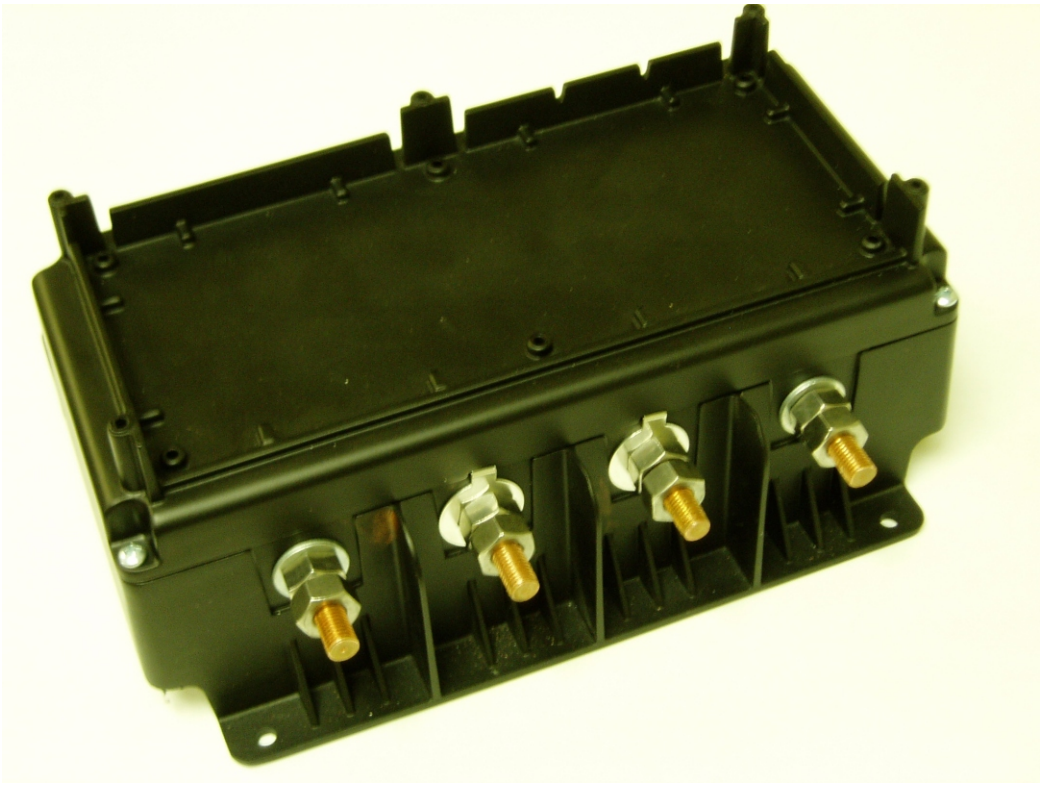
MOBAC - 200 Amp Battery Control Center

INSTALLATION & SERVICE MANUAL



Part No. 00-01008-000

Product Description

The Battery Control Center is a centralized power switching, fusing, and distribution center. Power from the main and the auxiliary batteries is fed into the Battery Control Center. The full power of both batteries is available at the box. The system consists of two latching battery disconnect relays, a bi-directional battery charging circuit, an auxiliary start function (to provide a "jump start" from the auxiliary battery), and auxiliary battery run-down protection..

CAUTION:

All servicing of the Battery Control Center should be done only by a qualified Service Technician. Inadvertent shorts in and around the Battery Control Center could result in severe damage and/or injury.

***TOOLS REQUIRED*:** Low current Test Light, Accurate Voltmeter, (digital read-out preferred).

Intellitec

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P/N 53-01008-100 Rev. X 010508

How The MOBAC Works

The MOBAC includes three latching contactors to provide the battery power switching, One is used to disconnect the Main or Chassis battery, another is used to disconnect the Auxiliary or Coach battery, and the third is used as an isolator to connect the two batteries together. These contactors are operated by the electronic circuitry in the unit.

