National Rv

12V Battery Distribuition Center

Trouble Shooting Guide

Models:

111979: The voltage sensing and delay functions are provided by a module (mfg. By Intelletec) mounted on the inside rear wall of the chassis.

111979A: The electronics for voltage sensing and delay are integral with the circuit board.

General

The Battery Distribution Center provides four functions:

1. Disconnects the coach battery from certain loads.
2. Controls ignition switch loads.
3. Allows paralleling of chassis and coach batteries for charging or auxiliary starting.
4. Protects the various circuits with fuses and circuit breakers.

Battery Disconnect Function

Refer to Fig. 1, Coach Disconnect - partial schematic to aid in troubleshooting. The battery disconnect relay K2 is a magnetically latched relay. Hence, power is applied to its coil only momentarily to actuate the relay. Unlatching is caused by reversing the direction of current through the coil. The coach control panel battery disconnect switch is single pole, single throw (SPST) 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. Fig. 1 also shows the destinations and fuses of 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 J4. Momentarily grounding J4-3 should engage K2 and momentarily grounding J4-4 should disengage the relay. 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 connecting the relay terminals to coach battery and ground. Important, clip leads should not be connected more that 2 min. since the relay coil is intermittent duty and will overheat. Connecting the P lead to plus and the G lead to minus (ground) will engage the relay and connecting the P lead to minus (ground) and the G lead to plus will disengage the relay.

Ignition Switch Function

Refer to Fig. 2, Chassis Battery Circuits - partial schematic. When the vehicle ignition switch is on, 12vdc is applied to J4-6, pulling in relay K1. This energizes the Ignition Relay-controlled circuits P11, P12, J4-7 and J4-8.

Troubleshooting

It is assumed that the chassis battery is charged and F27 is good. Turn on the vehicle ignition switch. P11 should now be "hot". If not, disconnect J4 and apply 12vdc to J4-6 with a cliplead. Caution: the adjacent pin, J4-5 is grounded. Relay K1 should pull in and P11 will have 12vdc present. If so, the trouble is in the vehicle ignition circuitry. If not, replace the Battery Distribution Center.

Auxiliary Start Function

Refer to Fig. 3, Aux Start - partial schematic. The 2 models differ only in their method of connection to the pushbutton switch at the driver's console. In the 111979, a yellow wire pigtail goes to the switch and the return wire (usually wht/grn) connects to the Y terminal of K3. For the 111979A, the operator's switch is connected to P1 and P14 as shown. Pressing the button closes K3 and parallels the batteries.

Troubleshooting

It is assumed that either the coach or chassis battery is properly charged. Pressing the pushbutton at the driver's console should audibly pull in relay K3. If not, jumpering the yellow wire (on 111979 - jumper P1 and P14 on 111979A) should actuate the relay. If so, the trouble lies in the coach wiring or switch. If not, replace the distribution center. It is remotely possible for the relay to actuate but not make good contact inside. Evidence of this would be a voltage drop of more that 0.2v across the terminals of K3 when it is engaged.

Battery Interconnect Function

The purpose of this function is to charge the coach battery by paralleling it with the chassis battery while the vehicle is underway. Comparator circuits trip when the chassis (or coach for 111979A) battery has charged to a nominal 13.2vdc. A turn-on and turn-off delay of about 15 sec. is provided to keep the relay K3 from cycling rapidly. The nominal turn-off voltage is 12.2vdc.

A. 111979

Refer to Fig. 4. The comparison and delay circuits reside in a module manufactured by Intelletec and mounted on the rear panel of the chassis. Power for the module is obtained from P11. Hence, the ignition switch must be on for the unit to operate.

Troubleshooting

With the chassis battery voltage less than 13vdc, turn on the ignition key and start the main engine or connect a battery charger to the chassis battery. When the battery voltage exceeds approximately 13.2vdc, there should be a delay and relay K3 should pull in. If the ignition key is turned off, K3 should open immediately. If the operation is incorrect, replace the Distribution Center.

