



CAMEC SWAY CONTROL

CSC-1000

Installation Instructions





Sway Control (CSC) Installation Instructions

SECTION ONE: TRAILER CSC MOUNTING

1.0 CSC Mounting Location:

Select a location on the trailer to mount the CSC. The suggested location is on the first trailer frame cross member approximately 1530mm to 3050mm behind the trailer bumper hitch ball and shielded from road debris. The CSC can be mounted on either the “leading” or “trailing” edge of the cross member as long as the correct side is in the UP direction (as indicated on the label). The “trailing” edge is preferred since it provides the best protection from road debris. The CSC must be securely fastened onto a vertical surface of a steel trailer frame member to operate correctly. It must not be fastened to any other trailer surface that flexes or moves from wind such as plastic covers or plastic walls. The center of the CSC (marked by a red dot on the CSC label – SEE BELOW) must be positioned on the “center line” of the trailer. The longest edge of the CSC (as indicated by a red line on the label) must be mounted parallel to the trailer axle beam(s). See Figure 1 on page 2.

CSC LABEL

It is essential that the CSC be oriented in the proper direction when it is installed.



Warning!

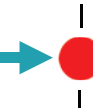
Ensure the electric brakes are adjusted and maintained in accordance with the manufacturer's recommendations in your owner's manual for proper operation of the sway control module.

↑ **Mount with this side UP** ↑
CAMEC SWAY CONTROL
 MODEL CSC-1000 P/N: 050422
 US PAT. NO. 9,026,311 / 9,415,753
 AUS PAT. NO. 2014204434 / 2016204948



Module wiring connector on this side.

Mount module with this point on the trailer centre line →



Module will not function if improperly positioned and/or oriented.

Wires	Trailer Wire Function
Purple	Left side electric brakes output
Pink	Right side electric brakes output
White	Trailer battery/frame ground point
Blue	Electric brake controller signal from tow vehicle
Black	12V DC from tow vehicle trailer harness



Warning!

Read and follow all directions in the installation instructions to ensure the unit operates properly.

Designed and Engineered in the USA by Tuson RV Brakes, LLC

Mount this edge parallel with the trailer axle beams
 1530mm to 3050mm back from trailer bumper hitch ball
ON A VERTICAL FRAME SURFACE

1.1 Mounting Hardware:

The CSC should be mounted using the mounting flanges which are located on the bottom of the unit. The customer is responsible for supplying the mounting bolts. Use four #10 self tapping screws with star lock washers to mount the CSC to the trailer. It is recommended that star lock washers be used and you must securely tighten the mounting bolts to hold the CSC firmly in position and to avoid becoming loose from vibration.

You **MUST NOT** drill holes in the CSC for any reason. Drilling holes or puncturing the unit **VOIDS YOUR WARRANTY.**