Battery Disconnects

The Battery Disconnect contactors are used to disconnect the batteries during periods of storage or during service. The contactors operate momentarily when one of the actuation buttons is pressed. The actuation voltage is supplied from the highest voltage battery. The Disconnects are operated remotely from a switch/monitor panels using Intellitec's MONOPLEX™ circuitry. There is a diagnostic LED associated with this circuitry located on the unit, next to the "COACH" buttons. When a "normal" signal is received, the LED will light. When the Battery Disconnect contactors are closed, a signal is sent out to the switch/monitor panel to indicate the contactor is closed. These panels can be as simple as an adapter harness that connects between two SPDT, center off, momentary switches, to a four button switch pane,l or as full featured with a digital voltmeter that reads out the voltage of either battery, as measured at the MOBAC.

Low Voltage Disconnect

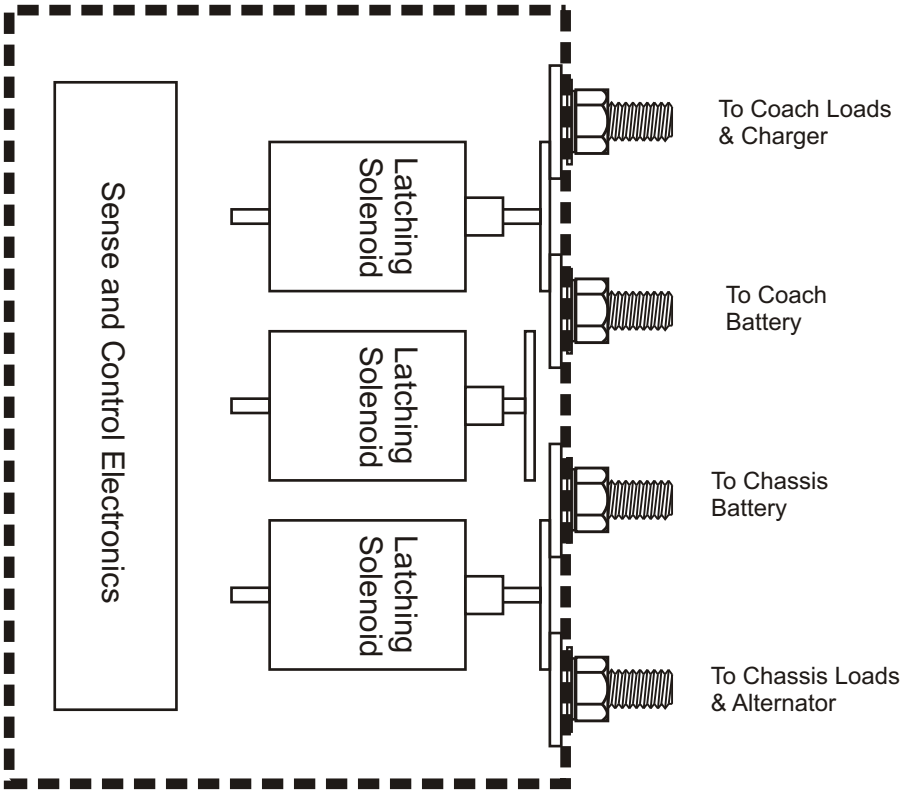
The MOBAC includes a low voltage shut-down feature to prevent the batteries from inadvertently being completely discharged. The voltage on the batteries is continuously monitored. If the ignition is off and the voltage falls too low, the switch panel indicator will begin to flash for two minutes and then the battery will be disconnected. The shut-down threshold is lower for the coach battery than the chassis battery.

Charging Circuit

The charging circuit, (which utilizes a latching contactor to connect the two batteries together for charging) will charge both batteries if either battery is being charged. It operates by sensing the voltage on the Chassis and Coach batteries. If either voltage goes above 13.1 volts (the minimum necessary to fully charge a battery) for more than 14 seconds, the isolator solenoid will pull in, charging both batteries. If , while the ignition is on, the voltage falls below 11.9 volts for more than 4 seconds, the isolator relay will open, keeping all of the alternator's output available for the chassis functions. If the ignition is off and the auxiliary battery voltage should drop below 12.6 volts (voltage of a fully charged battery) for 4 seconds, the isolator relay will open, preventing the coach loads from discharging the main battery. There is a diagnostic LED on the MOBAC that will light when the Isolator contactor is engaged.

Auxiliary Start

The Auxiliary Start function is used to provide a "jump start" from the auxiliary battery in the event that the main battery does not have sufficient charge to start the engine. It operates by connecting the main and the auxiliary batteries together through the isolator contactor. This function is accomplished by pressing the dash mounted switch, which applies 12 volts to the isolator input to actuate the isolator. Once the isolator has been actuated, it will *remain* connected for *approximately* thirty seconds after the Auxiliary Start button is released.



