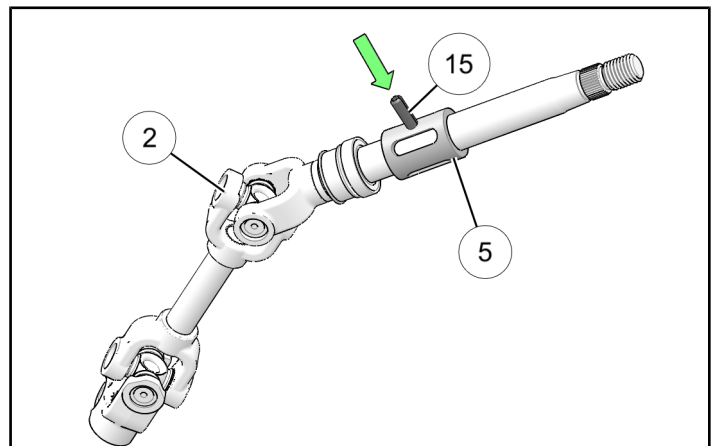
Ensure steering rack pinion sits slightly recessed from U-joint.



6. Install washers ①, bushing ② (ensuring correct allocation) and bearing ③ on upper steering shaft ④ as shown below.



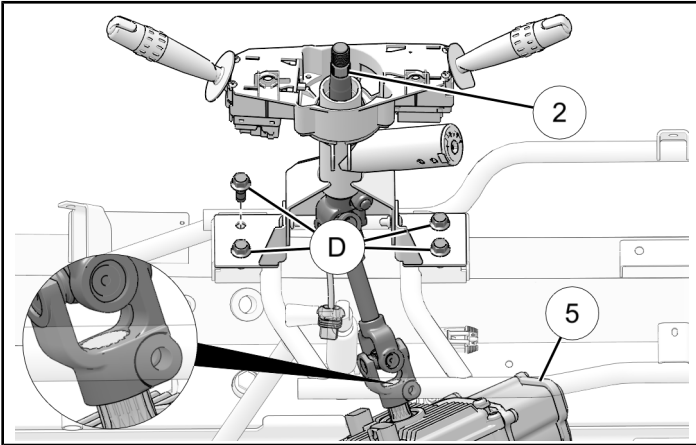
7. Slide lock collar ⑤ onto upper shaft ④, align hole and install spring pin ⑬.



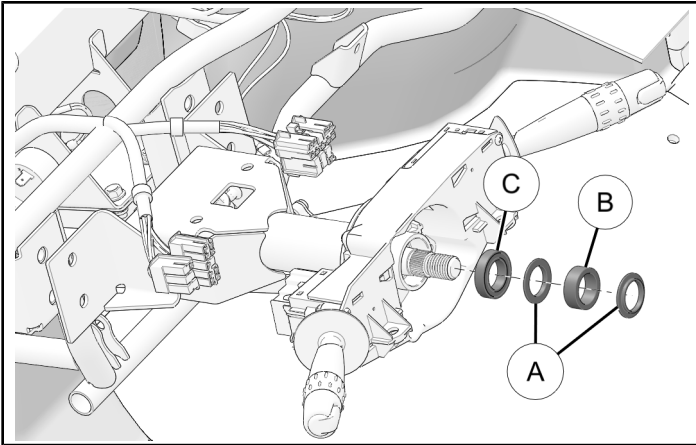
8. Insert steering column shaft ② into retained steering column weldment and install assembly back to steel dash frame using four retained screws ④. While installing, slide steering shaft ② onto EPS unit ⑤ and ensure skip tooth is aligned with slit on U-joint. U-joint slits should align when installed. Torque four screws to specification.

