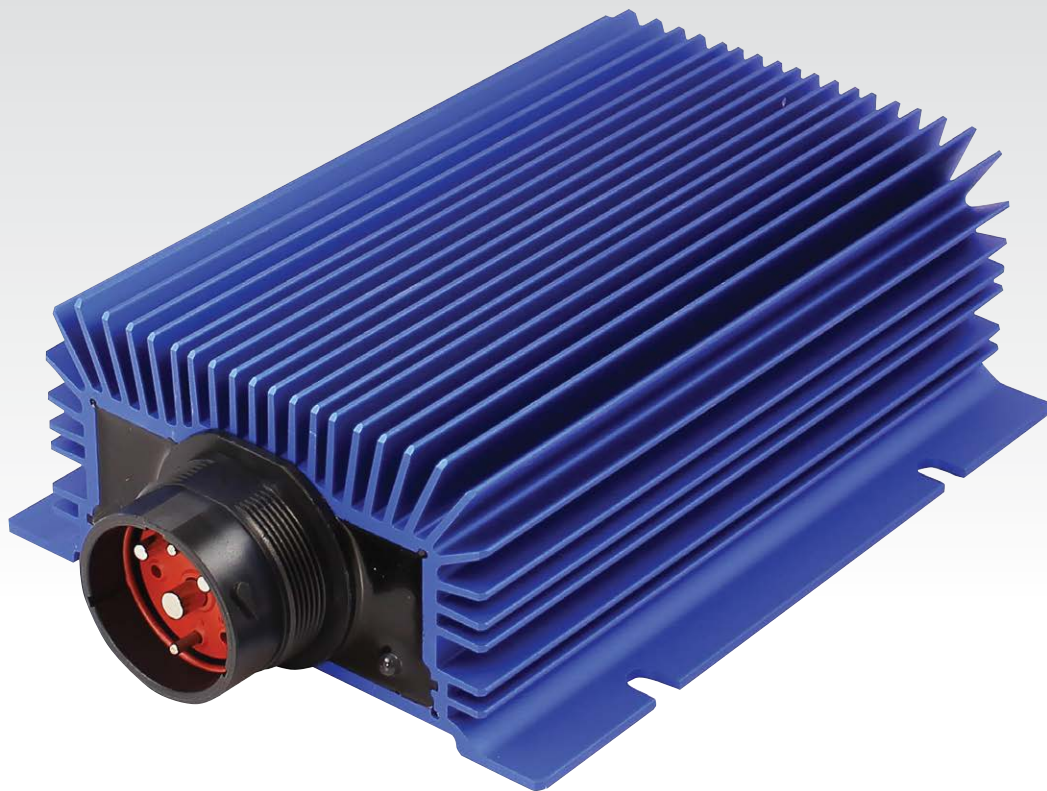


MAXON®

STA-CHARGE™

60-0200-600

Installation Manual I-60-0200



MAXON Reference# 299217-500
(I-60-0200) REV0 6-7-18

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PHILIPS

STA-CHARGE™ INSTALLATION MANUAL

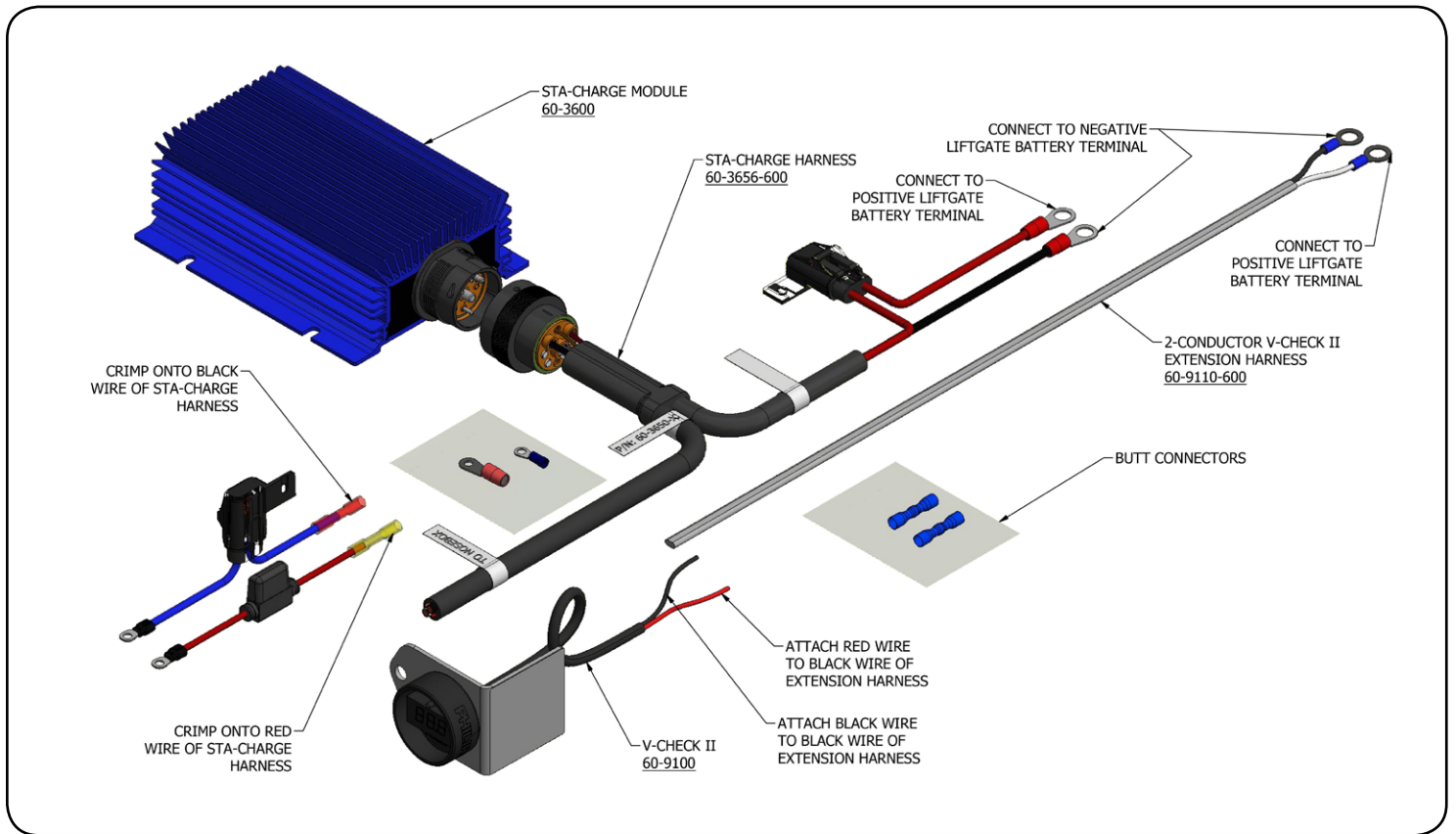


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GENERAL SYSTEM INFORMATION:

Most Class 8 tractors have a much larger battery bank than a typical liftgate system and they serve as an excellent source of supplemental power for a liftgate system. When a tractor is connected to a trailer and utilizes a liftgate charging cable, also known as a stinger cord and socket (either a single pole or dual pole), to charge the liftgate batteries, this is considered the traditional method for charging liftgate batteries. There are issues, however, getting the liftgate batteries to a fully charged state. Due to the naturally occurring voltage drop across a length of cable, the stinger cord has a limit to the amount of voltage it can supply to the liftgate batteries. The STA-CHARGE™ system uses a battery charger. This method takes the voltage coming from the front of the trailer, and boosts it up to 14.4 VDC, the threshold to which liftgate batteries need to be charged.

