

TIE DOWN ENGINEERING

Installation Instructions for Replacement Brake Shoes

Instruction sheet part # 15368 Revised 06/10/2003

Installation Instructions for Tie Down Brand E-Coat or GalvX Coated Drum Brakes



Replacement Kits Include:



Left Side Brakes



Right Side Brakes

Each kit contains right side and left side primary and secondary brake shoes, replacement primary springs, replacement bearing grease caps and locking tab washer (disregard locking tab washer if your spindle/hub may uses a flat washer and cotter key).

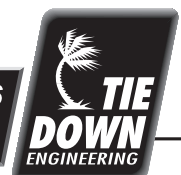
IMPORTANT: Read all the pages of these instructions before starting work on the brakes. Make sure you understand the instructions and have the proper tools, equipment and area to complete the job.

IMPORTANT: Never install new brakes on only one wheel. Uneven braking can occur that will create a dangerous situation.

These instruction pages cover the installation of new brake shoes on **TIE DOWN ENGINEERING** brand brake systems on marine and utility trailers. A qualified and experienced mechanic should perform this work.

Safety Issues: The trailer or boat trailer combination are very heavy. Failure to properly secure or support the weight could result in serious injury or death. Make certain all lifting and supporting equipment has sufficient capacity and is used properly. Follow all manufacturers precautions regarding brake fluid and all petroleum or solvent-based products. Always wear safety glasses. If you are unfamiliar with safe operation of any equipment or you are not certain that you are safe, do not proceed! Left is drivers side, right is passenger side.

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Materials required: One brake shoe kit per axle. Each kit contains primary and secondary brake shoes, replacement primary springs, replacement bearing grease caps and spindle nut locking tab washers (disregard locking tab washer if your spindle/hub may use a flat washer and cotter key). Normal shop supplies include rags, cleaning solvents, marine grade grease and a trash container.

Tools required: A well equipped mechanics tool set plus the following tools for simplified and quicker replacement:

- | | |
|---------------------------------|--------------------------------|
| 1/2" impact wrench | Three jack stands |
| 13/16" impact socket | Brake Spring Pliers |
| Hydraulic floor jack | Brake hold down spring remover |
| Spoon-type brake adjusting tool | Spray type brake cleaner |
| Safety goggles | Protective dust mask |
| 1-1/2" Socket | |

Position the trailer on a stable and LEVEL working surface. If possible, leave the tow vehicle hooked to the trailer in order to limit movement as well as keeping the front end supported and level. If the trailer is not supported on the tow vehicle, it MUST be blocked directly to the ground at the frame/tongue junction.

UNDER NO CIRCUMSTANCES IS THE TRAILER TO BE SUPPORTED BY THE TONGUE JACK WHILE BEING RAISED AT THE WHEELS! Block the wheels opposite the side being worked on both front and rear so that the trailer cannot roll. Do one brake at a time, so the other brake can be used as a guide.

1. Using an adequate capacity floor or scissors jack, raise the side of the trailer. NOTE: Check under frames for brake lines BEFORE lifting. DO NOT position jack in areas that may damage brake lines, etc.
2. **A.** Tandem and tri-axle trailers should be jacked on the frame between the wheels, or directly under the axle within 8" of the backside of the tire. **B.** Single axle trailers can be lifted on the frame just behind the axle or directly under the axle within 8" of the backside of the tire (if lifting at the axle).

CAUTION- always support the trailer with adequate capacity support stands. DO NOT rely on the jack as the only means of support.

3. Remove the tire and wheel from the hub to be serviced using a 13/16" socket.

4. Remove the hub dust cap by gently tapping it to the side as the brake drum is rotated by hand (walk it off). Using a rag, remove excess grease to expose the castle nut and retainer. Bend open the retainer tab on the locking tab washer, or remove the cotter pin (depending on how the trailer is equipped). Loosen the castle nut and gently remove drum by pulling and rotating. NOTE: The outer (front) tapered roller bearing and thrust washer should be held in place so that they do not fall on the ground and become contaminated. It may be necessary on older trailers to remove the rear most rubber plug from the rear of the backing plate and back off the star adjuster wheel. This will be necessary if the hub and drum will not come off easily.

