



# PulseTech Pallet Charger Basic Troubleshooting

April - 2020



**Note: There will be voltage & amperage present during the following tests. To prevent injury, tests should be done by qualified technicians ensuring Proper Safety Precautions are taken.**

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## Pallet Charger Replacement Parts:

Item	Part#	NSN
Pallet Charger Replacement Insert. Comes with all internal charging cards, cables, and cooling fan assy.	746X805	Not Assigned yet
Replacement Charging circuit Board.	740X373	5998-01-645-7646
Charging Cable – 8’ with clamps.	740X375	6150-01-618-5359
Power Cord - CORD 14/3 SJTOW 6'3"	740X415	6150-01-618-0289
Power Switch	740X411	6110-01-645-8549
Fan Assembly Comes with Fans, Bracket, and power supply	740X362	5340-01-645-9464
Plastic Plug Connector. Cable to charger casing.	740X458	5935-01-645-8488

## No Power to any ports / whole system:

1. Check that power cord is fully inserted. The cord can sometimes work itself loose, and if it backs out even a little bit it can cause loss of AC power.
2. Check to ensure that the power switch is in the ON position.
3. Ensure you have adequate Vac coming through the power cord using a multimeter.
  - Place multimeter on VAC
  - Plug the Neg and Pos leads into the outside plugs of the power cord.
  - Plug the power cord into the wall where you know you have VAC.

**No VAC present:** You have a defective power cord. Replace it with a heavy-duty cord (15A minimum). Replacement NSN is 6150-01-618-0289.

**VAC present:** Go to next step.:



Switch shown in Off position.



## 4. Remove Insert from casing:

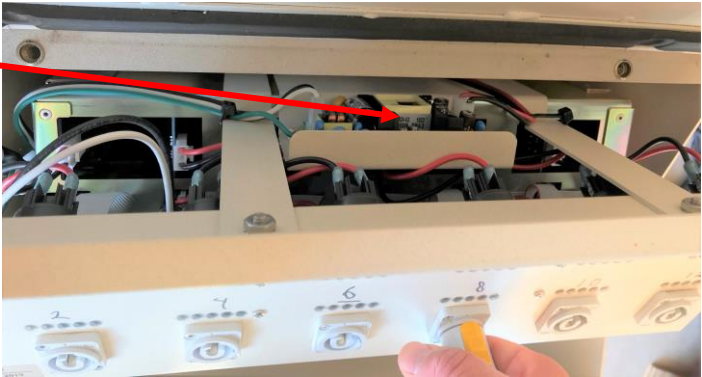
**Note:** There were a few systems made with rear (back of charger casing) mounted cooling fans. This are easy to see as there will be a panel with fan openings that has 6 or 8 screws mounting it to the back of the charger. **If you have one of these systems, the it the fans MUST be removed prior to next step.** To do this remove the 6 or 8 screws securing the fan housing, slowly pull the fan wires out until you can see the DC quick disconnects. Disconnect the fan assembly and place it to the side.

- A. Remove the 2 allen head screws that hold the insert in the case.
- B. Place one of the plastic charging cable connections on one of the 4 center plugs (it doesn't matter which one you use).



- C. **VERY Slowly** pull up on the insert, keeping an eye on the wires near the shock on the left side **AND** (see next page)

the fan power supply (if equipped) which will be at the top in the center. Newer systems have a cover over the wire harness on the left side of the insert.