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INSTALLATION

The MOBAC is designed to carry heavy current (up to 200 Amps continuos) encountered in a motor home and therefore requires care in the installation to be sure it will be trouble free.

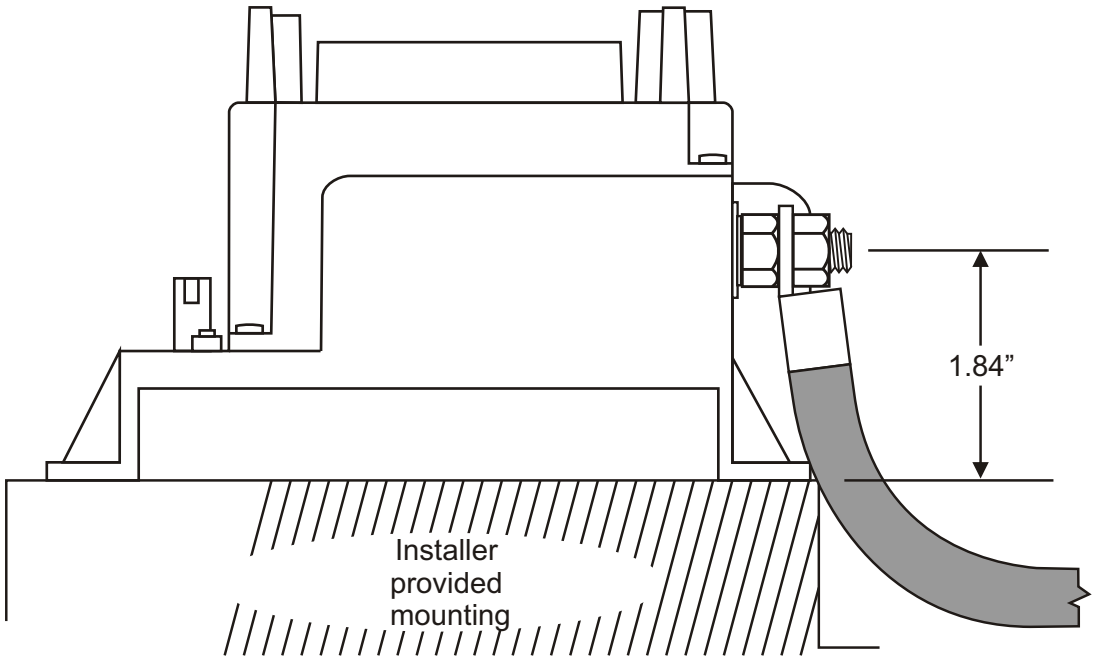
Mounting Location

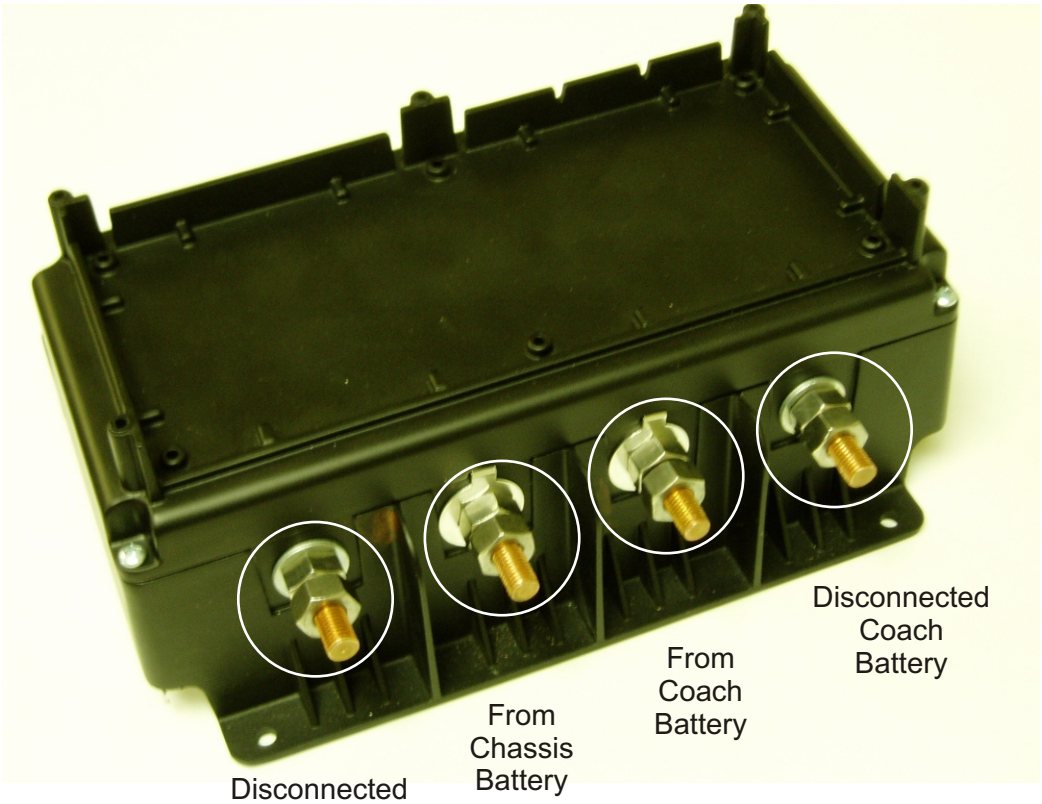
The unit which measures approximately 9" X 6 3/4" X 3 3/4" high, must be mounted securely in a weather-protected area of the coach where the maximum temperature will not exceed 65° C (149° F). The battery connection studs are approximately 1.84" above the mounting surface. This may not provide enough room for the cables to bend in a long enough radius. If this is the case, the unit should be mounted on an elevated surface that allows the cables to have enough room to bend gently. A typical recommendation for bending the cables is that the bending radius is at least 5 times the cable diameter.

The MOBAC can be mounted in any convenient orientation.

Battery Connections

The battery connections to the unit must use 2/0 or larger cables. These cables should be terminated with ring lugs that have a 5/16" hole to provide good connections to the studs of the unit. Such parts are available from Thomas & Betts (part nos. 54158, 54158UB, 54158UF)The nuts should be tightened to a torque of 7 ft/lbs. The cables should be strain relieved at distance of no more than 6" away from the unit to prevent them from rotating and getting loose.




Disconnected Coach Battery
From Coach Battery
From Chassis Battery
Disconnected Chassis Battery

Control and Sense Wiring

There are two Mate-N-Lok connectors used to connect the MOBAC to the coach. The four pin plug is used to connect to the switch panel or panels. Any number of switches can be used, such as one at the entry door and another at the driver's seat. These are in addition to the buttons on the MOBAC.

