

National RV

130325-1/129068-3 Battery Distribution Center

Trouble Shooting Guide / Schematics

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RVC Parts Website: http://www.pdxrv.com/catalog/c130_p1.html

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Models

Rev. 1: A prototype that never entered production.

Rev. 2: Split the battery distribution center functions into two modules and protected load circuits with reset-able circuit breakers.

General

The Battery Distribution Center is composed of two modules: the 130325-1 disconnect and 129068-3 circuit breaker panel. It provides several functions:

1. Protects Coach Battery and Coach Battery Disconnect circuitry.
2. Disconnects the coach battery from its loads.
3. Controls and protects Ignition Switched loads.
4. Parallels the chassis battery and coach battery to facilitate auxiliary starting and battery charging.
5. Protects all load circuits with appropriate resettable circuit breakers.

Battery Disconnect Function

Refer to Fig. 1, a partial schematic to aid in troubleshooting. The battery disconnect relay is a magnetically latched relay. Hence, power is applied to its coil only momentarily to actuate the relay. The relay is unlatched by reversing the direction of current through its coil. The coach control panel battery disconnect switch is single pole, double throw (SPDT) with center off (momentary action). Pushing the top of the rocker switch engages the disconnect relay while pushing the bottom of the switch disengages the relay. Coach wiring harnesses are protected from faults along Coach Battery and Coach Battery Disconnect cables by 50A circuit breakers CB3-CB7. Fig. 1 also shows the destinations and circuit breakers for the various Coach Battery and Coach Battery Disconnect circuits.

Troubleshooting

It is assumed that the coach battery is connected and properly charged. If the Coach Battery Disconnect fails to operate, unplug J1. Momentarily grounding J1-7 should engage the relay and momentarily grounding J1-8 should disengage it. If the relay operates normally, the fault lies in the coach wiring or switch. If it does not, replace the entire module.

Note: For other testing of coach circuits, it is safe to engage and disengage the Coach Battery Disconnect relay by momentarily grounding J1-7 and J1-8. It is not safe to use clip leads on the relay terminals since the coil is intermittent duty and will overheat if left connected with clip leads more than a few minutes. Also, grounding (momentarily) the grey lead terminal will engage the relay and grounding the violet lead terminal will disengage it.

If any of the studs J7-J11 do not have battery power with the Coach Battery Disconnect engaged, be sure to check the reset buttons on the circuit breakers. They are located on the side of the circuit breaker away from the studs.

Chassis Battery and Ignition Switch Functions

Fig. 2 gives a partial schematic of the chassis battery and ignition switch circuitry for ease in troubleshooting. When the vehicle ignition switch is on, 12vdc is applied to J1-1, pulling in relay RY1. This energizes the Ignition Relay-controlled circuits P3-5, P3-7, P3-8 and P8.

Troubleshooting

It is assumed that the chassis battery is charged. Turn on the vehicle ignition switch. The Ign Sw stud on the 130325-1 unit should now be "hot." If not, disconnect J1 and apply 12vdc to J1-1. Caution: the adjacent pin, J1-2 is grounded. Relay RY1 should pull in and J6 will have 12vdc present. If so, the trouble is in the vehicle ignition circuitry. If not, replace the 130325-1 unit.

Auxiliary Start and Battery Interconnect Function

Refer to Fig. 3, a simplified schematic diagram of the Battery Control Center electronics. The control electronics will make its decision on whichever of the batteries is the highest because of D1 and D2. When the highest battery voltage is below 12.6vdc, the Interconnect Relay is open. Between 12.6vdc and 13.6vdc, the Interconnect Relay stays in its prior state, either open or closed. Above 13.6vdc, the relay will pull in after a delay of about one minute. Similarly, as the batteries discharge below 12.6vdc, there is a one minute delay to turn off.

With both batteries below 12.6vdc, the Interconnect Relay will be open. Pressing the Auxiliary Start Switch at the operator's console will immediately pull in the Interconnect Relay by charging C5 through R2 and R10. The coach circuitry is protected by R2 and no fusing is required. There will be a one minute delay after releasing the Aux Start Switch until the relay drops out. The purpose of the delay is to reduce transients.

Troubleshooting

To troubleshoot the aux start function, be sure that the Interconnect Relay is open. If both batteries are below 12.6vdc, the relay will be de-energized. Alternately, check to see that there is no coil voltage present between the yellow and black terminals. A stuck relay would have no coil voltage but the battery voltages would be exactly the same on the contact studs.

Disconnect J1 and momentarily short pins 4 and 5 on the 130325-1 module. The Interconnect Relay should immediately close. One minute or so after removing the short, the relay should drop out. If the function doesn't operate properly, replace the 130325-1 unit. Then connect the coach to J1. Operation should be the same as before using the operator's aux start switch. If not, troubleshoot the coach wiring and switch.

