"Build Instructions for 1/16th Scale RC "Mid-Production" Mato/Vandra Sherman M10 "Wolverine" TD w/ Modifications

Started: January 7, 2026 Finished: April 14, 2026

by Paul E. Howald

Notes:

1. This construction article will discuss the modification I made to a Mato metal Sherman M-10 lower hull by adding a Vandra resin M-10 TD conversion kit as the upper hull/turret.

2. There are a number of books available for this type tank (see list below) and I also researched pictures on the internet for modeling information, prototype pics, and color info.

3. **Read all of these instructions first before commencing any work.**

Parts used:

1.	Mato Sherman M10 metal lower hull w/ VVSS running gear & metal Gearboxes	$153.00
2.	Vandra M10 resin Upper Hull conversion kit (used only 1/2 of $169 cost)	$ 84.50
3.	Mato Metal Turret, front & rear lights, driver hatches, and misc items	$261.26
4.	Heng Long 7.1 Electronics and Radio (use a 7.0 board if no servos are used)	$ 97.00
5.	Heng Long smoke unit	$ 13.00
6.	Tamiya IR flash and Receiver unit (or use LegoDEI System	$ 45.00
7.	7.2 v Battery	$ 20.00
8.	3 American 1/18 Ultimate "posable" Soldiers	$ 36.00
9.	AFV-Models.de in Germany, Part No. DT16009A 50 cal MG	$ 60.00
10.	Schumo metal Tow Cable; SH0027N	$ 30.00
11.	Misc. brass pieces and plastic parts	$ 5.00
12.	Misc. saved Tamiya Sherman plastic parts & screws	$ 30.00
13.	Decals:	$ 20.00
14.	Modeling time and talent	$300.00
	Total Cost	**$1154.76**

Research Materials used:

1. Vandra Resin part pictures from company website (no assembly instruction)
2. Tankograd #6028 M10 & M10A1 GMC
3. Militaria #115, Polish book on M10/M36 Tank
4. M10 Tank destroyer, Squadron Signal #12057
5. Misc. Internet pictures and info

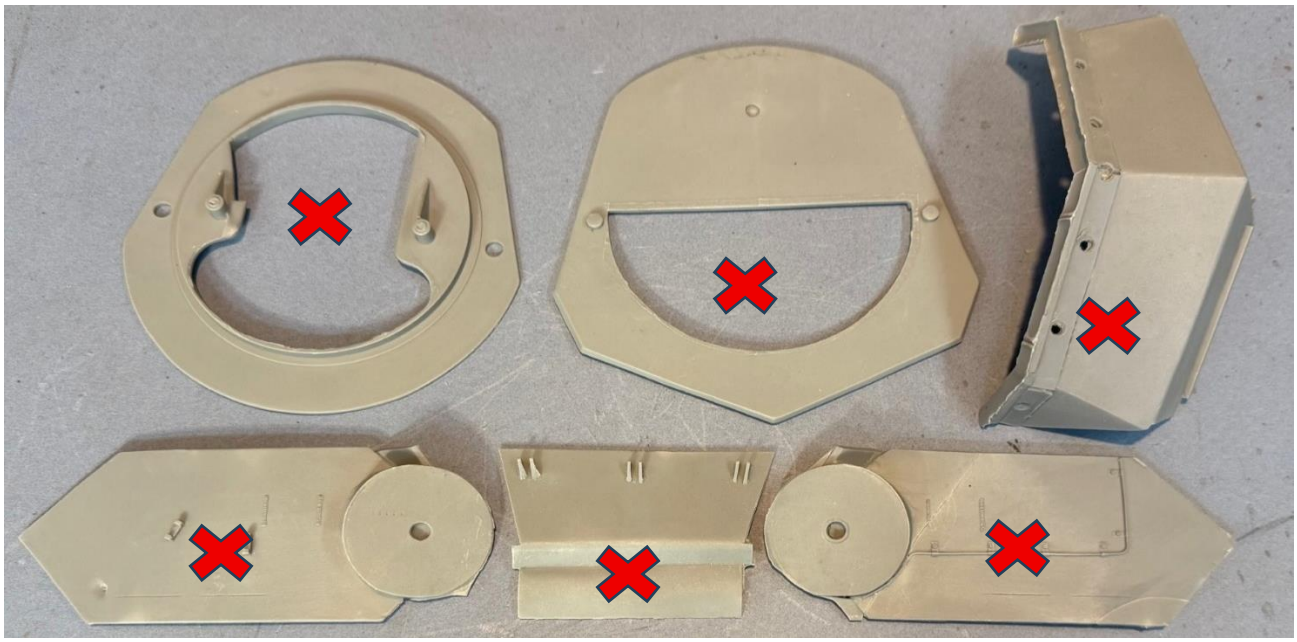
Commence Work:

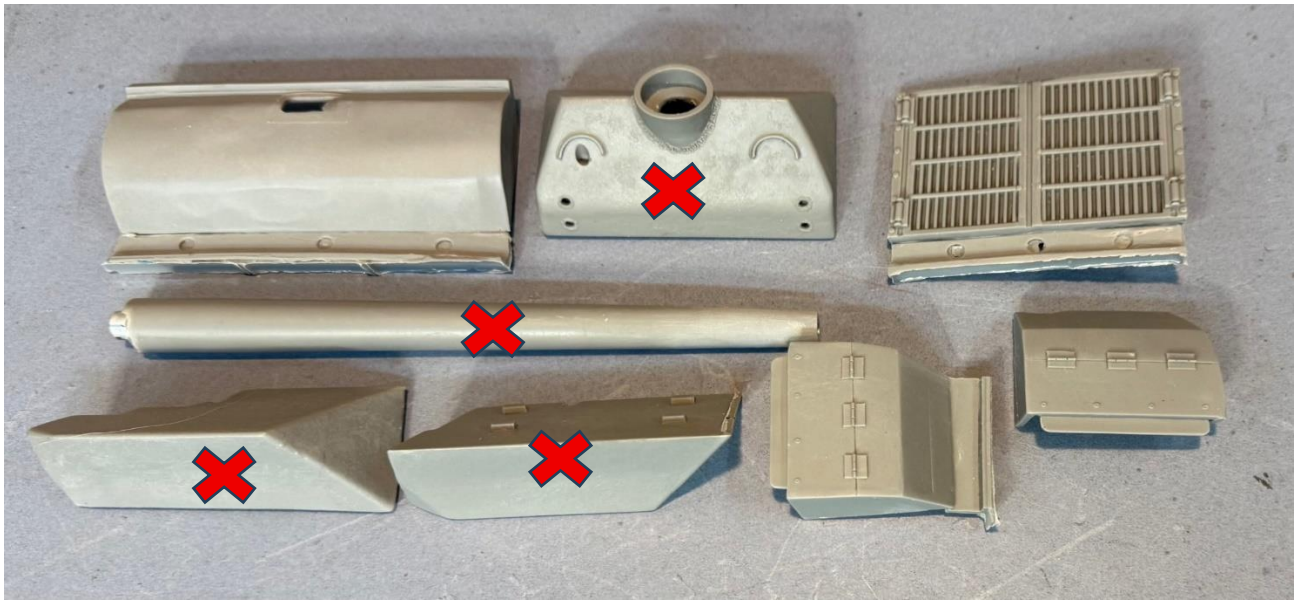
1. **Check all parts:** If there were no "picture instructions" with the Vandra resin kit, you can find them on-line. There are no actual written instructions…just sequential pictures for the build. You must be a modeler w/ lots of experience to build this tank model. It is not for the faint of heart. Make sure all your parts are there, both resin, plastic, any metal additions and all your electronics **before** starting this project. Gather any additional parts that you plan to substitute.

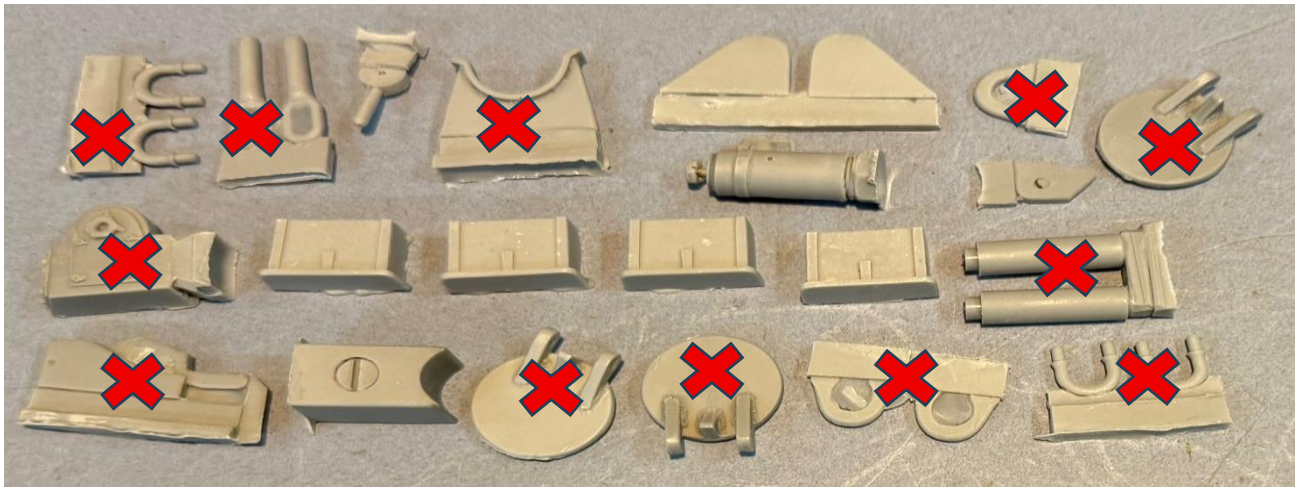
   Check that the metal Mato Lower Hull with running gear, metal Gearboxes and metal Tracks are all in good condition and operational (all track pins seated properly). I chose to switch the T74 tracks that came with the Lower Hull and used a set of Mato T48 metal Tracks with plastic "V" shaped chevrons. These seemed more prevalent in all the pictures I found of the M10 and M10A1 Gun Motor Carriage (GMC) Tank Destroyer (TD).

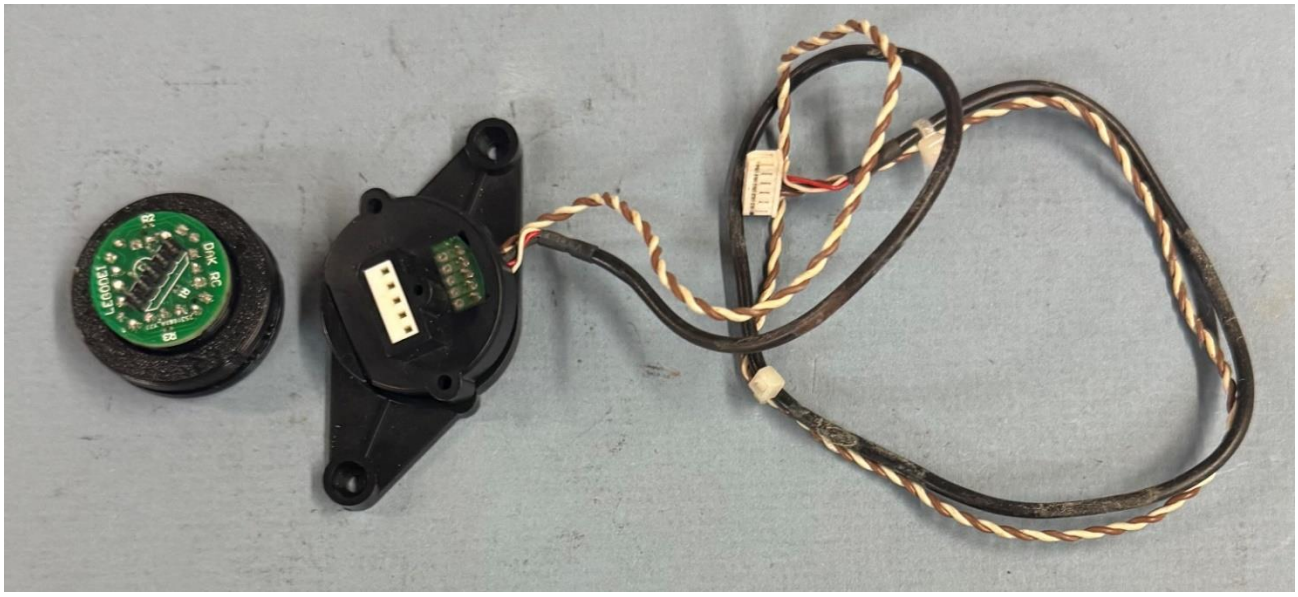
   Here are the photos of all the resin and electronic parts to be verified. Because I ended up buying a metal Mato Turret, many of the resin parts were not needed. Those that I did not use are marked with a red X.

Note: The rear wall of the Upper Hull is NOT angled out enough. It’s almost straight up & down.

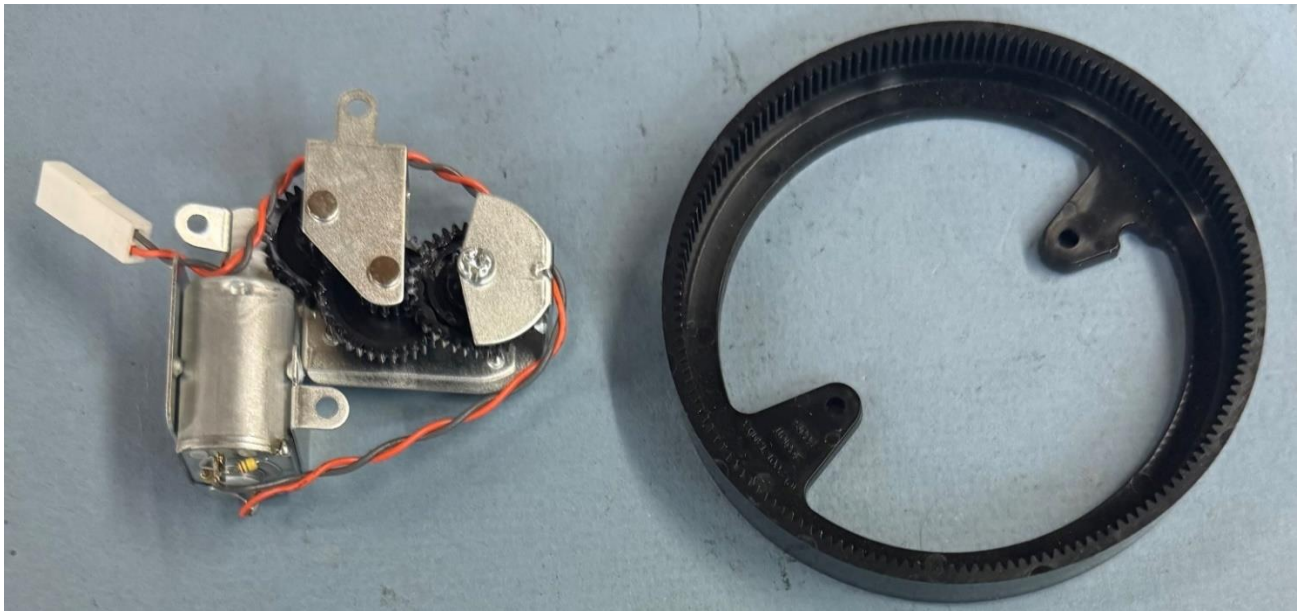








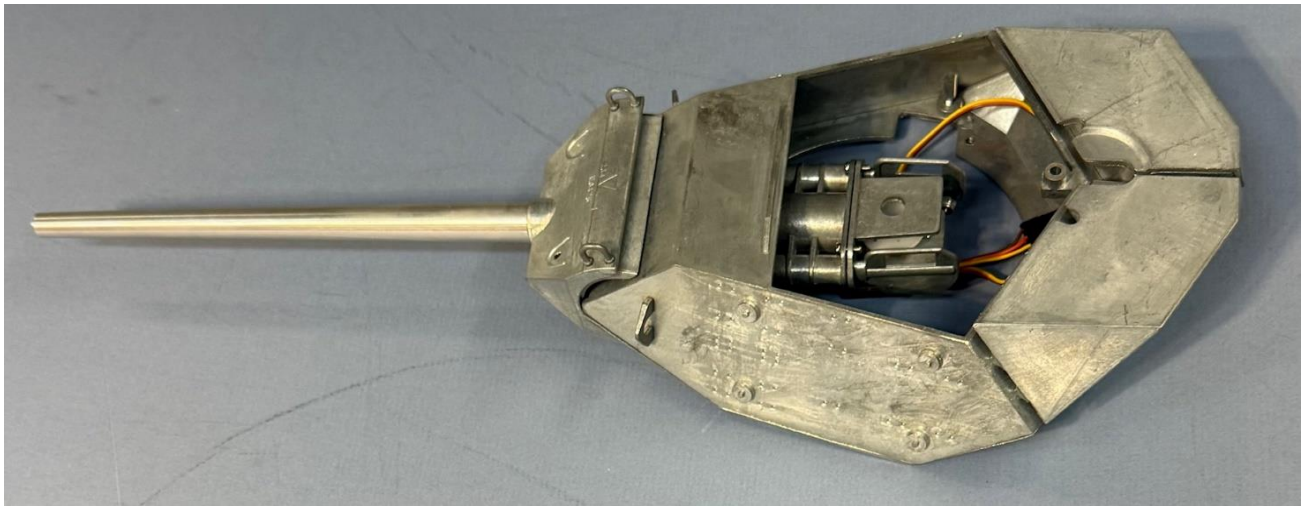
Note: Read Step 10.D now. This Tamiya IR system will not work with Heng Long boards w/o chgs.



