

Boat Transport and Trailing**ROLL YOUR BOAT - ALL ABOUT TRAILERING**

Mention a skipper's boat, and he or she is liable to talk about its graceful sheer, its quickness, the way it handles, or the clever use of space below.



Mention a trailer, and the first thing that comes to mind is convenience. While the marina-based boat is restricted by time, distance, and the weather, a trailered boat can be transported just about anywhere—lakes, oceans, bays, or inlets—in the span of a weekend, Hurricane coming? Put the boat on its trailer and head inland. Too cold? Head south.

But convenience is only part of a trailer's appeal. When you consider the money saved on slip fees, bottom paint, and blister repairs, it's easy to understand why trailer boating is so popular.

Boating on a highway, like boating on the water, requires some attentiveness and know-how. That's what this brochure is all about. Boats go aground in the water. Boats can also "go aground" on a highway. Negotiating stoplights, potholes, slick spots, and manic vacation traffic while towing a cumbersome trailer and boat takes practice.

Trailers, like boats and automobiles, require TLC to keep them rolling. But no amount of maintenance will help a trailer that is too small, or otherwise inadequate, for the boat it will be towing.

The first step, then, is to choose a trailer that is most likely to get you and your boat where you want to go, despite potholes and vacation traffic.

Part I: Selecting a Trailer

With a modern boat, the choice of a trailer is often left to the dealer, which means bunkers or rollers will be positioned properly to provide maximum support. It is a no muss, no fuss deal for the buyer. He or she has to rely on the trailer dealer, however, and dealers have been known to unload inventory that may not be entirely suited to your needs. In this case, it helps to know what your needs will be and what options are available to meet those needs.

Trailer Size

After spending a small fortune to buy the boat of your dreams, it may be tempting to skimp a little on the trailer. Don't. A trailer that is too small is more than just an inconvenience, it's dangerous. Federal law requires that a trailer display its GVWR (Gross Vehicle Weight Rating), which is the total weight the trailer is rated to carry, including the boat, engine, gasoline (six pounds per gallon), water (eight pounds per gallon) and gear.

Some experts suggest that as a margin of safety the total weight of the boat and gear be no more than 85% of the trailer's GVWR. Don't confuse the GVWR with the GAWR, which is the load carrying capacity of an axle - its Gross Axle Weight Rating. On single axle trailers, the GVWR and the GAWR are the same. For tandem-axle trailers, the GVWR is equal to twice the GAWR.

Single vs. Tandem-Axle

While they cost more and require more upkeep, boat owners who have traded-up to tandem axle trailers almost always report that they are pleased with the results, especially with larger boats. For one thing, tandem trailers handle better, with better tracking and less tendency to fishtail. The extra wheels also mean a much smoother ride and safer handling in the event of a blowout. The size of the tires—larger is better—also contributes to the smoothness of the ride. It is usually easier to find replacements for larger tires, although you shouldn't make the mistake of substituting an automobile tire for a trailer tire. Trailer tires have thicker sidewalls.

Submersible or Float-on Trailers vs. Roll-Off Trailers

Submersible trailers, which allow the boat to float free when the trailer is submerged, have the advantage of being easier to use, at least for beginners. The disadvantage is that submersible trailers require more upkeep and a steeper ramp for launching. Some trailers tilt to create a steeper launch angle but are usually unwieldy for all but the smallest boats.

Roll-off trailers may be easier to maintain, but they are also more expensive about 20% more. And for the inexperienced trailer owner, roll-off trailers can be more difficult to use. A skipper in Michigan who said he had used a submersible trailer several times still managed to do several hundred dollars worth of damage to his new boat when it rolled too quickly off his new trailer and bashed onto the concrete ramp in shallow water. As a general rule, rollers make launching and retrieving easier, while pads provide better support for the boat. Many trailers now use a combination of pads (at chines) and rollers (at keels) to optimum advantage.

Paint vs. Galvanized

Many manufacturers offer a choice of a galvanized steel or painted steel trailers. The painted trailers are fine for freshwater but are vulnerable to corrosion in saltwater. Galvanized trailers cost slightly more, but require less maintenance, especially if they will be dunked in saltwater.

Painted trailers are sometimes painted to match the boat, which is nice. With galvanized trailers, one expert suggests painting it with bright colors, especially colors that clash, so that it will be easy to identify. Not a bad idea. The BoatU.S. Marine Insurance claim files have shown that a boat on a trailer is far more likely to be stolen. If you were a crook, which trailer would you steal: one that looks like every other trailer on the road or one that looks like a painted circus wagon?

