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REFLEX

REFLEX BRAKE CONTROL INSTALLATION AND USER GUIDE

For use with 12 volt negative ground systems only
For trailers with two to eight brakes

Read, follow and save this guide for future reference

This package includes:

(1) Brake control module with quick plug
(1) Slide-in mounting bracket
(2) Mounting bracket screws
(1) Double-sided mounting tape
(1) Surface prep wipe
(1) Quick reference card

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# 51515/51516 - male quick plug with pigtails
- CURT part# 51500 - brake control wiring kit

Key Features

- Polarity protected against positive and negative power reversal
- Power conservation mode after one hour of inactivity, wakes when brake pedal is pushed
- Display is capable of communicating operating errors
- Manual control lever activates brake lights
- Reduced output when sitting still (railroad crossing, stoplight, etc…)
- Will work with most electrically activated hydraulic trailer brake systems
- Nearly unlimited mounting positions, single calibration upon initial setup

Controls and Components

1. Digital display
2. Load range / calibration button
3. Output adjustment thumb wheel
4. Manual control lever
5. Quick plug connector

Mounting the Brake Control Module

NOTE: Avoid mounting the brake control module near a CB radio or other RF transmitter.

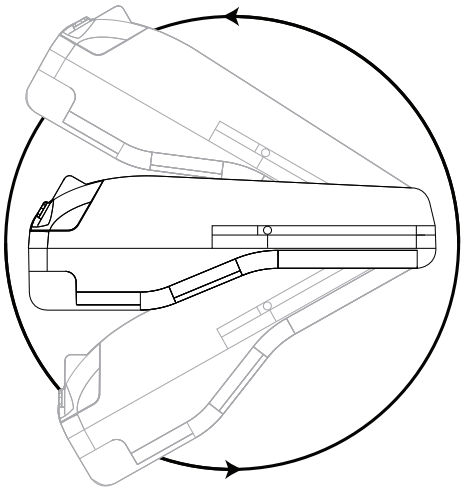


Figure 1

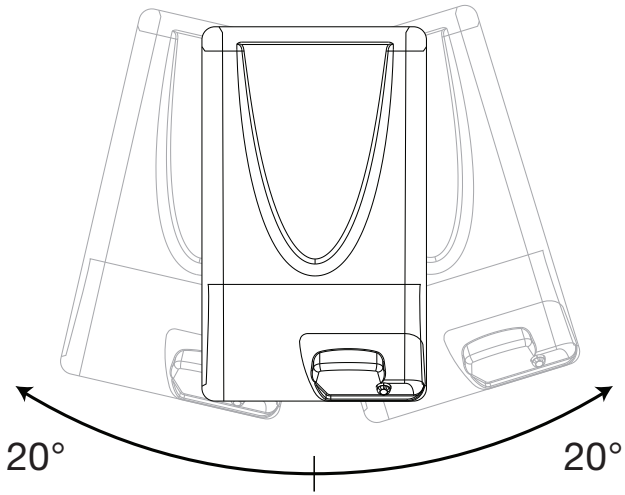


Figure 2

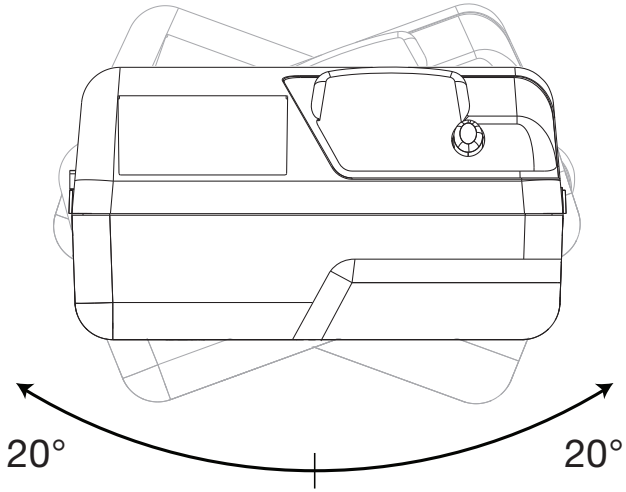


Figure 3

1. Determine a suitable mounting location.
   Mount the unit securely to a solid surface where it is easily accessible to the driver.
   The area behind the mounting location must be clear to prevent damage while drilling.
   The module can be mounted above or below the dash at any angle vertically,
   but must stay within 20° horizontally (see Figures 1, 2 and 3).

2. The mounting bracket can be secured with the screws or foam tape provided.
   NOTE: The front of the bracket must face the driver. See Figure 4.

