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This Technical Service Bulletin describes service procedures for Wheel Hub Removal and Installation on 1999-2004 Ford Super Duty F250, F350, F450, and F550 4x4 trucks. See TSB4610 for Super Duty Axle Shaft Seal and Universal Joint service, TSB4591 for Super Duty Ball Joint Service, and TSB4643 for Super Duty Inner Axle Seal Replacement (order from 4x4repairmanuals.com). Special front axle service tools for your Ford Super Duty can be found at www.4x4tools.com. (See tool note on page 3.)

1999-2004 4x4 Ford Super Duty Front Hub Service

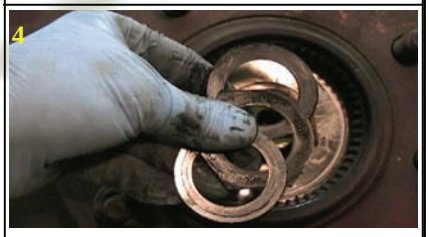
Disassembly

1. **ALWAYS WEAR EYE PROTECTION!** (see safety note page 3)
2. Raise and safely support vehicle.
3. Remove front tire and wheel assemblies.
4. Remove brake calipers and wire to frame. DO NOT LET CALIPERS HANG FROM HOSES!
5. Remove brake pads and brake caliper supports *(figure 1).*
6. Dual rear wheel vehicles: Remove hub extenders.
7. Remove brake rotor (should slip off).
8. Compress and remove snap ring retaining lockout hub in wheel hub.
9. Remove lockout hub. Once the snap ring is removed, you SHOULD be able to work the lockout hub out of the wheel hub. If the lockout hub will not slide out, use T1124 Hub Remover and a slide hammer to pull the lockout hub out of the wheel hub (*figure 2*).
10. Remove snap ring from axle shaft *(figure 3).*
11. Remove three thrust washers from axle shaft *(figure 4).*
12. On anti-lock brake equipped models, disconnect the connector by the frame and disengage the harness clips.
13. Remove 4 locknuts from inside knuckle that retain the wheel hub assembly to the knuckle (figure 5).
14. Pull the hub out of the knuckle. The hub is designed to be a slip fit and it should be easily removed. If the hub will not separate from the knuckle, you may need to use a puller *(figure 6).* The brake shield should come off with the hub.
15. *Optional:* Remove large plastic axle shaft thrust washer.
16. Clean the inside and outside of the knuckle.
17. Clean the exposed part of the axle shaft.
18. Clean or replace the small axle shaft support needle bearing pressed in the back of the wheel hub. *Tech Tip: The wheel bearings are of unitized construction. They are not*

Removing Caliper Support & Pads

Removing a stuck Stock Lockout Hub with T1124 Puller and QT9302 Slide Hammer

Axle Shaft Snap Ring Removal



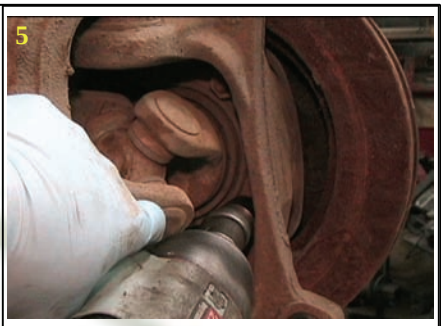
Remove 3 Thrust Washers from Outer Axle Shaft

serviceable even though they have what looks like an adjustment nut.

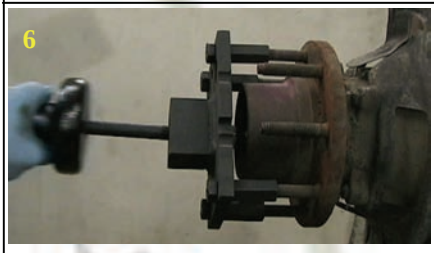
19. Remove and discard the black o-rings from the lockout hub assemblies and the large (usually yellow) o-rings from the wheel hub assemblies *(figure 7).* Replacement of o-rings is necessary to prevent water infiltration or vacuum loss (on models with vacuum actuated hubs).
20. If the wheel hub is being replaced with a new unit that does not have the four hub studs installed, put two nuts on a stud and lock them together. Remove and clean the studs. Apply 242 Threadlocker to the stud threads and thread them into the new hub. Ford does not list a torque specification for the stud to hub, so it seems reasonable to use the same 133 lb-ft torque specification as listed for the hub to knuckle nuts in the service section of 1999-2004 Ford Factory Workshop Manuals.

