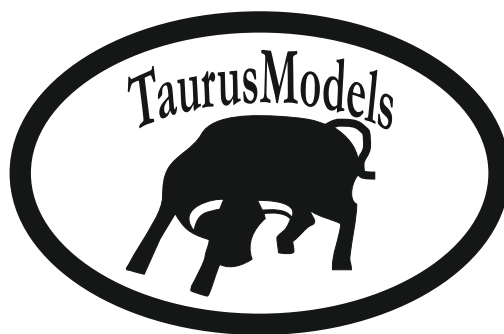


1:32



D3229

Resin model of the
Gnome Lambda
80 hp French rotary aircraft engine

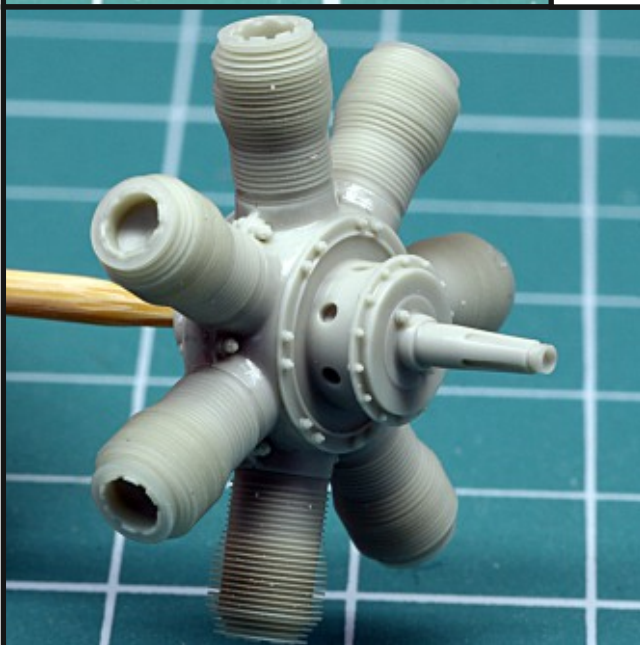
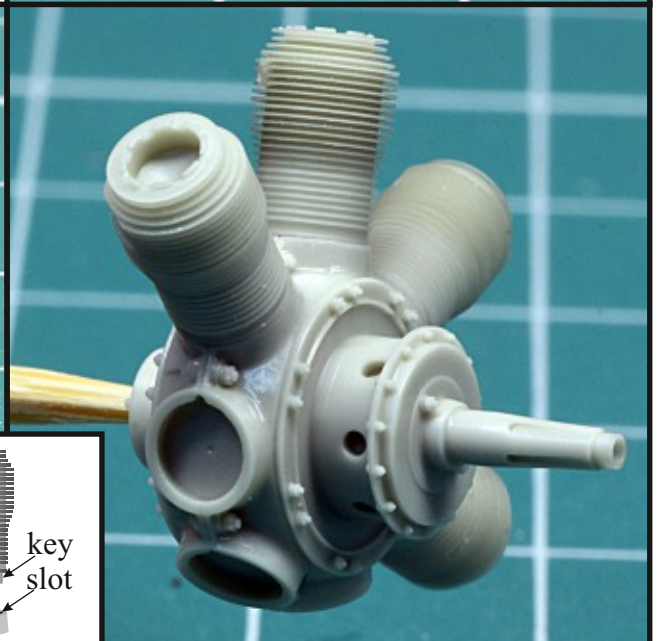
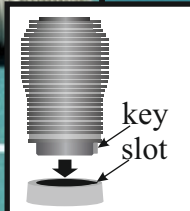
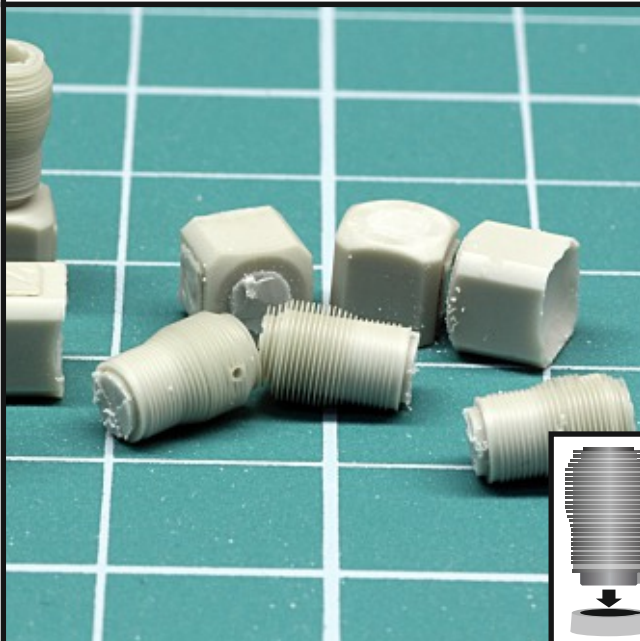


Detailed assembly manual

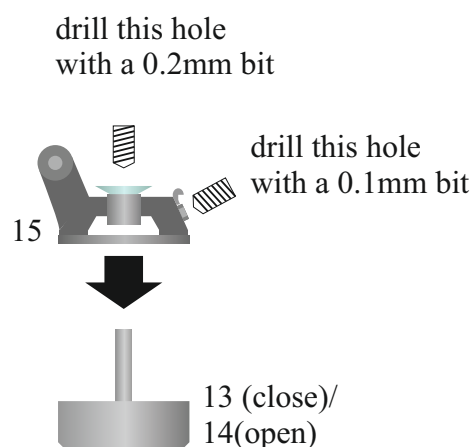
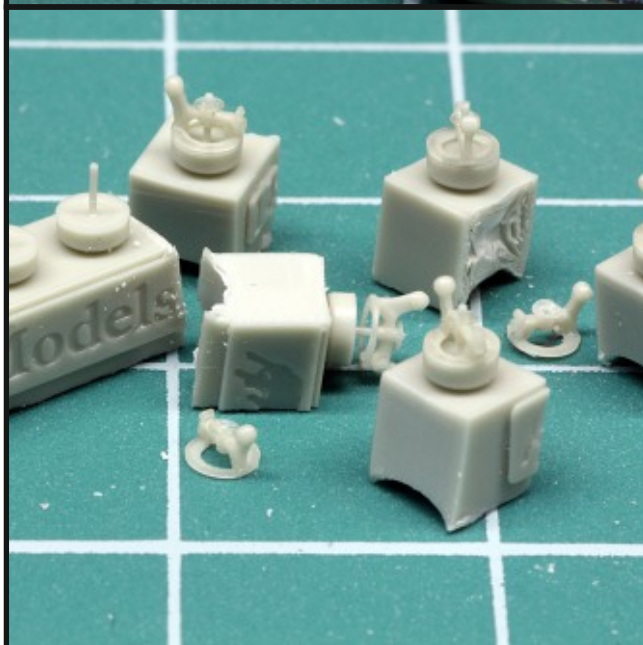
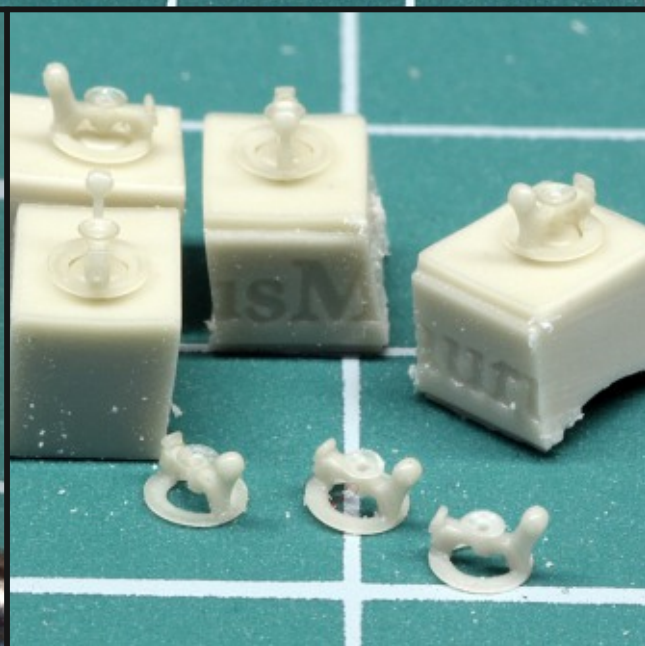
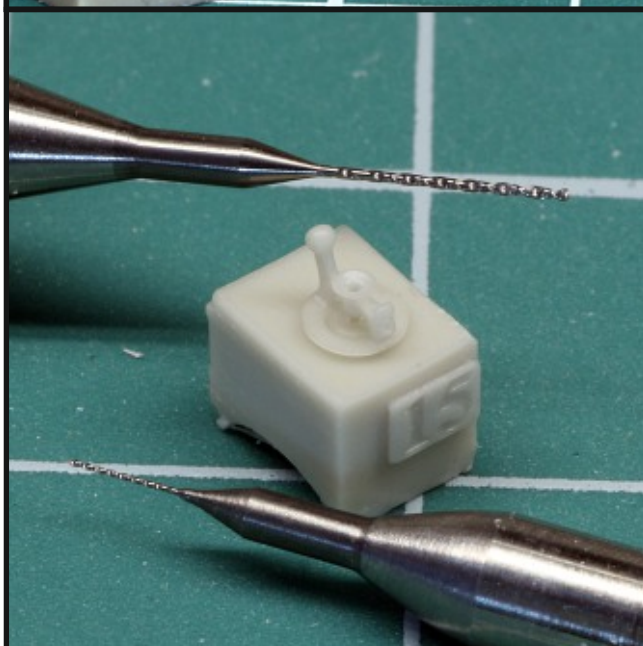
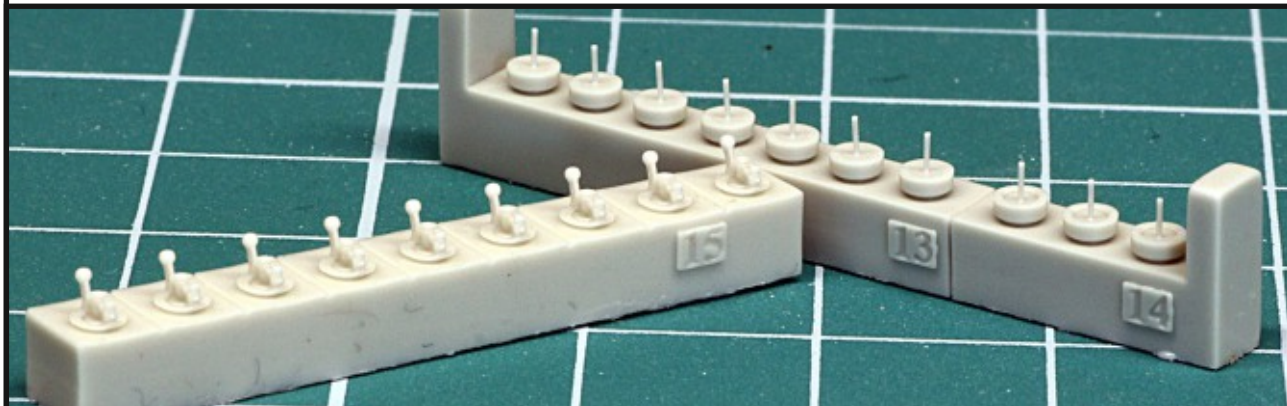
Start the build by cutting the crankcase (part 1) from the casting block with a razor saw. Sand with a Dremel or similar motor tool if you have one to remove any excess resin-if not, using a piece of fine sandpaper taped to your workbench will also work. And **ALWAYS wear a mask** whenever you do so- resin dust in your lungs isn't very healthy, to say the least! The rear of the crankcase (part 3) should be prepared in a similar fashion. Having cleaned up both parts and smoothed the mating surfaces carefully, use a good two-part epoxy to connect them. Note the alignment; viewed from the rear, the screws should be visible between the cylinder bases, as shown. For ease of handling, drill a hole in the rear of the engine and insert a superglued toothpick if desired.