The Tamiya motor and Rotation Gear Ring shown above cannot be used "if" the Turret is all metal. See comments in Paragraph 9.D.

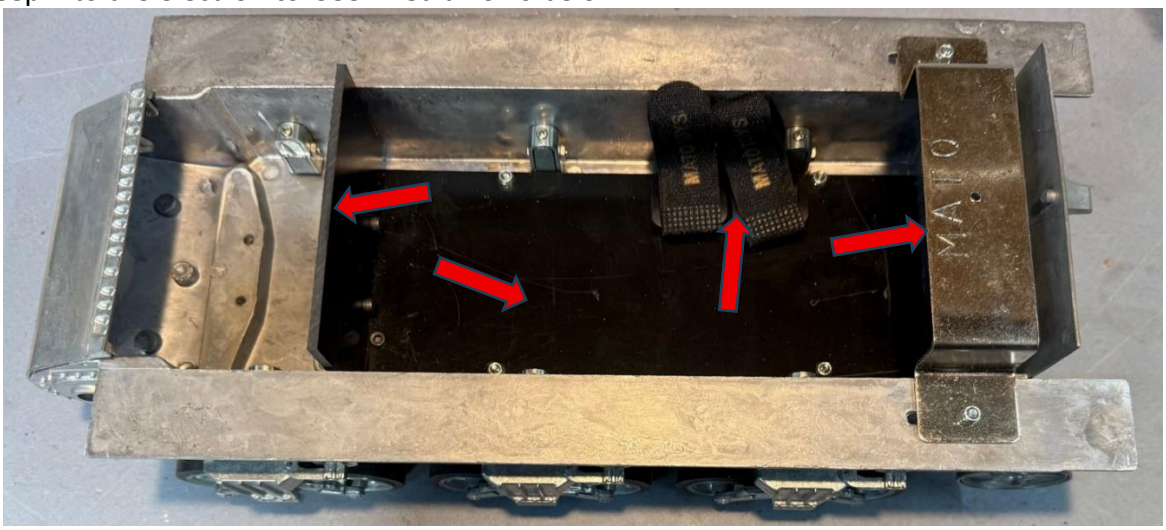
There are other electronic systems available for this conversion, such as Clark Boards or Heng Long 6.0, 6.1 or 7.1 Boards. **See further comments in Paragraph 3.**

This is the Mato all metal Turret that I ended up using. You will also need the extra parts shown below.

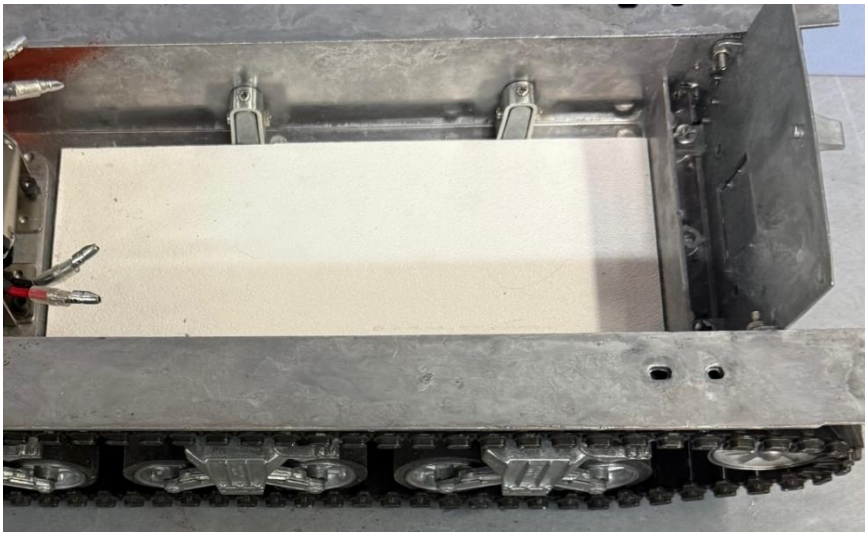


2. Modifications to the Lower Hull:

I removed the 2 black battery straps and the silver “L” bracket on the back end. I also removed the 2” x 3.7” black plastic plate at the front and its metal “L” bracket, as well as the 3.2” x 7.5” plastic base plate. All screws and bolts are removed and the holes filled in with glue, so that no moisture can seep into the electronics. See 4 red arrows below.

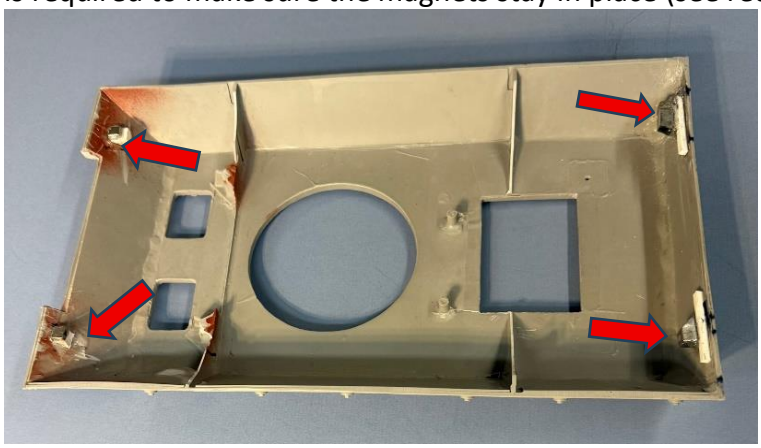


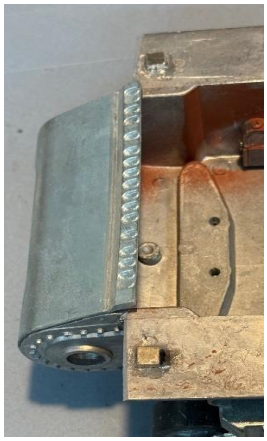
I then cut and snapped a 1/16″ thick white styrene piece into the floor area to act as an insulator to the metal.

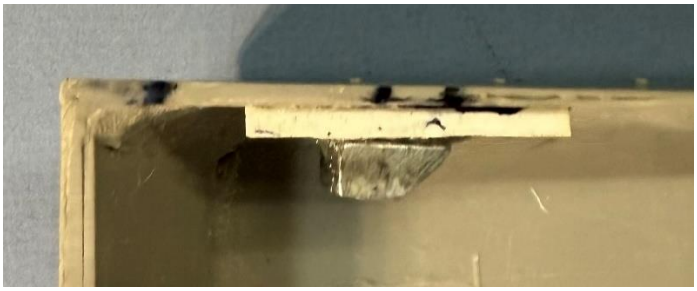


3. **Electronic Installation:** This is how everything looks installed (board, battery, smoke unit w/o hoses & speaker) in the Lower Hull. I ended up using an HL 7.1 board instead of the 7.0 board shown. Note the 2 on/off switches. One for the battery (at bottom) and the other for the FPV camera (at top).

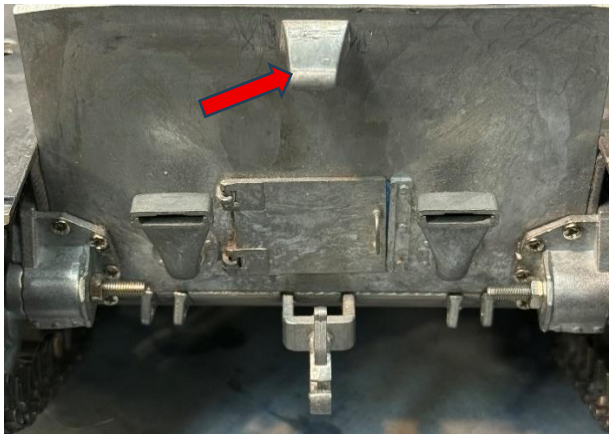
4. **Anchoring Upper Hull to Lower Hull:** I chose to use magnets to anchor the Upper Hull. A lot of glue is required to make sure the magnets stay in place (see red arrows).

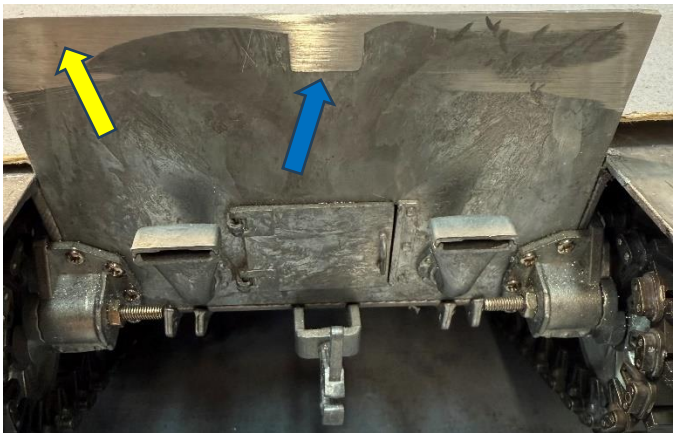




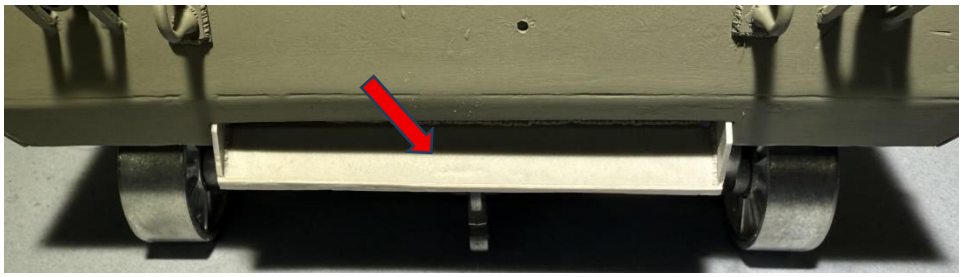


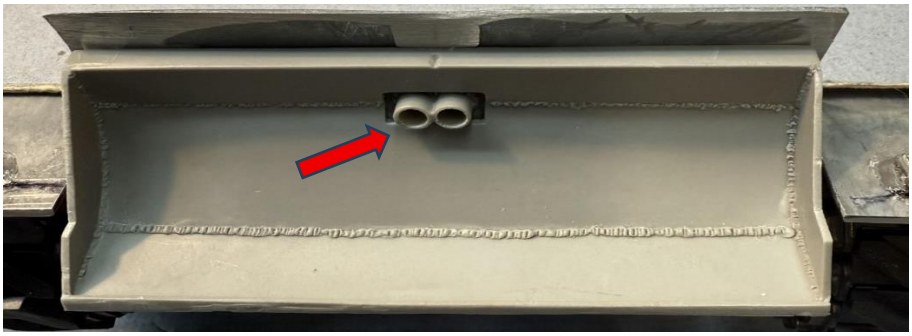
5. **Rear Wall of Lower Hull:** The rear wall has minor changes to be made if you use the Adapter Pan for the deep-water fording exhaust trunk. First, I cut off and then ground the upper knob off (red arrow). After it is cut off, grind any excess off, but be careful not to accidentally grind the rear wall thinner (which I did….I accidentally thinned out the left corner…see yellow arrow) and be sure to leave a tiny amount of the knob (about 1/32)" to seat the Adaptor Pan up against (blue arrow). I glued the rear access door closed.

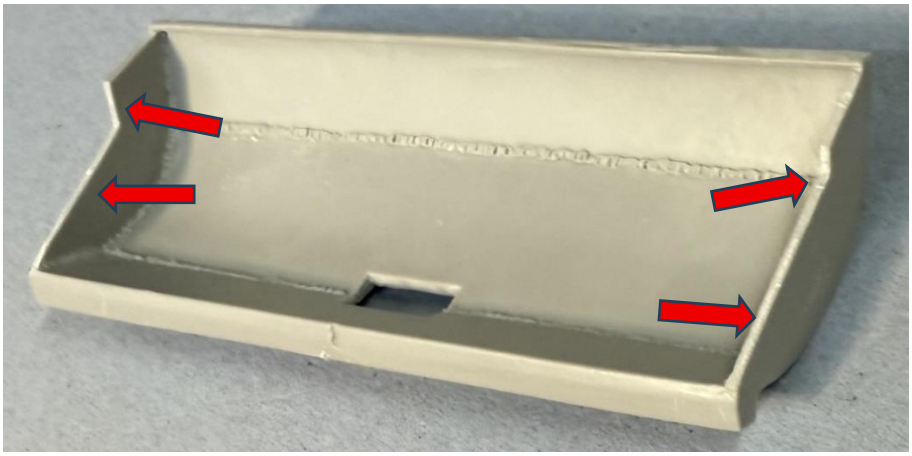




The Adapter Pan is used for a deep-water fording exhaust trunk, when crossing rivers and landing on beaches. It was typically removed during normal fighting engagements on land, but you can elect to install it to the rear of the Upper Hull if you like, with the 2 pipe pc. glued in the opening…see red arrow in 2nd picture below). Glue this Adaptor Pan in place before painting. After seeing this part installed, **I decided not to use it** because it hid too much of the back wall.



