

# **TIE DOWN ENGINEERING**

## **Disc Brakes for Trailers**

### **Installation Instructions**

**for 81101(10") & 81104(12") Bulk: 46231(10") & 46232(12")**  
**(81101 & 46231 Fits all wheels with a center hole of 1.98"**  
**or larger, may not fit all 13" wheels.)**

Instruction sheet #15380 (revised 3-19-2004)



*It is highly recommended to use a reverse lock-out solenoid.*  
*(#81103 or #11250)*

*NOTE: Flexible brake lines are required - Part #81099 or DOT approved brake lines.*

### **STAINLESS STEEL DISC BRAKE RETROFIT INSTALLATION INSTRUCTIONS** **( MODEL #'s 81101, 81104, 46231, 46232)**

*Read and understand all mounting instructions before installing your brakes. Unlike drum brakes, disc brakes generate full braking power in reverse. If your actuator does not have a reverse lock out lever or switch, a reverse lockout solenoid, part number 81103 or 11245 (bulk) should be installed at the actuator before installation of disc brakes. A "DISC BRAKE READY" ACTUATOR IS REQUIRED WITH DISC BRAKES.*

#### **INSTALLATION**

1. Remove tire/wheel from hub. Disconnect brake line from drum brake housing.
2. Remove drum brake hub and backing plate from spindle. Carefully clean and inspect spindle for wear. Contact the trailer manufacturer if excessive wear is found on spindle. If the spindle does have minor rust spots, these can be removed using a 600 grit wet/dry sandpaper. Be careful not to create any flat spots. Coat the spindle with a thin layer of grease. Each disc brake hub and rotor comes pre-assembled with bearings, seals and Mystic JT6 lithium based grease.
3. Attach backing plate, slide caliper over rotor. Install both hub and caliper/over pins over spindle at the same time.
4. Install hub and rotor assembly onto axle spindle. Slide your new hub onto the spindle. Next, place the washer on the spindle, followed by the castle nut. Keep tightening the nut, while turning the hub with your other hand. Stop tightening when you feel friction on the hub. Now back the nut off about 1/8 to 1/4 of a turn to align the spindle hole with the slots in the castle nut. The hub should turn freely without wobbling. Now insert the cotter pin through the hole in the spindle and castle nut slot. Bend the ends back against the nut. Fill the dust cap with grease and tap into place.

5. Reattach the brake line to the inverted flare fitting in the center of the caliper assembly. Place caliper assembly onto sliding caliper pins that have been pre-installed on the off set mounting bracket. Make sure caliper slides freely back and forth on the pins before mounting to axle brake flange. Place caliper and bracket assembly into place with the rotor situated between the brake pads. The mounting bracket should now be located on the outside of the axle brake flange.

6. Attach caliper and mounting bracket to the outside (wheel side) of the axle brake flange using 4 ea. 7/16" X 1-1/2", GRADE 5 hex bolts with lock nuts. Tighten to 45 ft. lbs. For Model 81104-12" disc brakes, mount caliper on outside of brake flange, with shim plate located between flange and mounting bracket, using 3 ea. 3/8" x 2" grade 5 hex bolts with lock nuts.

7. Repeat steps 1-5 for second wheel.

**If you currently have a drum brake system, we STRONGLY suggest replacing your actuator with a "disc brake ready" model. 2nd choice, is to have a qualified mechanic remove the check valve from the master cylinder and then mark the actuator with permanent ink that the change has been made.**

***WARNING: IF "DISC BRAKE READY" ACTUATOR IS NOT USED, OR THE CHECK VALVE HAS NOT BEEN REMOVED, IT WILL CAUSE THE DISC BRAKES TO DRAG OR OVERHEAT CAUSING PREMATURE PAD WEAR, OVER HEATING AND FAILURE, FOR BEST RESULT USE A DISC BRAKE ACTUATOR.***

***NOTE: If you already have or are replacing disc brakes, skip step #8***

8. Using a thread sealant, screw reverse lockout solenoid directly into the master cylinder, screw pipe fitting previously removed from the master cylinder into the female end of the solenoid. If solenoid will not fit directly into the master cylinder, it may be spliced into the brake line at any point that is convenient for mounting. Make sure thread sealant does not obstruct fluid flow. If you are using a Dico model 10 or Model 20 a special fitting may be required to connect the solenoid to the actuator housing.