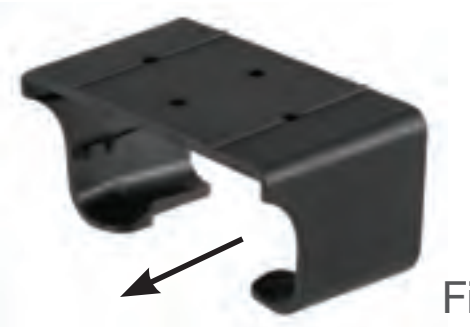


Figure 4

3. Hold the bracket in place and mark two screw locations.
   Using a 1/8" diameter bit, drill holes in the marked locations.
4. With a philips screwdriver, secure the bracket in place using the two screws provided. Be careful not to strip the holes by over-tightening.
5. If using tape, make sure both surfaces are at least 68°; warm them, if needed using vehicle heater or a heat gun. Clean the mounting location and bracket with the surface prep wipe provided.

   Peel adhesive liner from one side of the foam tape and stick the tape securely onto the bracket's surface. Make sure the front of the bracket is facing the driver, see Figure 4. Peel the other liner and press the bracket firmly into place.
6. Line up the slots in the side of the module with the bracket arms, slide the unit into the front of the bracket until it snaps into place.

Wiring

NOTE: Removal of factory supplied quick plug may void warranty.

Most pick-ups 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 the CURT catalog for application information.

For tow vehicles not equipped with a factory brake control plug, we suggest CURT brake control wiring kit, part# 51500.

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 10 gauge wires, one white and one black, from the mounted brake control to the battery area. Using a ring terminal, connect the black wire to the 'aux' side of the 30 amp 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 30 amp circuit breaker to the brake control's black wire. Using a 10/12 gauge butt

connector, attach the white wire from the battery area to the brake control's white wire.

Run a 10 gauge blue wire from the tow vehicle's trailer plug 'brake' terminal to the brake control. Using a 10/12 butt connector, connect this wire to the brake control's blue wire.

Connect the brake control'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 green stripe. Connect to the light green wire only.

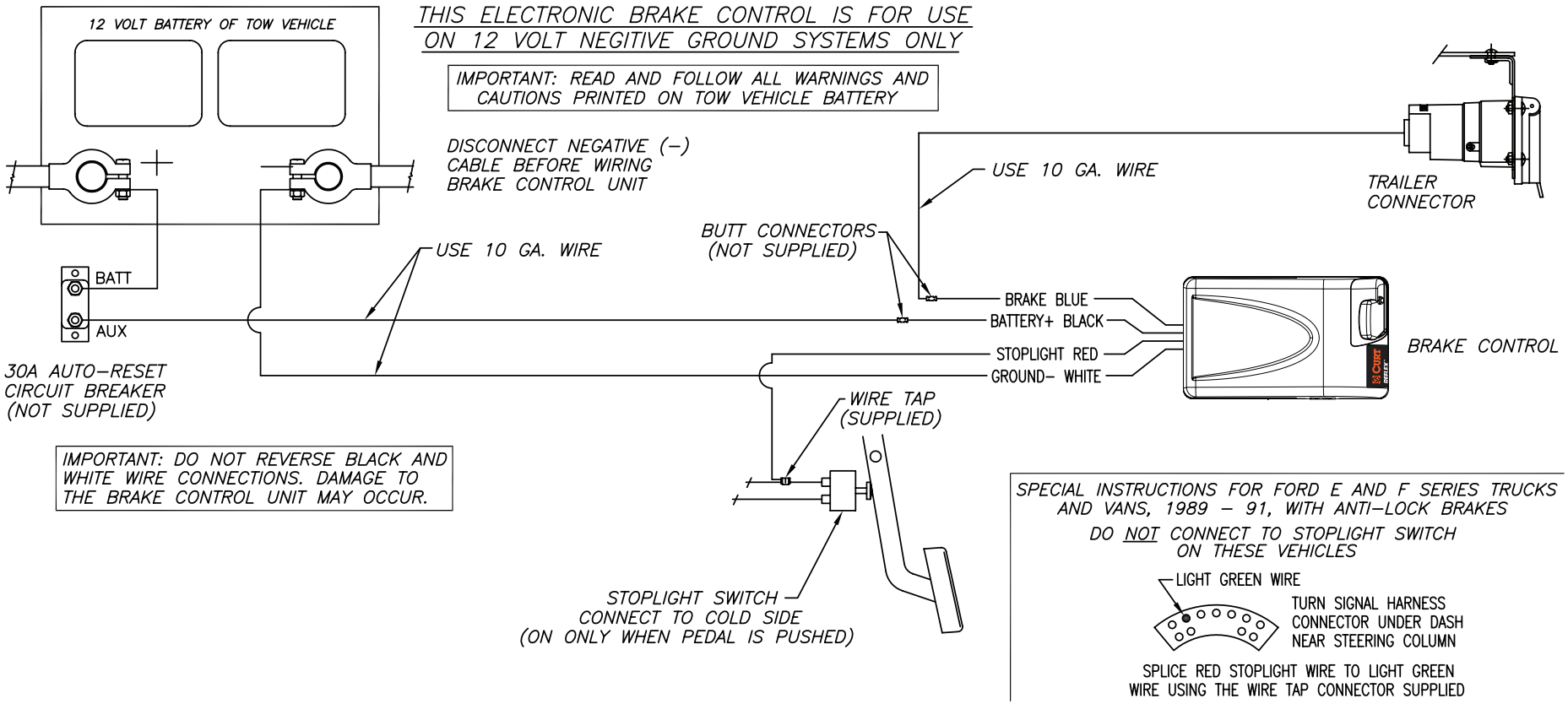
For 1989 - 1991 Ford E and F series vans and trucks with anti-lock brakes, find the crescent shaped connector located on the steering column. The connector has two rows of wires, the wire needed is the light green wire, second from the end in the outside row. See the view shown in the wiring diagram on page 8.