Pin Outs

J1 - Three Pin

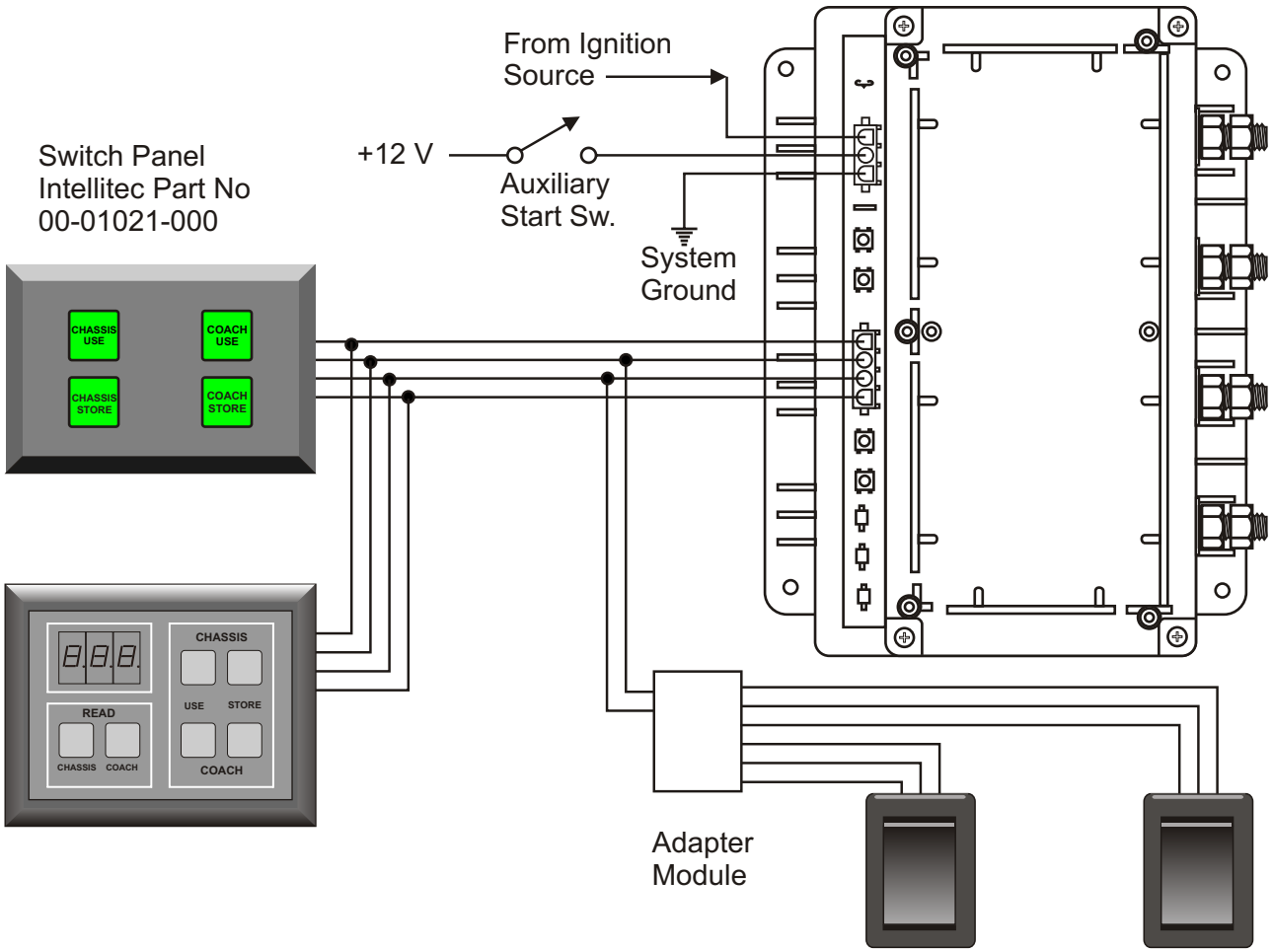
J1-1 Ignition Input
J1-2 Auxiliary Start Input
J1-3 Chassis ground