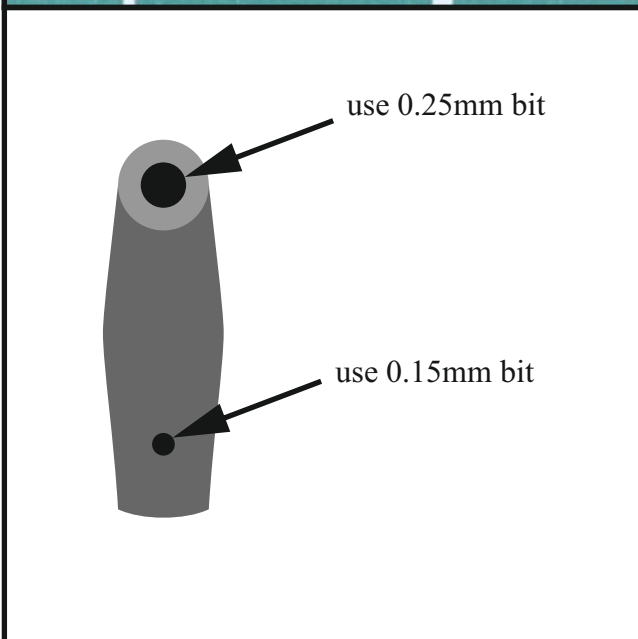
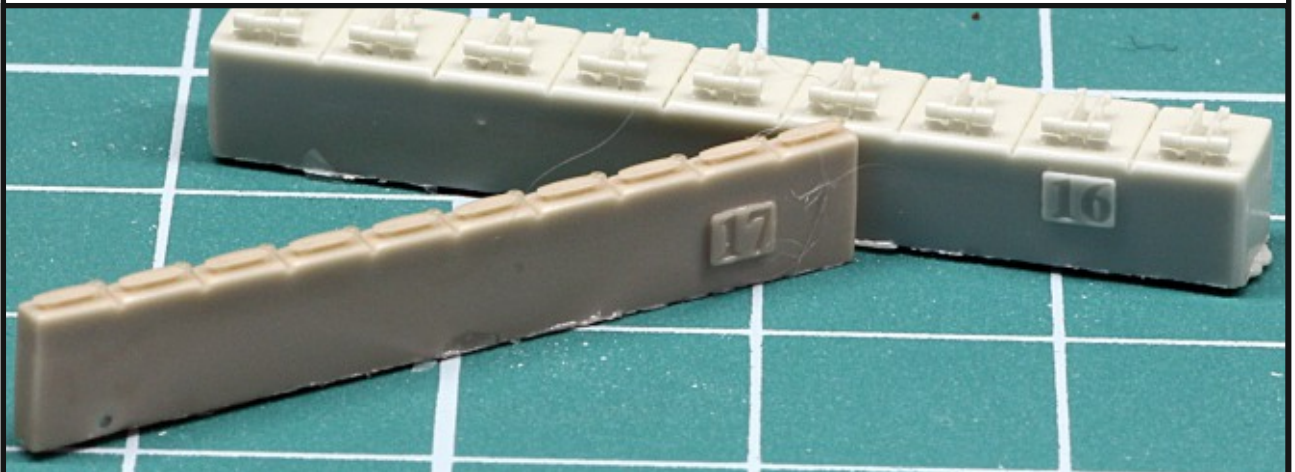
For this step, first use a magnifying glass or jeweller's loupe and have a very good look at the parts before separating the cylinders from their casting blocks. Note that the base of each cylinder has a tiny 'key' or bar cast into its base. This is intended to engage with the equally tiny slot intentionally cast in the circumference of each cylinder socket in the crankcase. So as not to obliterate this important feature, pretend you're a brain surgeon and use a fine-toothed razor saw to separate each cylinder (part 2) from its casting block, sand with equal care, and attach them all to the crankcase, again using epoxy. Position each one very carefully, using the key/slot arrangement to ensure that everything's correctly aligned for authenticity's sake.



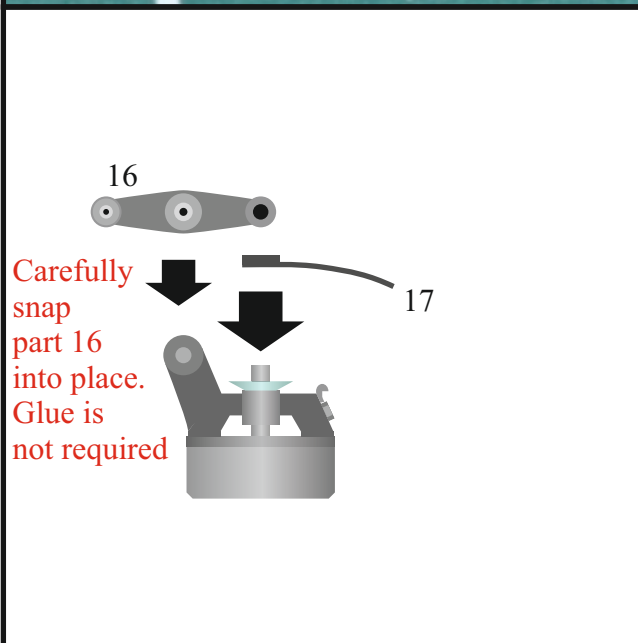
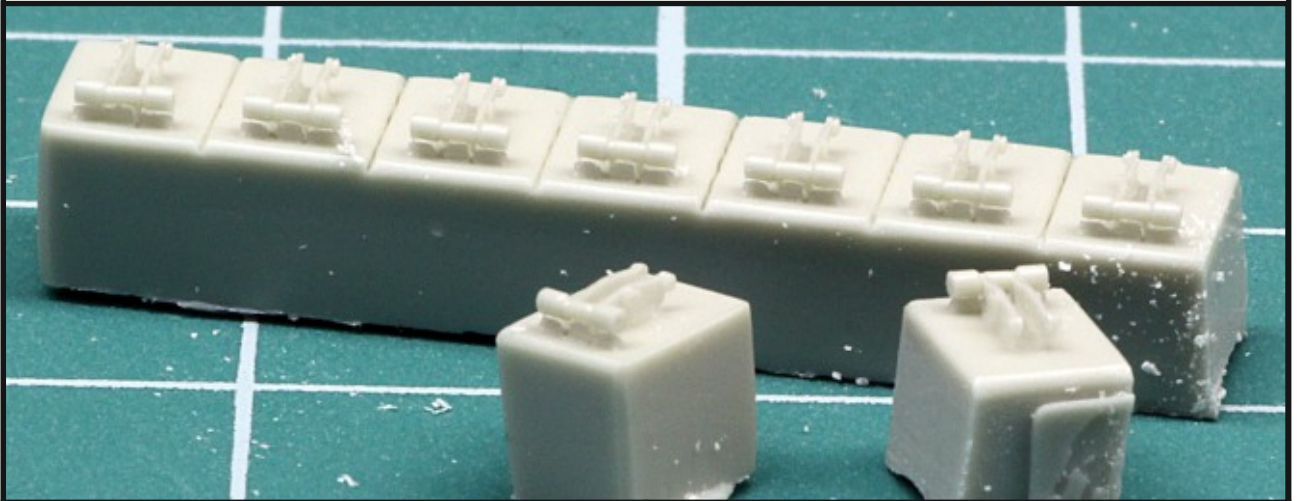
Begin the cylinder head assembly by drilling holes in part 15, using a 0.2mm bit for the central hole and a 0.1mm bit for the hole in the rear. Now, carefully separate each cylinder head from its casting block, and slide individually onto parts 13 and 14, which should be left on their own casting blocks for the time being to make the next few assembly steps easier. Part 13 represents a closed valve, while part 14 represents an open valve. For the correct firing sequence, prepare five closed valve systems, and two open ones.



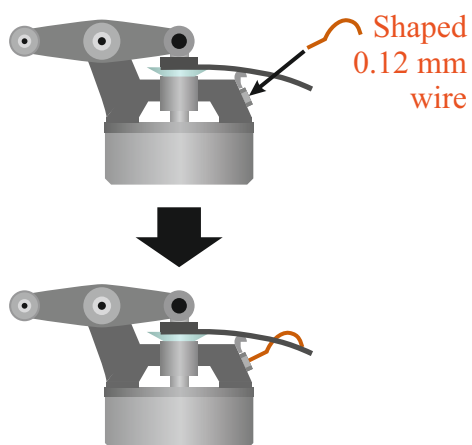
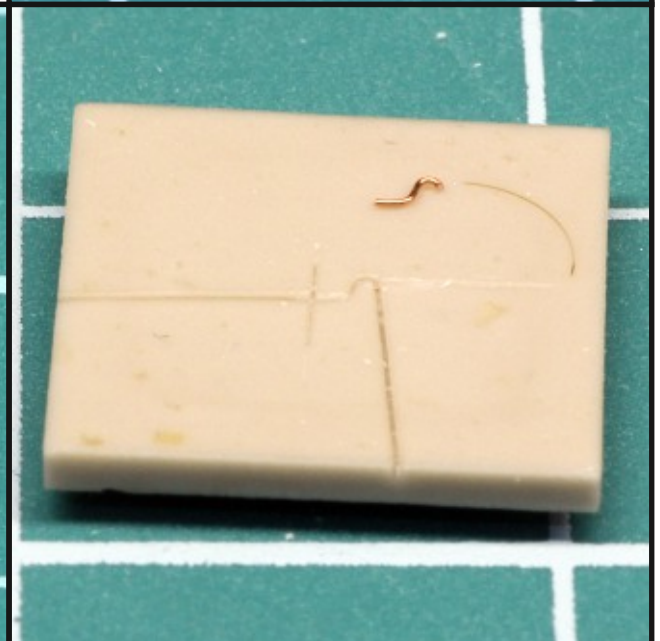
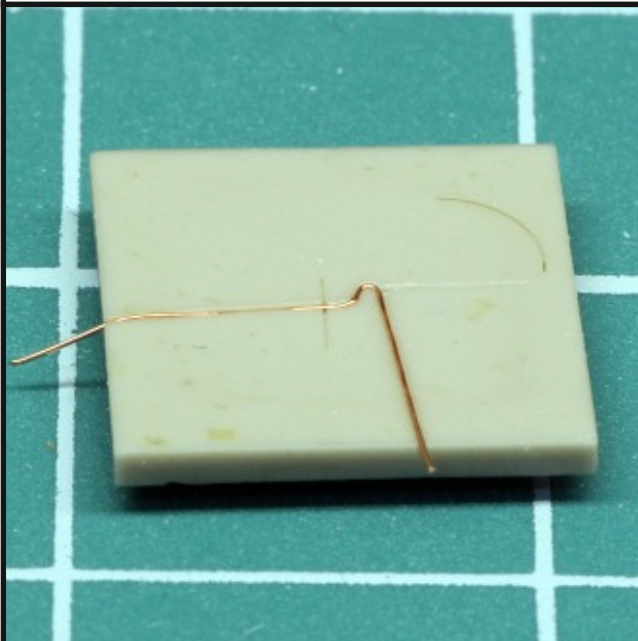
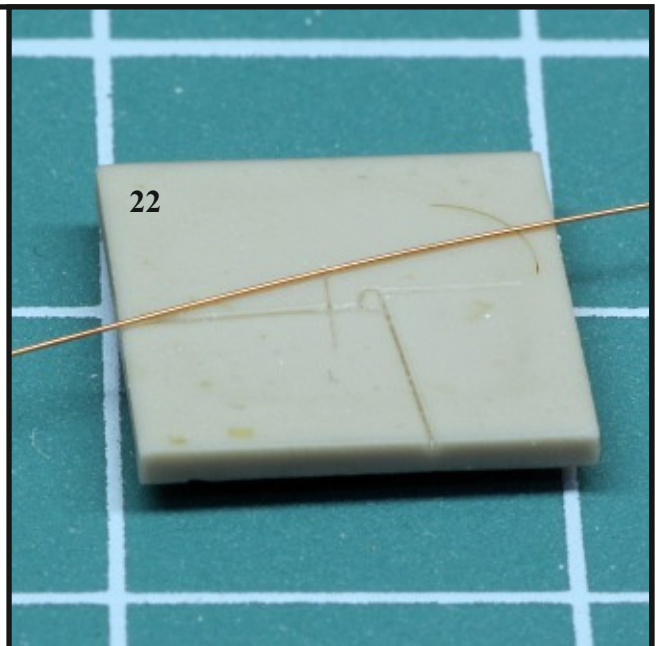
Next, the valve lifters and springs should be assembled. Begin by preparing the valve springs, part 17. Before removing them from their casting block, use 0.25mm and 0.15 mm drill bits as shown. With the required holes drilled, the parts can now be sawn free.



Then, cut the valve lifters (part 16) from their casting block with a very sharp modeling knife. Assemble as shown below.