The STA-CHARGE™ Battery Charger is a DC/DC converter used to charge liftgate batteries that suffer from low voltage due to the amount of voltage loss from the source batteries. The STA-CHARGE™ unit will boost the voltage coming from the tractor that is as low as 8.5V up to 14V. This not only ensures the batteries are being charged to 100% capacity, but also allows more liftgate cycles for each trip.

The STA-CHARGE™ unit can also utilize an ABS Lock-Out feature, such that when the brake pedal is pressed, all power to the battery charger is stopped and becomes solely available to the ABS module. This is not recommended for inner-city type applications due to frequent multiple stops. It is more applicable for long haul applications where trailer speed and ABS events are more frequent.

The V-CHECK™ II provides a digital display of the battery voltage and state of charge. It is easy to tell if the batteries are charging at a steady rate with a quick glance. If the voltage doesn't appear to increase at a normal rate, then there could be a parasitic load or an issue with the charging system batteries, and troubleshooting will be necessary.

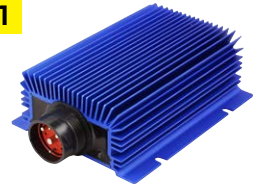
STA-CHARGE™ BATTERY CHARGING SYSTEM CONTENTS (Bill of Materials)

The parts below are included and are required for the installation of
60-0200-600 STA-CHARGE™ Battery Charging System.

1. 60-3600*: STA-CHARGE™ Battery Charger Unit

*Supplied to a third-party installer separately for all Maxon builds. Will already be mounted inside the battery box of the trailer that the STA-CHARGE™ Battery Charging System will be installed on.