B. 111979A MINE

Refer to Fig. 5. Diodes D46 and D47 allow the comparator to sense the voltage of both chassis and coach batteries. Hence, with the coach plugged into "shore" power and engine off, relay K3 will pull in when the coach battery reaches nominal 13.2vdc. Note that since both batteries are probably well charged when the engine is turned off, both batteries will remain paralleled (K3 on) until the voltage drops below a nominal 12.2vdc. The ignition key does not affect charging.

Troubleshooting

To start, K3 must be open and both coach and chassis batteries must be below 13vdc. Two tests need to be run, converter on-engine off and converter off-engine (or charger) on. With the converter plugged in to "shore" power, the coach battery should charge. When the battery reaches a nominal 13.2vdc, there will be approximately a 15 sec. delay and K3 will pull in. Unplugging converter power, both batteries must discharge to a nominal 12.2v before K3

drops out. Starting the main engine or connecting a charger to the chassis battery will charge it. When the chassis battery voltage reaches a nominal 13.2vdc, K3 will engage after a 15 sec. delay. Shutting down the engine or turning off the charger will allow both batteries to discharge until a nominal 12.2vdc is reached. There, relay K3 should drop out. If operation is improper, the Battery Distribution Center must be replaced.

Fuses and Circuit Breakers

Figures 1 and 2 show all of the DC loads supplied by the Battery Distribution Center. They are grouped acording to function (chassis battery, coach battery, ignition and coach battery disconnect). The circuit board is stenciled with the function to aid in troubleshooting. Each fuse and circuit breaker has a light emitting diode across it to indicate when a fuse is blown or circuit breaker is tripped. The load must be on for the diode to light. The 30A and 50A circuit breakers are reset by a button on their side. The 150A circuit breaker has a reset lever on its side.

