LI-ION BATTERY UPFIT KIT

P/N 2881852

APPLICATION

Verify accessory fitment at www.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.

REQUIRED SOLD SEPARATELY

IMPORTANT
This procedure was written for a vehicle that has all applicable bulletins completed. The vehicle must be equipped with an auxiliary battery before proceeding.

Full installation of this kit also requires the following additional parts (sold separately):

- *Brammo Li-Ion Control Module*, PN 4016692

Full installation of this kit also requires one of the following additional parts (sold separately):

12.4 kW

- *Brammo Battery, 15v/4.1 kW*, PN 4017364
- *Brammo Battery, 30v/8.3 kW*, PN 4017365

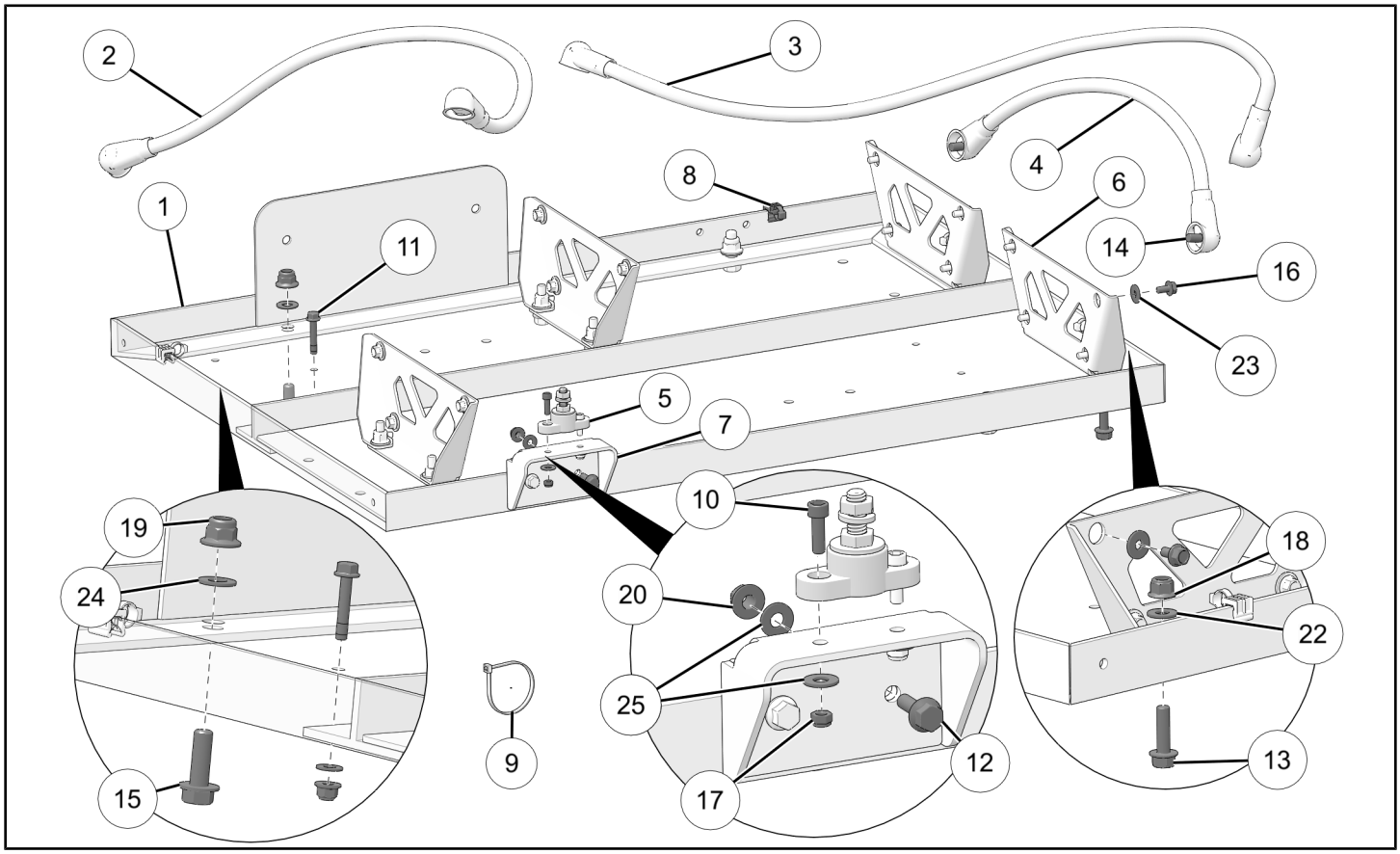
8.9 kW

- *Brammo Battery, 44v/8.9 Kw*, PN 4017366

Full installation of this kit also requires one of the following additional parts (sold separately):

- *Li-Ion Harness e2/eL XD*, PN 2413350
- *Li-Ion Harness e4*, PN 2413374
- *Li-Ion Harness e6*, PN 2413375

KIT CONTENTS



REF	QTY	PART DESCRIPTION	PART NUMBER
1	1	Weld Battery Tray, Li-ion	1022302
2	1	Li-ion Battery Cable, Positive, Short	4015890
3	1	Li-ion Battery Cable, Positive, Long	4015891
4	1	Li-ion Battery Cable, Interconnect	4015894
5	1	Positive Terminal	4016008
6	4	Battery Bracket, Support	5261281
7	1	Mount Bracket Terminal	5261943
8	4	Edge Clip	7081876
9	14	Cable Tie, 25-76 mm	7080492
10	2	Screw, Socket Head, M5 x 0.8 x 16 mm	7516610
11	2	Screw, Hex Flange Head, M6 x 1.0 x 35 mm	7516827
12	2	Screw, Hex Flange Head, M6 x 1.0 x 20 mm	7518613
13	8	Screw, Hex Flange Head, M8 x 1.25 x 30 mm	7518884
14	4	Screw, Hex Flange Head, M8 x 1.25 x 20 mm	7520454
15	4	Screw, Hex Flange Head, M10 x 1.25 x 30 mm	7519059
16	16	Screw, Phillips Hex Head, M6 x 1.0 x 12 mm	7519145
17	2	Nut, Nylon Locking, M5 x .8 mm	7546601