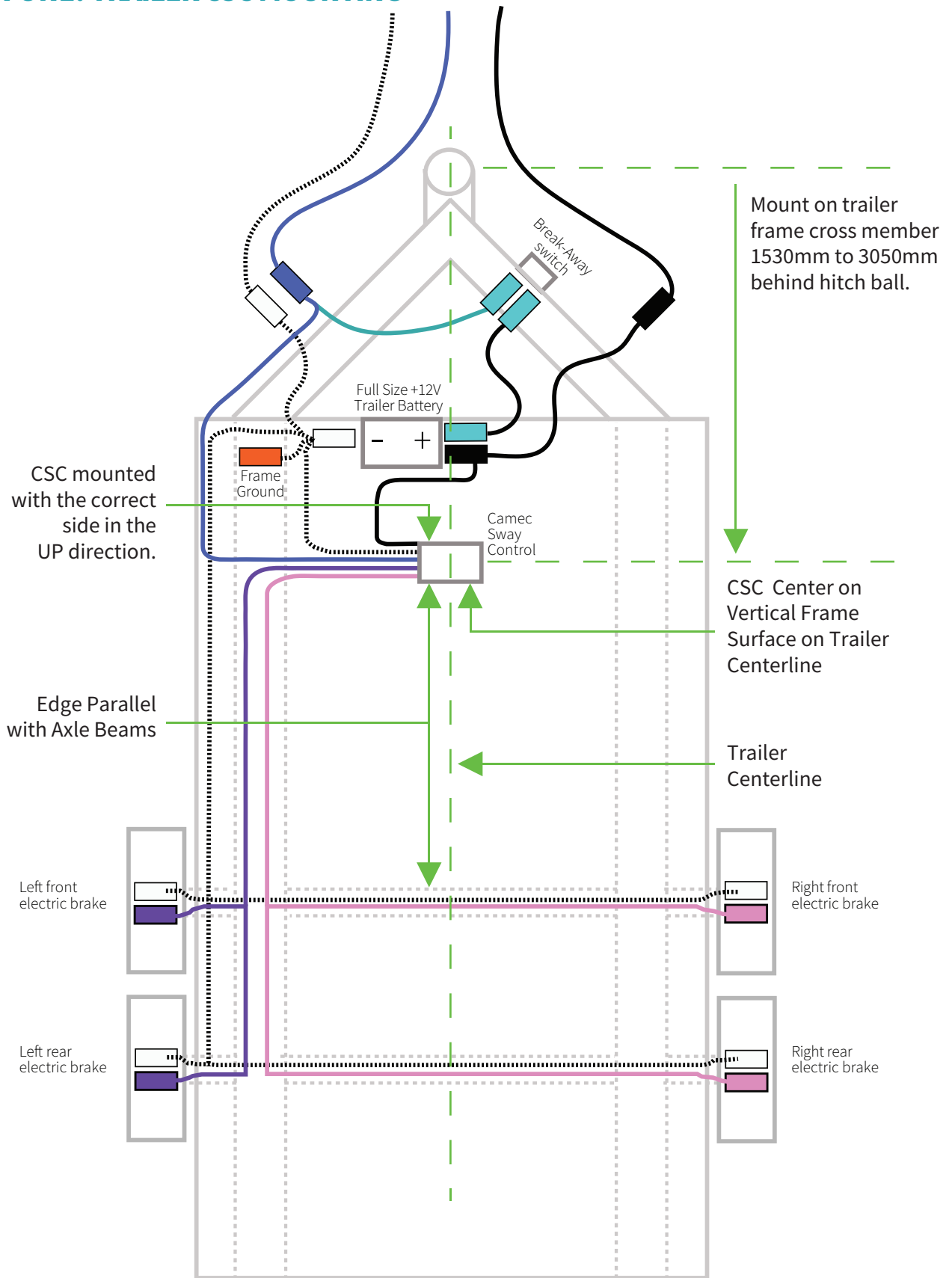


Warning!

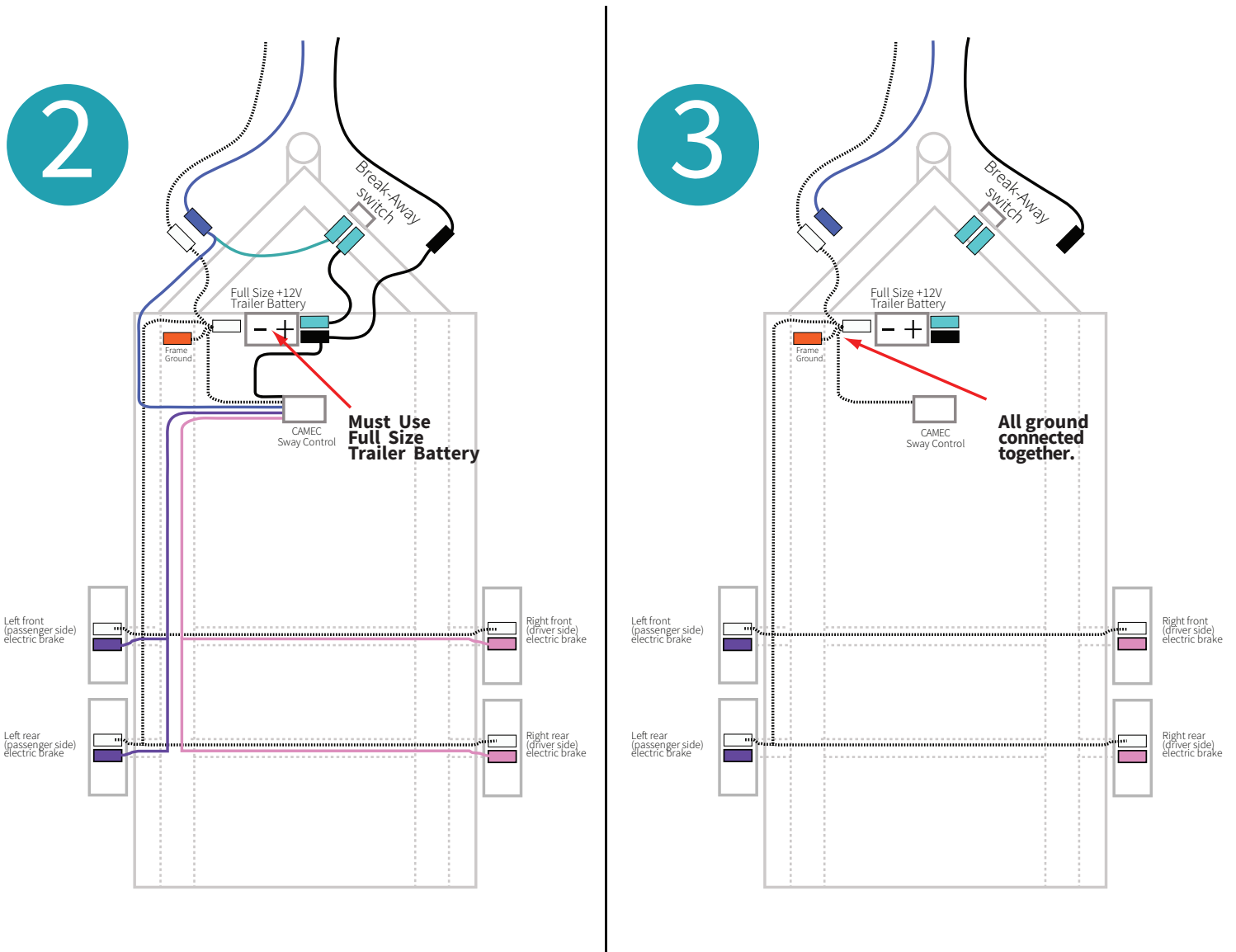
DO NOT SPRAY HIGH PRESSURE WATER ON THE CSC. The CSC is a weather sealed, water resistant unit but it is not designed to withstand direct, high pressure spray from a power washer.