**TORQUE**

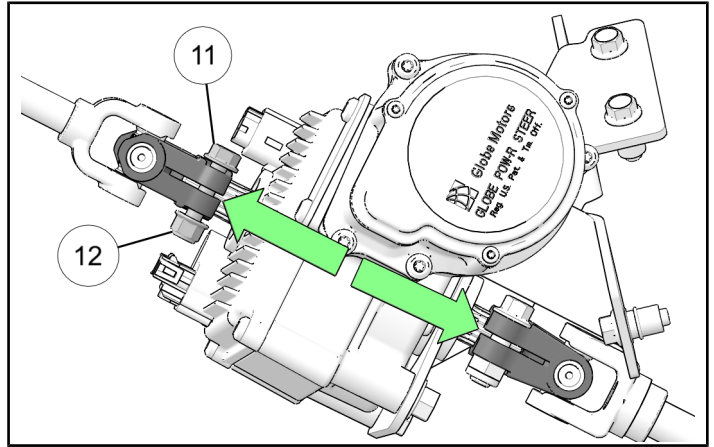
Steering column weldment screws ④:  
**18 ft-lbs (24 N·m)**



9. Install steering shaft washers ①, bushing ②, and bearing ③ onto steering shaft.



10. Loosely install bolt ⑪ and nut ⑫ into upper shaft joint but **DO NOT** tighten fasteners at this time.



11. Reinstall retained upper steering column cover.

**TORQUE**

Upper Steering Column Cover Screw:  
**12 in-lbs (1.4 N·m)**

12. Reinstall retained lower steering column cover.

**TORQUE**

Lower Steering Column Cover Screw:  
**12 in-lbs (1.4 N·m)**

13. Reinstall retained steering shock/brace.

**TORQUE**

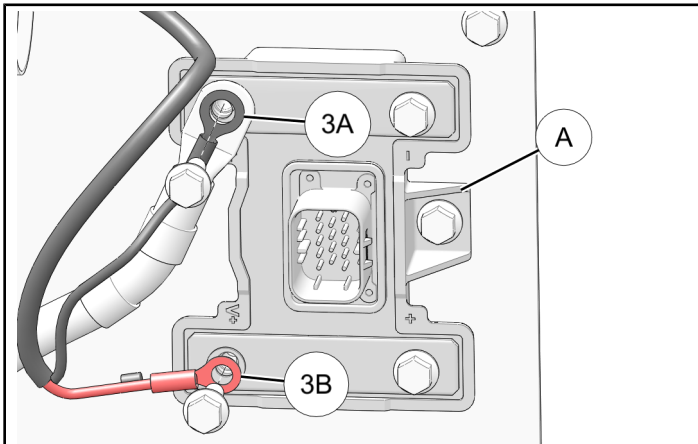
Steering Shock Brace Bolt:  
**96 in-lbs (11 N·m)**

## CONNECT WIRING HARNESS

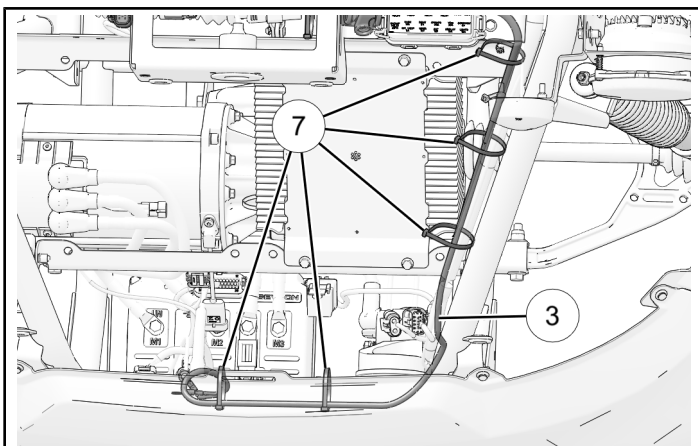
1. Locate Battery Management Controller (A) at front of vehicle. Connect BMC Positive Terminal Connector 3B to BMC positive terminal labelled "V +" and connect BMC Negative Terminal Connector 3B to BMC negative terminal labelled "V-" as shown. Torque BMC terminal screws to specification.