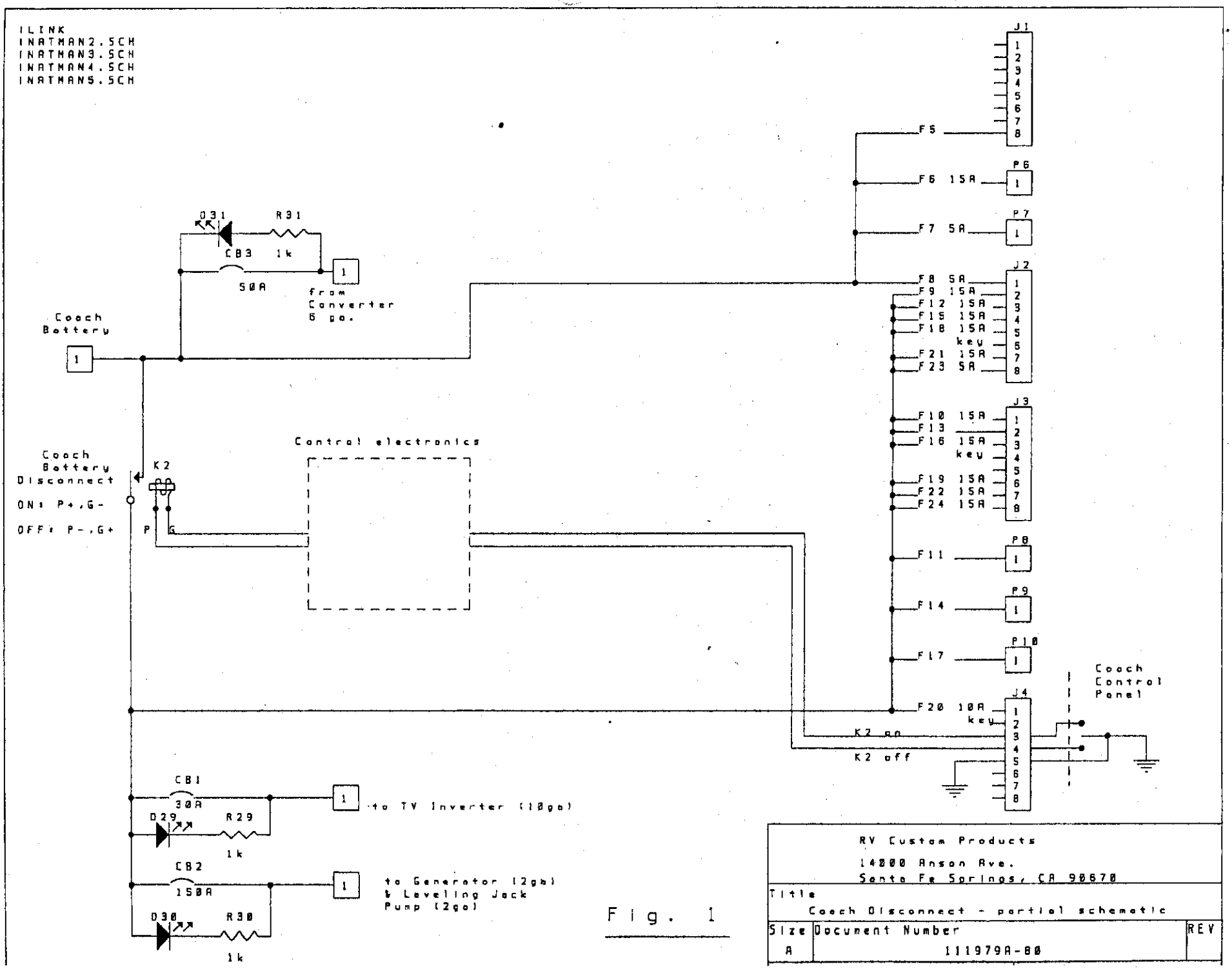

Fig. 1

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14000 Anson Ave.
Santa Fe Springs, CA 90670

