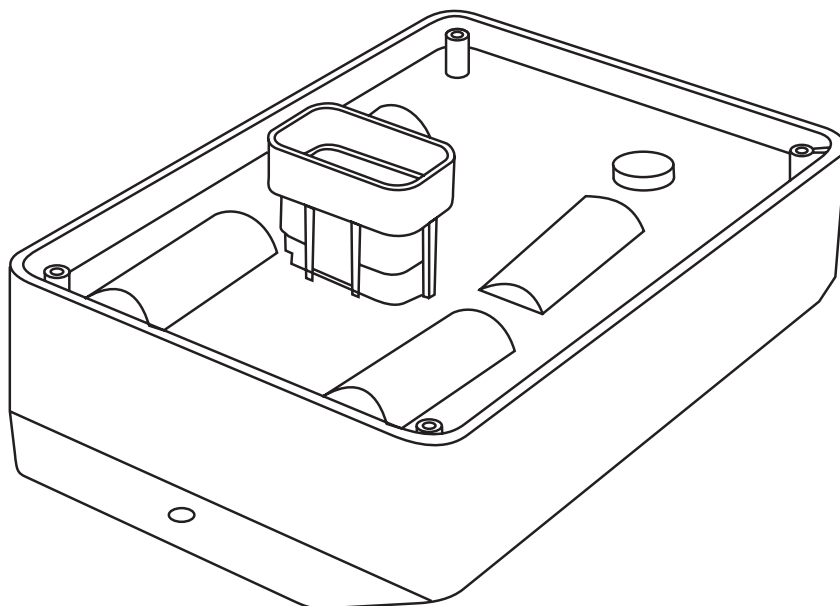


# REVERSE BATTERY PROTECTED BATTERY GUARD

## INSTALLATION & SERVICE MANUAL



Part No. 00-00696-240

### CAUTION

Some of the components of Reverse Battery Protected Battery Guard are connected directly to the vehicle's batteries. The full power of these batteries is available at the terminals of the disconnect relays. Inadvertent shorts of these cables could result in severe damage and/or injury.

***All servicing of this system should be done only by a qualified Service Technician.***

### Tools Required:

Accurate Voltmeter (*digital read-out preferred*).

**Intellitec**

[www.intellitec.com](http://www.intellitec.com)

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P/N 53-00696-241 Rev. B 032105

# **REVERSE BATTERY PROTECTED BATTERY GUARD**

## **INSTALLATION & SERVICE MANUAL**

### **HOW IT WORKS**

The Reverse Battery Protected Battery Guard is used as a main battery disconnect for both the 24 volt and the 12 volt batteries in a dual battery system or the 24 volt battery in a single battery system. It also provides battery run-down protection and protection from reverse battery installation. The system consists of a control module, one or two latching relays, and a dash-mounted switch. The system provides a number of features, including Master Disconnect, battery run-down protection and reverse battery protection.

#### **Master Disconnect**

The Master Disconnect feature allows the driver to disconnect both the 24 volt and 12 volt batteries at the same time, from the dash-mount switch. This can be done with the ignition on or off. To switch off the batteries, the driver presses and momentarily holds the Master Disconnect switch in OFF position. If the ignition is on, the system will interrupt the power to the ignition system prior to disconnecting the batteries. When the batteries are connected, the indicator on the dash-mount switch will be illuminated. If the batteries are disconnected, the indicator will be flashing. To reconnect the batteries, the driver presses and momentarily holds the switch in the ON position.

#### **Battery Run-Down Protection**

If the ignition is off, the system constantly monitors the batteries for drain by measuring the voltage of the batteries. If the voltage falls below 24.0 volts for more than 4 minutes, the system will disconnect the batteries to prevent further discharge. The Master Switch indicator light, will begin to blink two minutes prior to disconnecting, to alert the driver of the impending shut-down.

#### **Reverse Battery Protection**

If the battery cables are removed, the unit senses the sudden drop in voltage and opens the disconnect relays. When the batteries are re-connected, the relays are open and the batteries must be connected in the correct polarity before the system will close the relays, thereby preventing the application of reverse polarity to the vehicle's electrical system.

#### **Indicator Light Extinguishing**

There is an input to the module that allows the indicator light to be extinguished for dark running operation. When this input is high, the indicator will be off.

#### **The Module**

The module is potted and contains no user serviceable components. The electronics in the module control the latching solenoids to perform the functions described above.

#### **Latching Relay**

The Latching Relays (Intellitec Part # 00-00507-024) operate by the momentary application of voltage to the coil terminals. When the voltage is in one polarity, the relay is pulled in and latched. When the voltage is applied in the opposite direction, the relay is un-latched. The control electronics in the module perform the application of the power to the relays.