### TORQUE

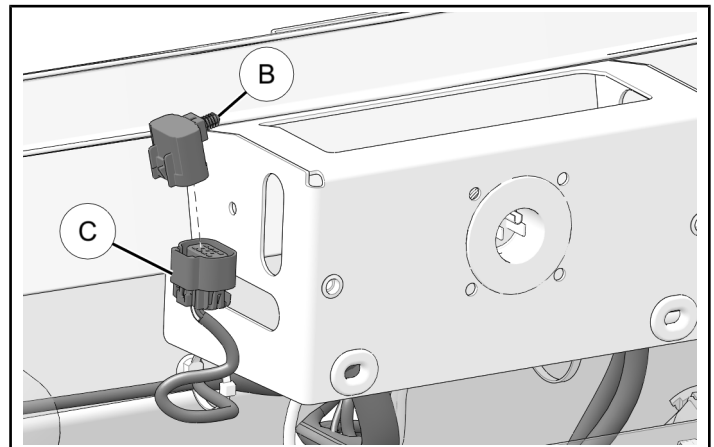
BMC Terminal Screws:  
8 ft-lbs (11 N·m)



2. Route harness (3) following front harness. Secure EPS harness (3) to main front harness with cable ties (7).

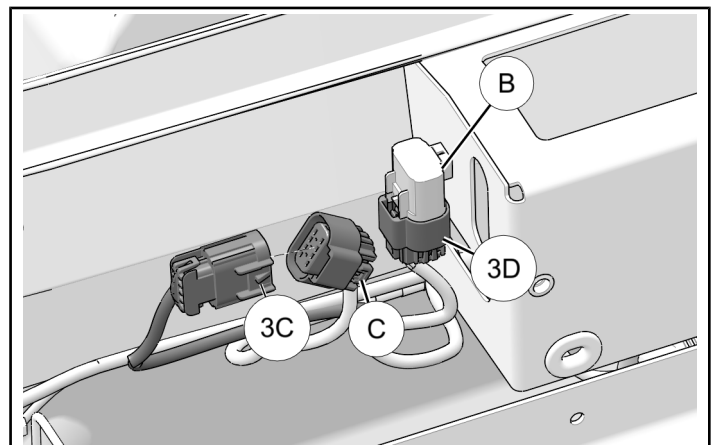


3. Disconnect blank plug (B) from diagnostic port connector (C).



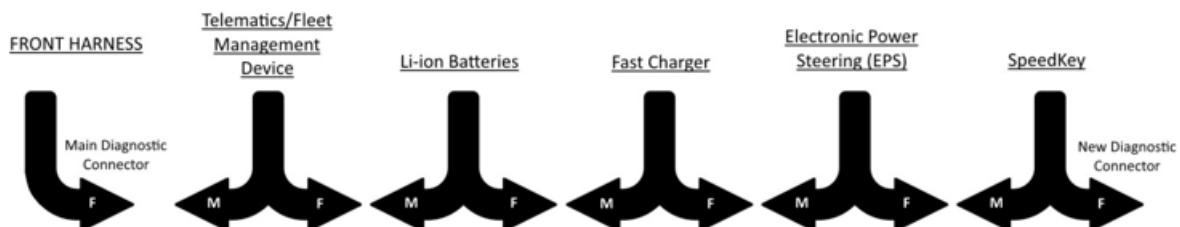
4. Plug following connectors together:

- Diagnostic Connector Link 3C to Vehicle Diagnostic Connector (C) (or last accessory connector in line)
- Diagnostic Connector Port 3D to Blank Plug (B)

