

TD 020 Care

Following are some recommendations for running the Mattes Engine Rework <http://www.flyfreeflight.com> modified TD 020, getting the most performance, and insuring a long life.



- 1) The plug used is the Nelson Flat coil plug which installs between the brass clamp ring and the aluminum head. When installing a new glow plug use a standard duty flat coil Nelson plug (Part No. NL03) which is available from <http://www.kittingittogether.com> for \$5.50. Note the web site does not provide a phone number. There is also a heavy duty/cold version of the plug which does not run as well. Life of the plug is very long even on the 65% fuel. **A standard screw-in Nelson plug will not work in this installation and will damage the head.**



- 2) As modified the engine will run very well with 40 to 65% nitro fuel with 65% Aerodyne or equivalent providing by far the best performance at the expense of engine life. A good equivalent can be mixed using 65% nitromethane, 10% Klotz or similar synthetic oil, 10% castor, and 15% propylene oxide. Your home brew may appear a bit cloudy due to some of the castor being in suspension but works just fine. Aerodyne 65% fuel can be obtained at <http://www.freeflightmodels.com>. It is not recommended that you run the 020 above 27 to 28000 rpm as cranks may break.

- 3) The use of a medium/low pressure bladder with the "Little Red Cap" preferred. It can be purchased direct from the supplier at <http://www.littleredcap.com> or from various retailers such as Menards, Amazon, Ace, and Rockler Woodworking. With the Red Cap the stock NVA is easy to adjust and the super fine threaded assemblies are not necessary. It is very economical and works fine for all sizes of engines.



- 4) The 020 can be damaged through aggressive use of an electric starter. Also the prop drive washer will eat into the front of the case when using an electric starter. All engines that are worked on in my shop are fitted with a brass rub washer to help with this situation. If you do use an electric starter be careful

and do not force a flooded engine to rotate with the starter or you may bend a rod or crank. This pretty well wipes out the damaged parts. Rods can sometimes be straightened but it requires a special setup to do an acceptable repair.

- 5) If your engine starts running slow and/or ragged you may very well have a worn out plug or a head leak either at the Nelson plug seal bevel or at the Aluminum Head/Cylinder joint. To tighten the plug seal joint double wrench as shown. This double wrench procedure keeps



all torque off of the cylinder/case and head/cylinder joints. To tighten the Head/Cylinder joint use your Cox 020 wrench to hold the cylinder while tightening the head. If your cylinder has the tightening flats on the top fin use it for holding the cylinder. If flats are not present you will need to use the wrench slot that engages the cylinder through the exhaust ports. Be very careful when using this approach as a slip or partial insertion of the wrench can destroy a cylinder. Please use two wrenches when changing the plug with one wrench on the aluminum body and the other on the brass retaining ring.



- 6) The flat coil plug requires a good glow driver or a strong battery to obtain a steady pale glow. Check your battery on a plug before you install it the first time. Look for at least one full coil glowing brightly. Some old Ni-Cad or NiMH batteries will not provide sufficient power to obtain a good start. If you remove the aluminum head and replace the head gasket or change the case/cylinder shims the head must be reinstalled with the about the same deck clearance as received. The easiest way is to measure the shim(s) thickness and replace them if necessary with the same thickness.
- 7) When I fit an engine the deck clearance is fine tuned to suit that particular engine. Old engines can use a bit more compression than new engines. Use of too little clearance will make the engine very difficult to start and may blow plugs while too much will harm performance.
- 8) If your engine is fitted with an aluminum radial mount it is sealed using Red RTV Silicone sealant available at any automotive parts store. It is easily removed and must be replaced when reinstalling the radial mount. The sealant can and should also be used with the plastic Cox mounts to ensure an effective seal.