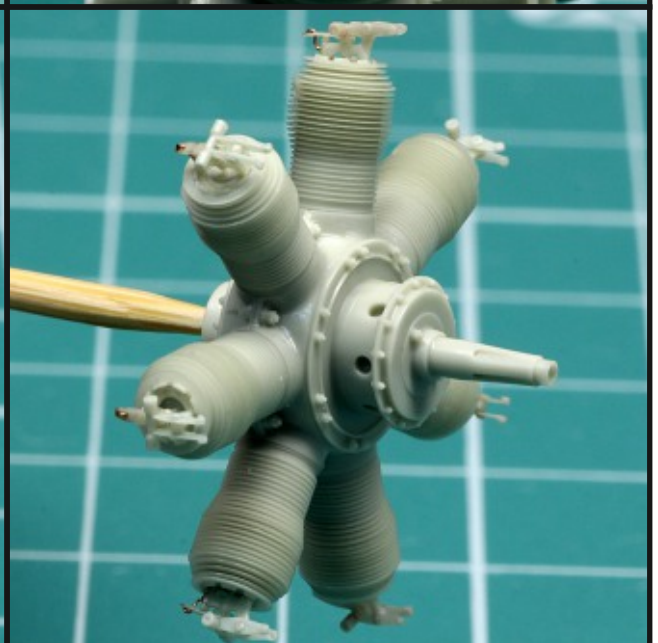
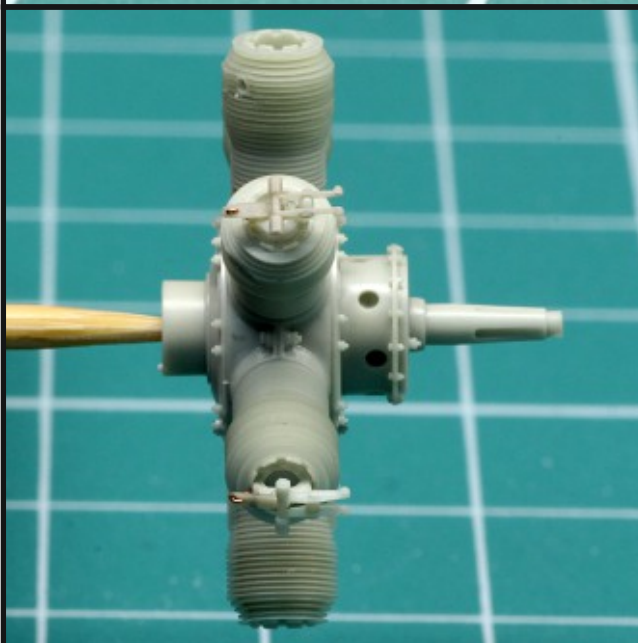
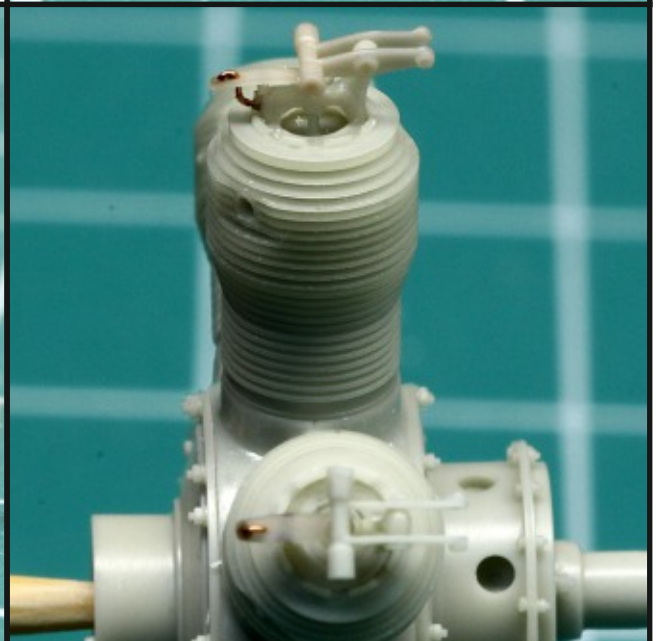
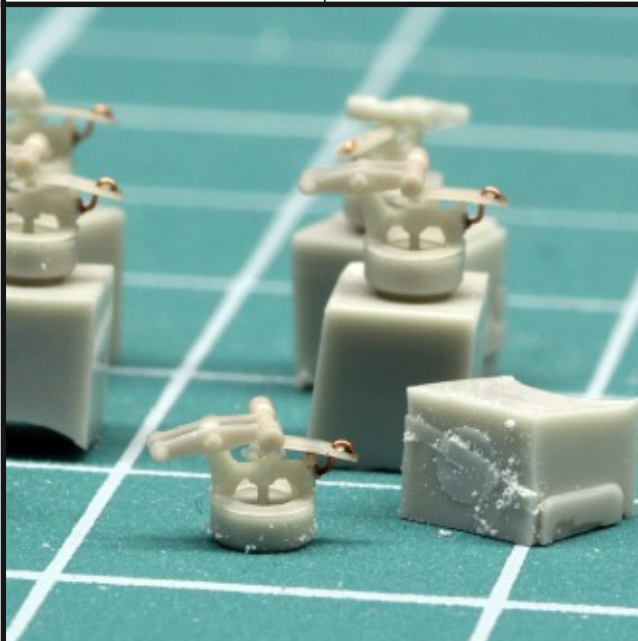
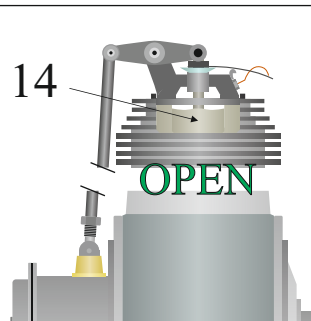
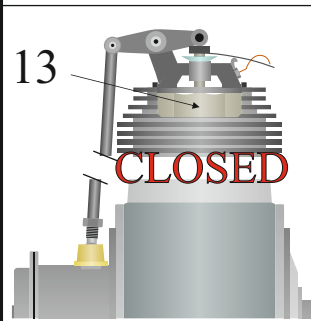


To form the valve spring retainer, slot a short length of the 0.12 wire (the thicker of the two gauges of wire supplied) into the channel on template (part 22) then cut as marked. Make one per cylinder head; they'll snap into place without gluing.

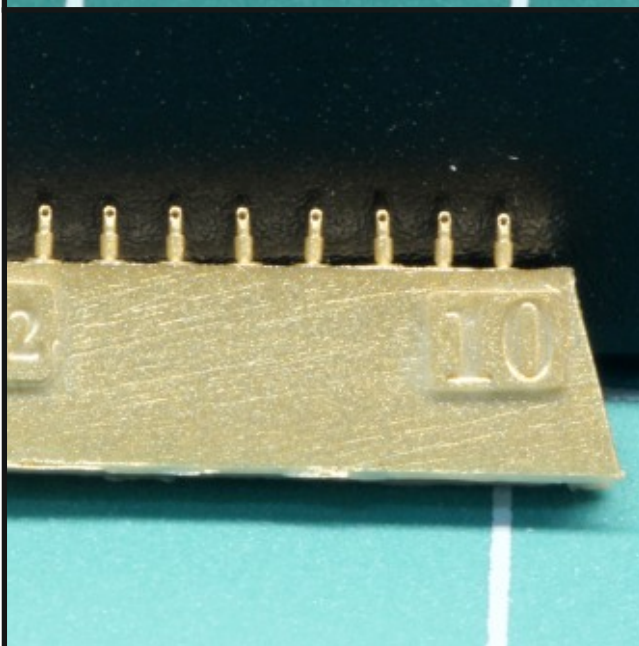
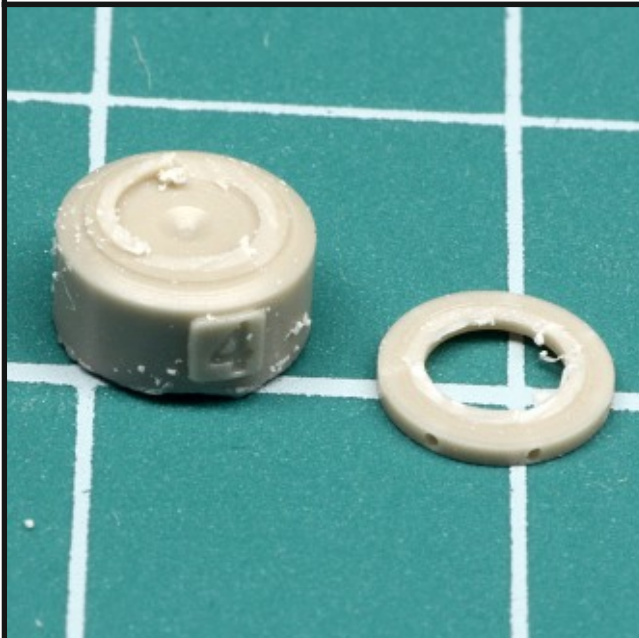


The assembled cylinder heads can now be separated from their casting blocks, and glued to each cylinder, taking care to install them in the correct firing sequence:

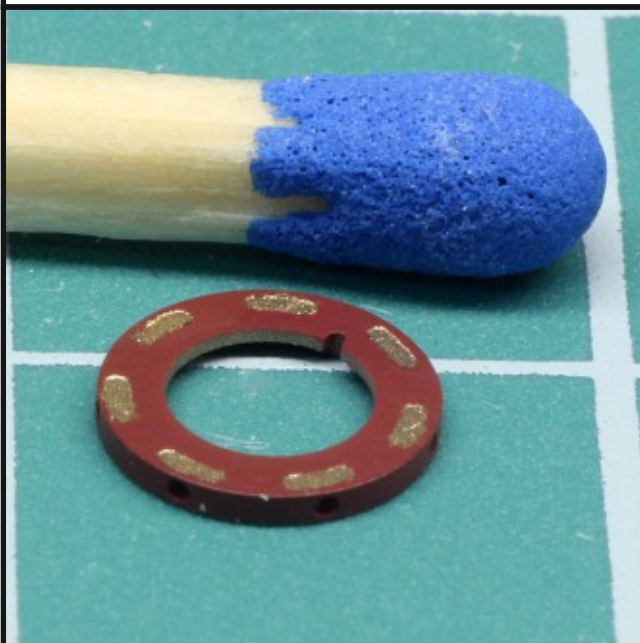
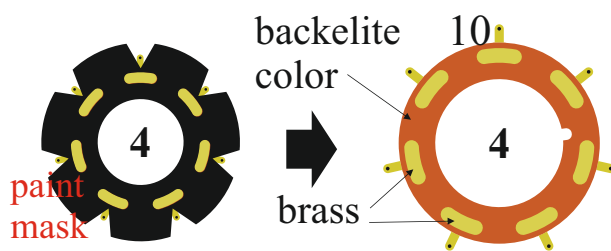
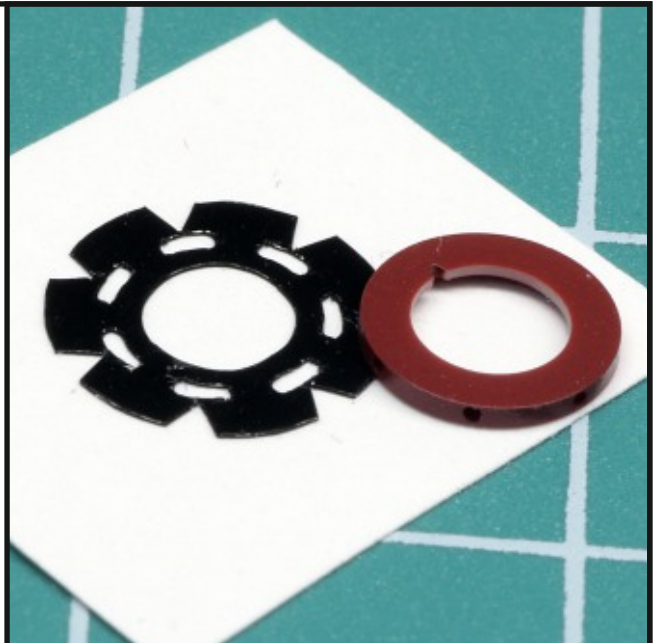
CLOSED, OPEN, CLOSED, OPEN, CLOSED, CLOSED, CLOSED, CLOSED.