Title
Coach Disconnect - partial schematic

Size	Document Number	REV
A	111979A-80	

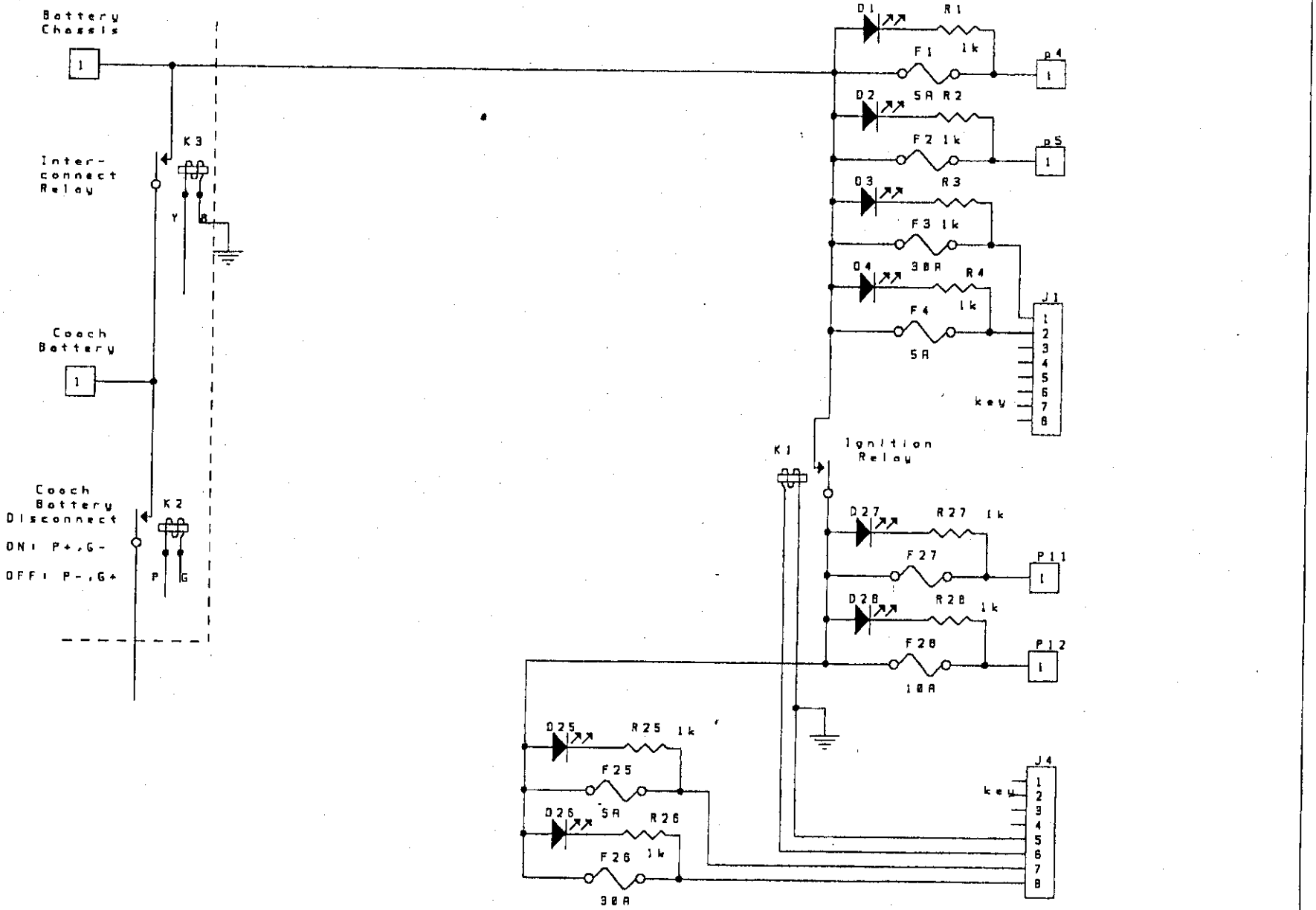

Fig. 2

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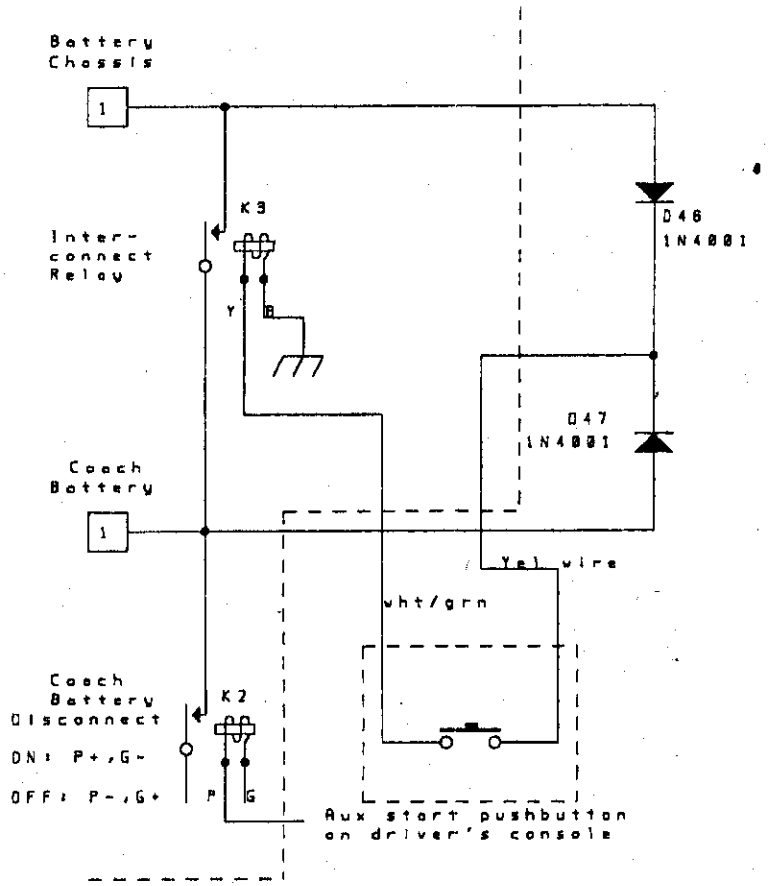
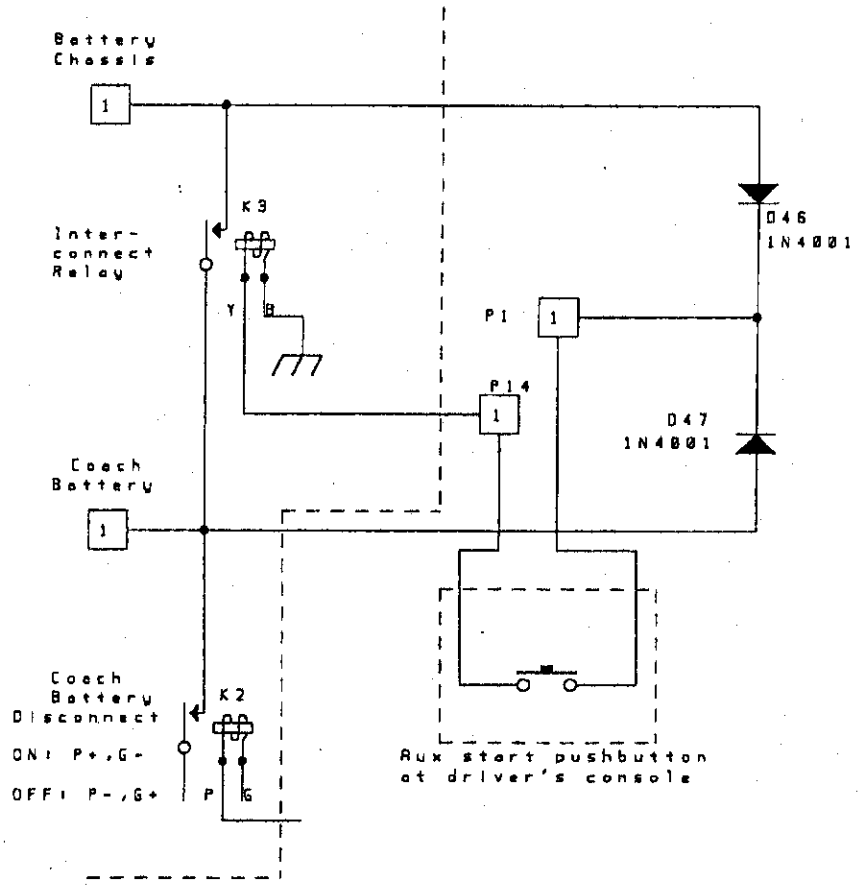
Title Chassis Battery Circuits - partial schematic	
Size A	Document Number 111979A-B0 REV



111979



111979A

Fig. 3

RV Custom Products 14000 Anson Ave. Santa Fe Springs, CA 90670		
Title Aux Start - partial schematic		
Size A	Document Number 111979-B0	REV
Date: June 12, 1998	Sheet 3 of 5	

