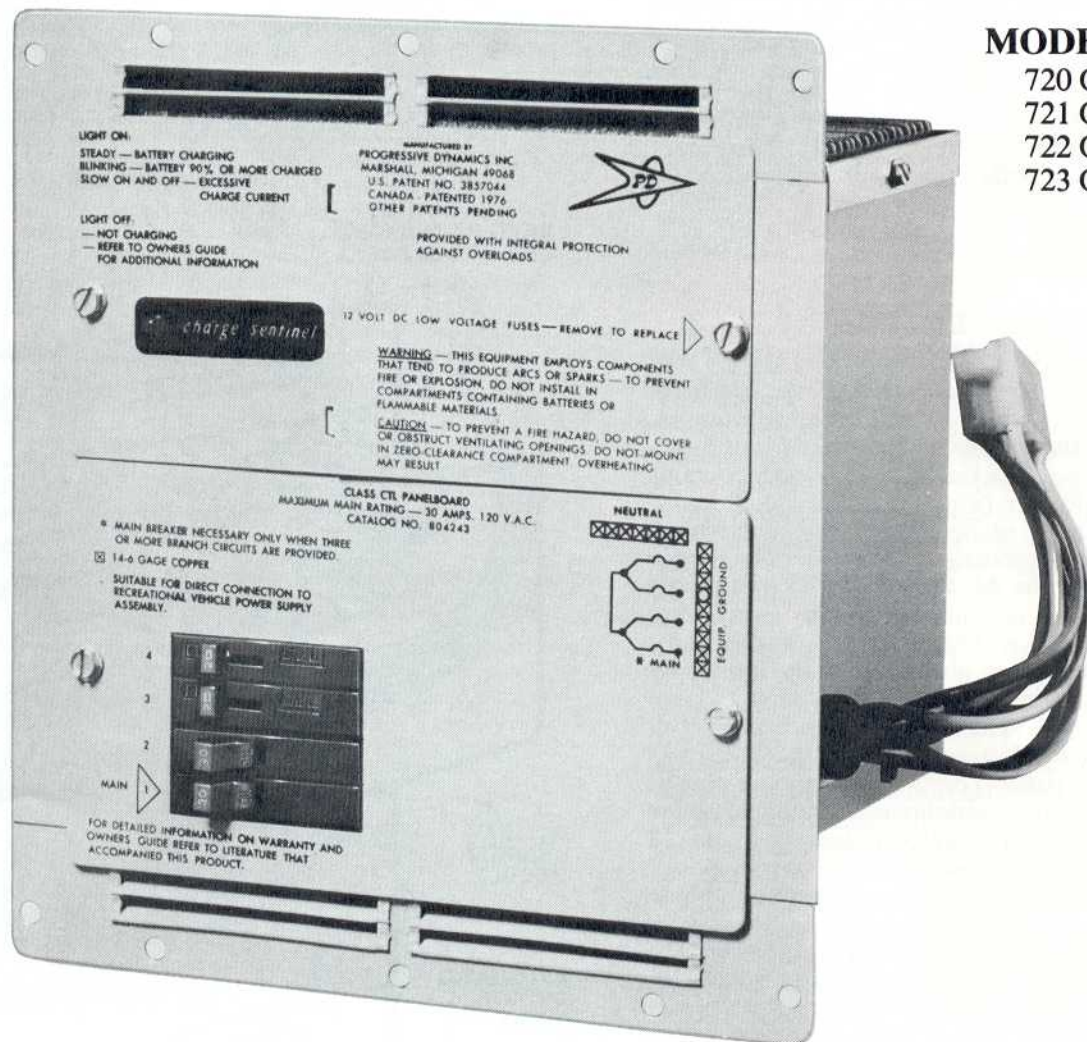


ELECTRICAL CONTROL CENTER OWNERS MANUAL

MODELS

720 Q
721 Q
722 Q
723 Q



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INTRODUCTION

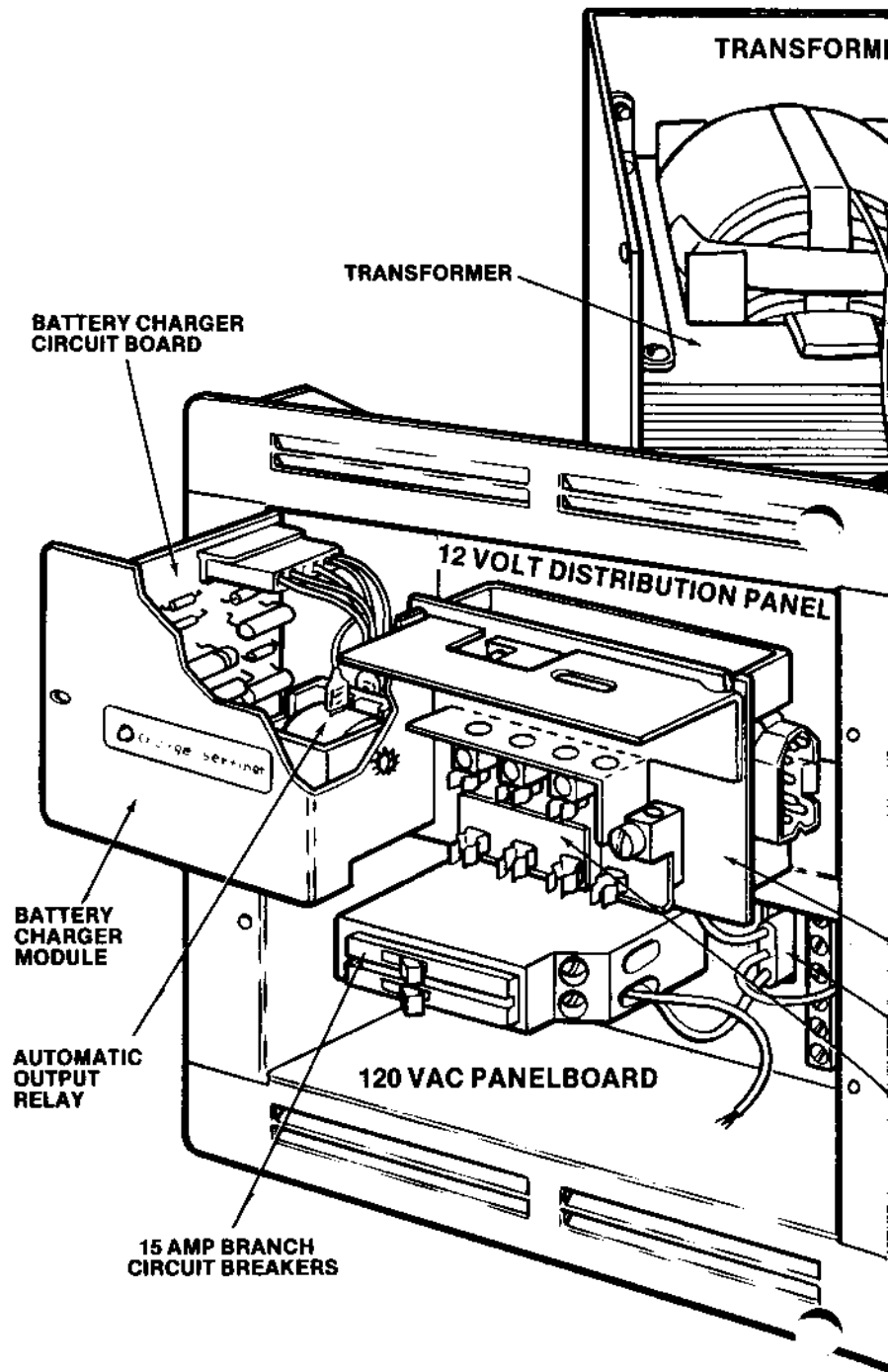
Congratulations. Your R.V. is equipped with the very latest and most advanced Electrical Control System. Your new Electrical Control Center is designed as a combination distribution panelboard/power converter. The distribution panelboard gives you overcurrent protection for all the 120 VAC wiring in 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.

