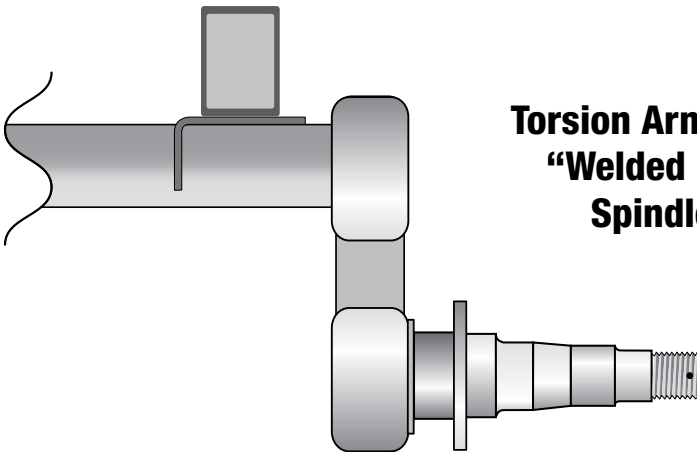


Torsion Axle Owners Manual



**Torsion Arm with
"Welded On"
Spindle**

TIE DOWN ENGINEERING
255 Villanova Dr. SW, Atlanta, GA 30336
www.tiedown.com
(404) 344-0000 • Fax (404) 349-0401

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Torsions Axle Care and Maintenance

Congratulations on the purchase of your new trailer. This trailer manufacturer has chosen the Tie Down Engineering Torsion Axle for your trailer's suspension requirements. There are several important facts in using your new trailer with the torsion axle.

Four cords inside the axle housing handle suspension travel and shock absorption. As the wheel moves up or down, the rubber cords compress, offering a progressive rate of resistance.

Benefits to this system are: Independent suspension, each wheel acts independently for a smoother ride. Trailer rigidity, the axle is bolted to the trailer frame. This acts as an additional cross member which stiffens the frame, reducing flex in cross winds and rough roads. Progressive "spring" rate, small bumps are handled by a soft initial rate, while larger bumps use a stiffer rate. This makes for a smoother ride over all types of roads.

Corrosion resistance: Each torsion axle tube is galvanized inside and out. Since there is no metal-to-metal contact as with springs, bare metal is not exposed that promotes corrosion. The torsion arms are available with E-coat or with hot dip galvanizing. Longer life with fewer problems. Reduced un-sprung weight: The torsion axle tube is bolted to the frame. The moving parts are reduced, lowering the weight that the "spring action" must move. This results in a smoother shock action.

Stainless Steel Wear Sleeves: Rear oil seals ride on stainless steel sleeves on the 3500 series, 5000/6000 and 7000 series axles. This reduces the chance of worn seals due to corrosion build up on the spindle surface where the oil seal meets the spindle surface.

Road Side Repairs

When required, you have several options when confronted with a flat tire or bearing failure. Flat tires should be handled like any other trailer tire change. Make sure trailer is on level or near level ground. Loosen lug nuts on wheel. Use jack on trailer frame to elevate tire in order to place spare tire on the hub. Make sure all lug nuts are securely tightened before moving trailer. Re-check lug nuts after several miles to make sure they are tight. Bearing failure is usually discovered by a loud grinding noise or wheel wobble. If there is obvious bearing damage, jack up the trailer to remove the tire. Remove the dust cap with a hammer by striking at the edge, rotating the hub to strike different sides until the dust cap is removed. The castle nut that holds the hub on has a "tang" washer or cotter pin to keep it from coming off. Bend or straighten the tab/cotter pin so that the nut will come off. Remove the hub and inspect the spindle for damage. If none is detected, wipe the spindle clean and replace the damaged hub with a pre-greased spare. The washer and castle nut are replaced. Tighten the nut until it is tight with obvious friction on the bearings. Back off nut 1/4 turn to allow fluid bearing movement. Re-lock the castle nut with the unused tang on the washer. Replace tire and secure with lug nuts.

Torsions Axle Care and Maintenance

Always re-check all work performed when you return to a safe area.

Torsion Axle Maintenance

Torsion axles do not require any regular maintenance, unlike springs that need constant review for worn or loose parts. Spring axles must be checked regularly to make sure the spring surfaces are not corroded, creating a weak point in the suspension.

It is always a good idea to tow any trailer in a level position with the load balanced over the axle or axles. Torsion axles require that the trailer be towed level. On multi axle torsion axle trailers, excessive tire wear will occur from the coupler being too high or too low. Trailers with two or more torsion axles do not have a self-leveling or load balancing feature.

If the hitch/coupler/actuator position is too high, too much load will be transferred to the rear axle. If the hitch/coupler/actuator is too low, too much load will be placed on the front axle.

Either situation will create excessive tire wear and loss of braking power. Excessive tire or brake wear due to the trailer being towed improperly is not covered under manufacturer's warranty programs.

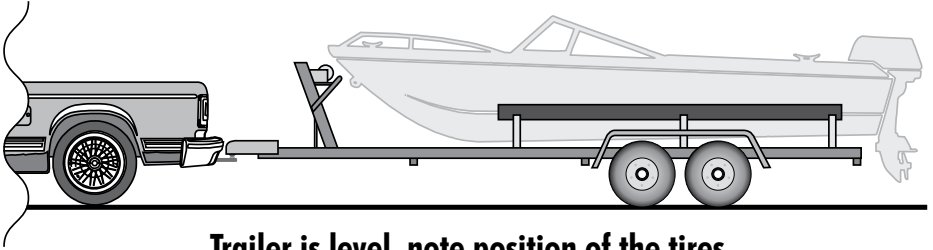
WARNING

Improper hitch height may overload the front or rear axle on your trailer and could result in tire, wheel or bearing failure. Serious injury or property damage can result from such failure.



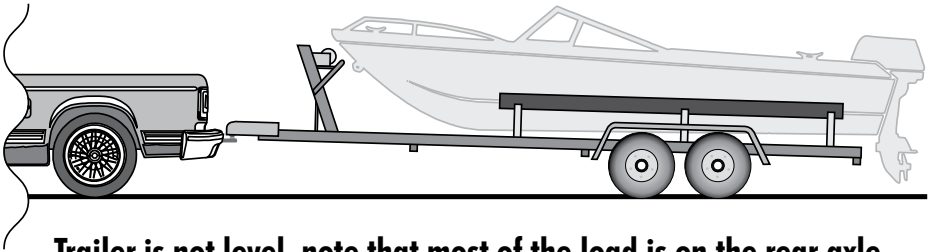
Correct Towing Positions for Torsion Axles

Correct Level



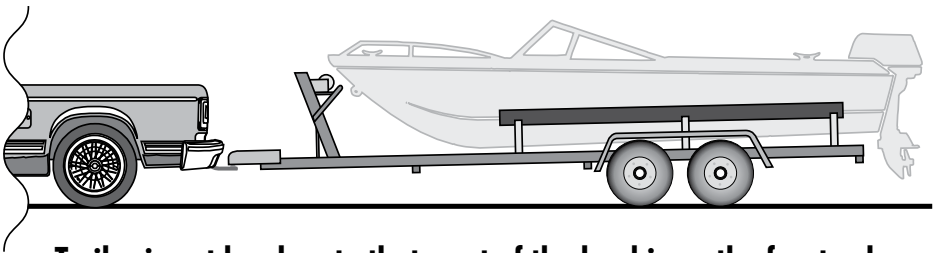
Trailer is level, note position of the tires

Hitch Too High



Trailer is not level, note that most of the load is on the rear axle

Hitch Too Low



Trailer is not level, note that most of the load is on the front axle