Trailer Brakes

In many states, trailers with a GVWR of 1,500 pounds or more are required to have brakes on all wheels. Most automobile manufacturers suggest trailer brakes be used with even lighter weights.

There are two basic types of brakes on trailers: surge brakes and electrically-activated brakes. Most trailers have surge brakes, which are activated after the automobile's brakes have slowed the trailer. Surge brakes are frequently wrecked by dunking, although newer models have flushing devices that offer some protection. Electric brakes, which are connected to the automobile's brakes, are also vulnerable to dunking.

Trailer Hitches

Trailer hitches are rated in four classes according to the weight (GVWR) they will be pulling: Class I has a maximum capacity rating of 2,000 pounds; Class II has a maximum rating of 3,500 pounds; Class III has a maximum capacity rating of 5,000 pounds; and Class IV has a maximum rating of 10,000 pounds. The weight of your boat, trailer, and gear should never exceed this capacity.

Another Consideration: The Tow Vehicle

A car's engine, transmission, cooling system, tires, and rear springs are all stressed by the additional weight of a boat and trailer. Considering that the average price of a new car is about \$20,000, it behooves the trailer boat owner to be mindful of the car's towing capacity and to select a car with a towing capacity that is at least several hundred pounds greater than the weight you intend to pull.

Always follow the manufacturer's recommendations when an automobile or truck is used for towing a boat. Don't assume a big car can be used to haul a big boat. A Cadillac Seville with a hefty 4.6 liter V-8, for example, has a rated towing capacity of only 1,000 pounds, which is the same towing capacity as a tiny Ford Escort.

And while horsepower is certainly important, more horsepower does not always produce more torque. The latter is a measure of how much weight an engine can move. An automatic transmission is more desirable for towing than a manual transmission, since the added weight is tough on a clutch.

Auto manufacturers publish a recommended towing weight, which, depending on the type of construction, is usually about half the weight of the car. Although the car will be able to haul more weight, exceeding the recommended towing weight will make the trailer difficult to control and cause the car to get old before its time.

Since you'll have passengers, luggage, etc., in addition to the boat, manufacturers now use a gross combined weight rating (GCWR), which is the total weight of the car, trailer, boat, passengers, and gear that a car can safely accommodate.

Many automobile manufacturers offer optional beefed-up towing packages. The additional cost on a new car is nominal, and is certainly worth the money if you plan on towing a boat. If you're not going to buy a new car anytime soon, and your present car is too feeble to tow the family boat and trailer, you may be able to bring it up to snuff by beefing up the spring coils with air bags, adding a larger radiator and water pump, etc. This will be considerably more expensive than ordering the same components on a new car, but it can be done by most car dealers.

Part II: Trailer Maintenance

Three things dictate how often a trailer needs to be inspected: where it is used; how often it is used; and how hard it is used. A fourth consideration, just to complicate the discussion, might be the quality of the trailer itself. As a bare-bones minimum, any trailer should be thoroughly inspected at the start of each boating season.

Even if the trailer isn't used regularly, an annual inspection and any subsequent maintenance will protect its value. If a trailer is going to be used frequently, will be dunked in saltwater, and will spend many hours traveling over bumpy roads, you'll want to inspect key components much more often. Here are a few tips and suggestions:

The Frame and Axle

Submersible trailers have the advantage of being easier to use, at least for beginners, but they have the disadvantage of requiring more upkeep, especially when the trailer is used in saltwater. Any light rust on the trailer's frame should be sanded and painted. The sooner the better. If a structural component appears to be badly rusted, the trailer shouldn't be used until it is examined by an expert or the component is replaced. To prevent rust, even a trailer with a galvanized frame should be rinsed thoroughly when the trailer has been dunked in saltwater.

Trailers tend to get bounced around a lot, and any loose nuts on the frame must be tightened. If you aren't familiar with your trailer, structural components should be inspected frequently until you're confident that none are prone to loosening. Even the tightest trailer should be examined routinely on long trips.

Trailer Brakes

Surge brakes must be adjusted periodically. You'll have to jack the wheel off of the ground and then use a tire tool to first tighten the adjustment cog all of the way until the wheel won't turn and then back it off a few turns until the wheel again turns freely. If you do the job yourself, follow manufacturer's recommendations.