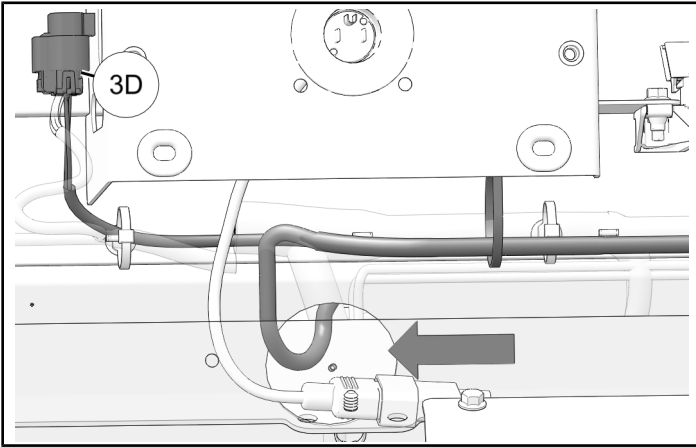


### NOTE

Telematics harness (if equipped) must always be first accessory connected to vehicle harness diagnostic connector. Li-Ion batteries (if equipped) must be after Telematics and before any other accessories. All other accessories can be connected in any order after Li-Ion Batteries.



- Continue to route harness through opening in plastic splash guard.



- Route harness clear of steering shaft and plug following connectors in:

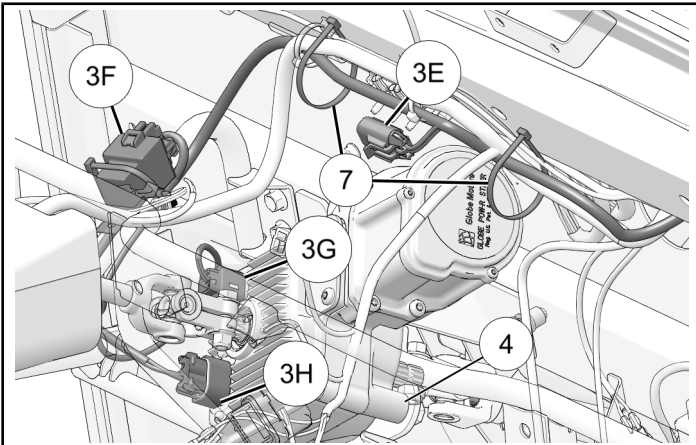
- EPS Signal Connector **3G** to EPS Unit **4**
- EPS Power Connector **3H** to EPS Unit **4**

Secure following parts

- EPS Power Relay/Connector **3F** to harness with cable tie **7**.
- Fuse Holder **3E** to plastic splash guard.

#### NOTE

Ensure harness will not interfere with steering shaft.



- Reinstall steering wheel with steering nut. Make sure steering is straight and vehicle will drive straight with a correctly aligned steering wheel.

#### NOTE

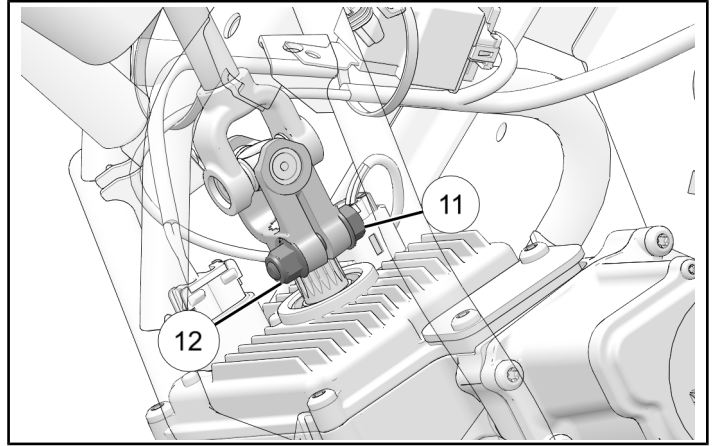
Ensure self-cancelling turn signal tab is installed.

- Once steering is properly aligned and torqued reinstall steering wheel nut cover.

- Tighten upper shaft slip joint screw **11** and nut **12** now that EPS steering has been properly installed. Torque to specification.