REF	QTY	PART DESCRIPTION	PART NUMBER
18	8	Nut, Flange, Nylon Locking, M8 x 1.25 mm	7547332
19	4	Nut, Flange, Nylon Locking, M10 x 1.25 mm	7547333
20	4	Nut, Flange, Nylon Locking, M6 x 1.0 mm, Nyloc	7547339
21	4	Washer - 3/8 inch, Spring Lock (not shown)	7552603
22	12	Washer - .344 x .750 x .062 mm	7555954
23	16	Washer - 6.4 x 18.0 x 1.6 mm	7556064
24	4	Washer - 3/8 inch	7556153
25	6	Washer - .250 x .563 x .047 mm	7558203

TOOLS REQUIRED

- Safety Glasses
- Pliers, Side Cutting
- Screwdriver, Slotted
- Socket Set, Hex Bit, Metric
- Socket Set, Metric
- Socket Set, SAE
- Socket Set, Deep Well, SAE
- Torque Wrench
- Wrench Set, Metric
- Wrench Set, Ratcheting, SAE

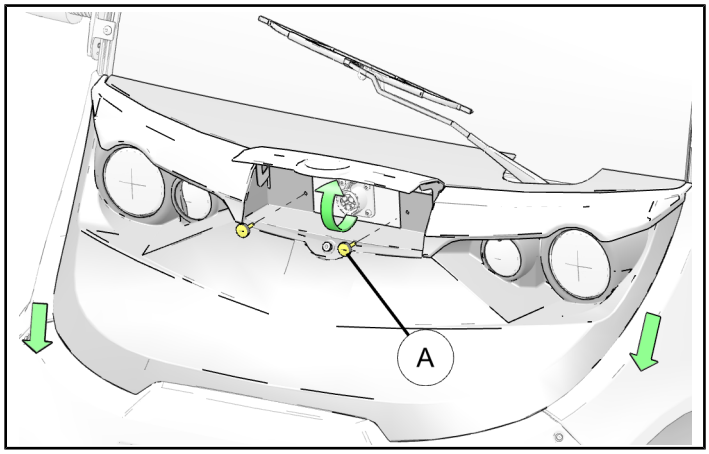
IMPORTANT

Your Li-Ion Battery Upfit 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.

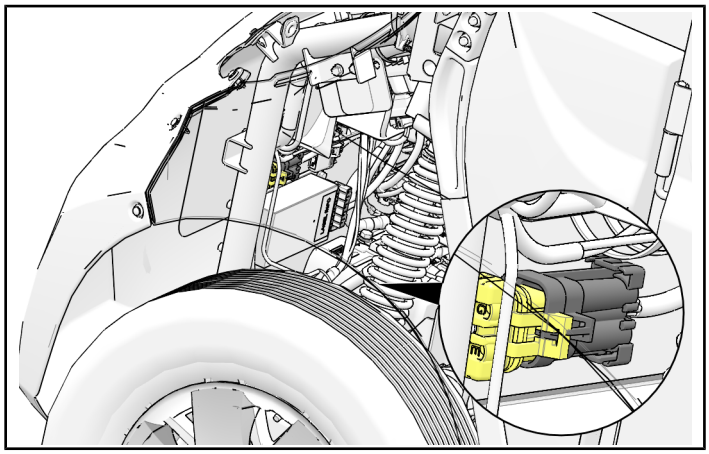
INSTALLATION INSTRUCTIONS

VEHICLE PREPARATION

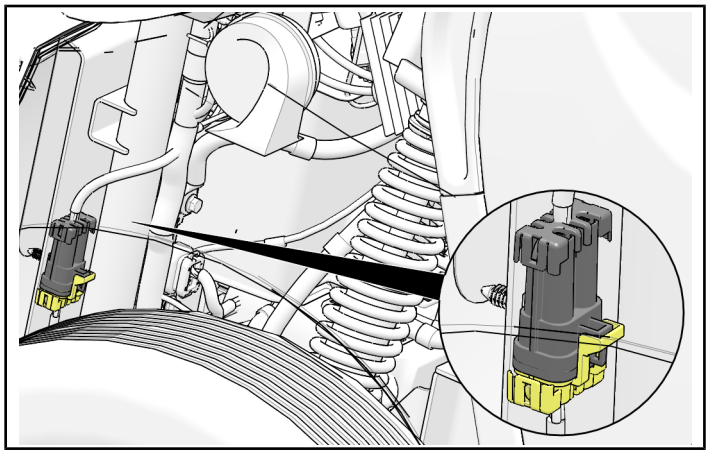
1. Place gear selector in N. Apply parking brake. Turn key to OFF position and remove from vehicle.
2. Flip open charge port door and remove two thumb screws Ⓐ. Pull hood in direction of arrow (parallel to ground) and remove from vehicle.



3. Carefully pull back tab on main disconnect plug and disconnect it from vehicle as per owner's manual.
   - **US: September 2017 and older:**
     EU and Canada: December 2017 and older