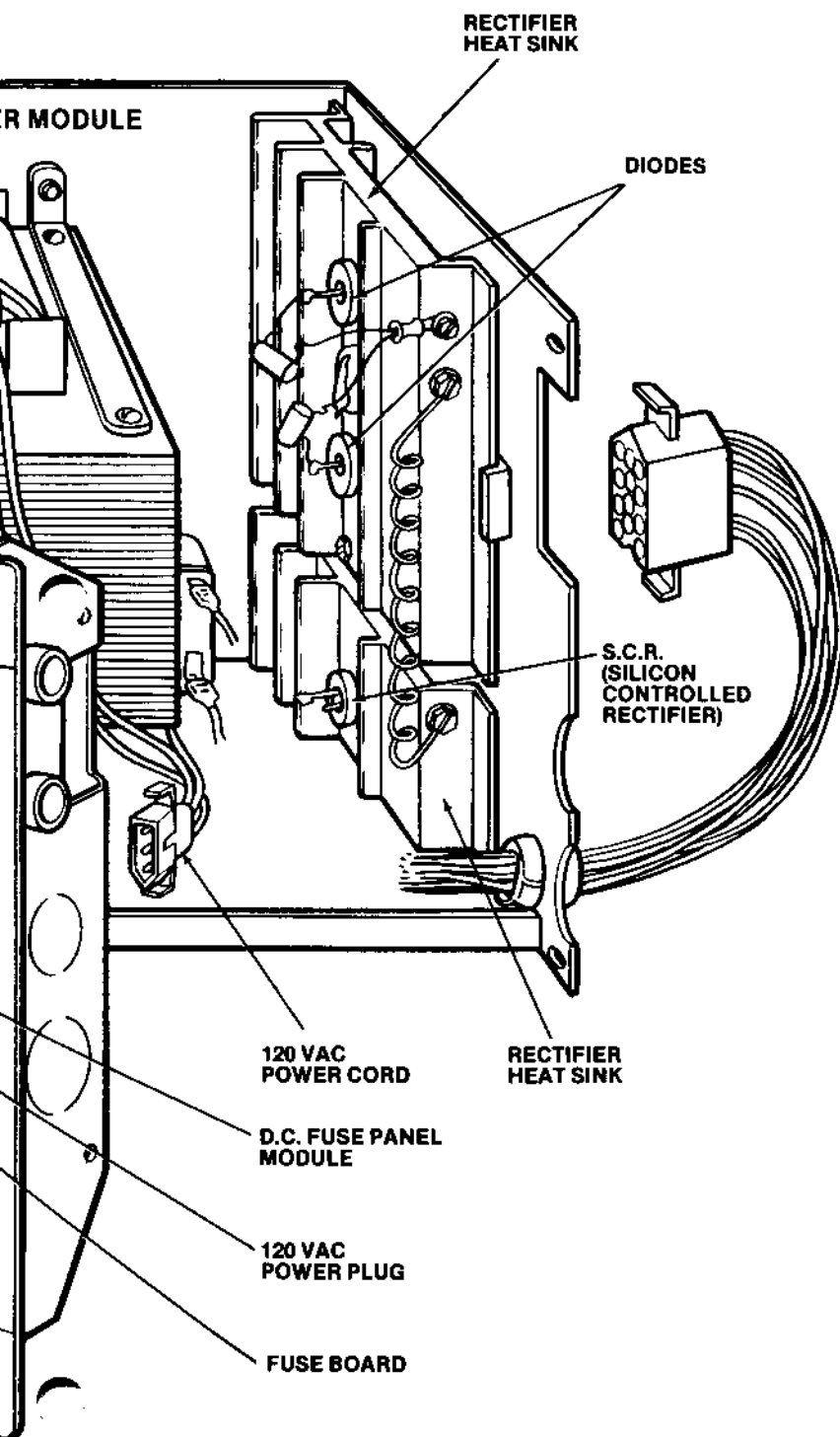
115 VAC PANELBOARD

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 115 VAC

The power converter section of the Electrical Control Center consists of 2 separate modules. The **transformer module** and the **12 volt distribution panel**. The **transformer module** contains the transformer (some units have dual transformers) that reduces the 120 VAC down to 12 VAC. It also contains the rectifiers or diodes that change the AC to DC. The **12 volt distribution panel** contains the power switch that changes the R.V. from battery power to transformer power and also contains the individual 12 VDC fuses for all the 12 volt circuits from the converter. The removeable printed circuit board for the battery charger is also housed in the 12 volt panel. Your power converter may be equipped with an automatic or a manual power changeover switch which is located in the 12 volt distribution panel. On converters equipped with the automatic power switch you will hear a "clicking" when the transformer is energized by plugging the R.V. into 120 VAC power. The clicking sound tells you the converter is working. On converters equipped with the manual power switch you will have to press the rocker switch to the TRANSFORMER position when you plug your R.V. into 120 VAC power. When either the automatic power switch or the manual power switch is in the TRANSFORMER position, all the 12 volt lights, fans, etc., are operating directly from the rectifier of the converter. In this condition the battery is held in reserve and cannot be discharged. The battery will be charged in this condition if the converter is equipped with the optional battery charger.





POWER CONVERTER OPERATION ON 12 VOLT BATTERY

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 only, you merely have to turn on the lights, etc. 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 comes into the converter through the power switch and then through the 12 volt distribution panel out to the various 12 volt lights, etc. The battery is now supplying the power to the same lights, fans, etc. as the rectifier was previously powering. On the power converters equipped with the manual power switch there is a center off position where all the 12 volt power to the R.V. is turned off.

BATTERY CHARGER OPERATION

The battery charger portion of your power converter is fully automatic. When your R.V. is connected to 120 VAC power the charger will automatically bring your battery up to a full charged condition and then taper down to a small trickle charge to maintain your battery. **WARNING:** Check your R.V. battery for water a minimum of every week.