1



2. 60-3650-600: STA-CHARGE™ Harness

Harness Cable Wiring – 7-Way Side

- 1/8GA **WHITE** = GROUND
- 1/8GA **BLACK** = VOLTAGE IN
- 1/14GA **ORANGE** = CHARGER ENABLE
- 1/14GA **RED** = SHUTDOWN (ABS LOCK-OUT)

Harness Cable Wiring – Liftgate Battery Side

- 1/10GA **BLACK** = GROUND (-) (With pre-terminated ring terminal end)
- 1/10GA **RED** = POSITIVE (+) (Includes pre-installed 40A fuse, with pre-terminated ring terminal end)

Included Fuses and Additional Hardware (7-Way Side Installation)

- 40A fuse assembly (blue) with pre-installed ring terminal and butt connector
- 5A fuse assembly (red) with pre-installed ring terminal and butt connector
- (1) 1-1945 8GA #10 CRIMP & SEAL™ Ring Terminal – Red
- (1) 1-1923 16-14GA #10 CRIMP & SEAL™ Ring Terminal – Blue

2



3. 60-9100: V-CHECK™ II Unit (Pre-installed on Bracket Mounting Plate)

Wiring

- 1/16GA **RED** = POWER
- 1/16GA **BLACK** = GROUND

3



4. 60-9110-600: V-CHECK™ II Harness

Harness Cable Wiring

- 1/14GA **WHITE** = GROUND (Pre-terminated with ring terminal on battery side)
- 1/14GA **BLACK** = VOLTAGE IN (Pre-terminated with ring terminal on battery side)

Included Additional Hardware

- (2) 1-1962 16-14GA CRIMP & SEAL™ Butt Connector – Blue

4



Available Part For This System Installation - Sold Separately From 60-0200-600

60-601: Miscellaneous Hardware for Re-Termination

60-601 is not required since all terminals are already supplied (weather pre-installed or not) with each individual component listed above. Additional terminals supplied with this part number are offered for complete installation where re-termination might be necessary.

For STA-CHARGE™ Harness:

- To 7-Way (1) 1-1945 8GA #10 CRIMP & SEAL™ Ring Terminal – Red
- To 7-Way (1) 1-1923 16-14GA #10 CRIMP & SEAL™ Ring Terminal – Blue

For V-CHECK™ II Harness:

- To V-CHECK™ II (2) 1-1962 16-14GA CRIMP & SEAL™ Butt Connector – Blue



BEFORE BEGINNING INSTALLATION:

The following pages will show how to connect the individual harnesses using a step-by-step installation process. Be sure to follow all instructions carefully and use safe maintenance practices at all times.

CAUTION

BEFORE beginning the installation procedure, ensure the following are adhered to:

- Only qualified personnel shall perform this procedure.
- Follow all applicable lock-out/tag-out practices to ensure work area is safe to operate in.
- Verify that all power is disconnected per applicable safety standards before beginning any work on the trailer.
- All cables to the liftgate batteries must be disconnected and wrapped with non-conductive material to prevent arcing or accidental contact with battery terminals.
 - This includes SOLAR and other charging systems if available.
- Disconnect trailer from tractor electrically and mechanically.
- Completely power down the reefer unit and ensure that it cannot be restarted unintentionally.
- Do not use any open flame or heat source near flammable vapors at any time during this procedure. When applying heat to seal heat shrink connections, ensure no flammable materials or vapors are present in the work area.
- Take precautions to avoid short circuiting cables and wires, and do not allow **POWER** and **GROUND** wires to come into contact with one another at any time before, during or after installation.

1. STA-CHARGE™ Unit Part No. 60-3600*

*This unit is supplied to a third-party installer separately for all Maxon builds. It will already be mounted inside the battery box of the trailer the STA-CHARGE™ Battery Charging System will be installed on.



STA-CHARGE™ unit
60-3600 already pre-installed
in the battery box

1. Before moving forward with the next steps in the installation process, confirm the STA-CHARGE™ Battery Charger Unit is installed in the battery box, as this module is necessary for installation for the entire STA-CHARGE™ Battery Charging System.

2. STA-CHARGE™ Harness

Part No. 60-3656-600: (7-Way Side) 2/8GA – White & Black and 2/14GA Orange & Red (Liftgate Battery Side) 2/10GA - Black & White



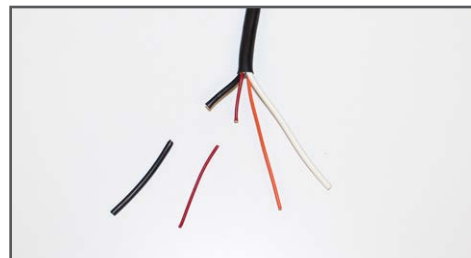
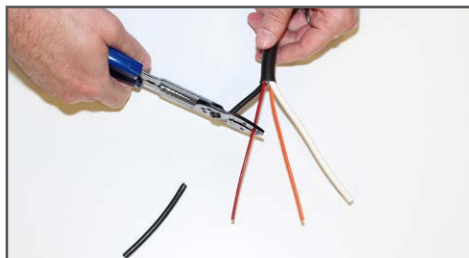
This harness is connected at three different locations on the trailer. The 7-way J560 nosebox/socket, the liftgate batteries and the STA-CHARGE™ battery charger. See the graphic on page 9 as an additional reference to the following written instructions.

