

## Differential Assembly Instructions

Section One: 260, 260XP, 260XPI, and 320 Automatic Scrubbers

Section Two: 26 and 32 Inch Automatic Scrubbers with Brakes

## Section One

(Refer to Diagram 1)

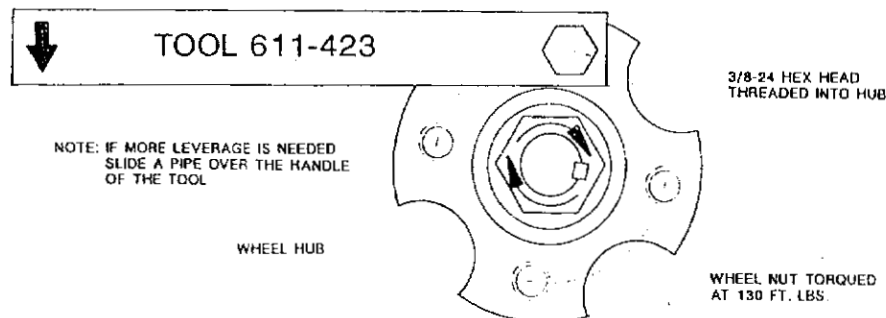
To properly rebuild a differential assembly on the 260, 260XP, 260XPI, and 320 Automatic Scrubbers using the four (4) bolt clamping collar, proceed with the following steps:

- 1) With the old differential components completely removed from the drive carriage weldment, slip the differential through the chain assembly. Slide both inner bearings (with their locking collars) and flanges on each axle shaft, with the bearing's locking side facing outwards. Mount the (2) sets of flanges with the (2) inner bearings to the carriage weldment, with the appropriate hardware. NOTE: At this point, finger tighten only the mounting hardware for the flanges.
- 2) Install both new style (4) bolt clamping collars (Part No. 611-409) on each axle shaft with the inside ridge facing the axle ends. Make sure the ridge inside each half of the clamping collar is properly seated in the groove in each axle shaft. Hand tighten the (4) socket head screws to both clamping collars, starting with the (2) screws on to the ridge side of the collar. Keep an equal amount of space between each side of the (2) halves of the clamping collar. At no point should the (2) halves of the collar touch. With the (4) socket head screws snug, the collar halves equally spaced, and each collar's ridge properly seated in the axle groove, now completely tighten down the (4) socket head screws to each clamping collar (Refer to diagram 1).
- 3) After both (4) bolt clamping collars have been installed, slide (1) large spacer (Part No. 611-410) over each axle shaft, up against the clamping collar.
- 4) The (2) outside bearings and flanges may now be installed. NOTE: DO NOT USE LOCKING COLLARS ON THE (2) OUTSIDE BEARINGS The extended portion of the bearing's inner race, where the bearing's locking collar would normally mount, goes up against the spacer. The mounting hardware for the (2) sets of flanges that mount the (2) outside bearings can be completely tightened down.
- 5) Make sure both axle shafts on the differential assembly are pushed inward towards the gearbox, and center the differential sprocket within the slot cut out of the carriage weldment. NOTE: It is normal for the differential's axle shafts to have in and out side play in the gearbox. In step (5) have both shafts pushed into the gearbox (Not Pulled out).

- 6) Install the key for the wheel in the axle's keyway. After the key has been installed, coat the axle ends with an anti-sieze compound only where the wheel or hub will be placed. NOTE: Installation of an iron wheel is different than that of an air or foam filled tire with a hub. Please note which is to be used and follow the appropriate step:
- A) WHEN INSTALLING AN IRON WHEEL: first note whether or not your wheels have holes in the rim. If there are none, you must drill a 1/2" hole 1 3/4" from the edge of the wheel's axle hole. This will provide a place to put a jam bar, which will enable you to torque the wheel nut to 130 ft. lbs. Once a hole is in the wheel, place it on the axle over the key. Place a jam bar in the hole. This will keep the wheel from turning when tightening the nut. Be sure the jam bar is long enough to securely engage against the carriage weldment. The nut should now be placed on the axle and drawn up to 130 ft. lbs.

WARNING: USE A 1/2" JAM BAR AND WEAR SAFETY GOGGLES WHEN TIGHTENING WHEELS DOWN.

- B) WHEN INSTALLING AN AIR OR FOAM FILLED TIRE: slide the hub (without the tire) over the key onto the axle. Using one of 3/8" bolts for the wheels, mount the tool provided in the kit to the hub (see figure below). This will allow you to keep the axle from turning while tightening the nut. The nut may now be placed on the axle and drawn up to 130 ft. lbs. NOTE: If more leverage is necessary to hold the tool, slide a pipe over the tool handle to obtain the 130 ft. lbs. Once the nut has been properly torqued, the tool may be removed. After removing the tool, place the wheel on the hub and tighten the (4) 3/8" bolts.