Trailer Tires

A blown tire can be more than just an inconvenience. According to the BoatU.S. Marine Insurance claim files, neglecting tires is one of the most frequent causes of trailer failure--broken axles and even spilled boats. Treads should be examined whenever the trailer will be used, but keep in mind that trailer tires sometimes need replacing long before the treads wear out. Spider-web cracks on the sidewall are an indication that the tire is rotten and can no longer be relied on to carry heavy loads. While you're examining the sidewalls, take a look at the wheel lugs to make sure they're tight.

Sidewalls contain another useful bit of information: the maximum load limits for the tires. If there are two tires rated for 500 pounds each, then the total weight on the trailer--the boat and all gear--should be no more than 1,000 pounds.

Trailer tires frequently suffer from under inflation and should be checked whenever the trailer is used. Recommended inflation pressures are stamped on the sidewalls. Monitoring inflation pressure (when tires are cool) is especially important on trailer tires, which are typically smaller and work harder than automobile tires. An under-inflated tire builds up heat quickly, which can cause the layers inside --called plies--to delaminate. Repair or replace a tire with a slow leak. Never mix tires--bias plies and radials. Use tires built specifically for use on trailers, which have thicker sidewalls.

Trailer tires deteriorate in sunlight and can have their useful life extended by taking them off the trailer and storing them in the garage (put blocks under the trailer frame) whenever the trailer will be idle for extended periods. Removing the tires also discourages theft. If removing the tires isn't possible, wrap them in plastic trash bags to protect the sidewalls from sunlight.

Spare Tires, Hassles, and Highway Theft

Considering what is at stake, it is surprising how many skippers do not carry a spare tire for their trailers. Trying to find someone who can fix (or replace) a blown trailer tire can be a hassle, to say the least, but there is also a considerable risk that while you're searching for a gas station someone will steal the boat. A boater in Connecticut, to use one example, left his trailer on the side of a busy highway for less than a half-hour while he went to get the tire repaired. When he got back, the boat and trailer were gone. Another boater, this one in Texas, left his boat and trailer to get a tire repaired and returned sometime later to find that his outboard was missing. After leaving briefly to report the theft to police, he returned to find that the boat and trailer (and his luggage) had disappeared.

Boats on trailers are an easy target for thieves, especially when they're sitting alone on the side of a busy highway. Learn from the mistakes of others: carry a spare tire for your trailer! A U-bolt can be used to attach the spare directly to the trailer frame. Note: A typical car jack will not work on a trailer, so you'll need to get a scissors jack that is large enough to handle the load.

Hubs and Bearings

If your hubs don't have bearing protectors, it is best to keep them out of the water. If you must dunk the hubs, allow time for them to cool or cold water will be drawn inside, displacing the grease and causing the bearings to corrode and fail. Bearings that have been accidentally submerged in saltwater should be cleaned with kerosene and then butyl alcohol before being repacked with grease. Use something like a tongue depressor to distribute the grease evenly to both front and rear bearings (don't over-pack). With most hubs, seals must be replaced whenever they're removed for packing.

Most new trailers, fortunately, have bearing protectors, which are metal caps with springs that hold grease under pressure. These protectors eliminate water penetration into the hub, not to mention a lot of grubby work. If your trailer doesn't have protectors, they can be and should be added to the hub. They're easy to install and are relatively inexpensive.

With protectors, a squirt or two of grease at a fitting is all that is required to protect bearings. Press the protector at the edge; if it moves it doesn't need grease. If it is rigid, you'll need to add grease (use only a grease recommended for trailer bearings). Even with protectors, it is a good idea to carry extra bearings on a long trip.

Lights and Electrical

Not all trailer lights are waterproof. Some trailer lights aren't meant to be immersed in water and should be removed before launching. Even if you have sealed trailer lights, don't let the connector plug to the car get dunked, especially when it's still connected. Only stranded copper wire, which is flexible and break resistant, should be used on a trailer. Exposed wire should be secured every 18" to prevent chafing. The entire system should be inspected twice a year for bare or chafed wires and all of the contacts given a protective dab of grease. Finally, it's a good idea to always carry spare bulbs and fuses.

Rollers

Rollers that are damaged should be replaced. The yellow or clear "poly" rollers, incidentally, last considerably longer than their rubber counterparts, which deteriorate in sunlight.