Connecting the STA-CHARGE™ Harness to the 7-Way J560 Nosebox/Socket/Junction Box

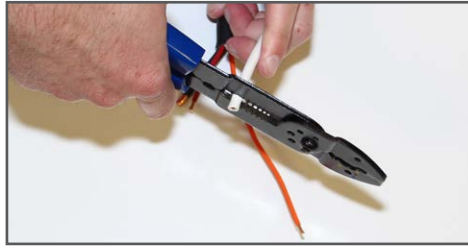
1. Route the 7-way side of the harness from inside the battery box towards the front of the trailer. This will be the longer, blunt cut cable with 4 wires.
2. Route the 7-way cable into the 7-way J560 nosebox and through the socket/junction box opening. Cut the cable to length, with an additional 10" extending outside the nosebox/junction box. (This additional 10" will be needed for stripping and terminations.)
3. Strip approximately 6" of the cable jacketing off, and separate wires out.



4. Cut approximately 4" off the red and black wires.

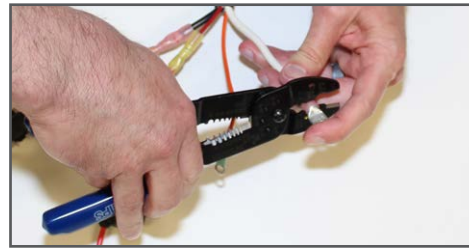
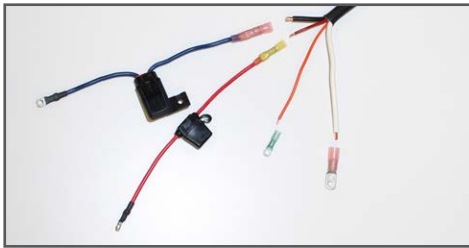


5. Strip approximately 3/8" of wire jacketing off the end of all four wires.

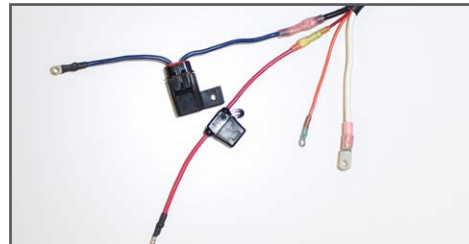


6. Crimp the following to one another:

- 40A fuse (blue) assembly with 8GA to 12-10GA Step-Down CRIMP & SEAL™ red butt connector **TO** the **BLACK** 8GA wire of the harness.
- 5A fuse (red) assembly with 12-10GA to 16-14GA Step-Down CRIMP & SEAL™ yellow butt connector **TO** the **RED** 14GA wire of the harness.
 - NOTE: NOT RECOMMENDED FOR INNER-CITY APPLICATIONS
- 16-14GA #10 CRIMP & SEAL™ blue ring terminal **TO** the **ORANGE** 14GA wire of the harness.
- 8 GA #10 CRIMP & SEAL™ red ring terminal **TO** the **WHITE** 8GA wire of the harness.