#### TORQUE

Upper shaft slip joint fastener:  
**18 ft-lbs (24 N·m)**



## VEHICLE REASSEMBLY

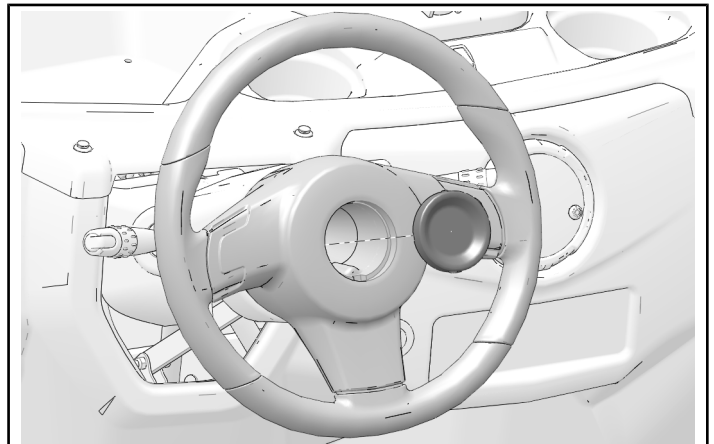
### INSTALL STEERING WHEEL

- Position steering wheel so it is centered.
- Install steering wheel retaining nut and torque nut to specification.

#### TORQUE

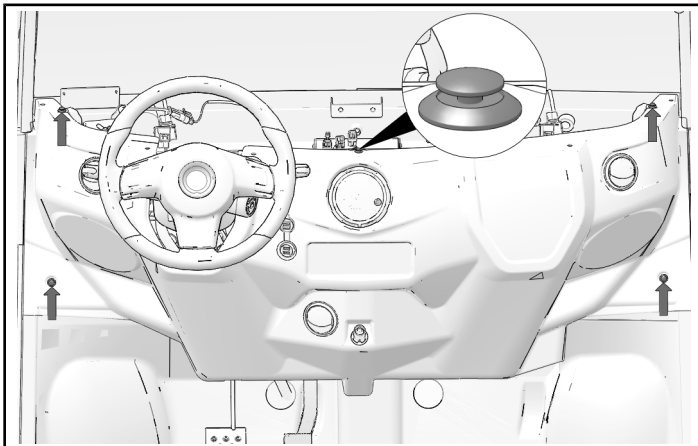
Steering Wheel retaining Nut  
**60 ft-lbs (81 N·m)**

- Install steering wheel cap.



## INSTALL LOWER DASH PANEL

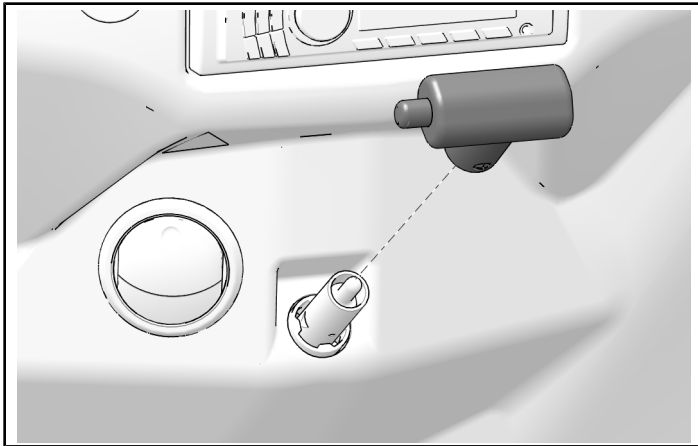
1. Install lower dash panel into place and retain with five push pin rivets.



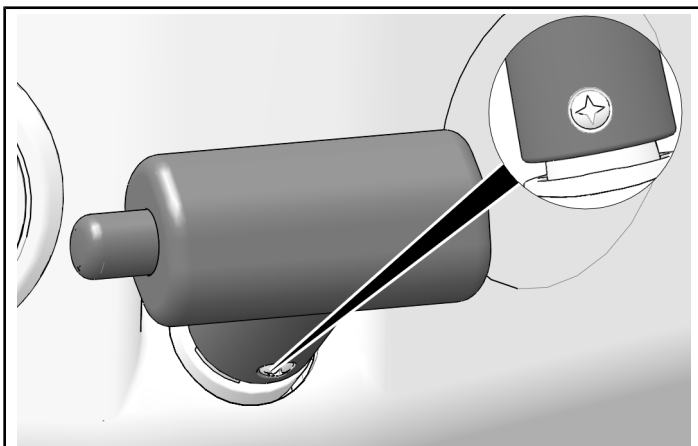
2. Reconnect any electrical connectors, switches, gauges, vents, or accessories that pass through lower dash panel.