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### **CAUTION**

To prevent damage, continuous power should never be applied to the relay coil.  
*All servicing of this system should be done only by a qualified Service Technician.*

### **SERVICING**

There are no dealer serviceable parts in this box.  
Replacement of a defective box is the only way to correct a failed unit.

### **REMOVAL AND REPLACEMENT**

#### **Module**

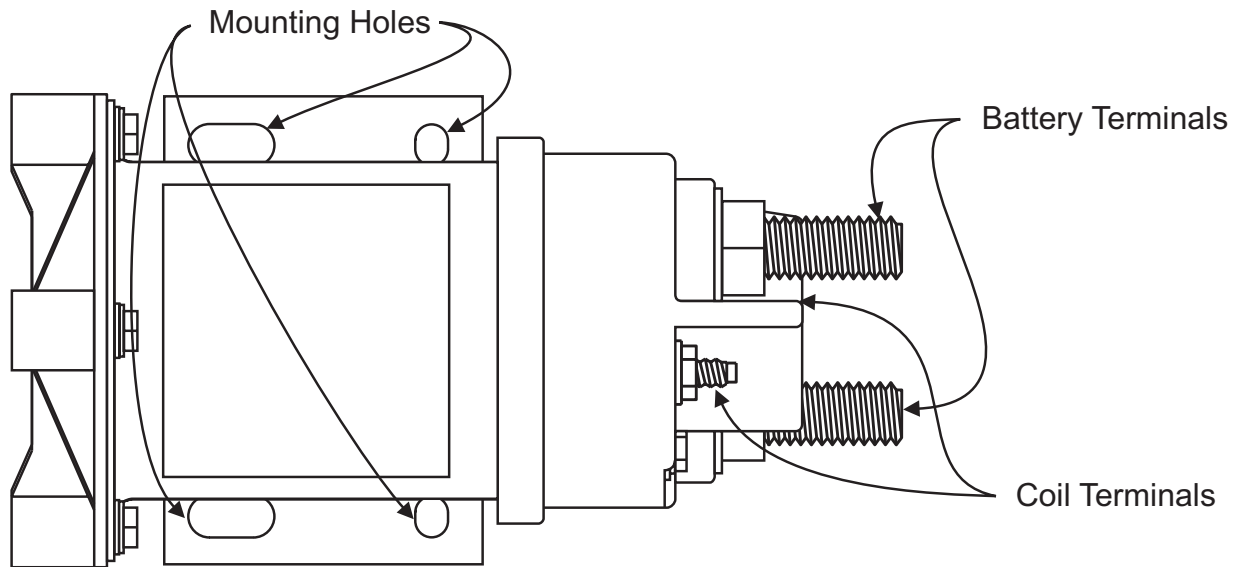
To remove the module, unplug the ten pin plug by pulling the latch outward, while gently rocking and pulling the plug. The module is held in place with two screws through the flanges on the ends of the module. The module can now be removed and replaced by reversing the removal procedure.

#### **Relay**

The relay(s) can be removed by first disconnecting the ground cable from the battery(s). Be sure the cable is positioned a distance from the battery post to prevent accidental reconnect while working on the system. There are four connections to the relay, two battery cables and two coil wires. *Observe the color code of the wires as they are removed from the relay.* The relay will have to be reconnected with the identical connections for proper operation. Once the wires are removed, the four mounting screw are removed to free the relay. The new relay can be installed using the reverse order of the removal. Tighten the battery cable connections to a torque of 150 in/lbs.

# REVERSE BATTERY PROTECTED BATTERY GUARD

## INSTALLATION & SERVICE MANUAL



### Disconnect Relay

The Disconnect Relay used in the system is Intellitec's standard 200 Amp Latching Relay (Intellitec Part No. 00-00507-024). This relay is a mechanical latching unit that requires NO power to keep it open or closed. To close the relay, +24 volts is momentarily applied to the "I" terminal of the relay and "S" terminal is grounded. To open the relay, +24 volts is momentarily applied to the "S" terminal and the "I" terminal is grounded.