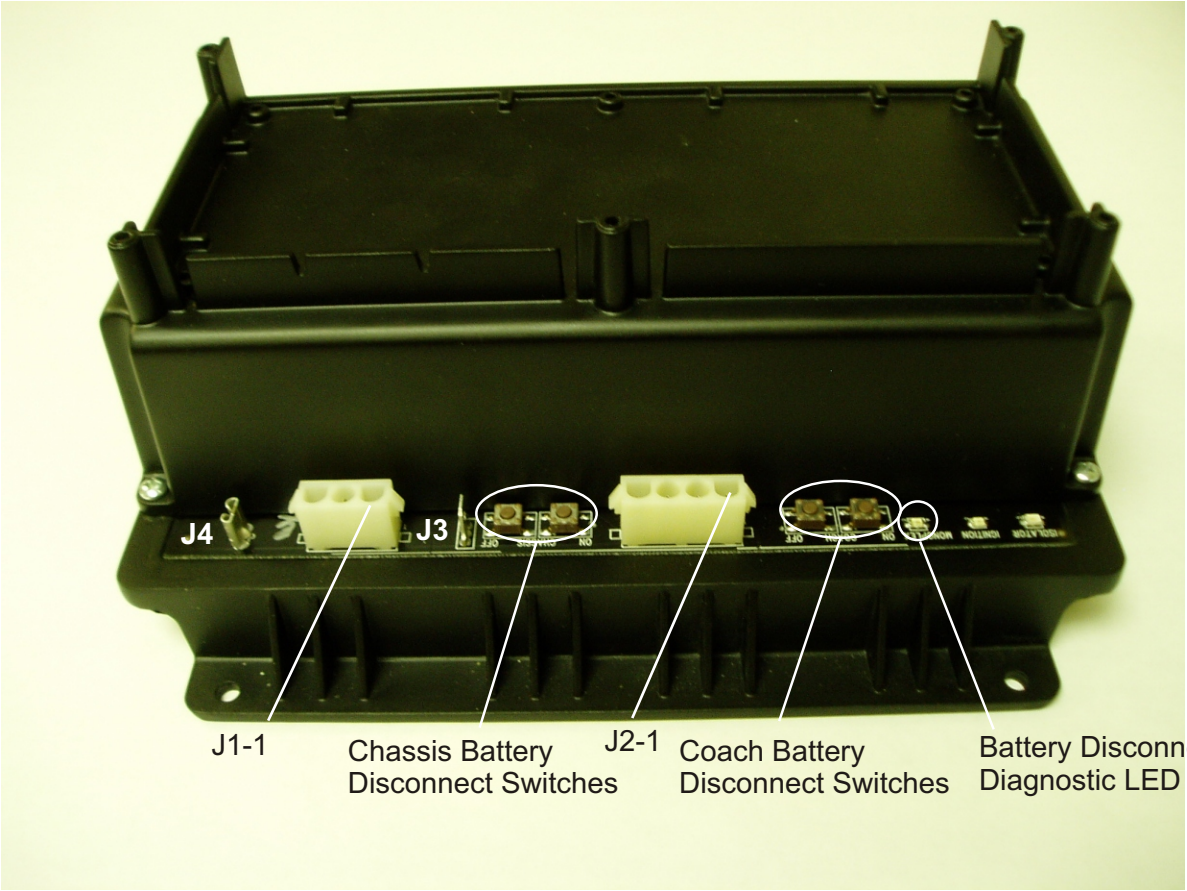
J2- Four Pin

J2-1 MONOPLEX™ input
J2-2 Switch panel ground
J2-3 Chassis battery indication/voltage
J2-4 Coach battery indication/voltage