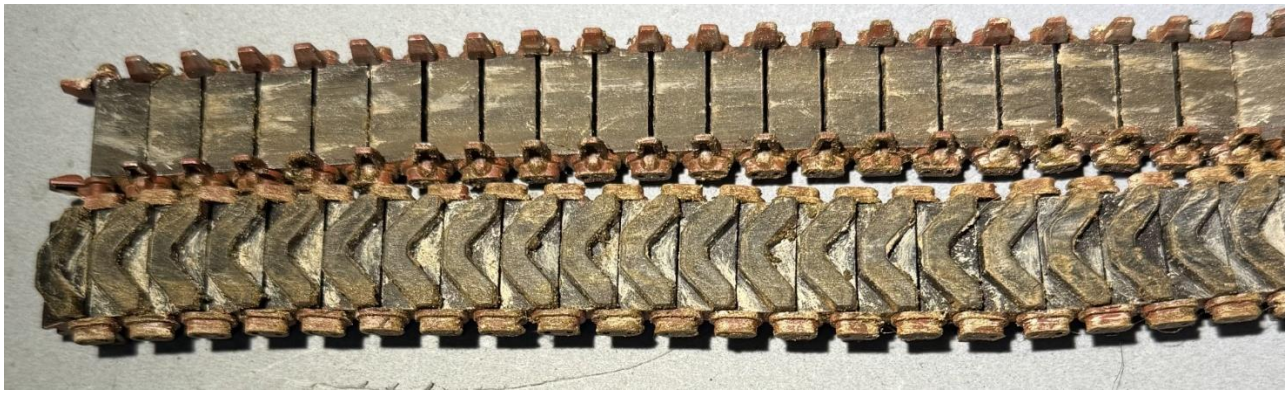




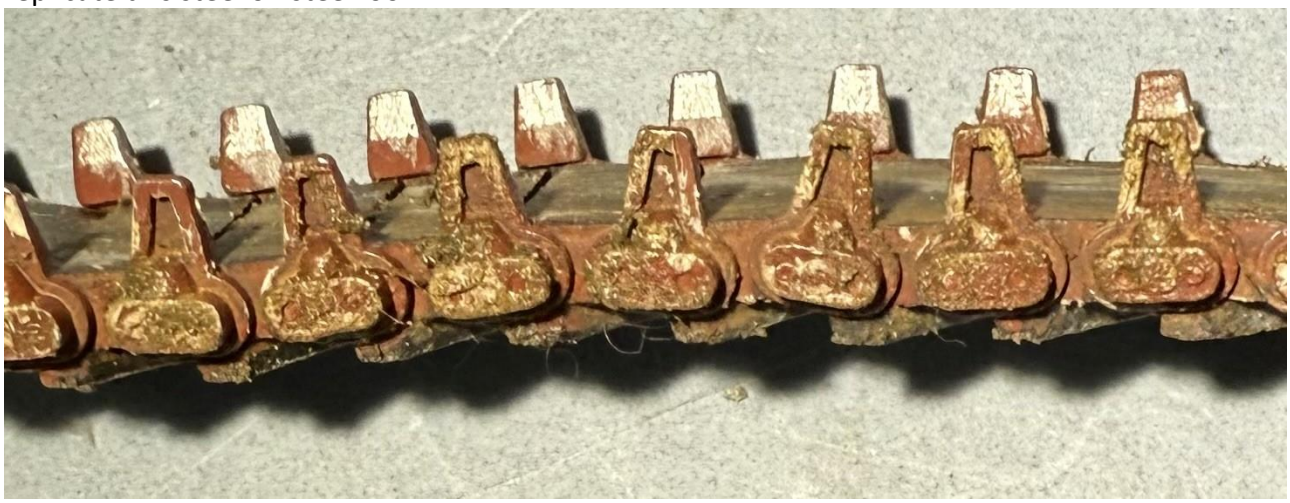
If you do decide to use this part you will have to mark and cut the sides of the curved area so that the Upper Hull will fit down over it properly (4 red arrows show the parts to be cut down). For some reason (perhaps warpage of the resin part??s), my parts did not set exactly square so one side of the curved louver/vent piece is cut different from the other side. Yours may not need this treatment.

6. **Tracks:** I like my tracks to have Red Primer on the guide teeth to replicate rust. I cover the track pads with painter's blue masking tape on both sides before spraying, and I then hand paint any missing area of the guide teeth red and scrap off any red overspray that accumulated on the bottom or top of the track pads.

If you want your tracks to look muddy then follow these next steps. Add a light coating of AIM Products Weathering Powder #110-3104 "Dirty Yellow" to the outside of the teeth by first spraying a foot long section with Dullcote and then brush on the powder. I also brushed this powder along the inside of the flat track pads…very light coating but do not use Dullcote with this step…..instead after brushing the powder on, rub the powder with fingers to eliminate heavy splotches. The next step is to lightly add Vallejo #73.810 Light Brown Mud to the outside and bottom of the teeth and to the bottom of the track pads (to replicate dried mud from having driven thru mud areas…some of the mud would have dried and fallen off) followed by "splotches and spots" of Vallejo #73.807 European Mud. Be sure to use your fingers to rub the outside pads so no mud in on the flat areas of that surface…only down in the crevasses. I added a little bit of the #73.810 Light Brown Mud to the flat area of the track pads, since a little bit of mud would no doubt have gotten on the area where the wheels roll over.

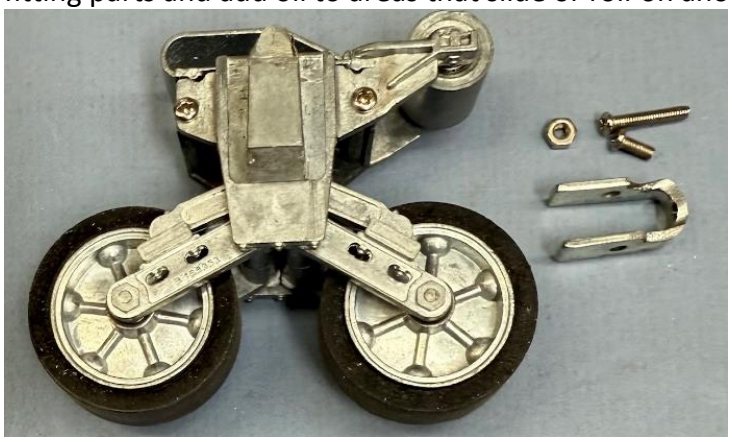


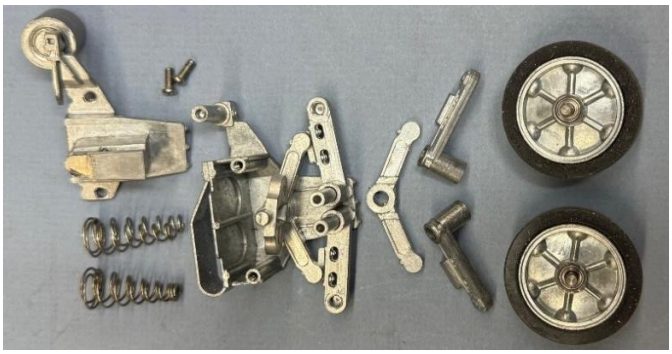
The last step is to add “spots” of silver paint to the inside of the teeth where a “steel on steel” look would occur from red paint (rust) wearing off (down to the metal surface) as the road wheels move. You may want to add silver highlights to the roller on the top of each suspension bogie unit to also replicate this steel on steel look.



Extra Track Links: If you have any extra track links, be sure to paint them in this step, but do not make them as dirty as the main tracks….these may not have seen any action yet. NOTE: You may need these for your track to fit properly around all the wheels, drive sprocket and return roller, so check first before mounting on the Turret or Upper Hull as extras. I needed all my track links, so I had to use 3D printed links instead for the extras mounted to the sides of the Upper Hull.

7. **Lower Hull:** I decided at this point to paint the Lower Hull, Running Gear, Drive Sprockets & Return Rollers (I used Krylon Camouflage #4329 Olive Drab spray paint). Painting requires removing all the Running Gear from the hull….be sure to keep track of the order of the suspensions you take off and keep all the parts together for proper reassembly. The following pictures show all this work, with Olive Drab paint sprayed on. Remove the rubber tires before painting. Scrape paint away from close fitting parts and add oil to areas that slide or roll on another part.

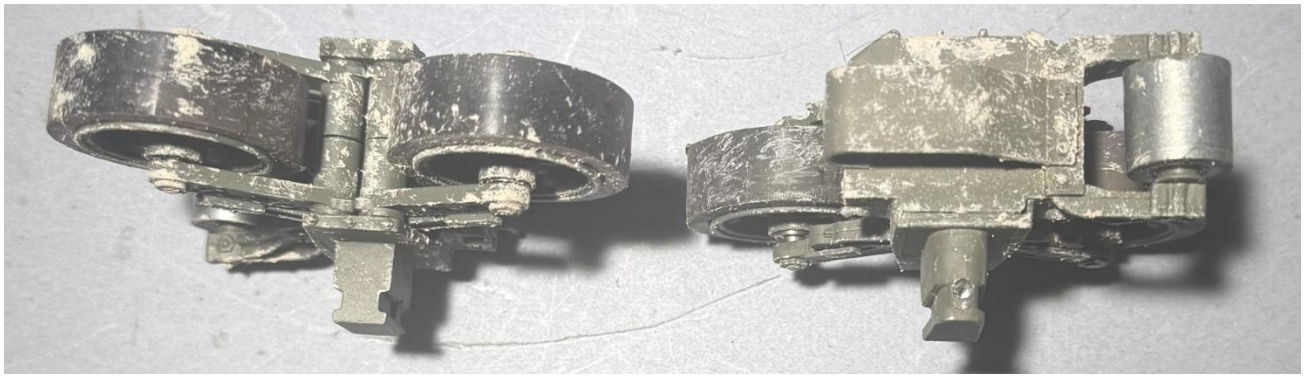


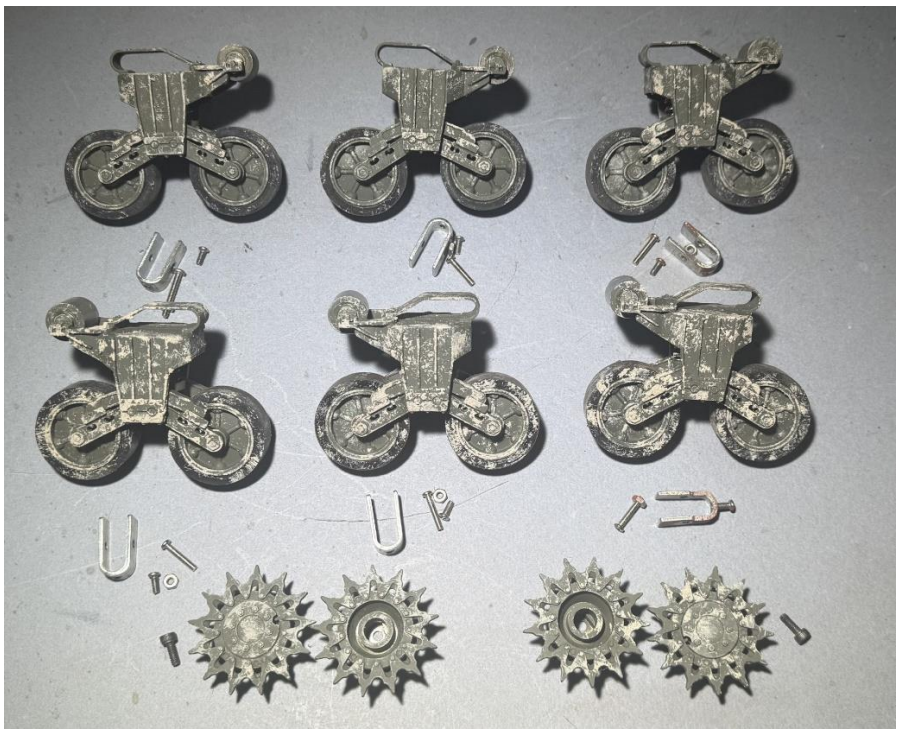


I next decided to add all the mud and dust weathering treatment to the bottom of the Lower Hull and all the Running Gear at this point. I added 2 layers of mud. The first is done by dabbing Vallejo #73.810 Light Brown Mud all over with a course brush.

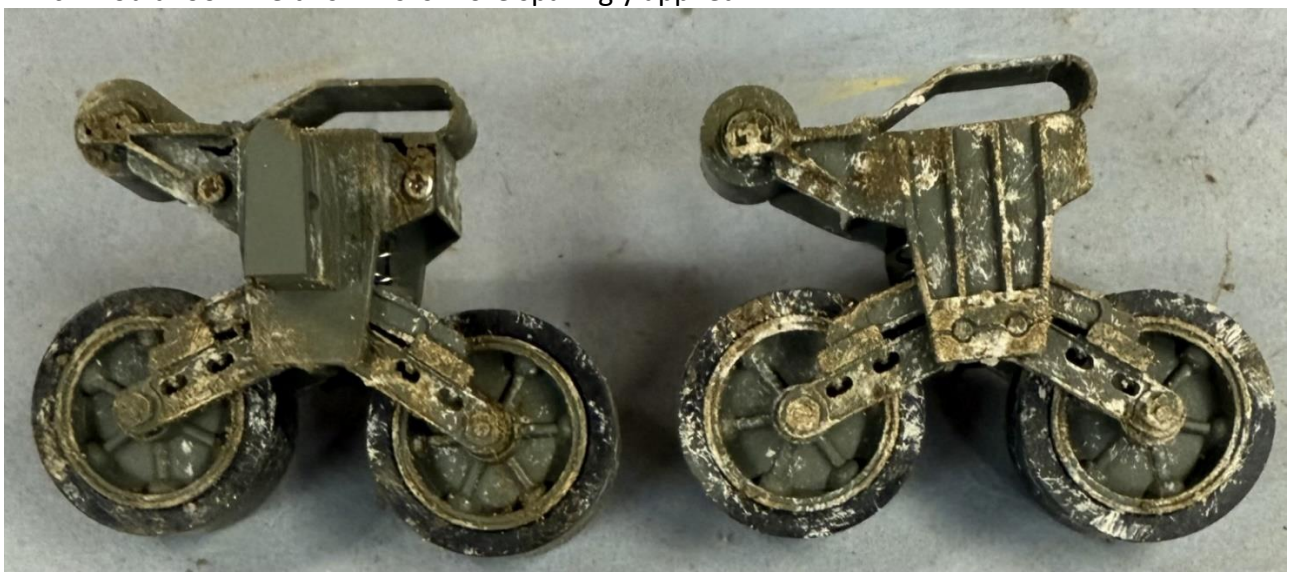
Since the hull angles inward, mud would splatter at the bottom of the side skirts & on the inside.

The light mud covering the Running Gear would look like this.





Then, I carefully added Vallejo #73.807 European brown mud over the light mud, to the Running Gear which would look like this. This is more sparingly applied.



