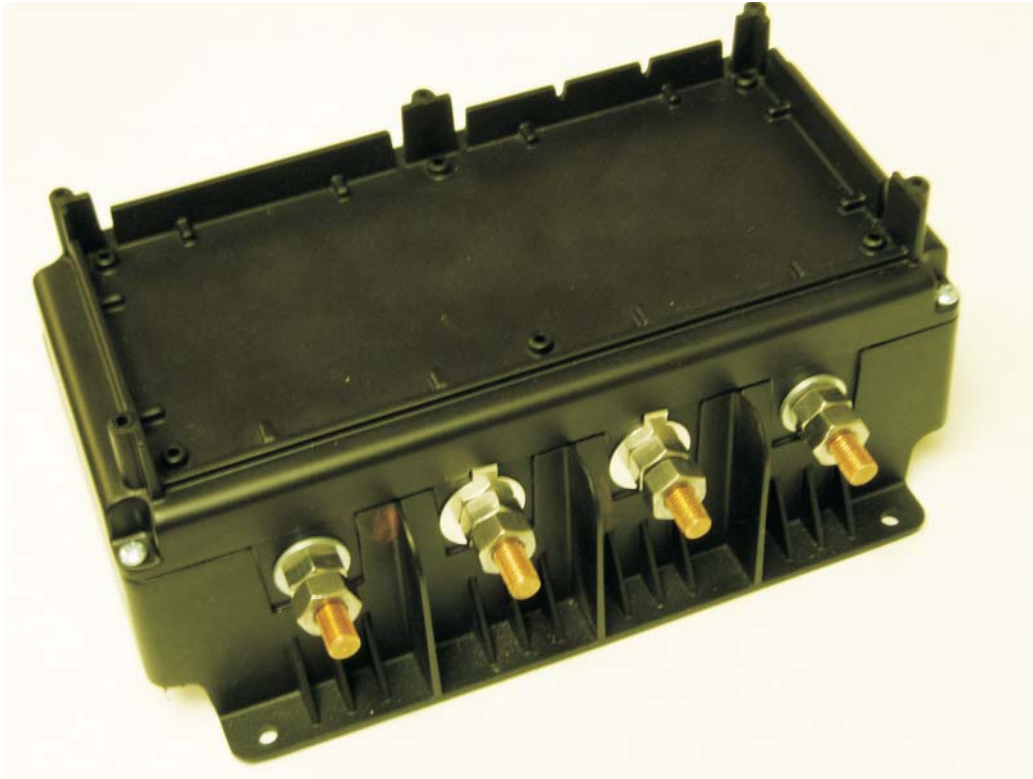


# MOBAC - 200 Amp Battery Control Center

## 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 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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### 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 strongest battery source. The Disconnects are operated remotely from a switch/monitor panel 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 present, the LED will light during battery press. 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 panel 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, for two minutes the switch panel indicator will begin to flash for another 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 for more than 14 seconds, the isolator solenoid will connect both battery sources. While the ignition is on, if the voltage falls below 11.9 volts for more than 4 seconds, the isolator relay will open, disconnecting both battery sources from each other. 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.

