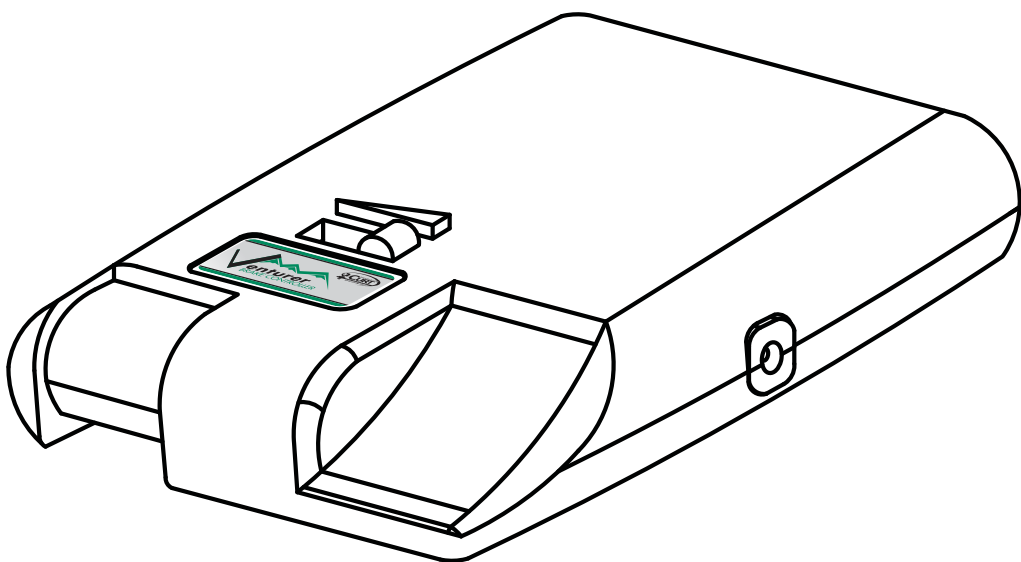




ELECTRONIC TRAILER BRAKE CONTROL



INSTALLATION AND USER GUIDE

For Use With 12 Volt Negative Ground Systems Only
For Trailers with 2 – 6 Brakes

Read, follow and save this guide for future reference.

51110

This package includes:

- (1) Brake Control Module with Quick Plug
- (1) Mounting Bracket
- (4) Screws

One or more of the following may be needed to complete installation

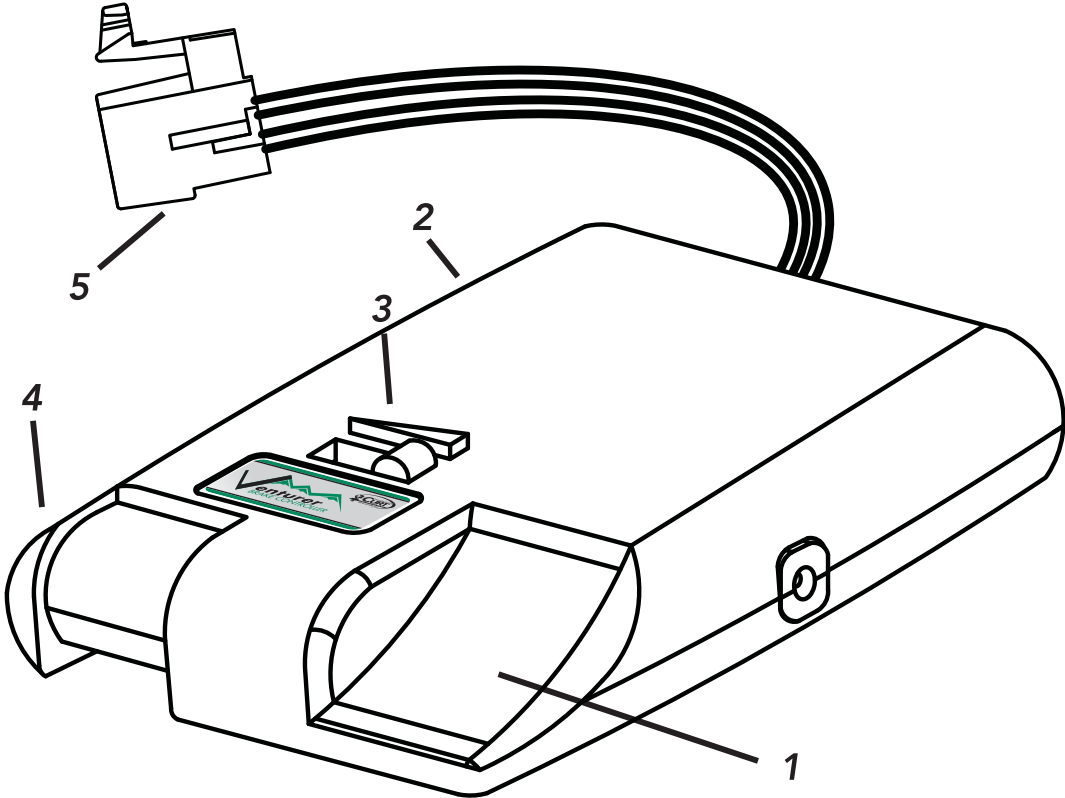
- Brake Control connection harness supplied with the tow vehicle (if equipped)
- CURT Quick Plug – custom connector for specific vehicles. See catalog for availability
- CURT part number 51515 male Quick Plug with pigtails
- CURT part number 51500 Brake Control Wiring Kit