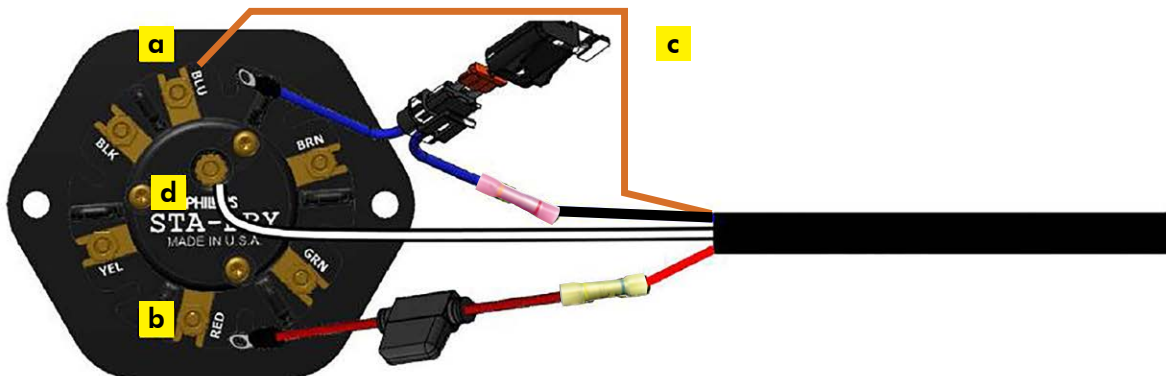


7. Apply heat evenly to all terminals.



8. Connect the terminated wires on the STA-CHARGE™ harness to the back of the 7-way socket as listed/shown below:

- BLACK** wire connected to the 40A fuse (blue) **TO** the **BLUE** circuit on the J560 socket
- RED** wire connected to the 5A fuse (red) **TO** the **RED** circuit on the J560 socket
- ORANGE** 14GA wire **TO** the **BLUE** circuit on the J560 socket
- WHITE** 8GA wire **TO** the **WHITE/GROUND** circuit on the J560 socket

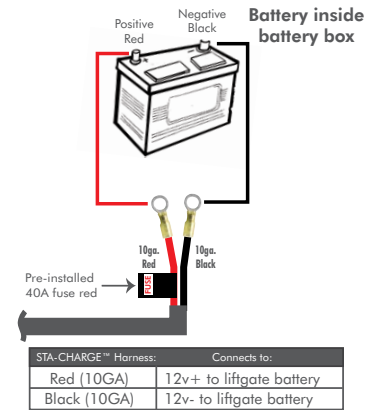


VIEW OF BACK OF J560 SOCKET

Connecting the STA-CHARGE™ Harness to the Liftgate Batteries

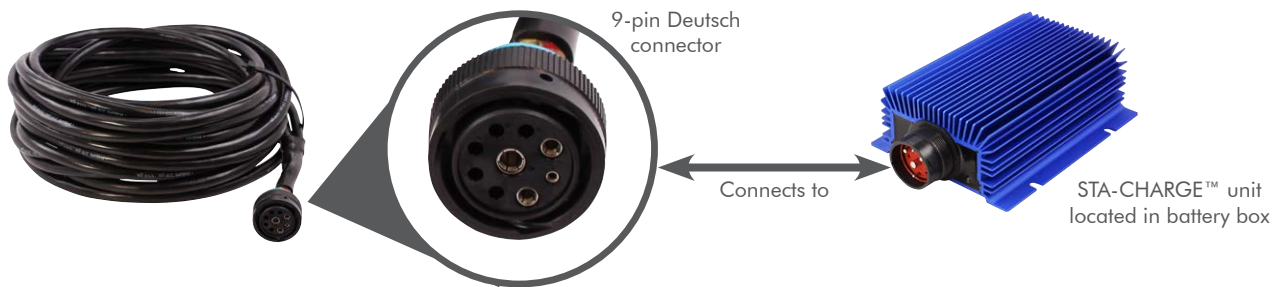
The other end of the harness will connect the 2/10GA **BLACK** and **RED** cables to the liftgate battery.

9. Connect the pre-terminated **BLACK** wire to the negative (-) post on the liftgate battery.
10. Connect the pre-terminated **RED** wire with 40A fuse (red) to the positive (+) post on the liftgate battery.