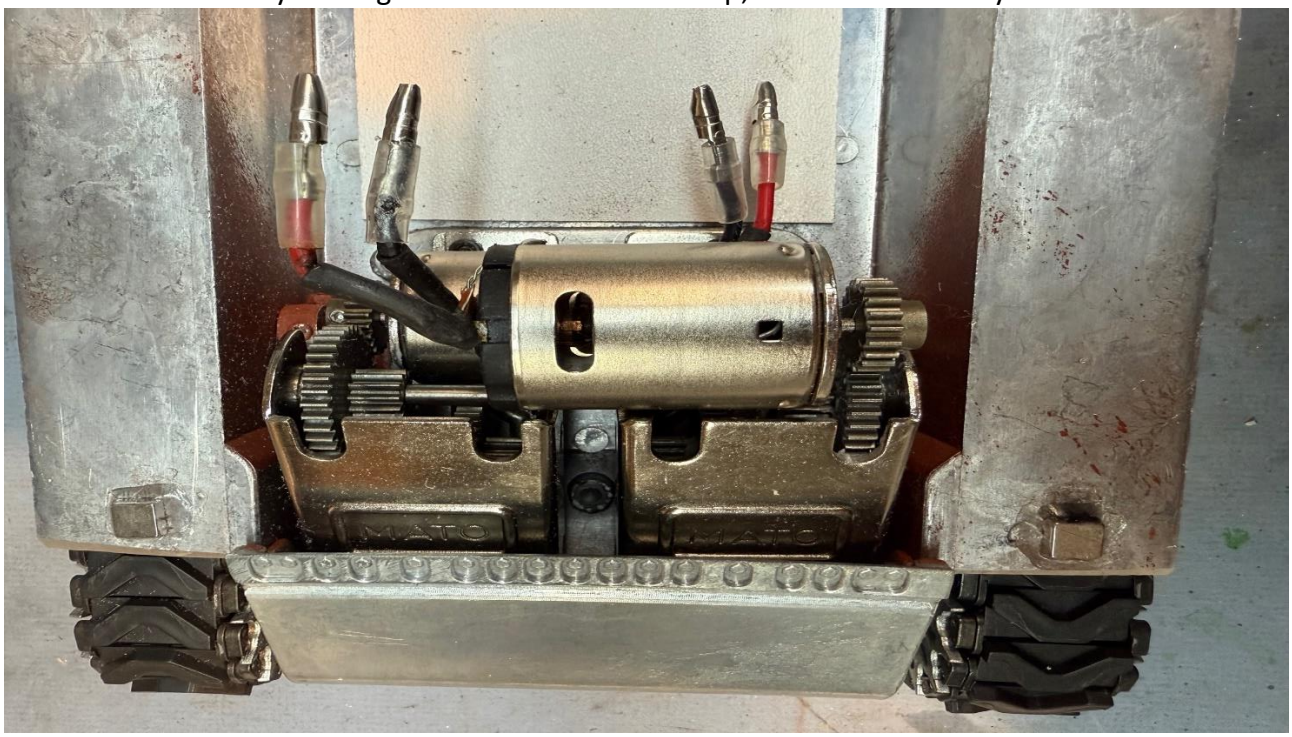
The next step is to add the darker Vallejo #73.807 European brown mud splotches to the Lower Hull, the side skirts of the Upper Hull. Then over all of those areas, I brushed limited amounts of AIM Products Weathering Powders #110-3122 “Dark Buff” and then a lighter coat of #110-3104 “Dirty Yellow”. ……. Then Dullcoat was then sprayed lightly over everything. The finished look appears like this.

Be sure you have added all your decals before completing this step.

This is what the Lower Hull and Running Gear look like once all is assembled and Tracks are back on.

8. **Installing Gearboxes:** First, remove the front metal Glacis Plate from the Lower Hull. Before installing the Gearboxes, determine which of the motor leads are positive and negative. Solder the wire leads

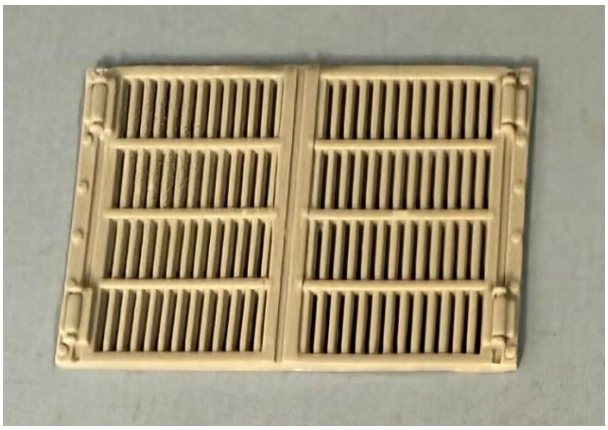
to the motors accordingly. Now install the 2 Gearboxes. There are only 4 black allen-head screws for mounting. They screw on tight, down thru the gearbox frames into the lower hull. I have to question why Mato didn't use 4 per Gearbox for better overall strength? To keep from losing the screws off the allen wrench (they are steel and the motor's magnets pull on them as they slide by), I chose to hold them with a tiny bit of glue to the allen wrench tip, which breaks away after the screw is set.

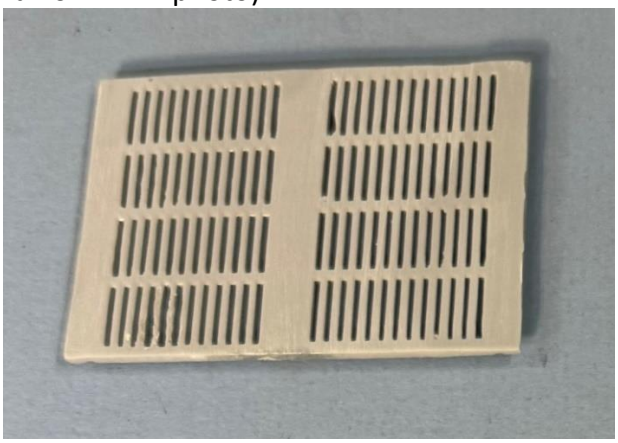


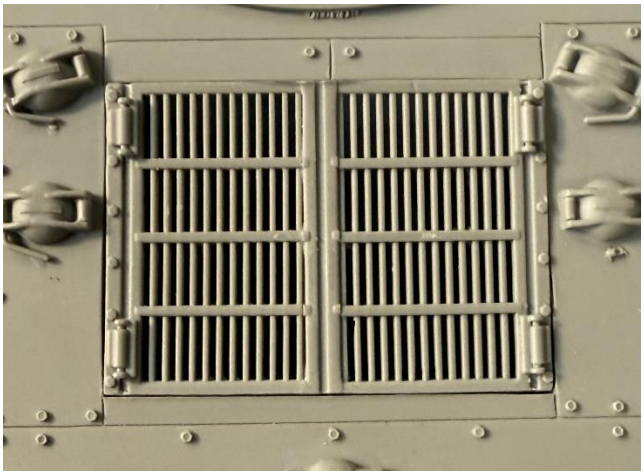
In order to use the metal Glacis Plate, you have to cut off the bolt pattern strip (red arrow above) "from" the resin Upper Hull, **not the metal Glacis Plate.**

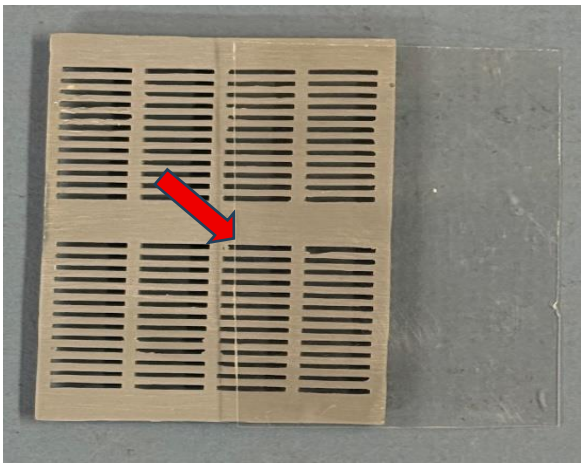
9. **Upper Hull Modifications:** Some of these modifications are not needed if you are using a Heng Long Lower Hull and the Heng Long Turret rotation system in the Upper Hull. See Vandra pictures for this Heng Long installation if you choose to use that system.

   A. **Rear Engine Hatch in Upper Hull:** The resin part in the kit is cast very thick, so I elected to sand off about a half of the thickness on the back so that you could see through the openings. Then the hatch is glued in place. If you don't wany dust to get inside the engine compartment, add a clear plastic sheet to the underside area (see red arrow in 4th photo).

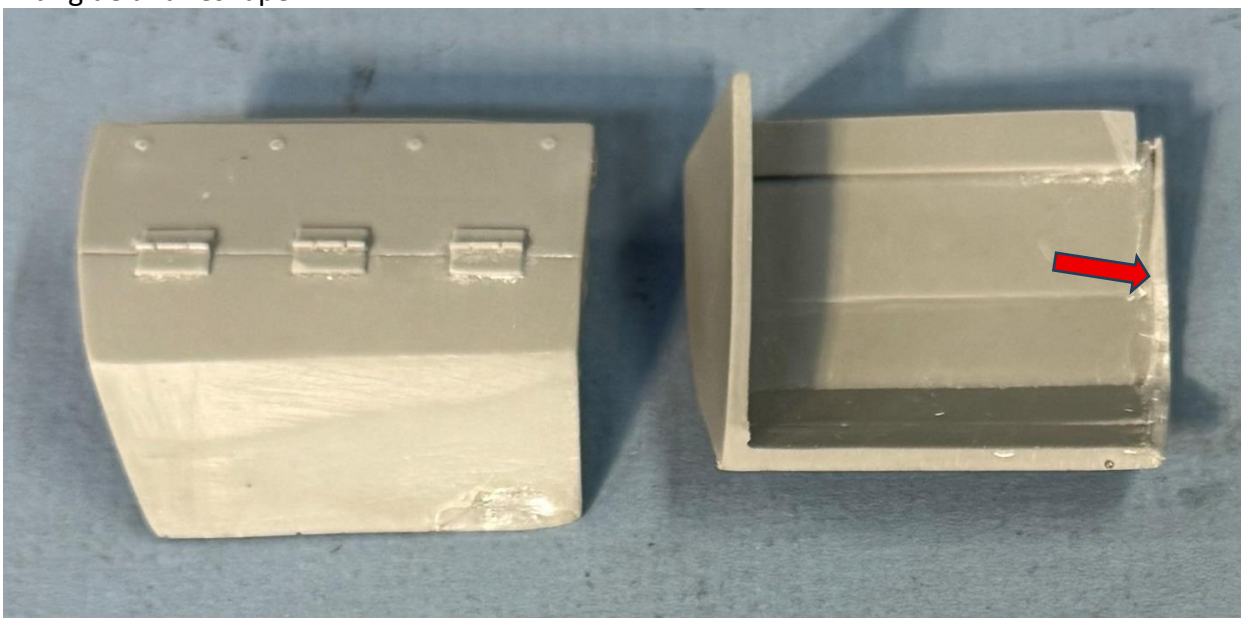




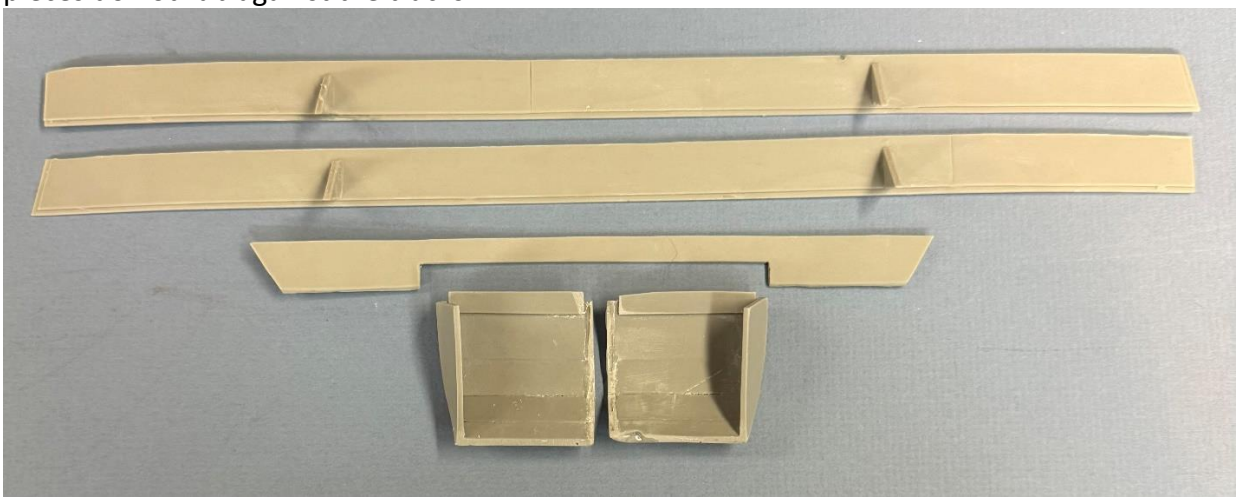




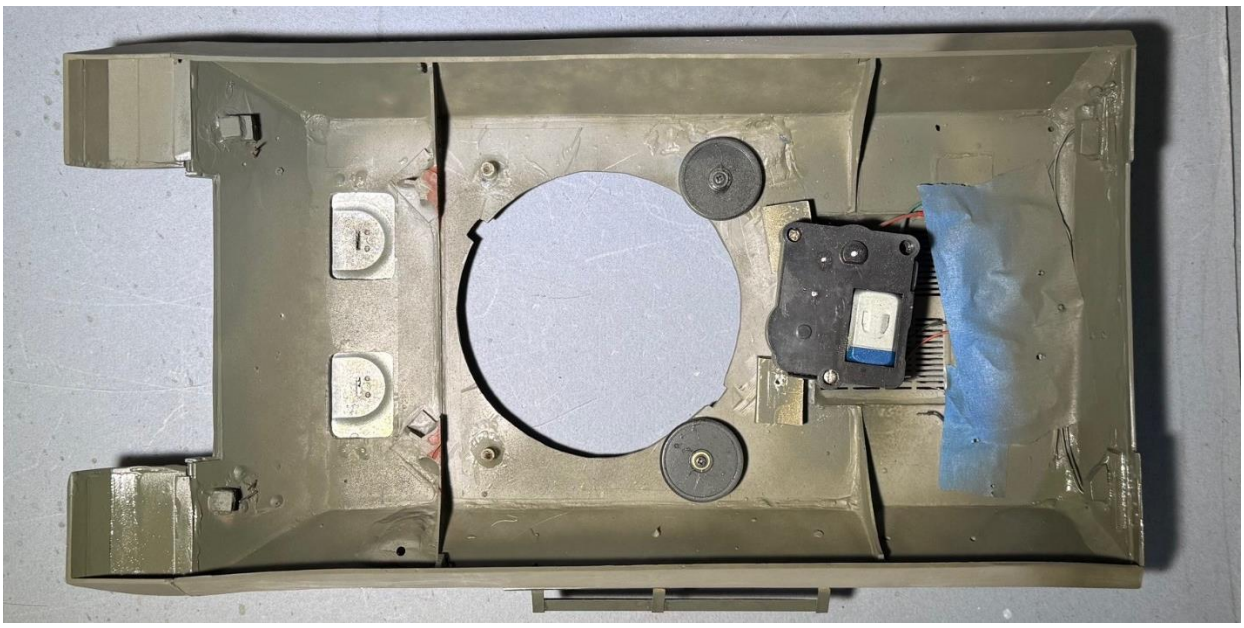
B. Side Skirts and Front Fenders: The Front Fenders need to be modified to fit the Mato Lower Hull. The inside wall that sets down between the inside of tank tracks and sprocket housing needs to be cut away (see red arrow below). Do this only if yours do not fit correctly. Be careful when removing the side piece. Mine broke some plastic that should have remained, so I had to fill it in with glue and reshape.



I noticed that the long side pieces to be added to the fenders did not have the same angle as the fenders, so make sure you align all 5 parts when installing and gluing. And make sure the side pieces do not rub against the tracks.