Important Features

- Display shows brake force output.
- Mount anywhere in your vehicle. Dependable solid state electronics require no leveling.
- Electronic activation ensures smooth stops.
- No internal moving parts.
- Fully adjustable power and time (Sync).
- Provides automatic and manual trailer braking.
- Manual Control activates brake lights.
- Compatible with electronic systems (anti-lock brakes & cruise control).
- Self diagnostic – continually monitors trailer connection & checks for short circuits.
- Displays brake system disconnect.

Controls and Components

- 1. Display
- 2. Sync adjustment
- 3. Output adjustment
- 4. Manual Control lever
- 5. Quick Plug connector



Disconnect Indication

Should a trailer disconnect occur, either unplugged or wiring failure, the status LED will glow steady red. It will remain red for approximately 10 minutes or until the connection is restored.

If the disconnection was not a result of intentionally unplugging the trailer, check and repair wiring to the trailer brake system.

Output Control

The Output Control establishes the maximum amount of power available to the trailer brakes.

As the Output Control is moved to the right, more power will be available to the brakes when the brake pedal is pressed or the manual control is used.

The Output Control would be adjusted during initial setup, when trailer load changes, when different trailers are used or to adjust for a change in road conditions.

The Output setting is shown on the display when a trailer is connected and the brake pedal is pressed or the Manual Control is actuated. The Output setting is shown as 1-8 green bars.

Sync Control

The Sync Control is located on the left side of the Brake Control Unit.

The Sync Control adjusts trailer brake aggressiveness. The trailer brakes become more aggressive as the switch is moved toward the front of the tow vehicle.

The Sync adjustment has no effect on the manual control. The Sync Control would be adjusted for individual driver preference or changing road conditions.

The sync setting is shown on the display when a trailer is connected, the brake pedal is pressed or the manual control is activated and the sync control is moved. The sync setting is shown as 1-8 bars with a flashing green status LED.

Manual Control

The Manual Control is located on the front of the Brake Control Unit at the left side.

The Manual Control only applies the trailer brakes. Manual is used during initial setup and in situations where a slow reduction in speed is desirable.

When the Manual Control is pushed to the right, the control begins to apply the trailer brakes. The further to the right it is pushed the harder the brakes are applied until the maximum set by the Output Control is reached.

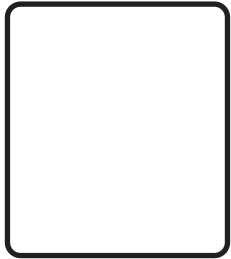
The Output setting will be shown on the display and can be adjusted when using the Manual Control.

The Manual Control activates the tow vehicle and trailer stoplights.

Display

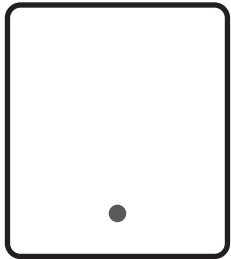
The display shows the Output setting when the control is activated. It is used to setup and monitor the Brake Control.

