

Repairing the Base Plate Attachment Pedestal on a D1 / 202 Desk Set

by Jeff Lamb

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I'm sure everyone who collects antique Western Electric D1 desk set, has encountered stripped threads inside the base plate attachment pedestals, located inside the base of the set. Once one, or both, have stripped out, it's pretty tough to keep the base plate fastened properly.

The following is a technique I use to repair the problem.

First of all, I have a fairly well equipped shop, and I make use of the equipment I have. I'll explain everything I use in a moment.

The base for the sets I'm discussing, are either aluminum or zinc alloy, and both materials are fairly similar in nature, and it really doesn't matter if they're made of either material, the repair procedure is the same regardless.

Secondly, I'm going to be using the term, "brass insert". Personally, I prefer to use brass, as it's a fairly easy material to work with, and produces excellent results. One could use aluminum stock, which would be a closer match to the material used when the sets were originally manufactured, but aluminum is a pain in the neck because it plays havoc with the cutting tools. It plugs up the cutting tools which then have to be cleaned of aluminum deposits fairly often, and getting aluminum deposits out of the inside of a thread cutting die, is no easy chore.

I use a drill press to drill out the pedestal that requires repair. It ensures a controlled, and straight hole. The "key" word in that sentence is "control". It's more than easy to drill too deep, ending up with a hole through the exterior of the case, which is definitely not good.

Here's the overview of the entire process. I'll explain drilling out the pedestal that's damaged, prepare and install a brass insert, and finish off the installation so that it really looks like a factory or professional repair.

The machines I use: A drill press, and a micro metal lathe.

The tools I use : ¼ - 28 (NF = National Fine) thread cutting die.

¼ - 28 (NF) regular tap.

¼ - 28 (NF) bottoming tap.

No. 3 Index Drill. (0.2130")

No. 29 Index Drill. (0.1360")

No. 8 – 32 regular tap

One small (around 4 Fluid ounces) can of tapping fluid.

Dremel Rotary Tool with Cut Off Wheel

I'm going to explain this using the exact procedure that I use. As it so happens, the handset cradle posts of a D1 are all about the same height, and as such, they provide a fairly stable base upon which to rest the case, in an upside down position, in order to drill and tap the base plate mounting pedestal(s).

The tools are essential, but the machines are optional. The machines do ensure the drilling, thread cutting and tapping are aligned and straight.

The first thing I do is remove the hook switch plunger and related actuator components and set them aside. I remove the hook switch assembly as well. It's not totally necessary, but it's one less thing to worry about during the repair.

Next mount a No. 3 index drill into the chuck on the drill press. Place the "D1" base, upside down, with the handset cradle posts resting on the drill press table and line up the base plate mounting pedestal opening with the tip of the drill bit. Important : Use a sharp drill bit.

Drill out the pedestal, making sure that the drill bit doesn't travel too far into the pedestal, and come out the other side. Common sense is an important word here. It's not necessary to strike "oil". All we want to do is provide enough depth to provide an adequate seat for the brass insert. Use a small drill bit or small screw driver shaft and measure the depth of the existing factory hole. Mark the depth on the drill bit, and don't exceed that mark when drilling the post.

The use of the drill press "depth stop" might come to mind in this situation, but it's best to determine the depth by using yours "eyes". Drill a bit, then stop and check how deep the bit has travelled. The bottom of the pedestal recess as cut at the factory, has a smaller indentation at the bottom of the hole. It can serve as a reference point. Leave that recess intact, and don't go any deeper.



Once the pedestal hole is enlarged by drilling it out, set the housing aside for a minute, and install a $\frac{1}{4}$ - 28 regular tap in the chuck of the drill press.

PLEASE NOTE : I'M NOT GOING TO PUT THE CHUCK / TAP UNDER POWER. I JUST WANT TO USE THE DRILL PRESS TO START THE TAP WITH ACCURACY, i.e., STRAIGHT.

Place the casing back onto the drill press table in an upside down, so that it's again resting on the handset cradle posts.

Crank the drill press table up, and position the drilled out pedestal is aligned with the end of the tap.

Continue to crank up the table so that there's slight pressure being applied to the tap against the pedestal opening. Use lots of tapping fluid to ensure easy cutting and nice clean threads. One can't really ever use "too much" tapping fluid.

Using a drill
press "NOT
UNDER POWER"
to start the tap
so it cuts
straight & true.
Turn the chuck
by hand until the
tap is started.



