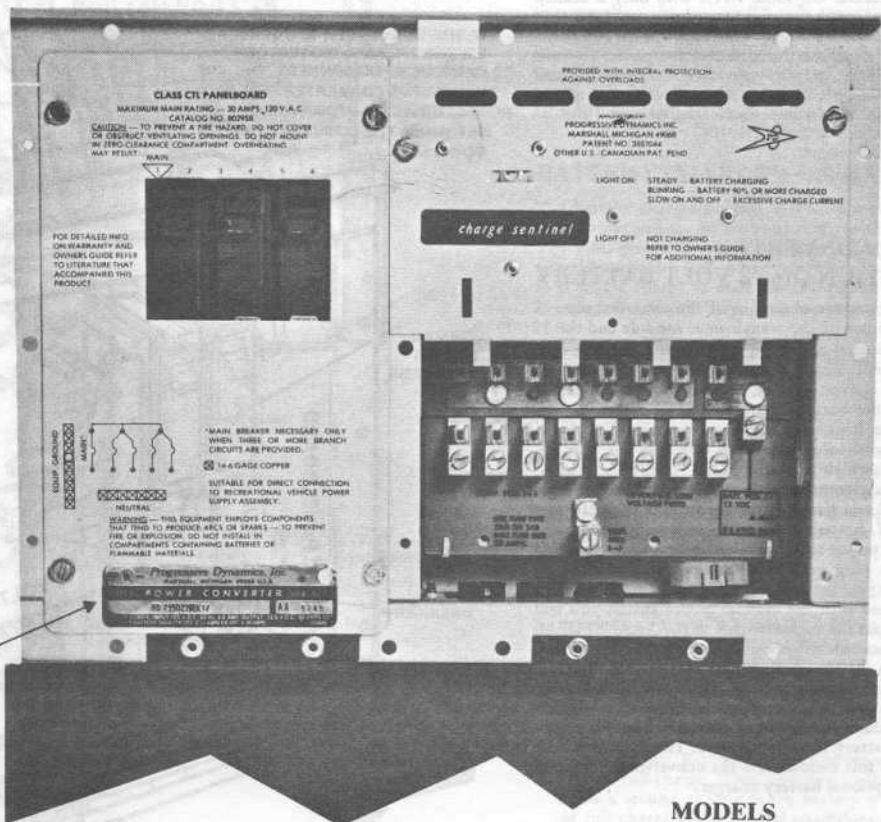


ELECTRICAL CONTROL CENTER OWNER'S MANUAL



OPTIONAL BROWN DOOR

MODELS

731Q	735Q
732Q	737Q
733Q	738Q
734Q	



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INTRODUCTION

Congratulations. Your R.V. is equipped with the very latest and most advanced electrical control system. Your new electrical control center is designed as a combination distribution Panelboard/power converter. The distribution panelboard gives you overcurrent protection for all the 120 VAC wiring in your R.V. The power converter changes the incoming 120 VAC down to a safe 12 VDC to power your interior lights, fans, pumps, etc.

120 VAC PANELBOARD

On most R.V.s the 120 VAC panelboard is equipped with a 30 amp main breaker and 3 or more branch circuit breakers. On some R.V.s with only 2 branch circuit breakers there might not be a main 30 amp breaker. When you plug your R.V. into 120 VAC power the panelboard distributes the power to your air conditioner, power converter, refrigerator, and other 120 VAC receptacles and appliances throughout your coach.

POWER CONVERTER OPERATION ON 12 VOLT BATTERY

The power converter section of the electrical control center consists of the transformer module and the 12 volt distribution panel. The transformer module contains the individual 12 VDC fuses for all the circuits from the converter. The removable printed circuit board for the optional battery charger is also housed in the 12 volt panel. Your power converter might be equipped with an automatic or manual power change-over switch which is located in the 12 volt distribution panel. This automatic or manual output relay/change-over switch transfers R.V. power from the transformer to the R.V. battery. On converters equipped with the automatic power switch you will hear a clicking sound when you plug into 120 VAC power. The clicking sound tells you the converter is operating. On converters equipped with the manual power switch you will have to press the rocker switch to the TRANSFORMER position when you plug into 120 VAC power. When both the automatic power switch or the manual power switch are in the TRANSFORMER position, all the 12 volt lights, fans, etc. are operating directly from the transformer of the converter. In this condition the battery is held in reserve. The battery will be charged in this condition if the converter is equipped with the optional battery charger.