Blank Display



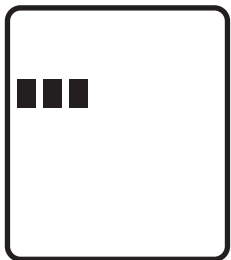
Not activated by either
brake pedal or manual
control

Single Green



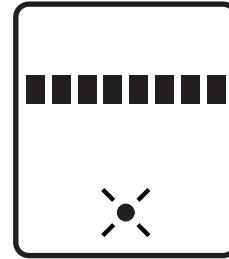
Ready
No trailer connected
Brake pedal or manual
activation

Green Bars



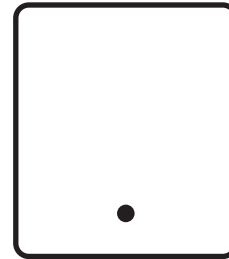
Output
1-8 bars
Trailer connected
Brake pedal or manual
activation

Green Bars w/Flashing Green



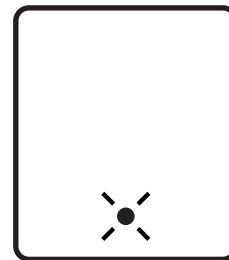
Sync setting, 1-8 bars
Trailer connected
Brake pedal or manual
activation

Single Red



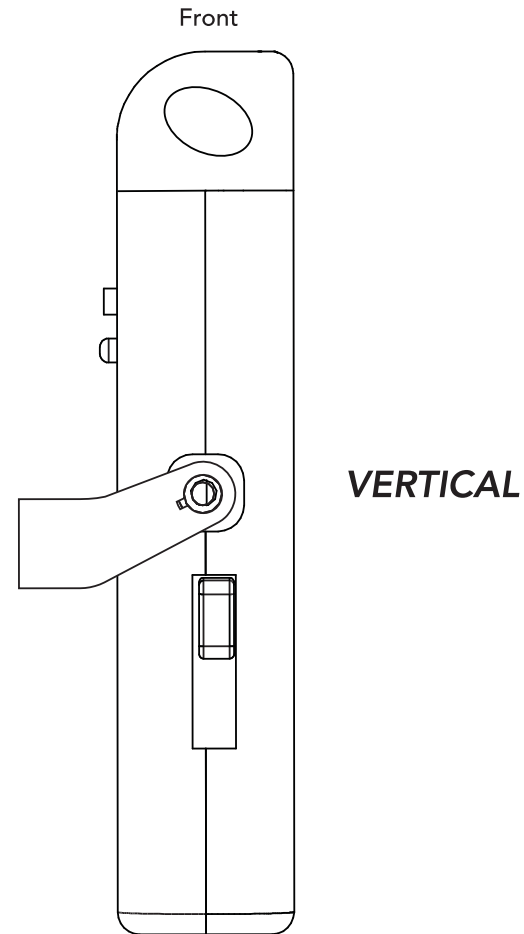
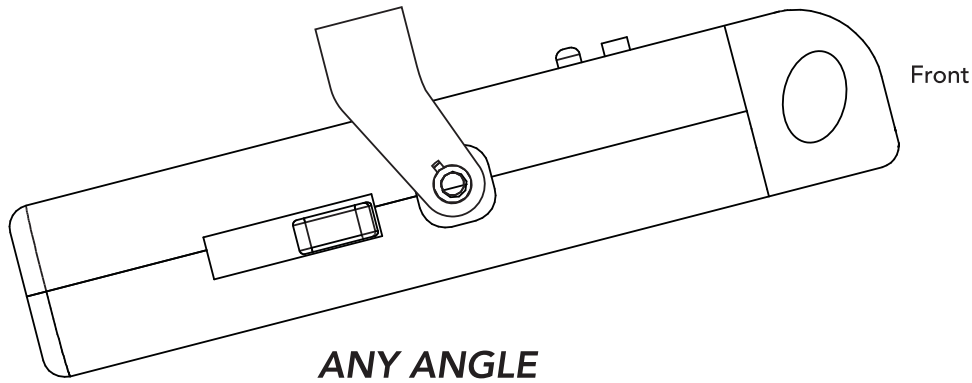
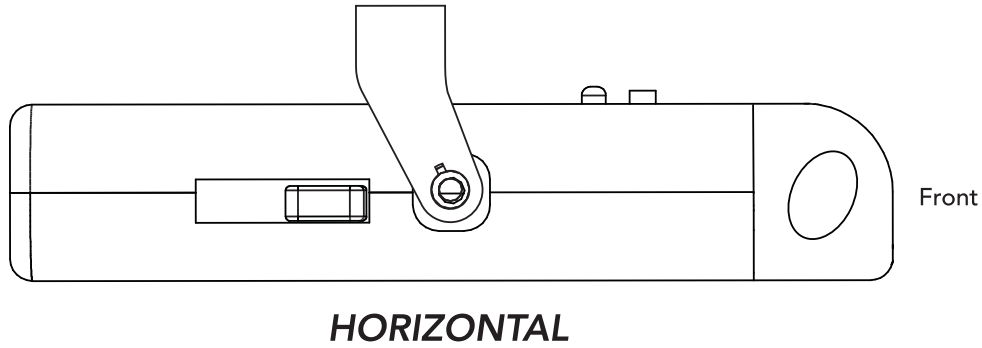
Trailer disconnect
See display modes error
conditions (page 16)