### CAUTION:

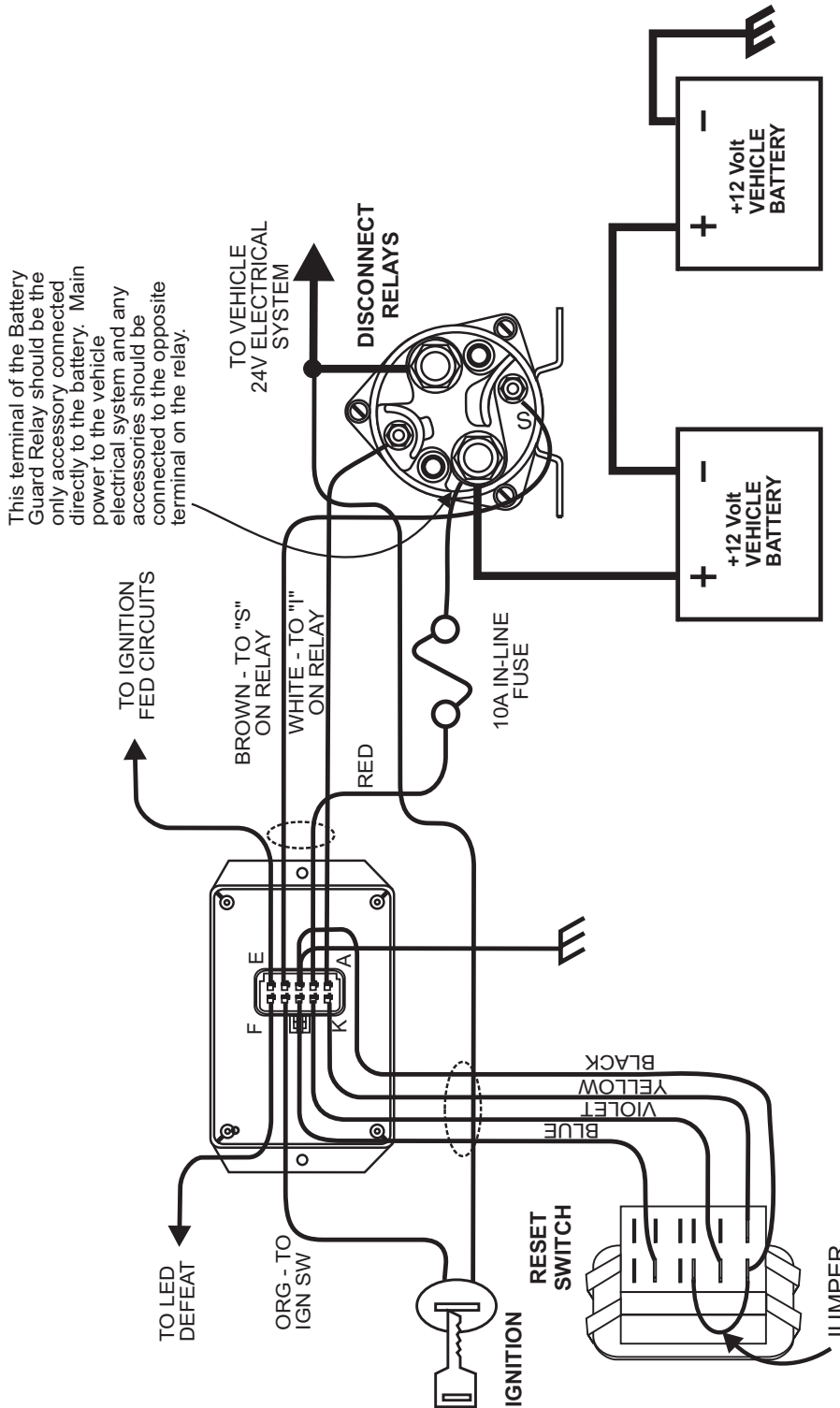
Application of continuous power to the coil will permanently damage the unit.