- 7) When both wheels have been installed, the bolts for inside bearing flanges may be tightened. NOTE: To insure proper alignment, the wheels should be turned to allow the inner bearing flanges to properly seat on the carriage weldment prior to tightening.
- 8) The two locking collars for the inside bearings may now be tightened down, using a hammer and a drift pin. IMPORTANT: It is only necessary to stake the bearing collar to tighten it to the shaft. Hitting the collar with a heavy blow may crack the bearing's inner race. Always tighten the bearings in the same direction as the machine's forward travel. After tightening the collars, tighten both set screws.
- 9) Tighten the setscrews on the wheels on both sides.

Section Two  
(Refer to Diagram 2)

To properly rebuild a differential assembly on the 26" and 32" Automatic Scrubbers with brakes using the four (4) bolt clamping collar, proceed with the following steps:

- 1) With the old differential components completely removed from the drive carriage weldment, slip the differential through the chain assembly. Slide both inner bearings (with their locking collars) and flanges on each axle shaft, with the bearing's locking side facing outwards. Mount the (2) sets of flanges with the (2) inner bearings to the carriage weldment, with the appropriate hardware. NOTE: At this point, finger tighten only the mounting hardware for the flanges.
- 2) Install both new style (4) bolt clamping collars (Part No. 611-409) on each axle shaft with the inside ridge facing the inside bearings. Make sure the ridge inside each half of the clamping collar is properly seated in the groove in each axle shaft. Hand tighten the (4) socket head screws to both clamping collars, starting with the (2) screws on to the ridge side of the collar. Keep an equal amount of space between each side of the (2) halves of the clamping collar. At no point should the (2) halves of the collar touch. With the (4) socket head screws snug, the collar halves equally spaced, and each collar's ridge properly seated in the axle groove, now completely tighten down the (4) socket head screws to each clamping collar .
- 3) After both (4) bolt clamping collars have been installed, slide both outer bearings (with the locking collars) over the shaft. Make sure the locking collars are facing the inside. The locking collars should touch the (4) bolt clamping collar. NOTE:USE LOCKING COLLARS, BUT DO NOT TIGHTEN THE LOCKING COLLARS OR SET SCREWS ON THE OUTER BEARINGS.
- 4) There shouldn't be any space between the outer bearing locking collar and the clamping collar. If there is space, you need to add shims. If there is a space between the outer bearing flanges and the frame before you bolt the flanges down, then there are too many shims. If you have any space, do not tighten the flanges. This will cause bearing side load and premature failure. You must first remove excess shims, then bolt down.
- 5) Make sure both axle shafts on the differential assembly are pushed inward towards the gearbox, and center the differential sprocket within the slot cut out of the carriage weldment. NOTE: It is normal for the differential's axle shafts to have in and out side play in the gearbox. In step (5) have both shafts pushed into the gearbox (Not Pulled out).

NOTE: IF WHEEL DOES NOT HAVE A HOLE IT  
WILL BE NECESSARY TO EITHER DRILL A 1/2"  
HOLE 2" FROM CENTER OR USE C-CLAMP TO  
RETAIN THE WHEEL WHILE TIGHTENING THE  
NUT TO 130 FT. LBS.

