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Understanding Trailer Brake Controllers

By Derek Chastain

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An electric trailer brake controller is a device that supplies power from a tow vehicle to a trailer's electric brakes. There are two types of brake controllers on the market today – Time Delay Activated and Inertia Activated.

While the controllers operate differently, they are very similar. Both types have the same wiring configuration. Both allow the driver to adjust the amount of braking power and both have a pressure sensitive manual override switch that can be used to apply the trailer brakes independently of the tow vehicle.

Time Delay Activated Brake Controls

Time Delay Activated or "solid state" controllers are enabled by the depressing of the brake pedal in the tow vehicle. Once enabled, time delay activated controllers apply a gradual voltage to the trailer's brakes using a Time Delay Circuit.

The advantages of a solid state brake control unit are the inexpensive cost, low profile, and they can be mounted at any angle. The disadvantages mostly pertain to Hazard Flashers issues. In most applications the digital display will flash with the hazard flashers and if the gain is set aggressively, some pulsing of the trailer brakes may be felt.

Hazard Flasher issues can be resolved by using a Pulse Preventer that will isolate the brake control from the vehicles flashers, thus eliminating the pulsing.

Inertia Activated Brake Controls

Inertia Activated Brake Controllers or Pendulum Style controllers are enabled by the depressing of the brake pedal and activated by a Pendulum Circuit that senses the stopping motion of the vehicle. The

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Pendulum Circuit applies a proportional voltage to the trailer's brakes.

When the Inertia activated brake control is properly adjusted, the trailer will decelerate at the same speed as the towing vehicle. A result of this is increased braking efficiency and reduced wear on the brakes.

Advantages of pendulum style controllers are efficient braking under a variety of braking conditions including adverse conditions. They also have a smooth braking motion.

Pendulum style controllers have a few disadvantages also. They tend to be larger than solid state controller. They usually more expensive and they must be mounted in a level position. Tekonsha's Prodigy controller is an exception. Due to its innovative technology, it can be mounted in almost any position.

Whether the brake control is Timer Activated or Inertia Activated, the gain can be adjusted by the user. Both feature a pressure sensitive switch that can be used to apply the trailer brakes independent of the tow vehicle. Most importantly, both styles achieve the same goal safely and reliably. Visit

for more information.

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Trailer Buying Guide

By Derek Chastain

Thinking about buying a cargo trailer, horse trailer or even a motorcycle trailer but aren't sure which trailer to buy? As you might have realized, choosing a trailer now-a-days can be perplexing. It's not surprising given the amount of trailer manufacturers and different types of trailers available.

There are many factors to consider when purchasing a trailer. One of the first considerations is to choose an established trailer manufacturer. As with most everything, you usually get what you paid for, so try to choose the best trailer that you can afford.

Deciding on what type of trailer you need for your application will help in narrowing down the manufacturers. There are trailers for almost every conceivable type of cargo, from motorcycles to horses to concessions. If you have to haul it, then there's a trailer made to haul it or at least one that can easily be converted to do the job.

After choosing a manufacturer, figure out what size trailer you'll need. Trailers come in several different widths and lengths. If you're considering an enclosed trailer, you'll also need to consider the height of

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the interior. If your trailer towing needs require that you spend very much time inside the trailer, choose one with enough interior height to keep you from bending your neck or back when standing.

Open or Enclosed Trailers

The next step in choosing a trailer is figuring out whether you will need an open or an enclosed trailer. An open trailer is one which exposes the cargo to the outside elements. If inclement weather isn't a factor for your cargo, then an open trailer may be the most economical choice. Open utility trailers can range in price from about \$900 to \$2500 new.

Open utility trailers are well suited for many applications including small landscaping businesses that are just starting out and need a way to haul their landscape equipment. As their business grows and they decide to move up to an enclosed trailer, the open utility trailer will still be incredibly useful for hauling all sorts of material such as mulch, rock and plants.

Another plus for open trailers is their weight. Open utility trailers tend to be lighter and provide less aerodynamic drag than enclosed trailers.

While open trailers are economical and very useful, they do not provide the protection from the outside environment that an enclosed trailer will. Enclosed trailers also offer an added measure of security because the trailer functions as a portable, lockable storage building.