Using one hand to hold the telephone case firmly on the drill press table, turn the chuck with the tap installed, clockwise (that's clockwise when looking down at the pedestal, or, the normal direction in which a drill press would turn if under power). Just turn the chuck $\frac{3}{4}$ of a turn and crank the drill press table up slightly, to compensate for the tap cutting into the telephone case pedestal.

Once the tap has travelled a couple of complete revolutions, loosen the drill press chuck to release the tap. Leave the tap in place and carefully move the telephone case to the work bench. Attach a normal tap handle to the tap and continue tapping the hole in a normal fashion.

A regular tap will bottom out after only a few turns, and you'll feel the tap handle getting hard to turn.

Stop and remove the regular tap and install a bottoming tap.

N.B. – A bottoming tap is designed to tap threads almost all the way to the bottom of the hole into which the threads are being cut.

Carefully thread the bottoming tap into the hole using the threads created by the regular tap.

Continue tapping the hole all the way to the bottom, and remove the tap.

Clean out the newly tapped pedestal with preferably lacquer thinner, acetone or rubbing alcohol to remove the tapping fluid and the pieces of metal cut by the tap. A cotton Q-Tip dipped in the cleaning solution does a decent job.

It's important to get rid of the fluid and metal particles in order to ensure a good bond between the brass insert and the threads of the newly tapped pedestal.

The insert : Is a piece of $\frac{1}{4}$ inch brass round stock, and cut to approximately $1\frac{1}{2}$ inches in length.

After tapping the new hole, clean it out with lacquer thinner, acetone or rubbing alcohol.



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The inside hole is drilled to a depth of approximately $\frac{3}{4}$ of an inch, with a No. 29 index drill, which is the correct tap drill size for tapping out the hole for a No. 8 – 32 fastener with the appropriate tap.

The drilling is done by placing one end of the $\frac{1}{4}$ inch brass round stock in a round stock collet clamp attached to the head stock shaft of the metal lathe. The No. 29 index drill bit is placed into a Jacob's drill chuck attached to center spindle of the lathe's tail stock.

Once the set up is complete, the hole is drilled out, and to a depth of approximately $\frac{7}{8}$'s of an inch. This is the only operation done by powering up the lathe.

The drill bit is then removed from the Jacob's chuck, and replaced with an 8-32 tap. The tail stock of the lathe is adjusted to an appropriate distance from the brass round stock, and using the tail stock spindle, move the tip of the tap into the hole opening. Keep moderate pressure on the tap and turn the lathe's chuck in a counter clockwise direction, (direction determined by assuming the lathe chuck is to your left, and your looking directly at the face of the chuck), using cutting fluid as you go.

The outside threads are cut with a $\frac{1}{4}$ - 28 NF thread cutting die.