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 10 gauge stranded wire and a ring terminal, connect the 'battery' side of the circuit breaker to the positive battery terminal.

WIRING DIAGRAM



Once properly connected, the display will show one of the following:

Condition	Display	Meaning
Blank screen		Sleep mode, touch brake pedal to activate
One dot		No trailer connected
Two dots		Trailer connected
O.C		Manual control activated, no trailer connected
0.5 to 0.9	 to	Trailer is connected, brakes are activated. The display reading is based on the position of the output control or the position of the manual control.

Calibration

With the tow vehicle on a level surface and no brakes applied, press and hold the load range / calibration button located next to the digital display. When a steady 'CL' appears, calibration is complete. Recalibrate if the module loses power, if the mounting angle changes, or if the 'CL' flashes at any time. **NOTE:** To prevent inadvertent calibration, the calibration mode is locked out when the brakes are engaged.

Set Load Range

Press and release the load range / calibration button until appropriate output range is set.

Trailer GVW is less than tow vehicle GVW

Trailer GVW is approximately equal to tow vehicle GVW

Trailer GVW is up to 50% more than tow vehicle GVW

Trailer GVW is more than 100% greater than tow vehicle GVW

Set Output

With the trailer connected and engine running to ensure proper charge voltage, while parked without the brake pedal applied, slide the manual control lever to the left as far as it will go. While holding the manual control, turn the output wheel located on the left side of the module until 5.0. is displayed.

Output Adjustment

Drive forward at about 25 mph with enough distance for safe braking, apply the trailer's brakes using the manual control lever only. The output should be set to a point where brakes do not lockup, but stops are firm and smooth. If needed, adjust the output setting up or down, then retry.

Confirm Settings

Using the brake pedal, make additional stops at 25 mph. Stops should be firm and smooth. If needed, adjust the output setting up or down. **IMPORTANT:** Always check trailer brake condition before towing. Brake control cannot compensate for worn or defective brakes.

Troubleshooting Guide

This brake control is capable of communicating functional errors through the digital display.

Condition	Display	Issue
Single dot		Brake pedal is pushed, no trailer connection
Flashing O.C		When manual control is activated indicates no trailer connection. Note: O.C. will flash for a few seconds after a trailer is disconnected from the tow vehicle trailer plug, this is normal
Flashing S.C		Short circuit condition in the blue brake wire circuit beyond the brake control (trailer plug, trailer brakes, etc). Normal function will return once the condition is corrected
C.S		Low or no power from the tow vehicle's battery. First, restart vehicle. Then check battery connections, check circuit breaker, check vehicle's tow battery and charging system

Bench Test

This brake control can be tested out of the vehicle to confirm proper function. You will need a standard 1156 automotive bulb in a socket, a charged 12v battery and a length of wire.

1. Connect the brake control's white and the bulb's ground wire to the battery's negative terminal. Connect the brake controls's black wire to the battery's positive terminal. Leave the blue and red wires disconnected at this point.

   IMPORTANT: Do not allow the red wire to touch the battery negative terminal or any other ground during testing. This will destroy the brake control.

2. Lay the module on a flat surface, press and hold the calibration button until a steady 'CL' is on the digital display. Release the button.