Enclosed trailers tend to be heavier and less aerodynamic than open trailers. Enclosed trailers usually cost in the \$1600 to \$5000 range new, but can go much higher.

Single or Tandem Axle

Once you've decided on either an open utility trailer or an enclosed cargo trailer, you'll need to decide whether the trailer should have a single axle, dual axle or possibly even three to four axles.

Single axle trailers have just one load bearing axle. Trailers with single axles come with and without brakes, but as a general rule of thumb, most single axle open and enclosed trailers come without brakes. If you plan on hauling more than 3000 lbs, trailer brakes need to be considered. In fact, it's a legal requirement in most states.

Anything heavier than 3000 lbs should be hauled on a dual axle trailer, be it an open or enclosed trailer. Dual axle trailers use two load bearing axles and usually feature either leaf springs or independent torsion bar suspensions. Brakes are recommended for dual axle trailers and again may be required depending upon where you live. Also, dual axle trailers tend to track more accurately than single axle trailers over varying road surfaces.

Rear Access

If you decide on an enclosed trailer, next you have to decide on either a ramp rear door, double rear doors or one single barn-type door. Choosing the type of rear access will greatly depend on the cargo

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you intend to haul. If you're going to be hauling a motorcycle, race car or any other type vehicle, then a ramp rear door will provide the easiest loading and unloading method.

Be sure though when purchasing a trailer with a ramp door that the ramp is spring assisted as some of the ramp doors can be very heavy. Ramps are also nice for hauling furniture or other heavy items where you'll be using a dolly to load and unload them.

If you will be using the trailer quite often and will be in and out of it, then a ramp can become rather cumbersome. Enter double door trailers. It is much easier to open the doors, step in and get the tool or item you need and then step out and close the door than it is to drop a ramp every time you need access. Too, you have to consider the clearance needed for opening a ramp rear door.

Single barn type rear doors are usually found on smaller enclosed trailers and are comparable in convenience to double rear doors.

Trailer manufacturers are aware of the ramp issue and most now add a side door for access to their enclosed trailers giving those that require a ramp the best of both worlds.

Trailer Brakes

In addition to the various types of trailers, there are several types of trailer braking systems.

Electric braking systems are the most common type of braking systems found on trailers today. These type braking systems connect the brake system on the tow vehicle to the brake system on the trailer. This is accomplished by installing a brake controller inside the tow vehicle. The controller senses the braking force of the tow vehicle and in turn activates the brakes on the trailer.

A hydraulic surge brake system consists of an actuating cylinder that is usually integrated with the trailer tongue assembly. As the tow vehicle applies its brakes, the "surge" of the trailer towards the decelerating tow vehicle compresses the surge actuator. As this cylinder is compressed, force is applied to the master cylinder and from there to the braking cylinders.

Surge braking systems are more expensive and usually only needed if you'll be using several different tow vehicles that would each require a brake controller.

Electric brakes are usually preferred over surge brakes because their operation is independent from the tow vehicle. If for some reason the tow vehicle loses its brakes, there would not be enough deceleration surge to activate the surge brakes. However, with electric brakes, the driver could manually activate the brake controller thus allowing the trailer to slow the entire rig.

In some states, any trailer with brakes is required to have a breakaway system. In the event that the trailer becomes disconnected from the tow vehicle, the trailer brakes would apply automatically to stop the run away trailer. Trailer equipped with electric brakes carry a separate battery to activate the breakaway systems. Surge brakes use a cable that locks the breaks in a breakaway situation.

Informed Buying

The most important aspect of buying a trailer is to be an informed buyer. Ask lots of questions. Any reputable dealer will be glad to answer your questions and in fact, should ask you a lot of questions regarding your intended cargo load. Ask about the warranty. Does the manufacturer stand behind its work? Most established manufacturers offer a very good warranty program and will go out of their way to satisfy a customer.

To help in your search for the perfect trailer, you can visit

where you'll

find hundreds of new and used trailers for sale by individuals and dealers.

Derek Chastain

Derek is the webmaster for

, an online resource for buying and selling

trailers of all types.

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