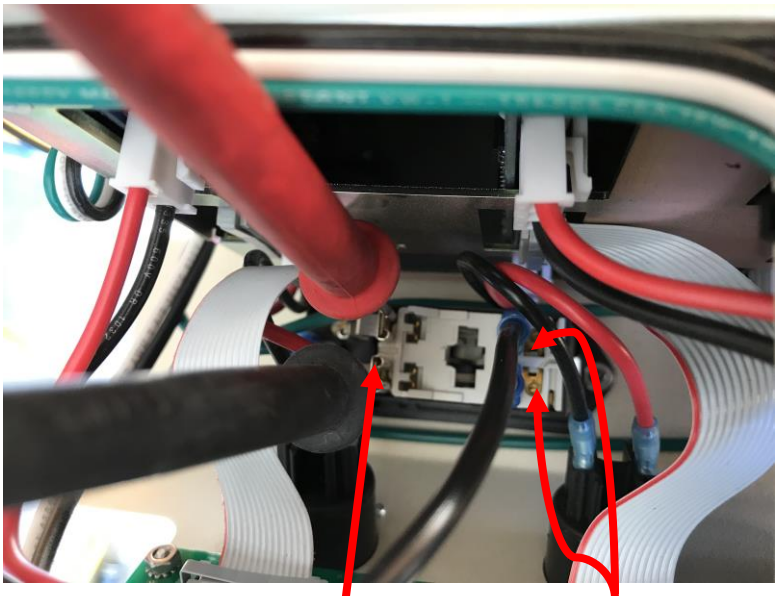
- D. You may have to use your free hand to guide the fan power supply past the housing.
- E. If necessary, use a longer flat head screwdriver to help guide the wires as required.

- F. Once the insert has cleared the shock and the fan power supply (if equipped) has cleared the housing you can slowly lean it back and out until it is fully removed.



- 5. Lay the insert flat on a bench. Visually check to see if there are any loose or damaged wires. Reconnect any loose and repair any damaged wires. Plug in and Retest system. If still no power, go to next step.

- 6. You will have to leave the front of the insert over the edge of the bench to conduct the next test.
  - A. Plug in power cord.
  - B. Turn the power switch on.
  - C. Check for VAC into the switch and through the switch out to the system.
  - D. Is there VAC to the switch?
    - No: Replace switch. NSN 6150-01-618-0289
  - E. Is there VAC through the switch?
    - No: Replace switch. NSN 6150-01-618-0289
    - Yes: Continue to next step.



VAC INTO system test.

VAC OUT to system with switch turned on.



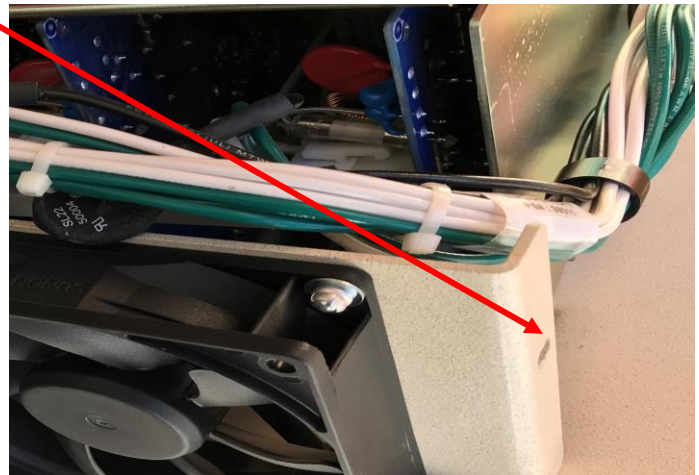
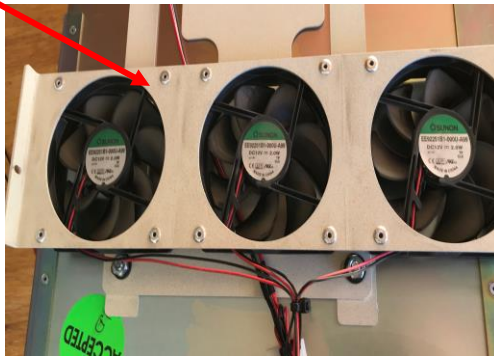
7. With the AC power cord removed. Check AC wire harness for damage. If equipped, remove the cover on the left side of the insert that protects the AC wire harness. Ensure that the main power wires are fully inserted, and there is good continuity between the switch, the harness, and corresponding wires going out to the charging cards. Check the black AC Thermistors / current limiters for any damage. Note: The harness can be tested for continuity by placing a multimeter probe into the back side of the harness where the wires are inserted and probing other plug, the power switch.