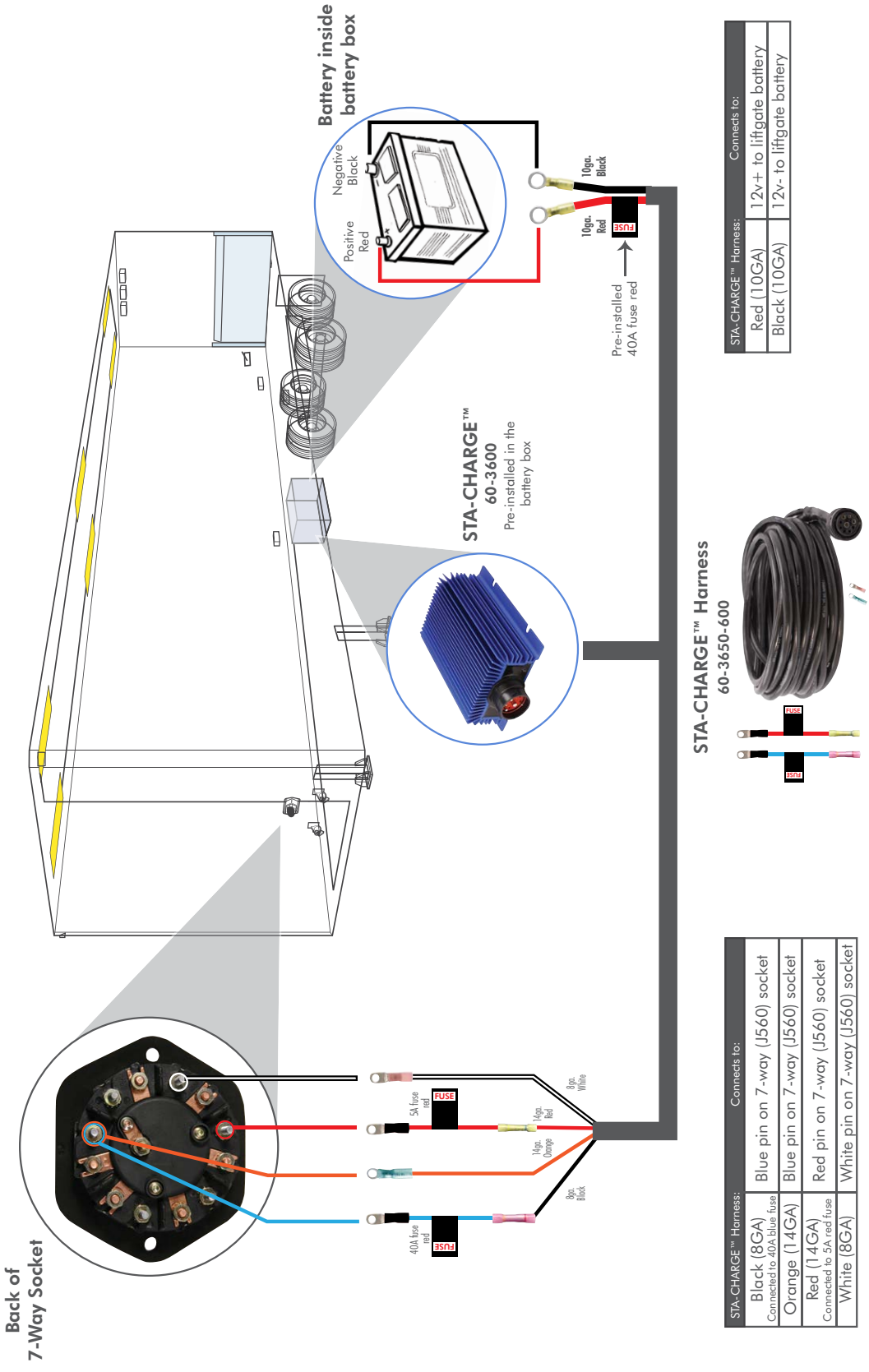


Connecting the STA-CHARGE™ Harness to the STA-CHARGE™

11. Connect the 9-pin Deutsch connector to the STA-CHARGE™ unit. The Deutsch connector is a keyed connector, so pay careful attention to where the keyway is. You will feel a slight resistance when the connector is turning, and then a positive latch/click when it is seated properly.



STA-CHARGE™ HARNESS WIRING



STA-CHARGE™ Harness:	Connects to:
Black (8GA) Connected to 40A Blue fuse	Blue pin on 7-way (J560) socket
Orange (14GA)	Blue pin on 7-way (J560) socket
Red (14GA) Connected to 5A red fuse	Red pin on 7-way (J560) socket
White (8GA)	White pin on 7-way (J560) socket

STA-CHARGE™ Harness:	Connects to:
Red (10GA)	12v+ to liftgate battery
Black (10GA)	12v- to liftgate battery

3. V-CHECK™ II Unit Part No. 60-9100

Use the following steps to install the V-CHECK™ II with the pre-installed bracket mounting plate to any nosebox that is convenient. (7-way or liftgate)

1. Remove the existing hardware from one of the mounting holes on the nosebox.
2. Slide the bolt through the mounting hole on the V-CHECK™ II bracket mounting plate.
3. Re-connect the hardware and tighten.



4. V-CHECK™ II Harness Part No. 60-9110-600: 2/14GA - White and Black

1. Once the V-CHECK™ II is mounted at the front of the trailer, start at the inside of the battery box and route the harness towards the front of the trailer.
2. Cut the harness so that it meets the wires from the V-CHECK™ II, plus an addition 6". (This additional 6" of working length will be needed for stripping and terminations.)

Note: If for whatever reason, multiple cuts need to be made, take care not to remove too much length. If the harness becomes too short, the ring terminals on the other side may not have enough slack to connect to the battery.

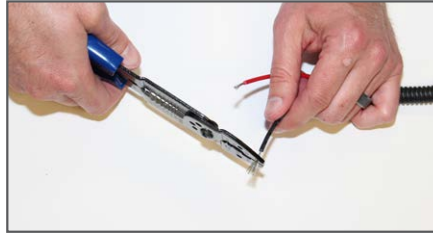
3. Strip approximately 4" of cable jacketing off. Separate the wires out.