J3 - Male Faston - Ignition signal output

J4 - Female Faston - ground





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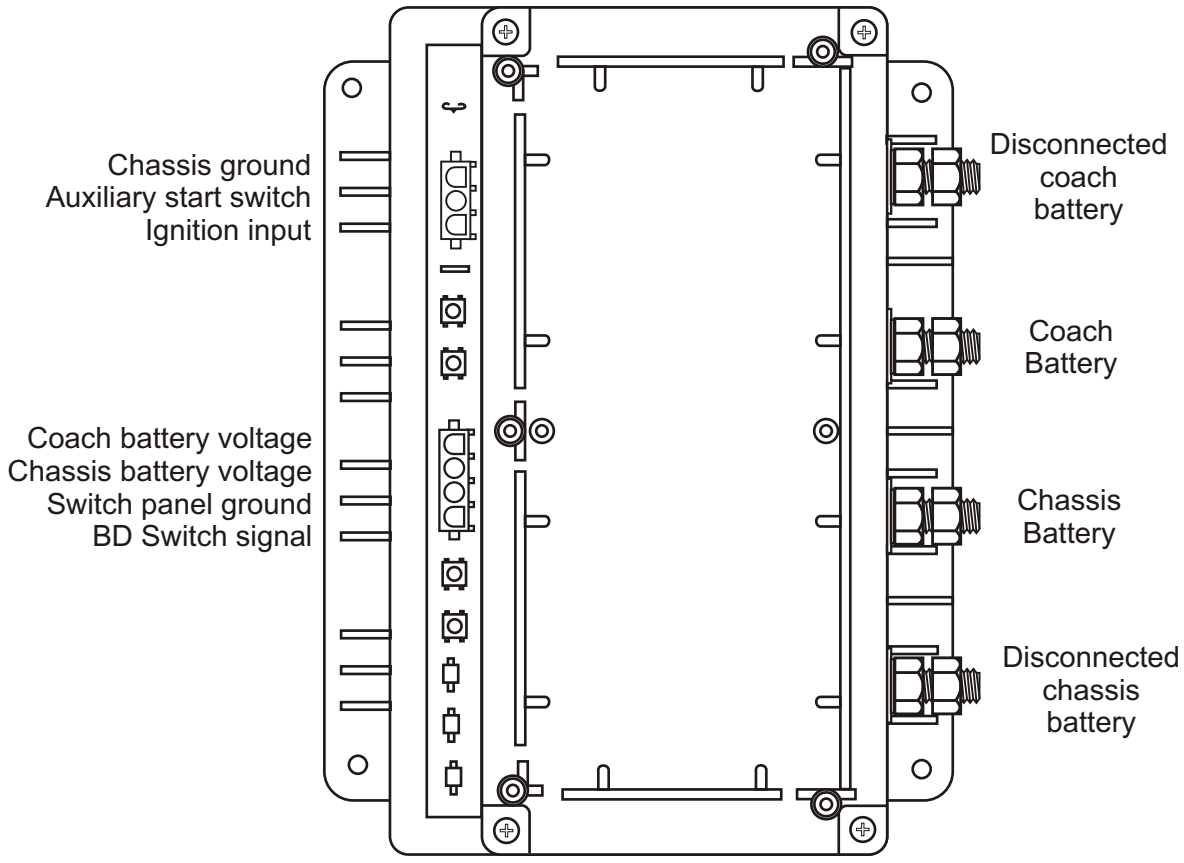