Flashing Red



Brake circuit overload or
short
See display modes error
conditions (page 16)

Mounting the Brake Control Module



Note: avoid mounting the Brake Control module near a CB radio or other RF transmitter.

1. Determine a suitable mounting location.
 - A) The unit must be mounted securely to a solid surface.
 - B) The unit must be easily reached by the driver.
 - C) The area behind the mounting location must be clear so nothing will be damaged when drilling.
2. Hold the mounting bracket in the position selected and mark hole locations through the slots in the bracket
3. Using a 1/8" diameter bit, drill holes in the marked locations.
4. With a phillips screwdriver secure the bracket in place using (2) screws (provided).
Be careful not to strip the holes by over-tightening.
5. Mount the brake control unit in the bracket using the (2) screws (provided) as shown in the illustration.

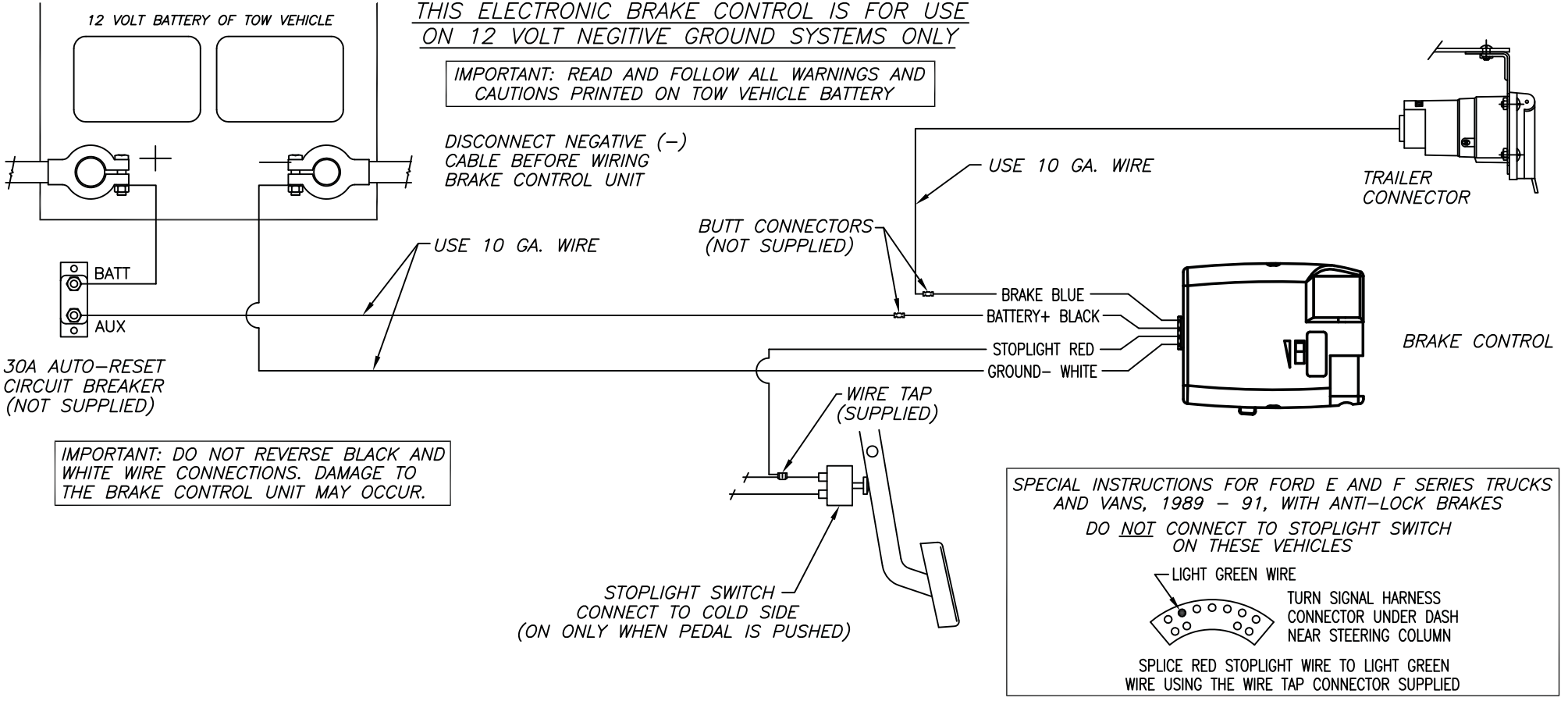
Wiring

Note: Removal of factory supplied Quick Plug may void warranty.

Tow Vehicles Equipped with a Factory Brake Control Plug – Most Pickups and utility vehicles are equipped with a plug from the factory that allows quick Brake Control installation. Check the owner's manual for plug availability, location and installation.

If the mating plug supplied with the vehicle is no longer available, a CURT Quick Plug can be used (see CURT catalog for application information).

Tow Vehicles not Equipped with a Factory Brake Control Plug – Suggested: CURT part number 51500 Brake Control Wiring Kit



WIRING DIAGRAM

Important: Make sure that both positive and ground connections are made directly to the tow vehicle's battery. Connecting to existing wiring or chassis ground, other than the battery terminal, may damage vehicle circuits and could lead to trailer brake failure.

Mount a 30 amp, auto reset, circuit breaker as close to the battery as possible.