Winch

In general, your winch should be rated to pull at least half the combined weight of your boat, motor and gear. Check your winch regularly for loose mounting bolts and any loose internal parts. If you use an electric winch, check that the power cord is in good shape and there is no corrosion on the wire--you might over heat the winch if the electricity supply isn't 100%. Make sure your winch line doesn't rub up against anything while loading/unloading the boat. Check the line frequently for wear or fraying. Even a slight amount of wear can significantly reduce the weight carrying ability of the strap.

Note: Winches are designed for one thing: loading and unloading your boat. They are NOT designed to hold your boat on the trailer when you are going down the road. Make sure you use other methods of securing your boat to the trailer!

Part III: Towing a Trailer

Weight Distribution

Driving hazards that are normally only an annoyance to an automobile - potholes, uneven pavement, sharp curves, etc.—can be scary when you're towing a trailer, especially if the weight is not distributed correctly. Five to 10 percent of the total weight of the boat, motor, trailer, and gear should be on the trailer ball when the coupler is parallel to the ground.

Too much weight on the ball and the car will be difficult to steer (and good luck retrieving your boat at a steep launch ramp, especially if your car has front-wheel drive). You can also wreck the car's suspension system. Too little weight on the ball and the trailer is prone to fishtailing - excessive swaying from side to side. (Fishtailing can also occur when tires are too soft or the trailer and the boat are too heavy for the car.)

Techniques for redistributing weight at the coupler include shifting gear inside the boat, emptying water and fuel tanks, and adjusting the boat's position on the trailer. If all else fails, you can remedy the problem by moving the trailer's axle - a much larger job that usually requires a pro.

Positioning the Boat

Many boats spend the better part of their lives atop a trailer. To reduce the chances of sagging or oil-canning (flexing) that could permanently disfigure or even weaken the boat's hull, the boat should always be level and supported evenly, with rollers or padded bunks concentrated in critical areas such as the engine and chine. On boats with outboard or I/O's, transoms must be well supported. Poly rollers, incidentally, last considerably longer than their rubber counterparts, which deteriorate in sunlight.



Securing the Boat

Keep in mind that when you're barreling down the highway at speeds of 65 mph or more, the boat will be buffeted by near hurricane force winds.

Anything loose on the deck or in the cockpit, including things like Bimini tops, will probably be blown away. Either stow them below or make sure they are secured. Better yet, warp the boat in a snug-fitting cover, which protects the upholstery from sunlight and road grit, as well as reduces fuel consumption.

A heavy strap should always be used to anchor the boat's stern to the trailer. If a strap isn't used, the boat will bounce against (or off) the trailer. Don't rely solely on the winch cable to tie down the bow. Use a separate line from the bow eye down to the trailer. When you're traveling, check the straps and the bow eye itself whenever you stop.

Safety Chains

Always use a safety chain, criss-crossed between the car and the trailer coupling. Should the hitch fail, heaven forbid, the chain will keep the trailer from flying off the road. Crossing the chain prevents the trailer coupler from separating completely from the car. Leave enough slack in the chain to allow for proper turning, but not so much that it drags. Using a shackle/pin is far more secure than relying on the standard S-hooks, which have been known to jiggle loose.

Getting There (In One Piece)

The first thing you should remember when towing a trailer is that you are towing a trailer. That may sound obvious, but when the car is humming merrily along it can be easy to forget the trailer is back there. Slow down! Reducing speed gives you more time to react and reduces the strain on



the car and trailer. Swing wider at corners so your trailer doesn't hit the curb, and remember to allow extra space when you pass other cars.

The additional weight of a trailer dramatically affects braking, so leave considerably more distance than you normally would between your car and the car in front of you.

Rely on lower gears rather than brakes to reduce speed when driving downhill. Some states have separate speed limits for cars pulling trailers, and you should also be alert to signs restricting trailers.

On trips, make it a habit to check the wheel hubs every time you stop for gas. If one hub feels hotter than the other, or if both feel abnormally hot, the bearings should be inspected before you continue the trip. Straps holding the boat, lug nuts on the tires, and structural nuts and bolts on the trailer frame should also be examined to make sure they're tight. If it is raining, check the boat's cover for pooling water, which could affect weight distribution and make the car more difficult to handle.

Launching the Boat

Let's suppose you've managed to negotiate the gauntlet of potholes, slick spots and traffic snarls without mishap. The trailer held together. You have arrived at the launch ramp.

If the ramp is crowded, and it usually is on weekends, don't despair; use the extra time to prepare your boat and trailer before it is your turn to launch. Make sure the lower unit is raised to avoid scraping; install the drain plug; release the securing straps; disconnect the trailer's lights; and rig a line so the boat doesn't drift away after it is launched.