SECTION ONE: TRAILER CSC MOUNTING

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SECTION TWO: CSC WIRING



2.2 Trailer Battery:

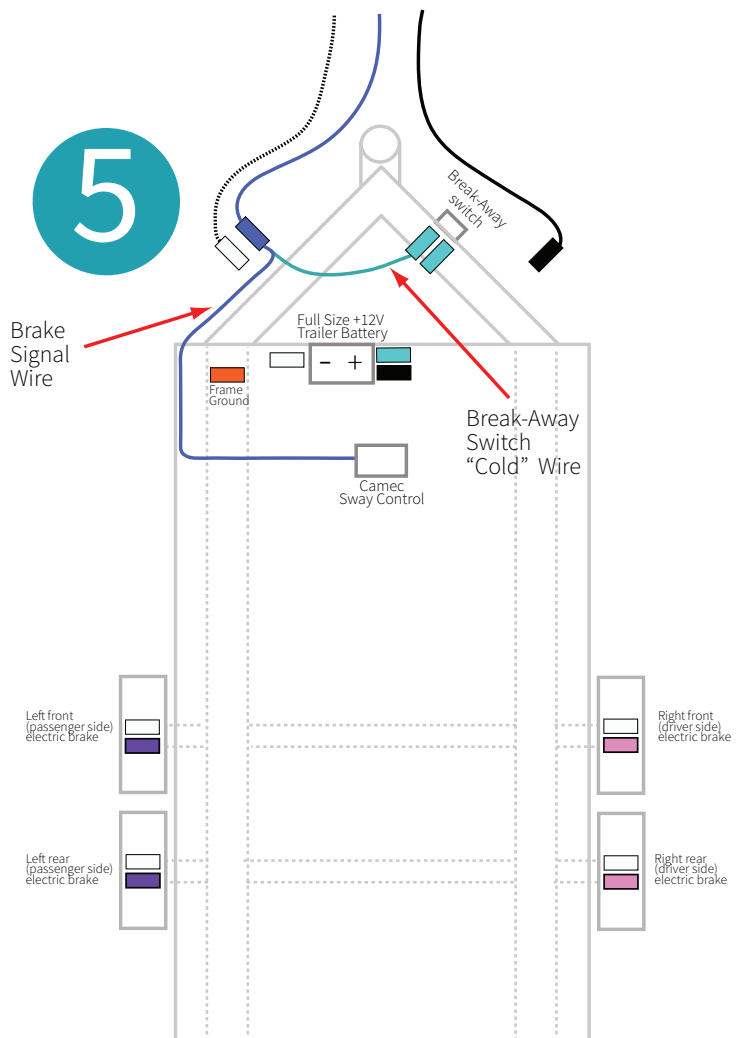
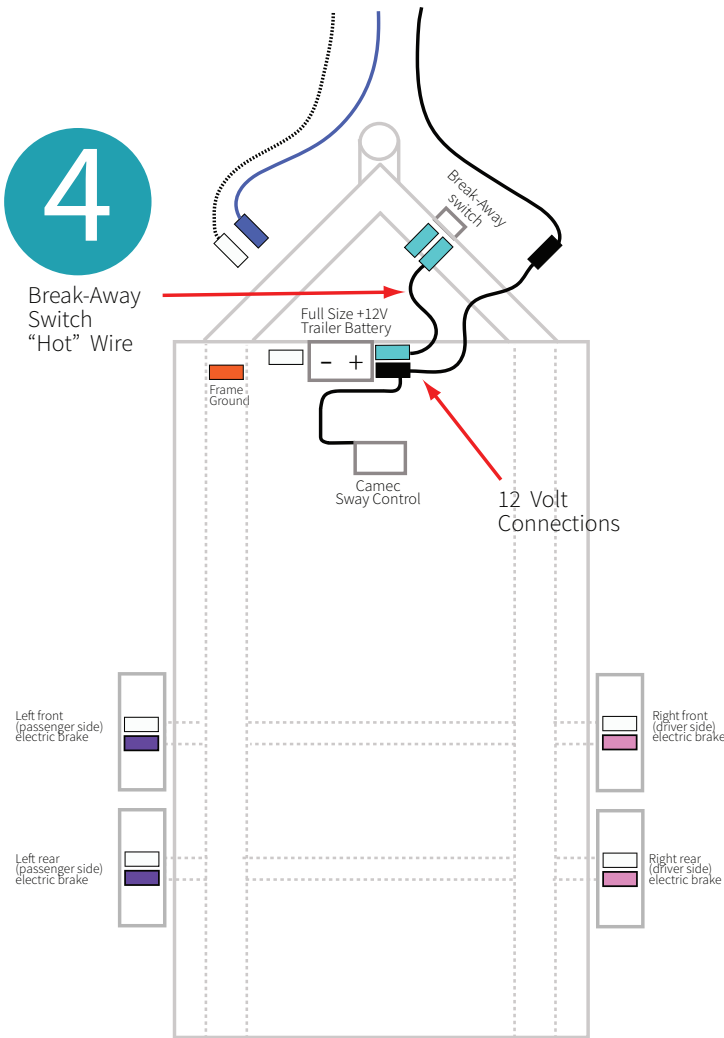
The trailer must be equipped with a full size 12V battery. **Small, gel-cell type batteries must not be used with the CSC.**

2.3 Ground Connections:

The tow vehicle ground, trailer battery ground, trailer frame ground, CSC ground (white) wire and the electric brake ground wires (on both sides of the trailer) must all be securely connected together with 14 gauge wire (min.) in order for the CSC to function properly.