Important: When passing wire through sheet metal, always go through an existing grommet, add a grommet, or use silicone sealer to protect the wire from sharp edges.

Feed two 12 gauge, or larger, wires, one white and black, from the mounted brake control to the battery area. Using a ring terminal, connect the black wire to the "AUX" side of the circuit breaker. Leave the white wire for connection later.

Using a 10/12 gauge butt connector, attach the black wire from the "AUX" side of the circuit breaker to the Brake Control module's black wire. Again using a 10/12 gauge butt connector, attach the white wire from the battery area to the module's white wire.

Run a 12 gauge, or larger, blue wire from the tow vehicle's trailer plug "Brake" terminal to the Brake Control module. Using a 10/12 butt connector, connect this wire to the module's blue wire.

Connect the Brake Control module's red wire to the cold side of the tow vehicle's stoplight switch using a wire tap.

Note: When making the stoplight switch connection on Ford / Mercury vehicles, do not connect to the red wire with white stripe. Connect to the light green wire only.

1989 – 1991 Ford E and F series vans and trucks with anti-lock brakes, find the crescent shaped connector located on the steering column. The connector has two rows of wires, the wire needed is the light green wire, second from the end in the outside row (see the view shown in the wiring diagram).

For all other vehicles, use a test probe to find the cold side of the stoplight switch. Probe the

switch wires until a wire is found that is only on when the brake pedal is pressed. **Important: once a cold side wire is found, test to ensure that the wire is not grounded when the pedal is in the up position. If the wire is grounded, the brake control unit will be destroyed when manual control is used.**

Reconnect the tow vehicle's negative battery terminal and attach the white 10 gauge wire previously positioned near the battery to the negative terminal using a ring terminal.

