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drive washer was intended to bite into a wood prop. Quite often this knurling is not even and, when used with a spinner back plate, will tip it slightly. Again, more spinner wobble. Now is the time to make friends with someone that has a lathe, or access to one, because you are going to have to take a light facing cut across this knurled face. You do not need to disassemble the unit to do this. Hold the front housing by the part that slips into the case, (the o.d. of the rear bearing housing) in a three jaw chuck. It is very important that an accurate three jaw chuck be used that will hold the housing true. The crankshaft is still free to spin, so wedge a piece of cardboard between one chuck jaw and the edge of the counter-balance to stop it from rotating. Take a light cut across the knurled face. Also take a

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very light cut on the short aluminum section that your prop slips over. Now screw in the threaded steel stud and note if it wobbles or oscillates as you screw it in. If it does, throw it away and get another. Face off both ends of this stud, and be sure and do this with a lathe, not a file. When you tighten the stud, the square face will butt against the square end of the crankshaft and lock everything up straight. Even though the threads in the aluminum drive washer may be loose, or even off slightly, this will bring things into fairly true alignment. When you are done the end of the threaded steel stud should have no more than .002" total run out.

Now that you have gone to this trouble, be sure that the hole in the spinner back plate is centered and not just hacked out with a hand reamer or file. That about takes care of the front end. Be sure and lubricate the bearings with a light oil. Don't let them set dry for any length of time.

The fit of the rear rotor is very important for proper engine performance, and yet overlooked by 90% of the fliers. The pilots that are turning in the top times are also keeping a close eye on the fit of their rotors. This, in itself, can add or take away as much as a thousand rpm if incorrectly set by only a few thousandths. First of all, the plastic rotor is not nylon as many of you think, but according to the Williams Brothers who mould them, molybdenum disulfide impregnated polypropylene. Say that to yourself a couple of times if you want a tongue twister. Being moulded plastic, the rotors have a small amount of fuzz and irregularities. These will wear in with time, but let's speed things up by carefully driving out the rotor pin and removing the rotor from the backplate. Some of the fellas have been boiling the rotors in water to remove the moulding stresses but I have not found this to be necessary. If you do this, place the rotor in a plastic bag upon removal from the water so that it will not be exposed to cool air. The idea of the boiling is to keep the rotor

from warping the first time it gets hot. Maybe I have just been lucky, but I have not had any trouble with the rotors warping. I do soak the rotors in a can of hot fuel overnight, because the hot fuel will cause them to swell very slightly. Possibly, this also removes the moulding stresses.

Place a piece of 360 wet or dry on a dead flat surface and, with an oscillating motion, lightly face the back of the rotor. Do the same thing to the face of the backplate on which the rotor rides. Use a light oil with the wet or dry. Do not try to get rid of all of the low spots on the back plate as it has been hard chromed and you will be working for many hours. Just get rid of the rough fuzz and any rough spots. Check to be sure no low spots run into the edge of the port opening. Clean any fuzzy edges off of the plastic rotor and you are ready to reassemble the unit. Head for your local auto parts store and get two strips of .004" steel feeler gauge stock. These come in strips about 1/2" wide and 3" long. If you can find some wide .004" shim stock in which you can cut a slot to slip over the pin, all the better. Brass shim stock only comes in .002", .003", and .005". No .004" for some reason. Place a strip of the feeler gauge stock on BOTH sides of the pin and tap it back into place. Be sure and support the back of the back plate while doing this so that you do not bend the casting. You want the fit to be a snug .004". This means you can pull the shims out with your fingers, but they come out with resistance. If you have to use pliers, the fit is too tight. Now this setting will not last forever and must be checked quite frequently, especially if much of the flying is off of dirt fields. The rotors wear and will wear more towards the outer edge than in the center which results in a very slight cone shape. This will mean resurfacing from time to time, but a considerable amount of running can be done before this is necessary. Do not check the clearance by slipping a feeler gauge into one side. This way you tip the rotor and get an incorrect setting. With the unit assembled, push the plastic rotor against the back plate, as you rotate it, and check for any catches or bumps as the opening in the rotor passes the opening in the back plate. If so, find out why. This must be dead smooth. Now assemble the front housing and rear rotor unit to the case without the piston, sleeve, or rod. The crank counter-balance