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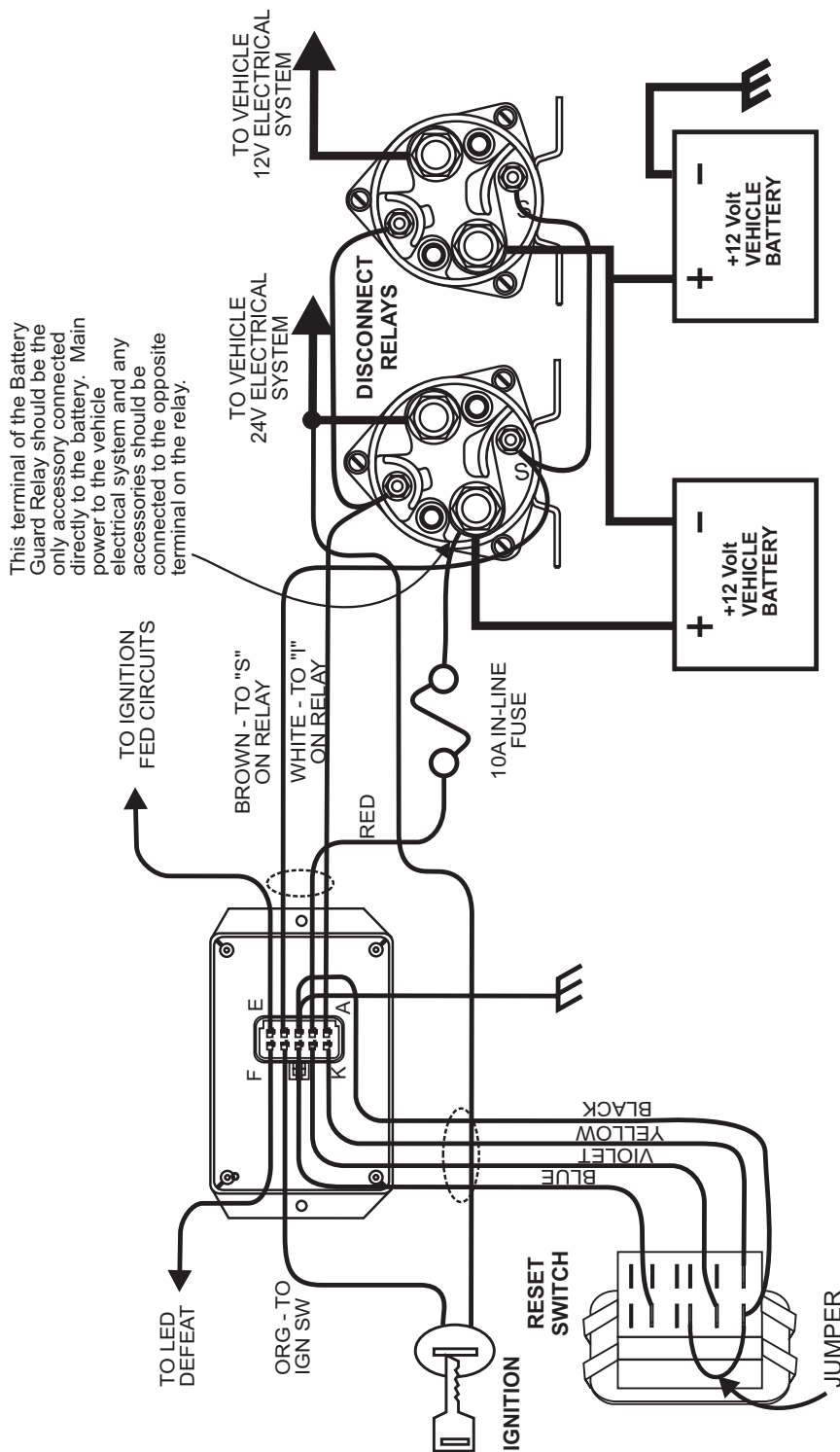
## INSTALLATION & SERVICE MANUAL



**SINGLE VOLTAGE  
REVERSE BATTERY PROTECTED  
BATTERY GUARD**

# REVERSE BATTERY PROTECTED BATTERY GUARD

## INSTALLATION & SERVICE MANUAL



This terminal of the Battery Guard Relay should be the only accessory connected directly to the battery. Main power to the vehicle electrical system and any accessories should be connected to the opposite terminal on the relay.

**DUAL VOLTAGE  
REVERSE BATTERY PROTECTED  
BATTERY GUARD**

# REVERSE BATTERY PROTECTED BATTERY GUARD

## INSTALLATION & SERVICE MANUAL

### TROUBLE SHOOTING

#### NOTE:

Many installation problems can be created by improper connections. Before proceeding with module or relay replacement, be sure that all the wiring connections are correct and the battery/batteries are charged and connected in the correct polarity.

#### Symptom/Problem

#### Possible Cause/Cure

Won't connect the battery/batteries.

Be sure battery/batteries are connected in the correct polarity and charged to at least 24.2 volts.

Check the 10 amp fuse feeding the module power. Replace if necessary.

Won't disconnect the battery/batteries.

Check the 10 amp fuse feeding the module.

Keeps disconnecting the battery/batteries with the ignition off.

This is a normal function for the system to prevent excessive draining of the batteries. Check for draining loads. Turn off unnecessary loads.

Check the condition of the batteries. They may be failing.

No power through the relay.

Check to be sure the relay has been closed by actuating the dash-mounted switch. Connect a voltmeter between the relay coil terminals to see if power and ground are applied when the switch is pressed. (Both coil terminals are normally grounded through the module. External application of power to either of the coil terminals will damage the module. The relay may be operated without the module by first removing the connections to the module and then MOMENTARILY applying +24 volts and ground with test or jumper leads.)

If power has been applied in the correct polarity and the relay is still open, replace the relay.

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