Using 12 gauge, or larger, stranded wire and a ring terminal, connect the "BATT" side of the circuit breaker to the positive battery terminal.

Secure all loose wires with cable ties so that they will not be damaged and reconnect battery. See vehicle's owner's manual for special re-connection instructions.

Test installation: Without a trailer connected, push the brake pedal. A single green status LED should light up on the Display. If the green LED does not light or if any other LED does light, see Display Modes Error Condition section of this guide (page 16).

Setup

Preliminary Adjustments:

With the trailer connected press and hold the brake pedal, the Display will show the Output setting.

Adjust the output control left or right until 3 green bars are displayed.

Move the sync control to near center position.

Test Drive

In an open area, such as a large parking lot, drive forward and apply the trailer brakes using the Manual Control.

If the trailer brakes are weak adjust the Output Control to the right. If the trailer brakes jerk or lockup adjust the Output Control to the left.

Repeat this step until firm braking is felt without lockup.

Once the Output is set, drive forward and press brake pedal, the tow vehicle and trailer should make smooth stops.

If the stops seems slow and more aggressive braking is desired, move the Sync Control toward the front of the vehicle while holding the brake pedal.

If the stop seems too aggressive adjust the Sync Control toward the rear of the vehicle while holding the brake pedal.

Make several stops at various speeds and adjust Sync until stops are smooth and firm. Slight adjustment the Output Control may also be desirable.

Helpful Tips

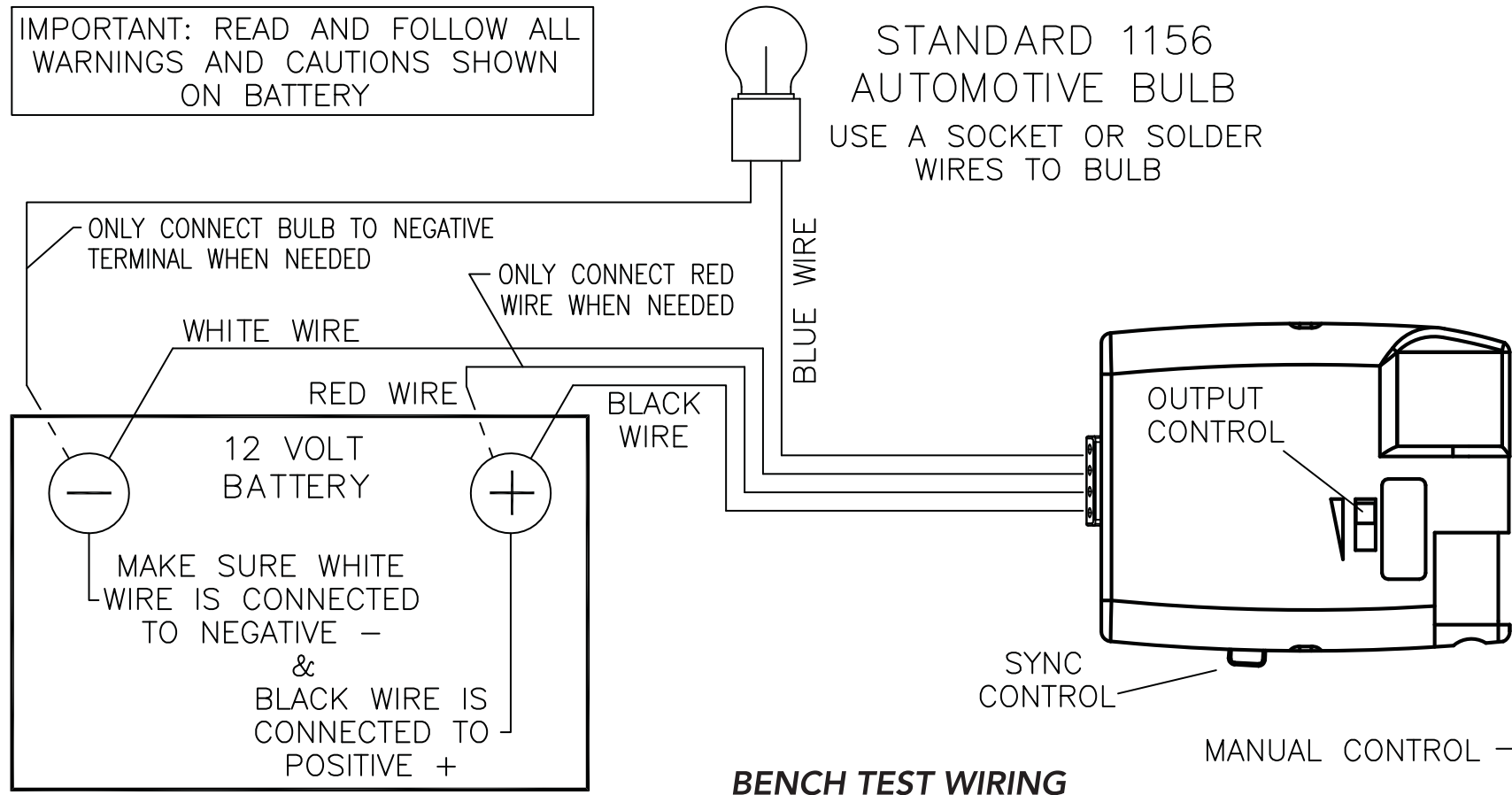
Light pressure on the brake pedal will activate the trailer's brakes with no effect on the tow vehicle's brakes. This is useful for gradual slowing on steep grades or before stops.