CHARGING WHILE DRIVING

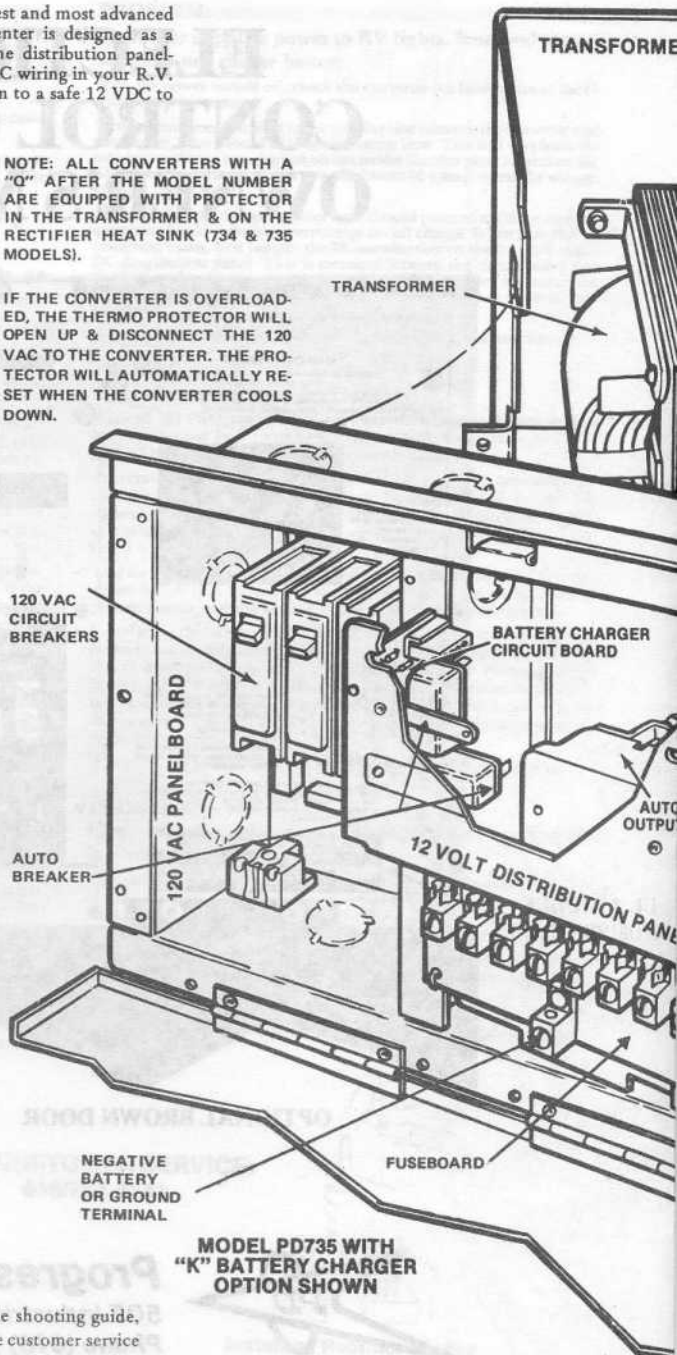
All Progressive Dynamics electrical control centers are designed to allow charging of the R.V. battery by the alternator while driving. We recommend the use of our PD-741 or PD-742 dual battery hook-up kit to prevent accidental draining of the starting battery.