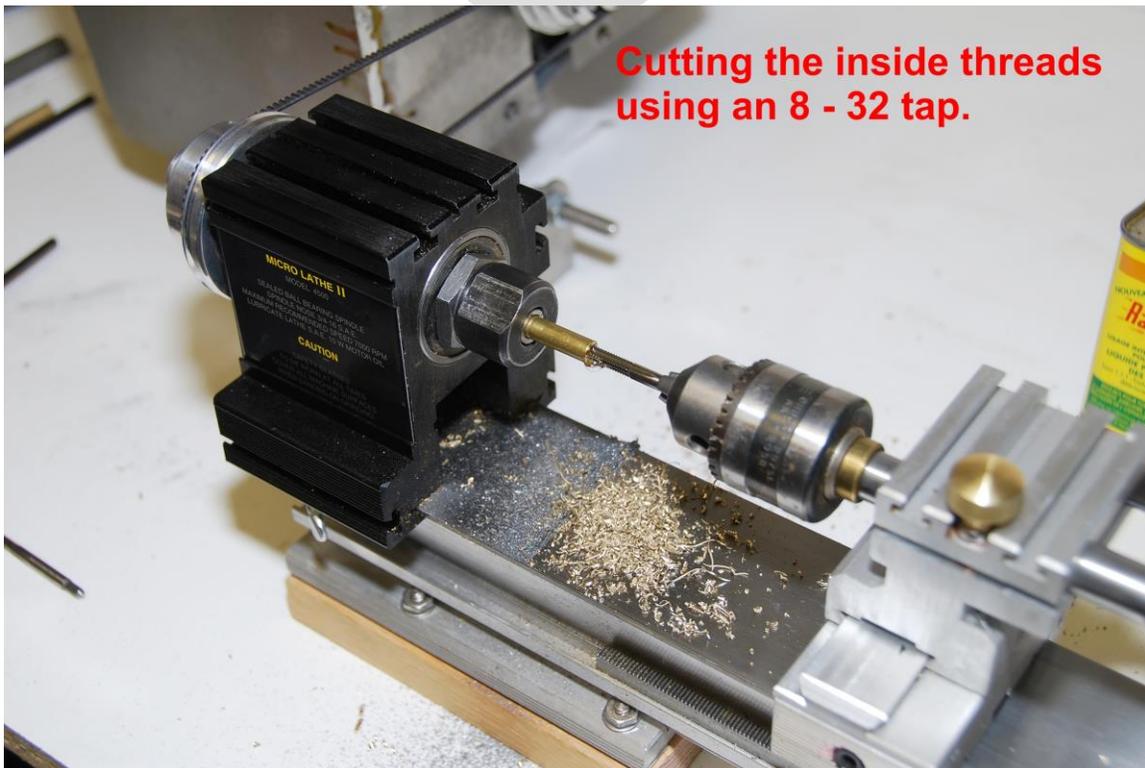
The thread cutting die is placed in a 3 jaw chuck on a metal turning lathe, while the $\frac{1}{4}$ inch brass round stock is clamped in a Jacob's chuck mounted to the lathe's tail stock.