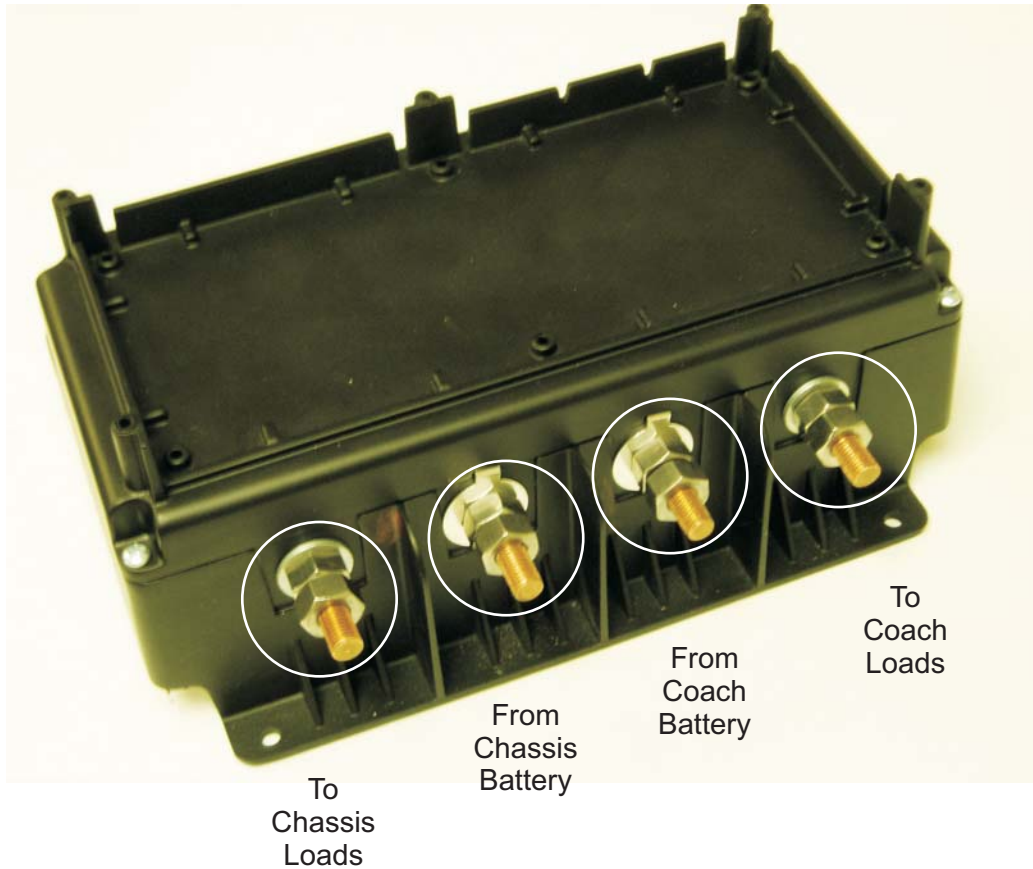
## IGNITION FUNCTIONS

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### CAUTION:

No additional loads may be added or connected beyond the factory installed connecting cables to the following Power Studs on the MOBAC.

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### INSTALLATION

The MOBAC is designed to carry heavy current (up to 200 Amps continuous) 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"L X 6 3/4"W 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 or the use of a 90 or 45 degree angle cable terminal can be used. A typical recommendation for bending the cables is that the bending radius is at least 5 times the cable diameter.

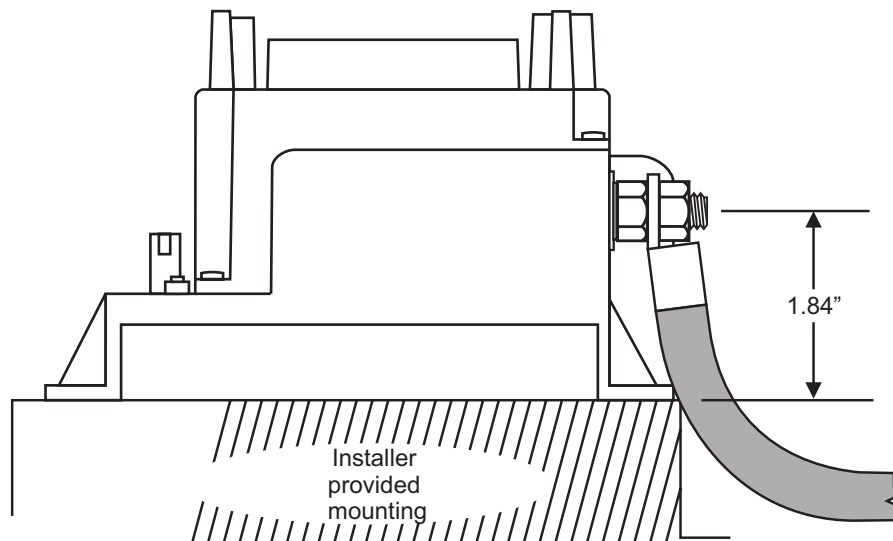
The MOBAC can be mounted in any convenient orientation.

#### **NOTE:**

If your MOBAC has a Fuse Distribution Panel (p/n 00-01029-xxx) the entire assembly should be installed in the interior of the vehicle or in a compartment protected from the environment.

#### **Battery Connections**

The battery connections to the unit must use cables sized to meet applicable codes for current demand. These cables should be terminated with ring lugs that have a 5/16" hole to provide good connections to the studs of the unit. 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 loosening.



