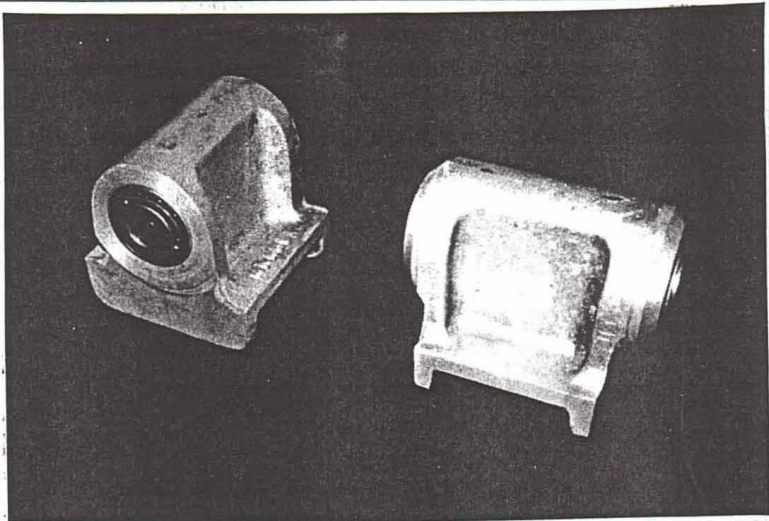
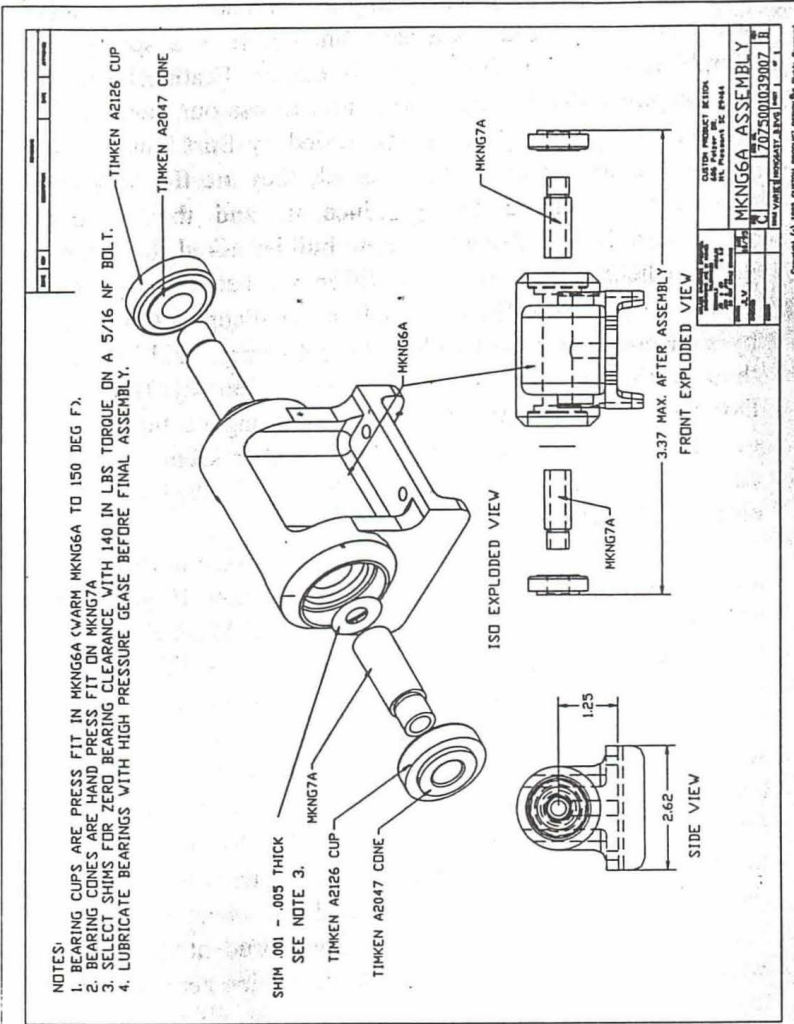


# IMPROVED MKNG6 PIVOT

Another of our favorite builders, Jack Wilhelmson, writes:

When my COZY was still in the testing phase, I was impressed with the flying and ground handling qualities, as most pilots are. Many words have been written about the flying qualities of the COZY, but not a lot about the ground handling qualities, even though they are very good. If built per plans, the airplane normally requires very light brake applications and tends to track straight on a level taxiway. As my airplane accumulated hours and landings, I began to notice a deterioration of the ground handling. It seemed to refuse to track straight and required harder and harder braking to make corrections. This led to brake heating and wear. After analyzing the problem, I discovered that excessive side to side play in the nose gear was the cause. The bronze bushings in the NG6 casting had excessive clearance. After replacing them, the ground handling returned to normal. A few months and landings later, I noticed the problem was beginning to return. I tried installing small sealed ball bearings in the casting. These failed even sooner than the bushings. It became apparent that the failure of the bushings and the bearings was caused by side impact loading during landing and side loads during taxiing. Some conservative load assumptions and an analysis of the nose gear geometry revealed that the loads could be high enough to fail the bearings. Adding to the problem was the fact that the clearance in the bearings is multiplied by about forty where the nose wheel touches the ground. The only bearings capable of repeated impact loading without failure and zero clearance preload are tapered roller bearings, that is why they are used as wheel bearings. The problem was that the smallest standard tapered roller bearing is slightly larger than the NG6 casting. A new NG6 was milled from a solid block of aluminum and the tapered bearings installed. This has been in my airplane for four years and many hard landings with no increase in nose gear side play or deterioration in ground handling. In the last four years I have made five of these for other people with Long Ezs and COZYs. After trying to get Ken Brock to make and market them (Ken can't change a Burt Rutan design), I finally made a casting pattern that works for the Longs, Cozys, and MKIVs, and I had a short run of them cast. The aluminum is an aircraft grade and the castings have been heat treated to normalize them for machining. The bearing races are press fit in the casting. The bearing inner races are light press fit in two spindles that have a .322 dia. hole and accept the original 5/16" dia. mounting bolt. The preload on the bearings is controlled by the length of the two spindles. The original mounting holes are left out of the casting, so that if the unit is being retrofit to an existing airplane, the bolt holes can be match drilled to fit the nose gear parts. The installation is best done by putting the gear in place before the floc between the casting and the gear strut cures, and

checking for equal clearance on both side of the strut in the retracted position. On new construction, the installation is the same as the old casting, except that the mounting holes must be drilled. I can drill these holes at no added cost if you ask. Contact me at (843) 884-5061 or [Wilhelmson@scra.org](mailto:Wilhelmson@scra.org)



Jack Wilhelmson's MKNG-6 and MG-6 are similar, but dimensioned to fit the Mark IV and the Cozy III respectively.