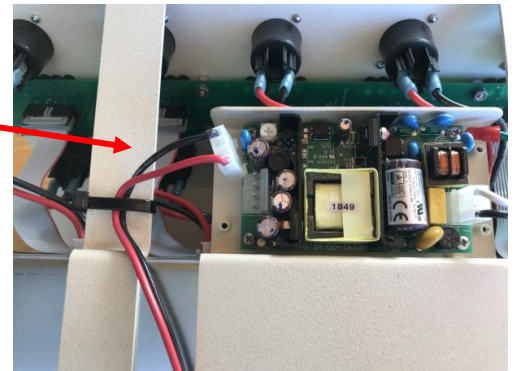
AC wire harness with protective cover.

Repair any loose or damaged wires. Retest.  
No loose or damage wires, go to next step.

8. Next step: Remove fans to test AC harness at the charging boards.  
A. Remove the side screws for the fan assembly.  
B. Take the fan assembly and lay it on top of the insert.



- C. Disconnect the fan DC power supply for the below tests.



- D. Remove one of the AC plugs going to a charging card assembly. Note: this is usually easier if done gently with a needle nose pliers. See below example.
1. Plug mutimeter leads into the AC plug.
  2. Plug in power cord.
  3. Turn on system.
  4. Test VAC at AC plug.
  5. Check to see if there are any lights on for other channels. If still no AC or lights the AC wire harness is defective. Replace Insert or whole charger.

**End of No power tests.**

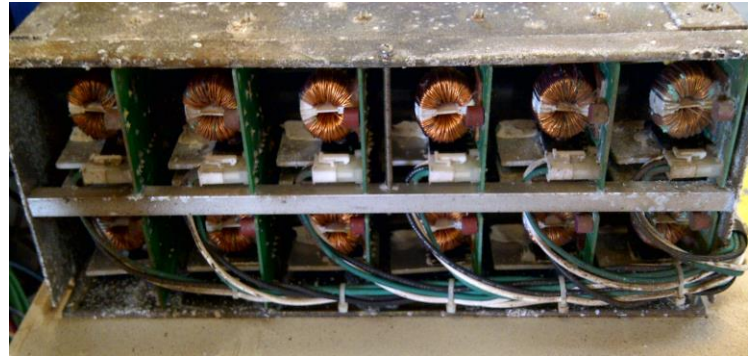
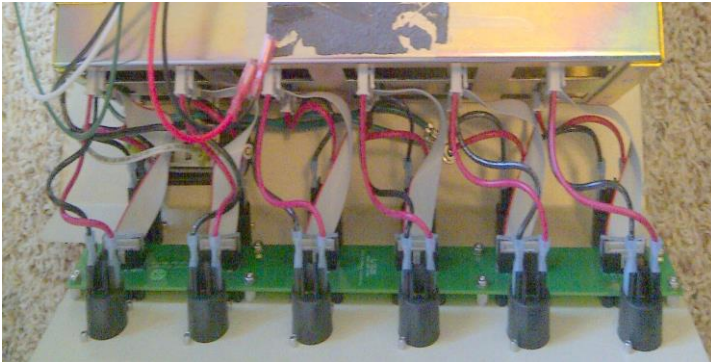




## Most common fault - System has Power, but some lights or channels not working:

**First:** completely power down the charger until ALL lights have gone out. Then restart the system. On newer systems this can sometimes fix minor glitches with the microprocessors.

1. With Insert removed from casing: see page 1 and 2 for instructions on removal.
  - A. Inspect all connections and visually inspect all wires that go from the boards to the back of the individual charging plugs.



- B. NOTE: Pay particular attention to the plug or plugs that were malfunctioning.
    - C. Next inspect the ribbon cables to ensure they **are fully seated** at both ends.
    - D. If you have damaged wires or ribbon cables, contact your supporting PulseTech FSR. They will help you decide if the system should be repaired, replace the insert or replace the whole charger based on age, use, model#, etc.
    - E. **Most of the time you have a bad charging channel IF** you find no loose or disconnect cables, along with only a single channel out, **or** channels that are **not** out with 1 bad channel on the on top row **and** corresponding bottom row of charging channel plugs.