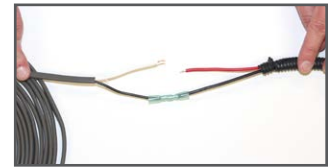
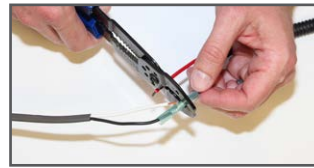
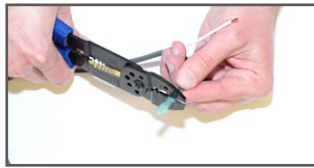
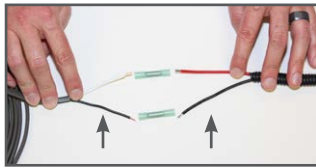
4. Strip approximately 3/8" of jacketing off the black and white wires.



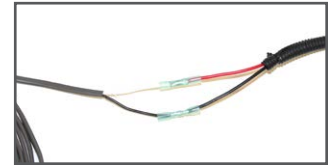
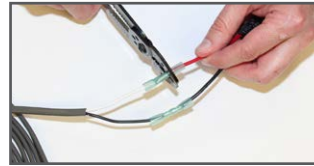
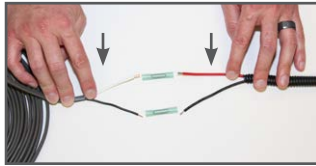
5. Cut additional length of wire off ends of V-CHECK™ II unit. Approximately 3/8" of wire should remain outside of the jacketing.



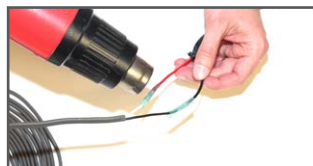
6. Connect the **BLACK** wire from the V-CHECK™ II harness to the **BLACK** wire on the V-CHECK™ II unit using a 14GA blue CRIMP & SEAL™ butt connector supplied in the kit.
- Place the end of the **BLACK** wire on the V-CHECK™ II harness into the butt connector and crimp.
 - Place the end of the **BLACK** wire on the V-CHECK™ II unit into the other side of the butt connector and crimp.



7. Connect the **WHITE** wire from the V-CHECK™ II harness to the **RED** wire on the V-CHECK™ II unit using a 14GA blue CRIMP & SEAL™ butt connector supplied in the kit.
- Place the end of the **WHITE** wire on the V-CHECK™ II harness into the butt connector and crimp.
 - Place the end of the **RED** wire on the V-CHECK™ II unit into the other side of the butt connector and crimp.

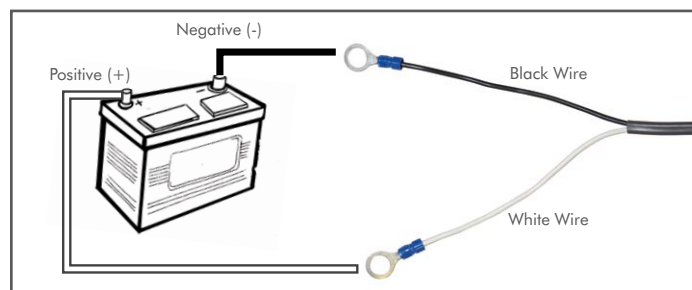


8. Apply heat evenly to completely seal both connections.



9. Secure this harness with the existing trailer cables using cable ties (not included). Leave any slack inside the front coupler area.

10. Return to the battery box and connect the pre-terminated **BLACK** wire to negative (-) battery post, and the **WHITE** wire to the positive (+) battery post.



SYSTEM FUNCTIONAL TEST:

Attach a Class 8 tractor to the trailer and plug in the 7-way J560 cable assembly.

Note: Do not use a lite-cart or service truck system, as these methods are not guaranteed to deliver good voltage at the high current demand the liftgate charging system needs to test properly. Depending on the voltage levels of the liftgate batteries and the tractor, the indicator light will display which systems are functioning.

Leave the keys off inside the tractor, and note the voltage displayed on the V-CHECK™ II. For example "12.4". Next, turn ON the key to the AUX/ON position and watch the V-CHECK™ II. The voltage reading should have climbed a minimum .2V (for example "12.7"). This is a good indicator that the STA-CHARGE™ system is ON and working properly. To verify, look inside the battery box and the LED on the STA-CHARGE™ unit should be lit GREEN.



GREEN - Unit is ON and supplying ~14 VDC to the liftgate batteries.



OFF/FLASH RED - Unit is OFF due to low voltage, over temperature, or excess current.



OFF - No voltage on the **BLACK** wire and/or **ORANGE** wire at the 7-way.

Turn the key off inside the tractor and then ensure the LED on the STA-CHARGE™ unit is OFF.

