

## ***DYNATRAC PRODUCTS***

### **1999-2008 4X4 Ford Super Duty & Dodge 1994-1999 2500/3500 Heavy Duty Ball Joint Kit**

#### **ProSteer Ball Joint Installation V2.0**



**WARNING:** This product is designed for use in specified axles and should not be used for custom applications. Any non approved application will risk your safety and the safety of others around you. Any non approved use will void the warranty of the product.



**WARNING:** Improper use or installation of this product can cause major failures that could lead to injury or death.



**WARNING:** There are knock off axle products that are not made to Dana specifications. Dtnatrac will not be accountable for the tolerances of non Dana or Dynatrac products on the market.



**WARNING:** OEM ball joint camber bushings range from 0.0 Deg to 2.0 Deg. This product is not designed for use with camber bushings over .75 Deg.

①**INFORMATION:** Dynatrac ball joints are sold in a fully assembled condition, ready to install in your vehicle. Install the ball joints as if they are standard OEM replacement parts. Refer to your vehicle or axle service manual or contact a competent auto repair or alignment shop to properly install the ball joints on your vehicle. Press tools are required when installing ball joints, and it is recommended that you use an experienced shop. There are ball joint press tool kits available online, or at auto stores.

For the do it yourself guy, Dynatrac recommends using Miller Press Kit 8975 in conjunction with kit CR9.2-1X3050-C supplied by Dynatrac (Fig 13). Other ball joint installation kits besides the listed Miller kit are available; however Dynatrac has not tested them. The Dynatrac installation kit may also be used with other off the shelf kits.

**Note:** Dynatrac strongly recommends buying the Dynatrac ball joint installation kit sold separately (Fig 13). The Dynatrac ball joint installation kit will prevent damage to the ball joints during installation.

#### **Common Tools Which Will be Required**

- Ball Joint Press Kit or Shop Press Equipment (Miller Kit 8975)
  - Miller Tool kit 8975 with the Dyantrac Kit sold Separately
  - C-Clamp (Miller C-4212 F)
  - Press Tools (Miller, 8975-1, 8975-2, 8975-3, 8975-4, 8975-5, 6289-3)
- 1-5/16 Socket
- 1-1/8 Socket
- Calibrated Torque Wrench

- Pry Bar
- Wire Brush
- 4 Quarts of Gear Oil (Optional)

### Installation Instructions



**WARNING:** Only perform this installation if you are an experienced, fully equipped mechanic.



**WARNING:** Always wear proper safety equipment including safety glasses and gloves while working with tools. Improper use of tools and equipment can cause injury or death.

### Preparation and Inspection

1. As stated above only perform the installation if you are a fully equipped mechanic. Using the attached bill of materials, verify the kit is complete (Figure 12). Contact Dynatrac if the kit does not include all the listed parts ((714) 596-4461). You may need anywhere between 4 to 10 hours depending on your experience, so allow plenty of time. If you are performing the installation at home, Dynatrac strongly recommends using the miller ball joint kit with the Dynatrac kit. Dynatrac also recommends using kit number DA60-1X3050-C with all other installation kits (Fig 13).

### Removing the Knuckle

2. Because there are several axle designs, it is recommended a service manual specific to the vehicle is used. Publications are available online that offer detailed instructions for replacing ball joints.
3. Remove the wheel hub assembly, brakes, tie rod and all other miscellaneous hardware as outlined in the service manual. At this point the bare knuckle is exposed and ready for disassembly (Figure, 1). Once the knuckle is exposed remove the castle nut from the upper ball joints. Loosen the lower ball joint nut until 3-5 threads are still on the nut, this will prevent the knuckle from falling off. Since the ball joints have a tapered stud they will be firmly seated in the end forging. To remove the ball joint stud from the end forging, use a 5Lb metal hammer to hit the bottom of the end forging. Several hard well directed blows should cause the ball joint stud to fall out of the end forging. At this point you will have the knuckle with the ball joints still pressed inside of them (Figure, 2).



Figure 1, Knuckle with wheel end removed



Figure 2, Removing the knuckle

### Pressing Out Ball Joints

**Note:** There are two primary ways of removing the ball joints from the knuckle. If you are an experienced shop you may use press equipment to remove the ball joints from the knuckle. If you do not have press equipment Dynatrac recommends using the C-Clamp press kit referenced in the tool list. In Both cases Dynatrac recommends buying the additional tool kit or making a similar set of bushings to prevent damage to the seals.

#### Removing the Upper Ball Joint

4. At this point the old ball joints may be pressed out, by using shop press equipment or a C-Clamp press kit. Place the knuckle in a vise or clamp the knuckle to a sturdy table. Remove the upper ball joint first using Miller tool kit (Tools, C-4212 F, 8975-2, 8975-4). Use tool 8975-2 to receive the ball joint and tool 8975-4 to push the ball joint out (Fig 3). Repeat the procedure for the opposite knuckle.