### 2. Wires and cables look ok.

- A. Do you have 2 channels out that are out one above the other?

Yes: This could be an indicator that there is an issue with the AC Power. Note: The single AC plug in the back powers the 2 channels per board. Perform AC power tests on the plugs going into these boards. See page 3, test#7 and work your way through testing the AC plug for functionality.



- B. Fans removed, and fan power disconnected.  
AC power cord plugged back in.  
System power switch turned on.

Test for AC power at defective card or cards:

Do you have AC power with no apparent plug damage?

YES: Replace charging card. See step 2C below.

No: Troubleshoot AC wire harness. See page 3, step#7.



C. Is your system more than 4 years old **OR** are there 3 or more channels out?

**Yes:** Replace insert, part# 746X805. Insert replacement is only valid on systems made in 2008 or newer. If your system is tan colored charger with a removable power cord the insert can be replaced.

**No:** Go to next step 3.

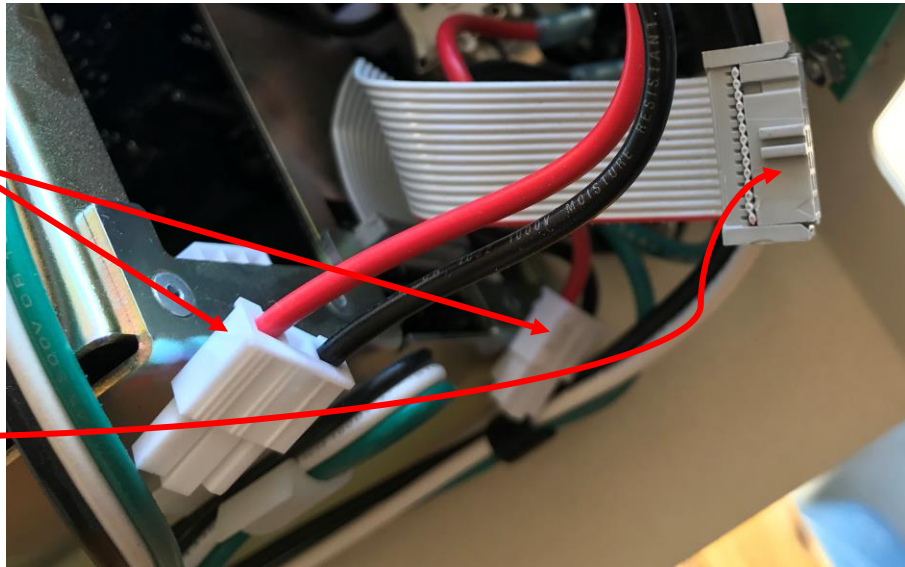
### 3. **Charging board replacement. NSN 5998-01-645-7646**

Insert removed from casing. See page 3.

Fan assembly removed. See page 5.

A. On the defective board;  
Disconnect the top and bottom plugs from the front of the board to the charging for the charging board that is going to be replaced.

B. Disconnect the ribbon cable from the front of the charger. Leave it on the board being changed, as it is MUCH easier to get back in this way.

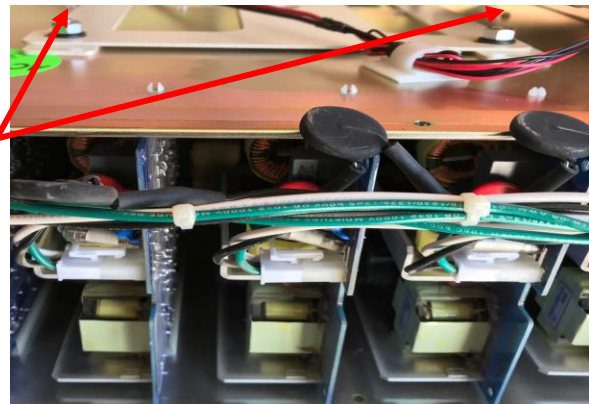


C. Remove the long screw in the center securing the charging card retainer bar at the rear of the insert. **Note:** On older systems it is much easier for reassembly if you mark the position of the bar to ensure it goes back into its original position.



