

**Subject: Troubleshooting of GLH3000 skis on Piper type geared aircraft.**

**Background:** The GLH3000 skis are installed on a welded modification to the gear leg. The welded attach fittings on the inboard side are typically stable. The outboard side utilizes a stub axle that is inserted in the existing axle and roll pinned into position. Over time this outboard stub axle has potential to loosen slightly. This minor deviation (change in fitting movement) in the outboard fitting is magnified over the length of the ski. In addition, over time you may see some play in all the connections (Bolts, Fittings, Rod Ends, etc.) This slight additional play can cause tips to tow-in more than they did when first installed. If variability is high enough it could affect the maximum toe-in measurement of 2".

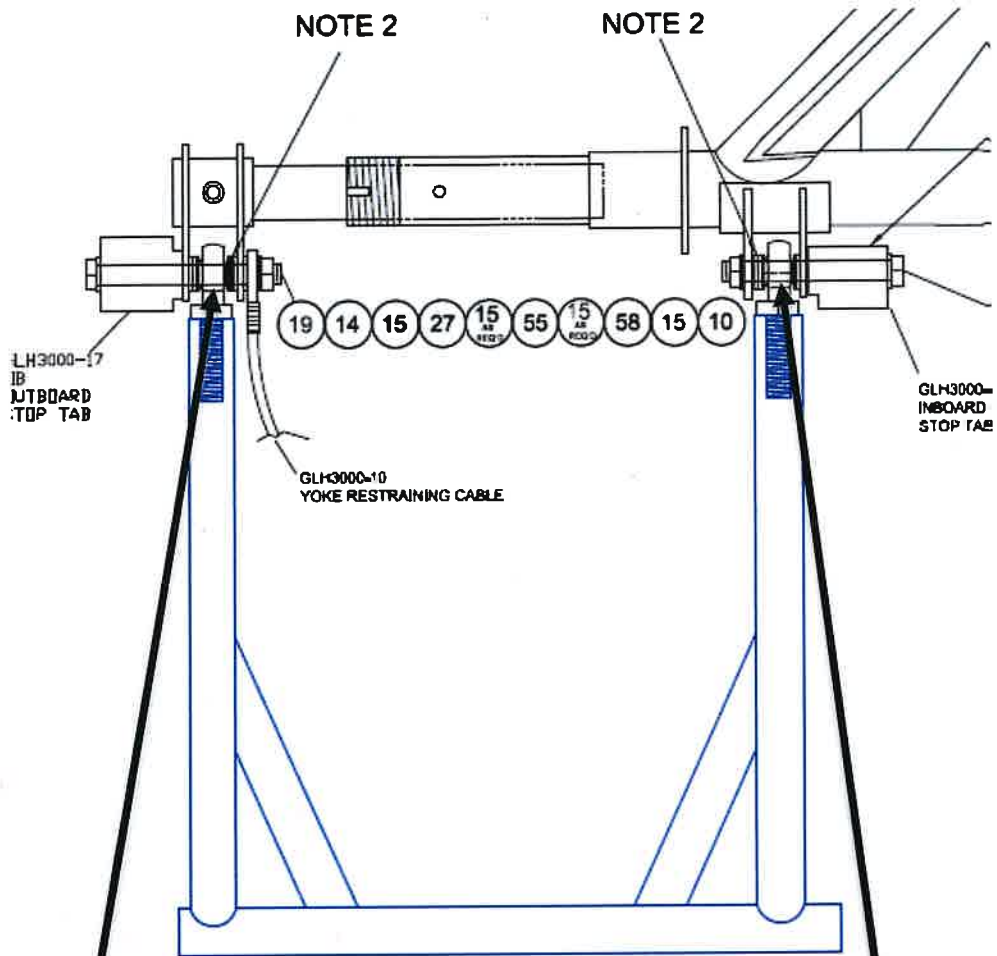
**NOTE: Do not evaluate toe-in measurement, without ensuring gear have not been loaded up when backing the skied aircraft into the hangar.** When backing an aircraft with skis the tendency (Especially skis with tail wheels) is to preload the gear abnormally. All that is typically needed to eliminate this pre-load tendency is to move the aircraft forward a little bit.

**Initial Installation:**

Step 1. Measure the tires at the front and rear to determine if they are equal distance. If not, you may need to adjust the ski angle (Toe) to account for this.

