Too Tight!

by Tom Endy 2022

During the 35 years I have been rebuilding Model A Ford differentials I have seen just about every failure mode there is. On two occasions I have seen the bearing hub shear off the ring side of the carrier. The first time the car continued to run because the bearing and the sheared portion of the hub stayed pretty much together. This recent second failure was a different story. The differential locked up and the car could not go anywhere. The cause of this type of failure was set up when the differential was last overhauled, maybe years ago. The mechanic did not understand the need for proper carrier bearing pre-load setting, which resulted in the bearing being set too tight against the race. In most cases it causes the bearing to spin on the hub and does no further damage. However, if it is way too tight it can build up a lot of heat and eventually sheer the hub off the carrier. The ring & pinion in this assembly took quite a beating and had to be replaced along with the carrier.

Carrier bearing pre-load is achieved by the selection of the quantity and thickness of banjo gaskets. The nominal pre-load requirement has been determined to be 20 inch pounds of torque as read on a dial indicator torque wrench.