Sway Control (CSC) Installation Instructions

SECTION TWO: CSC WIRING



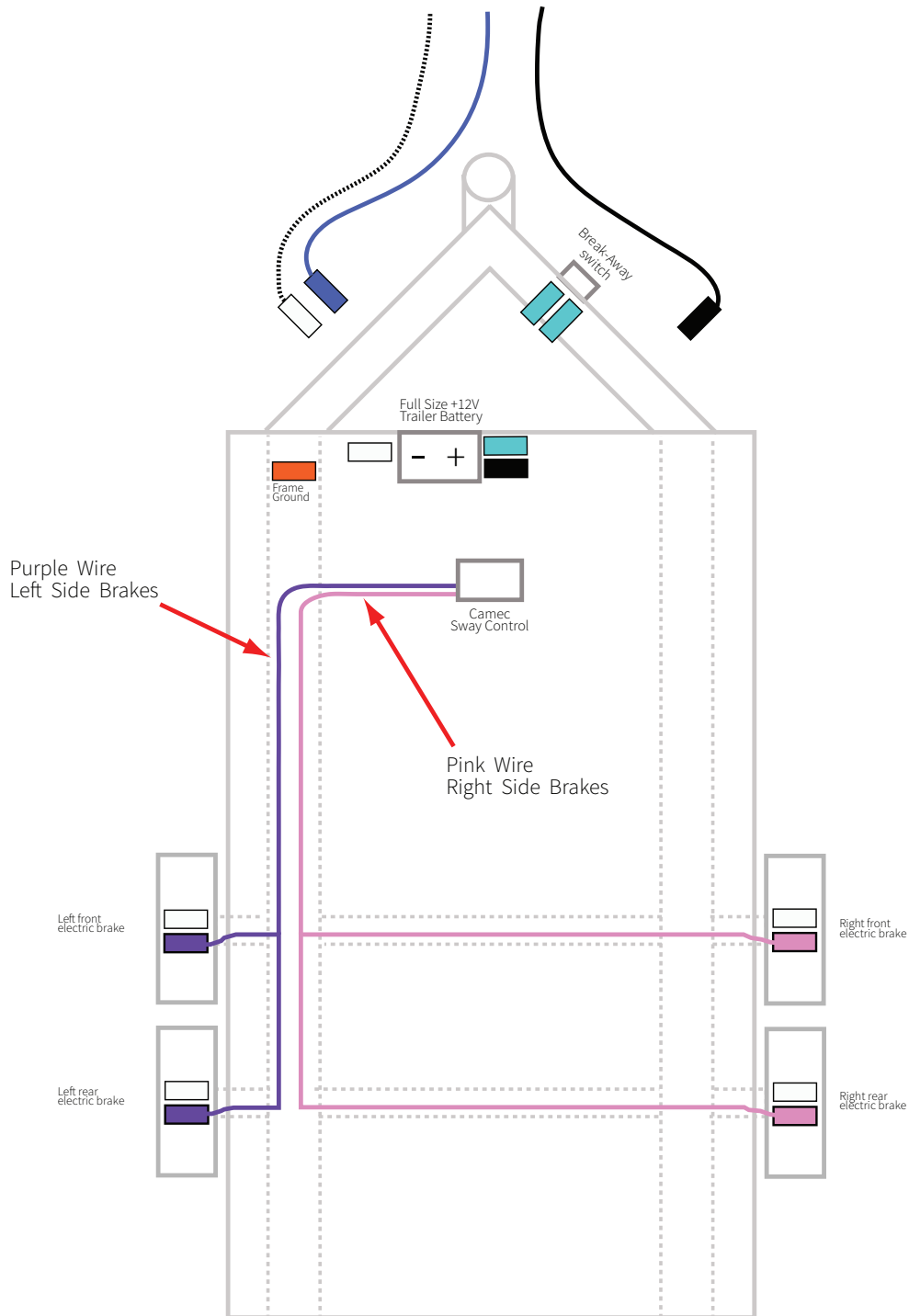
2.4 12 Volt Connections:

The tow vehicle 12 volts charge line, the 12 volts trailer battery terminal and the CSC 12 volts (black) wire must be securely connected together with 14 gauge wire (min.) in order for the CSC to function properly. The "hot" wire from the breakaway switch must be connected to the +12V terminal of the trailer battery.