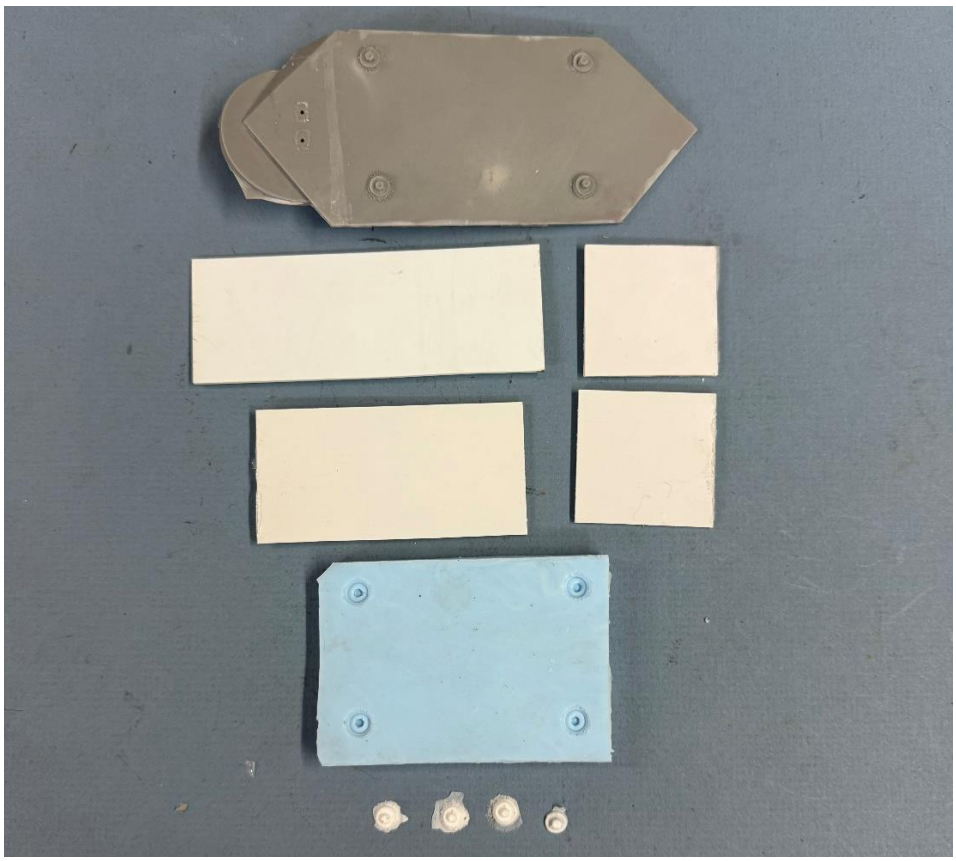


This is how the Upper hull looks after the 5 pieces have been added.



The metal bracket I fabricated to hold Gas Cans is shown by the red arrow.

C. **Applique Armor:** The M10 and M10A1 tanks have a pattern of 12 large bolts on each sloped side panel and 8 large bolts on the front panel. These were designed so that extra armor plating could be mounted to the Upper Hull for added protection. Not many M10's or M10A1's in the ETO used this added plating because it increased the overall weight of the tank, which slowed it down, but I did find a couple pictures of this application, and one of the prototype tanks w plating is still on display in Normandy, France. I decided I wanted my model to use this extra plate thickness, so I first created a rubber mold of the bolt heads, using one side piece of the resin turret for a master. I forgot to take a picture of it all assembled as a box like structure to hold the RTD rubber, but this following picture shows all the parts I used, and the resulting rubber mold and first 4 castings that were made.



The original bolts on the resin Upper Hull will need to be ground off where you want to add applique armor plating. Then add the styrene plate and the new cast bolts.

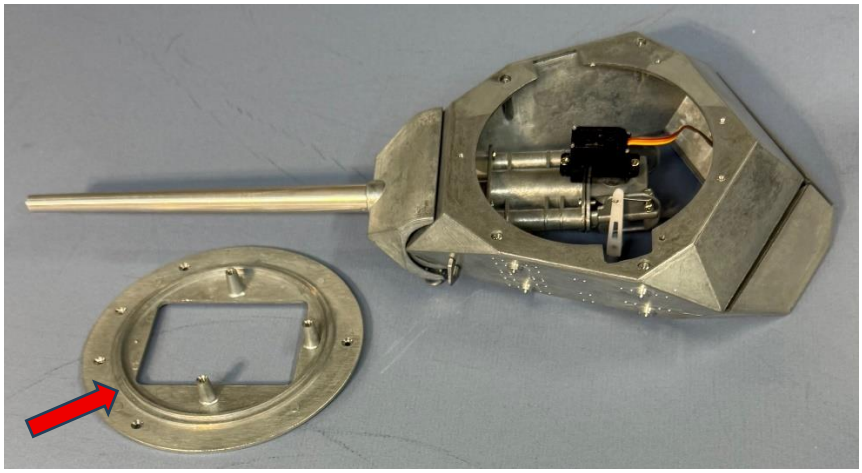
D. Turret Mounting and Rotation Motor:

Important Note: I initially completed this next step using Tamiya Turret components, but found out that the Tamiya Turret Motor was not strong enough and the gear teeth were too small to properly turn the heavy metal Mato Turret without slippage. To rectify this problem, I added a Heng Long (HL) Rotation Gear Ring (RGR) to the prior assembly because it and the HL motor unit had bigger teeth and the power needed to properly turn the heavy Mato Turret. If I had not already finished, painted and detailed the inside of the Turret, I would have started over with only the HL system, but I did not want to tear all the finished Turret work apart and have to start over. If you are using the Vandra resin Turret, then the Tamiya system will likely work well, and you can follow these steps below, but if you are using the Mato metal Turret, then modify these steps as you see fit.

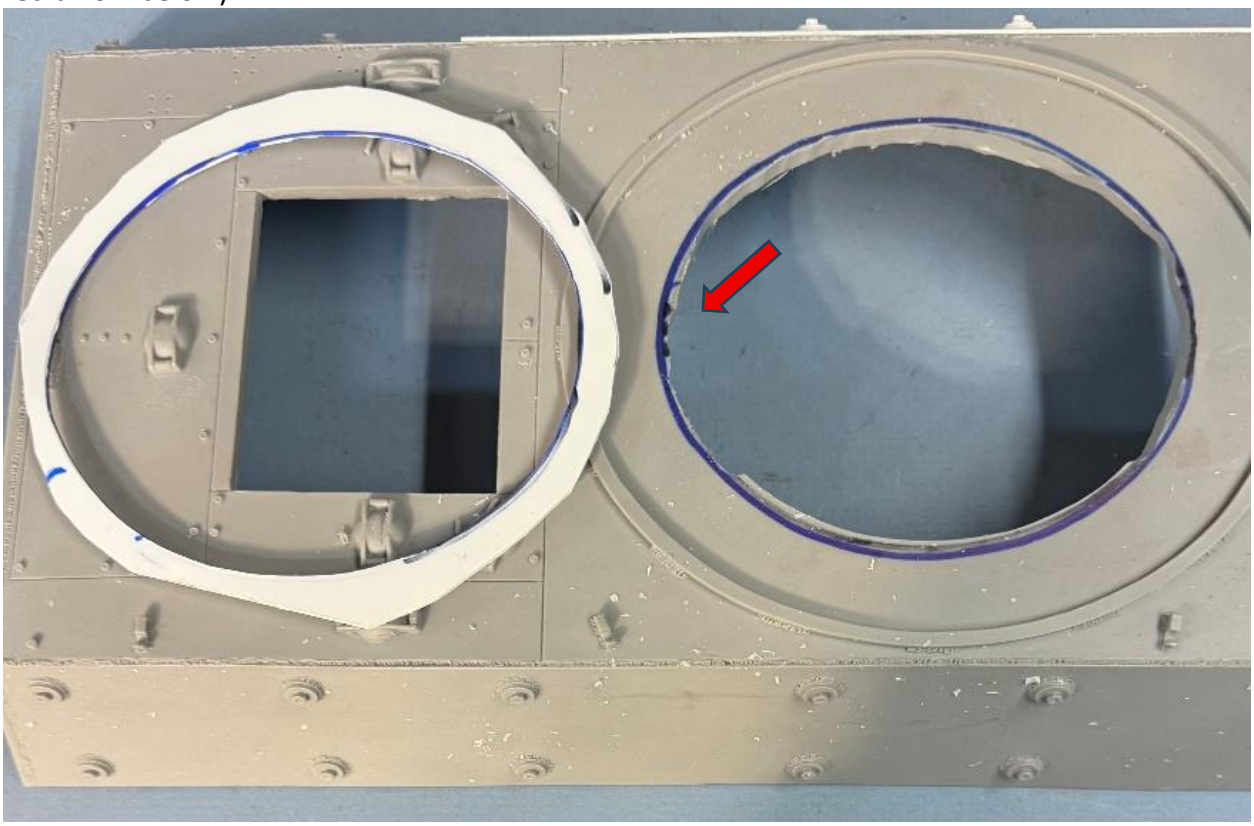
Below is a picture of the metal Mato Turret and Locking Ring (LR) (see red arrow below), that I removed and replaced with the corresponding Tamiya LR. The Tamiya LR did not fit into the Vandra Upper Hull opening, so I had to enlarge the hull opening by grinding away some of the resin for clearance. Grinding the excess resin away creates a lot of dust, so plan accordingly and use a face mask so you don't breath in the vapors.

If you are using a HL LR, or maybe even the Mato metal LR will work(?), double check if the Upper Hull opening actually needs enlarging before grinding any resin away. You may be able to just use

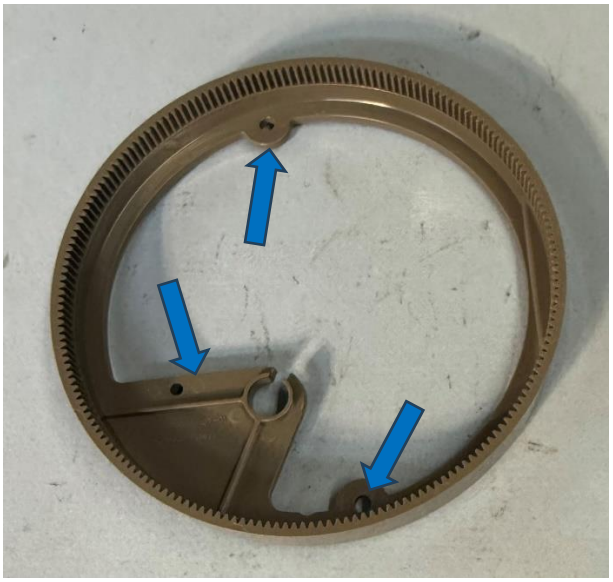
either one “if it positions” the rotation teeth far enough below the Upper Hull’s resin thickness to engage the HL Motor’s gear teeth.



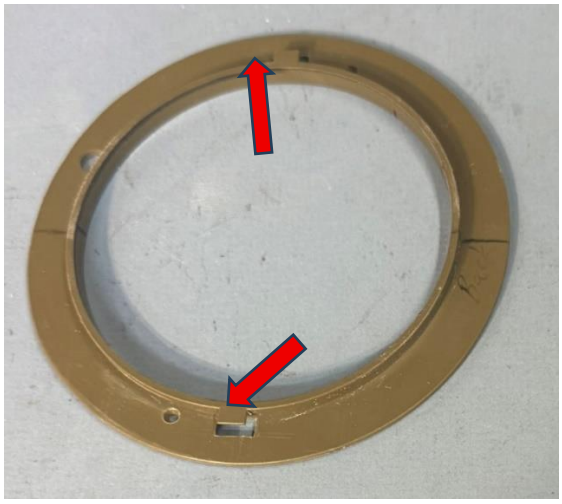
If you are using the Tamiya system and are widening the Upper Hull opening, make a pattern from styrene for the correct OS diameter of the final assembly, and mark the Upper Hull for cutting the correct diameter (which is the outside edge of the blue circle on the Upper Hull (see red arrow below).



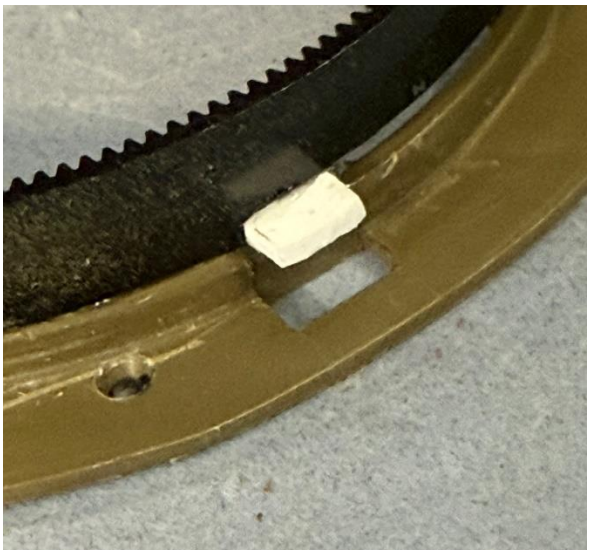
If you use the Tamiya RGR, there are 3 parts that are in the way, so trim them off (see blue arrows below). The black ring is the final RGR version I first tried using.



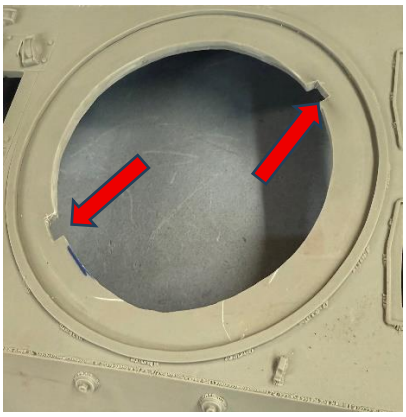
Next, I worked on the Tamiya LR, which you will also need to trim the OS diameter down to 4.6”, so that it does not stick out so far under the bottom of the metal Turret.



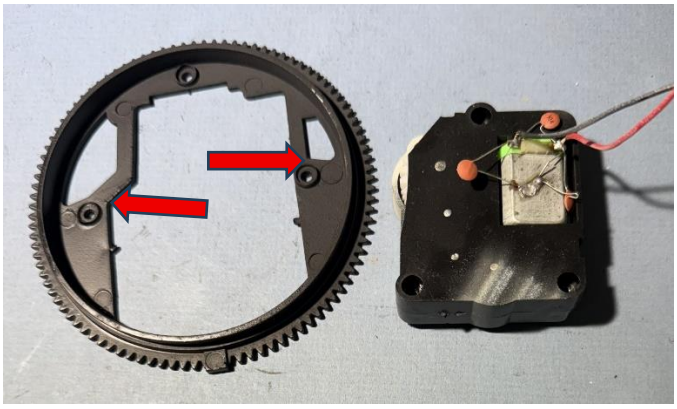
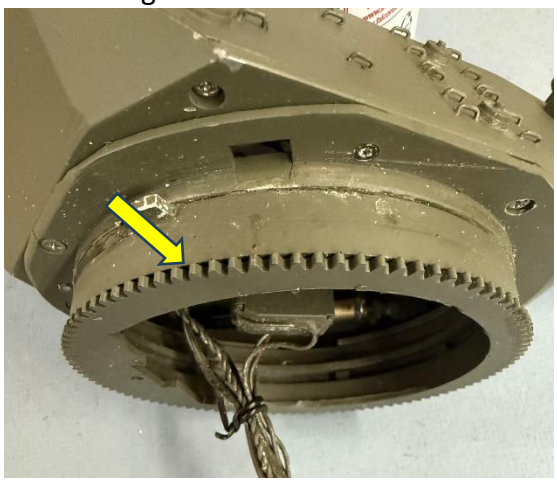
You also need to remove the 2 tabs (red arrows in the picture above) because they do not fit the thickness of the Vandra Upper Hull. To replace these, I made 2 new tabs (white styrene) and affixed them with glue and small screws to the black Rotation Ring which has been glued onto the Slip Ring. Again, you might be able to avoid a good bit of this work if the Mato or HL LR is used instead???