#### Removing the Lower Ball Joint

5. After the upper ball joints have been pressed out the lower ball joints may be removed. Remove the lower ball joint first using Miller tool kit (Tools, C-4212 F, 8975-2, 8975-4). Use tool 8975-2 to receive the ball joint and tool 8975-4 to push the ball joint out (Fig 4). Repeat the procedure for the opposite knuckle.

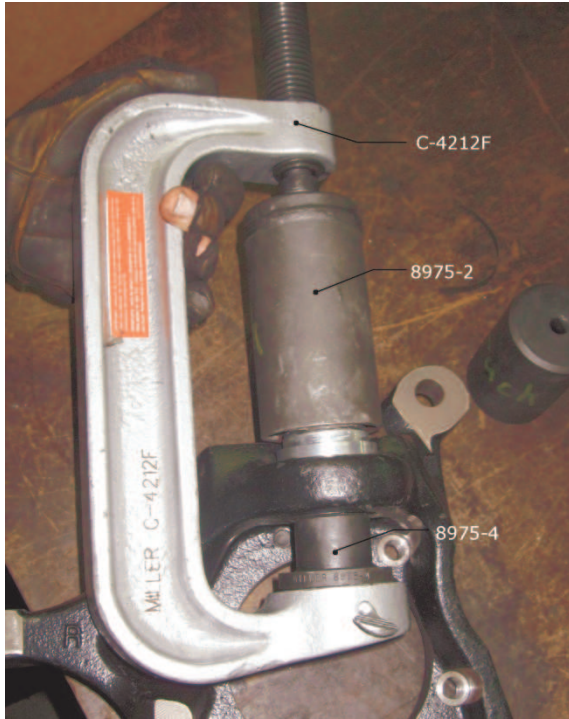


Figure 3, Removing the Upper Ball Joint

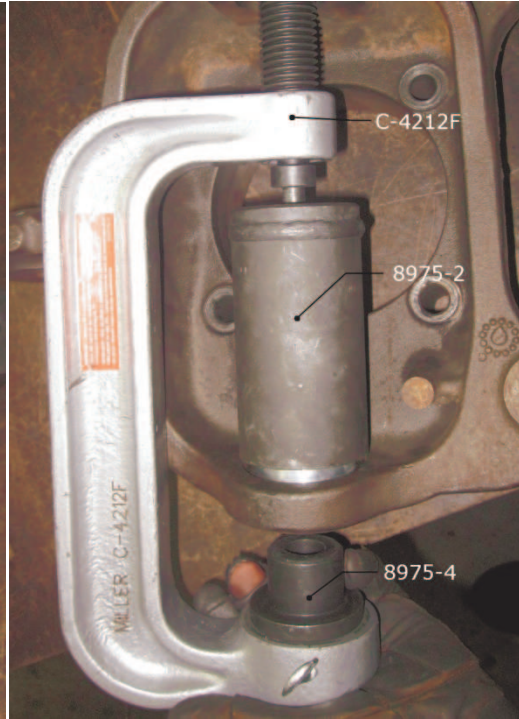


Figure 4, Removing Lower Ball Joint

### **Prepping the Ball Joint Bores**

6. Once all of the ball joints have been removed use brake cleaner or another solvent to clean the bores in the knuckle and end forging. It is extremely important to clean any rust or sediment build up off of the end forging faces where the ball joints will seat. This can be done using a wire wheel, wire brush, Scotch-Bride or 100 grit sand paper (Fig 5). Cleaning of the end forging bores is extremely important to make sure the ball joints seat correctly

### **Installing Dynatrac Ball Joints**



**WARNING:** Shop presses exert tremendous force and can easily damage components if caution is not exercised.



**WARNING:** Pressing on the seal when installing the lower ball joint will damage the seal. Exercise great caution when installing the ball joints to reduce the risk of damage.

**Note:** Dynatrac strongly recommends using the Miller tool kit in conjunction with the Dynatrac Ball Joint installation kit.

### **Preparation**

7. After the knuckles and end forgings have been cleaned, place Anti-Seize on all the ball joint bodies (Figure 4). There is a significant amount of force required to install the ball joints. Anti-Seize will help prevent galling and damage to the axle components when installed (Fig 6).