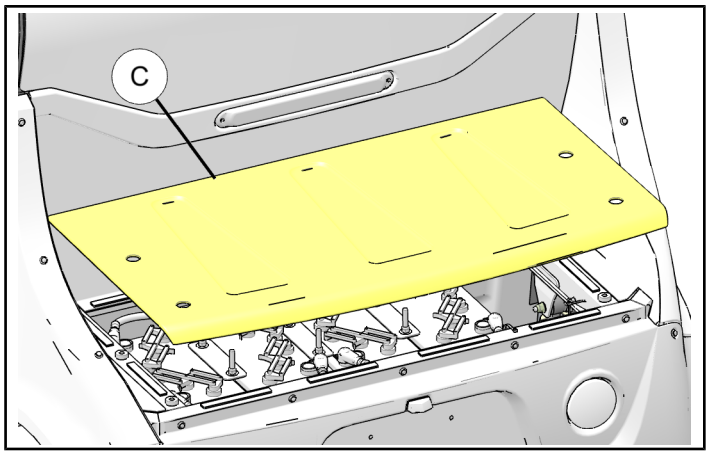


   - **US: October 2017 and newer:**
     EU and Canada: January 2018 and newer

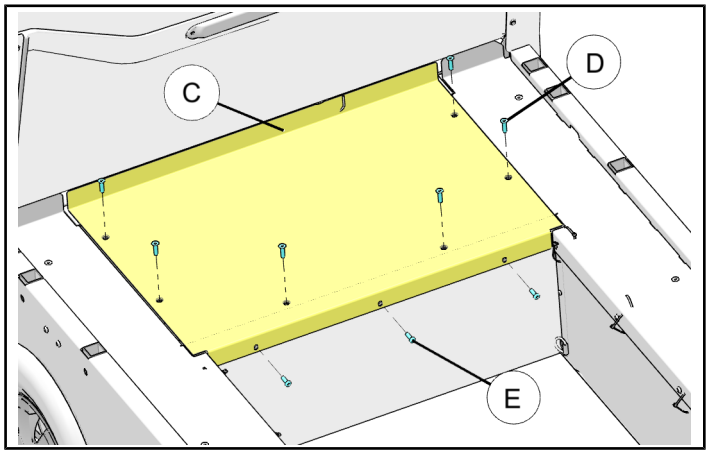


4. Battery access cover removal.
   a. **For e2, e4, and e6®:** Remove rear battery access cover Ⓒ.

NOTE
Battery access cover is attached with Velcro to the rear aluminum frame.

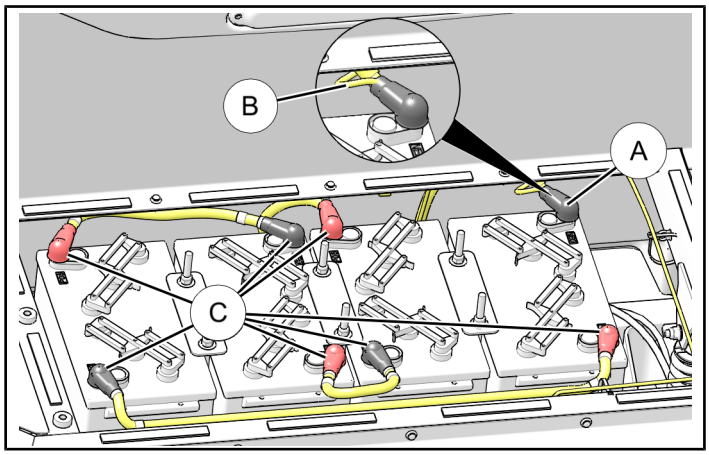


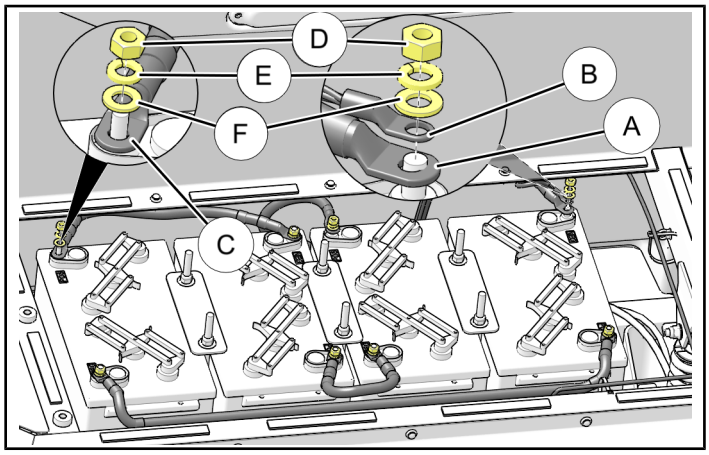
   b. **For eL XD:** Remove six hex head screws Ⓓ and three screws Ⓔ to remove rear battery access cover Ⓒ.



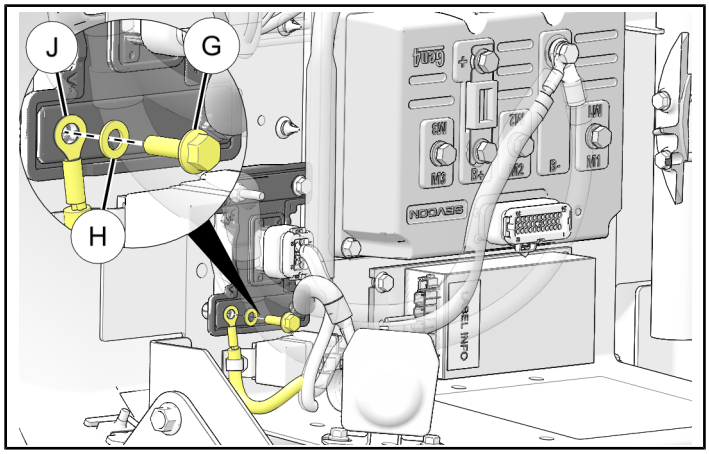
DISCONNECT AND REMOVE STOCK BATTERY

1. Disconnect all battery cables starting with main ground cable Ⓐ and battery temperature sensor Ⓑ on front-most post on far right battery, followed by main harness connections Ⓒ by removing nuts Ⓓ and washers ⒺⒻ.