2.5 Electric Brake (Blue Wire) Connections:

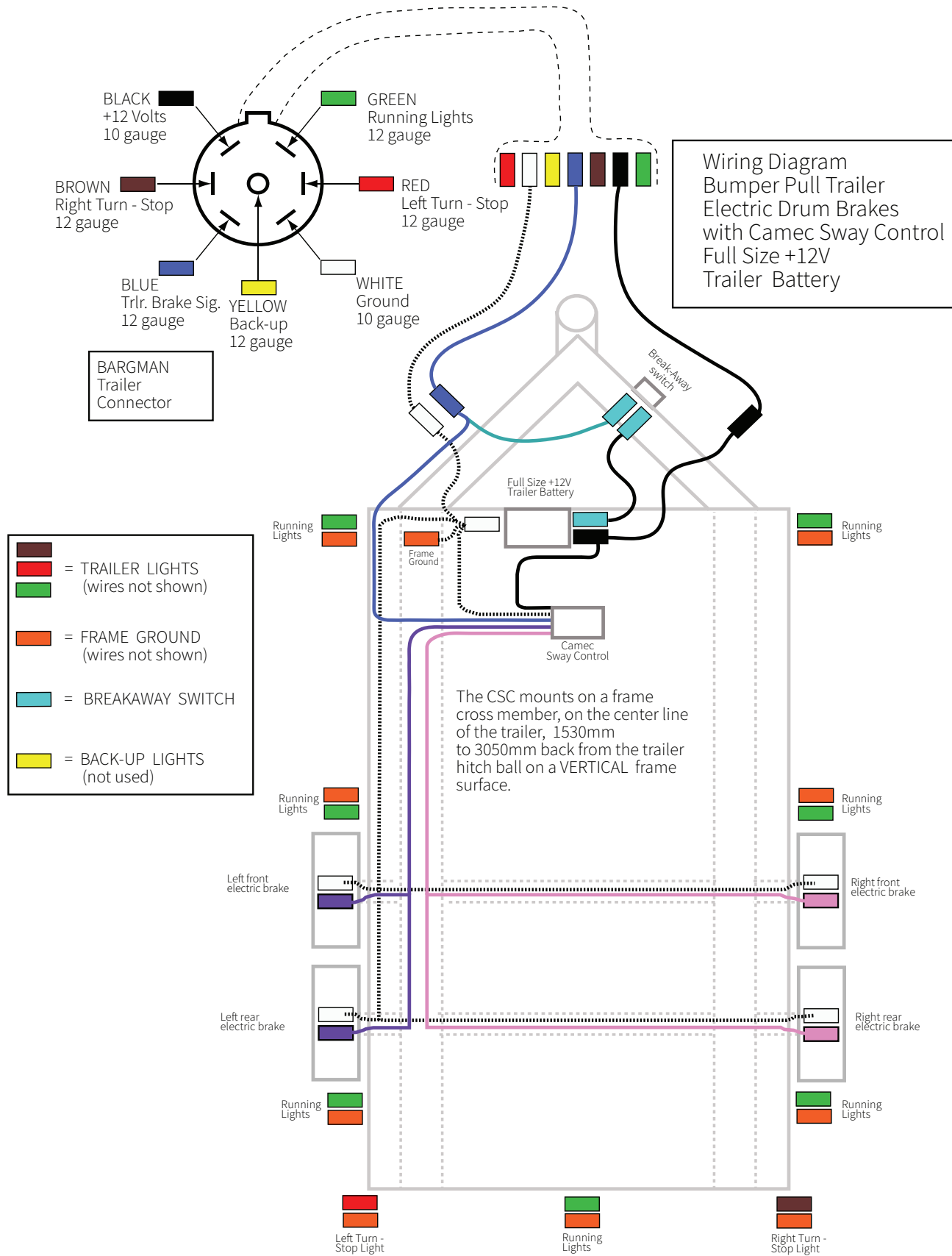
The tow vehicle brake signal (blue) wire must be securely connected to the CSC brake signal (blue) wire as well as to the "cold" wire from the breakaway switch as shown in the wiring diagram.

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2.6 Left Side and Right Side Brake Wires:

The CSC operates the left and right trailer brakes independently in order to control trailer sway and therefore it is very important that the correct CSC wires are connected to the correct side brakes. The CSC purple wire must be connected to the left electric brakes with a 14 gauge (min.) wire. The CSC pink wire must be connected to the right electric brakes. Failure to properly connect these wires will prevent the CSC from controlling trailer sway.



Sway Control (CSC) Installation Instructions

SECTION TWO: CSC WIRING

CSC Wiring Harness

The CSC wiring harness has five wires requiring electrical connection and one wire for the status LED light. The function of each of these wires is outlined in the table below:

CSC Wires	Trailer Wire Function	Wire Gauge Required
Purple Wire	Left side electric brake output	14 Ga. Minimum
Pink Wire	Right side electric brake output	14 Ga. Minimum
White Wire	Trailer battery/frame ground point	14 Ga. Minimum
Blue Wire	Electric brake controller signal from tow vehicle	14 Ga. Minimum
Black Wire	12V DC from tow vehicle trailer harness	14 Ga. Minimum
Black Wire	3050mm wire with a two pin connector on the end that plugs into the LED status light	Included in kit

The 14 ga. wires of the CSC wiring harness are approximately 300mm long to allow for flexibility when mounting the unit. Extensions will be required to connect the unit to the trailer's electrical wiring. When making connections to the trailer's wiring harness, the desired termination is a solder joint. If the connection is not soldered, use the appropriate size and type of "crimp-type" weather sealed heat-shrink per manufacturer instructions. Once the 14 ga. wires are connected, route the Status Light wire to a location on the front connectors, using the manufacturer's recommended crimping tools in accordance with their instructions and mount the Status Light Module onto a flat surface using self-tapping screws. Select a location that makes it easy to see the Status Light when looking at the front of the trailer.