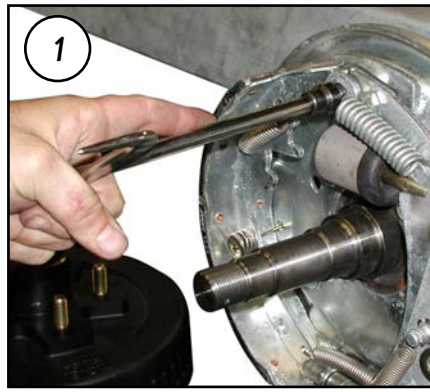


5. Inspect the drum for scoring. Resurface or replace the drum if necessary. Before cleaning and disassembly, it is important to inspect for seal leaks. Look for signs of leakage around the axle seal, wheel seal and wheel cylinder. If leakage is present, replacement or repair of the components is necessary before replacing your brake shoes. After inspecting, clean the backing plate areas and old shoes with a spray brake cleaner. This will remove the pad dust and fibers from the brake assembly. Replace parts as necessary.

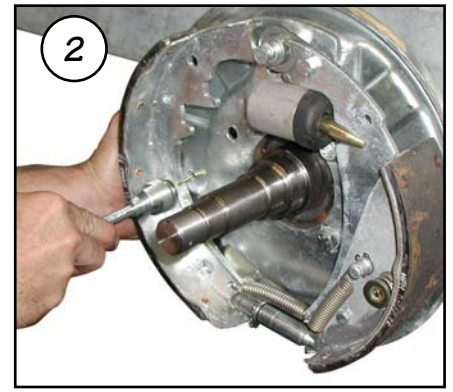
Brake Shoe Replacement (Removal)

Note: Be certain there is no force pushing on the actuator (ball/hitch) such as the tow vehicle being parked on a slight grade, etc. Even slight pressure in the hydraulic lines could cause the wheel cylinder pistons to be forced out when the shoes are disassembled. If this occurs the brake system must be bled and purged of air.

1. Using the spring removal tool, remove the two brake shoe return springs and the flat washer underneath from the anchor pin located at 12 o'clock on the backing plate. Take note that the primary shoe (front) return spring is on top (outside, first off, last on).



2. Using the proper tool, remove the secondary (rear) shoe-retaining washer, retaining spring and keeper pin.



3. Take note of the position of the star adjuster and spanner spring (located at 6 o'clock). Lift the top of the secondary shoe off the anchor pin and pull it out slightly and pivot it forward so that the star adjuster and spanner spring can be and set aside.

4. Remove the primary (front) shoe retaining spring, keeper pin & washers and carefully pivot the shoe upward (counter clockwise) and away from the wheel cylinder push rod. (see #3).

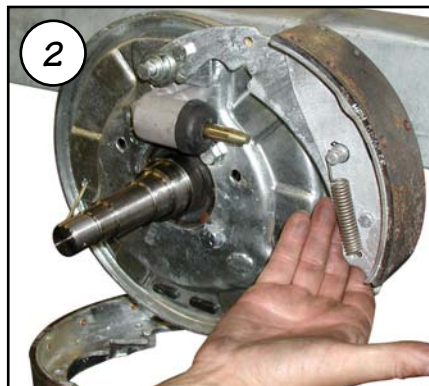
5. Inspect and clean the backing plate and spindle as needed.



(Reassembly)

1. We suggest you replace the springs (included) whenever doing a brake job, as springs lose their tension from use and brake heat build up. Disassemble, clean and lubricate the brake adjuster.

2. Install the primary (forward) shoe assembly (left hand and right hand are different, shoes should be marked RH and LH). Holding the shoe in a horizontal attitude, place the travel limiting link (attached to the primary shoe assembly) around the anchor pin (12 O'clock). Pivot the shoe downward being careful to engage the wheel cylinder push rod. Install the keeper pin, retaining spring and washers.

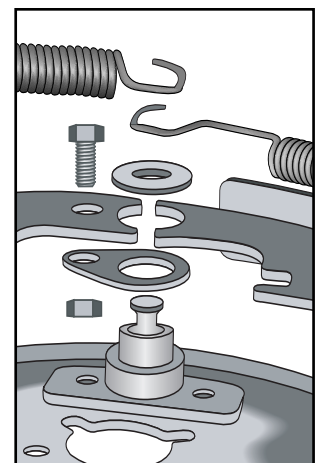
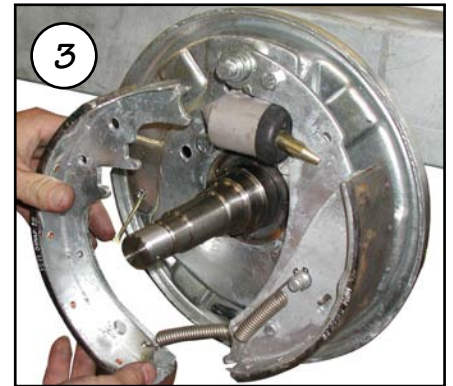


Note: It may be necessary to temporarily remove the free backing return spring.