With both batteries below 13.6vdc and the Interconnect Relay open, apply a charging source (main engine, genset, shore power or general purpose charger) to either battery. When the voltage reaches 13.6vdc, the Interconnect Relay should pull in after approximately one minute. Remove the charging source and discharge the batteries. When the voltage reaches 12.6vdc, the relay should drop out after the one minute delay. If the 130325-1 unit doesn't operate as specified, replace it. Note that two tests should be made, one with the charging source on the coach battery and the other with the source on the chassis battery.

Circuit Breakers

Table 1 gives a listing of each circuit breaker and its associated load on the 129068-3 distribution panel. Figures 1 and 2 give the same information in simplified schematic form. All circuit breakers in the system are push to reset. In troubleshooting, be sure to check the voltage sources since they are controlled by circuit breakers on the 130325-1 unit.

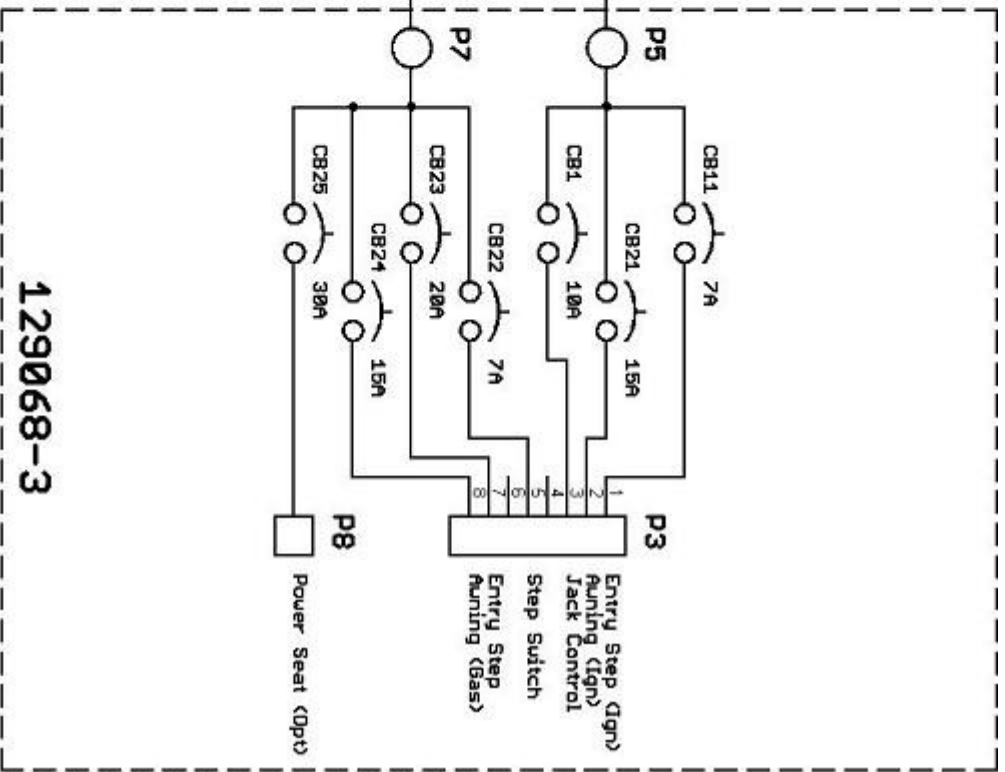
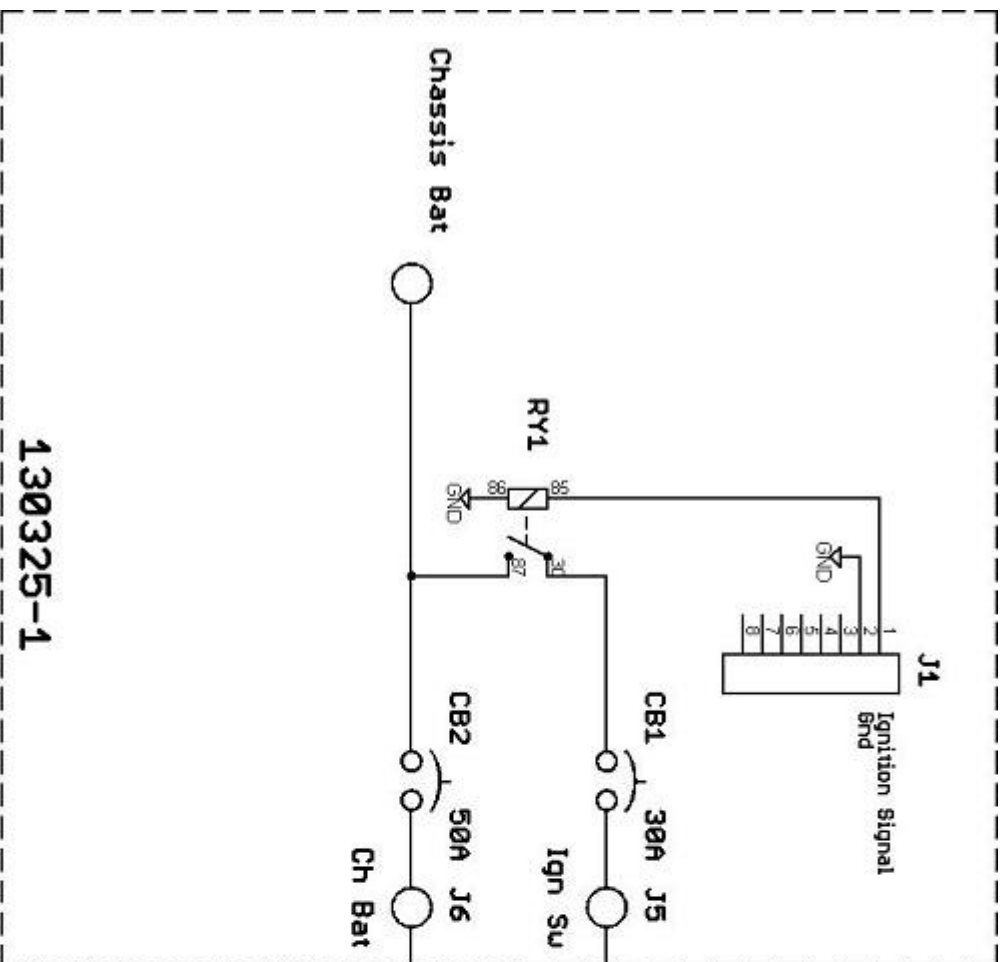