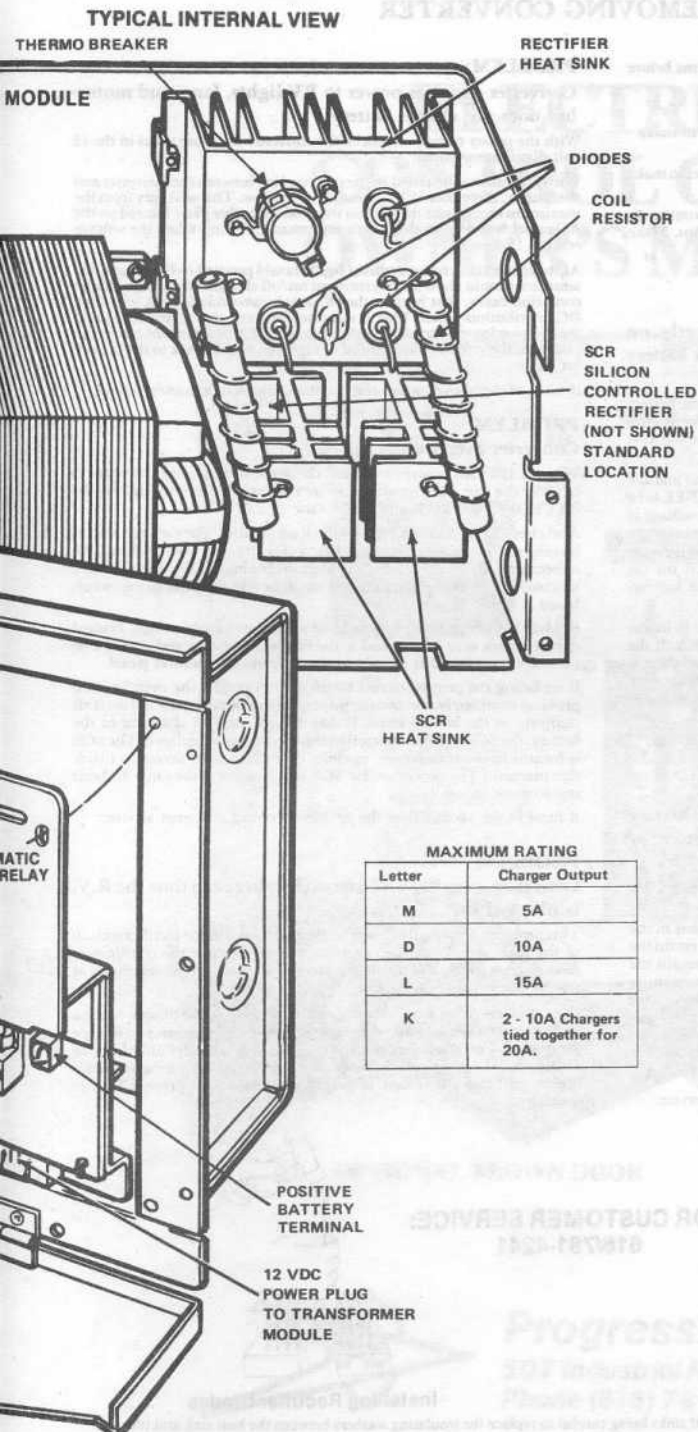
CONVERTER REPAIR MANUAL

A complete converter repair manual with parts lists, trouble shooting guide, Electrical Schematics, and pricing may be ordered through the customer service department at Progressive Dynamics, Inc. Price is \$9.00 prepaid by 1st class mail.

NOTE: ALL CONVERTERS WITH A "Q" AFTER THE MODEL NUMBER ARE EQUIPPED WITH PROTECTOR IN THE TRANSFORMER & ON THE RECTIFIER HEAT SINK (734 & 735 MODELS).

IF THE CONVERTER IS OVERLOADED, THE THERMO PROTECTOR WILL OPEN UP & DISCONNECT THE 120 VAC TO THE CONVERTER. THE PROTECTOR WILL AUTOMATICALLY RESET WHEN THE CONVERTER COOLS DOWN.





POWER CONVERTER OPERATION ON 120 VAC

If your power converter is equipped with the automatic power switch it is normally in the BATTERY position. When you wish to run self contained on battery power only, you merely have to turn on the lights or any 12 volt convenience. If your power converter is equipped with the manual power switch you must press the rocker switch to BATTERY position before your lights will operate on battery.

When your power converter is operating on battery, the 12 volt battery power enters the converter through the power switch and on through the 12 volt distribution panel to the various 12 volt conveniences. The battery is then supplying power to the same conveniences as the transformer was previously powering. On the power converters equipped with a manual power switch there is a center OFF position where all 12 volt power to your coach is turned off.

BATTERY CHARGER OPERATION

The battery charger portion of your power converter is fully automatic. When your R.V. is plugged into 120 VAC power the charger will automatically bring your battery to a full charge condition then taper off to a trickle charge to maintain full charge condition. **Warning: Check your R.V. battery water level weekly.**

CHARGE SENTINEL LIGHT (L.E.D.)

A visual indication of the amount of current that is charging your battery from the power converter. However, this is only an indication of a charge to the battery. If any problems occur with the charge sentinel light, you should put an ammeter between the converter and battery to see if the charger is working correctly.

LIGHT (L.E.D.) INDICATES

MAXIMUM RATING	
Letter	Charger Output
M	5A
D	10A
L	15A
K	2 - 10A Chargers tied together for 20A.

1. **Continuous bright light:** Battery is being charged. This will change to a flashing light as explained in number 3.
2. **Continuous bright light on all the time:** Battery is being over charged. Loss of water in the battery is an indication of this condition.
3. **Flashing light:** Battery has reached approximately 90% of full charge. It will continue to flash several times a second as long as the battery is over 90% of full charge under normal conditions.
4. **No light:**
 - A. Battery is fully charged. This condition happens to a few units, but is a normal condition.
 - B. No charge going to the battery.
 Warning: The charge sentinel will not work when there is no battery in the R.V. or when the converter is not plugged into 120 VAC power.
5. **Light stays on after converter or 120 VAC power is unplugged:** P.C. board is defective. Have it repaired or replaced.

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TROUBLE SHOOTING PROCEDURES BEFORE REMOVING CONVERTER

If the R.V. has a converter problem, check the following items before removing the converter.

- (1) Make sure 120 volt A.C. power is connected to the R.V.
- (2) Check the circuit breakers in the R.V. distribution box to make sure they are ON.
- (3) Check the fuses and circuit breakers on the power converter to make sure they are ON.
- (4) Disconnect 120 VAC power to the R.V. and remove the front cover of the power converter. Check all wiring for loose connections. Make sure wires are connected to the proper circuits.

