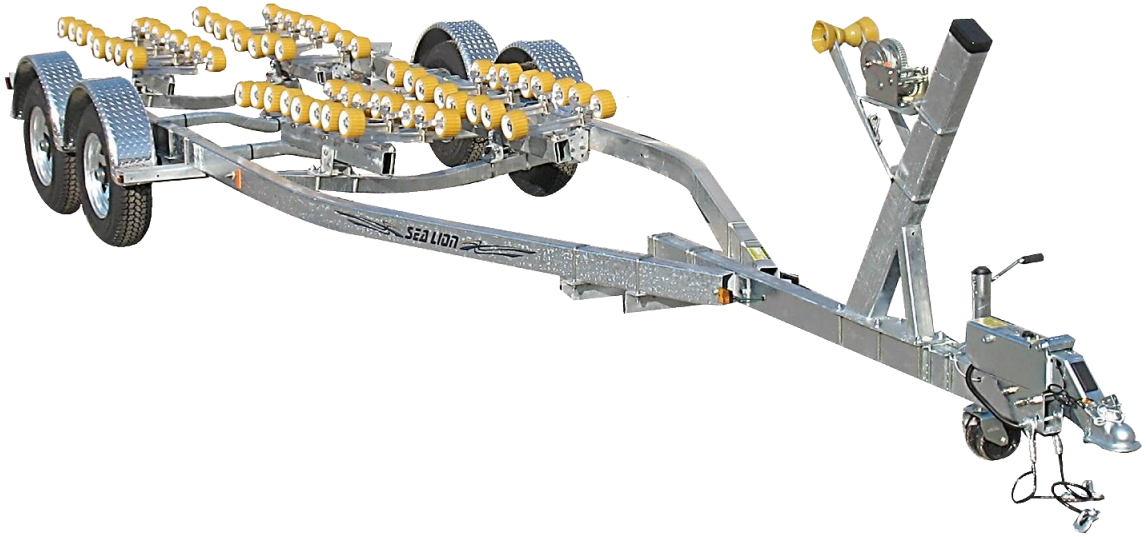

Trailer Operations and Maintenance Manual

Trailer Selection Guide:

An accurate weight for your boat is essential for a safe and long lasting trailer. You can get the boat weight from the dealer that you purchased the boat from or from the manufacturer's literature that came with your boat. If you don't have either of these a reputable trailer dealer should be able to calculate the weight of your boat for you. However you obtain a number for the weight be sure that it includes the bare boat, the engine, a full tank of fuel, fresh water and any gear that you are likely to carry. This number is the minimum carrying capacity of the trailer that you should select.

Trailer specifications should include a carrying capacity, a gross vehicle weight rating (GVWR) and a gross axle weight rating (GAWR). The GVWR rating is the maximum weight of the boat and trailer combination. It is not the carrying capacity of the trailer. Many trailer manufacturers use the length and weight capacities in their model numbers. For example, Sealion trailer model number SE-22T-4800B will carry a maximum boat length of 22 feet and a maximum boat weight of 4800 pounds. Not all manufacturers follow this system however, so be sure that the weight rating of the trailer that you are evaluating is it's carrying capacity.

To assure a good trailer fit for your boat it is important that the length number that you give the trailer dealer refers to that portion of the boat that the trailer sees. The length of a boat as specified by the manufacturer is usually the maximum dimension of the hull. A 22 foot boat is usually at most 22 feet from the end of the swim platform, if it has one, to the bow (possibly including an anchor pulpit). The portion of the hull that will contact the trailer is from the drain plug to the bow eye. This is often considerably less than the overall length and will determine which trailer frame is used. The swim platform is not supported by the trailer and will project beyond the rear of the trailer just as the engine or outdrive will. The anchor pulpit (if applicable) is important only in that the trailer tongue must be long enough to allow the pulpit to clear the towing vehicle.

With an accurate weight and the appropriate dimensions the correct trailer can be determined for your boat.