Taking shortcuts when connecting any wires on your trailer increases the likelihood that some part of your electrical system will fail. Make sure your splice connections are durable and sealed against exposure to water and corrosive elements. One loose wire connection can disable your entire trailer brake system.

When adding extension wires to the CSC wiring harness, you must use the correct gauge wire as outlined in the table above.



Warning!

Failure to use the correct gauge wire may result in poor braking performance or brake failure. Improper wire gauge may also result in significant damage to your trailer or its components, cause a fire, which may result in serious or fatal injury and/or property damage. Undersized wire will prevent electrical circuit protection devices such as fuses or circuit breakers from functioning properly. Undersized wire may melt or burn before these safety devices can be activated.

Sway Control (CSC) Installation Instructions

SECTION THREE: FINAL BRAKE WIRING CHECK & START-UP

Final check for correct brake wiring:

- 1) Refer to **Figure 1** on page 9 to verify correct wiring on the left side of the trailer. Ensure that ONLY the PURPLE and WHITE wires are connected to the left side trailer brakes - wired in parallel and not in series.



Warning!

It is very important that the trailer brake controller wire from the tow vehicle (blue wire) is ONLY connected to the BLUE wire on the CSC and NOT connected directly to the trailer brakes.

- 2) Refer to **Figure 2** on page 9 to verify correct wiring on the right side of the trailer. Ensure that ONLY the PINK and WHITE wires are connected to the right side trailer brakes - wired in parallel and not in series.



Warning!

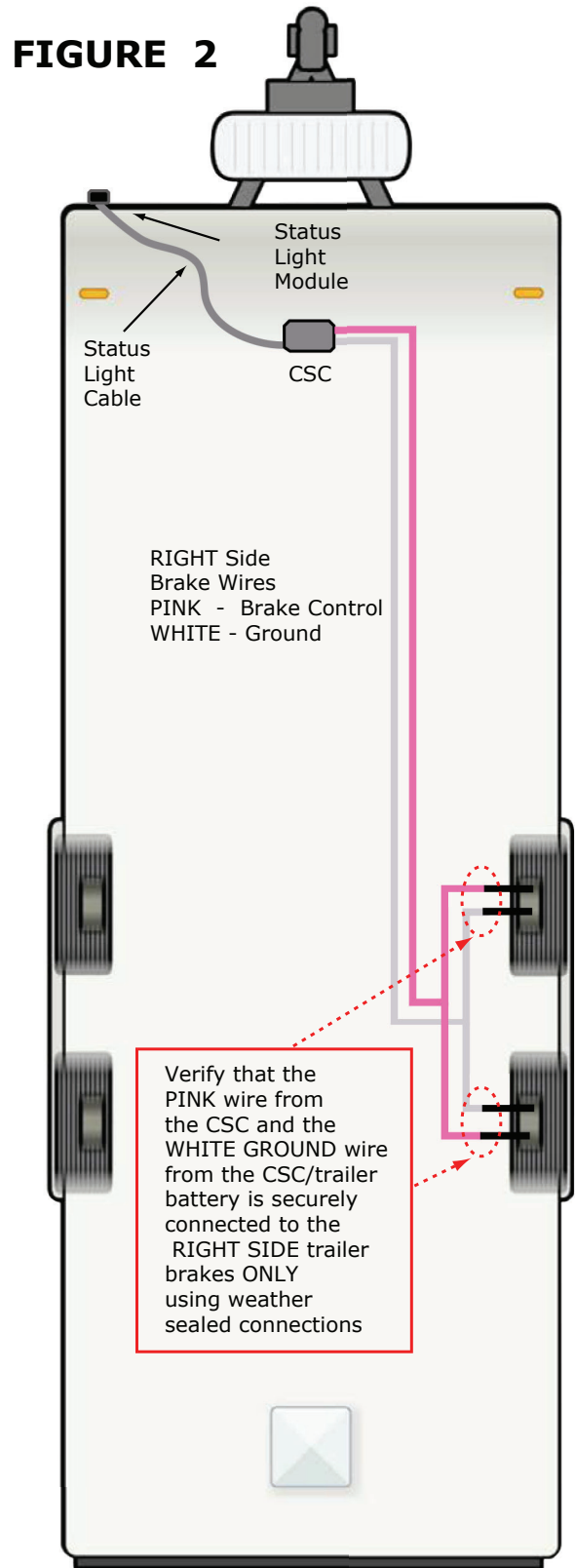
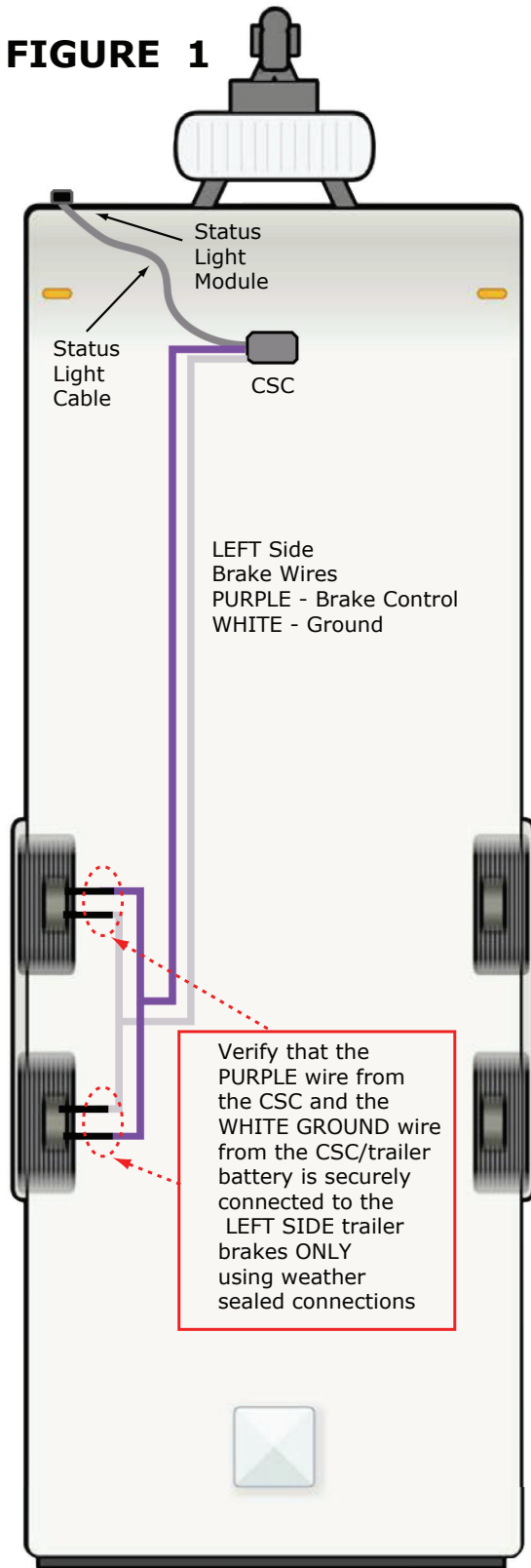
It is very important that the trailer brake controller wire from the tow vehicle (blue wire) is ONLY connected to the BLUE wire on the CSC and NOT connected directly to the trailer brakes.