PROBLEM:

12 volt lights, fans and motors operate properly on converter or transformer but will not operate on battery power.

Using a 12 volt test light or hydrometer, test the condition of the battery to be sure it is fully charged. Check all battery terminals for loose or dirty connections. Check the negative connection where it attaches to the R.V. frame.

Using a 12 volt test light, check between the negative terminal and the battery positive terminal on the 12VDC DISTRIBUTION PANEL to be sure the battery voltage is reaching the converter. If there is no voltage at this point, check for blown or tripped fuses or breakers between the battery and the converter. If there is no voltage at this point, test between the same negative terminal and the positive load terminal on the converter output fuse. If you have no voltage here, test the battery-transformer switch or relay.

If the converter has a battery-transformer switch, be sure it is in the BATTERY position. Check for continuity through the switch. If the converter has an automatic relay, be sure it operates freely and there is good contact between the points. Check for continuity through the relay points. You may have to bend the contacts for a better connection. Never file the contacts.

If none of the above locates the problem, contact customer service.

PROBLEM:

12 Volt lights, fans and motors operate properly on battery power but will not operate from the converter or transformer.

Check the 120 VAC power cord for firm connection. Check the 120 VAC distribution panel for tripped circuit breakers.

With the 120 VAC power turned off, check for loose connections in the wiring compartment. Test all wiring to the transformer to be certain the transformer is receiving power. On manual converters, be certain the switch is in the TRANSFORMER position. Check for continuity through the switch. On Automatic converters, listen for a clicking sound when the 120 VAC is turned on. If you fail to hear the click, check the relay for dirt or other obstructions on the armature coil. If the relay won't energize, check for bad diodes. (See diode replacement procedure below.)

If none of the above locates the problem, contact customer service.

PROBLEM:

Converter supplies power to RV lights, fans, and motors but does not charge battery.

With the power turned off, check the converter for loose wires in the 12 volt distribution panel.

With an ammeter installed in the positive line between the converter and the battery, there should be a steady current flow. This will vary from the maximum charge rate marked on the model number plate located on the AC panel board cover down to a minimum of 1 amp when the voltage reaches 13.6 volts.

At that point, the charge sentinel light should proceed to flicker and the ammeter should show an intermittent on/off charge. When a no charge condition exists, first jumper the DC autobreaker on the back left of the DC distribution panel. This is mounted between the circuit board and the large relay in the center of the panel. If this does not solve the problem, the circuit board should be replaced or sent back to the factory for repair.

If none of the above locates the problem, contact Customer Service.

PROBLEM:

Converter overcharges the battery.

With all 120 VAC power turned off, check the wiring to the converter to be sure the hot lead (positive) from the battery is connected to the BATTERY POSITIVE terminal on the 12 VDC.

Also check for capacitors on the blue load circuits. They are sometimes incorrectly used as electronic filters for motors and radios. We recommend the PD-734 electronic filter to eliminate radio noise. Be sure all connections to the circuit board are tight and the plug to the circuit board is firmly in place.

Replace the printed circuit board and see if the charging stops. Printed circuit boards may be returned to the factory for testing and repair. The printed circuit board is located in the 12 VDC distribution panel.

If replacing the printed circuit board doesn't correct the overcharging problem completely, remove the printed circuit board again and see if all charging to the battery stops. If this doesn't stop all charging to the battery, the SCR (silicon controlled rectifier) must be replaced. The SCR is located in the transformer module. (See cut-away illustration inside this manual.) The procedure for SCR replacement is the same as diode replacement shown below.

If none of the above solves the problem, contact customer service.

PROBLEM:

Converter trips 120 VAC circuit breaker each time the R.V. is plugged in.

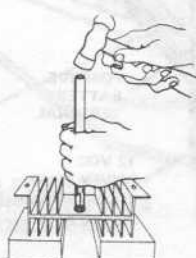
This problem is normally caused by shorted diodes in the rectifier section of the converter. With the power turned off, remove the transformer module from the back of the electrical control center. It is not necessary to remove the entire unit.

Use a soldering iron to remove all wires connected to the diodes. **Make a wiring sketch to be sure the wires are correctly installed when you replace the diodes or rectifier.** Remove the rectifier heat sinks by unbolting or drilling out the pop rivets. Remove the diodes by following the sequence illustrated below. It is best to **replace all diodes to prevent further problems.**



Removing Rectifier Diodes

**FOR CUSTOMER SERVICE:
616/781-4241**



Installing Rectifier Diodes

After replacing the diodes, re-install the rectifier heat sinks being careful to replace the insulating washers between the heat sink and the case. Solder all wires per your sketch and replace the transformer module on the electrical control center.