UNDERSTANDING TOWING

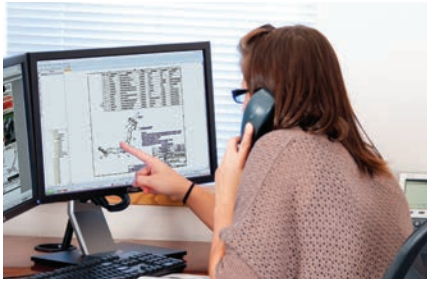
CONFIDENCE TO BRING IT®

It is CURT's goal, first and foremost, to provide you with a complete line of quality products. We also strive to give you the resources needed to educate your customers, so they can Bring It® safely and confidently. Understanding Towing offers information on towing components, weight capacities, vehicle-trailer wiring and much more. All of this information can also be found in a more extensive interactive version at curtmfg.com.

FOR MORE INFORMATION

TOWING 101
A beginner's guide to towing
visit curtmfg.com

TOWING GLOSSARY
Over 500 terms and definitions
visit curtmfg.com



Towing 101

This beginner's guide is perfect for educating new employees. It covers all key aspects of towing, from hitch selection to trailer hook-up.

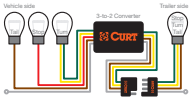
Towing glossary

If you're looking for a term related to the towing industry, you'll likely find it here. This glossary contains over 500 definitions and images.

Product support team

If you have questions about CURT products or how to use them, our Product Support Team is standing by. Simply call 800.798.0813.

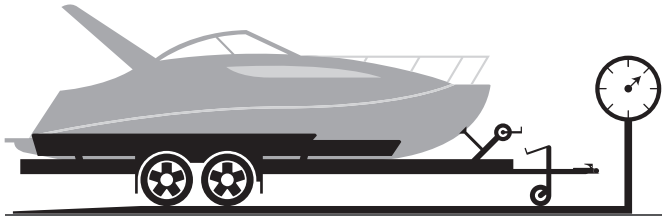
SECTION INDEX



THE BASICS OF TOWING A TRAILER

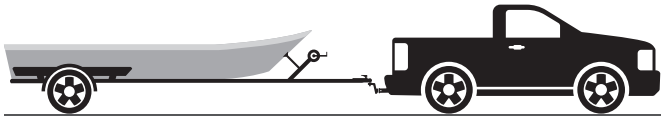
Gross trailer weight (GTW)

The gross trailer weight is the total weight of a trailer and its cargo. For example, GTW = boat + trailer + cooler + fishing gear. It is vitally important to know the GTW to ensure safe towing. It can be measured by putting the fully loaded trailer on a vehicle scale.



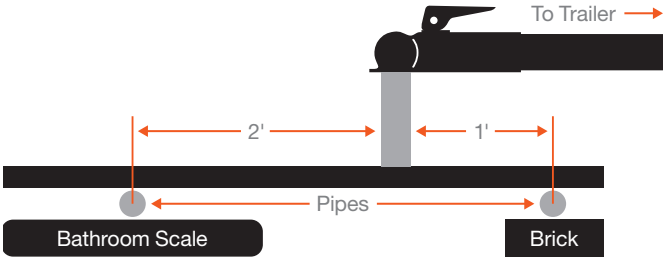
Weight carrying capacity (WC)

The weight carrying capacity is the total weight a trailer hitch is safely rated to tow without the assistance of a weight distribution system. When towing, always use the lowest weight capacity rating of the towing system.



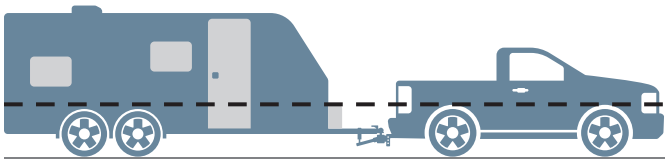
Tongue weight (TW)

Tongue weight is the downward force of the trailer at the coupling point. Proper TW should be about 10% to 15% of the GTW. To measure TW, use a commercial scale or a bathroom scale. In the method shown below, multiply the scale reading by three.



Weight distribution capacity (WD)

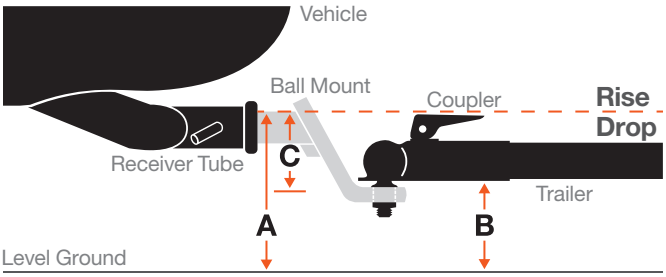
The weight distribution capacity is the maximum amount of weight a trailer hitch can safely tow with a weight distribution hitch installed. A weight distribution hitch distributes a portion of the TW across the vehicle and trailer. See page 317 for WD products.