CHARGE SENTINEL is a visual indication that your battery is being charged from the power converter. The SENTINEL will show a continuous light while the battery is being charged and will then change to a flashing light when your battery reaches approximately 90% of full charge. The SENTINEL will continue to flash several times a second as long as the battery is over 90% of full charge and will continue to flash even when the battery is fully charged. **WARNING:** The SENTINEL will not work when there is no battery in the R.V. and when the converter is not plugged into 120 VAC power.

CHARGING WHILE DRIVING

All Progressive Dynamics, Inc. Electrical Control Center converters are designed to allow the R.V. battery to be charged by the alternator while driving. We recommend using our PD-741 or PD-742 dual battery hook-up to prevent accidental draining of the starting battery.

TROUBLE SHOOTING PROCEDURES BEFORE REMOVING CONVERTER

If the R.V. has a possible converter problem you should check the following items before removing the converter:

- (1) Make sure 115 Volt A.C. power is connected to the R.V.
- (2) Check the circuit breakers in the R.V. distribution box to make sure that they are all "On".
- (3) Check the fuses or circuit breakers on the power converter to make sure they are on.
- (4) Disconnect all 115 Volt A.C. power from the R.V. and remove the front cover on the power converter, check all wires for loose connections. Check to make sure that the wires are connected to the proper circuits.

PROBLEM:
12 Volt lights, fans, and motors operate OK 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 and 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 D.C. DISTRIBUTION PANEL to be sure the battery current is reaching the converter. If you have no current at this point check for blown or tripped fuses or breakers between the battery and the converter. If you have current at this point test between the same negative terminal and the positive load terminal on the converter output fuse. If you have no indication here test the battery-transformer switch or relay.

If the converter has a battery-transformer switch, first 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 OK on the battery but will not operate from the converter or transformer.

Check the 115 VAC power cord to be sure it is firmly plugged in.

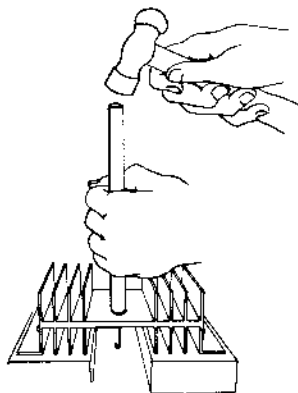
Check the 115 VAC distribution panel to be sure no circuit breakers are tripped.

With the 115 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.

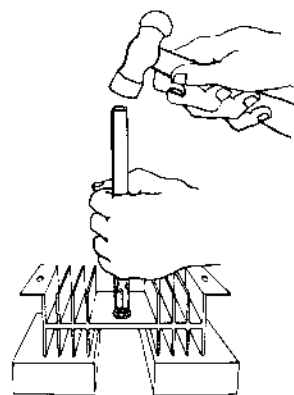
On manual converters be certain the switch is in the TRANSFORMER position. Check for continuity through the switch.

On automatic converters listen for a distinct clicking sound when the 115 VAC is turned on. If you fail to hear the clicking sound check the relay for dirt or other obstructions on the armature coil. If the relay doesn't energize you probably have bad diodes that must be changed. See diode replacement procedure.

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



Removing Rectifier Diodes



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 the sketch and replace the transformer module back on the electrical control center.

PROBLEM:

Converter does not charge battery but does supply power to the R.V. lights, fans, and motors.

First determine if your converter has the charger option "D" or "M" written or stamped on the U.L. label.

With the battery disconnected test for voltage between the negative terminal and the battery positive terminal on the converter D.C. panel or at the battery connections. With the 115 VAC power turned on you should read approximately 11.5 VDC.

If you have no reading, replace the PC board located in the 12 Volt distribution panel. PC boards may be returned to the factory for repair. For an additional test place a DC amp meter in series with the red wire. You should read the charging rate with the 115 VAC power turned on and the battery in the circuit.

With the power turned off check the converter for loose wires in the 12 Volt distribution panel and test the 15 amp automatic breaker for continuity.

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

PROBLEM:

Converter overcharges the battery.

With all 115 VAC power turned off check the wiring of the converter to be sure the hot lead (positive) from the battery is connected to the battery positive terminal on the D.C. fuse board. Also check for capacitors on the blue load circuits. They are sometimes incorrectly used as a filter for motors and radios. Note: Use the PD-734 electronic filter to eliminate radio noise.

Be sure all connections to the circuit board are tight and the plug to the PC board is firmly in place.

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

If replacing the PC board doesn't correct the overcharging problem completely, remove the PC board 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. (SCR replacement is similar to the diode replacement below.)

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

PROBLEM:

Converter trips 115 VAC breaker every 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 Electrical Control Center.

Using a soldering iron remove all wires connected to the diodes. Make a wiring sketch to be sure the wires are correctly installed.

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.