If you are stepping a mast, make sure there are no overhead power lines between you and the ramp. If you don't have bearing protectors, make sure hubs are cool.

Next, you'll have to back the trailer onto the launch ramp. To a novice, backing a trailer can be like standing on your head and reading a book upside down in a mirror. It takes practice. Learning can be rough on the blood pressure - yours and the other people at the ramp waiting patiently (or impatiently) to launch their boats.

To avoid disagreeable encounters with your fellow boaters, practice backing the trailer in the quiet safety of your driveway or, better yet, an empty parking lot. Tip: push the bottom of the car's steering wheel in the direction you want the trailer to go.

Keep a tire stop handy, leave the car's engine running in case you need power quickly, and don't forget your parking brake! That may seem elementary, but when a particular boater in Tennessee got careless, his truck and trailer rolled down the ramp and didn't stop until they were in 60' of water. It must have been a long walk home.

Retrieving the Boat

Now that you've enjoyed your time on the water, it's time to go home. When you get to the ramp, good manners are very important! If there are other boaters launching or leaving, you must wait your turn. When your turn comes, you must be ready to move quickly. Start by getting all of your gear ready to take off the boat, and get your boat ready to go on the trailer. If you have the option, let someone off the boat to get the trailer to the water while you or the other people aboard take the gear off.

Before you back down the trailer, make sure the trailer lights aren't connected to the tow vehicle. If the trailer has a tilting trailer bed, put it in the up position. Slowly back the trailer into the water, and use the boat's bow and stern lines to line the boat up with the trailer.

Attach the winch cable to the boat, and start cranking! Be careful that no one is in the direct line of the winch cable--if it breaks you can be seriously injured from the whiplash. After you have the boat all the way on the trailer, attach the safety chains and pull the boat the trailer forward--make sure your engine is raised first!

Once you've cleared the ramp area, make sure all loose gear is stowed, attach the tie-down straps, and reconnect the trailer lights to the tow vehicle, and hit the road.

NOTES - While many people drive the boat onto the trailer, it isn't advised. Using the engine to assist trailering erodes the ramp bed, can lead to debris being sucked into the engine, and can cause an accident!

Make sure you drain all water from the boat - the bilge, the live well, the trailer lights, etc. Trailer boats are a leading cause of the spread of invasive species. Make sure your boat is cleaned thoroughly before you launch your boat again, particularly if you go to a different body of water. The best thing to do would be to clean your boat at the ramp. If you can't, try to make sure that when you do wash, the water doesn't go into a drain that feeds into a sewer that feeds into a different body of water.

Protecting Trailers from Thieves: A Few Suggestions

Wayne thought he was being prudent bringing his boat home for the winter. His marina wasn't in an especially good neighborhood and, besides, nobody would watch after his boat the way that he would. You can guess the rest. Despite Wayne's caution, he returned from work late one afternoon to an empty driveway. His boat had been stolen.

It's no wonder that trailer boat thefts appear so frequently in the BoatU.S. claim files. Imagine leaving thousands of dollars stored in large crates marked MONEY on a trailer in your driveway. An exaggeration? Maybe. But to a thief, especially a professional, a boat on a trailer is not much different than a stack of dollar bills. Simply parking a boat in a driveway in front of your house offers little or no security. But there are a few simple tricks, shown below, that will make a boat on a trailer a much less attractive target for thieves.

- **Remove the tires.** This not only makes it much harder to pull the trailer, storing the tires indoors (out of the sunlight) prolongs their life and reduces the chances of a flat tire. As an added precaution against theft, be sure to remove the hub nuts and store them with the tires.
- **The more you take off of your boat, the less attractive it will be to a thief.** Take all valuable equipment and documents off of the boat for the winter. Small motors, seats, and spray dodgers are all candidates for indoor storage.
- **If practical, chain the trailer to a tree.**
- **If possible, store the boat in the backyard or in the garage so that it can't be seen by passers-by.** If the boat has to be stored in the driveway, don't leave the trailer hitch facing the street. Even if the hitch is locked or has been removed, professional thieves carry coupler devices that can be quickly attached to the trailer.
- **Remove the trailer's license plate and, if possible, the tail lights.**
- **Invest in a dog,** preferably one with a nasty disposition to deter strangers.
- **Locks are available for props and some model out drives.** Smaller outboards should be taken off and stored in the garage.



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