## INSTALL PARKING BRAKE HANDLE

1. Push on handle onto base.



2. Install retained screw into parking brake handle. Hand tighten screw.

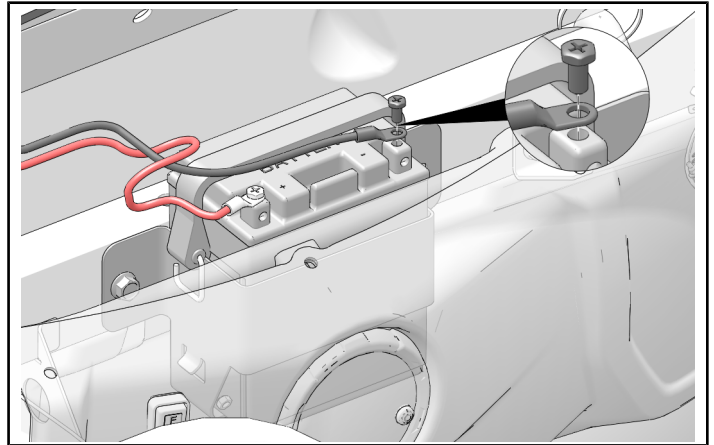


## CONNECT AUXILIARY BATTERY

1. Install negative (-) battery cable with negative (-) terminal bolt located under front dashboard or in rear battery tray (dependent on initial installation position). Torque bolt to specification.

### TORQUE

Negative Battery Terminal Bolt  
45 in-lbs (5 N·m)

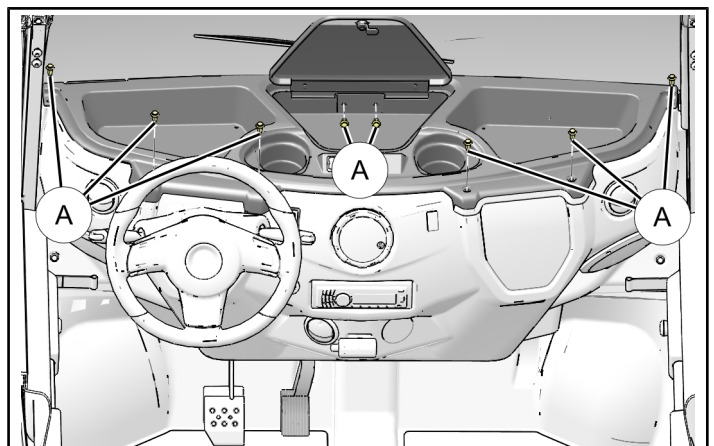


## TOP DASHBOARD REINSTALL

1. Set top dashboard panel in vehicle and reconnect all under-dashboard accessories (if equipped):
  - Heater
  - Dome Light
  - Roof Beacon
  - Defrost Heater
2. Use eight retained push-pin rivets (A) to reinstall dashboard.

### NOTE

Install two push-pin rivets (A) in glove box.