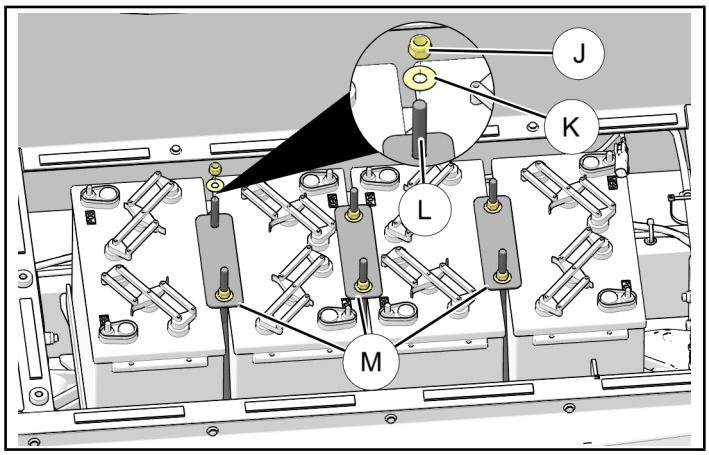




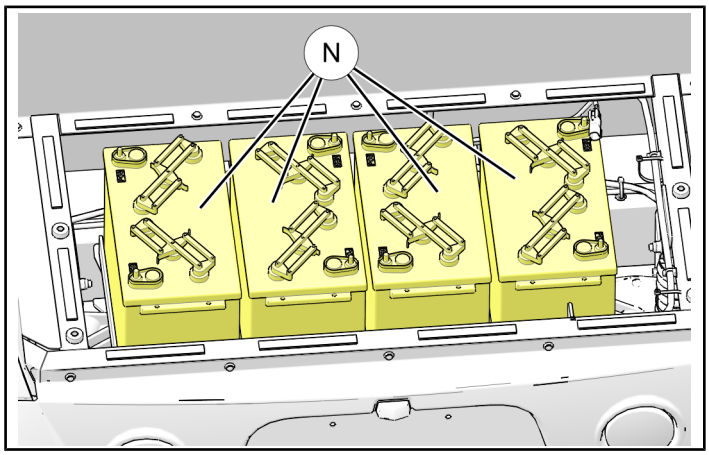
2. Remove and retain screw Ⓖ and washer Ⓗ. Disconnect +12V connector Ⓙ from Battery Management Controller. Wrap cable end with electrical tape and tape or cable tie to main battery cable.



3. Remove nuts Ⓙ and washers Ⓚ from long tie down bolts Ⓛ. Remove battery hold down brackets Ⓜ and long tie down bolts Ⓛ.

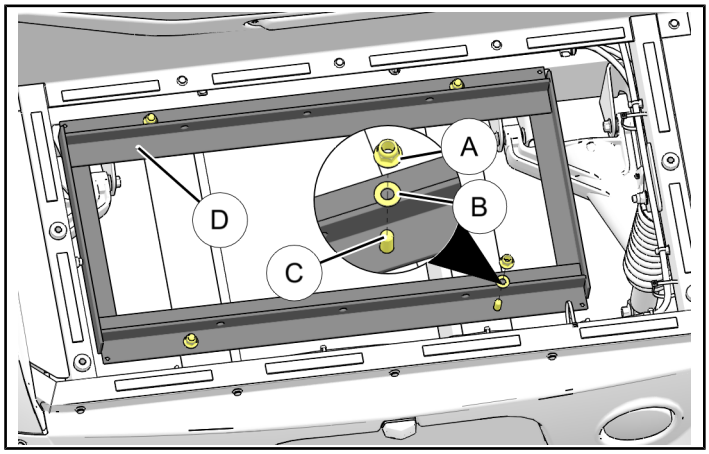


4. Remove old flooded batteries Ⓝ or maintenance free batteries from battery tray.



REPLACE BATTERY TRAY

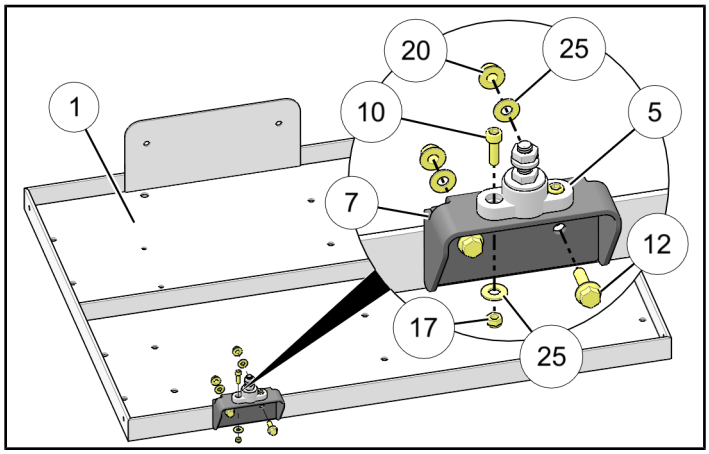
1. Remove nuts Ⓐ and washers Ⓑ from screws Ⓒ holding battery tray Ⓓ in place and remove battery tray from vehicle.



2. Install terminal mounting bracket ⑦ to lithium ion battery tray ① with screws ⑫, washers ㉕, and nuts ⑳. Install terminal ⑤ to bracket ⑦ with screws ⑩, washers ㉕, and nuts ⑰. Torque fasteners to specification.

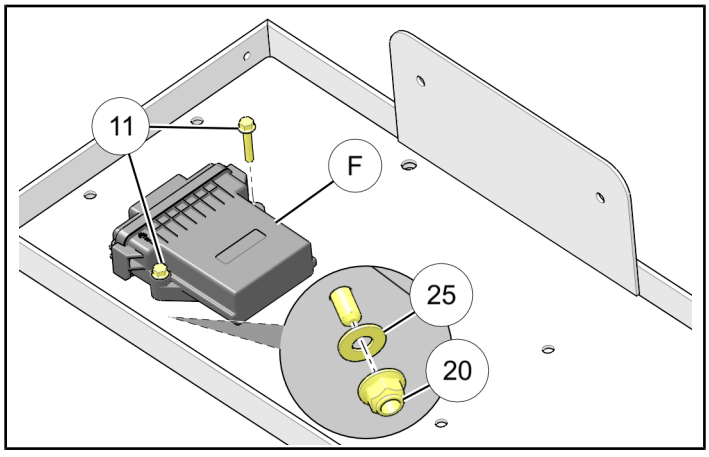
TORQUE
Terminal Mounting Bracket Screw ⑫: **96 in-lbs (11 N·m)**