- 3) After performing the final brake wiring check, the CSC is ready for start-up. The operational status of the CSC is indicated by the LED status light. The CSC is in SLEEP MODE if the LED light is off (dark). The CSC will start-up (wake-up) when voltage is applied to the BLUE WIRE. Once the trailer is connected to the tow vehicle, apply the manual override on the trailer brake controller in the tow vehicle. The LED status light should begin flickering GREEN if the system is installed correctly. If the LED status light does not come on when applying the manual override on the brake controller, refer to the troubleshooting table on page 10.

CSC Self Diagnostics

The CSC performs a self-diagnostic test every time it “wakes up” by receiving a signal from a brake controller in the tow vehicle. The light may flash RED and GREEN approximately 6 times on startup and then go to GREEN. The CSC also continually monitors system parameters during operation. If the system is operating properly and no faults are detected, the GREEN light will remain ON and flicker or pulse. If a problem is detected, a RED light will flash a specific number of times to indicate the specific problem. The table on page 10 contains the meaning of the different RED and GREEN light flashes along with troubleshooting suggestions to correct the problem(s). The CSC continues checking the fault status and keeps the RED light flashing until the fault is corrected. Once corrected, the GREEN light returns. NOTE: When the trailer is not moving, every 60 seconds the GREEN light will turn off for 2 seconds and back on. This is normal and indicates proper operation of the CSC. If you do not notice the GREEN light turning off and on every 60 seconds while the trailer is not moving, have the CSC checked by your local service center.