Disconnect the AC plug for the card that is being replaced.

**Note:** For 2<sup>nd</sup> from left and second from right cards the carriage bolts must be removed prior to removing the cards. If any of the other cards seem stuck the carriage bolts may need to be loosened before attempting removal. See next page.



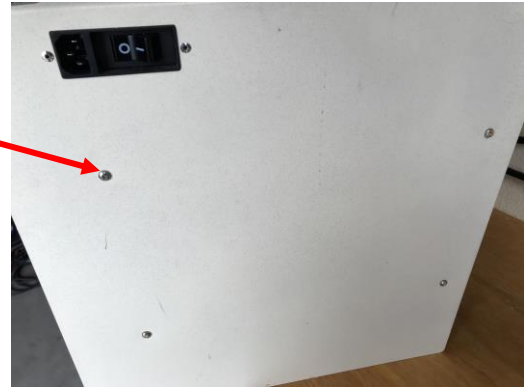


D. Are you replacing a board that must have the carriage bolt removed first?

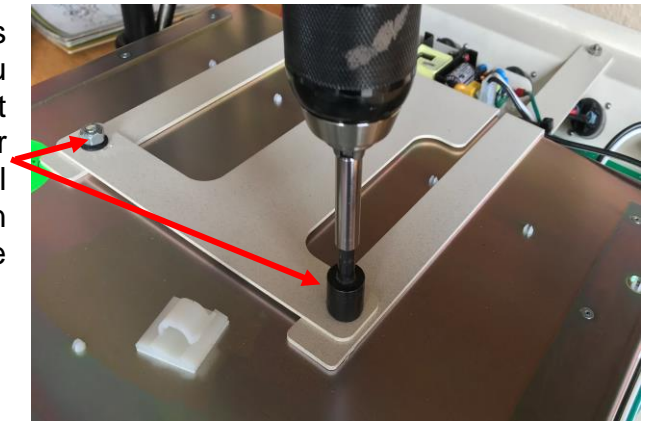
NO: Go to step F.

Yes:

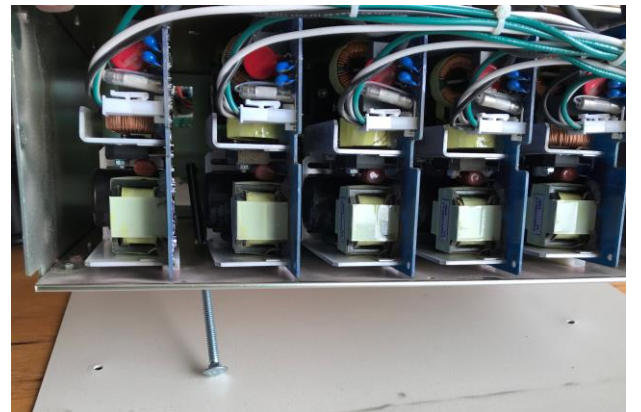
1. Turn Insert over.
2. Remove the 4 small screws that secure the board housing to the metal insert frame.
3. Gently turn the insert back over holding the board housing somewhat in place to prevent it from moving too much.



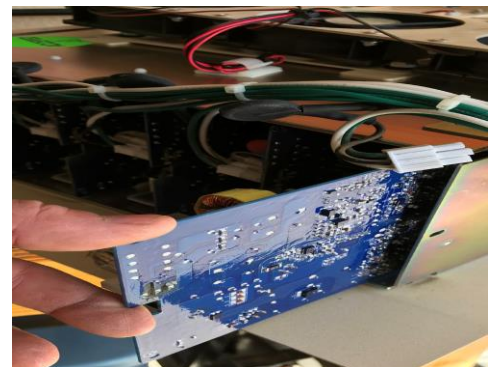
4. With the insert back up, remove the nuts from the carriage bolts. Once removed you can swing the brackets aside that connect the card housing to the upper charger frame. Note: if equipped with a fan you will need to cut the zip ties that hold the fan wires in place against the brackets before swinging them out of the way.