Trailer Construction:

Two things are necessary to assure a durable, long lasting trailer; heavy gauge metals and conservative design. We use 1/8" minimum wall thickness for all frame components on our 3x3 and larger frame sizes. If you've ever had a galvanized trailer fail after many years of service you know that the reason they fail is that something rusts out and collapses. Of course this always happens when you are on the road with your boat, usually in a lightning storm. It's usually the rear cross bar or the rear of the main frame rails which always get dunked in the salt water. The heavier the steel is to start with the less it flexes and the longer it takes for corrosion to weaken the component enough for it to bend under load. When you compare trailers look at the thickness of the components as well as their dimensions.

Trailer Brakes:

Trailer brakes are an essential component of safe trailering. Your vehicle must be capable of safely stopping the combined weight of the vehicle, the boat, the trailer, fuel and gear. A boat and trailer often weigh as much as the towing vehicle and can greatly increase the distance required to stop. Be sure that the towing capacity of your vehicle is at least as great as the combined weight of the boat and trailer. Once you are up to speed on the road the trailer will be less noticeable until you have to stop quickly. You must remember to leave more distance between you and the vehicle in front of you and be cautious when making turns and lane changes.

If you purchase one of our trailers with brakes they will be disc brakes. These marine grade disc brakes provide fade resistant stopping power to assist the brakes on your vehicle. They also generate braking power when you back up so to avoid problems we install a solenoid valve in the brake system. This valve will prevent

fluid from entering the brake lines and applying the brakes when your vehicle is moving in reverse. For this to operate properly the solenoid must receive a signal from the back up lights on your vehicle. Our trailers with brakes have a five wire harness where four of the wires operate the lights and the fifth operates the reverse solenoid valve. Most newer vehicles have their back up circuits factory wired to a seven wire round plug. If you purchase an adapter with a flat, five wire plug you will have all of the lighting and braking features necessary for your trailer.

Since you are reading this booklet you have obviously purchased a Sealion trailer. Thank you for your purchase. With proper use and care your trailer will provide you with many years of use. Before you use it, please read the documents in this package thoroughly. Familiarize yourself with the adjustments and operations of the trailer prior to loading a boat onto it. We use high quality marine grease in the wheel bearings. They should be inspected and repacked, if necessary, twice a year with compatible grease. See "Hubs and Bearings" section below for grease specifications.

Information relating to the capacity of the trailer can be found on the Certificate of Origin and/or the frame sticker on the left front frame rail of the trailer. This information should be filled into the appropriate spaces at the bottom of the next page. An explanation of this information is as follows:

Model: model number of the trailer
VIN: vehicle identification number of the trailer
Year: model year of the trailer
GVWR: maximum allowable combined weight of the trailer and boat
Shipping Weight: unladen weight of the trailer
Name of Dealer: dealer to whom the trailer was originally delivered

The weight capacity of the trailer can be found by subtracting the **Shipping Weight** from the **GVWR**. We also include the capacity of the trailer in our model numbers. For example, an SE-22T-4800B will accommodate up to a 22 foot, 4800 lb boat. Attempting to load a boat heavier than this will void the warranty and could result in failure of the trailer frame and/or damage to the boat. Keep in mind that adding gear and supplies (normal items will usually add a minimum of 10% additional weight) to your boat can add more weight than you might expect. Any other additional items such as T-Tops, additional motors, water, etc. must also be accounted for.

Model: _____

VIN: _____

Year: _____

GVWR: _____ lbs.

Shipping Weight: _____ lbs.

