

CURT 51170

CURT 51170 Spectrum Integrated Electric Trailer Brake Controller Instruction Manual

Model: 51170 | Brand: CURT

1. INTRODUCTION

The CURT Spectrum trailer brake controller provides powerful brake operation while maintaining a clean, consistent OE look and feel on the dash of your vehicle. It is comprised of a main module and a separate user interface. This interface is a simple rotary knob with a push-button and ten tri-color LEDs to control and monitor all trailer brake activity. It also features a triple-axis accelerometer for highly responsive, smooth stops on any grade.

The separated module and interface of the Spectrum brake controller allow it to integrate with the vehicle unlike any other. The main module can be mounted behind the dash and completely out of sight. The separate rotary knob provides a sleek, subtle interface that mounts on the dash of the vehicle wherever desired. It features ten LEDs with three colors each (red, green and blue) to indicate trailer brake activity and power adjustment. The rotary knob and integrated push-button allow for simple and effective operation of the control settings and manual adjustment.

The Spectrum trailer brake controller offers superior safety and helps protect the life of your vehicle and trailer with its advanced triple-axis accelerometer. This integrated circuit detects the motion of the vehicle and trailer when making stops and applies the precise amount of brake power for maximum efficiency and effectiveness. The three axes of the circuit also enable the brake control to compensate when going up or down a hill. Like most CURT brake controllers, the Spectrum installs using one of our vehicle-specific quick plug harnesses. It also has automated leveling and calibration capabilities to simplify and speed up the installation process. The Spectrum trailer brake controller comes with mounting hardware for a complete installation.

2. KEY FEATURES

- **Factory Look:** Designed to mount onto the dash and integrate with other controls like a factory brake controller, using a simple knob for control and monitoring. Compatible with low-volt, PWM, ABS, cruise control, and electric over hydraulic systems.
- **Hidden Main Module:** The computer module is separate from the control knob and can be mounted out of sight, maintaining a clean vehicle dash.
- **Intelligent Braking:** Features a triple-axis accelerometer that detects vehicle motion on three planes,

applying precise braking power for smooth stops, even on inclines or declines.

- **Easy Adjustment:** Highly adjustable to accommodate various vehicles, trailers, and loads. The push-button knob provides easily accessible manual override.

3. WHAT'S IN THE BOX

The CURT 51170 Spectrum Electric Trailer Brake Controller package includes:

- Spectrum Main Module
- Rotary Control Knob with 10 Tri-Color LEDs
- Mounting Hardware
- Wiring Harness (vehicle-specific quick plug harness may be required, sold separately)



Image: All components included with the CURT Spectrum brake controller, showing the main module, rotary knob, wiring, and mounting accessories.

4. SETUP AND INSTALLATION

The CURT Spectrum brake controller is designed for straightforward installation, especially with vehicle-specific quick plug harnesses (sold separately). The main module can be hidden, and the control knob mounted conveniently on the dash.

4.1. Installation Overview

1. **Prepare Vehicle:** Ensure the vehicle's battery is disconnected before beginning installation.
2. **Mount Main Module:** Select a discreet location behind the dash for the main module. It can be mounted at any angle. Secure it using the provided tape or zip ties.
3. **Mount Control Knob:** Choose a flat, easily accessible spot on the dash for the rotary control knob. Clean the surface with alcohol before applying the adhesive. Ensure the "down" arrow on the knob's base is oriented correctly.
4. **Wiring:** Connect the main module to the vehicle's existing brake control wiring system. If your vehicle does not have a pre-existing tow package, refer to the wiring diagram in the product manual for detailed instructions on connecting to the battery and brake system.
5. **Connect Control Knob:** Plug the USB cable from the main module into the control knob. Route the

cable to conceal it as much as possible.

6. **Reconnect Battery:** Once all connections are secure, reconnect the vehicle's battery.

4.2. Visual Installation Guide



Image: The dash-mounted rotary control knob integrated seamlessly into a vehicle's interior, providing an OEM-style appearance.

FEATURES & BENEFITS

Easily accessible manual override
with the press of a button



Image: A hand installing the main module discreetly behind the vehicle's dash, out of sight.

4.3. Installation Video

Your browser does not support the video tag.