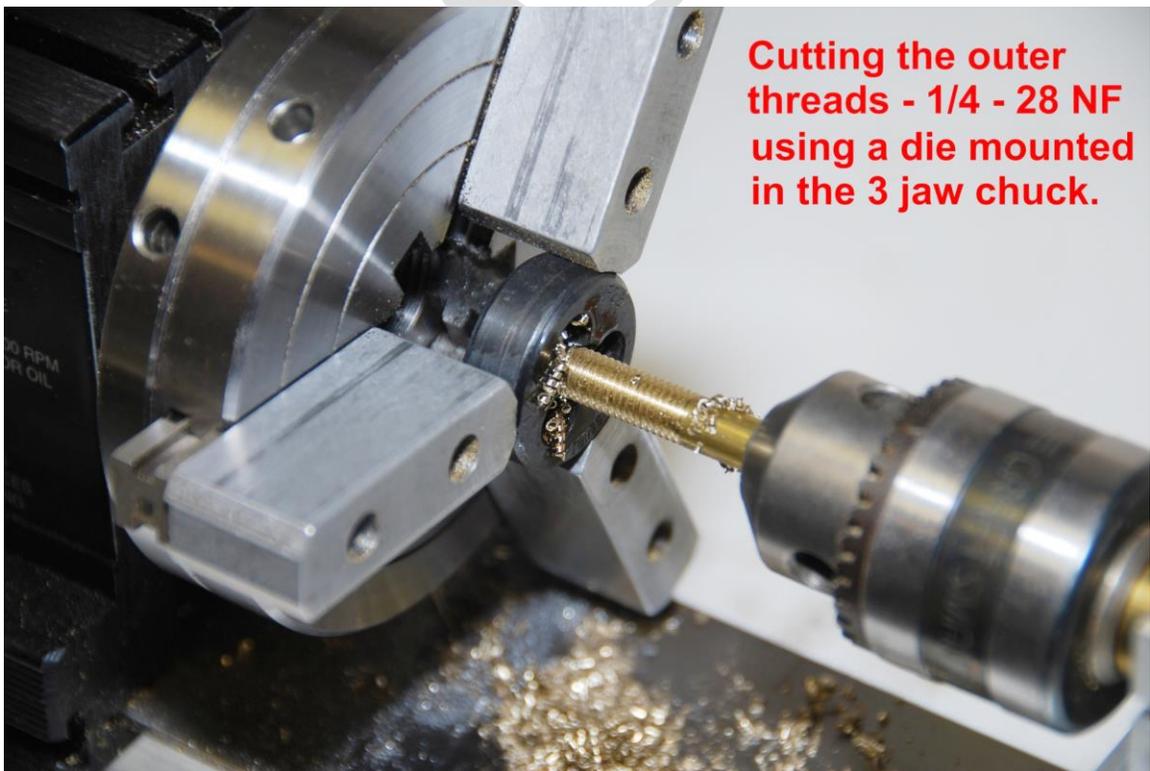
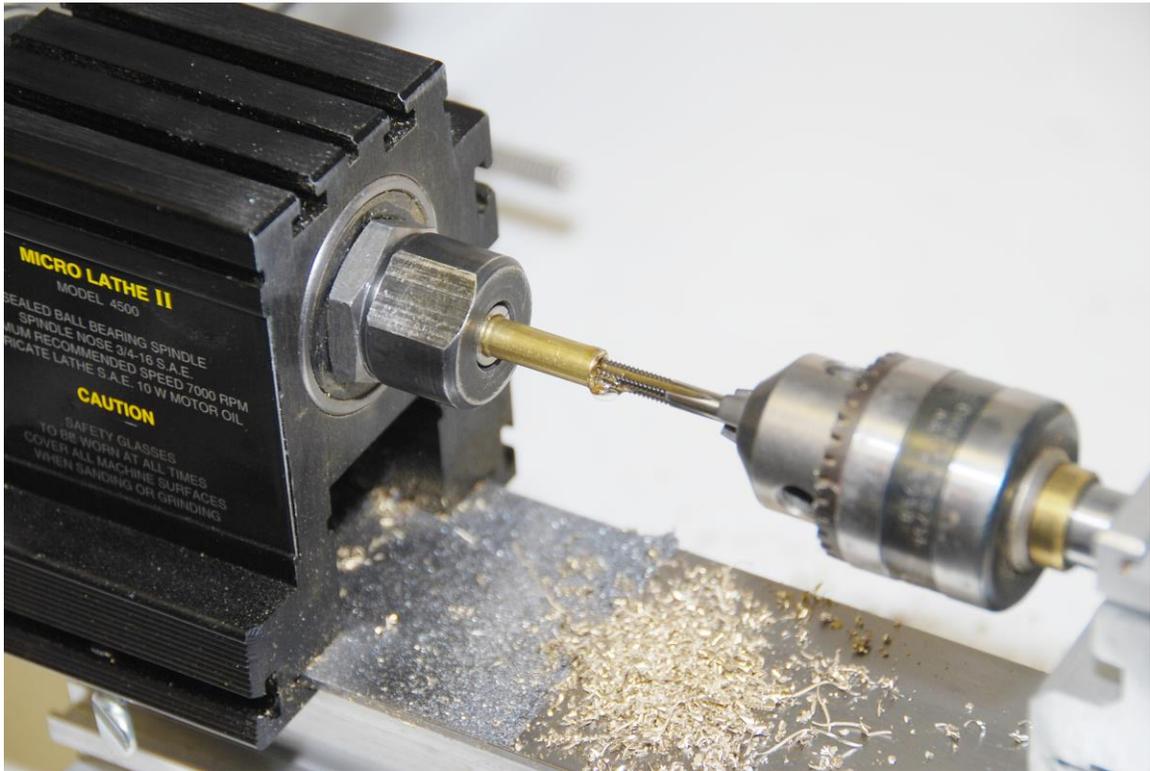
The actual cutting of the thread is done manually.

N.B. – THE LATHE IS NOT UNDER POWER FOR THREAD CUTTING. IT'S ALL DONE MANUALLY BY TURNING THE CHUCK BY HAND.

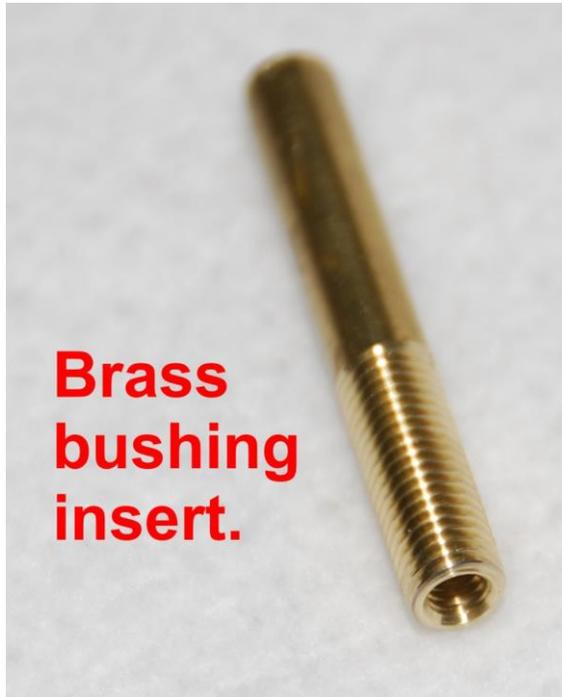
The lathe just ensures that the hole being drilled, and the cutting of the threads, is done accurately and straight.