With weight distribution

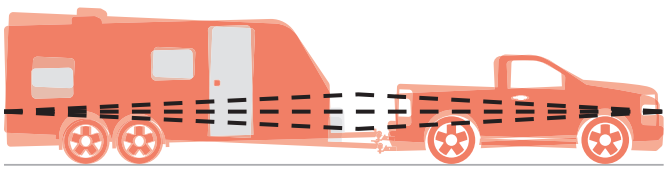
Measuring ball mount drop & rise

When selecting a ball mount, it is important to determine drop / rise for leveling the trailer. Use the diagram below to find this value. B minus A equals C. If C is negative, this indicates the amount of drop needed. If positive, it indicates rise.



Level towing

Using a ball mount with the proper amount of drop or rise will allow for level towing across both trailer and vehicle. Without a level vehicle-trailer combination, the trailer can tend to wander and can even impair the driver's control over the vehicle.



With too much rise or drop

TOWING ELECTRICAL SUBCATEGORY COLOR GUIDE

Towing Electrical Page 235

CURT has identified seven subcategories within the towing electrical category to make it easier for retail customers to find the correct products. Each sub-category is given a unique color that we apply in our literature and retail packaging for easy visibility.

Brake controls Page 237

Many trailers are equipped with electric trailer brakes, and to properly use them, a brake control is needed. A brake control regulates the trailer brakes from the dash of the vehicle and serves as an interface for the driver. There are two basic types: inertia-based and time-based. For more information, see page 237.

RV harnesses Page 252

When dinghy towing a vehicle behind an RV, syncing the taillights is essential. This requires an electrical connection from the vehicle to the RV. CURT RV harnesses plug into the vehicle, using vehicle-specific plugs, and provide a standard 4-way flat to plug into the RV socket. See page 252 for a complete listing.

Plugs & sockets Page 261

A plug and socket are the basic components that allow a vehicle wiring system to connect to a trailer. Plugs and sockets can use anywhere from two to seven wires. When preparing to tow, the plug is inserted into the socket and supplies power to the trailer lights and other electronics. See page 261 for our plugs & sockets.

Accessories & testers Page 268

When installing CURT electrical products, certain electrical components may be required. For splicing, snap locks, wire nuts, terminals and butt connectors provide a reliable connection. When installing a trailer wiring connector or experiencing electrical problems, be sure to test the connection with an electrical tester.

Custom wiring Page 246

If your customer's vehicle is not equipped with a factory-installed connector, custom wiring is the ideal solution. Custom wiring (or a 'T-connector') plugs into the vehicle's electrical system, using the taillights or an OEM socket, and provides a trailer wiring connector. See the application guide, starting on page 32.

Electrical converters Page 254

If a custom wiring harness is not available for a certain vehicle, an electrical converter may be required. A converter is designed to splice into a vehicle's wiring and convert the signals to be compatible with the trailer wiring, providing a standard 4-way flat socket. See page 254 for a complete listing of CURT converters.

Electrical adapters Page 256

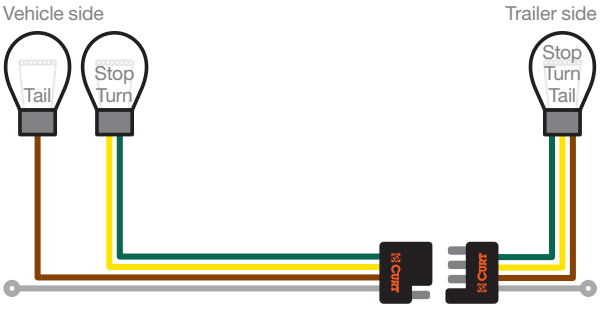
An adapter allows a connection to be made between a mismatched trailer plug and vehicle socket. For example, a vehicle may be equipped with a 7-way, while the trailer may have a 4-way. An adapter can easily be installed to bridge the connection. For our full selection of adapters, see page 256.

ELECTRICAL WIRING SYSTEMS

Vehicles today use different wiring systems to carry out electrical functions, specifically for taillights, stop or brake lights and turn signals. As vehicles have advanced, these wiring systems have changed. To provide a proper wiring connection for towing a trailer, often times an electrical converter is needed. Below are the common wiring systems used in vehicles today, as well as the types of converters used.

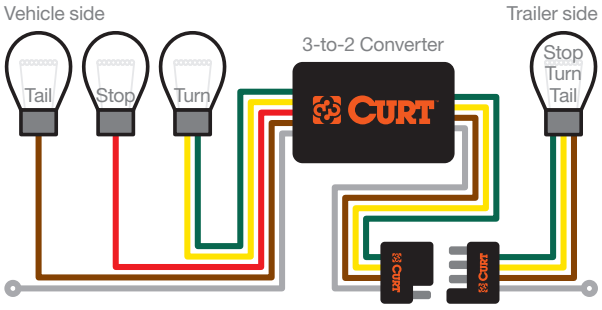
Two-Wire System

The two-wire system is the simplest form of vehicle and trailer wiring and is still used by some vehicles today. This system sends the stop and turn signals along one wire, and the taillight signal along a second wire.