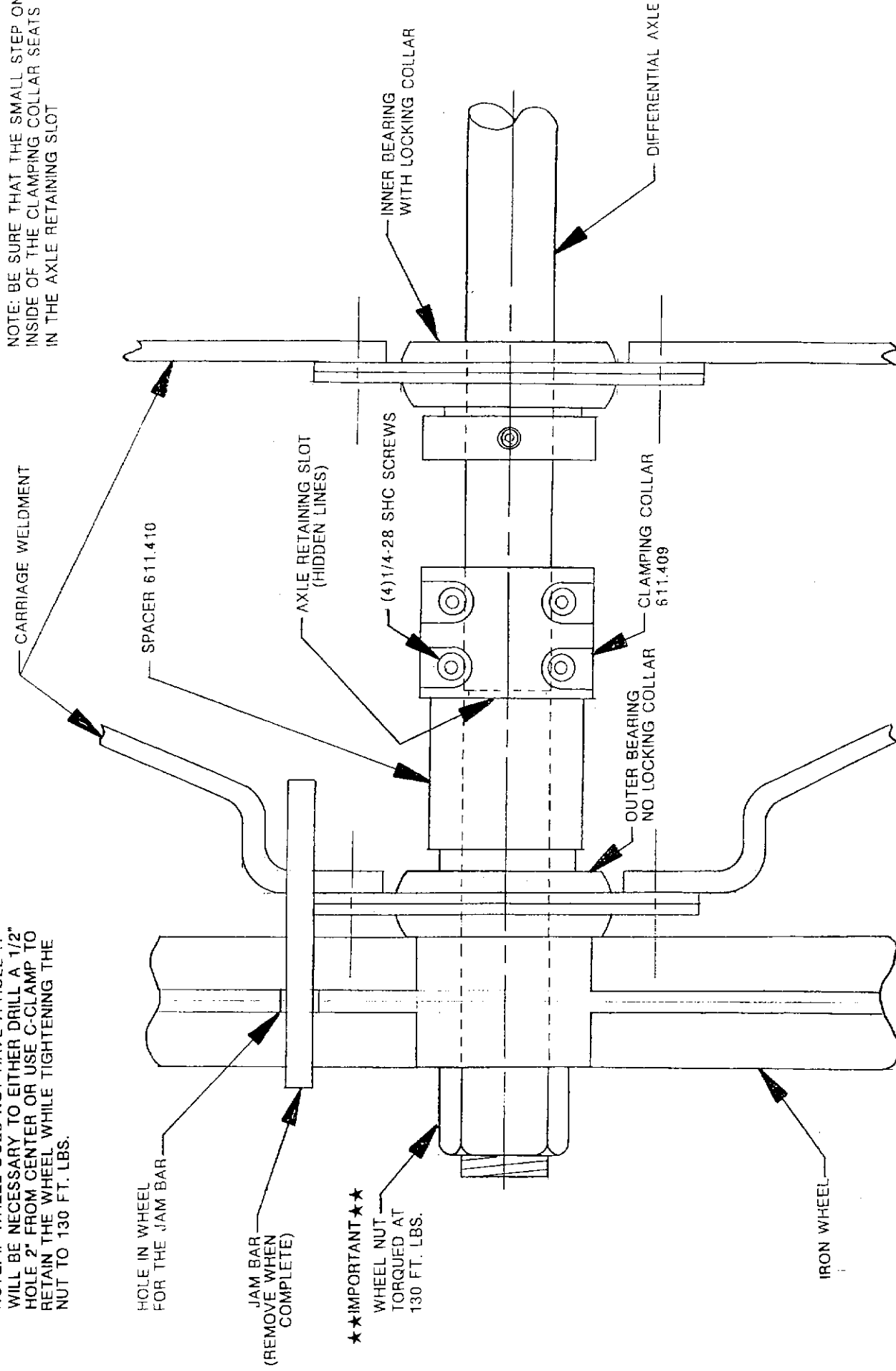
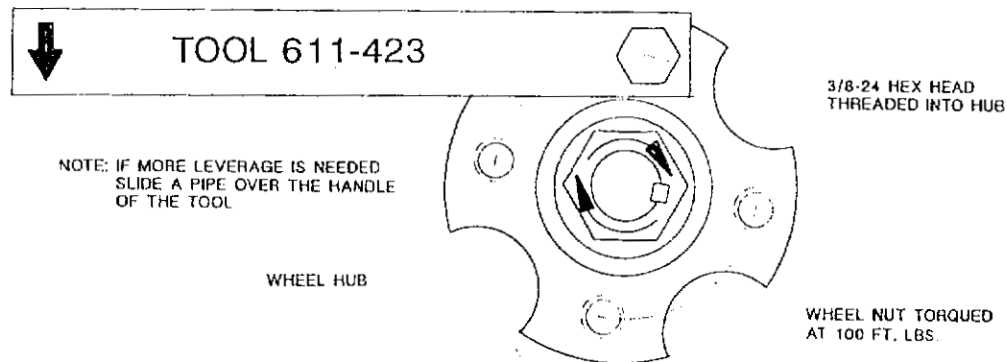


DIAGRAM FOR THE ASSEMBLY OF ALL  
260'S AND THE STANDARD 320 DIFFERENTIALS  
FIGURE 1

- 6) Install the key for the wheel in the axle's keyway. After the key has been installed, coat the axle ends with an anti-sieze compound only where the wheel or hub will be placed. Slide the hub (without the tire) over the key onto the axle. Using one of 3/8" bolts for the wheels, mount the tool provided in the kit to the hub (see figure below). This will allow you to keep the axle from turning while tightening the nut. The nut may now be placed on the axle and drawn up to 100 ft. lbs. NOTE: If more leverage is necessary to hold the tool, slide a pipe over the tool handle to obtain the 100 ft. lbs. Once the nut has been properly torqued, the tool may be removed. After removing the tool, place the wheel on the hub and tighten the (4) 3/8" bolts.



- 7) When both wheels have been installed, the bolts for inside bearing flanges may be tightened. NOTE: To insure proper alignment, the wheels should be turned to allow the inner bearing flanges to properly seat on the carriage weldment prior to tightening.
- 8) The two locking collars, for the inside bearings only, may now be tightened down using a hammer and a drift pin. IMPORTANT: It is only necessary to stake the bearing collar to tighten it to the shaft. Hitting the collar with a heavy blow may crack the bearing's inner race. Always tighten the bearing collars in the same direction as the machine's forward travel. After tightening the collars, tighten both set screws.
- 9) Tighten the setscrews on the wheels on both sides.