5. With the brackets out of the way and the carriage nuts removed; Gently lift the card housing and remove the carriage bolts.

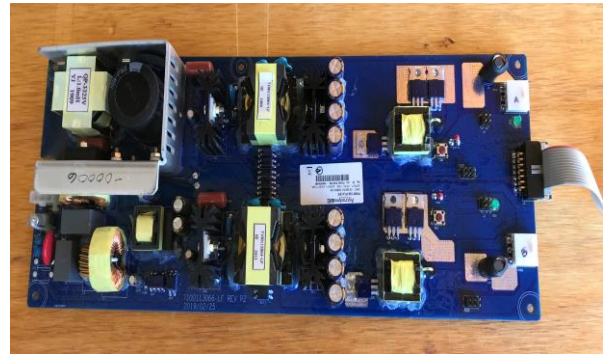


E. Slowly slide the bad board out the rear of the casing. You will have to guide the ribbon cable at the front while pulling the card out the back.





- F. Once the card is removed, change over the ribbon cable from the old card to the new one. Note. Hold new boards on the sides and try not to touch the printed circuits on the bottom.




- G. Reassemble in reverse order.

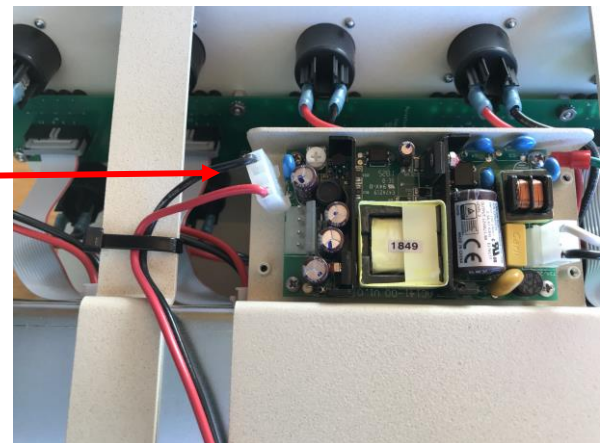
**End of card replacement.**


**Cooling fans not engaging / Replacement.**

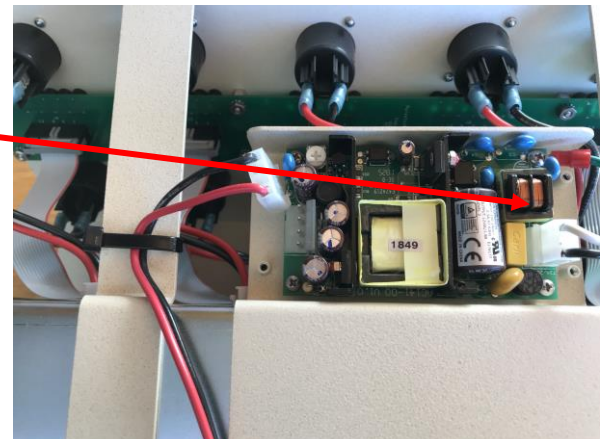
- 1. Inspect all wires going to and from the fan power supply. Check continuity between the power supply and the fan assembly. Repair loose or damaged wires / connections.

- 2. With insert on bench, disconnect the wires going from the fan power supply to the fans. Plug in and turn on system.

- A. Check for 12 VDC going to fans. 
  - If 12VDC is present and the fans will not engage than the fans are unserviceable.
  - Replace \*Fan Assembly.
  - Part# 740X362 / NSN 5340-01-645-9464
  - \*Fan Assy comes with bracket, fans, and power supply.