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### 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

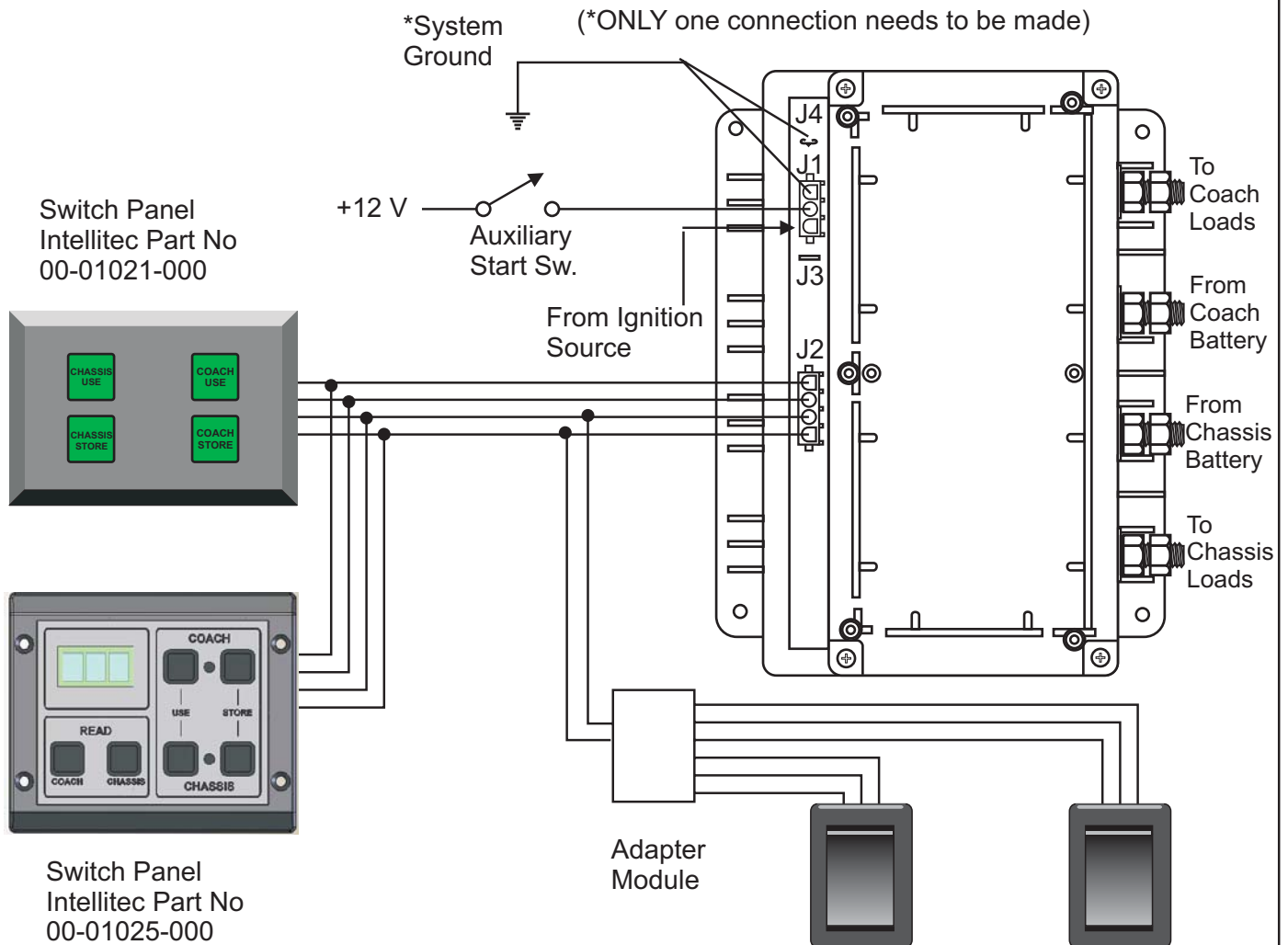
- J1-1 Ignition Input
- J1-2 Auxiliary Start Input
- J1-3 Chassis ground