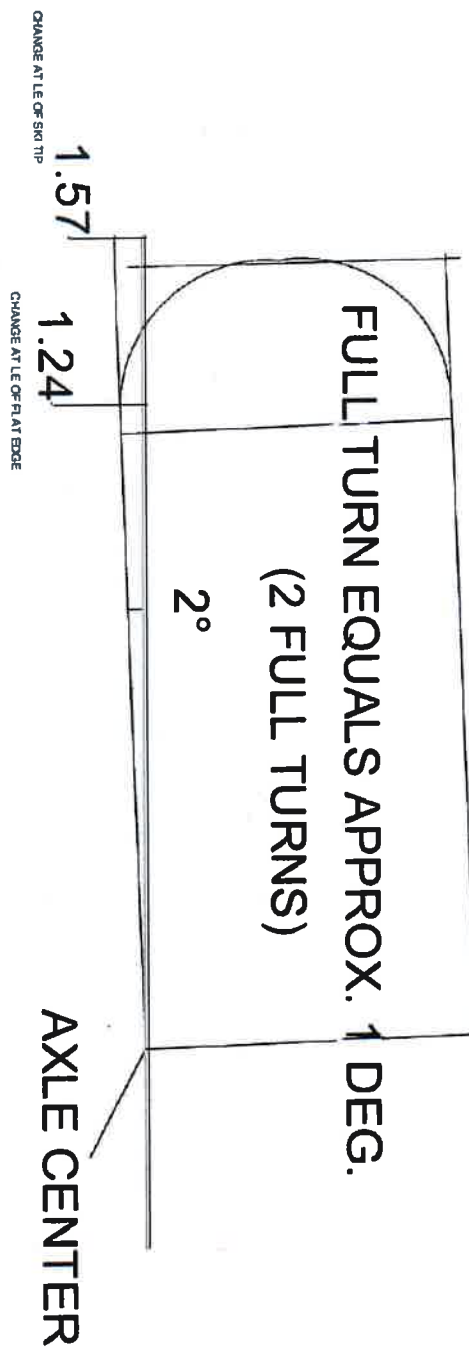
Step 2. Install ski yoke to the landing gear, to see where the ski angle is in reference to the centerline of the aircraft. **An inward force will need to be applied to the outboard ski tip, to take out stack-up tolerance (Slop) in the attachment mechanism.** If ski tip is toed in, then an adjustment needs to be made in the yoke rod ends (HMX6G). A toe-in can be resolved by either **reducing the length of the outboard rod end (Option 1)**, or **extending the length of the inboard rod end (Option 2)**. There may be times when both options are needed to prevent tires from rubbing wheel wheels.

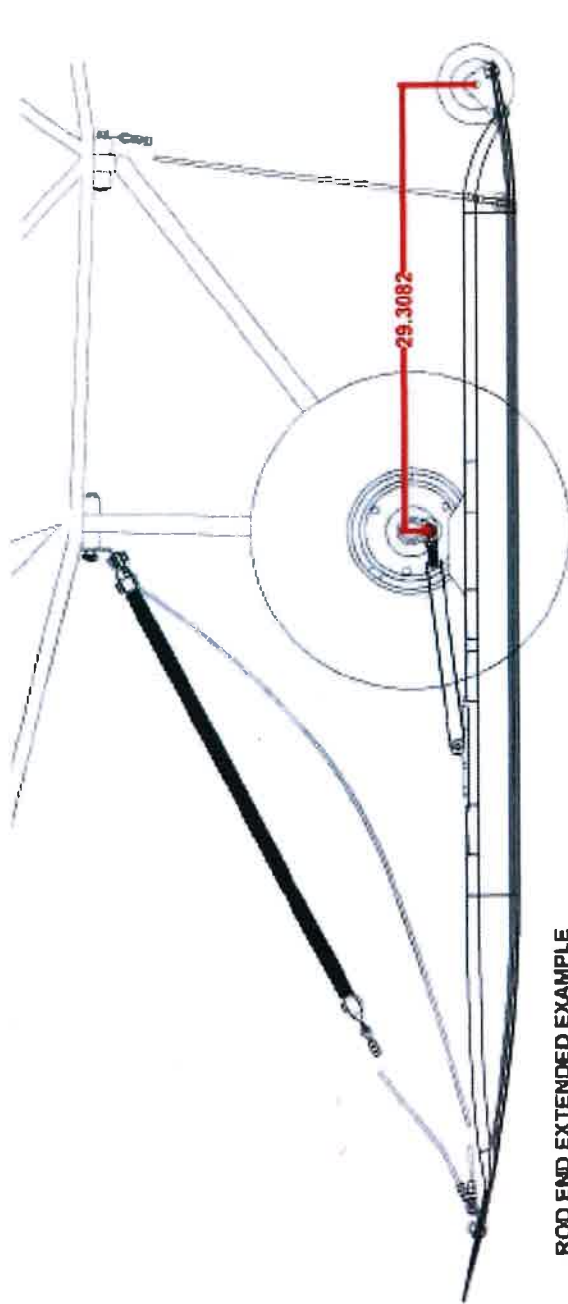
NOTE: If skis are already installed and has a toe-in condition, the first action would be to reduce the length of the rod end on the outboard side. Verify after adjustment that tire is not hitting the wheel well. If outboard yoke rod end is bottomed out, then Option 2 will need to be used. As stated before, a combination of option 1 & 2 may need to be performed. When make adjustments, remember a small change at rod end will have a magnified effect on toe-in. We recommend only a half to a full turn per adjustment. As with all trouble shooting, don't change more than one thing at a time.



