



Get Your **BEARINGS**

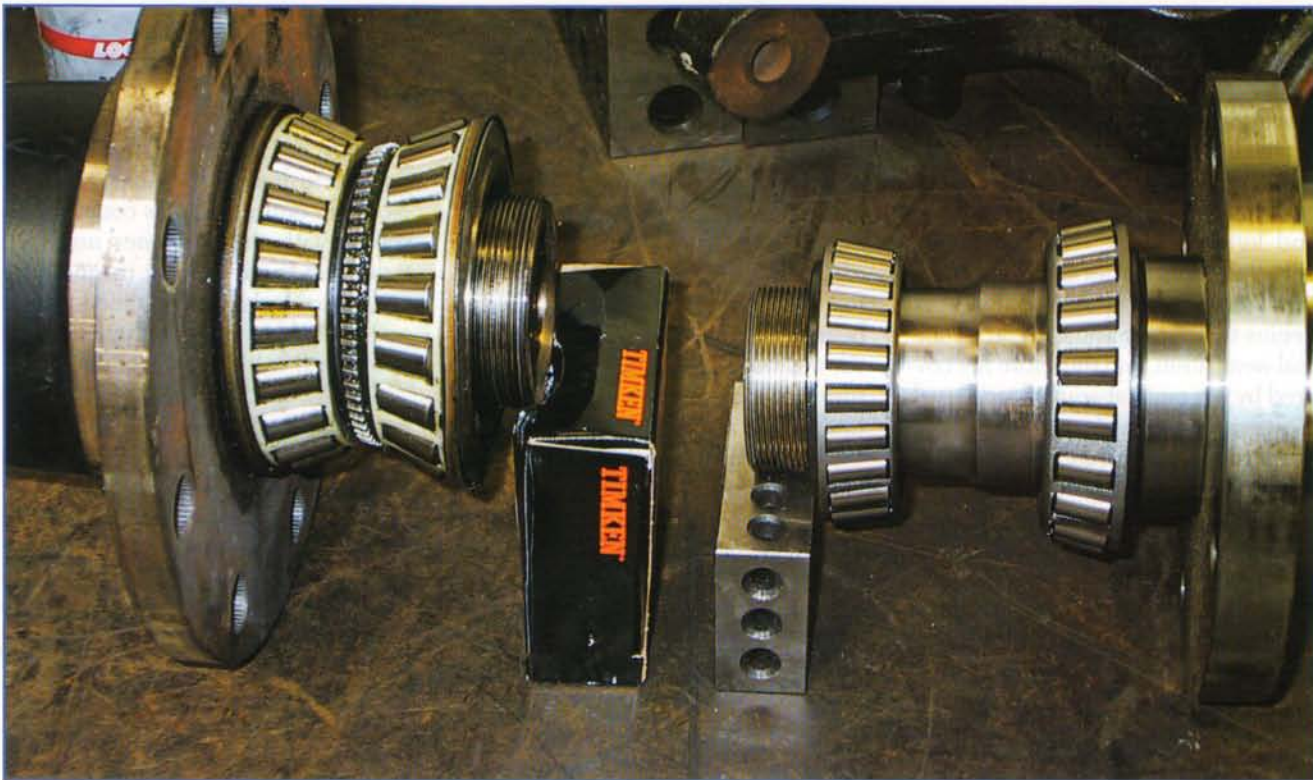
Dynatrac's Serviceable Bearing Kit for the Ford 4 × 4 Super Duty

TEXT & PHOTOS BY GARY WESCOTT

BACK IN 1999 WHEN FORD introduced the Super Duty 4WD F-Series, it was an immediate hit. However, as with all new things, there were bugs. Ford, Timken, and TRW Automotive had collaborated on a sealed "unit bearing" for the front hubs, presumably to save time on the assembly line. Unlike older front hub/bearings, they cannot be serviced. Consequently, they have been known to fail without warning, and when that happens the damage can be extensive. The replacement bearing part runs about \$400, plus new studs, nuts, an external O-ring seal and labor. If it's not caught in time, the rotor, spindle, calipers, brake pads and the stub axle shaft — basically



The pre-assembled rotor, dual-wheel-adaptor spacer and the new hub make for a heavy part to lift and slide over the spindle later, especially on F-550 and F-450 models. Individual components could be fitted (or removed) one at a time to the steering knuckle.



The inner and outer bearings (L) in the OEM hub are stacked together, which decreases their mechanical ability to absorb the leverage. The Dynatrac design is much stronger, and the bearing cage is steel.



The replacement needle bearings are significantly larger than those in the factory-unit hub.

everything in front of the galvanized brake-dust plate — could be history, and this can happen in about ½ mile at 65 MPH!

There is only one warning sign we have noticed that may indicate a bearing is close to failure. If the ABS light comes on and stays on, it may mean the

tone ring located between the two sealed wheel bearings is wobbling. If this happens, immediate inspection is advised. Excessive heat and/or uneven brake-pad wear is a second sign of something potentially going wrong.