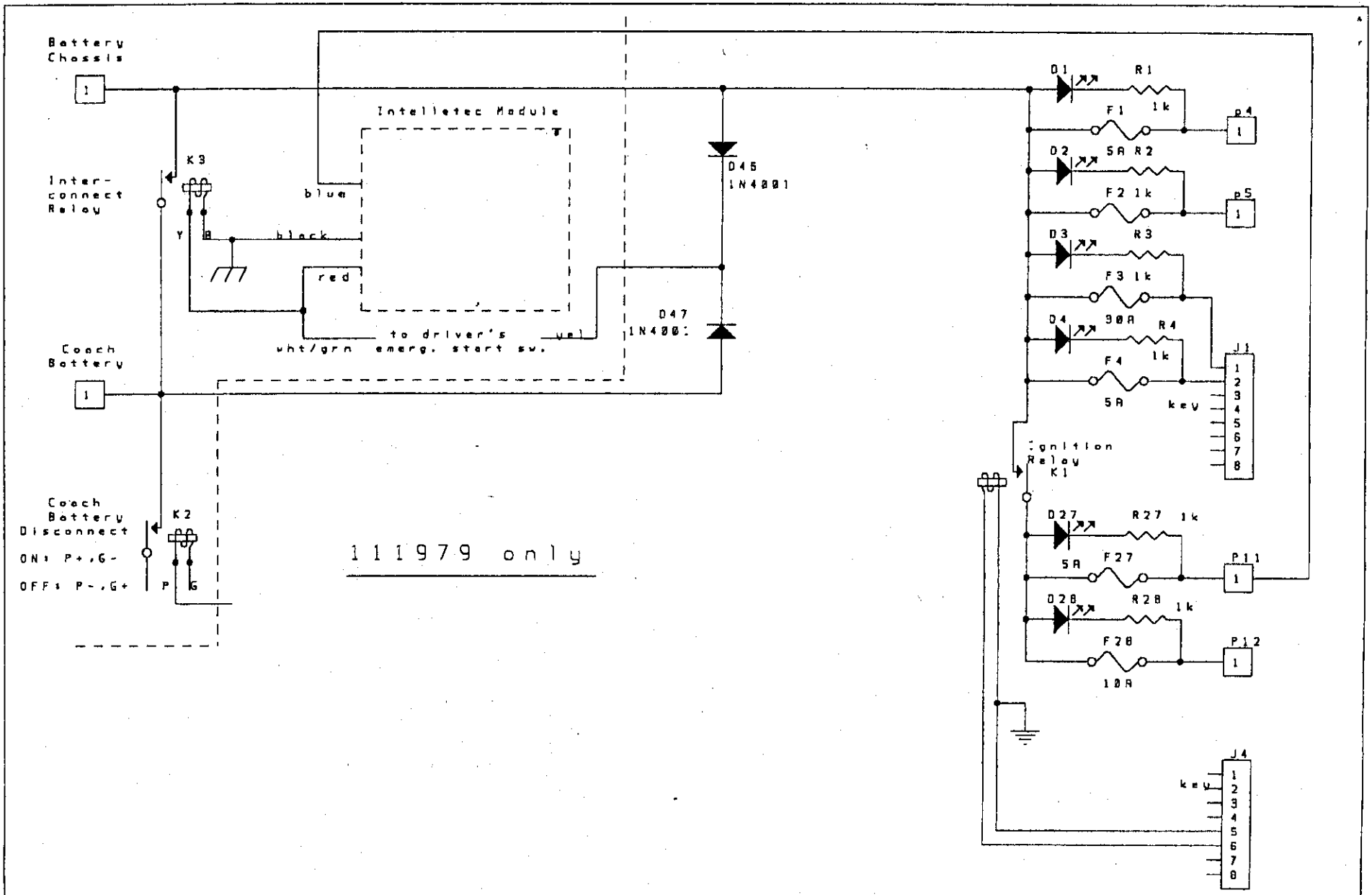


Fig. 4

RV Custom Products 14000 Anson Ave. Santa Fe Springs, CA 90670	
Title Interconnect Function - partial schematic	
Size A	Document Number 111979-00 REV
Date: June 12, 1998	Sheet 4 of 5