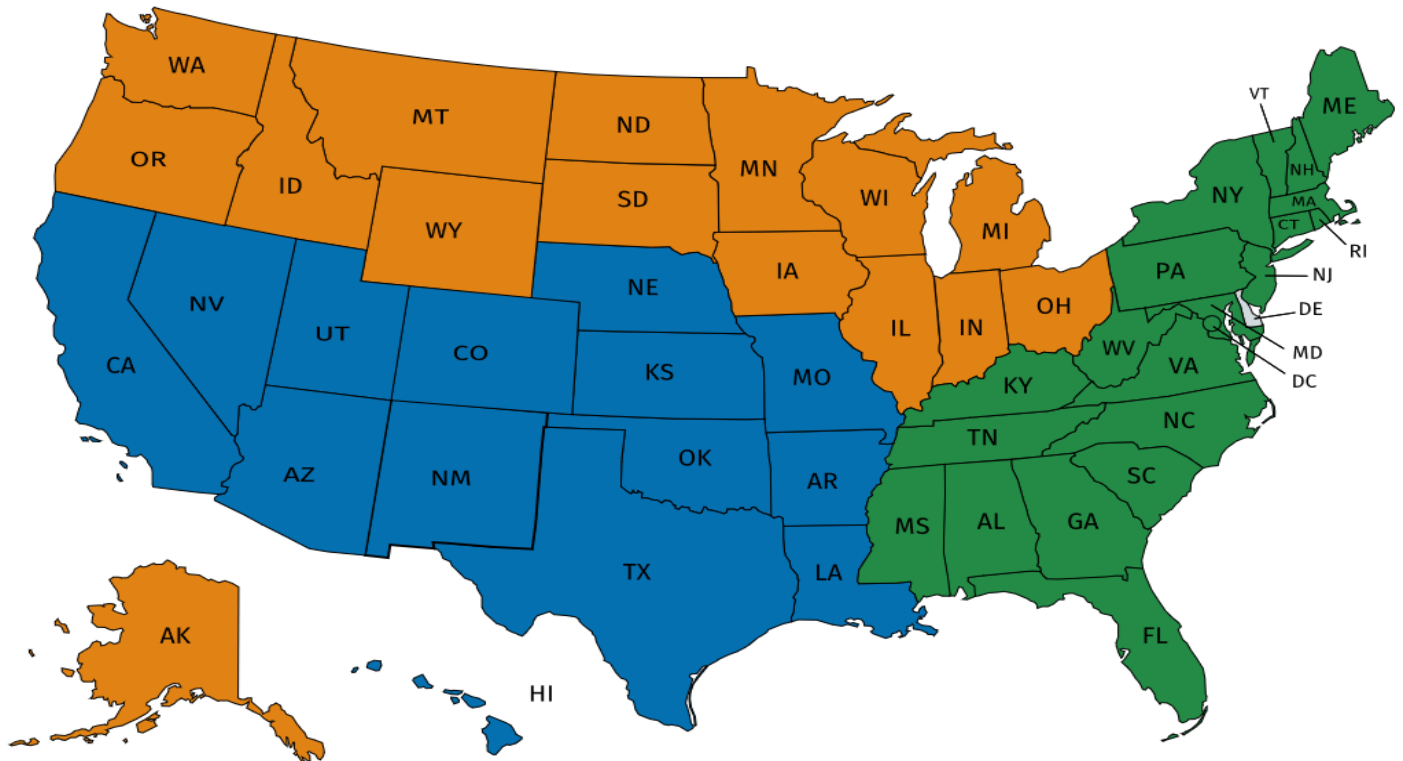
- B. If 12VDC is not present going to fans; check for 110 250 Vac going into fan power supply. If Vac is present replace \*Fan Assembly as there is no NSN for just the power supply. 
  - Part# 740X362 / NSN 5340-01-645-9464
  - \*Fan Assy comes with bracket, fans, and power supply.



- C. If Vac is not present, check connections on AC power strips. There may be an issue with the AC harness. Conduct continuity checks to determine where the break is and repair as required.

**System turns off on its own.** All newer Pallet Chargers are equipped with a thermal protection on-off switch. If your system is turning completely off after it has been in use for a while the thermal switch may be overheating and popping. If it continues to turn off on its own the switch is faulty.

**PulseTech Military Team FSRs:** For questions or additional help with troubleshooting please contact your supporting PulseTech FSR.



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