Figure 5, Cleaning the Knuckle



Figure 6, Placing Anti Seize on Ball Joints

**⚠ WARNING:** Do not press on the seal when installing the ball joints or it will damage the parts (Fig 7).

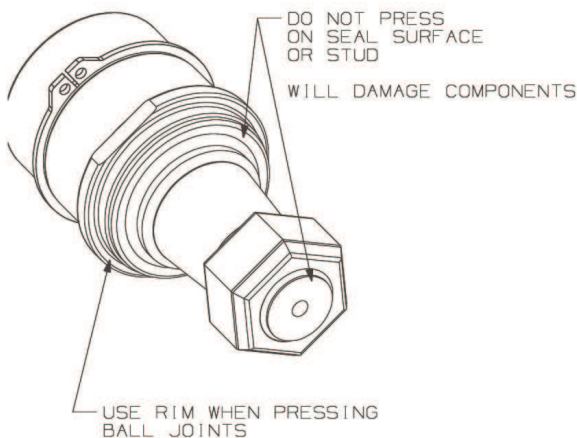


Figure 7, Proper Press Location

### **Installation of Lower Ball Joint**

8. After all of the ball joint bores and bodies have been cleaned and prepped with Anti-Seize they will be ready for installation. Install the lower ball joint first with either a shop press or a C-Clamp press kit. If you are using a C-Clamp kit use tools C4242 F, 8975-1, DA60-3050-N, DA60-3050-P, and 7975-2. Using that combination of tools press the lower ball joint into the knuckle (Fig 8). Repeat the procedure for the opposite side. After the ball joints are installed insert the snap ring around the body of the lower ball joint.

### **Installation of Upper Ball Joint**



9. Once the lower ball joints are installed the upper ball joints may be pressed in. Using the miller press kit use tools C4212 F, DA60-3049-O, 8975-1 and 8975-3 to install the upper ball joint (Fig 9). Make sure the ball joint is fully seated on the knuckle.



Figure 8, Pressing In Lower ProSteer Ball Joint

Figure 9, Pressing In Upper ProSteer Ball Joint

### **Installation of Knuckle**

10. Now the knuckle is ready for installation. A 1-5/16 socket and a 1-1/8 socket are required to tighten the ball joint nuts. Be sure to clean the tapered shafts with brake cleaner or acetone; this will help prevent the shaft from spinning during assembly. Place the knuckle into the end forging and lightly screw on the ball joint nuts, preventing the knuckle from sliding out.
11. Place a screw driver or pry bar under the camber bushing on the upper ball joint (Figure, 10). Tighten the upper ball joint with the pry bar underneath the bushing. This will seat the lower ball joint into the end forging taper and allow you to tighten the lower ball joint to 35 ft. lbs of torque. Once the lower ball joint has been tightened to the first torque specification, remove the pry bar from the upper ball joint. Tighten the upper ball joint with an open ended wrench. There is a flat milled on the upper ball joint stud, so a second wrench may hold the shaft preventing it from spinning (Figure, 11). After the castle nut is drawn into the bushing, the upper ball joint may be torqued to the specified value of 71 ft. lbs.

### **Torque Procedure**

- Torque lower ball joint to 35ft. lbs
- Torque upper ball joint to 71 ft. lbs, then turn the nut until the next slot lines up with the cotter pin.
- Insert the cotter pin into the hole and bend the tab over.
- Re-torque lower ball joint to 140/160 ft. lbs



Figure 10, Pry Bar to Leverage Camber Bushing      Figure 11, Tightening the Upper Ball Joint

### **Reassembly of Wheel end**

12. At this point the knuckle should be properly bolted to the end forging. Refer to the service manual and reassemble the wheel end. After everything has been installed check the wheel alignment. Make sure the axle is filled with gear oil if the differential was drained prior to disassembly.



**WARNING:** Failure to properly refill the axle with Gear Oil can cause serious gear and bearing failure which could result in serious injury or death.



**WARNING:** Failure to check bolt and lug nut torque can cause serious accident, component failure, serious injury or death.

### **Bill of Materials**

#### **DA60-2X3050-A**

Description	Qty	Dynatrac P/N
Upper Ball Joint	2	DA60-1X3049-B
Lower Ball Joint	2	DA60-1X3050-B
Lower Body Snap ring	2	DA60-3050-K
3/4 Castle Nut	2	DA60-3049-F
Cotter Pin	2	DA60-3049-K
Lock Nut	2	DA60-3050-F