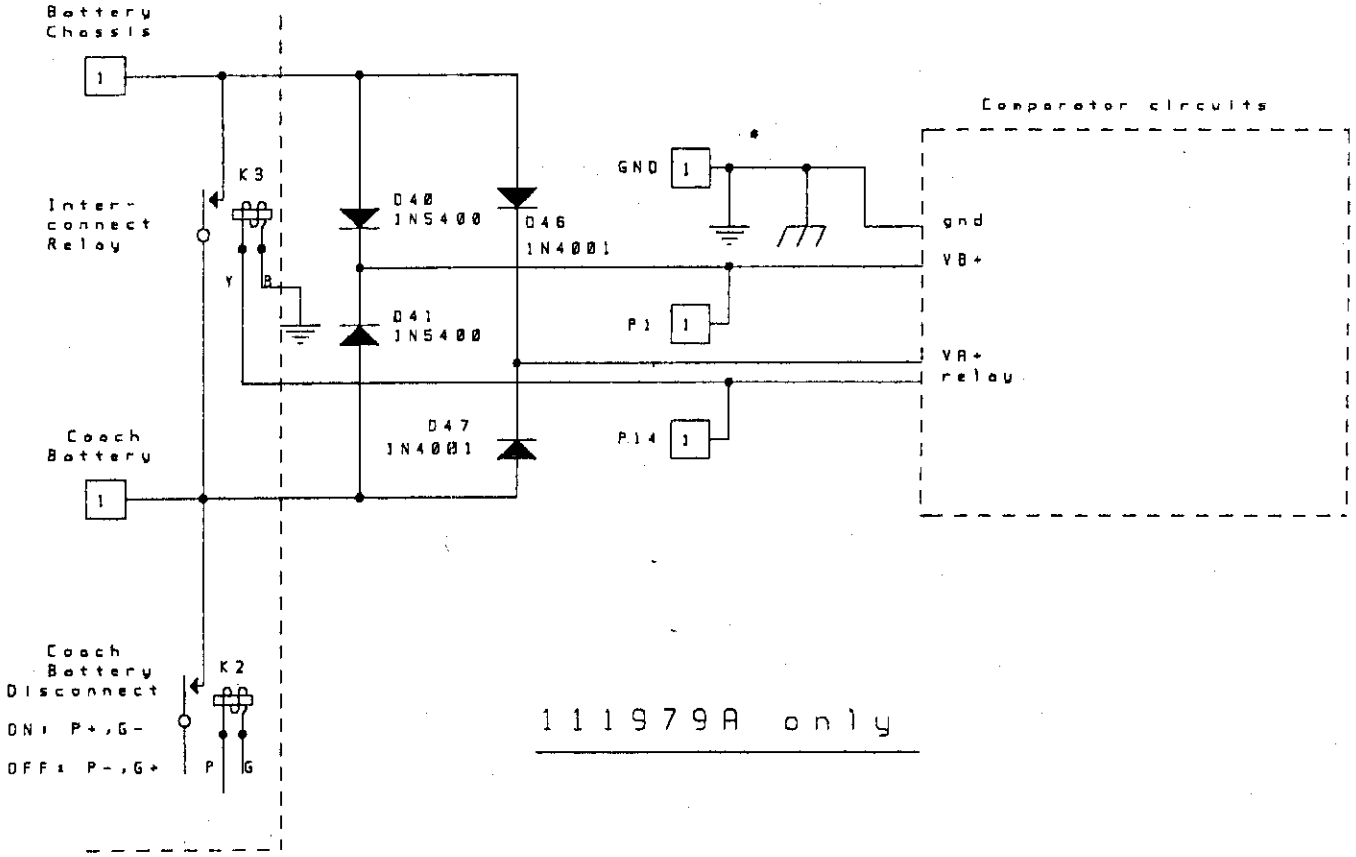
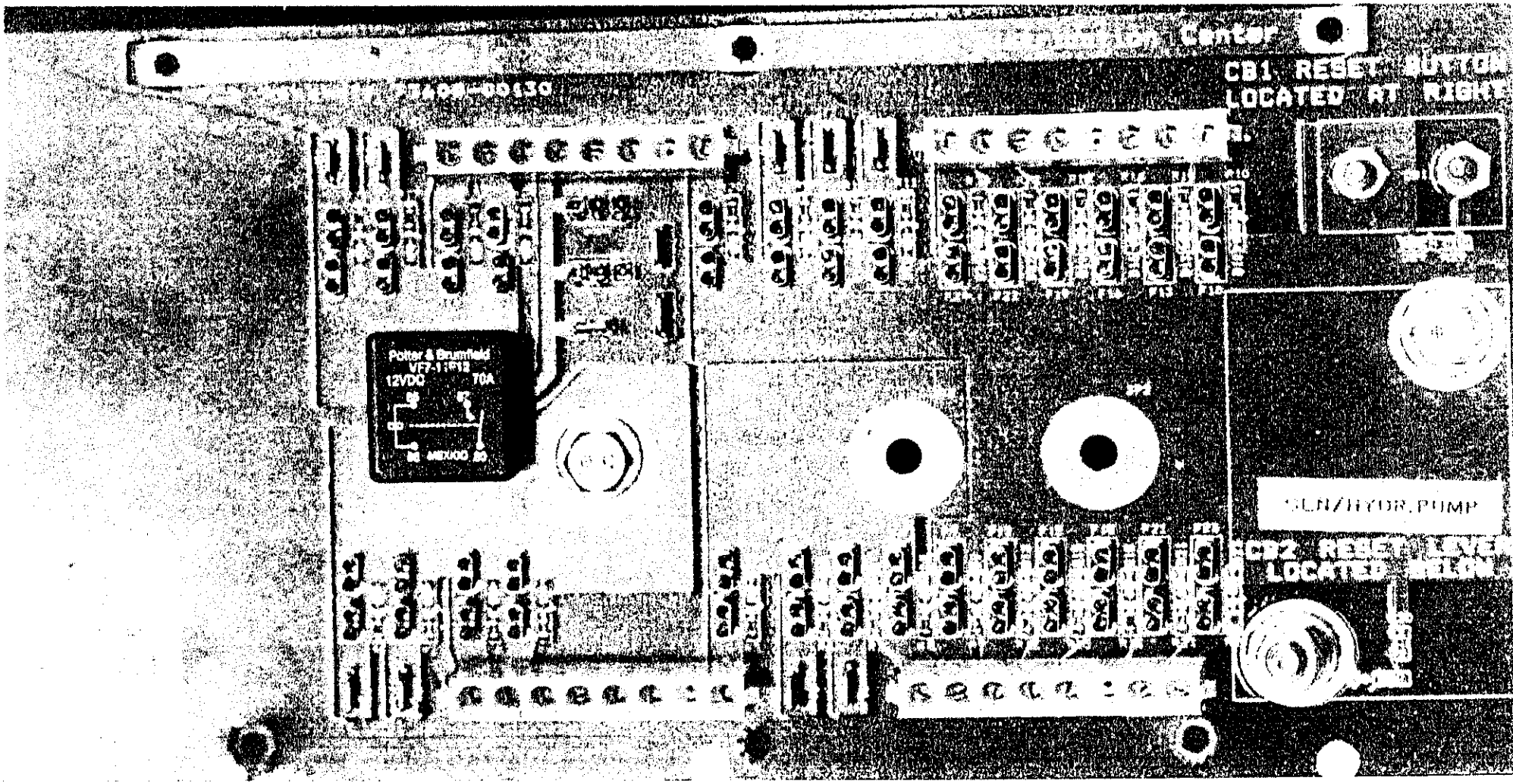


Fig. 5

RV Custom Products 14000 Anson Ave. Santa Fe Springs, CA 90670		
Title Interconnect Function - partial schematic		
Size A	Document Number 111979A-B0	REV
Date: June 12, 1998	Sheet 5 of 5	

PART # 111979

Power tek



Part # 111979A

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