Weight Capacity: _____ lbs. (GVWR - Shipping Weight)

Dealer Name: _____

Pre-Towing Inspection

Perform a safety inspection before each trip. Make sure that:

- The hitch pin securing the ball mount to the receiver is in place and the cotter pin is installed.
- The coupler is securely engaged to your hitch ball and the safety latch is closed. The class rating of the hitch and hitch ball must meet or exceed the class rating of the coupler.
- Jack is fully cranked up (and parallel to tongue if swivel style).
- Safety chains or cables are properly attached in a criss-cross fashion.
- Electrical plug for lighting and brakes (if your trailer is so equipped) is connected to the vehicle electrical system.
- Brake lights and running lights are working.
- Your boat must be secured with tie-down straps. Be sure that the winch strap/cable is tight, the safety cable is connected to the bow eye and transom straps are securely fastened.
- Be sure your tires are properly inflated. You will find the appropriate information on the sidewall on your tires and on the tire placard attached to the trailer. In most cases the inflation pressure will be different than your tow vehicle. Also, check for tire wear and be advised that low air pressure is the leading cause of tire wear and poor handling
- If your trailer is equipped with brakes, make sure they are in working order. It is always best to test the brakes before entering the highway.
- Maintain proper torque (85-90 ft. pounds) on lug nuts. Failure to do so may cause serious injury or damage. On your first trip re-torque every 25 miles until constant, afterward check before each trip.

Maintenance Tips

Frame and Axle

The structural component fasteners 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

Check the brake fluid in the actuator before each use and refill as necessary with D.O.T. #3 approved brake fluid. Sealion Trailers are equipped with disc brakes which require that the solenoid on the back of the brake actuator is powered by the tow vehicle's backup circuit. The trailer's solenoid wire is part of our 5 wire harness plug at the front of the trailer, located near the actuator. You need to attach this plug to a to a suitable 5 wire connection on the tow vehicle. Most new vehicles with towing packages will have a round 7 pin connection factory installed. You can purchase a 7 to 5 connector which will plug into the round 7 pin connection on the vehicle and provide a 5 pin connection which will mate with the 5 pin plug on the trailer harness. **If you do not have a functioning 5 wire connection the trailer brakes will be active when you try to back up and the brakes will lock.**

Trailer Tires

The biggest detriment to trailer tires is not use, but rather the lack thereof. Trailer tires sitting for long periods of time may experience damage from the elements. 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 dry rotting and can no longer be relied on to carry heavy loads.

While you're examining the sidewalls, check the wheel lugs to make sure they are tight.

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. 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.

Spare Tires, Hassles, and Highway Theft

Considering what is at stake, it is surprising how many trailer owners 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. However, you should also consider that while you're searching for a gas station you are leaving your boat and trailer unattended. Disabled boats on trailers can be an easy target for thieves, especially when they're sitting alone on the side of a highway. Having the spare allows you to make a simple repair and be back on your way to that fun filled day. Learn from the mistakes of others: **carry a spare tire for your trailer!** A spare tire mount 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 jack with enough capacity to handle the load**.

Hubs and Bearings

When it comes to protection, nothing beats the power of Tie Down Engineering Super Lube or Vortex hubs. Both of these feature a grease fitting on the end of the spindle and a triple lip spring-loaded seal that ensures outer/inner bearing protection from corrosion, wear and water entry. It's a time saver, too. Super Lube and Vortex lets you grease or repack bearings with just a hand grease gun and without disassembly.

To ensure proper lubrication for the Tie Down Super Lube System, each unit should be lubricated with the appropriate wheel bearing grease. Super Lube hubs use Lucas 10005 Red N Tacky marine grease and Vortex hubs use Lucas 10320 marine grease. This should be applied with a hand operated grease gun every three months, 1000 miles, or as use requires.

Lights and Electrical

Even if you have sealed trailer lights, don't let the connector plug to the car get dunked, especially when it's still connected. Another easy maintenance tip is to coat all exposed metal surfaces with dielectric grease, including trailer harness plugs, bulb sockets and contacts. The grease will help prevent corrosion, which is the leading cause of light failure. Finally, as a safety precaution, always check the trailer lighting for proper operation before heading out on the road.

