Technical Notes

Honing the Zenith Fuel Inlet Seat

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The purpose of honing the Zenith fuel inlet seat is to achieve a leak free fitting. (Fig.1) Over the years the Zenith cast iron carburetor can become pitted if left out in the elements. Also if excessive force was used to tighten the brass gas line fittings the seat could become scored or burred.

Fig. 1

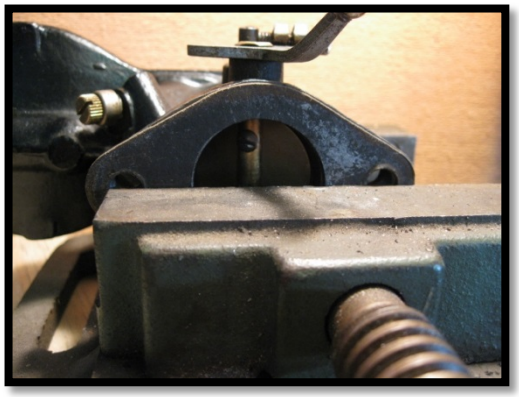
Fig. 2

Fig. 3

I use a #952 Dremel grinding stone (Fig.2). These stones are called mounted abrasive by machinist, while others may call then grinding stones or hones. The stones come in different colors (Fig.3) depending on what material they are made from, and the type of bond adhesive used to hold them together. Aluminum oxide is the most common for ferrous metals, while silicon carbide is generally used for non-ferrous metals. The fine grit that is used on the small mounted abrasive stones is referred to as *grade.* The grade rating would be considered fine. It is also a soft bond so that the stone will disintegrate before causing much damage.

With the carburetor cleaned and taken apart, coat the fuel inlet seat with *Prussian Blue* which is a dye. Let dry, then tighten the brass fitting into place and remove the fitting. A visual look at the seat will check the contact area. A perfect seat would have even areas of dye removed in 360 degrees. If it has spotty areas, then precede with the following steps.

1. Mount the upper carburetor in a drill press or milling machine vise. I mark the center of the tapped mounting holes in the carburetor (flange to fasten to intake manifold) to obtain a level and 90 degree angle for the honing process. (Fig.4 & Fig.5)



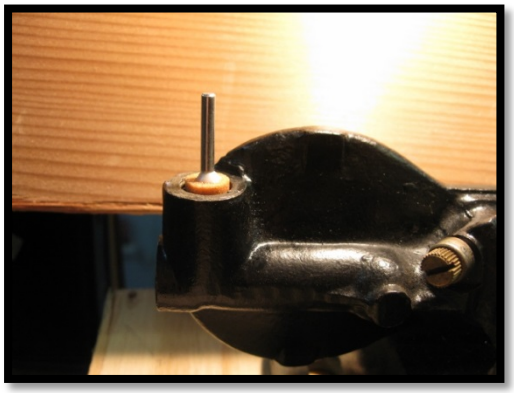


Fig. 4 Fig. 5

1. Use a high R.P.M. of 1200 to 2000. Wear eye protection and use extremely light downward pressure during the honing process. (Fig.6) I would recommend using thin oil to prevent the surface of the stone from glazing. The oil will float away the cast iron particles cut from the seat. This prevents them from imbedding in the stone. Do not use a hand drill as you need to maintain the 90 degree angle at all times.
2. Chase the threads by hand using a $\frac{1}{4}$ - 18 pipe tap. Do not use any wrenches on the tap as the cast iron is very brittle and could crack. (Fig.7) **Note:** The thread size is $\frac{1}{2}$-20 NF. If this tap is used it could cause damage due to lack of clearance if rust and dirt are present. The pipe tap if used by hand will provide ample clearance so it will not break or crack the cast iron, **do not use any wrench on the tap!**

Fig. 6 Fig. 7 Fig. 8

3. Clean and put the carburetor back together.
4. When attaching the fuel line there are two types of fuel seat ferrules (Fig.8). The left side is the one piece style with the ferrule attached directly to the fitting. The right side is a de-attached ferrule. Check these carefully for scratches, burrs or scores. These brass ferrules should not be deburred, they should be replaced. You should now have a leak free fuel line fitting on the Zenith carburetor.