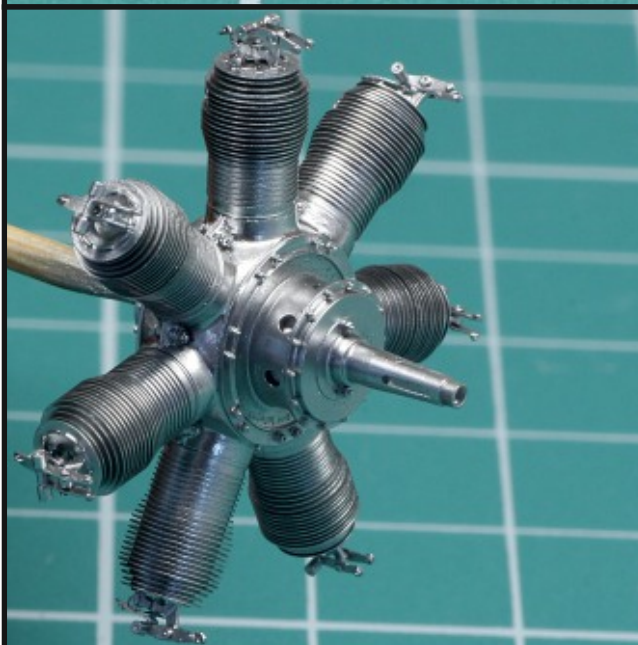
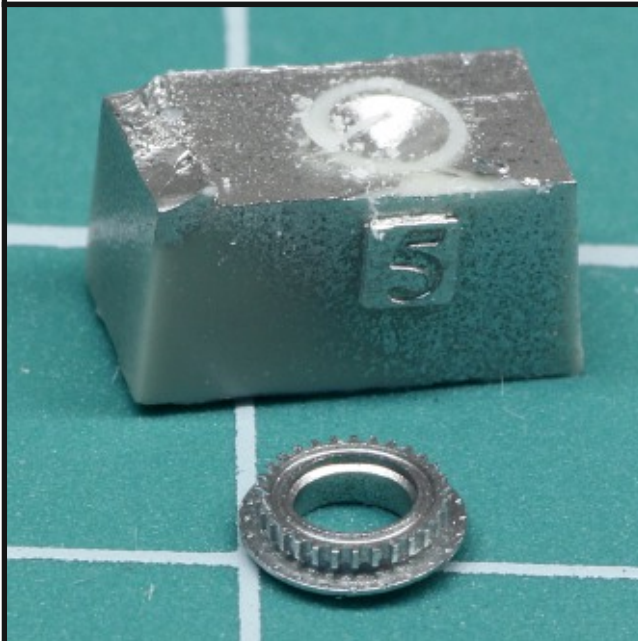
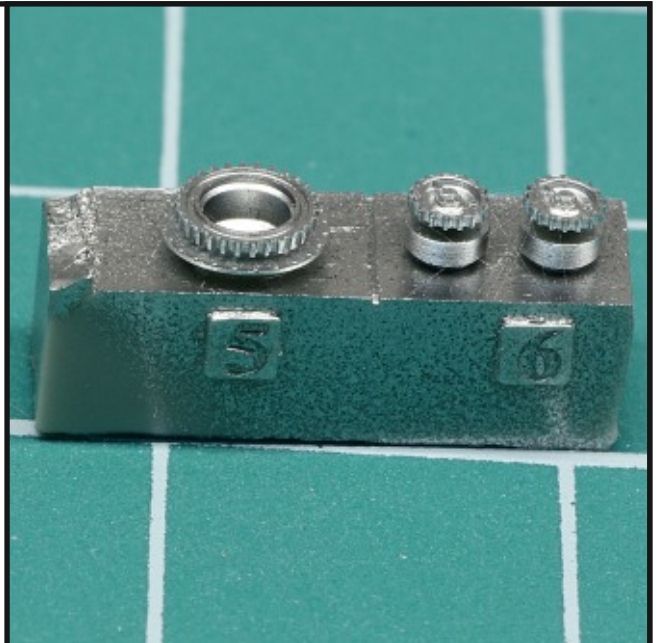
Remove the distributor (part 4) from its casting block, smoothing the newly-cut area carefully with fine sandpaper. At the same time, prepare the electric connectors (part 10). Before painting, drill holes in each of these parts with a 0.1mm bit at the marked points. Part 4 should be basecoated to resemble Bakelite using **Gunze C-007 Brown** or a similar colour, while each part 10 should be painted brass; **Gunze SM-202 Super Gold** is a good match, as is **Vallejo Modelcolor Brass 70.801**.



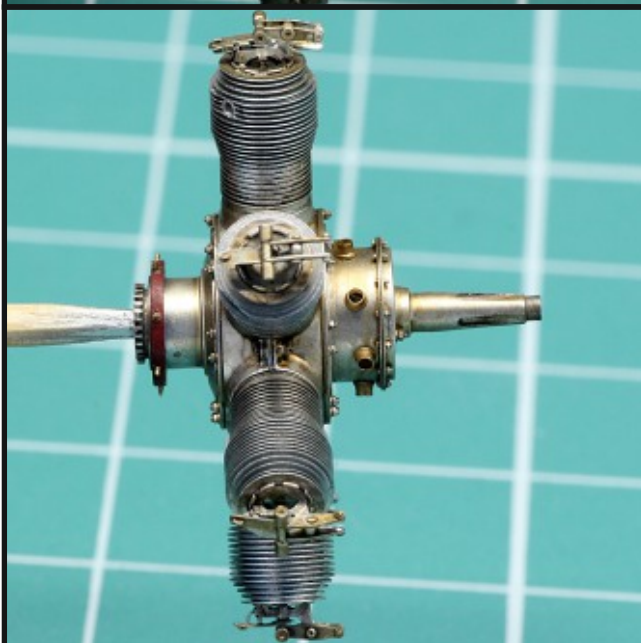
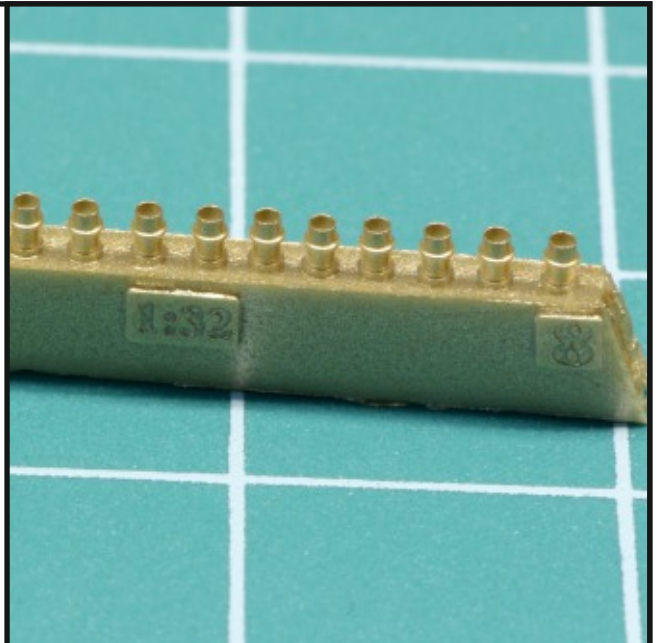
For the contact points on the distributor, apply the supplied mask as shown below, spray a thin coat of brass paint (Gunze SM-202 Super Gold, for example) allow to dry, then remove the mask. Next, install the electric connectors/brushes (part 10) in the predrilled holes around the circumference of the distributor, as shown below, making sure each one is at a 90° angle to the plate.



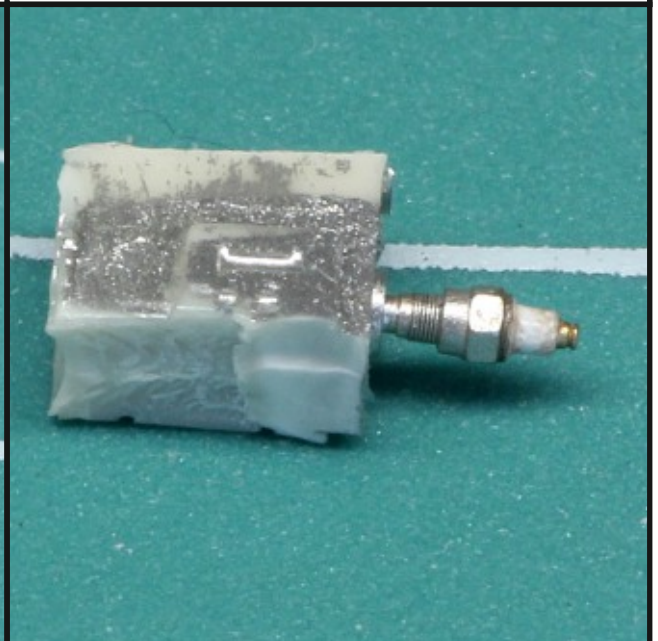
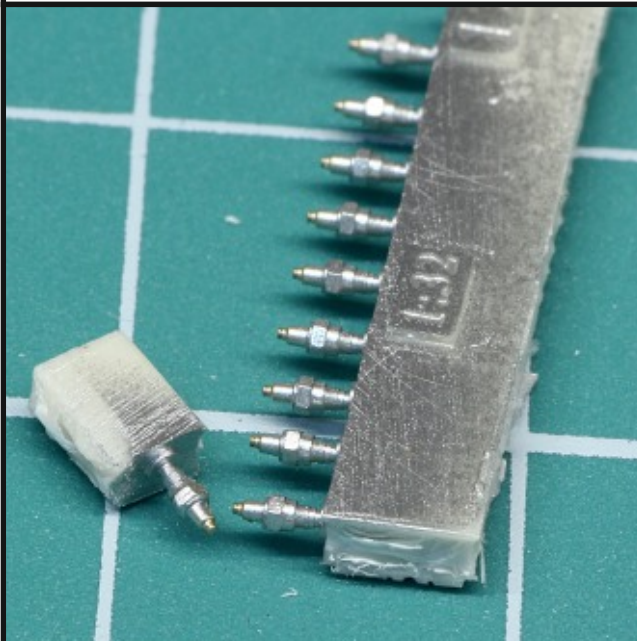
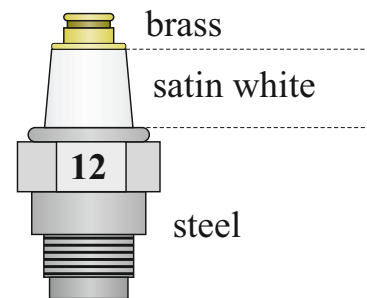
Next, paint the sprocket (part 5) steel (e.g., **Gunze Super Metallic SM01**). It can then be installed in the distributor, as shown. The same steel colour can be used for painting the engine and generator sprockets (part 6). Diluted washes of **Citadel Seraphim Sepia** and **Agrax Earthshade** will help represent the colour variations caused by oxidation and heated metal.



Paint tappet sockets (parts 8) brass, then align them around the circumference of the crankcase as shown. Now install the completed distributor assembly at the rear of the engine.