Video: Detailed installation guide for the CURT 51170 Spectrum Brake Control, demonstrating wiring and mounting procedures.

5. OPERATING INSTRUCTIONS

The CURT Spectrum controller offers intuitive operation through its rotary knob and integrated buttons. The 10 tri-color LEDs provide visual feedback on brake activity and power adjustment.

5.1. Initial Setup and Calibration

1. **Power On:** Once installed and connected, the controller will power on with the vehicle's ignition.
2. **Language & Brightness:** Access the setup menu (if available via the knob) to adjust language and screen brightness.
3. **Leveling:** With the trailer connected and the vehicle on level ground, perform the leveling calibration as instructed in the manual or on the device. This ensures accurate braking performance based on vehicle orientation.
4. **Manual Brake Setting:** Adjust the manual brake setting (Slow, Normal, Fast) to suit your preference

and load. A "Slow" setting provides a gradual brake application, ideal for sensitive cargo.

5.2. Adjusting Brake Power and Boost

- **Gain Adjustment:** Use the rotary knob to increase or decrease the overall braking power (gain) applied to the trailer brakes. The display will show the current gain setting.
- **Boost Settings:** The controller offers multiple boost settings (B1-B9) to provide additional braking power at the initial application of the brakes. Higher boost levels are suitable for heavier trailers or when more aggressive initial braking is desired. The display will show the current boost level and an icon representing the type of trailer (single axle, double axle, triple axle).
- **Manual Override:** In situations requiring immediate trailer braking (e.g., to correct trailer sway), press the integrated push-button on the rotary knob to manually apply the trailer brakes. The intensity of this manual application is influenced by the manual brake setting.

5.3. Operational Video

Your browser does not support the video tag.

Video: A user demonstrating the setup and operation of the CURT Spectrum Brake Control, including menu navigation, brightness adjustment, and manual brake control.

Your browser does not support the video tag.

Video: A demonstration of the CURT Spectrum Brake Control's boost settings and manual brake function while towing a trailer.

6. MAINTENANCE

The CURT Spectrum brake controller is designed for durability and minimal maintenance. Regular checks can ensure optimal performance:

- **Wiring Inspection:** Periodically inspect all wiring connections for corrosion, fraying, or loose terminals. Ensure all connections are secure.
- **Module Security:** Verify that the main module and control knob remain securely mounted in their respective locations.
- **Cleanliness:** Keep the control knob and display screen clean and free of dust or debris. Use a soft, dry cloth for cleaning.
- **Functionality Test:** Before each towing trip, perform a quick functionality test by connecting the trailer and checking that the controller powers on and responds to manual brake application.

7. TROUBLESHOOTING

If you encounter issues with your CURT Spectrum brake controller, consider the following:

- **No Power/Display:**
 - Check vehicle battery connections.
 - Verify all wiring connections to the main module and control knob are secure.
 - Inspect vehicle fuses related to the tow package and brake controller.
- **Incorrect Braking/No Braking:**
 - Ensure the trailer is properly connected and detected by the controller.
 - Re-perform the leveling calibration on level ground with the trailer attached.
 - Adjust the gain and boost settings to appropriate levels for your load.

- Check for fault detection messages on the display screen.

- **Intermittent Operation:**

- Inspect all wiring for loose connections or damage.
- Ensure the main module is securely mounted and not subject to excessive vibration.

For further assistance, refer to the complete product manual or contact CURT customer support.

8. SPECIFICATIONS

Feature	Detail
Model Number	51170
Brand	CURT
Type	Proportional Electric Trailer Brake Controller
Material	Acrylonitrile Butadiene Styrene (ABS)
Color	Black
Product Dimensions	3"L x 3.75"W
Item Weight	10.4 ounces (0.65 Pounds)
Special Features	Easy to Install, Triple-Axis Accelerometer, 10 Tri-Color LEDs, Manual Override
Compatibility	1-4 Axles, Low-volt, PWM, ABS, Cruise Control, Electric Over Hydraulic