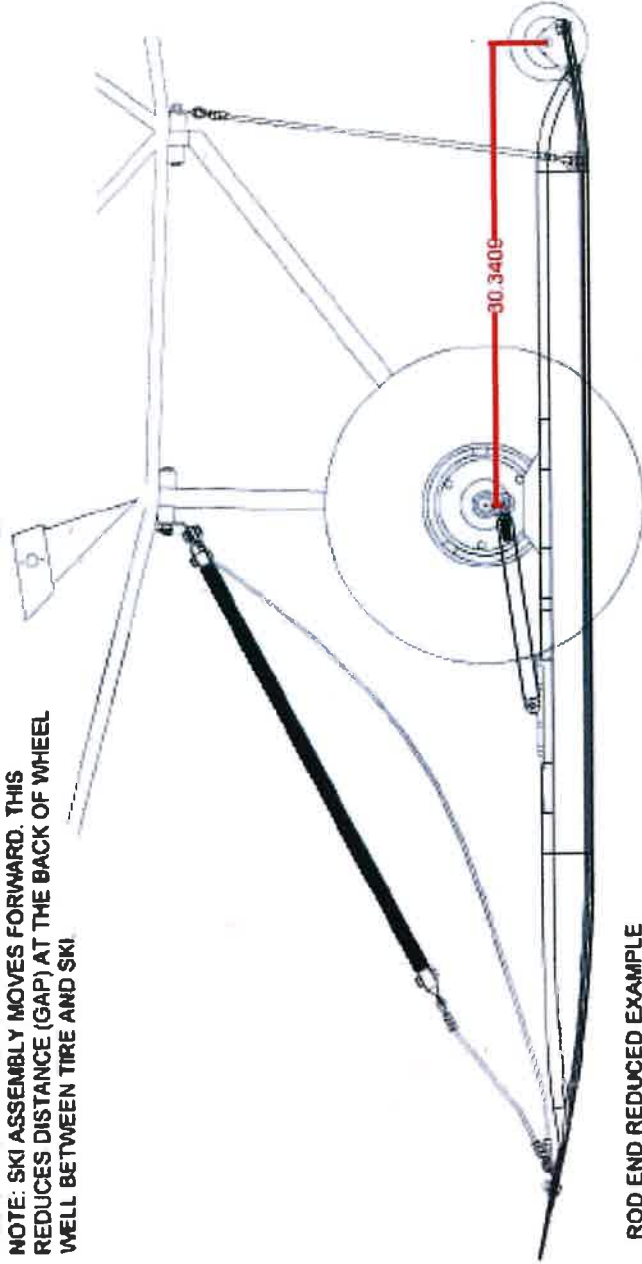
Reduce the outboard rod end, to reduce toe-in condition. Option 1