Rollers

Do not be fooled by color. Rollers can be any color whether they be plastic, TPR, or Polyurethane. Sealion Trailers comes standard with TPR rollers. TPR rollers last considerably longer than their rubber counterparts, which deteriorate in sunlight. The rollers used on Sealion Trailers are gold in color and should be replaced with the same style and size of roller when required.

Towing Your Trailer

Safety Chains / Safety Cables

Always use safety chains or cables, criss-crossed between the tow vehicle and the trailer coupling. Should the hitch fail, the safety chain will help keep the trailer under control as you come to a stop. Crossing the chain creates a cradle which prevents the trailer coupler from dropping to the ground in the event the coupler comes off the hitch. Leave enough slack in the chain to allow for proper turning, but not so much that it drags.

Weight Distribution

Driving hazards that are normally only an annoyance to an automobile—potholes, uneven pavement, sharp curves, etc. are more hazardous 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 vehicle will be difficult to steer, and possibly cause damage to the vehicle'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 / under inflated or the trailer and the boat are too heavy for the towing vehicle.) It is also critical that you tow your trailer completely level. Your dealer will supply you with the proper ball mount to achieve this.

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 axles - a much larger job that usually requires a pro. Sealion strongly recommends you have your dealer set up your trailer for your boat. Damage caused by improper set up is not covered under warranty.

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 near the engine and chines. On boats with outboard motors or I/O's, transoms must be well supported.

Securing the Boat

Keep in mind that when you're towing at highway 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 biminis will probably be blown away. Either stow them below or make sure they are secured. Better yet, wrap 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 that wraps completely around your boat and and connects to the tie down brackets on each side of the trailer at the rear (ask your dealer for details) in addition to transom straps MUST always be used to anchor the boat to the trailer. If a strap isn't used, the boat will bounce against (or off) the trailer. You should also not 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 whenever you stop and retighten if necessary. Sealion is not responsible for any damages to boat as a result of it not being tied down correctly. Please contact Sealion or your dealer with any questions before trailering.

Getting There

The first thing you should remember when towing a trailer is that "you are towing a trailer". That may sound obvious, but it can be easy to forget the trailer is behind you. Slow down! Reducing speed gives you more time to react and reduces the strain on the towing vehicle 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. Be sure your boat is securely tied down at all times. Transom straps alone are not sufficient, be sure to put a strap around the boat and attach it to the trailer frame as well.

The additional weight of a trailer dramatically affects braking so leave considerably more distance than you normally would between your vehicle and the vehicle in front of you. Rely on lower gears rather than brakes to reduce speed when driving downhill. Some states have separate speed limits for vehicles 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 vehicle more difficult to handle.

Launching the Boat

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 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. Let the hubs cool off before you back the trailer into the water. Hot hubs submerged into cool water tend to pull water into the hub past the seal.

Next, you'll have to back the trailer onto the launch ramp. A good tip to remember is to always try to back to the left. This will allow you to see the whole trailer through the mirror or by sticking your head out the window. Be patient, 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, in an empty parking lot. Tip: push the bottom of the vehicle'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! **Most importantly, do not remove your winch strap and safety cable from the bow eye of the boat until you have backed down the ramp completely.** Sealion has provided you with TPR rollers on our roller trailers. They are designed to roll easily to make your launching and loading easy and care free. Your boat can roll off the trailer if you back down the ramp without your winch cable being attached. Sealion recommends you review launch and load procedures with your dealer paying special attention to proper use of the winch cable, and bow safety cables or chains.

Adjusting Your Trailer

Sealion trailers are designed to offer you as much adjustability as possible. It is strongly recommended that you have your dealer adjust your trailer to your particular boat at time of purchase. Among a variety of other issues your dealer will make sure you have the proper tongue weight. The axle assemblies are attached to the main frame with U-bolts. To adjust the tongue weight, your dealer will loosen these bolts and slide the assemblies forward or backward as required. Moving forward will produce less tongue weight and backward will increase the weight. Tongue weight should be approximately 5 to 10% of the gross weight (GVWR). Again, it is highly recommended this be done by your dealer.