Fig . 2

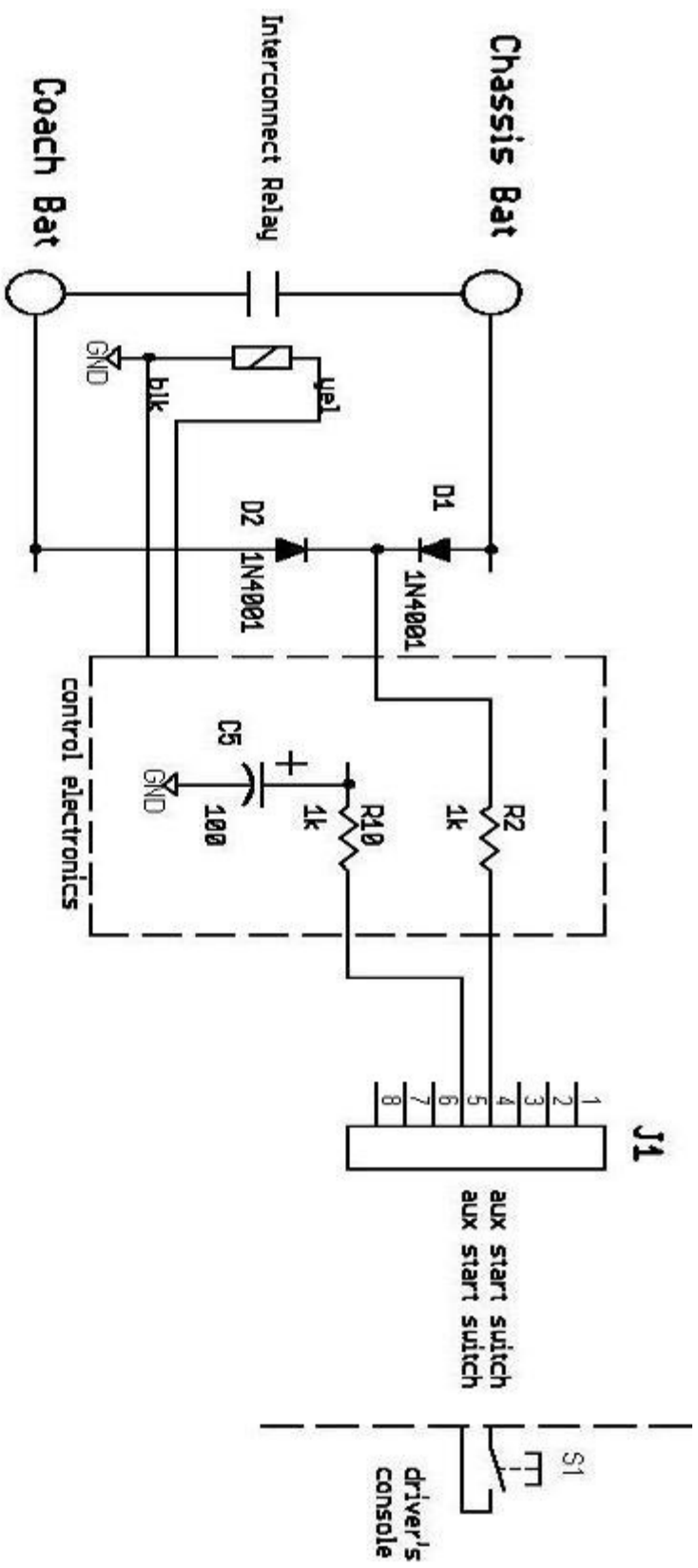


Fig. 3