holes before tightening on the adapter plate. The depth of these holes seems to vary on different year engines. If the hole is too shallow, it will be necessary to either add a washer or to or cut a small bit of the threaded end of the bolt off. After verifying that the bolts will properly tighten, back them off about one turn. Make sure the counter-bores in the spacers slide onto the locating dowels during this procedure. Note: The dowels should be clean and free of burrs before doing this step. Also, note that one of the bolt pattern holes in the engine is not threaded. Install this bolt with a 10mm nut.

8. Slide the short rectangular spacer between the upper left adapter plate hole and the engine. Install a 10 mm bolt (with washer) through the plate and spacer and thread it loosely into the engine. Slide the short trapezoidal shaped spacer between the lower right hole and the engine. Orient it as shown in the attached photo. Slide a short (110 mm) bolt with washer through the plate and spacer and loosely thread it into the engine making sure that it does not bottom out prematurely as explained in the previous step.

9. While supporting the weight of the adapter plate, tighten the six 10 mm bolts in small steps until they are snug (about 10 foot pounds). These bolts will later be torqued to their final value. I have not found any tendency for these bolts to loosen but you may Loctite them if you wish. The adapter weight should be supported to ensure that the plate accurately self-centers on the hole pattern. Make sure the single bolt spacers are rotated to their proper positions before tightening the bolts. A few builders have reported that one or more of the blind threaded holes in the engine block were not deep enough to allow the bolts to tighten before bottoming in the block. If this should occur on your engine, cut enough off the threaded end to allow proper tightening or add an additional washer to the bolt before inserting through the plate and spacer.

10. I would recommend that you do a trial assembly of the gear drive **without sealant** to insure that all the parts are properly aligned and that you are familiar with how all the parts fit together. Clean the sun gear assembly and its thrust bearings. The –C model of the reduction is designed for higher maximum engine RPM so it uses a stack of two needle bearings instead of the single roller bearing used on the A and B models. Be sure to assemble this bearing stack properly. Note that the thick bearing race with the larger I.D. must go on the shaft first and that the flat face of the race is toward the needle bearing. This is followed by one needle bearing followed by a thin 1mm bearing race, one more needle bearing and then the thick smaller ID bearing race. The nylon snubber spacer is packed with the input shaft, so put it aside until it is needed later.

11. Apply a liberal coating of wheel bearing grease to the input shaft pilot. When properly assembled, hold the thrust bearing assembly in place and slide the input shaft through the oil seal in the adapter plate and into the damper spline. The thrust bearing should seat against the adapter plate when fully inserted. This is a close tolerance spline and may require a few light taps with a rubber mallet to seat the sun gear and bearing against the adapter plate.

12. Apply some wheel bearing grease to the nylon snubber spacer to hold it in place and slide it over the aft end of the propeller shaft against the planet bulkhead in the main gear housing. See the exploded drawing for details on how the gears are assembled in the housing. Note that the nylon spacer ID is chamfered on one side. This side must go against the planet gear assembly bulkhead.

13. Now line up the punch marks on the gear housing spacer and adapter plate and slide it onto the twelve bolts in the adapter plate until it is flush against the adapter plate. If this were the finally assembly, you would now put the ring gear retainer O-ring in place with some wheel bearing grease behind the ring gear on the main housing. It can be left out for now since this is only a trial assembly.

14. After the gear housing spacer is in place, slide the main gear housing onto the twelve bolts, also lining up its punch mark with the planet carrier and adapter plate mark. Push the main gear housing so that it fits into the recess in the gear housing spacer. You may have to joggle the prop hub around to get the gear teeth to properly mate during this step. . Always follow the cardinal rule when assembling mechanical devices: **"Don't force it! if it doesn't fit, find out why!"** Using a long screwdriver or similar tool, slide the twelve ¼" bolts forward so that the threaded ends are protruding through the main gear housing. To ensure that the drive is correctly oriented, check to see that the oil return port near the rear of the gear housing is in the 6 O-clock position. The 1/8" NPT threaded hole for the oil supply line (top) should be at the 11:30 position.