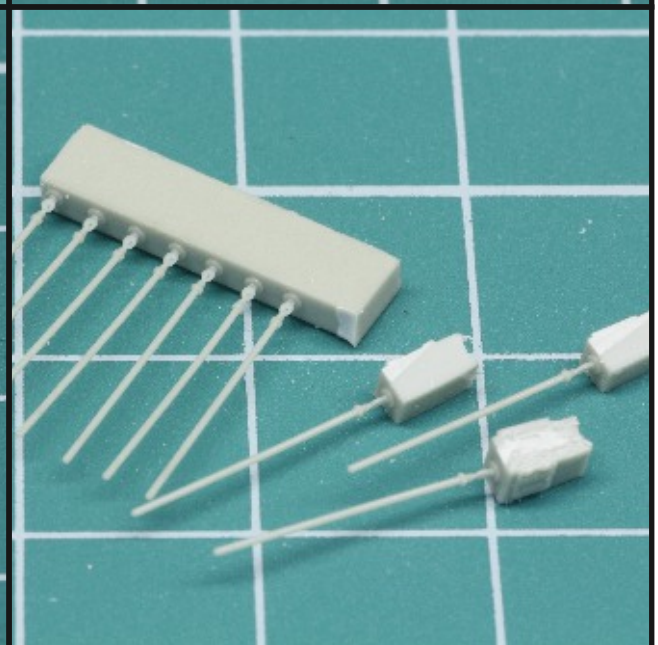
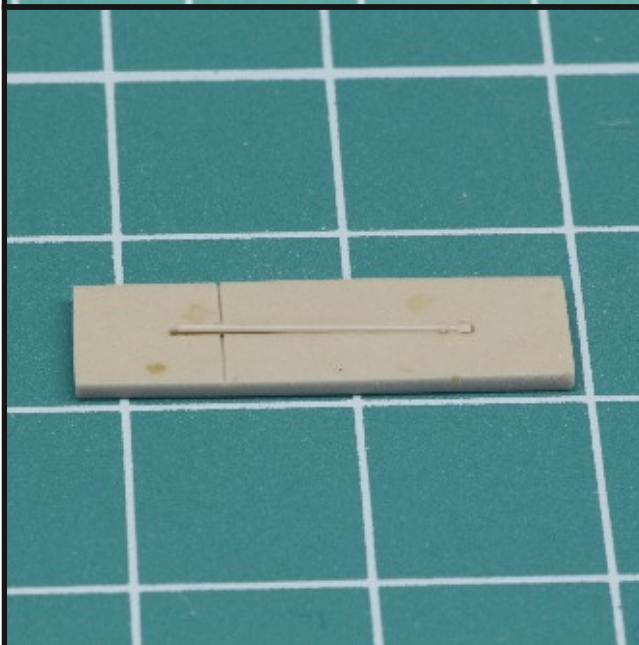
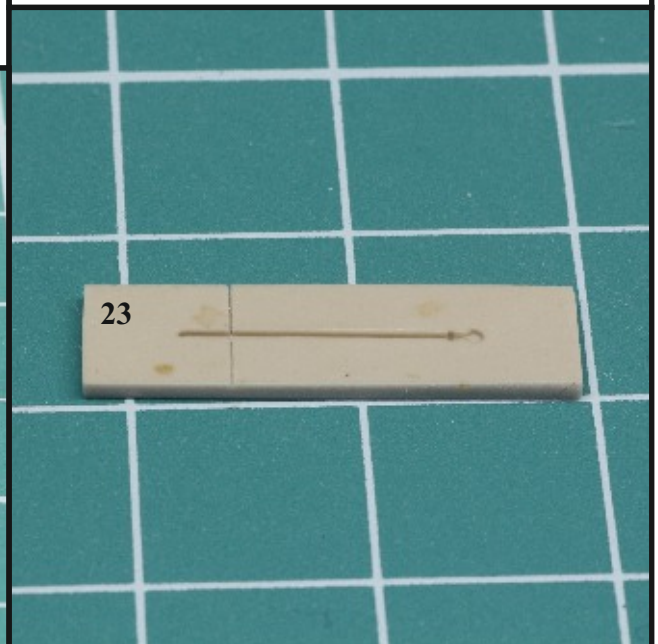
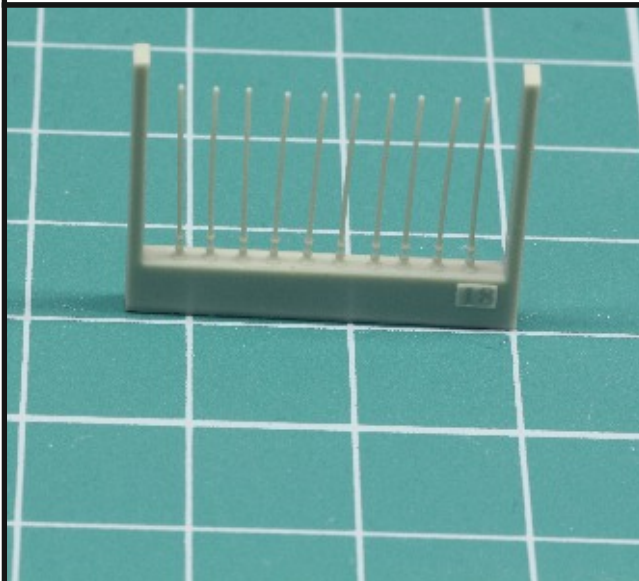
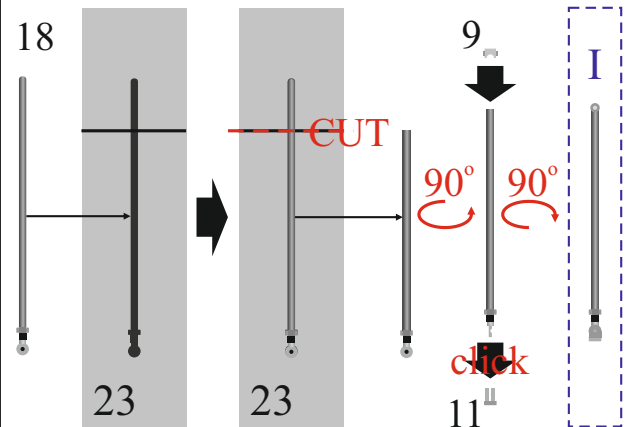
Paint the spark plugs (part 12) in the following order: First, paint everything steel, using, for example, **Gunze Super Metallic SM01**. The ceramic sparkplug insulators should be painted with a few thin coats of very diluted **Citadel Skull White** or similar in semi-gloss, then the contacts should be painted brass. After everything has dried, the completed spark plugs can be removed from their casting blocks and installed in the cylinders by using the positioning tool, part 24. .



The next few steps may seem finicky and time-consuming, but if followed with care and patience will provide the best result, of which you'll be justifiably proud.

First prepare the template (Part 23) by cutting it free from the other templates as shown in the photo. Cut the pushrods (Part 18) so each retains a tiny portion of its casting block for ease of handling. Carefully cut the bottom of the template perpendicular to the tappet link receptacle, so that said link, moulded at the base of the pushrod itself can fit into the template while still attached to its portion of casting block.

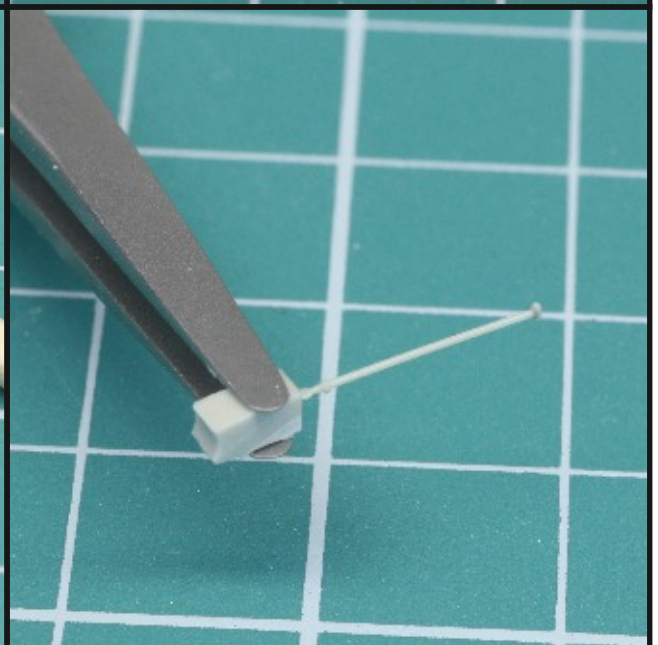
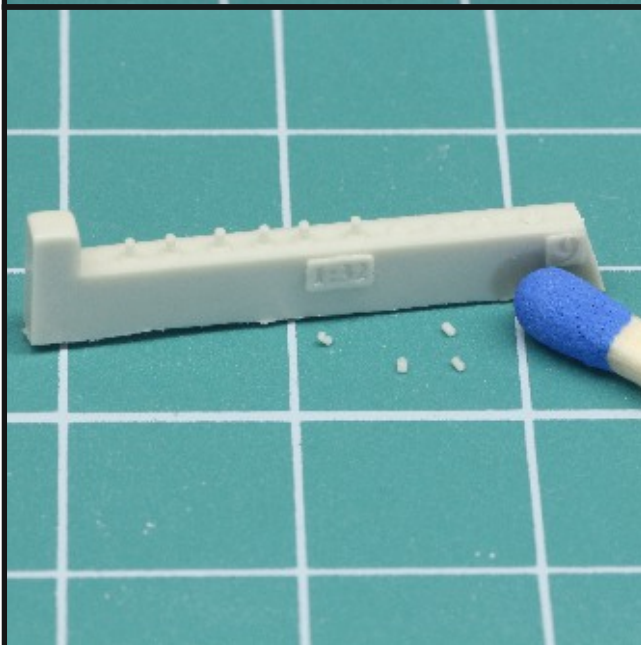
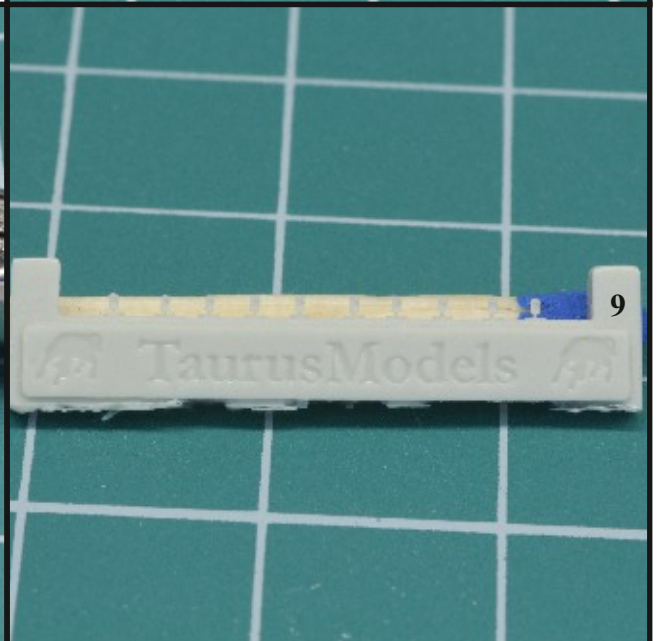
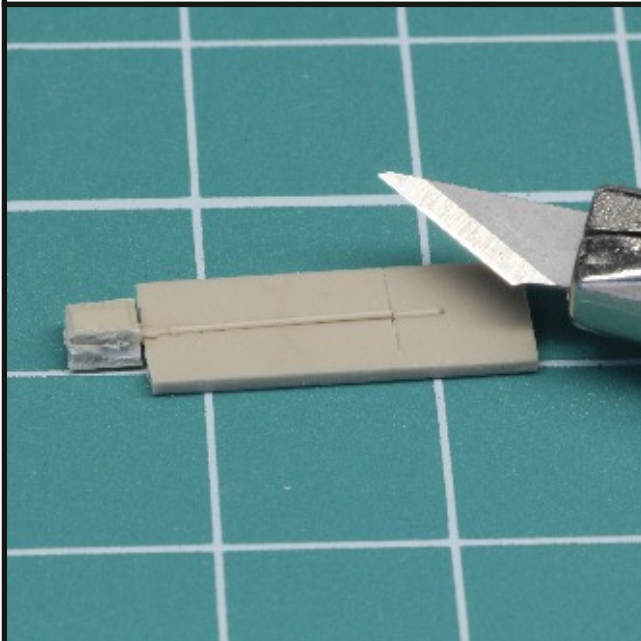
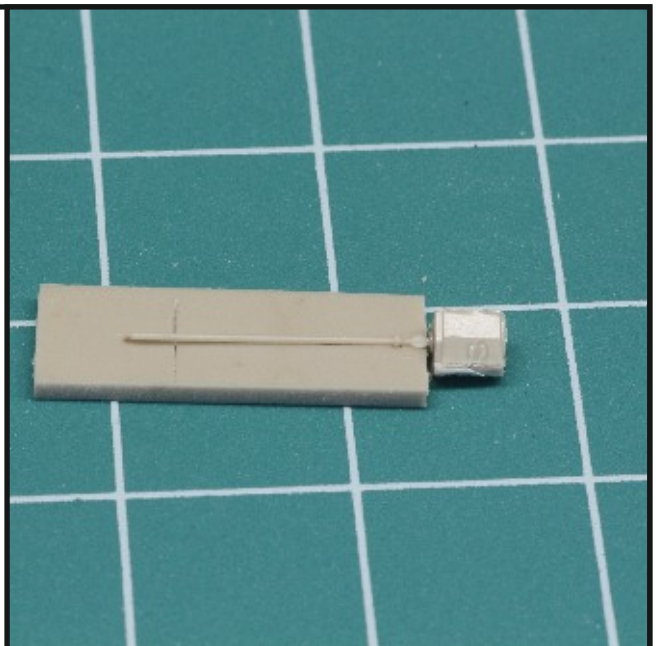
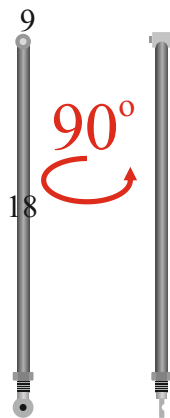
Next, place each pushrod into the template (Part 23), cutting it at the upper template mark as shown. It is now the correct length, and the aforementioned bit of casting block will make handling it for the next steps much easier.



