

Please Read Before Running Your 020

TD 020 Care

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

1) The plug used is the flat coil drop-in plug which installs between the brass clamp ring and the aluminum head. The installation was initially designed to use a standard duty flat coil plug made by Henry Nelson. The Nelson brand plug is no longer available but Merlin makes a substitute which can be seen/ordered at <http://www.merlinglowplugs.com/Aircraft.html>. Specifically I have found that the "GloBee Drop-In MED", which has a green insulator, and the "GloBee 10", which has a black insulator or maybe now silver, both provide good performance with the GloBee 10 being best. The plugs are located near the bottom of the above web page. Note that the illustration on the Merlin web site does not look like the actual plug shown below. Also if your engine was modified prior to 2014 the Merlin may benefit from a lower compression for best performance. I would suggest one additional head gaskets compared to the pre 2014 Nelson setup. Some performance gain may be obtained by very carefully pulling out the coil about 1/32 from the coil cavity. Effect of this on plug life is not known.



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 the best performance at the expense of engine life. A fair equivalent can be mixed using 65% nitromethane, 10% Klotz or similar synthetic oil, 10% castor, and 15% propylene oxide. If this mix is cold it can clog your NVA and make for difficult starting and adjusting. I often warm it up before use. Aerodyne 65% fuel can be obtained at <http://www.freeflightmodels.com>. I understand that Red Max may mix 65% fuel and their web address is <http://www.fhsoils.com/index.html>. 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 listed on the supplier's web site. I also stock the Red Cap as shown on the Commercial Parts page of my web site. With the Red Cap the stock NVA is easy to adjust and the super fine threaded assemblies are not necessary. The Red Cap is very economical and works fine for all but the largest 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 will 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 clamp double wrench as shown with a squeezing motion on the two wrenches preferably using one hand. Use a similar approach to loosen the plug clamp. This double wrench approach 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.

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. 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 and make the engine difficult to needle/run.

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 but the plastic mounts will in most cases make the engine run slower due to vibration.

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