**\*Damage to your trailer or braking system can occur if a reverse lockout solenoid is not installed with your system. Remember - unlike drum brakes, disc brakes work at 100% efficiency in reverse, the reverse pressure must be locked out of the system.**

9. Bleed the brakes according to manufacturers' instructions provided with the actuator. There are two bleeder valves per caliper, each one must be bled independently. When bleeding the disc brakes, always start with the brake "closest" to the actuator. If Disc brakes are mounted at an angle, bleed lower fitting first.

**Recheck all mounting hardware and brake lines after first hour of use.**

**Do not attempt to adjust brakes. The caliper housing is attached to stainless steel mounting bolts and is self-adjusting.**

**Do not turn rotors. Contact service center for replacement.**

10. Tire/wheel assembly can now be bolted onto the hub. Tighten each bolt or nut lightly at first to bring wheel evenly against the new hub. Tighten each nut or bolt to manufacturer's specifications.

11. Check wheel and brake action for proper rotation and stopping before using trailer.

12. Inspect brake pads, rotors, hubs, mounting hardware for proper operation every 1000 miles of use.

## Reverse lockout solenoid wiring instructions

### VEHICLE WIRING

1. Disconnect trailer hitch and any wiring connectors from the vehicle.
2. Connect a 14 gauge wire to the backup (reverse) light wire of the vehicle. This wire should be of sufficient length to attach to the existing vehicle/trailer wire receptacle. The end of this wire will require a female end that will match the solenoid male connector wire.
3. For ease of use, tape or band the end of the reverse light wire to the vehicle's trailer electrical connector.
4. Engage parking brake. With engine off and ignition on, check for proper solenoid operation by placing gear shift in reverse. Backup lights should turn on and an audible click should be heard in the solenoid. Make sure backup lights do not engage in any other gear position.

### PREVENTATIVE MAINTENANCE

Check pads frequently for wear.  
Check brake lines frequently for leaks.  
Rinse brakes off with fresh water after submersion in salt water.  
Routinely lubricate wheel hub bearings.  
Routinely lubricate sliding caliper bolts with a high temp. ant-sieze lubricant.

### To change caliper pads :

1. Remove hub and caliper.
2. Remove the 4 caliper housing bolts from the caliper housing and set aside.
3. Carefully remove the stainless steel screws from the old pads.
4. Apply lock tite solution to pad screws, and install brake pads to both caliper housings. Hang the opposite pad from the caliper bolts with the mounting plate toward the pistons.
5. Apply lock tite (Red) solution to each of the four caliper housing bolts and install. Tighten each bolt to 45 ft. lbs.
6. Re-attach caliper to mounting bracket and bracket to axle mounting flange. Tighten to 45 ft. lbs.
7. Check hub and rotor for proper rotation and alignment.

