

# VOLTAGE CONTROL RELAY

## Installation Instructions

### Pre - Installation

- Disconnect both batteries by removing both the positive and negative terminals before commencing installation. It is a safe practice to always disconnect negative first. You should always check with the manufacturer before disconnecting batteries on late model vehicles.
- Ensure the Auxiliary Battery is mounted securely to prevent movement in any direction.

### Location

- The Voltage Control Relay (VCR) should be mounted on a flat dry surface under the bonnet such as a firewall.
- The VCR must be kept well away from hot items such as exhaust systems or turbo chargers.

### Attaching Cable

Before cables can be connected to the batteries you will need to crimp a lug to the end of the cable. Please follow the instructions below for crimping lugs.

- Strip the plastic casing off the end of the cable for approximately 15mm, fit the appropriate connector and crimp in place.
- Slide the heat shrink over the connectors and heat with a heat source until secure
- Connect to the batteries as per the cable connection instructions

### Cable Connection

1. Connect one end of the positive (red) cable to the positive terminal of the auxiliary battery.
2. Run the other end of the cable to the VCR preferably keeping the cable away from any moving parts and cut to size.
3. Connect another section of red cable to the positive terminal of the start battery.
4. Connect both positive (red) cables to the VCR. The Cable connected to the start battery goes to M8 stud labelled 'A1', and the cable connected to the auxiliary battery goes to the M8 stud labelled 'A2'
5. Use a spade connector to connect one end of the small negative/earth (black) cable to the VCR terminal labelled minus.
6. Connect the other end of the small negative/earth cable to the closest earth connection (usually the mounting point of the VCR or on a clean paint free surface).
7. Connect one end of the large negative/earth (black) cable to the negative terminal of the auxiliary battery.
8. Connect the other end to the closest earth connection usually the chassis of the motor vehicle, engine block, or where possible to the negative terminal on the start battery.

For safety reasons please ensure to use DC fuses on the positive cables where possible.

Refer to the installation diagram in Figure 1.

### Options

If you want to use the emergency Parallel feature or winch bypass, you can make a switched connection from the terminal marked "status", (Starting Assist) to the positive terminal on the auxiliary battery.

- For safety please ensure to use DC fuses on the positive cables where possible.
- Refer to the installation diagram in figure 1

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### Starting Assist

- Use a Momentary (horn) switch and connect "status" on the VCR with a spade connection to the positive connection on auxiliary battery.
- When this switch is pressed and held both batteries will be joined for starting Assist. Once switch is released, batteries will separate.

### Winch assist

- For joining both batteries for winching use a constant on/off switch, and connect "status" on the VCR with a spade connection to positive connection on Auxiliary battery.
- When switch is on, both batteries are manually joined, so you can now winch across both batteries.
- When the switch is off the VCR will work in automatic mode.

### LED Output

- A light can be added to the system to show when the VCR is closed. Using a spade connector, connect "LED" on the VCR to the light, and then back to the positive terminal on Primary/Start battery.
- Please note where possible use a DC fuse as show in diagram.

### Testing

- 1.Reconnect the primary starting battery
- 2.Start your engine
- 3.Set your multimeter to DC volts.
- 4.Continually touch with the red multimeter terminal point to the M8 screw terminal labelled 'A1'. Then continually touch the black multimeter terminal point to the 'negative – VCR Earth point' this is the mounting point of the VCR to the vehicle chassis.
- 5.The voltage should quickly reach 13 volts (26v for the 24v system); this may vary in time depending on the type of vehicle. Once the voltage reaches 13.2 volts (26.4v) you will hear an audible click, this means the VCR has connected to allow current charge through to the Auxiliary Battery. This can simply be tested by continually touching with the red multimeter terminal point to the M8 screw terminal labelled 'Auxiliary battery' (A2) When the VCR is closed Voltage on both "A1" and "A2" will be the same.

Terminal Contacts	
<b>A1</b>	Main/Primary Positive
<b>A2</b>	Auxiliary battery Positive
<b>Status</b>	<ul style="list-style-type: none"> <li>• Positive Feed: contact closed</li> <li>• Open Feed: Normal operation, voltage dependent</li> <li>• Negative Feed: Contacts open</li> </ul>
<b>Minus</b>	Negative feed direct from main/Primary negative terminal Fuse 3A
<b>LED</b>	Remote status feed (on/off)

**Figure 1.**