Winterizing Your Trailer

STORING YOUR TRAILER

1. Park in a protected area such as garage, carport, etc. If you cannot park in a protected area, cover your trailer with a boat cover or tarp.
2. Repack wheel bearings.
NOTE. Water standing on bearing surfaces for as short a time as several weeks without the wheel being turned, can cause rust and possible bearing damage. Before storing the trailer for prolonged periods, bearings should be re-packed.
3. Lubricate moving parts such as rollers, winches and other rolling parts with lightweight household oil.
4. Tighten loose nuts and bolts.
5. Block the wheels, or better, jack up the trailer so the tires do not come in contact with the ground. If your boat and trailer are not protected in a car port, garage or with a boat cover, you should still cover the tires to protect against ultra-violet rays.
6. Block the tongue and crank the tongue jack to the completely closed position.

REMOVING YOUR TRAILER FROM STORAGE

1. Apply lightweight oil to winch gears.
2. Verify tightness of lug nuts.
3. Check air pressure in tires.
4. Check tread and general appearance of tires.
5. Verify brake fluid levels.
6. Check brake line for signs of rot or damage and replace as necessary.
7. Complete a full electrical check (as defined previously).
8. If equipped with Super-Lube spindles, apply additional grease.

Trailer Troubleshooting

Boat loading - boat comes up crooked or is difficult to load

1. Stand behind the trailer and look at the rollers or bunks. Is a strake on top of a roller or bunk? If it is, determine whether to move the roller/bunks closer together or farther apart so that the it will be beside the strake rather than on it. Move them whichever way requires the least movement and move them symmetrically. Moving either bunks or rollers requires that the boat be off the trailer so make measurements, take pictures and then unload the boat and make the adjustments.
2. Verify that your trailer is partially submerged. Roller trailers only require that the rear rollers are in the water. Don't bury a roller trailer too deeply or you will lose the self-centering properties that a roller trailer provides. Bunk style trailers require that a major portion of the boat be floating so that you can pull it onto the trailer with the winch. It's very difficult to pull a boat forward a long way onto a bunk trailer when it's out of the water.

Boat unloading - boat is difficult to unload

1. When the trailer is backed into position on the ramp tie a line longer than the trailer to a cleat on the bow of the boat. Pull the line towards the trailer and wrap the line three or four times around the bow stand post.
2. Verify that the rear of the trailer is far enough into the water that the boat or motor won't hit the ramp as it comes off the trailer. Roller trailers don't need to be as far into the water as a bunk trailer to allow the boat to come off the trailer. Bunk trailers require that the rear of the boat be floating to enable it to be pushed off the trailer.
3. Make sure that the locking pawl on the winch prevents the cable from paying out, then remove the safety cable from the bow eye.
4. Grasp the winch handle firmly and release the looking pawl on the winch. Carefully crank the winch to loosen the cable or strap attached to the bow eye until the boat is held in place by the line running from the cleat on the bow of the boat to the bow stand post and the winch cable is slack. Remove the hook on the cable or strap from the bow eye. **VERY IMPORTANT** – if your grip on the winch handle slips and the winch handle starts to freewheel **DO NOT ATTEMPT TO GRAB THE HANDLE**. It will break your arm. Just snug the end of the line wrapped around the bow stand post; it will stop your boat. Unwrap the line around the post one wrap at a time until the boat starts to slide off the trailer. By tensioning or loosening the end of the line around the post you can control the speed at which the boat comes off the trailer.
5. If the winch cable is slack but the boat still won't move off the trailer you may need to back further into the water. Carefully create about a foot of slack in the line from the boat to the bow stand then put more wraps around the post until it's secure. Back the trailer further into the water and tap the tow vehicle's brakes to see if you can get the boat to move until it takes up the slack in the line.
6. Once the boat is moving you can pay out the line and keep control of the boat.