TORQUE
Terminal Screw ⑩: **24 in-lbs (3 N·m)**



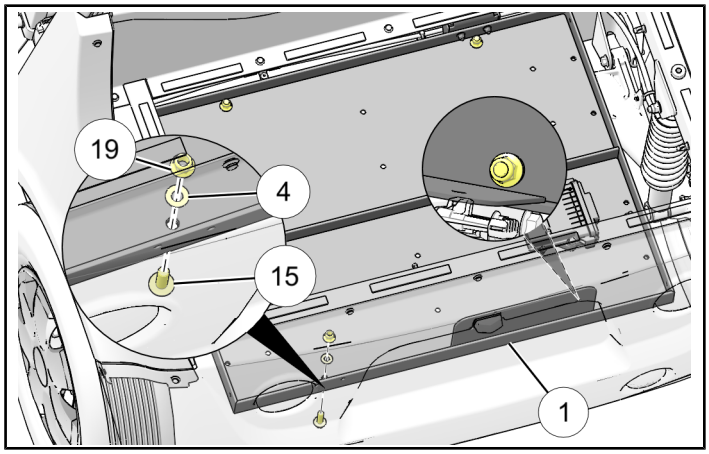
3. Install Brammo Lithium ion module Ⓕ **(Sold Separately, PN 4016692)** with two screws ⑪, two washers ㉕ and two nuts ⑳. Torque fasteners to specification.

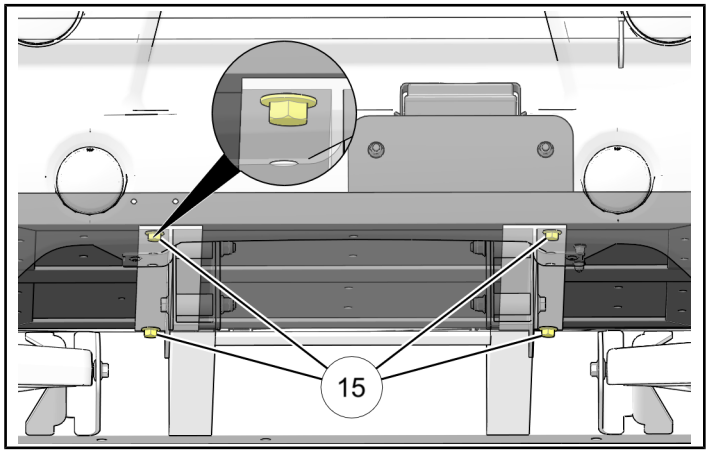
TORQUE
Li-Ion Module Screw ⑪: **24 in-lbs (3 N·m)**



4. Install new lithium-ion battery tray ① with four screws ⑮, four washers ㉔, and four nuts ⑲. Torque fasteners ⑲ to specification.

TORQUE
Battery Tray Nuts ⑲: **37 ft-lbs (50 N·m)**



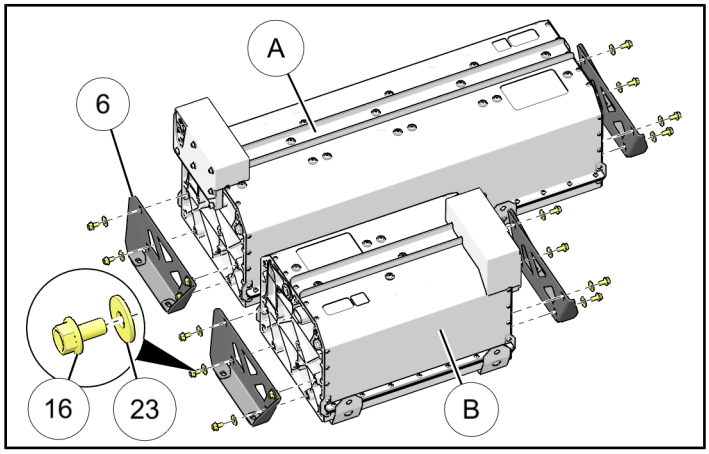


ASSEMBLE AND INSTALL LI-ION BATTERIES

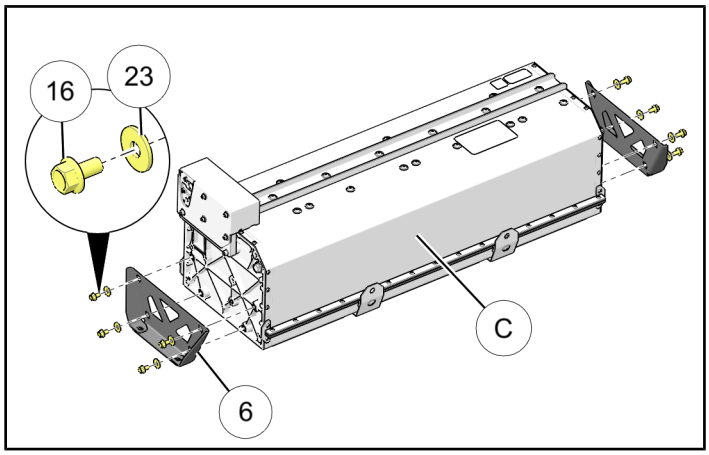
1. Install battery brackets ⑥ to both ends of lithium ion batteries: Ⓐ **(Sold separately, PN 4017365)**, Ⓑ **(Sold separately, PN 4017364)** for 12.4 kW battery pack, and Ⓒ **(Sold separately, PN 4017366)** for 8.9 kW battery pack with screws ⑯, washers ㉓ Torque fasteners to specification.

