

## DC Connections - APU Service Procedures

The Idle Free DC Circuit, APU, Exterior, requires service to ensure proper system operation and performance. When the Idle Free APU DC connections are dirty or loose, the Idle Free inverter's GFCI may trip or the inverter may overload & shutdown.

A poor, dirty or weak DC connection will prevent the Idle Free batteries from charging. This limits the energy available for adequate air conditioner starting.

An overloaded inverter (shown with a red status light, face of the inverter) may be caused by a loose or dirty DC cable. A loose DC connection will reduce the available energy needed to start the air conditioner.

The Idle Free inverter's GFCI outlet may trip due to dirty connections leaking voltage back to the inverter.

### Service

- APU DC Connections
- Service Needs: Clean, tighten and protect all DC APU connection points

### Connection Points

- Battery to cattery cables (6)
- Bulkhead connectors (4)
- Battery Separator (2)
- Fuse (2)

### Truck Battery Box

- Fuse (2)
- (+) Battery connection
- (-) Battery connection

### Tools Needed

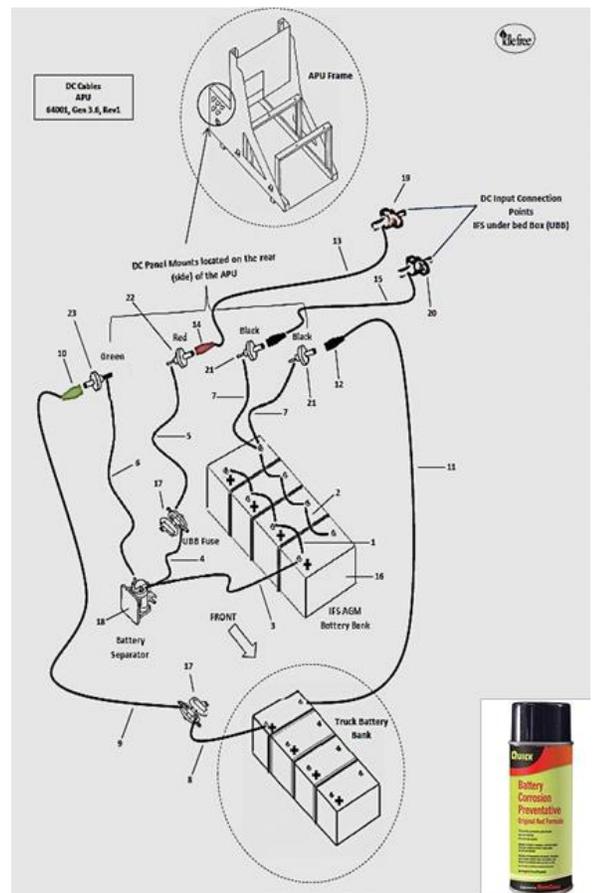
- 9/16 wrench or socket
- ½ wrench or socket
- Side cutters

### Parts Needed

- Tie-straps, narrow, 8-inch
- Battery protection connection spray

### Procedure Overview

1. Remove the cover from the APU and examine all DC cable connection points. Ensure all connections are clean, tight and treated for corrosion protection.
2. Use a flashlight to check the battery post connections that are located under the upper level. The positive battery connections are subject to contamination as well as the cable crimps (under the heat shrink), cable ends.
3. Replace severely corroded battery cable ends or battery to battery cables.
4. Use battery protection corrosion spray on all DC connection points.



**Thermostat must be in the OFF position.**

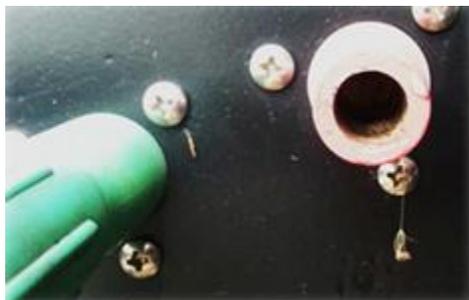
The Idle Free AGM batteries will be in one of these two locations: 1. Under the air conditioner and water heater 2. In between the frame battery box. The service procedure for either type is the same.

### **Battery to Battery Cables and Connection Points**

1. Inspect all battery to battery cables, looking for signs of corrosion or dirt. If corrosion or dirt is present, remove the battery nut and clean the lug and battery terminal.
2. If the battery connection looks clean, check the battery nut to make sure that the battery cable does not move.

### **Bulkhead Connectors**

1. Remove the rear cover of the APU to reveal the DC bulkhead connectors located on the rear side of the APU.
2. Disconnect all exterior rubber connectors by twisting them counter-clockwise and pulling them out.
3. Inspect the panel mount connection points to ensure cleanliness and that there is no corrosion. Repeat this procedure with the male plug-in connectors.
4. The black bulkhead connector is ground. The green connector is the truck battery bank fused power and the red connector feeds the Under-Bed Bunk module with fused DC power for the Idle Free inverter and other DC needs.
5. Use battery corrosion protection spray (in the bulkhead connectors) prior to re-connecting the color matched male connectors into the bulkhead connectors. The bulkhead connectors will only allow the male plug to go in if the proper alignment is achieved. Place a negative twist (counter-clockwise) unto the cable connector prior to inserting it to ensure that the connector remains tight. Twist each connector clockwise to lock them in place.



**Thermostat must be in the OFF position.**

### **Battery Separator**

1. Inspect both terminals on top of the battery separator for cleanliness, tightness and protection treatment. The far post on top of the battery separator has a single cable and the closest post has two battery cables connected to it.
2. Remove the single cable from the far post first. Clean the cable end and the battery separator post.
3. Replace cleaned cable end to the far post and tighten securely.
4. Repeat the procedure (3) on the closest battery separator post (2 cables).
5. Treat the cleaned and tightened battery separator posts with battery corrosion protection spray.

### **Fuse**

1. Remove the rubber fuse cover and remove the fuse.
2. Clean the fuse ends, fuse receiver terminals and the cable ends that connect to the fuse.
3. Return the fuse to the fuse holder and tighten to ensure there is no cable movement.
4. Treat the cleaned and tightened fuse posts with battery corrosion protection spray.



**Thermostat must be in the OFF position.**

### **Truck Battery Box Connections – Service Procedures**

1. Remove the cover from the truck's battery box to expose the truck's starter batteries.
2. Locate the positive battery post with the red Idle Free 12" battery cable attached to it (#32041).
3. Remove this red positive cable from the battery post and clean the battery post and the Idle Free battery cable lug. Make sure to clean the face of the cable or the mounting face of the battery to ensure a good transfer.
4. Place the cleaned red cable back onto the cleaned battery post and tighten the battery nut until the cables attached to it will not move.
5. Locate the other end of the 12" red cable that is attached to a fuse in a rubber fuse holder.
6. Remove both cable ends (#32042 and #32041) and the fuse in the fuse holder.
7. Clean the fuse connections points, the battery cable lugs and the fuse itself.
8. Place the cleaned cables back into the fuse holder followed by the fuse.
9. Tighten the fuse holder nuts until the cables will not move.
10. Locate the negative battery post that contains the Idle Free negative black cable (#32044).
11. Remove this negative black cable from the battery post and clean the battery post and the Idle Free battery cable lug. Make sure to clean the face of the cable or the mounting face of the battery to ensure good energy transfer.
12. Place the cleaned black cable back onto the cleaned battery post and tighten the battery nut until the cables attached to it will not move.
13. Treat the cleaned and tightened battery posts and fuse holder with battery corrosion protection spray.



Treated APU DC Connections - Images

Rear Battery,  
Negative Post



Fuse  
Connections



Battery  
Connections



Bulkhead  
Connectors