Slice part 9 from the casting block, leaving its tiny side-bolts in place



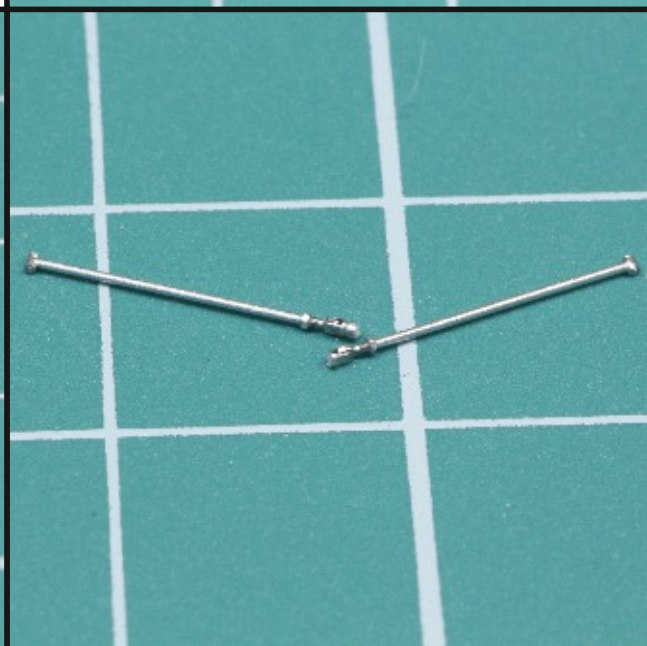
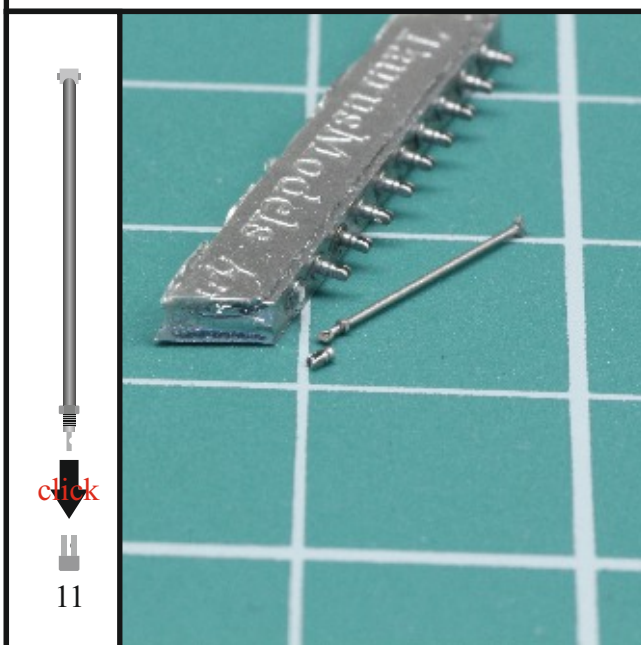
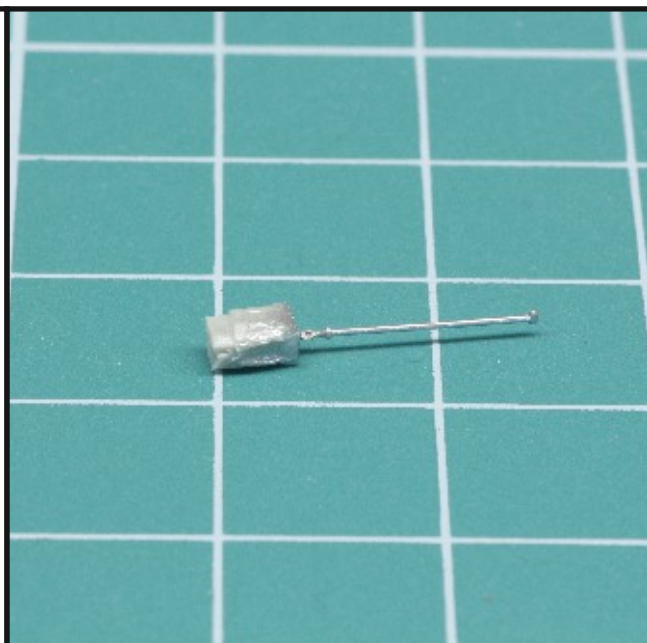
glue the tiny depression on its bottom surface to the cut tip of the pushrod, i.e. at the opposite end of the tappet linkage. It **MUST** be at 90°/crossways to the linkage so that its side-bolts can engage the holes in the valve lifter, (Part 16) in an upcoming step. Repeat this step seven times, one pushrod assembly per cylinder.



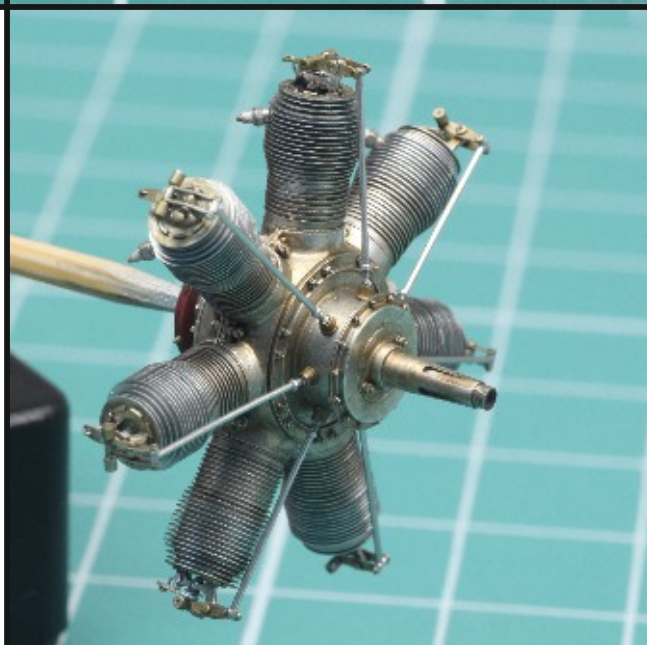
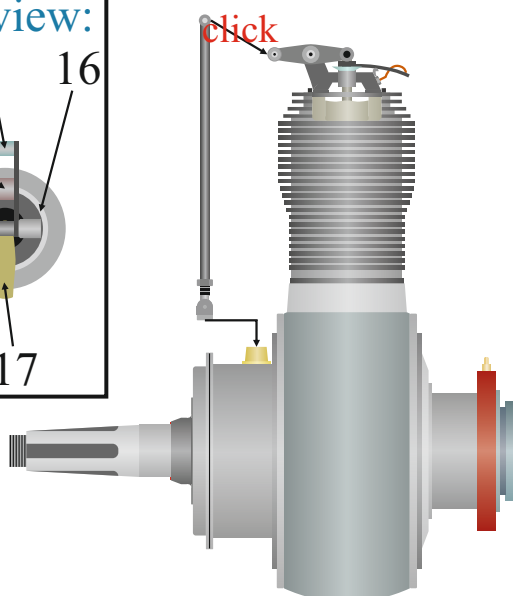
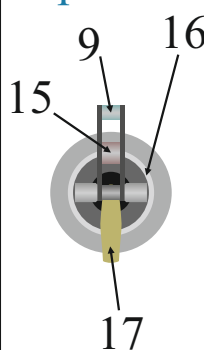
Paint everything steel, and when dry, carefully cut away the casting block portions. Paint the tappets themselves (part 11) steel also, and without using glue simply snap the open end of each into the linkage at the base of each pushrod. A few spares have been included, 'just in case'.

The pushrod assemblies are now ready to install. Place the base of a pushrod into a tappet socket, then gently bend said pushrod and snap the sidebolts into the holes of valve lifter 16.

Repeat with each of the remaining six pushrods. When this assembly is complete make yourself a much-deserved cup of tea or coffee, because worse is to come.

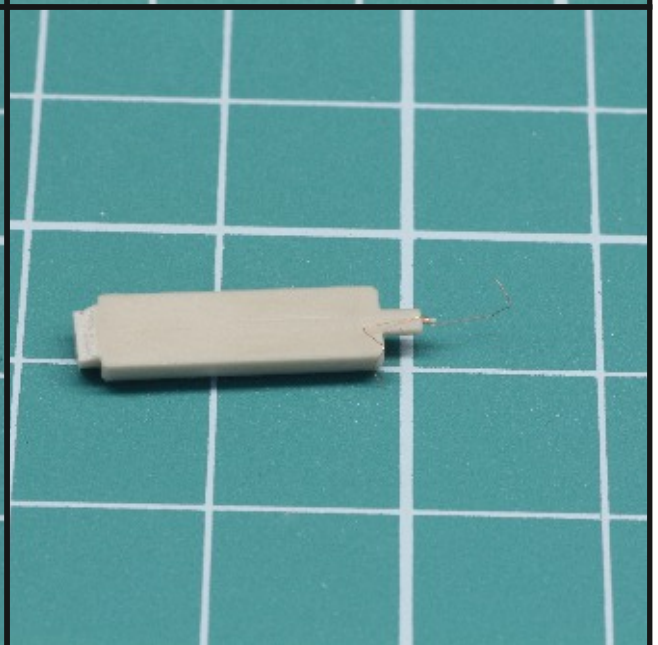
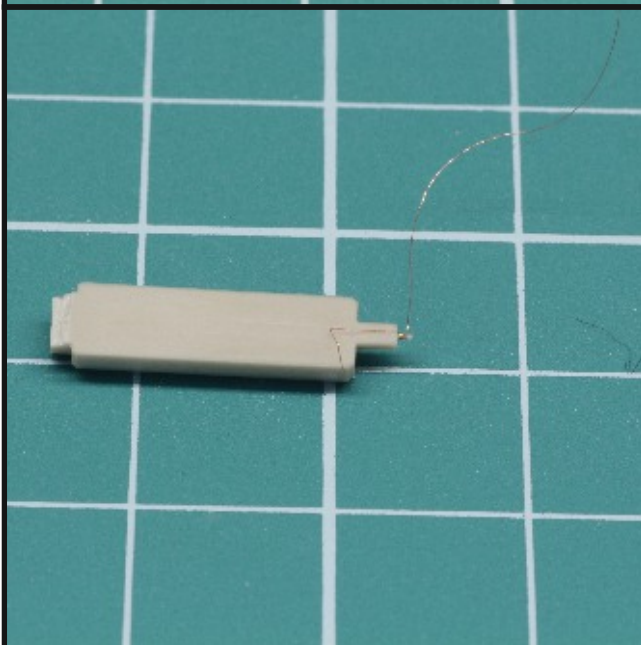
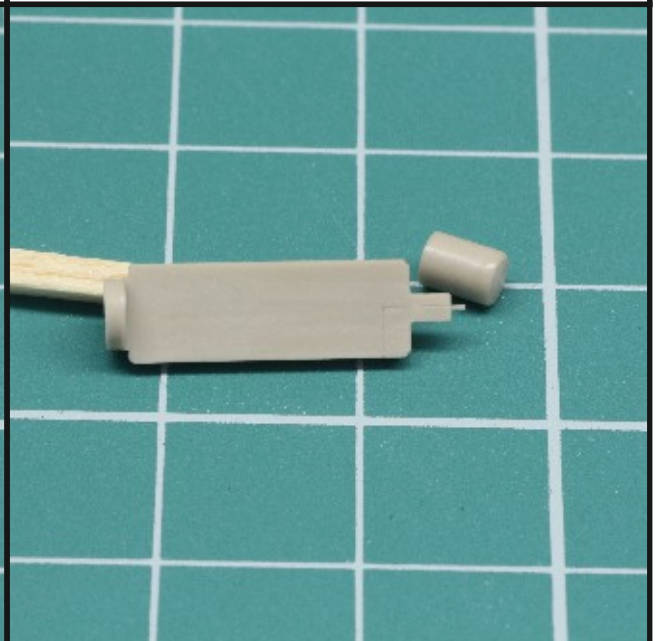
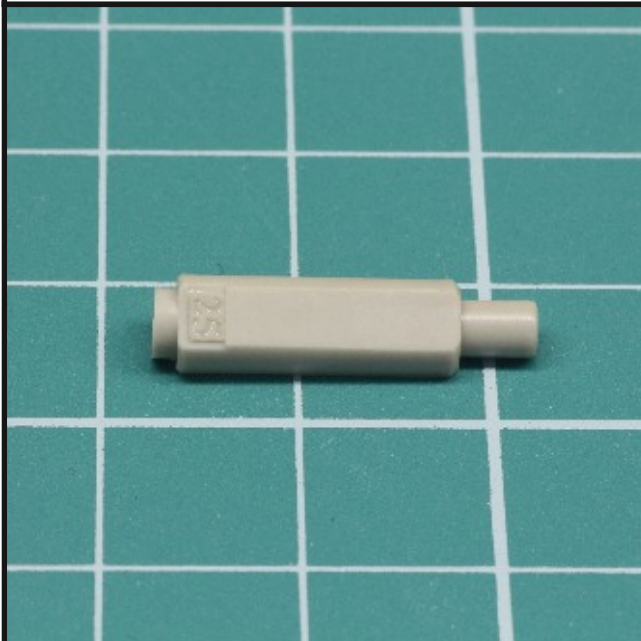
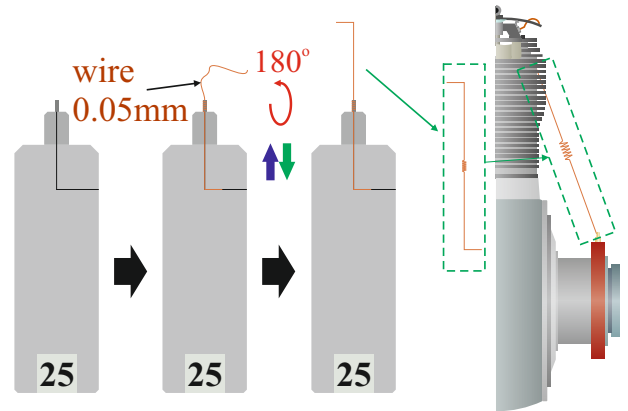