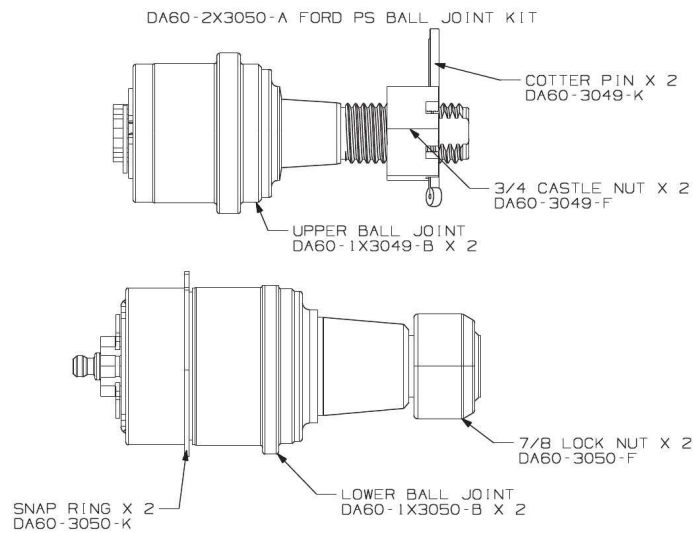


Figure 12, Ball Joint BOM

DA60-1X3050-B, FORD INSTAL BUSHING KIT  
BUY FROM DYNATRAC OR MAKE A SIMILAR SET

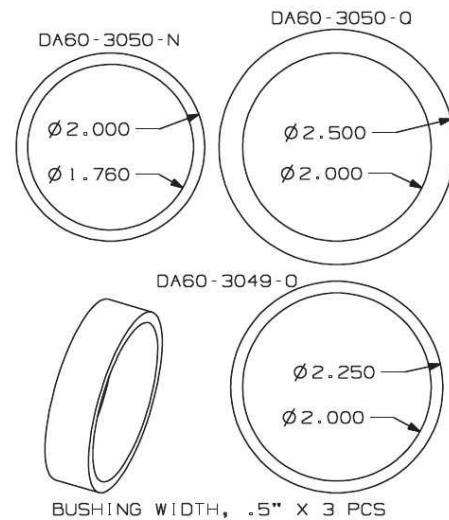


Figure 13, Additional Bushing Install Kit

### AXLE TERMINOLOGY

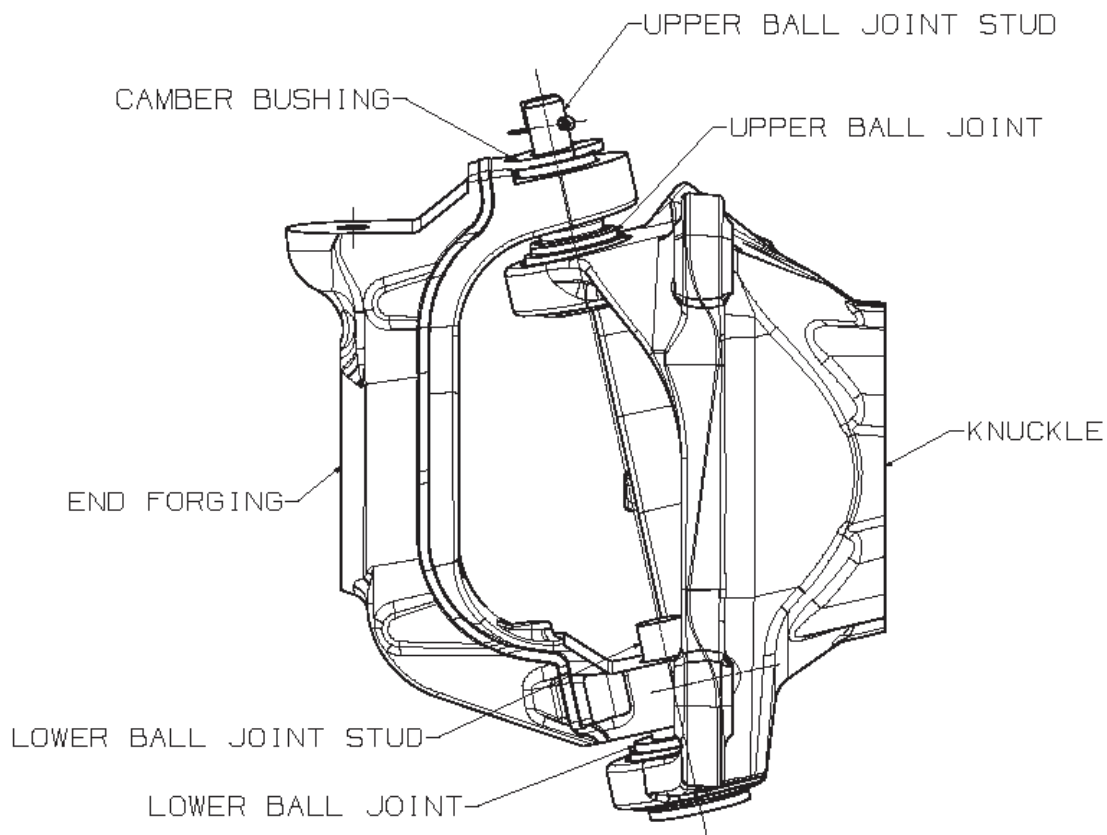


Figure 14, Axle Tech