TORQUE
Battery Bracket Screws ⑯: **66 in-lbs (7.5 N·m)**

12.4 kW Ⓐ and Ⓑ



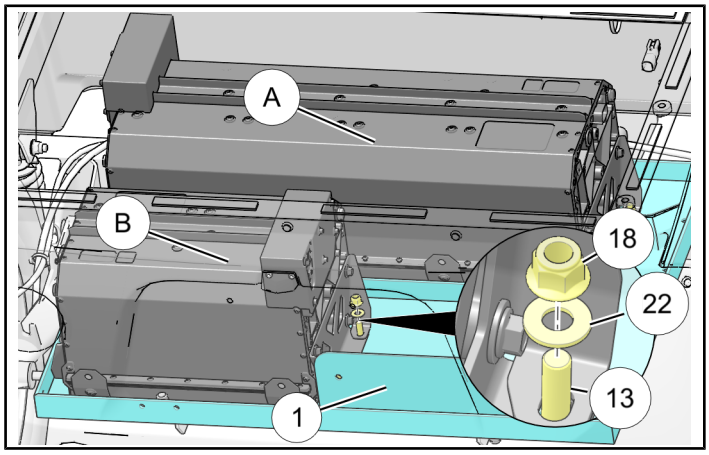
8.9 kW Ⓒ



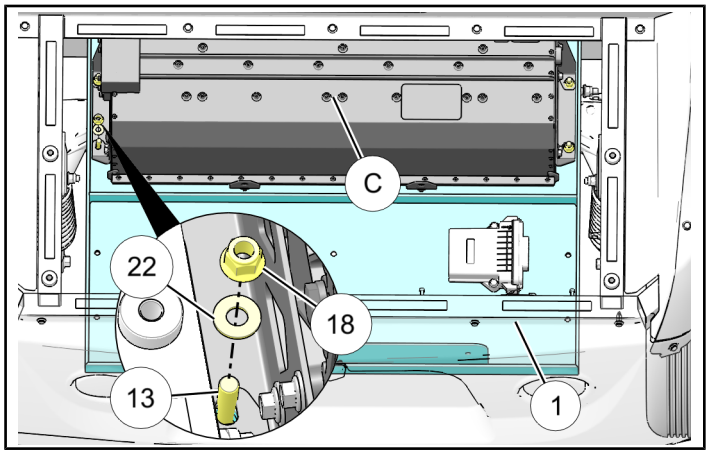
2. Install battery and bracket assembly onto battery tray ① with screws ⑬, washers ㉒, and nuts ⑱. Note different positions for 12.4 kw battery pack and 8.9 kW battery pack.

TORQUE
Battery to Tray Nuts ⑱ **18 ft-lbs (24 N·m)**

12.4 kW Ⓐ and Ⓑ



8.9 kW Ⓒ



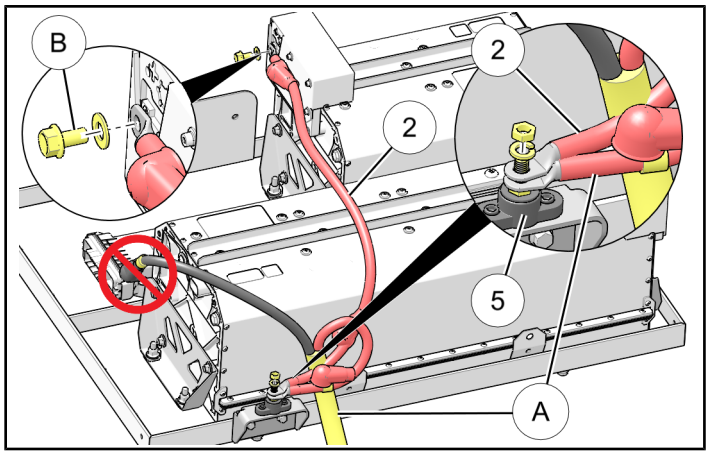
CONNECT BATTERY WIRING

NOTE
Vehicle not shown for clarity.

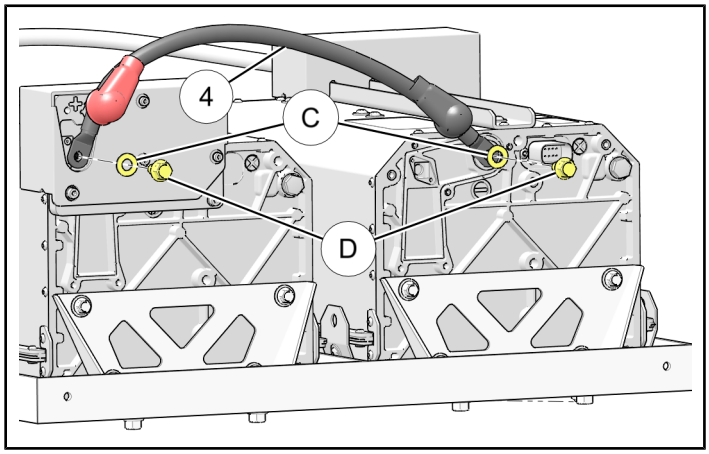
12.4 KW BATTERY CABLES AND LI-ION HARNESS

1. Install Positive Short battery cable ② and positive cable from main harness Ⓐ to positive terminal mount ⑤. Install opposite end of Positive Short Cable ② to post on small Li-Ion Battery Ⓑ. **DO NOT Torque battery post fasteners at this time.**

⚠ WARNING
DO NOT Connect Main Harness Negative Battery Cable At This Time, or serious injury or damage to components may occur.



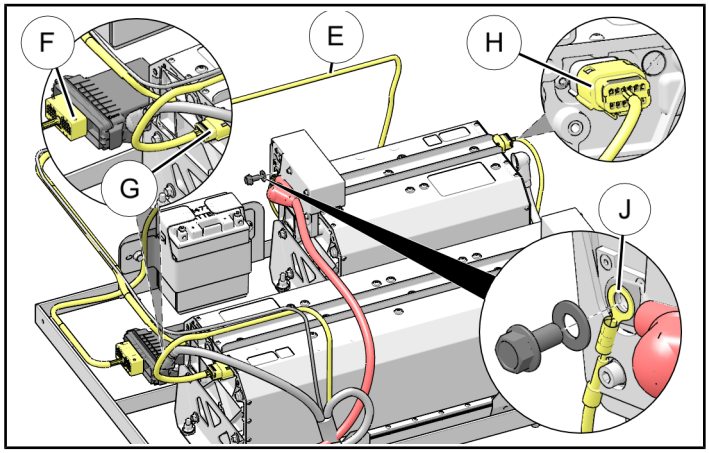
2. Connect Battery Cable Interconnect ④ between battery posts using two battery post washers Ⓒ and screws Ⓓ as shown. **DO NOT torque battery connections at this time.**



3. Install appropriate Li-Ion Harness Ⓔ by plugging large connector Ⓕ into Li-Ion Module. Now plug connector Ⓖ into large battery, remove blank plug from connector Ⓗ and plug into small battery. Connect small cable Ⓙ to positive battery terminal on small battery. Torque ***ALL already connected*** battery terminal connectors to specification.