Top view:

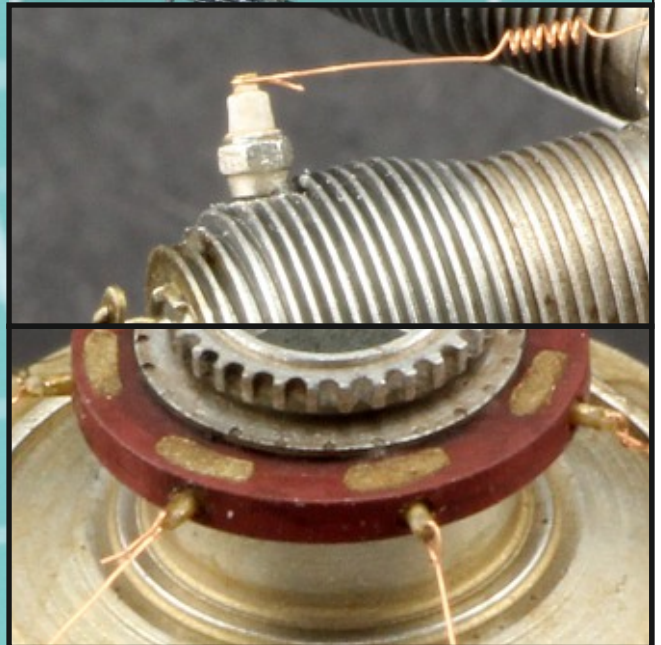
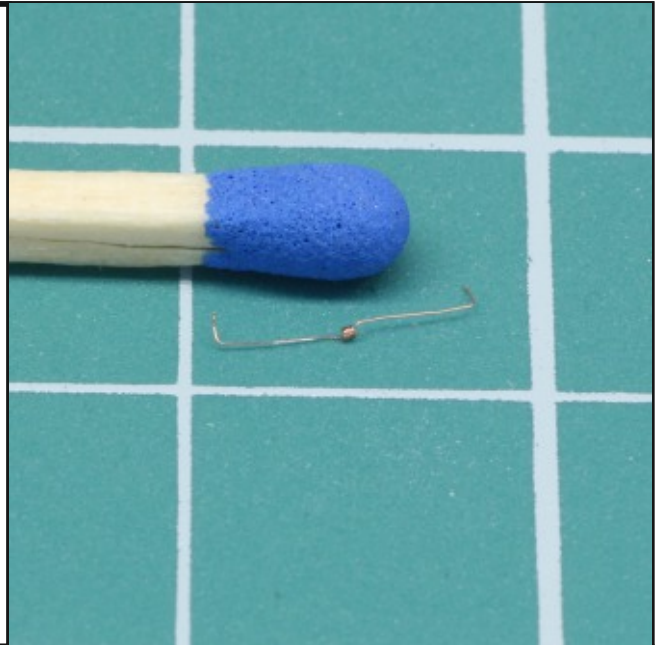


Now it's time to prepare the sparkplug leads with the included 0.05 mm wire, using the template (Part 25). First, remove the protective cap, note the thinness and fragility of the spring-forming jig and be as delicate as possible when using it.

Just below this, on the flat back of the template is a tiny right-angled groove which is used to shape the ends of each lead. To form the spring, take about an inch of wire and wind its centre five times around the jig. Then use the 90° bend channel to form each end, bending the wire at the proper angle. Make at least seven sparkplug leads because you might need a few extras.

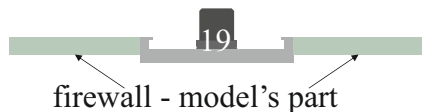


With the leads completed, it's time to connect them. Start by looping one end around the sparkplug terminal. Next, using tweezers, carefully thread the opposite end through the hole in the connector/brush (Part 11). Because of the spring you've formed in the lead, its length can be easily adjusted for a good fit. Finally, loop the ends of each wire as shown in the photographs.

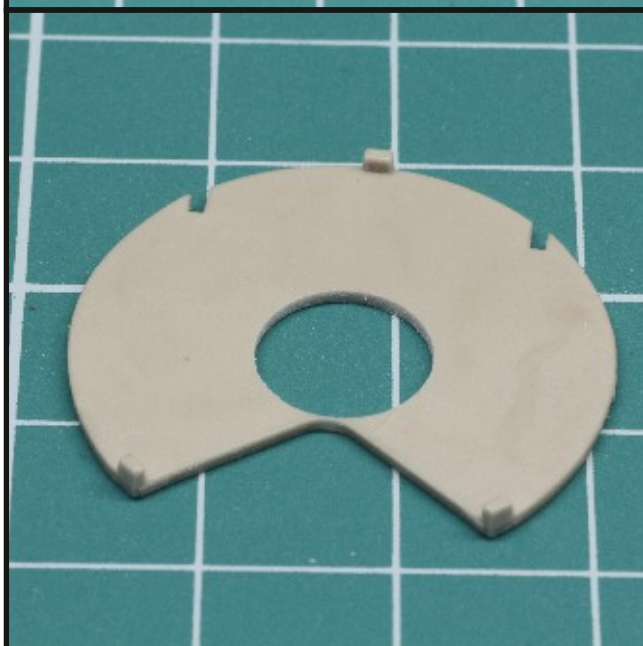
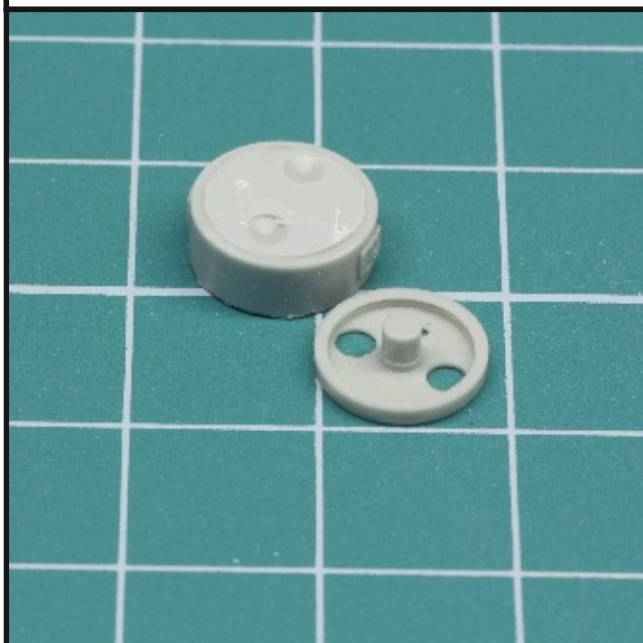
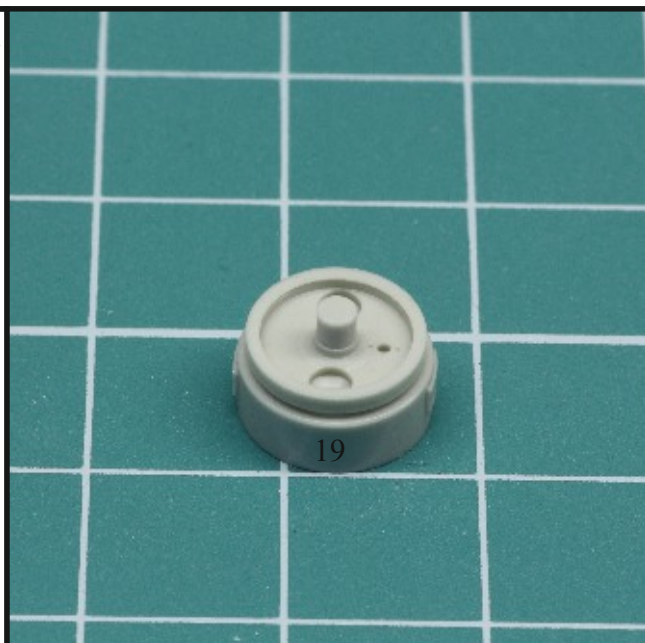


The engine is now complete and can be installed in either the model, or the display stand. Installation in the model (e.g., WNW Sopwith Pup) will require modification of the kit's firewall (WNWs Pup - Part A32).

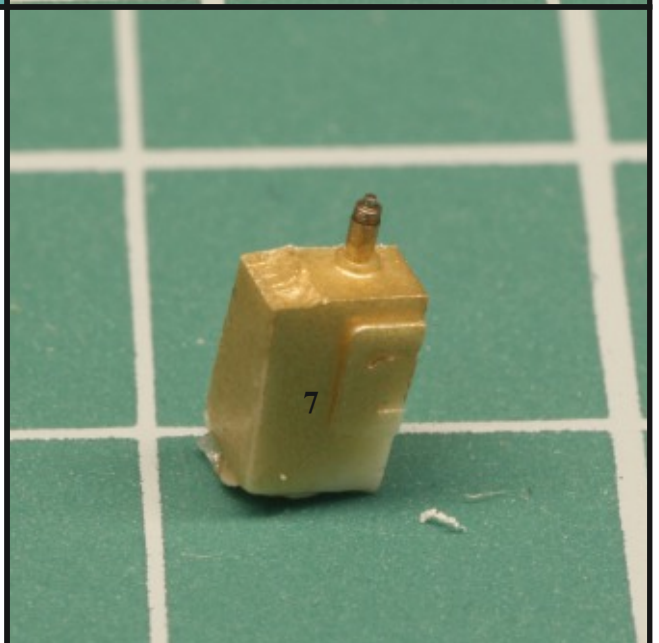
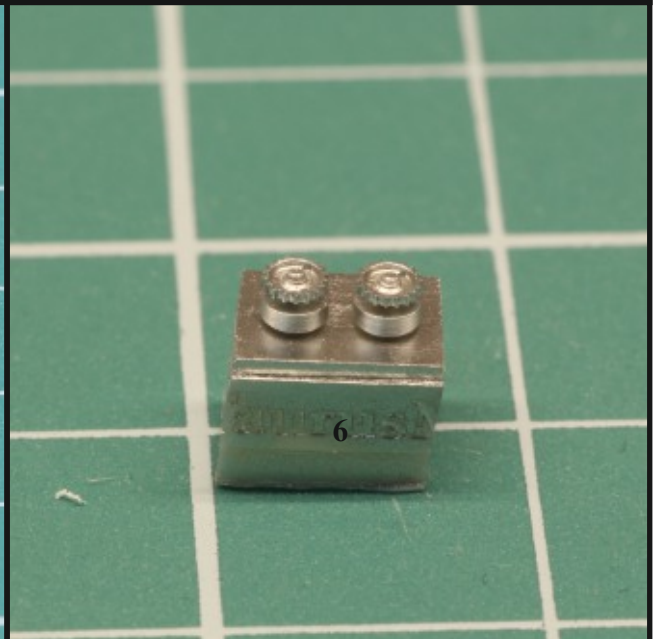
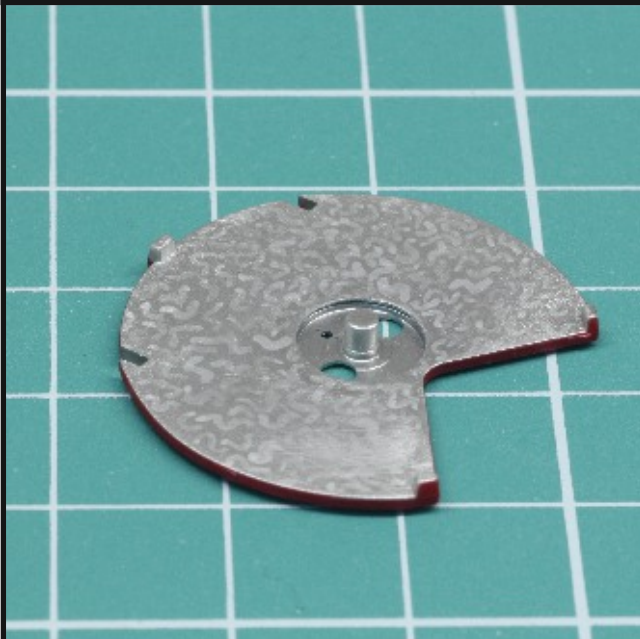
You'll need to widen the central hole to 9 mm. Next, remove the central support (Part 19) from its casting block and insert it into the hole in the kit's firewall, as shown. Ensure that the central support is at the correct level, as shown below.



