

# Bulletin ServiceLink<sup>SM</sup>



SERVICE TIPS FOR THE PROFESSIONAL TECHNICIAN

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## LOW SPEED VIBRATION AND DRIVE SHAFT ANGLES

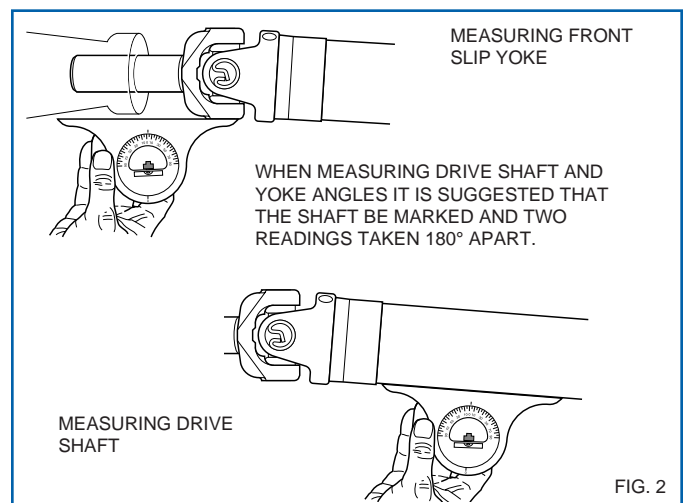
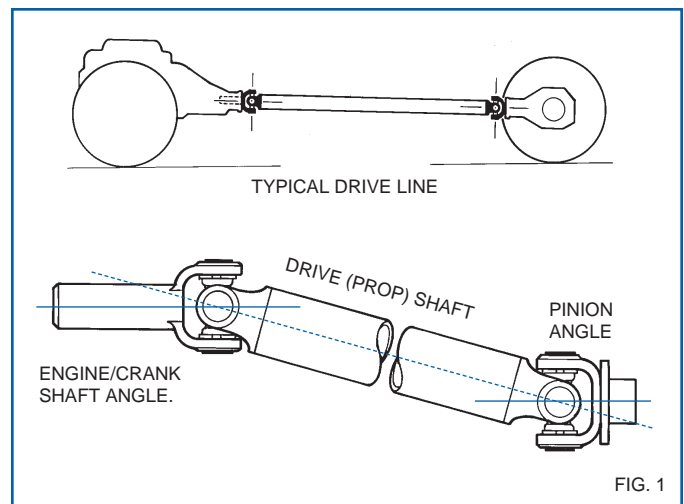
Cardan (cross) type universal joint operation is typically designed to be in a range of 1 to 3°, figure 1. A cardan type joint can operate for short periods of time at angles up to approximately eight degrees. Angles that are not within the desired range will cause drive line vibration and significantly shorten the life of the universal joint. Vibration that is created by incorrect u-joint angles is usually most noticeable at low speeds, under 40 mph., under load or acceleration.

If a problem with u-joint angle is suspected perform the following basic inspection procedures.

1. Rotate the drive shaft to check for binding, or misalignment of the cross or bearing cups.
2. Check that all surfaces are clean.
3. Check the condition of the motor and transmission mounts. **Broken mounts are a frequent cause of drive shaft vibration and are often overlooked.**

If these conditions are satisfactory a preliminary check of angles can be made with an inclinometer. Before attempting to measure angles ensure that tire air pressure is correct, that the vehicle is at the correct trim (chassis) height, and the ground surface is level.

1. Measure the angle of the front slip yoke by placing the inclinometer on the bottom of the bearing cup, figure 2. Position the inclinometer on the clean flat surface of the bearing cup, level the bubble and note the reading.
2. Measure the drive shaft angle, as shown, and subtract the smaller number from the greater to determine the angle.
3. Repeat the same procedure on the rear u-joint and pinion input shaft.



If the angles are greater than 3° consult the vehicle's service manual for more detailed measuring instructions and specifications. Front and rear angles should be equal or within 1/2° of each other.

It is recommended that truck drive lines be measured loaded and unloaded if an angularity problem is suspected.