Cut the outer threads for a distance of about $\frac{3}{4}$ of an inch from one end of the insert.





The brass insert should look something like this.

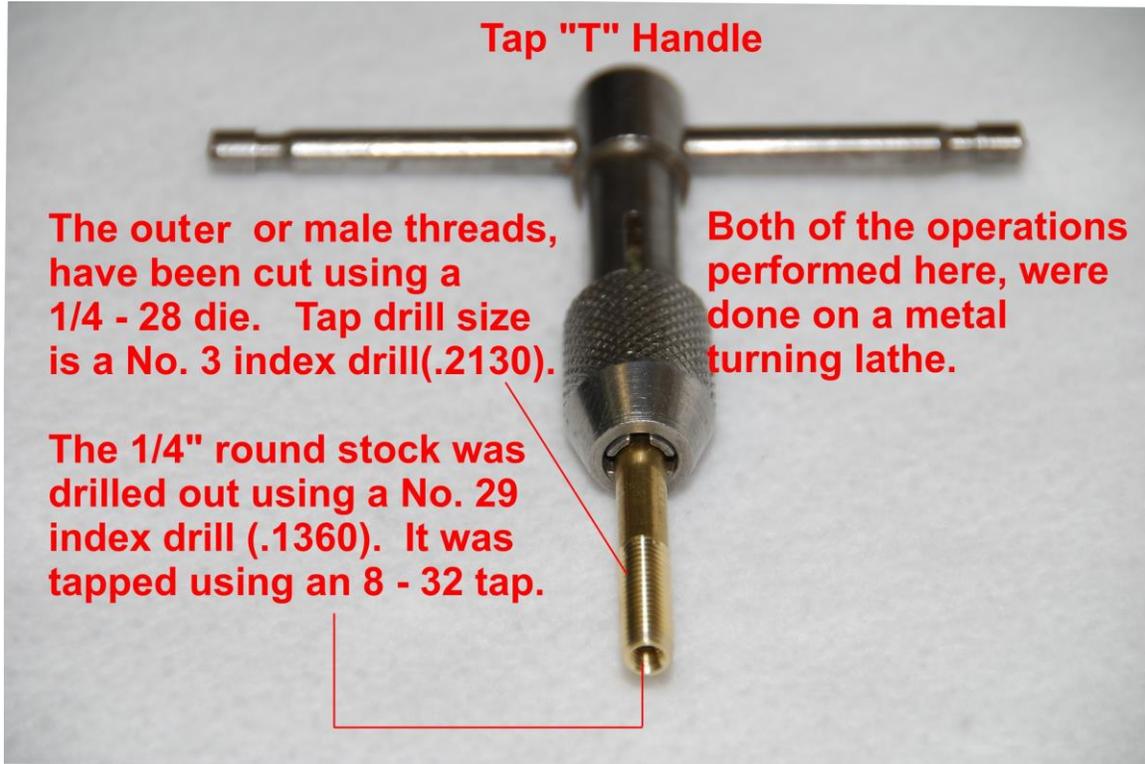


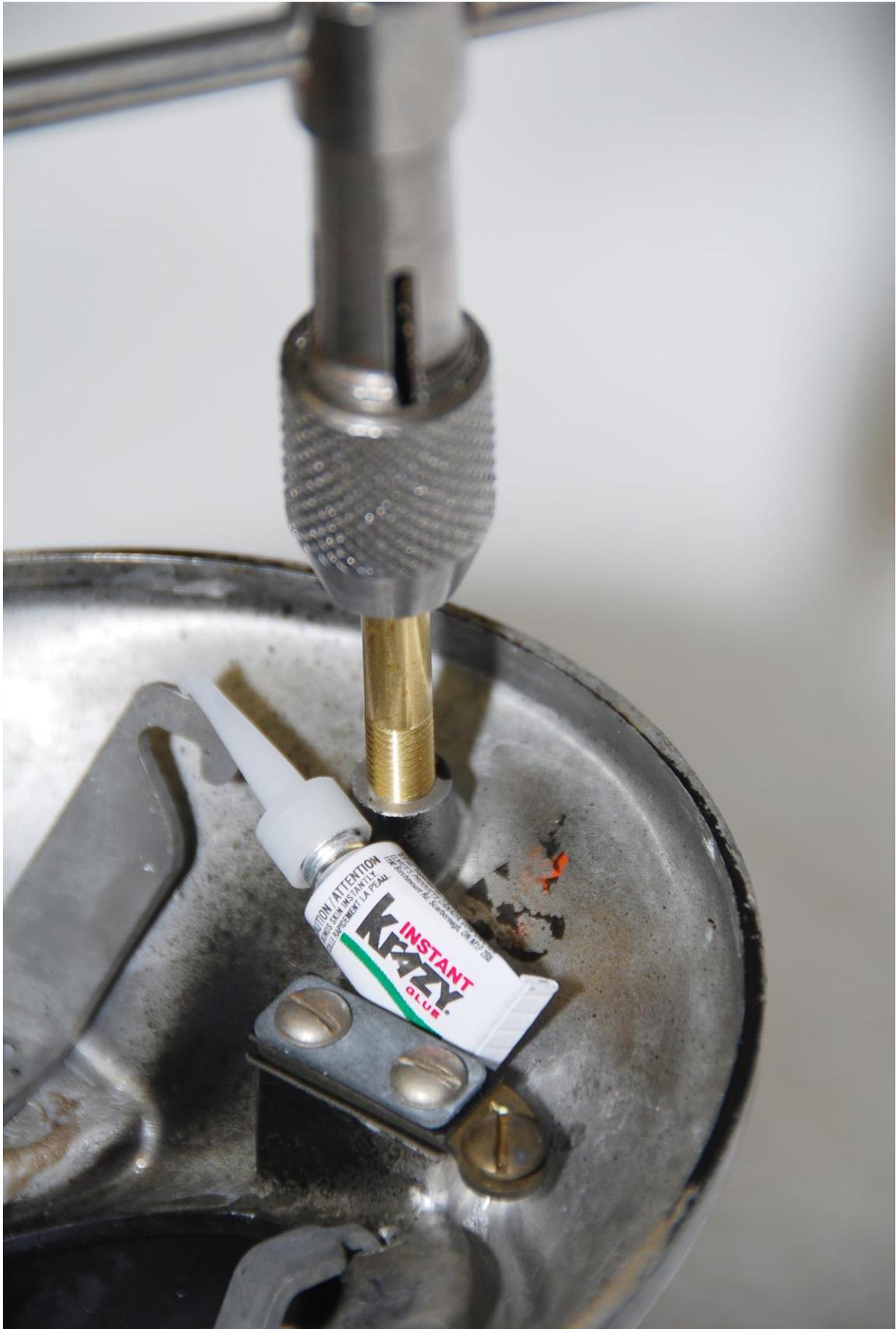
Installing the insert : To install the newly made insert into the base attachment pedestal, I mount the insert in a “T” handle designed for holding ¼ inch taps. It makes it a lot easier to screw in the insert and tighten it, rather than having to try tighten it with pliers or a pair of small vise grips.

Once the insert is mounted in the “T” handle, spread a light coating of “Crazy Glue” on the threads of the attachment pedestal, and on the threads of the brass insert.

Without wasting any time, thread the insert into the pedestal and tighten. Let the base with it’s new insert sit overnight to ensure that the glue is fully set. Once the glue has dried, the insert isn’t coming out believe me.

Once the glue has dried, I mount a cut off disk on my Dremel Tool and cut the insert off as close to the top of the pedestal as possible. Then sand the brass insert flush with the top of the pedestal using 220 grit emery paper, followed by 320 grit and finally, 400 grit.