##### 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 - system

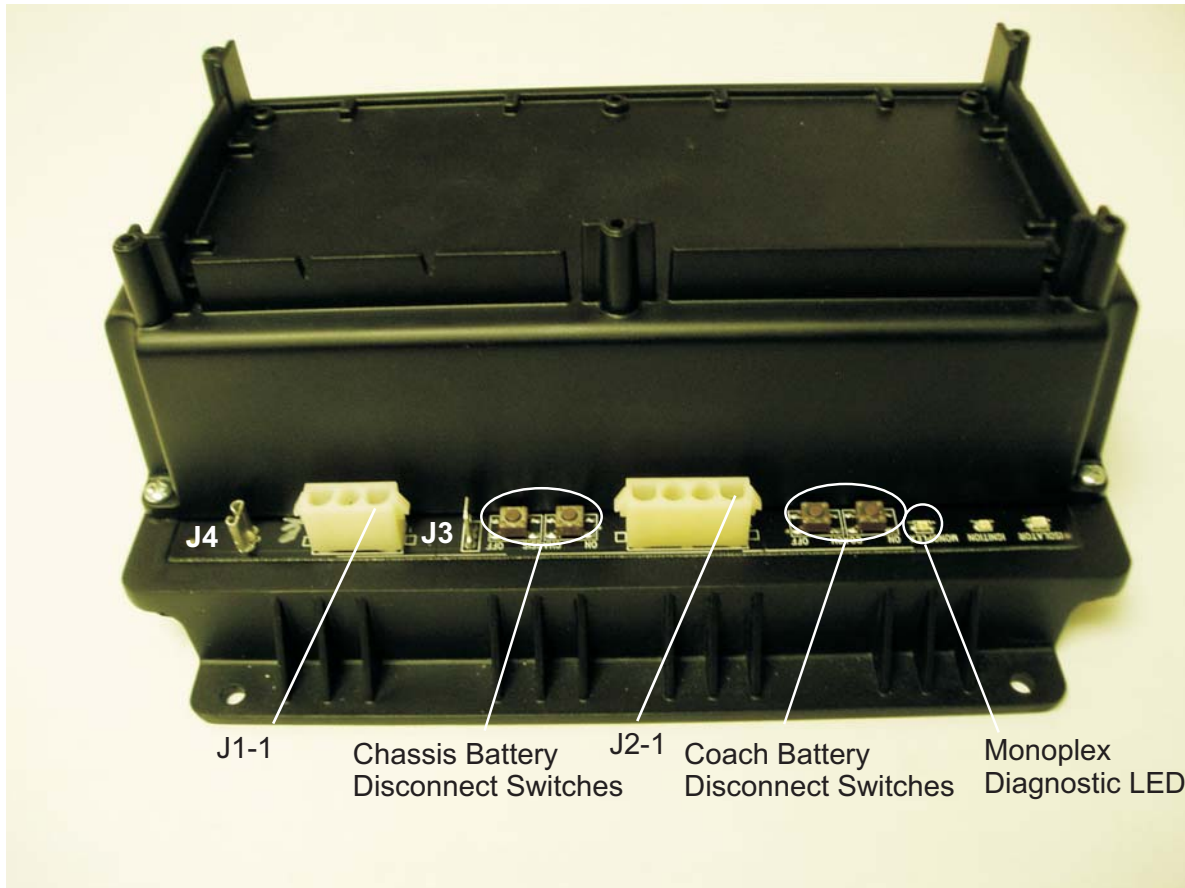


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# **MOBAC - 200 Amp Battery Control Center**

## **INSTALLATION & SERVICE MANUAL**

### ***Troubleshooting***

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 near the edge of the board. These buttons are marked to indicate their function. When any of the buttons is pressed, the MONOPLEX™ diagnostic LED will light. One of the disconnect contactors will momentarily operate, to either latch closed 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 when 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 voltage at the chassis battery terminal of the MOBAC. This voltage must be at least 13.1 volts for 30 seconds before the isolator will close. Check the alternator and appropriate connections 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 if the isolator contactor is closed.

#### ***Low Voltage Disconnect***

The low voltage shutdown feature prevents the batteries from inadvertently being completely discharged. If the ignition is off and the voltage for either the Coach or Chassis battery falls below the low voltage threshold a fault will appear on the switch panel. As long as observed battery voltage is below the low voltage threshold for a period of two minutes the switch panel will begin to flash and will continue to flash for an additional two minutes, (total of 4 minutes delay) before disconnecting either the Coach and or the Chassis loads from their respective source. The Chassis low voltage threshold is approximately 12.6V, while the Coach low voltage threshold is approximately 10V.

# **MOBAC - 200 Amp Battery Control Center**

## **INSTALLATION & SERVICE MANUAL**

### **Troubleshooting**

#### **Battery Disconnect**

##### **A. The relay fails to operate.**

1. Batteries may be dead. Check for voltage at the "battery" terminal of the MOBAC. 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 MOBAC. Press one of the buttons on the MOBAC and observe the diagnostic LED to see if lights. If not, MOBAC is faulty.
3. Wiring or switch panel is faulty. Check crimps in wire harness for bad connectors. Connect switch panel to MOBAC with known good wire harness.



# **MOBAC - 200 Amp Battery Control Center**

## **INSTALLATION & SERVICE MANUAL**

### **Troubleshooting**

#### **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 thirty (30) seconds and check the chassis battery voltage. The voltage must be at least 13.1 volts for 30 seconds before the isolator activates. Check the alternator if the voltage is less than 13.1 volts.

##### **B. 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. Switch or wires may be faulty. Check for 12 volts at J1 pin 2, while pushing the aux start switch. If 12 volts is not available, check wiring, and the switch.
3. Isolator relay may be defective. Replace MOBAC.