⚠ WARNING
DO NOT Connect Main Harness Negative Battery Cable At This Time, or serious injury or damage to components may occur.

TORQUE
Battery Terminal Connector: **8 ft-lbs (11 N·m)**

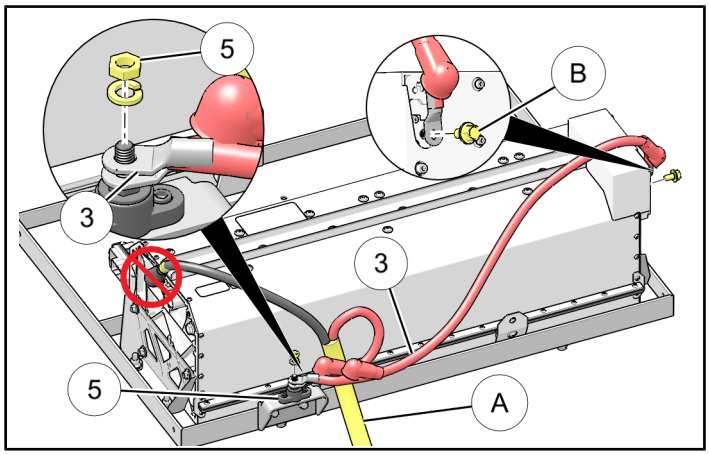


8.9 KW BATTERY CABLES

1. Install Positive Long Battery Cable ③ and main harness Ⓐ to positive terminal mount ⑤. Install opposite end of Positive Long Cable ③ to post on Li-Ion Battery Ⓑ. **DO NOT Torque battery post fasteners at this time.**

⚠ WARNING

DO NOT Connect Main Harness Negative Battery Cable At This Time, or serious injury or damage to components may occur.



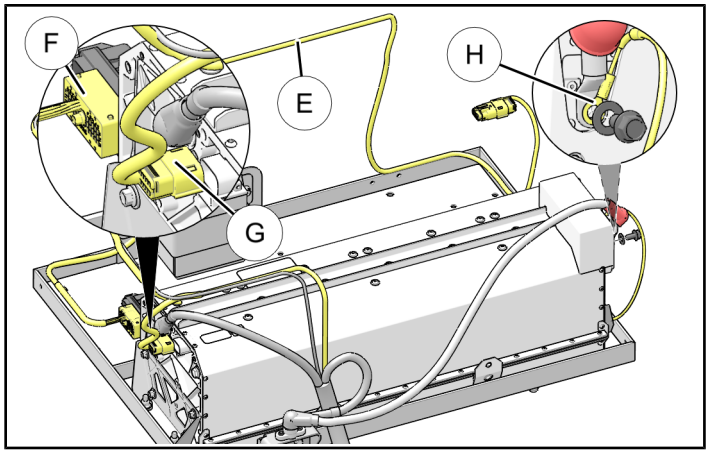
2. Install appropriate Li-Ion Harness Ⓔ by plugging large connector Ⓕ into Li-Ion Module and connector Ⓖ into large battery. Connect small cable Ⓗ to positive battery terminal on large battery. Torque ***ALL already connected*** battery terminal connectors to specification.

⚠ WARNING

DO NOT Connect Main Harness Negative Battery Cable At This Time, or serious injury or damage to components may occur.

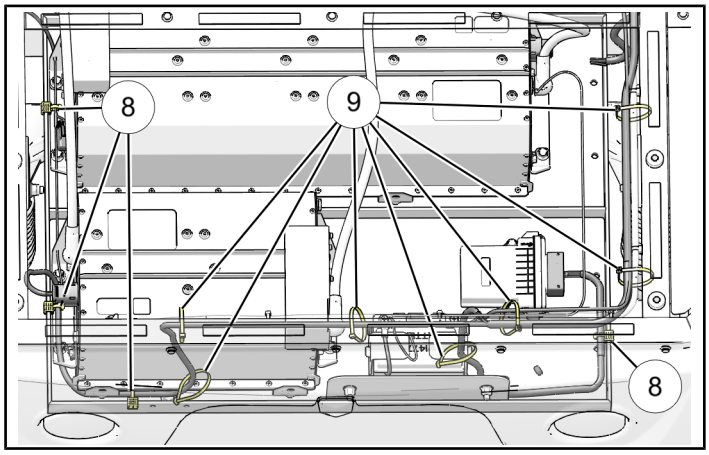
TORQUE

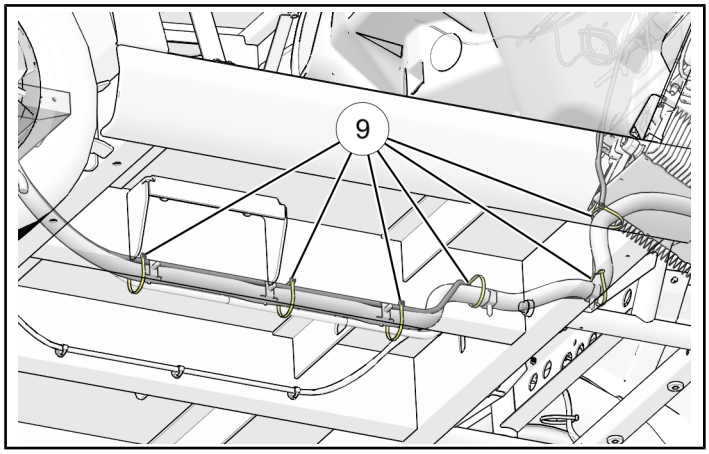
Battery Terminal Connector:
8 ft-lbs (11 N·m)