Bench Test Wiring

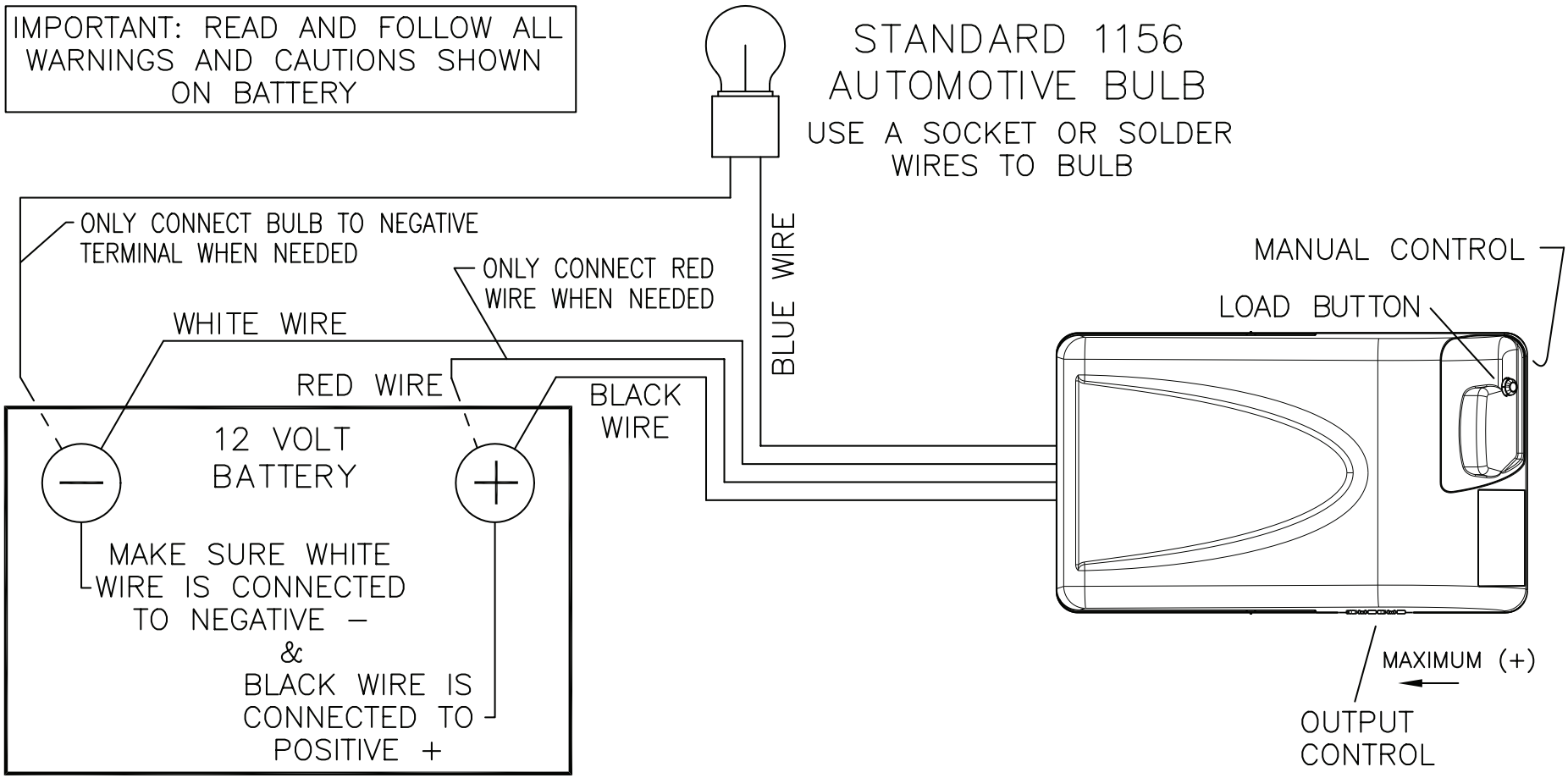


Figure 5

3. Rotate the output control thumb wheel clockwise as far as it will go. Move the brake control's manual control to the left, the display should show O.C. Connect the brake control's blue wire to the bulb's wire. See Figure 5 on page 12.
4. Activate the brake control's manual control, the display should read up to 9.9. After releasing the manual control, the display should show two dots. Repeatedly push the load range button and the display should cycle from L1 to L4.
5. Attach the brake control's red wire to the battery's positive terminal. The display may fluctuate for a few seconds, then show an output setting. Tilt the front of the brake control up to about 45°, the display should increase up to 9.9. and the bulb should light brightly.
6. Rotate the brake control down from 45° slowly, the displayed number should decrease with the downward movement. If the unit does not function as described in any of the test steps, return the unit for service or replacement.

NOTES