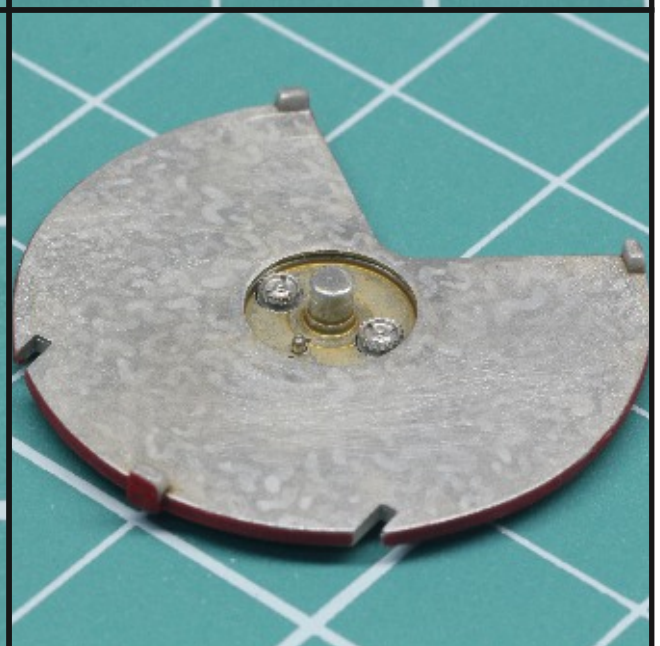
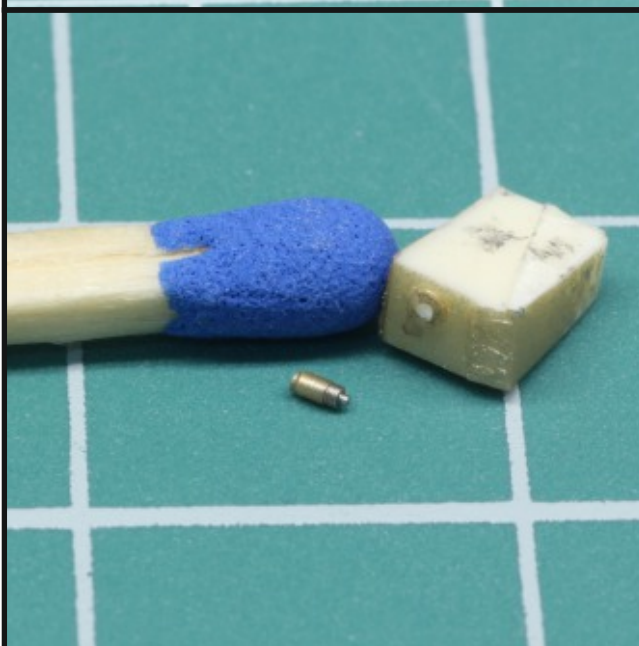
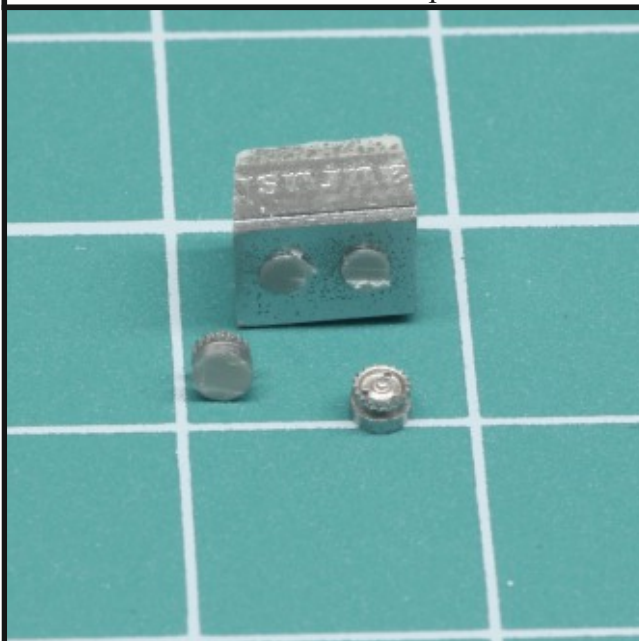
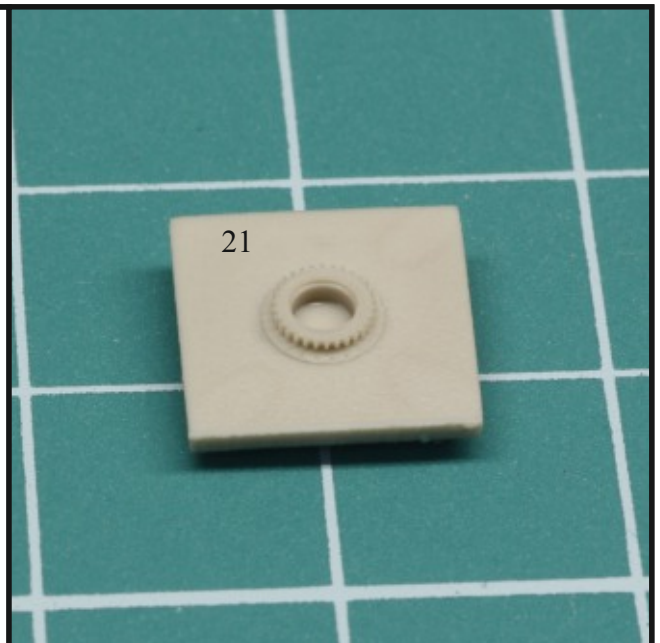
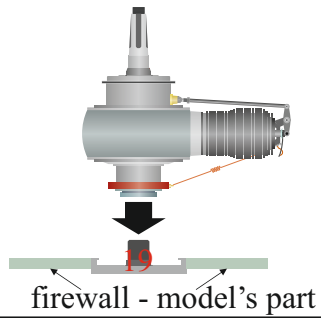
Use cyanoacrylate both for glue and for filling in any gaps between parts.



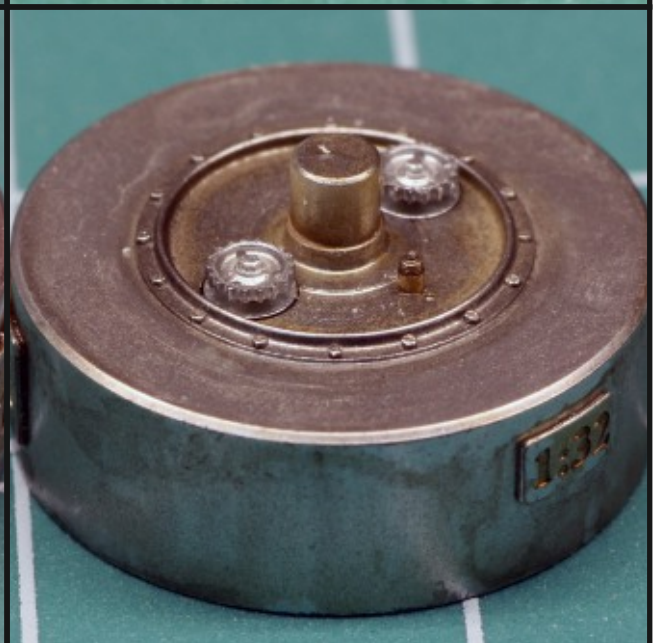
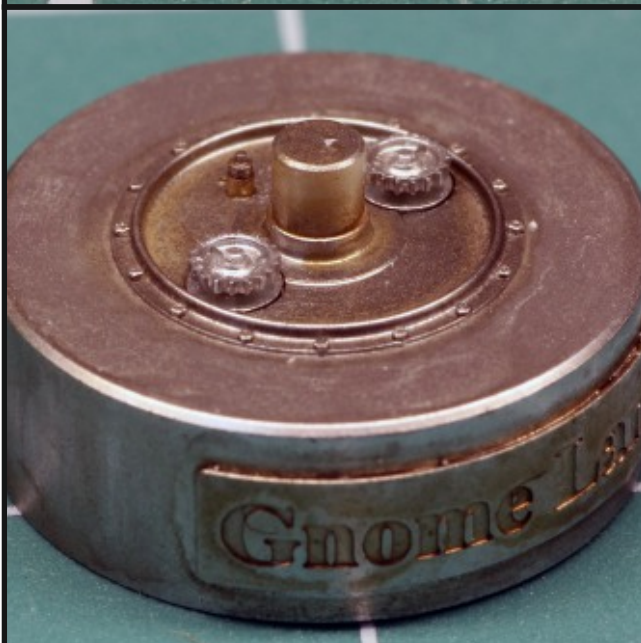
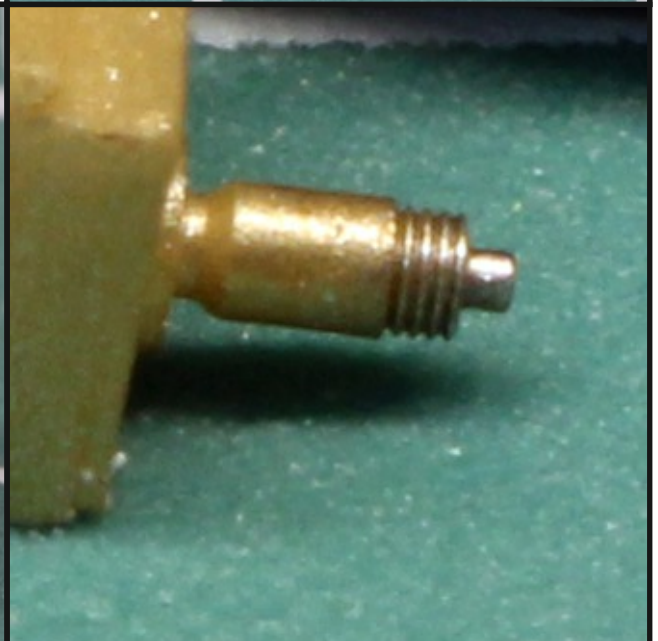
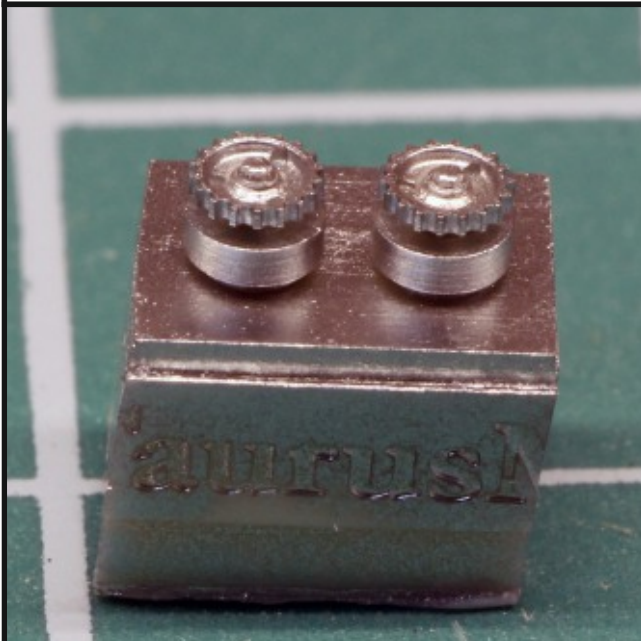
Smooth joins with sandpaper. Paint generator sprockets (Parts 6) steel, (e.g., **Gunze Super Metallic Sm01**). To replicate the 'machined' look of the firewall, use diluted silver paint, e.g., **Tamiya X-11 Chrome Silver** and paint fine squiggly lines. At the same time, paint electric brush (Part 7) brass and steel as shown. **Gunze SM-202 Super Gold** works well. Fine detail can be emphasised with water washes, e.g., **Citadel Seraphim Sepia** and **Agrax Earthshade**.



To install the generator sprockets (Parts 6) use the template (Part 21). This will position both properly. After the epoxy cures, remove the template, and install electric brush (Part 7), as shown. The central support is ready to receive the engine.



If you prefer to display the engine on its own, independently of the aircraft, roughly the same procedure applies. But in this case, instead of using the central support (Part 19), just use the display stand (Part 20). Install generator sprockets (parts 6) and brush (Part 7) in the same manner, as previously described.



Congratulations- your model is now complete. If you want an easier project for next time, you're now qualified to engrave the entire bible, both Testaments, on the head of a pin. **Have fun!**