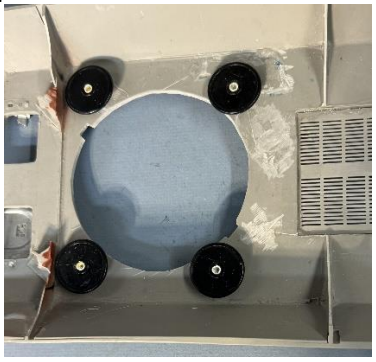
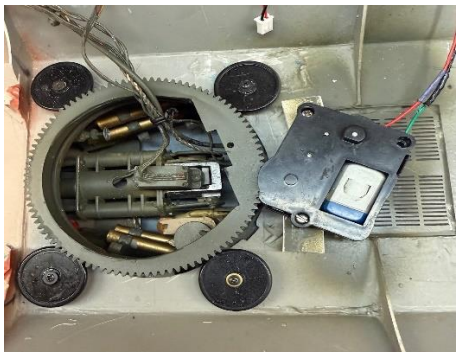
You must also cut 2 square openings in the Vandra Upper Hull so the Tamiya LR can be inserted. This step may not be needed if you use the Mato or HL LR and RGR.



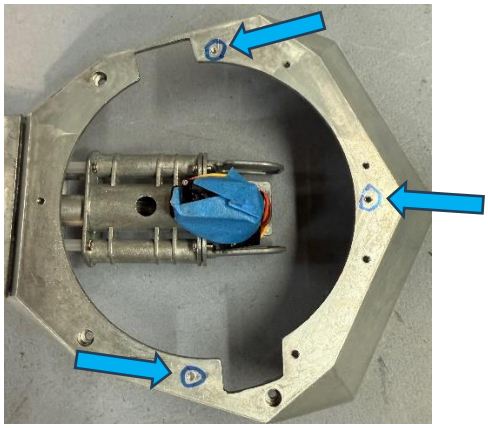
Below are pictures of the HL RGR after it was added to the design I had initially created to use with the Tamiya system. Since that did not work with the metal Turret, I had to add the HL RGR to the Tamiya assembly I had made. I chose to remove the unneeded parts of the RGR (shown with red arrows). The HL RGR was then glued inside the Tamiya RGR (8 small strips of .080 x .156" of styrene were glued inside around the diameter to effectively center the HL RGR). This type installation left only the HL RGR teeth sticking out to engage the HL Motor (see yellow arrow). Note that the first picture shows the HL RGR with a tab at the bottom which is a non-360 degree RGR….do not use this type…use an RGR that has teeth all 360 degrees.

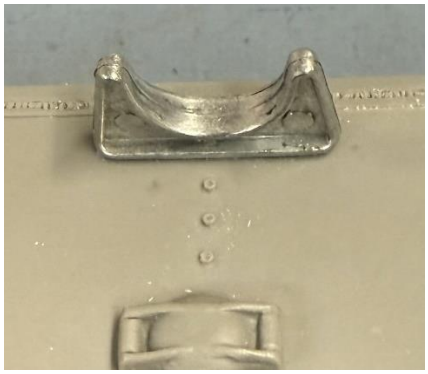
Now that the modified Ring Assembly is complete and fits thru the Upper Hull hole, the system to position it properly along with the HL Motor, needs to be built on the underside of the Upper Hull. This means correctly positioning the Ring Assembly so it turns freely and does not bind, and mounting the HL Motor so it properly engages the big teeth on the HL RGR. The 4 black Tamiya wheels keep the Ring Assembly tightly positioned and the Motor tightly engaged with the RGR's teeth. The black wheels spin on styrene dowels that are glued to the Upper Hull, and the black wheels are secured in place with 4 screws to keep the wheels from falling off the dowells when the Upper Hull is turned over.

"If" you used Tamiya system parts, the LR needs to be mounted to the Turret. To do this you need to drill and tap 3 new holes in the Turret bottom plate. You have to use 3 tiny metal flat head, tapered screws about ¼" long. The 3 new holes also have to be countersunk in the LR so these flat heads are flush and don't gouge the resin Upper Hull. I used a 2-56 size drill and tap for the threads. The 3 new holes in the Turret bottom are shown with blue arrows.



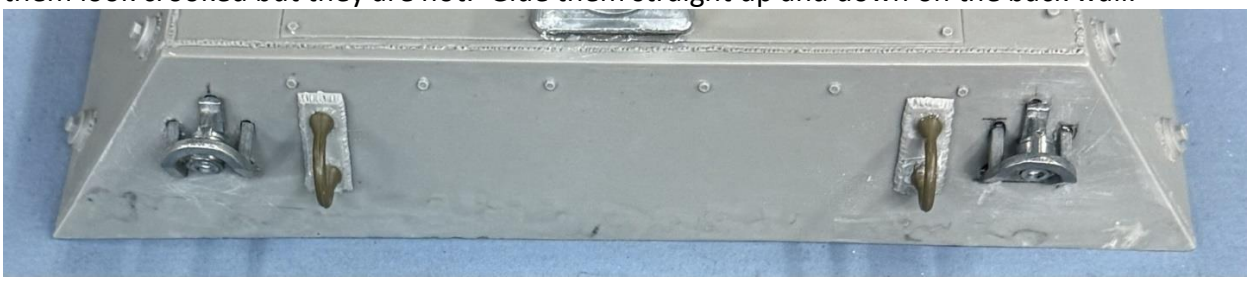
E. Barrel Lock at the rear: I bought a metal Mato Barrel Lock, cut the big stem piece off (red arrow) and drilled and glued a smaller brass rod to mount it to the Upper Hull.

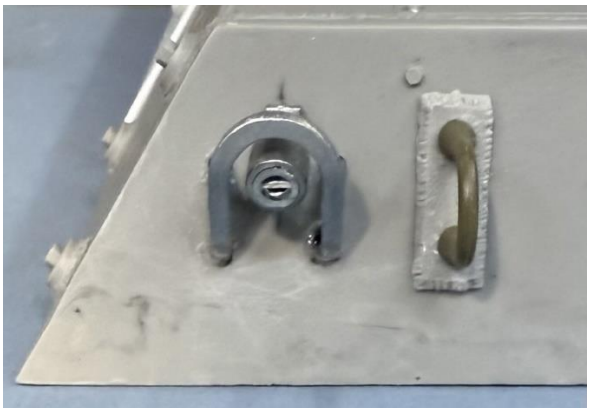


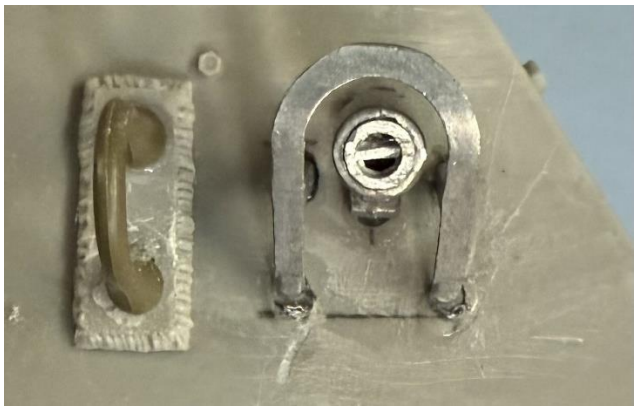
F. Lifting Hooks: I chose not to use the 4 lift rings that came with the metal Turret because they did not fit the ring bases that Vandra provided (part #46 & 47). Instead, I changed out the Vandra rings (too fragile) with Tamiya plastic parts that I had, for more stability.

When mounting these Hooks to the Upper Hull, Vandra provided no positioning dimensions, so I found some prototype pictures and figured out the approx. locations. For the front wall locations I used .519" down from the top (blue arrows) and then inward .092" at the top of the Hook base…. from the angled side of the wall (yellow arrows).

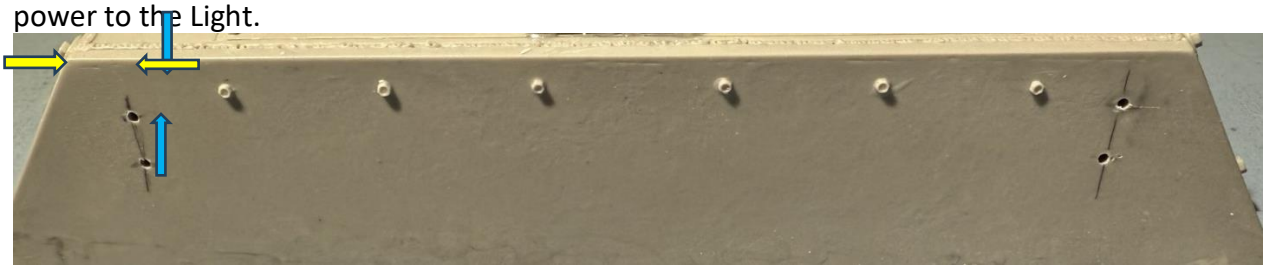
To complete the rear wall Hook locations, I first had to install the Rear Lights and protective Brackets, then I determined where the Hooks needed to be glued. The camera picture makes them look crooked but they are not. Glue them straight up and down on the back wall.



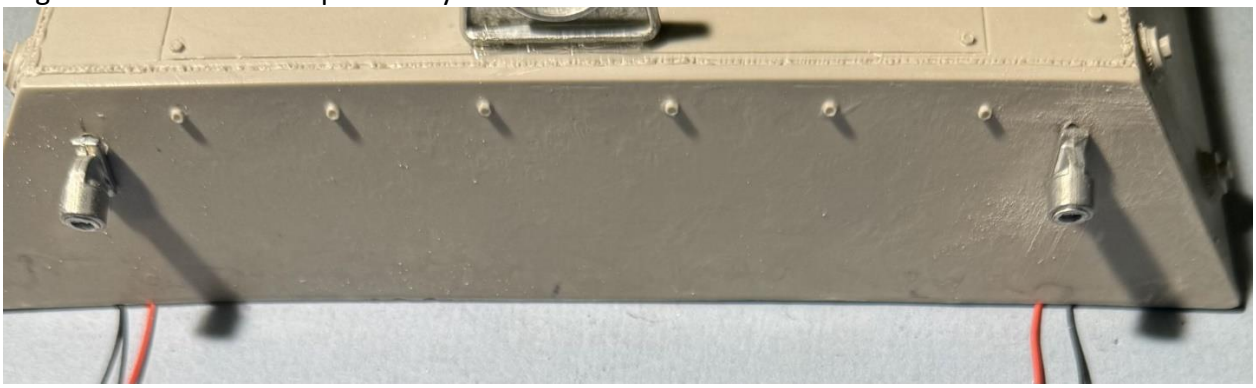




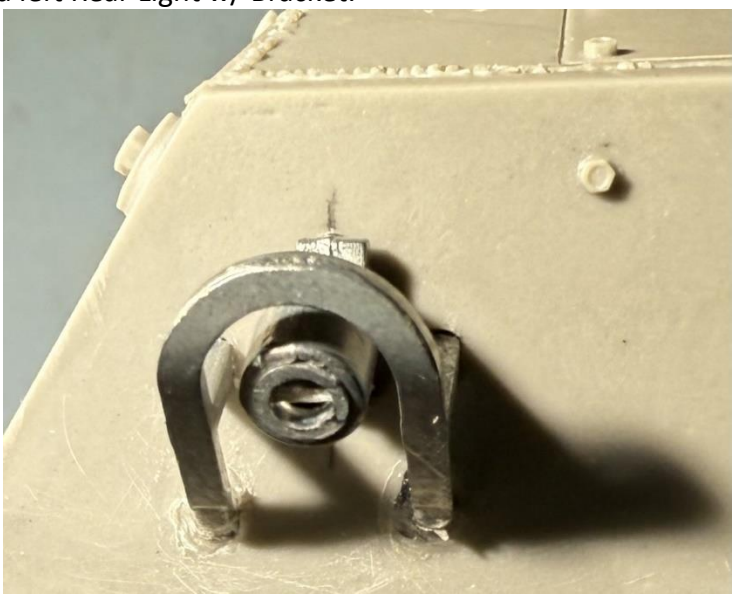
G. Front and Rear Lights and Brackets: For the rear lights, I drilled the Upper Hull where the lights should be positioned, including 2 holes for the electric wires. Once inserted, the wires will need a socket type soldered to the other ends which will fit the type electronic system you chose to use. All the holes drilled were .067" diam. In all the pictures the holes don't look straight up and down but they are… again, the camera just distorts the angle. The holes are located in .26" from the side (yellow arrows) and then down .33" to the first hole, then .28" down to the second hole (blue arrows). Also drill a 3rd hole between the 2 shown here…which are for the wires that supply power to the Light.



Note that these two lights are angled down more than they should be, because of the improper angle of the rear wall as previously stated. The bottom of the wall should be further outward.

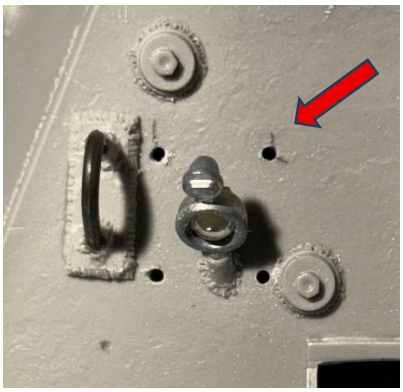


Here is the finished left Rear Light w/ Bracket.



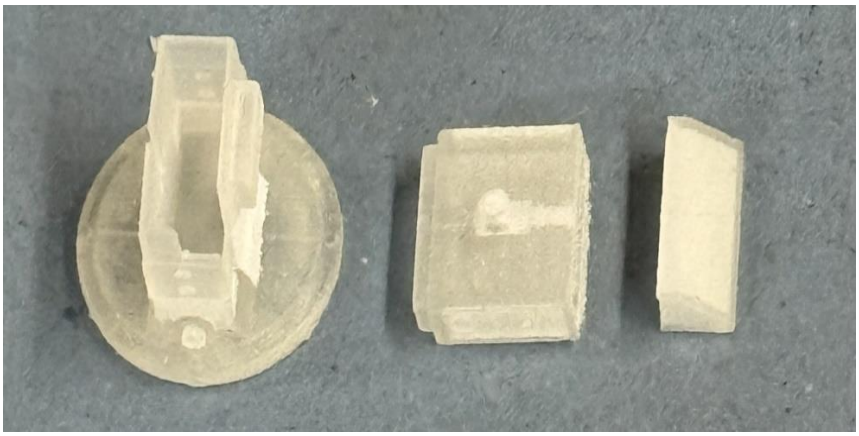
The Front Lights followed a similar process of installation, and Vandra at least provided a cast in stub to help locate where the lights go. I drilled a .067" dia. hole in the stub (see 2nd picture) and two .039" dia. holes behind the stub for the wire leads to fit into.

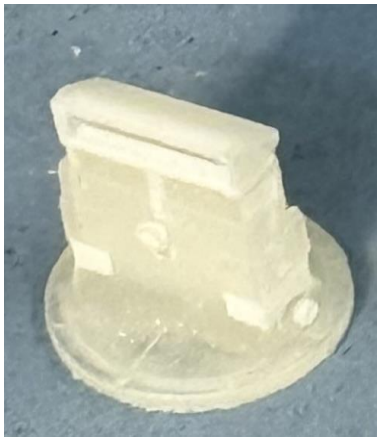
The holes for the front Light Brackets are .055” dia. and are drilled as shown below (red arrow).