3. Install the spanner spring at the bottom of the primary shoe. Rotate the star adjuster by hand until all the way closed. Make certain it turns freely. Hold the secondary (rear) shoe and install the other end of the spanner spring at its base. Pivot the top of the secondary shoe toward the front of the trailer and install the star adjuster making certain the star wheel is toward the rear of the trailer.

4. Pivot the secondary shoe to its normal operating position and seat the upper end against the anchor pin (12 O'clock). Install the keeper pin, retaining spring and washers.

5. Place the flat washer over the link anchor pin and install the secondary return spring with the installation tool.



6. Install the new primary return spring with the installation tool.

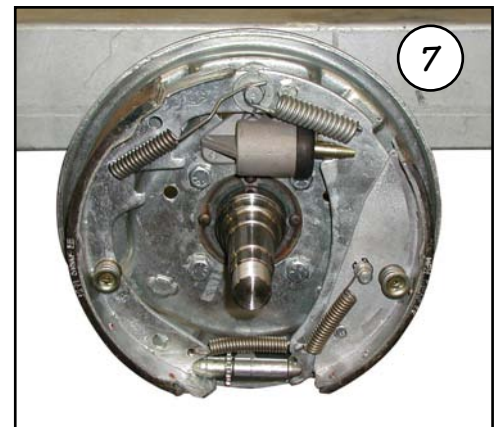
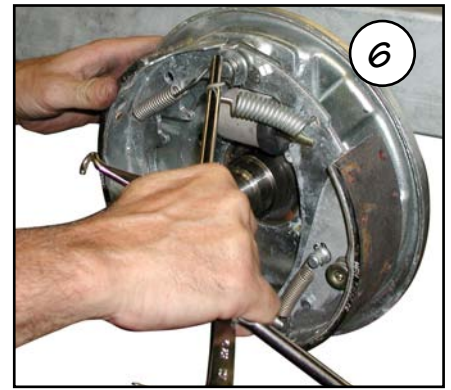
7. Inspect the assembly to be certain all components are in place. Both shoes should be firmly seated against the anchor pin, star adjuster ends seated against the shoes, retaining springs and keepers properly installed, etc.

8. Remove the rubber dust plug from the rearmost access hole in the backing plate. Insert a brake adjusting spoon or flat screw driver in the access hole and TAKE NOTE which direction the spoon needs to be moved in order to open the star wheel. It is advisable to try the star wheel in both directions so that you are familiar with the adjustments prior to installing the hub and drum.

9. Install brake drum on the spindle and be certain the grease seal is seated (push hub in place firmly). Install the outer bearing and thrust washer nut locking tab washer. If applicable, install the castle nut and tighten to approximately 35 ft. lbs. to seat the bearings while rotating the hub in the direction of forward travel. Important: Back off the castle nut and then retighten it to 'HAND TIGHT ONLY'. Bend tab on locking tab washer or install cotter pin if applicable. Bend one of the retainer tabs into the adjacent castle nut openings OR install a new cotter pin (if so equipped).

A) Install the dust cap by tapping it squarely with a wooden block and hammer.

B) Install the tire and wheel assembly and tighten the lug nuts to 85-90 foot pounds of torque.



Brake adjustment

1. With trailer wheel off the ground and tire mounted. Remove the rubber access hole plugs from the rear of the brake backing plate.

2. Using a brake spoon or flat head screwdriver, tighten the star adjuster while rotating the wheel in the forward direction. NOTE: Always spin wheel in the forward direction as if the trailer was traveling forward on the road. Tighten the star adjuster until the wheel reaches a point where the brake shoes start to engage.

3. Loosen the star adjuster one click at a time while turning the wheel in a forward rotation. Continue adjusting one click at a time until the wheel rotates with little effort.

4. Replace the rubber access hole plugs.

5. Repeat this procedure for all braking wheels.



Be certain that the trailer is properly supported with adequate capacity support stands and that the opposite tires are blocked to prevent all movement.