Three-Wire System

The three-wire system is the most common in the automotive industry. It sends the stop, taillight and turn signals along three separate wires. Vehicles with a this system usually require a converter.

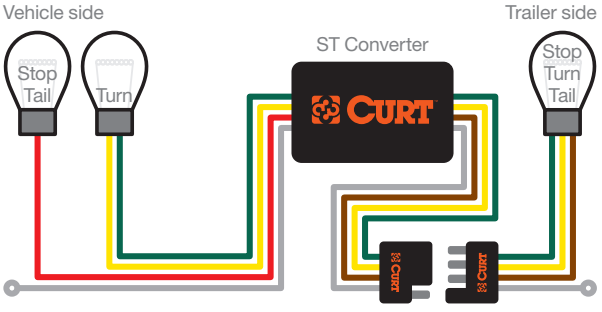


PWM Systems

More and more vehicles today use a PWM (pulse width modulation) system. Sometimes called a 'multiplex', this type of wiring is able to control multiple lighting functions through a single wire by varying the signal intensity. PWM systems can use incandescent or LED lights. There are generally two types: ST systems and STT systems. See the application guide on page 32 for a detailed listing of vehicles with ST and STT systems

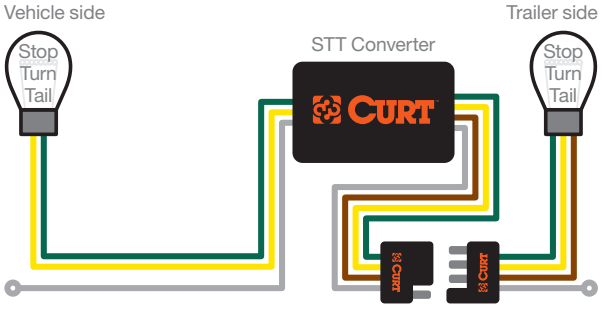
ST system

The ST system (stop / tail) uses a single wire to control the stop and taillight signals. Separate wires are used to control the left and right turn signals.



STT system

The STT system (stop / turn / tail) uses a single wire to control all three lighting functions: the stop or brake lights, turn signals and taillights.

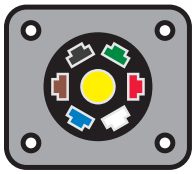


ELECTRICAL CONNECTOR WIRING GUIDE

There are several formats used for connecting trailer wiring, and each offers slightly different electrical functions. 'Socket' refers to the vehicle-side connection, and 'plug' is used to refer to the trailer side. While most plugs and sockets come with standard color-coded wires, the colors illustrated below may not reflect all vehicles and trailers.

7-way RV blade traditional configuration

Vehicle side

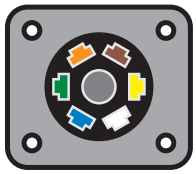


Trailer side

Function	Color
+12 volt	Black
Electric brakes	Blue
Reverse lights	Yellow
Left turn / brakes	Red
Right turn / brakes	Brown
Taillights	Green
Ground	White

7-way RV blade SAE J2863 configuration

Vehicle side



Trailer side

Function	Color
+12 volt	Orange
Electric brakes	Blue
Reverse lights	Grey
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

The difference in configurations

Traditional configuration

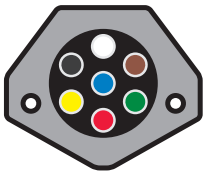
The traditional 7-way RV blade format is typically used on 5th wheel trailers, travel trailers and campers.

SAE J2863 configuration

The SAE J2863 7-way RV blade format is typically used on gooseneck trailers, utility trailers, cargo trailers and equipment trailers.

7-way round

Vehicle side



Trailer side

Function	Color
Auxiliary power	Red
Electric brakes	Blue
Reverse lights	Black
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

6-way round

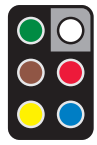
Vehicle side

Trailer side

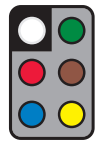
Function	Color
+12 volt	Black
Electric brakes	Blue
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

6-way square

Vehicle side



Trailer side

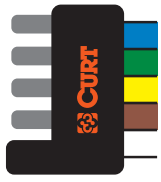


Function	Color
+12 volt	Red
Electric brakes	Blue
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

5-way flat

Vehicle side

Trailer side

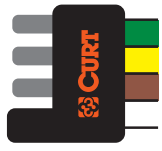


Function	Color
Reverse lights	Blue
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

4-way flat

Vehicle side

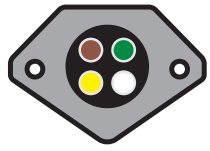
Trailer side



Function	Color
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White

4-way round

Vehicle side



Trailer side

Function	Color
Left turn / brakes	Yellow
Right turn / brakes	Green
Taillights	Brown
Ground	White