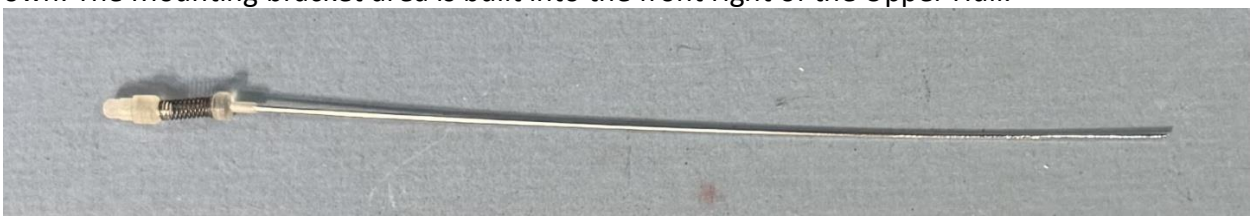

H. Front Driver Hatch Covers: The resin hatches were too fragile, so I removed them and the water strips surrounding them on the Upper Hull. I bought 2 metal Mato Hatches instead, but they are too large so I ground them down to just cover the Upper Hull openings. This process also required replacing the grab handles with brass wire. After installing the hatches to the Upper Hull, I added new water strips (styrene pieces) which were glued in place and then added welding lines before painting. Internal periscopes can be added to the inside of the metal hatches (if you desire). I had planned to use some 3D printed parts from ShapeWays, but elected not to add them to the Hatches because there was very little room underneath above the motors.


The left picture above shows the original Hatch size and final smaller size after grinding. The right picture above shows the brass handles added to the finished size of the Hatches. The next 3 pictures show the new Hatches installed with the new water strips and weld lines added, and and example of 3D printed periscopes that **I did not use.**





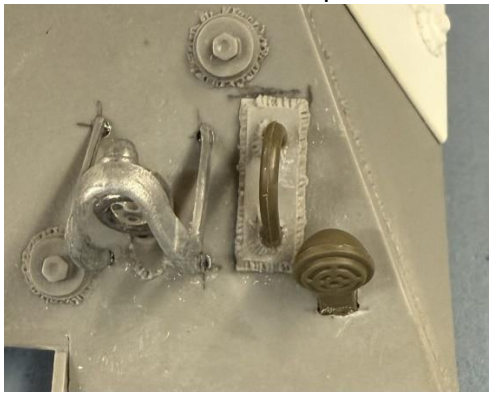
I. Antenna: The Vandra kit did not include any Antenna base or rod, so you have to fabricate your own. The Mounting bracket area is built into the front right of the Upper Hull.



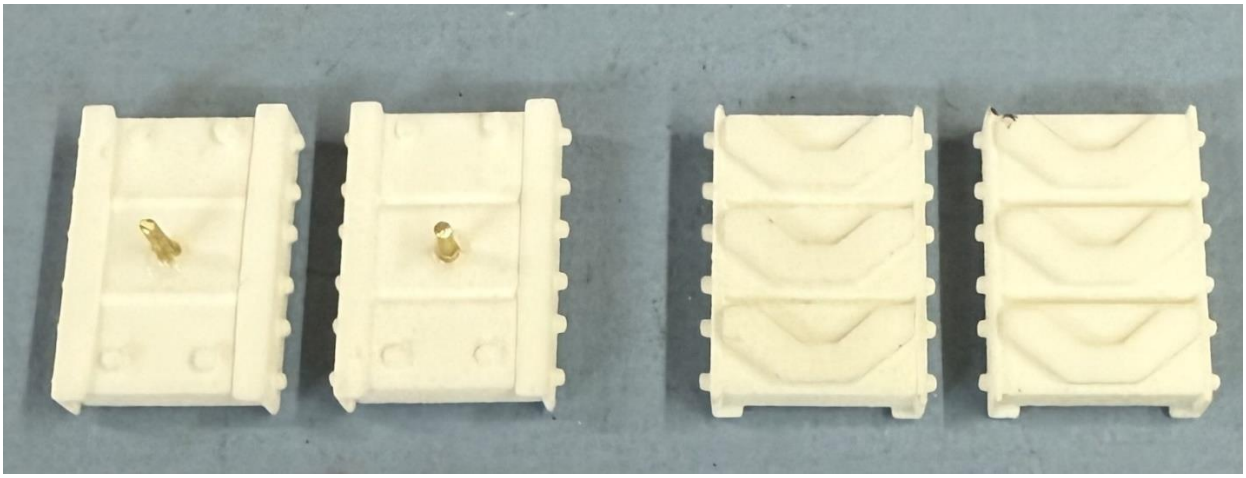
This picture shows the Antenna mounted in the Upper Hull (picture is rotated 90˚ to the right)

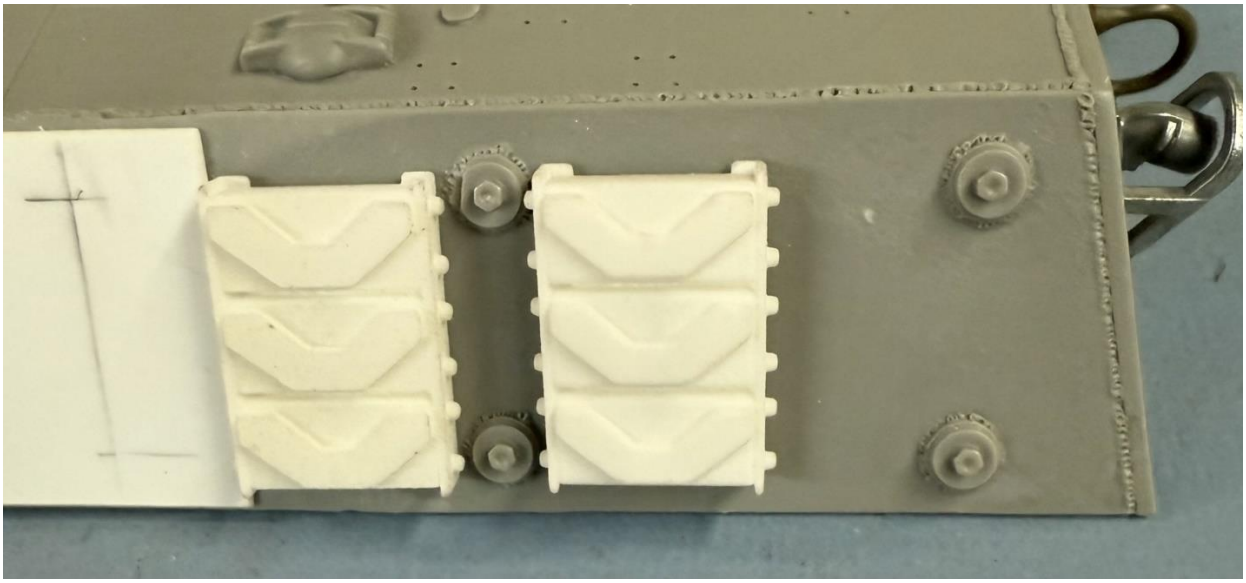
J. Driver Figures: There was very little space over the motors, so I elected not to install any Driver figures, nor as stated above, any Periscopes.

K. Siren: I mounted a Siren on the front left. The part was an extra from a Tamiya Sherman kit.

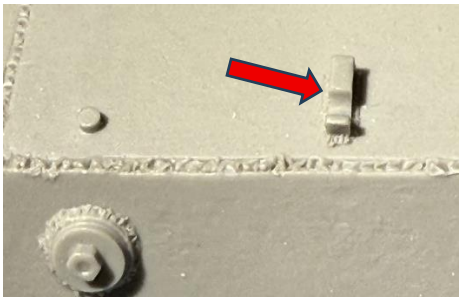


L. Extra Track Links: I had 4 extra Track Links (3D printed) which I mounted 2 per side in the rear. They required gluing a brass rod in the back as the anchor glued to the Upper hull sides.



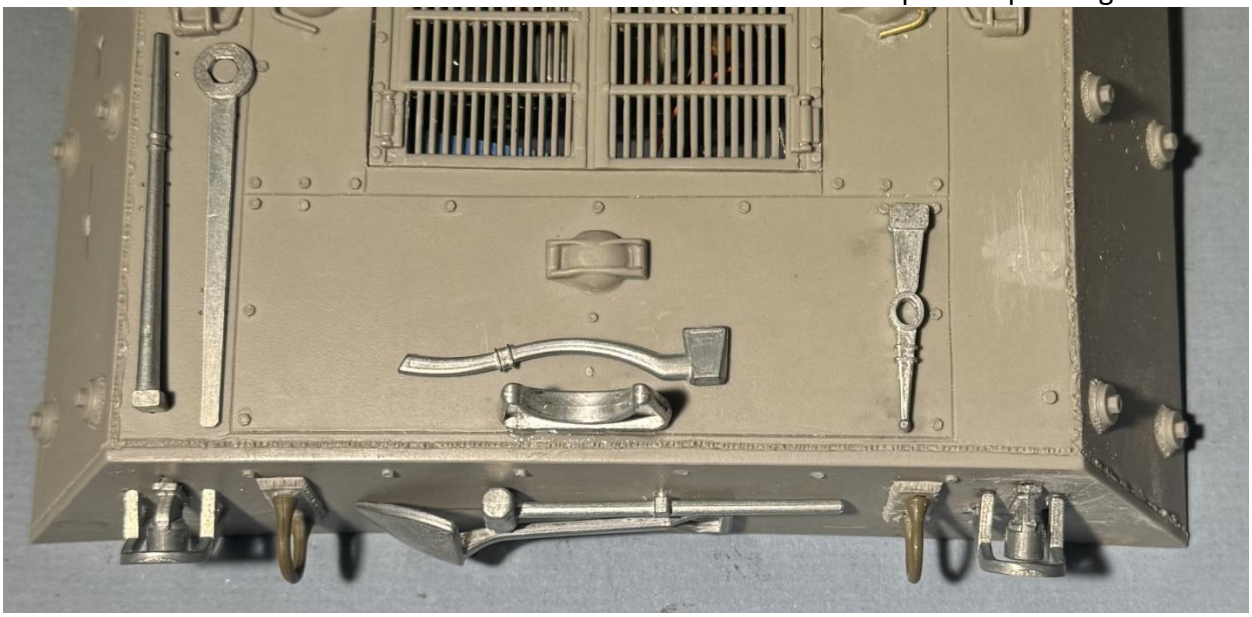


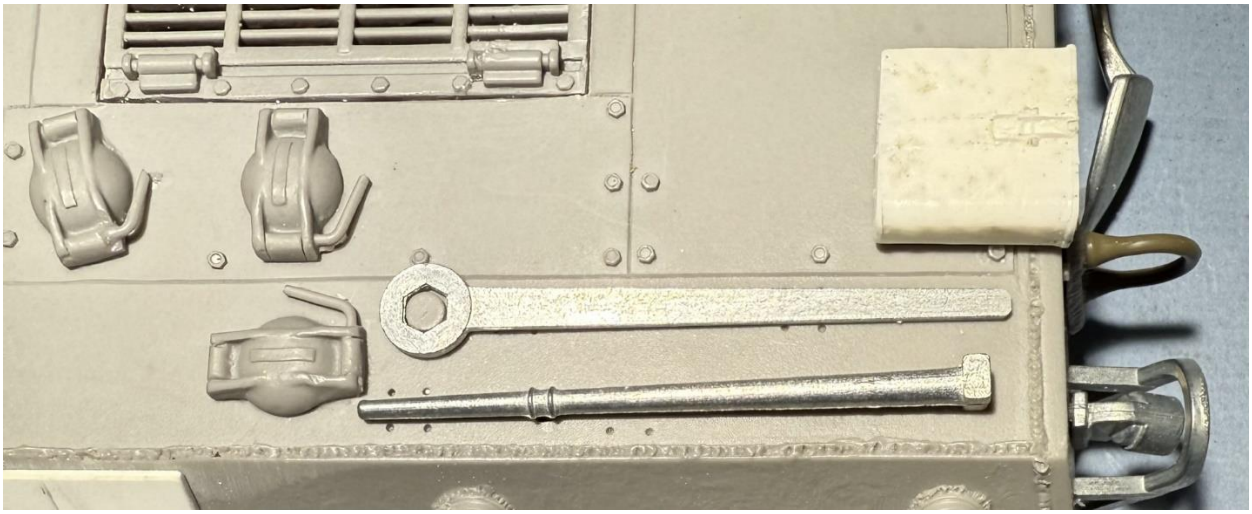
M. Tow Cable: I chose to use the Tow Cable kit from Schumo (part # SH0027N) because of its precise cast pewter parts. To mount these you must first remove the 3 cast on resin brackets (along right side top of the Hull….see example at red arrow in first photo). Then drill a hole for each new bracket and mount the corresponding Schumo parts. I put the locking brackets on each end and the 2 cable holders in the center area. The second picture shows the part sets which include 2 of each.

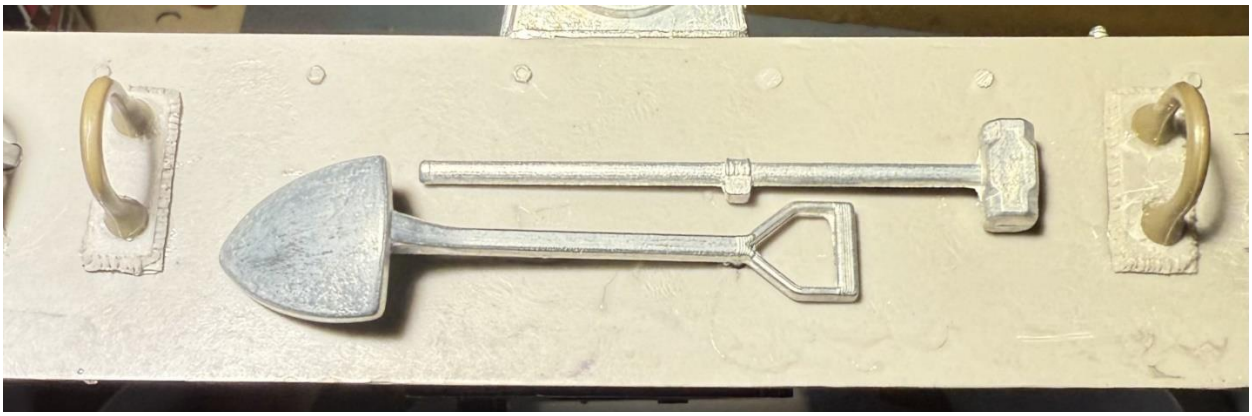


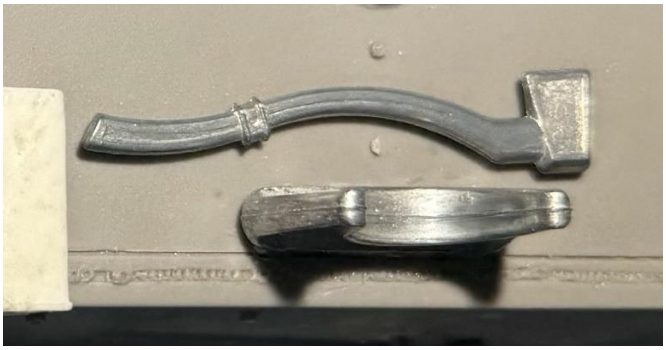
N. Tools: I used the pack of metal Tools from Mato (but after painting I did not like them). The following pictures show them positioned on the upper Hull. **Note: The Sledge Hammer eventually got shifted so the head was too the left, to accommodate the Fire Extinguisher that**

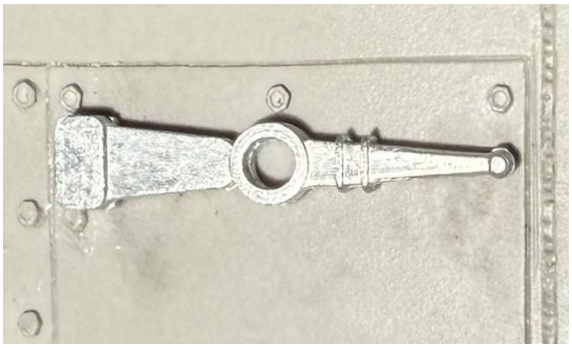
I fabricated (see paragraph P below). When painting these, I like to scrape a tight grain pattern into the wood handles. All handles will be mounted with leather straps after painting.