APPROXIMATE DIMENSIONS

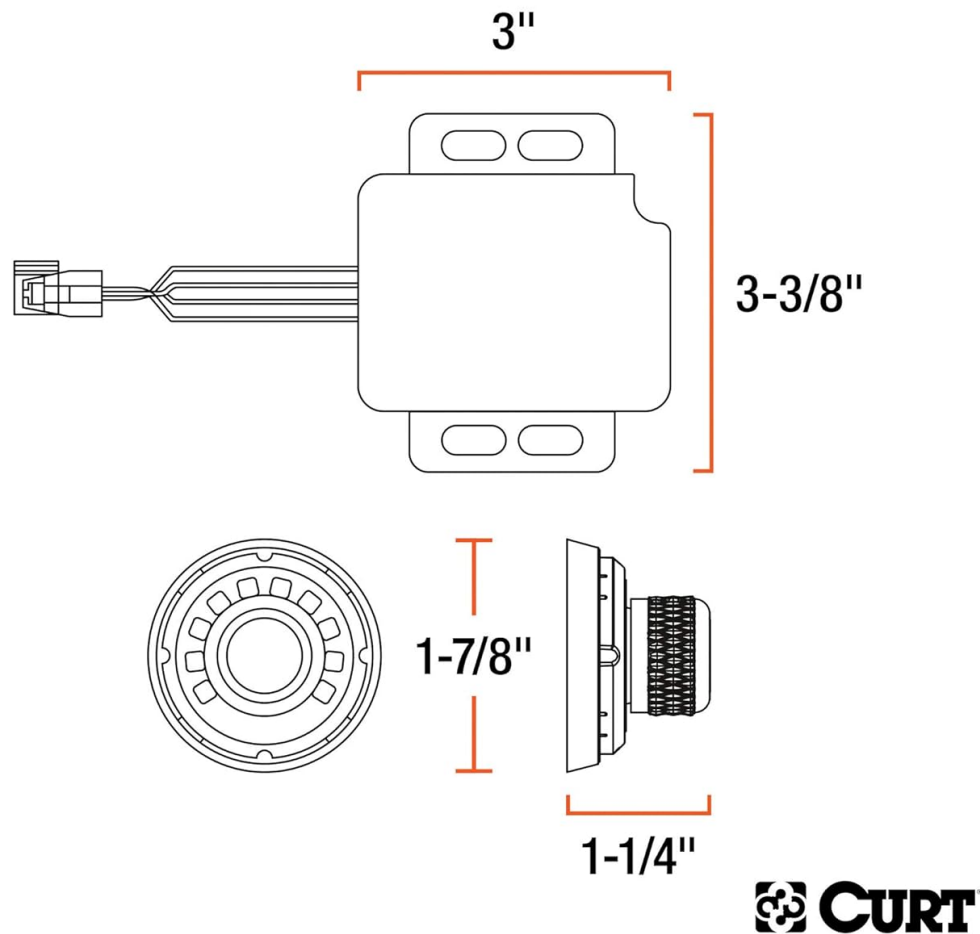




Image: Diagram showing the approximate dimensions of the CURT Spectrum brake controller's main module and control knob.

9. WARRANTY AND SUPPORT

For detailed warranty information and customer support, please refer to the official CURT product documentation included with your purchase or visit the [CURT Store on Amazon](#).

Related Documents - 51170

	CURT Spectrum Brake Control Installation Manual This manual provides detailed instructions for installing the CURT Spectrum Brake Control (Model 51170). It covers component identification, wiring, mounting options, setup procedures, testing, and troubleshooting for safe and effective trailer braking.
	CURT TRIFLEX Brake Control: Installation and User Guide Discover how to install, set up, and operate your CURT TRIFLEX™ trailer brake controller with this comprehensive user guide. Learn about its features, wiring, troubleshooting, and ensure safe towing for your vehicle and trailer.



Installation and user guide for the CURT Venturer Brake Control. Covers setup, wiring, operation, troubleshooting, and bench testing for 12-volt negative ground systems and trailers with two to six brakes.



Step-by-step guide for operating and testing the CURT Brake Control Tester, including instructions for manual activation, brake pedal activation, and short circuit protection.



A detailed numerical listing of trailer hitches by Curt Manufacturing, organized by vehicle make, model, and year, including part numbers, ratings, and replacement information.



Comprehensive installation guide for CURT brake control harnesses (models 51446 and 51447). This document provides step-by-step instructions, application details for Dodge Durango and Jeep Grand Cherokee (with factory tow package), and location guidance for proper installation of trailer brake control systems.