### LIMITED WARRANTY

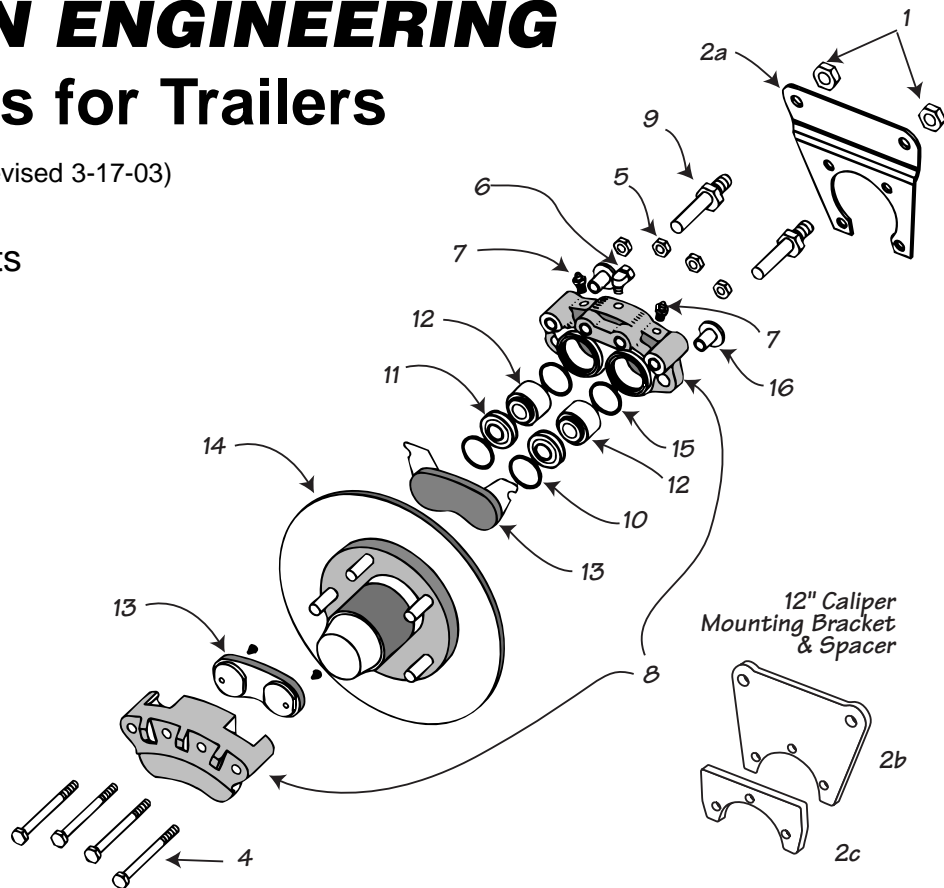
The use of any of our products for other than their intended use or alterations and modifications made to our products without specific written approval, may reduce their capacities and void any warranty covering that product. Tie Down Engineering warrants its products to be free from defects in materials and workmanship under normal service and use for a period of 12 months from date of purchase. Our obligation under this warranty is the replacement of such defective parts, if any and does not cover consequential damage to property or persons. This warranty covers normal use and applications and does not cover normal wear parts, corrosion, damage or defect which results from alteration, accident, neglect, improper installation or improper maintenance. This warranty may give you specific legal rights and you may also have other rights which may vary from state to state.

# TIE DOWN ENGINEERING

## Disc Brakes for Trailers

Instruction sheet #15380 (revised 3-17-03)

Contact your dealer  
for replacement parts



#	DESCRIPTION	Part #	Qty. Per
•	Reverse Lockout Solenoid, one per brake actuator	81103/11250	n/a
1	1/2" SS Flange Nuts	10612	2
2a	Caliper Mounting Bracket, 10 inch	44582	1
2b	Caliper Mounting Bracket, 12 inch	44589	1
2c	Caliper Mounting Shim Bracket, 12 inch	44588	1
4	3/8" x 3-1/4" SS bolts	10933	4
5	3/8" SS Hex Nuts	10621	4
6	Inverted Flare Brake Line Fitting	11242	1
7	Brass Bleeder Valve	11246	2
8	Caliper Assembly, w/pads	46243	1
9	1/2" SS Caliper Mounting Bolts	12110	2
10	Piston Boot Retaining Ring	10609	2
11	Rubber Boot	17450	2
12	Pistons	48715	2
13	Brake Pad Set, 4 each, carded, two wheels, manufactured after 8/98	81100	-
13	Brake Pad Set, 4 each, carded, two wheels, manufactured before 8/98	81102	-
14	Hub & SS Rotor Assembly, w/bearings, 10 inch	46227-1	1
14	Hub & SS Rotor Assembly, w/bearings, 12 inch	46228-1	1
15	Piston Seal	11228	2
16	Bronze Bushing	17433	2