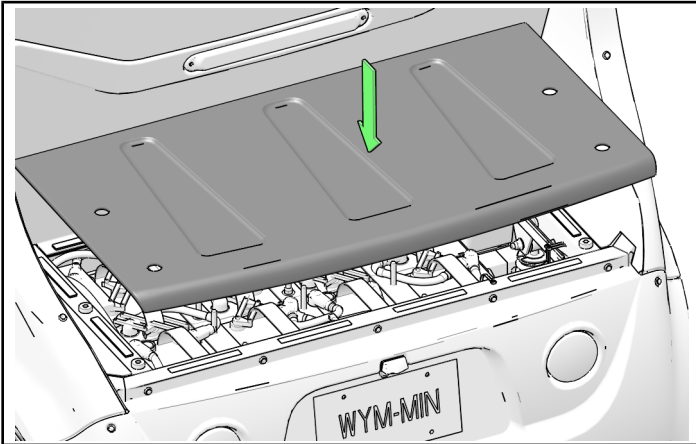
## BATTERY ACCESS COVER

### NOTE

Additional steps may be required to accommodate accessories.

**e2, e4, e6®:**

1. Press battery access cover down so that hook-and-loop fasteners engage.

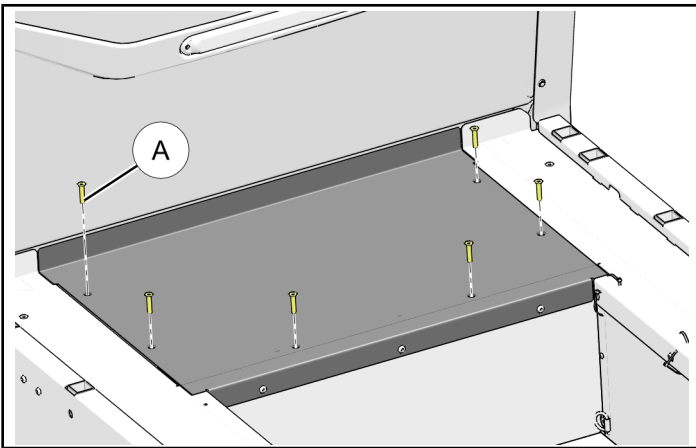


**eL XD:**

1. Secure top of battery access cover with six bolts (A).

### TORQUE

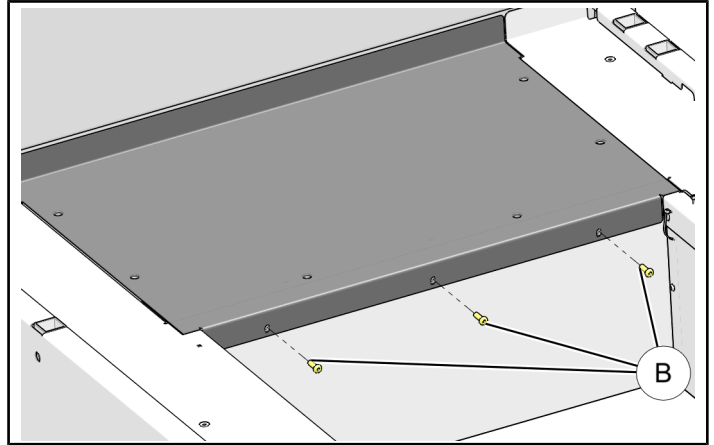
Six bolts (A): 14 ft. lbs. (19 Nm)



2. Secure rear-side of battery access cover with three bolts (B).

### TORQUE

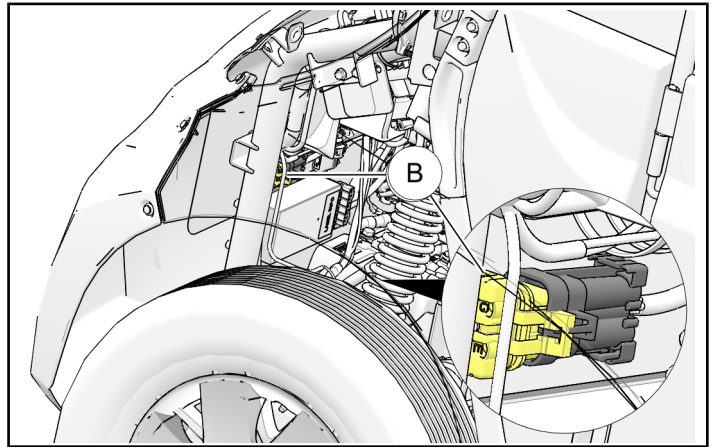
Six bolts (A): 14 ft. lbs. (19 Nm)