Reassembly

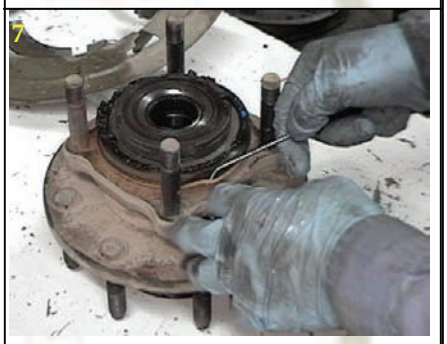
1. Liberally coat the outer axle shaft and large plastic thrust washer with clean grease. Slide the thrust washer onto the axle shaft with the chamfer against the shaft.
2. Lubricate the small axle shaft support needle bearing inside the hub with clean grease (figure 8).
3. Install new o-rings on the lockout hubs and wheel hubs.
4. Apply a film of grease meeting Ford specification ESA-M1C198-A to the wheel hub o-ring and the outside diameter of the hub where it will contact the knuckle.
5. Assemble the brake shield to the hub and install the assembly into the knuckle. Seat the hub in the knuckle with a dead-blow hammer *(figure 9).*
6. Apply 242 Threadlocker to the hub retaining nuts. Install the four nuts and tighten in a criss-cross pattern to 133 lb/ft (180 Nm). *(Ford Factory Workshop Manuals through 2004 have a discrepancy in torque values for the hub to knuckle nuts. In the service section, the torque value given is 133 lb/ft (180 Nm). The torque tables specify only 55 lb/ft (74 Nm) for front hub and bearing-to-knuckle nuts. Ford corrected the table specification in the 2005 manual.)*
7. Lubricate the three axle shaft thrust washers with clean grease and install them on the axle shaft in this order: metal, plastic, metal. Install the axle shaft snap ring.
8. Apply a film of clean grease the lockout hub splines and install the lockout hub assemblies.
9. Apply a thin coating of anti-seize compound to the hub to brake rotor mating surface. Make sure you do not get any anti-seize on the wheel studs or rotor friction surfaces.



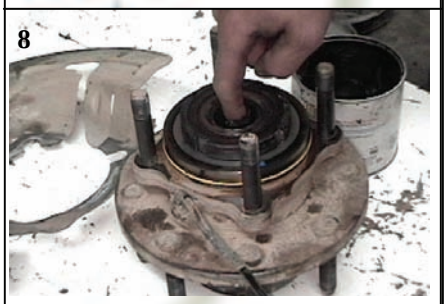
Removing Hub Retaining Nuts



Pulling a stuck wheel hub with T1039A Hub Puller, T1146 Adapter Set, and T9303 10 lb. Slide Hammer



Removing Hub O-Ring



Greasing Axle Support Bearing

Seating Hub in Knuckle

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10. Install the rotor to the hub *(figure 10)*.
11. On ABS equipped models, apply some dielectric grease to the connectors; then connect the wire harness and attach the retaining clips *(figure 11)*.
12. Apply 242 Threadlocker to the caliper support bolts. Install the caliper supports. Torque the bolts to 166 lb/ft (225 Nm) for F250, F350 models and 295 lb/ft (400 Nm) for F450, F550, and motorhome chassis.
13. Lubricate the sliding brake caliper bushings with Disc Brake Lube.
14. Install the brake pads, calipers, and anti-rattle hardware. Apply 242 Threadlocker to the caliper bolt threads. Install and torque the bolts to 42 lb/ft (56 Nm).
15. On dual wheel models, install the hub extensions. Torque the nuts to 130 lb/ft (176 Nm) in a criss-cross pattern.
16. Install tire & wheel assemblies. Torque nuts to the specification listed in your owners manual.
17. Check brake operation and road test.

1999-2004 Ford Super Duty Front Hub Torque Specifications			
Fastener	**Wrench Size**	**Torque (ft/lb)**	**Torque (Nm)**
Hub to Knuckle Bolts	21mm	133	180
Brake Caliper Support (F250, F350)	21mm	166	225
Brake Caliper Support (F350, F450)		295	400
Brake Caliper		42	56

*T Prefix Super Duty Axle Service Tools Are Available From: the **www.4x4tools.com** *Ford Super Duty Tools* Web Page

*Front Axle Parts and QT Prefix Super Duty Service Tools Are Available From: **www.quad4x4.com**

Brake Rotor Installation

Connecting ABS Wire

QU40143-2
Axle Shaft Bearing Kit

This Tech Service Bulletin is intended as an aide to performing a specific service procedure. It is not a replacement for vehicle manufactures or other service manuals.

Working on vehicles is dangerous. It has certain inherent risks, including serious bodily injury and death. This Tech Service Bulletin is not a substitute for common sense, experience and careful preparation. You are responsible for taking appropriate safety precautions before and during working on your vehicle or vehicle components. If you do not already know how to safely work on your vehicle, please have the work done by a professional automotive technician. !!!!!!!!!!!!!!!!!!!!!!!!!!!!