Periodic adjustment of the Sync and Output controls may be necessary to correct for changing road conditions, trailer loading, brake wear, and/or driver preference.

In some applications, when towing with Hazard Flashers on, the Display will flash with the Hazard Flashers. If the Brake Control is set aggressively this may be felt in the trailer brakes.

Bench Test Instructions

Wire as shown below.



Set the Output control to maximum and set the Sync control to minimum.

NOTE: If at any time during the bench test the red LED flashes, make sure that the blue "BRAKE" wire is not shorted to the "NEGATIVE" battery terminal or the white "BATTERY" wire.

Test Standby Condition

Hold the red "STOPLIGHT" wire on the "+" battery terminal. The display should show a single green LED. This indicates correct wiring and that the control is ready.

Disconnect the red "STOPLIGHT" wire from the battery.

Test Brake Pedal Activation

Ground the light bulb to the "NEGATIVE" terminal of the battery. Re-attach the red "STOPLIGHT" wire to the "POSITIVE" battery terminal.

The display should step up to 8 green bars and the bulb should start dim and slowly get brighter.

With the red wire still hooked up, slowly move the Output Control left. The display should step down to 0 or 1 green bar and the bulb should dim and go off.

Slowly move the Output Control back to the right, the Display should step up to 8 green bars and the bulb should return to full brightness.

Move the sync control all the way forward.

Disconnect and reconnect the red wire. The bulb should light brightly with no delay, the display should step to 8 green bars quickly.

Disconnect the red wire.

Test Manual Activation

With the Output Control still set at maximum, slowly activate the Manual Control slide button.


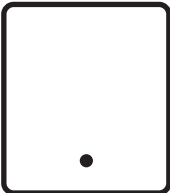
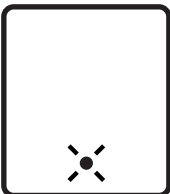
The bulb should start dim and get brighter and the display should step up to 8 green bars as the Manual Control is pushed.

While holding the Manual Control all the way in, slide the Output Control left and right. As the output changes the bulb should go bright and dim and the display should follow the bulb brightness.

If the Brake Control unit does not function as described, return it for service or replacement.

Notes:

Error Conditions Trouble Shooting Guide

Condition	Display	Probable Cause	Probable Solution
Blank display with brake pedal pushed or manual control activated	 <p style="text-align: center;">Blank</p>	Tripped circuit breaker, no battery connection B+ or ground	Check and repair battery connections
Loss of trailer connection	 <p style="text-align: center;">Single Red</p>	Trailer unplugged, failed wire to trailer	Check tow vehicle to trailer connectors, check and repair brake circuit wiring
Flashing red with brake pedal pushed or manual control activated	 <p style="text-align: center;">Flashing Red</p>	Brake circuit overload or short	Confirm 6 brake maximum load, locate short circuit and correct