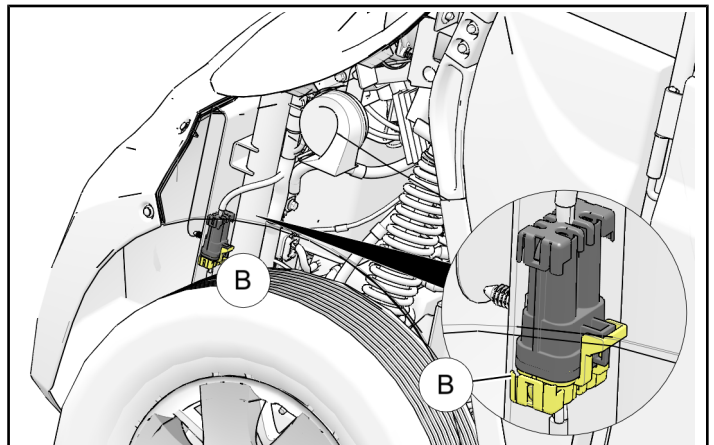
## SERVICE RECONNECT

1. Connect main electrical harness connector to charger harness, as per owner's manual.

- **US: September 2017 and older:**  
**EU and Canada: December 2017 and older**

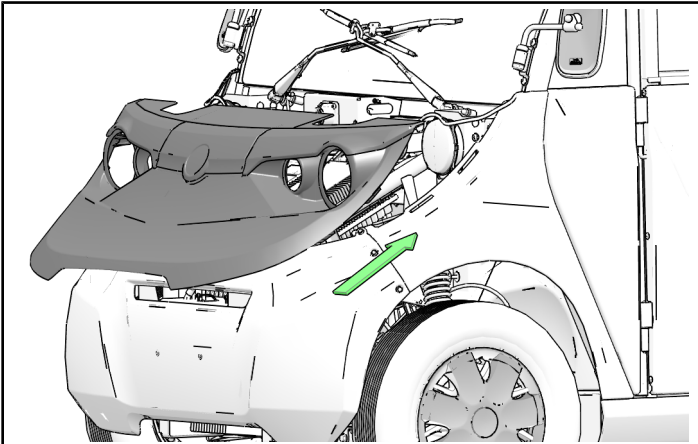


- **US: October 2017 and newer:**  
**EU and Canada: January 2018 and newer**

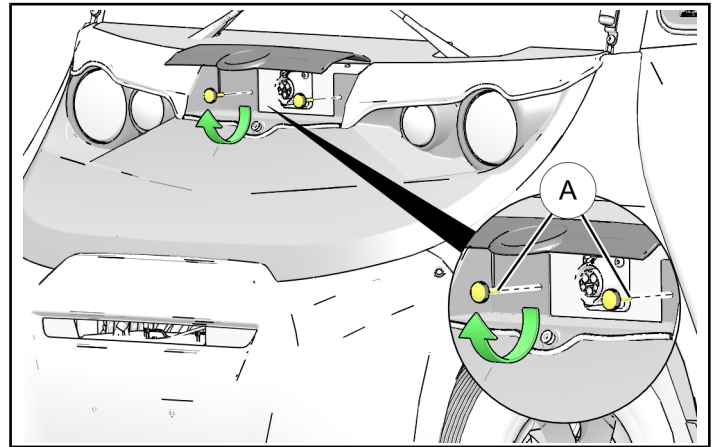


## HOOD INSTALLATION

1. Slide hood up and into position. Hood assembly should engage with grommets mounted on vehicle.



2. Open charge port door. Hand-tighten two knob screws **A** to secure hood to vehicle.



## FEEDBACK FORM

A feedback form has been created for the installer to provide any comments, questions or concerns about the installation instructions. The form is viewable on mobile devices by scanning the QR code or by clicking [HERE](#) if viewing on a PC.