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Trouble Shooting

The MOBAC is a completely self-contained battery control center. It contains ***NO*** user serviceable parts. It has been designed to provide many years of service. If it ever becomes defective, it should be replaced.

Checking the Battery Disconnects

The Battery Disconnect contactors can be tested at the MOBAC by pressing any of the four buttons in the edge f the board. hese buttons are marked to indicate their function. When any of the buttons is pressed, the diagnostic LED will light. One of disconnect contactors will momentarily operate, to either latch or open. Holding the button down will not harm the unit.

Isolator Contactor

An isolator contactor is provided in the unit to connect the chassis and coach batteries together for charging. It also is used to connect the two batteries together for auxiliary start. This allows the auxiliary battery to be used to "jump start" the main battery if it doesn't have enough charge to start the engine. There is a diagnostic LED on the MOBAC that indicates wen the isolator contactor is closed. To check for proper operation, operate the engine at high idle for at least 30 seconds and check the chassis battery votlage at the chassis battery trinal. This voltage must be at least 13.1 volts before th isoaltor will close. Check te alternator if the voltage is less than 13.1 volts.

Pressing the Auxiliary start switch will also close the isolator contactor. The Isolator LED should be lit in either case.

Troubleshooting

Battery Disconnect

A. The relay fails to operate.

1. Batteries may be dead. Check for voltage at the "battery" terminal of the relay. The voltage should be at least 11 volts. If the voltage is less, charge either battery. If the voltage is more than 11 volts, continue.

2. Switch panel wiring may be defective. Observe the MONOPLEX™ diagnostic LED to see if it is lit. With no button pressed, it should be off. If it is lit, there may be a problem with the switch panel or the wiring to it. Pull the four pin plug from the board to Press on the buttons on the panel and observe the diagnostic LED to see if lights. If the LED is lit all the time, the wiring is faulty. If

3. Wiring or switch may be faulty. To check the operation, have an assistant operate the Battery Disconnect switch inside the coach. Check for voltage on the "I" terminal and ground on the "S" terminals at the test points on the printed circuit board.

B. Coach functions operate when coach is plugged in, but not from the battery.

1. Circuit breakers feeding converter may be open. Reset circuit breakers at box.

Charging Circuit

A. Auxiliary battery does not charge.

1. The isolator contactor may not be closing. Operate the engine at a high idle for at least twenty (20) seconds and check the chassis battery voltage. The voltage must be at least 13.1 volts before the isolator activates. Check the alternator if the voltage is less than 13.1 volts.

2. Check for voltage between the chassis and coach batteries. If the voltage is more than 0.1volts replace the MOBAC.

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Troubleshooting

C. Main battery doesn't charge from converter.

1.The converter is not putting out at least 13.1 volts. Check converter, turn off excess 12 volt loads, if necessary.

2. Converter circuit breakers in Battery Control Center open. Reset the breakers located near the box.

Auxiliary Start

A. Auxiliary Start fails to operate.

1. The **coach** battery may be dead. Charge battery.

2. Isolator relay may be defective.

3. Switch or wires may be faulty. Check for 12 volts at J1 pin 1, while pushing switch. If 12 volts is not available, check wiring, if OK, replace the switch.

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