TRW and Timken engineers have



A replaceable seal on the back of the needle-bearing housing allows the bearing to be repacked with grease at normal intervals.

told us that the unit bearing is designed to last 150,000 to 200,000 miles. That's quite a spread, and with heavy loads and/or bigger tires, those figures can drop significantly. In fact, despite those mileage claims, our own research shows that while big tires and

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heavy-duty usage does speed up the process, many people who appear to be using their Super Duty trucks under normal conditions — stock tires and light-duty use — have experienced failures within the first 50,000 miles of ownership. Officially, Ford deems the unit bearings to be a “normal wear” item, and therefore not covered by warranty at any mileage level. However, some dealers are approving the work under warranty on a case-by-case basis. One-time repairs at a dealership can easily exceed \$1,500.

Fortunately, there is now a fix. Dynatrac Products has designed a “fixed spindle” that is superior to the OEM “live spindle.” This design is similar to the hub/bearing assemblies we have known for decades. The new spindle is forged from chromoly steel, and a cast nodular wheel hub replaces the OEM unit. The kit uses Warn Premium 35-spline manual locking hubs to engage or disengage front drive. All Dynatrac components are made in the United States to exacting standards.

Dynatrac engineers also upgraded the OEM 1.31-inch 30-spline outer stub axle to a stronger 1.50-inch 35-spline unit. The conversion uses all factory stock components — rotor, caliper, and brake pads — and is fully compatible with the stock ABS sensor. The Timken bearings, races and seals are the same as those used on 1986-1997 F-350 4WD trucks, and are also common to many Dodge and GM 4WD trucks. They can be purchased at any parts house for about \$65, and they can be inspected, repacked and adjusted as part of normal service.

Having experienced bearing failures on two occasions on our 1999 Super Duty, we took the opportunity to visit the Dynatrac facilities for a close-up look at the new conversion kit and the installation process. Jim McGean, owner of Dynatrac, explained that the OEM sealed unit bearing had several problems. First, the two bearings are stacked right together, which decreases their mechanical ability to absorb the leverage exerted by the wheel. This is compounded on DRW models by the large wheel spacer/adaptor installed on

the front axle, further increasing the leveraged force on the bearings. While the bearing may come from the factory properly greased and torqued, the sealed units cannot be inspected, adjusted or serviced, so when the seal begins to leak or any contamination gets in, the bearings can overheat — causing more grease to escape. All this is further aggravated by the fact that the bearing cage in the OEM unit is plastic, not steel. Once extreme temperatures are reached, the cage melts and total failure is rapid.

The installation of the Dynatrac conversion kit was straightforward, and could be done at home by anyone who knows the basics of repacking wheel bearings. After setting the brake calipers aside, the OEM hubs, brake rotors and axles were removed. The factory steering knuckle remains in place. All parts were thoroughly cleaned to prevent any contamination. The Dynatrac technician pre-assembled the rotors, dual-wheel adapter spacers and the new hubs on the bench. This makes a rather heavy part to lift and slide over the spindle later, but individual components could be fitted one at a time to the steering knuckle. The dual rear-wheel adapters and brake rotors on the front axles of F-550 and F-450 trucks are considerably heavier than those on F-350 models.

Since the OEM stub axle is not reused, we took the opportunity to replace the U-joints on the new 35-spline outer shafts with high-quality Spicer joints. The axles were then slipped back into the axle housing, aligning the splines with the differential gears.

Machined needle-bearing housings were mounted on the back of the new spindles, and the larger needle bearings were installed with their seals. After re-installing the sheetmetal dust shields, the spindles were aligned with the holes in the steering knuckles and secured, and the ABS sensors were fitted to the mounting blocks on each spindle.

With the new bearing races installed in the wheel hubs, the bearings were packed with grease. We did it the old fashioned way — by hand. The instructions note the importance of making sure you have the correct wheel studs, as there are two different types — fine and coarse threads. Dynatrac

can supply either one.



After the inner bearings are packed and installed, the complete hub/rotor/dual-wheel adapter assemblies are slid over the spindles, using care not to damage the inner-hub seals. Now the outer bearings could be installed with their spanner nuts and tightened to the correct torque. The new Warn locking hubs slide in easily and are held in place by large internal snap rings.

Finally, the stock calipers are reinstalled. Spacers are provided to assure proper clearance between the pads and the brake rotors. On our F-550, the small tabs on the dust shields that cover the ABS wires needed to be slightly trimmed so they would not rub on anything. When the kit is correctly installed, there is no effect on wheel alignment.

For Super Duty trucks with big lifts, the original Dynatrac Super Duty Combo Kit is still available. This requires changing steering knuckles and the track bar, and entails considerably more time. The conversion we installed required no welding, drilling or grinding.

The complete kit comes with detailed step-by-step instructions. The only special tools required by an experienced mechanic are: a six-point spanner socket (OTC #7090-A) or four-point spanner socket (OTC #7158), depending on which style spanner nuts your hub needs; a torque wrench that will go to 140 FT-LB; and a bearing race driver, such as the Snap-On #PPC14LA.

Kits for the 2000-2005 Dodge will be introduced soon, with the added benefit of giving Dodge-truck owners manual-locking hubs, (which have not been available from the factory since 1993). That will increase their fuel economy and reduce wear and tear. In other words, axle shafts, gears and driveshafts won't be constantly turning with the hubs unlocked.

The Dynatrac Conversion Kit fits all Super Duty 4WD trucks from 1999 to 2004. A kit for the 2005 Super Duty is in the works. MSRP at press time is \$1,595.  

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