SECTION THREE: FINAL BRAKE WIRING CHECK & START-UP

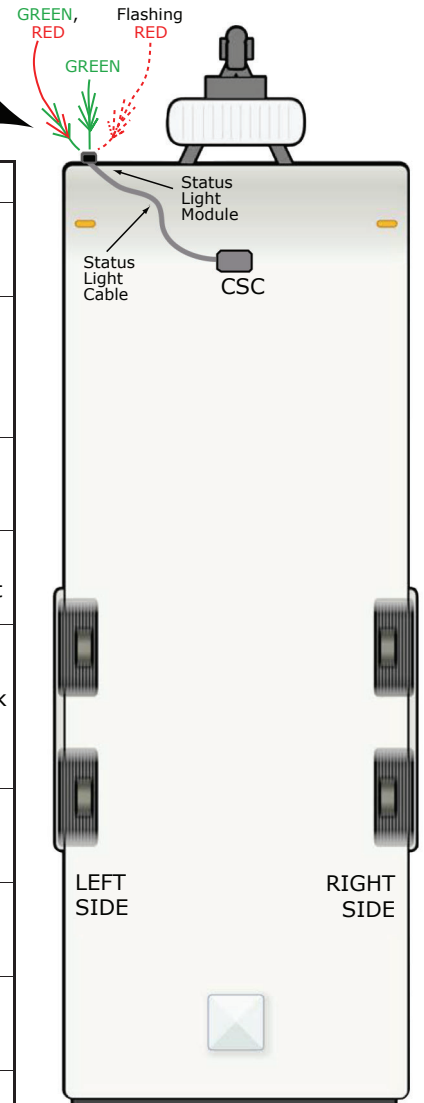


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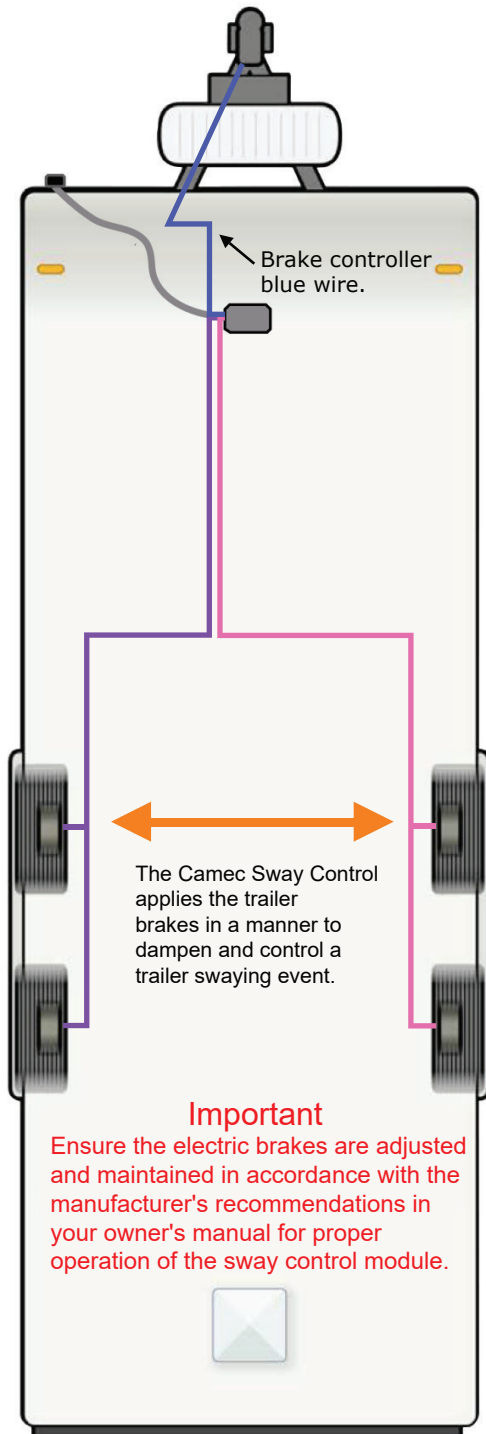
SECTION THREE: STATUS LIGHT AND TROUBLESHOOTING

Mount the Status Light Module in a location on the front of the trailer where the light is easily seen.

LIGHT ACTION	CONDITION	CORRECTIVE ACTION
Solid GREEN pulsing	Normal operation - no system faults	No action - system OK
1 GREEN flash	Module reset to mfg. default values. Keep trailer sitting still for minimum 30 seconds, then drive normally.	If module does not return to normal solid GREEN pulsing light after 3 system restarts, have the unit checked at a service center.
RED, GREEN, RED, GREEN, continuing...	Sway control automatically disabled due to rough terrain	Unit will return to normal green light when not on rough terrain
No light	Unit in "sleep" mode	Activate manual override on the brake controller to "wake up" unit
No light	No power after "wake up" from brake controller	Verify the unit has good quality power, ground and brake controller wire connections. Check for any blown fuses on the tow vehicle and trailer.
No light	Over voltage - over +20 volts	Check that power source is not exceeding 20 volts - correct voltage to 12-15 volts
No light	Low voltage - under 3 volts	Check that power source is 12-15 volts. Verify good power and ground connections
4 RED flashes	Brake short (right side)	Correct the short in right side brake wiring
3 RED flashes	Brake short (left side)	Correct the short in left side brake wiring
2 RED flashes	Sensor malfunction - no sway control	Service center repair required
1 RED flash	System malfunction	Service center repair required
Fast RED flashing	Low voltage - between 3 to 6 volts	Check the power and ground connections



SECTION FOUR: HOW THE CSC WORKS



How it Works

- The CAMEC Sway Control (CSC) continuously monitors trailer yaw.
- It has a proprietary algorithm which is used to determine the difference between quick steering to avoid a road obstacle (or other such circumstances) and the rapid onset of a trailer swaying event.
- It measures the angle, travel distance and speed of the lateral motion of the trailer (and other parameters) and uses this information to quickly intervene with the application of trailer brakes.
- The processing capability of the CSC is powerful and rapid. It captures all the critical elements of the swaying condition and uses this information to predict how the event will proceed without any driver intervention.
- It uses this data to get ahead of the event by applying the brakes on the correct side of the trailer, in a timely manner, with the proper braking level for the required duration.
- This quickly dampens and brings the trailer sway under control.

CAMEC Sway Control is based on the same technology used in automotive vehicle stability systems.

SECTION FIVE: WARRANTY

The warranty provisions for this unit are outlined on the Warranty Registration card included in the product packaging. Please ensure that you fill out the registration card at the time of purchase and retain it for future proof of purchase.