HARNESS ROUTING

1. Route harnesses and attach to vehicle using cable ties ⑨ and edge clips ⑧ as shown.

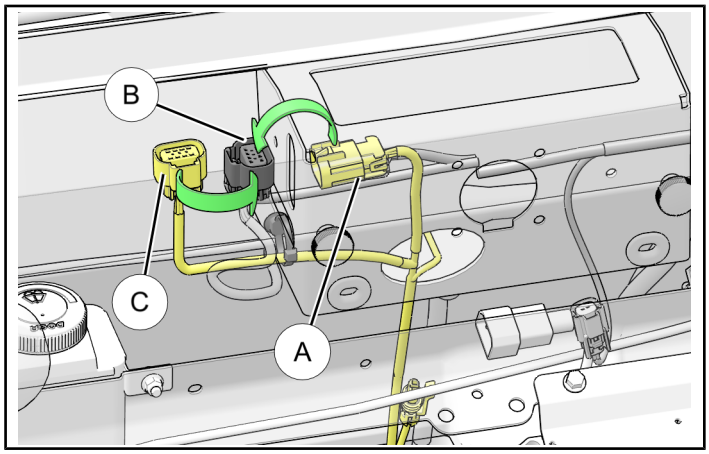




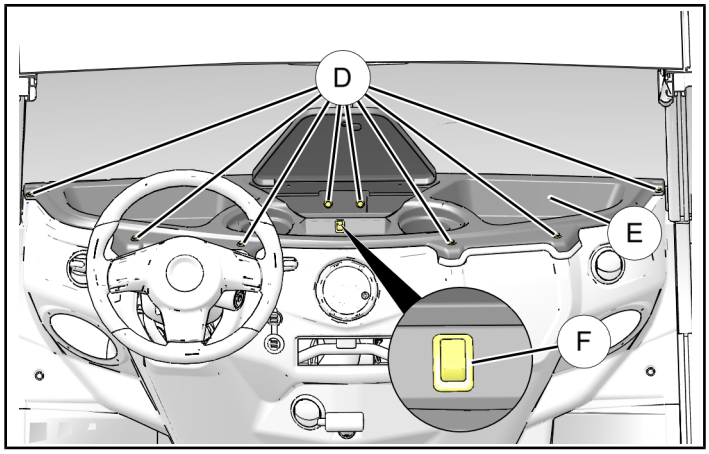
2. Plug lithium harness connector Ⓐ into diagnostic port connector Ⓑ and replace diagnostic port connector Ⓑ with other lithium harness connector Ⓒ.

NOTE

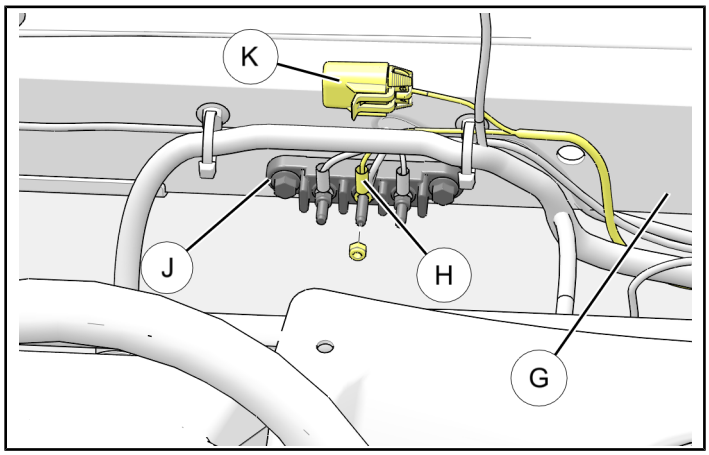
If vehicle is equipped with EPS or other CAN-Based accessories, see “ACCESSORIES - CAN-BASED” section of GEM Service Manual for more details on sequence of connections.



3. Remove eight push rivets Ⓓ from upper dash panel Ⓔ. Slowly lift upper dash and disconnect switch Ⓕ.

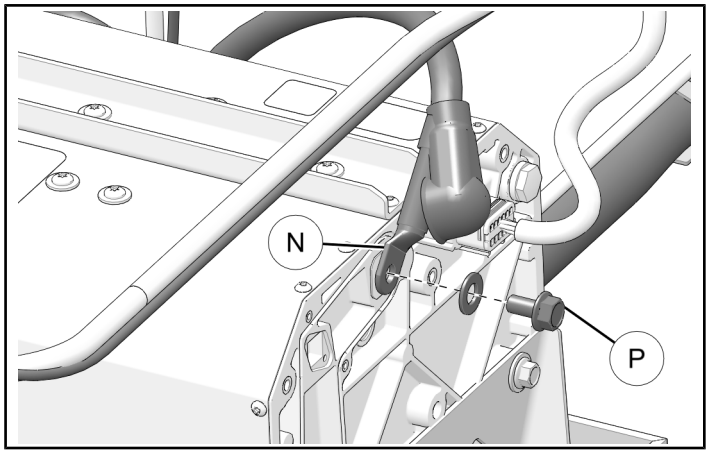


4. Route rest of harness through front plastic splash guard Ⓖ. Install terminal harness Ⓗ to accessory block Ⓙ on the middle post, for negative 12v. Install harness connector Ⓚ.



5. Reinstall upper dash panel Ⓔ with retained push-pin rivets Ⓓ. Make sure to connect all switches Ⓕ.
6. Connect main harness Ⓝ negative cable to negative battery post Ⓟ. Torque fastener to specification.

TORQUE
Battery Terminal Connector: **8 ft-lbs (11 N·m)**



7. Reconnect main vehicle disconnect. Reinstall battery cover and reinstall hood with thumb screws.

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.