Coupler

Improper coupler fit
1. Verify the hitch ball and coupler are the same size.
2. Verify the coupler is free from debris.
3. Verify that the hitch ball is securely fastened to the tow vehicle..
4. See your dealer - You should not attempt additional adjustments to the hitch.
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Winch

Fails to operate
1. Verify handle is securely fastened to winch and engaged.
2. Extend cable or strap completely and verify that it is securely fastened
to the winch barrel.
3. Visually inspect gears for signs of wear. If the gears are worn or damaged or the pawl fails to operate replace the winch.
4. Make sure pawl is always engaged on winch so the winch handle does not freewheel. This can cause serious injury. Please review proper winch operation with your dealer before towing.

Wheels/hubs

Excessive heat

Note. Hubs can get very hot especially brake hub/rotors. Before touching a hub, hold your hand near it. If you don't fell heat radiating from it you can gently touch it. Both left and right sides should be similar

temperatures. Brake hubs may be hotter especially if you have just been driving the trailer
After the hub has cooled:
1. Be sure axle system is fully greased.
2. Verify brake fluid levels.
3. Verify reverse solenoid (if equipped with disc brakes) is properly operating.
4. Have your dealer inspect and repack your bearings.
6. Check to see that the hubs do not have excessive wobble. This could indicate improperly adjusted or worn bearings

Tires

Tire wear / uneven tire wear
1. Check tire pressure.
2. Check to see if an object (such as the fender) is rubbing against the tire when the boat is on the trailer.
3 Check to see that the hubs do not have excessive wobble. This could indicate improperly adjusted or worn bearings.
4. Check trailer capacity versus boat, fuel and gear weight.
5. On multiple axle trailers check that dimension between axles is the same on both sides of trailer.

Brakes

WARNING. Brake maintenance should only be accomplished by a trained mechanic. Improper adjustment, repair or maintenance voids the manufacturer's warranty and may cause serious personal injury and property damage. See your dealer immediately for any brake problem.

Poor brake performance.

Unable to back-up.
1. Check connection to tow vehicle back-up light circuit. Connection should be free from dirt, water and debris.
2. Check trailer ground connection (do not depend on hitch ball connection to provide ground). Trailer should have dedicated ground wire (white) connected to grounding screw.
3. Check tow vehicle back-up light circuit. You should be able to hear a ‘click’ when 12 v. DC is applied to reverse lockout solenoid.
See your dealer immediately.

Electrical

Lights don’t work
1. Verify wire harness and vehicle connectors are free of dirt, debris and water and are properly attached. Verify that the two harnesses properly mate - are the same type.
2. Check that towing vehicle lights work.
3. Check ground on trailer and ground on tail lights (if equipped with separate tail light ground circuit).
4. Look for any pinched, frayed or cut wires and replace as necessary. Before replacing, disconnect the trailer from the tow vehicle and verify that there is no charge in the trailer circuitry.
5. Check bulbs and/or sealed capsules and replace as necessary.

Two Year Limited Warranty

Sealion Metal Fabricators Inc. warrants each trailer to be free from defects in materials or workmanship for a period of two years from the date of purchase. Sealion will repair or replace any parts found to be defective within a reasonable period of time from the date that the trailer is returned to an authorized Sealion dealer. This warranty is extended to the original purchaser only and is not transferable. This warranty is void if the trailer has been modified in any way or if the malfunction is due to damage, unreasonable use or lack of reasonable maintenance. This warranty does not cover winches, couplers, lights, brakes tongue jacks, springs, tires or wheels since these items are covered by their respective manufacturers warranties. This warranty does not extend to damage caused by overloading the trailer beyond it's stated capacity. Bearings are covered for a period of one year from the date of purchase. No transportation charges or other related expenses such as travel expenses, towing charges, lodging or loss of time will be paid by Sealion