NOTE: COLLAR SHOULD BE INSTALLED THIS WAY ONLY IF THE MACHINE HAS BRAKES. IF THE BRAKES ARE INOPERABLE, THEY SHOULD BE REMOVED SO THE COLLAR MAY BE INSTALLED AS SHOWN IN 'FIGURE 1'

NOTE: BE SURE THAT THE SMALL STEP ON THE INSIDE OF THE CLAMPING COLLAR SEATS PROPERLY IN THE AXLE RETAINING SLOT.

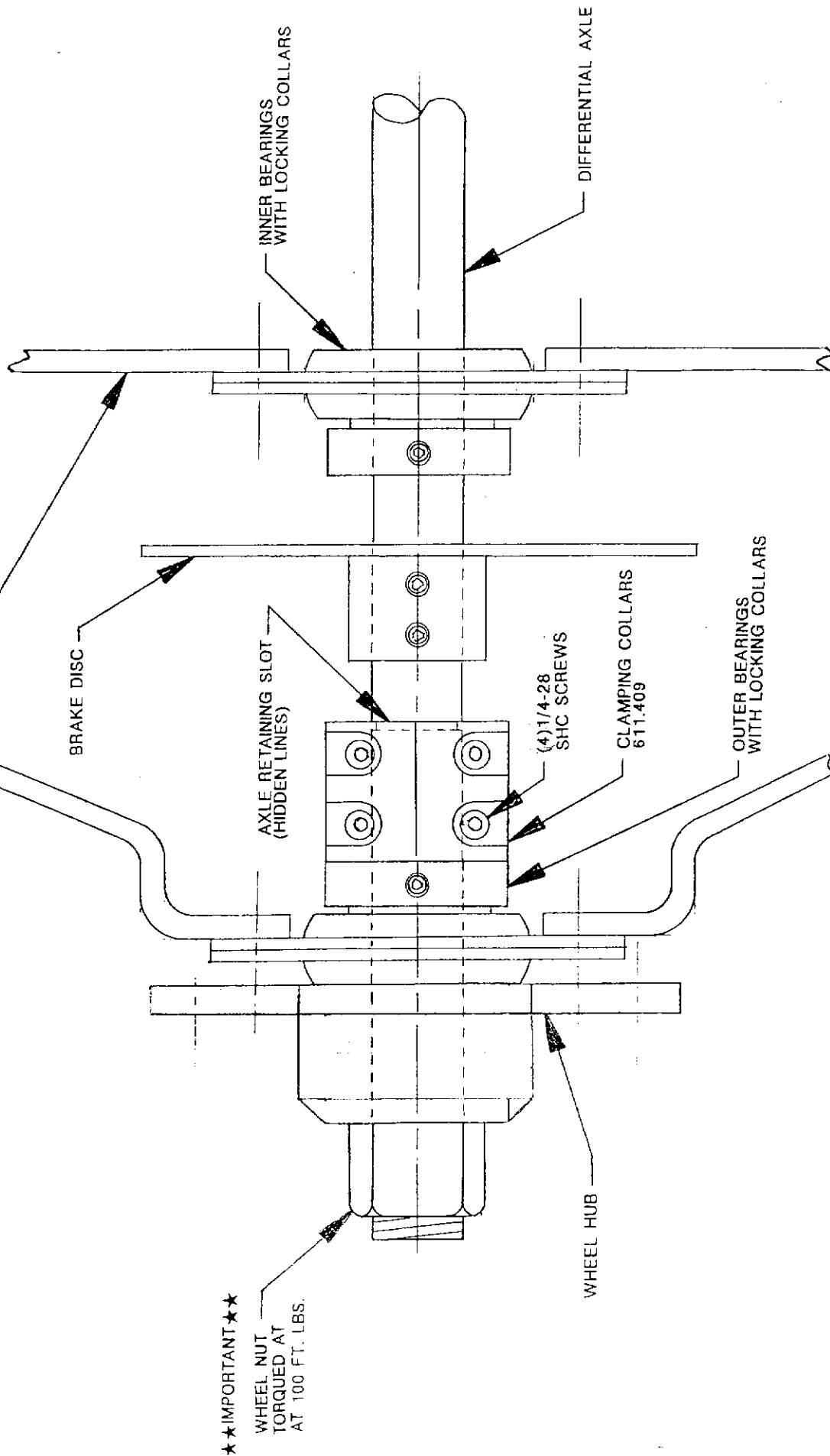


DIAGRAM FOR THE ASSEMBLY OF  
26" AND 32" DIFFERENTIALS WITH BRAKES  
FIGURE 2