Extend the inboard rod end to reduce toe-in condition. Option 2

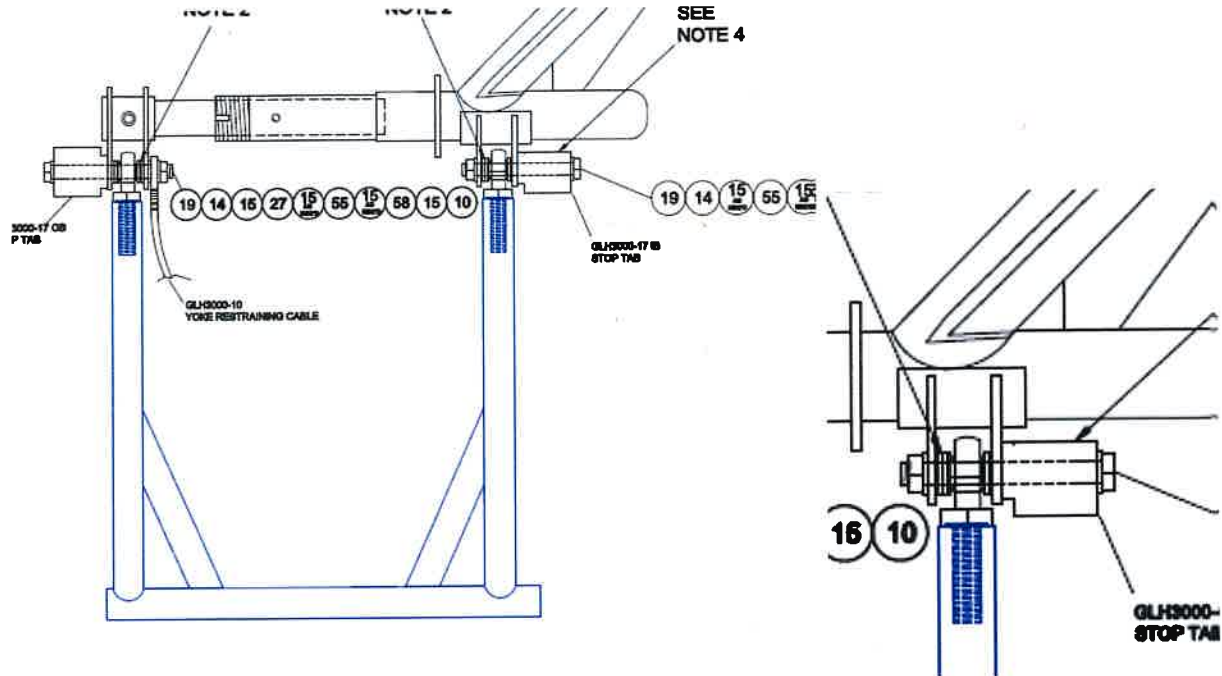




**ROD END EXTENDED EXAMPLE**  
NOTE: SKI ASSEMBLY MOVES FORWARD. THIS REDUCES DISTANCE (GAP) AT THE BACK OF WHEEL WELL BETWEEN TIRE AND SKI.

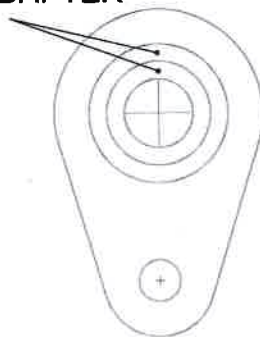


**ROD END REDUCED EXAMPLE**  
NOTE: SKI ASSEMBLY MOVES AFT. THIS INCREASES DISTANCE (GAP) AT THE BACK OF WHEEL WELL BETWEEN THE TIRE AND SKI.

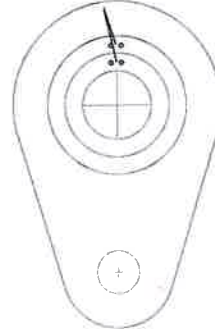


USE WASHERS TO GET ADEQUATE CLEARANCE SIDE TO SIDE INSIDE WHEEL WELL. CENTERING WHEEL IS NOT THE GOAL! THE GOAL IS TO HAVE CLEARANCE ALONG THE SIDES OF THE WHEEL WELL. ONCE INSTALLATION IS CORRECT, CONSIDER TAKING PICTURES FOR FUTURE INSTALLS. YOU MAY EVEN CONSIDER BONDING THE WASHERS TOGETHER TO AVOID FUMBLING OF INDIVIDUAL WASHERS.

LEFT HAND GEAR MODIFICATION  
PEENED WITH ONE DOT ON  
FITTING AND ADAPTER



RIGHT HAND GEAR MODIFICATION  
PEENED WITH TWO DOT ON FITTING  
AND ADAPTER



THIS PEENING IS DONE TO ASSIST IN PUTTING PROPER STUB AND FITTINGS ON AFTER REMOVAL AND REINSTALLATION.