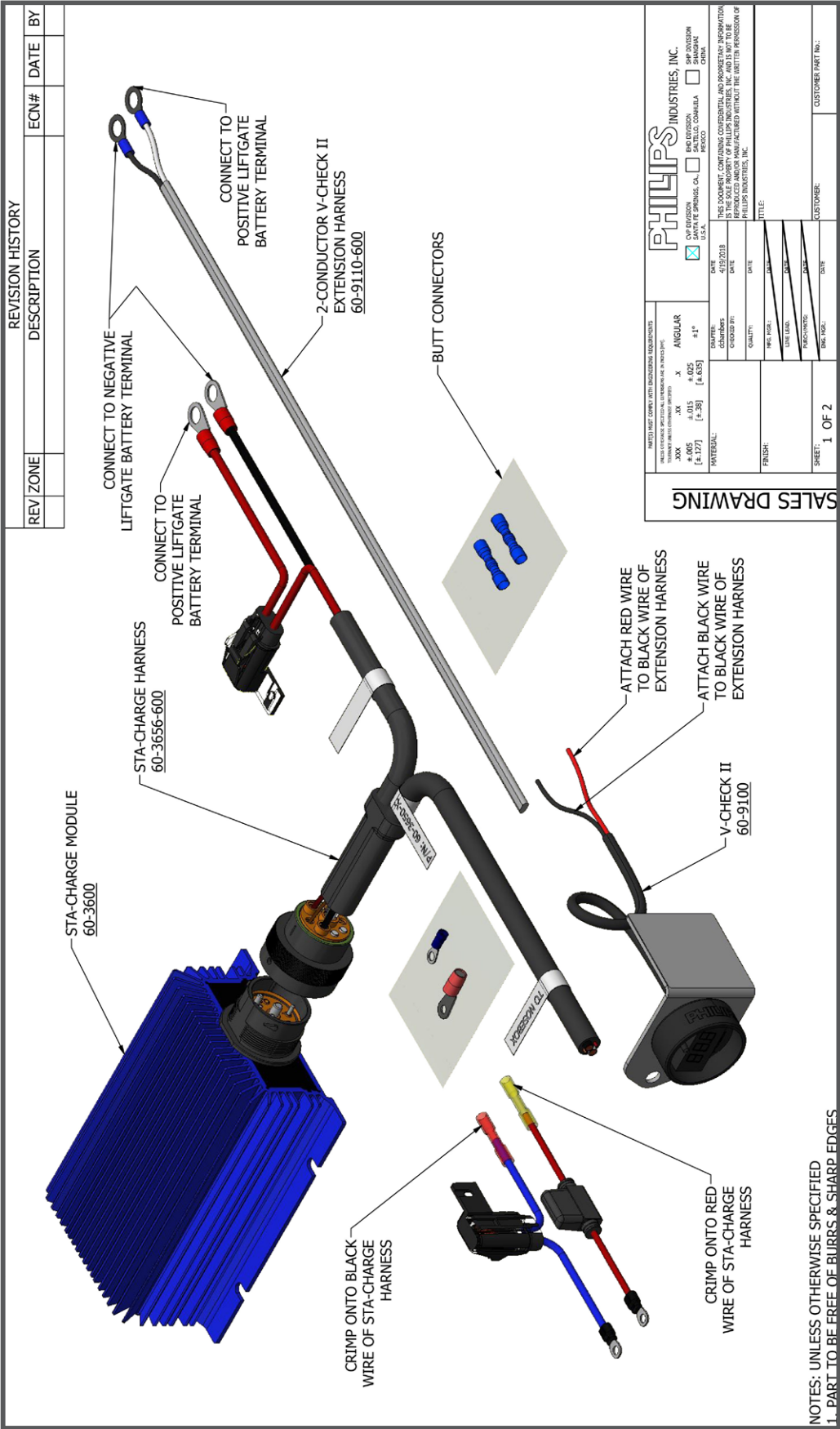
Note: The V-CHECK™ II will turn OFF after 48 hours of no activity on the liftgate batteries. Below is the table explaining the information displayed on the V-CHECK™ II.

V-CHECK™ II LED Colors

Voltage Measurement	State of Charge	LED Color Code
15.0V - 16.0V	HI	GREEN*
12.6V - 14.9V	95% - 100%	GREEN
12.4V - 12.5V	75% - 80%	YELLOW
11.3V - 12.3V	10% - 70%	RED
11.2V - 9.0V	SOS	RED
_9.0V (Below 9.0V)	SOS	RED

*A digital reading of "HI" (15V - 16V) will most likely never be displayed, however, if it does, it's an indication that the batteries are overcharged. Most often this leads to the batteries dying rapidly. However, in rare instances it can also cause the batteries to become hot and melt or swell, causing them to leak chemicals and burst.

SYSTEM DRAWING



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(I-60-0200) REV0 6-7-18