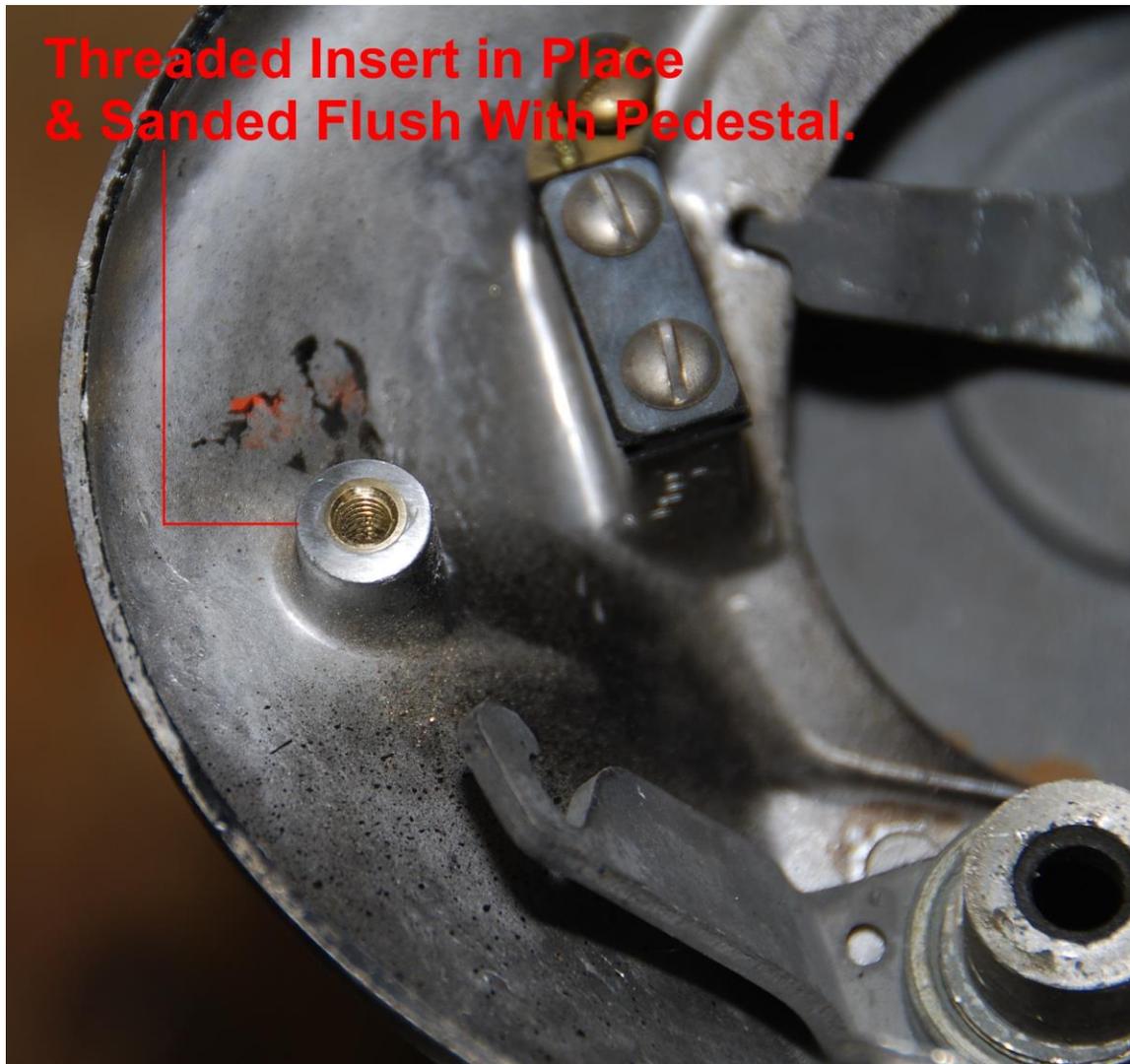
Dremel Tool with cut off wheel used to remove excess material from the brass insert.

A Dremel Tool with a cut off disk attached, is probably the easiest and most practical method of removing the excess brass from the insert once it's in place.

The insert installed, sanded flush with the base plate attachment pedestal and ready to go.

The final step, is to place the case upside down again on the drill press table, and mount a counter sink drill bit in the drill press.

With the drill press running, crank the drill press chuck downward and remove a small amount of the brass around the opening of the threaded hole just enough to give the opening a slight chamfer or bevel. That allows the base retention screws to find the hole a lot quicker when the base plate is being re-installed.



I fully realize that not all club members will have all of the tools that I've used to make and install the threaded insert. But I thought a detailed explanation would help to show exactly how I do it and what is involved.

I would be more than happy to make repairs for anyone that chooses to do so. I would also be more than happy to make and supply the brass inserts and mail them to anyone interested in making the repairs themselves.

Please feel free to contact me anytime if you have any questions.

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