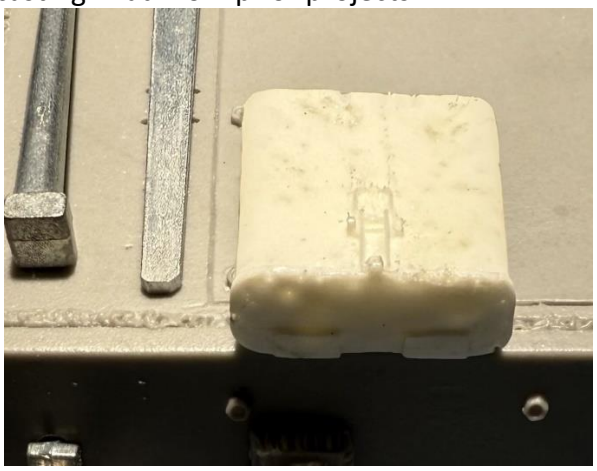






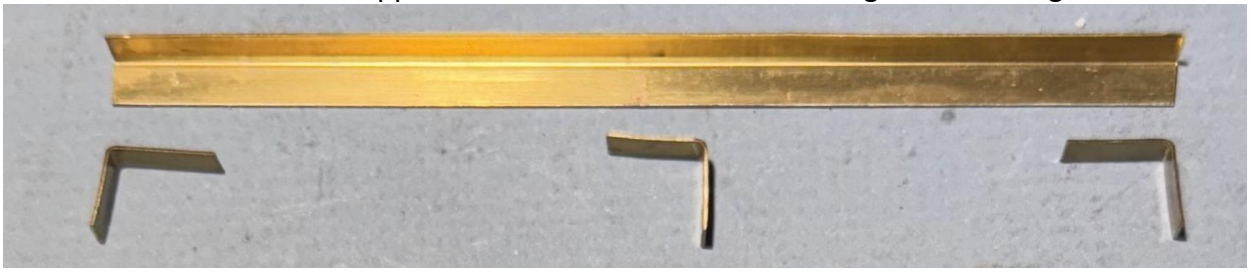


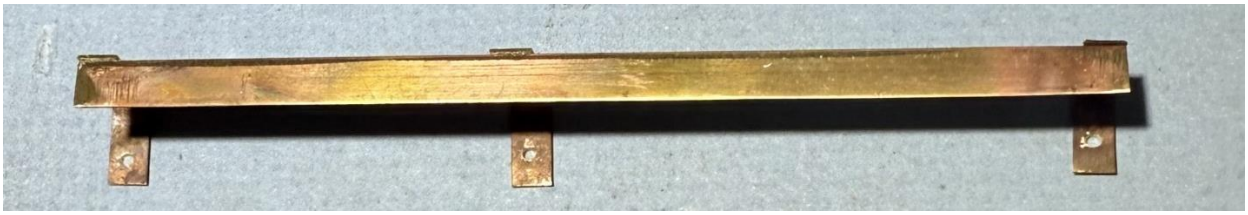
O. First Aid Box: I added a First Aid box at the left rear top, with a tiny bit of overhang so the lid would open. This is a casting I had from prior projects.

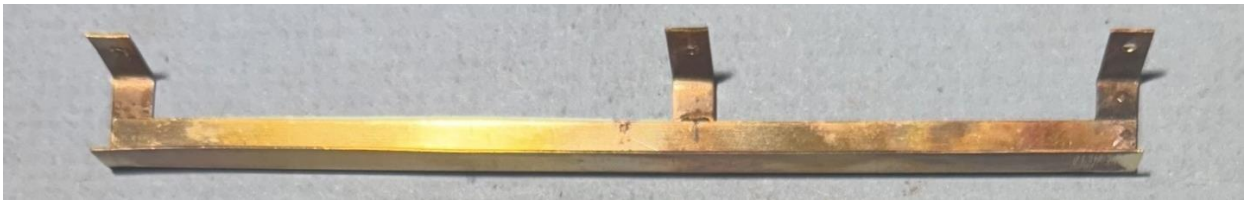


P. Exterior Fire Extinguisher: Prototype Photos that I viewed showed that a unique kind of Fire Extinguisher was located on the Rear Wall. I could not find one that was commercially available, so I scratch built one from brass parts. I will also make a bracket to hold it in place.

Q. Gas Can Rack: The Gas Can Rack is simple to build. I used a 4 " long x .016" thick brass "L" angle strip (.22" x .22"), and soldered three .013" thick x .15" wide brass strips, with the legs being .38" and .45" lengths. These are spaced so they line up with the large bolts on the side of the Upper Hull. Once mounted to the Upper Hull I added 3 small tie down rings to hold the gas cans down.



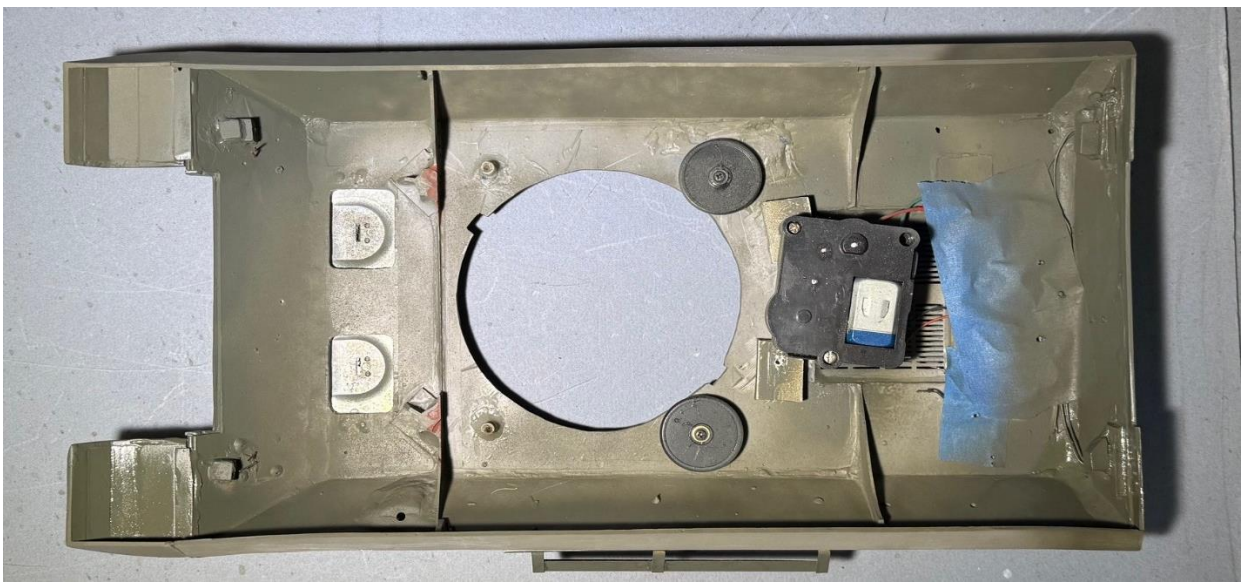


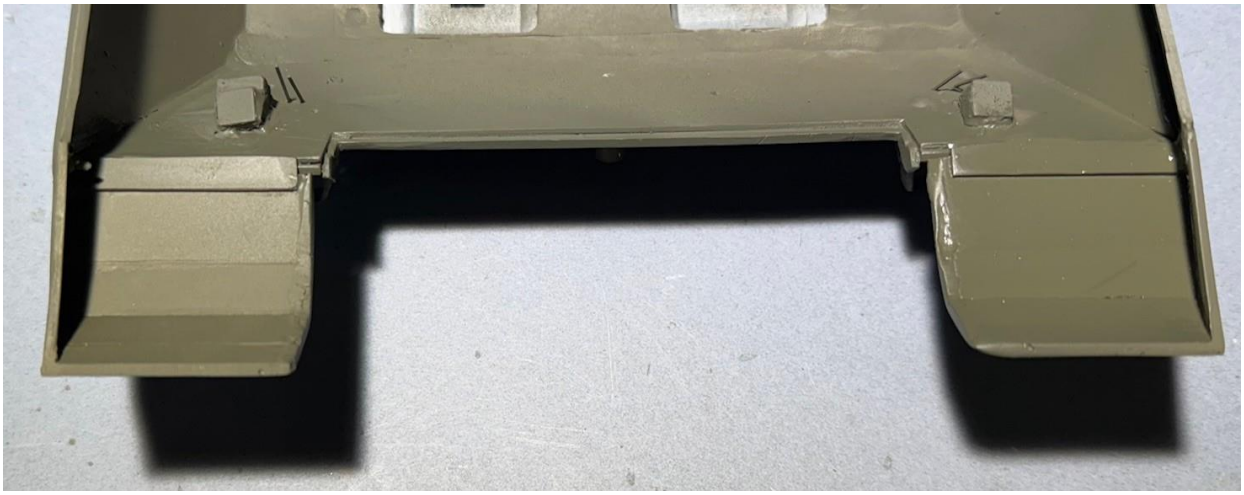


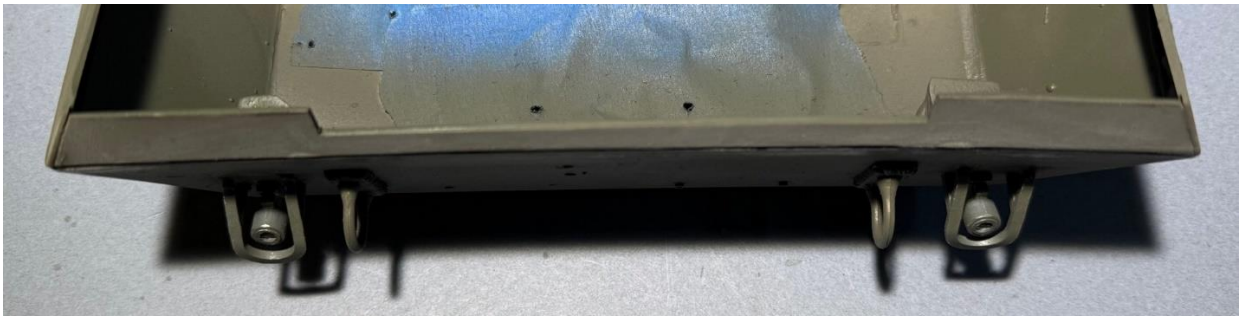
R. Extra Road Wheel: I elected to position the extra Road Wheel on the front Glacis Plate. I made a brass plate, brass tube and used a 1-72 hex head brass screw ½" long to anchor the wheel.

S. 2 Towing Clevis': I cast 2 from a mold I had and mounted them to the front.

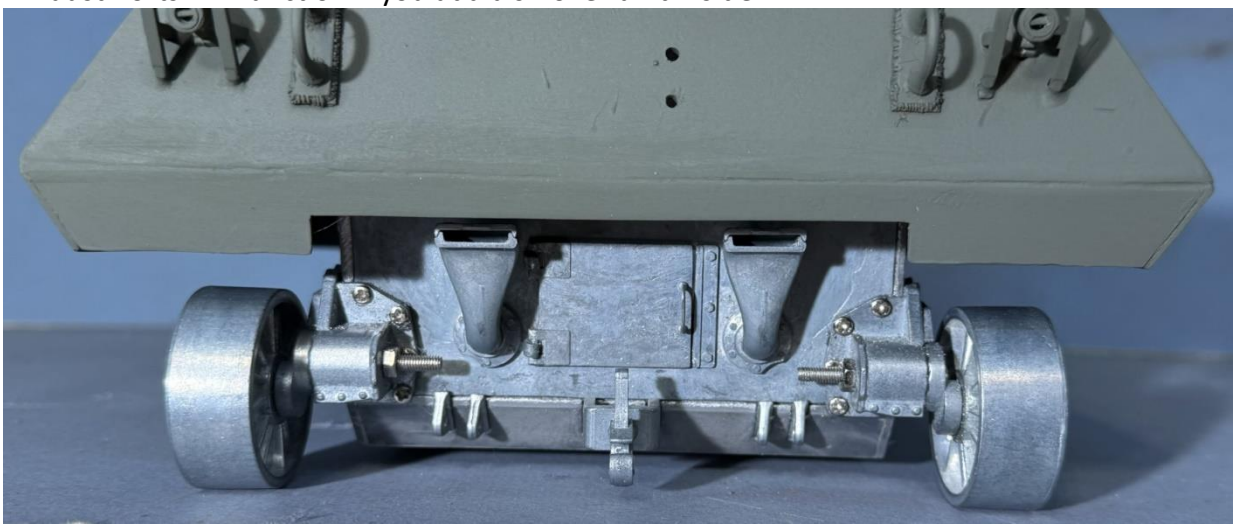
T. Fenders & Side Skirts on bottom of Upper Hull: Unfortunately, I added these 6 pieces of Side Skirts and Fenders after I had painted the Upper Hull, but they still went on very nicely. Guess I was in too much of a hurry to see what the hull looked like painted ☹. I ended up gluing these 5 pieces on the inside to the hull and then used Tamiya putty to fill in any gaps on the outside. A smooth sanding and re-painting of the hull produced smooth joints. Be sure to leave about 1/16th inch clearance over the tracks at the front when gluing the 2 Fenders on.





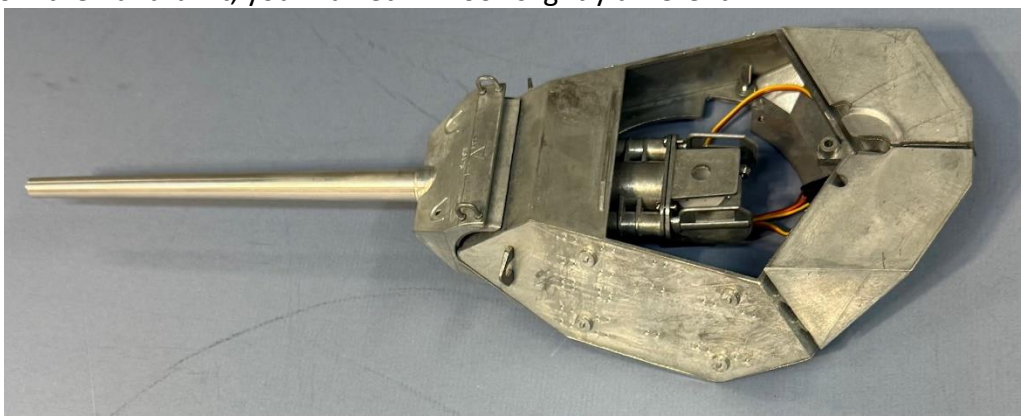


If you do not use the exhaust Adapter Pan, then the rear of the model will look like this, and the Exhaust Ports will function if you add a smoker unit inside.

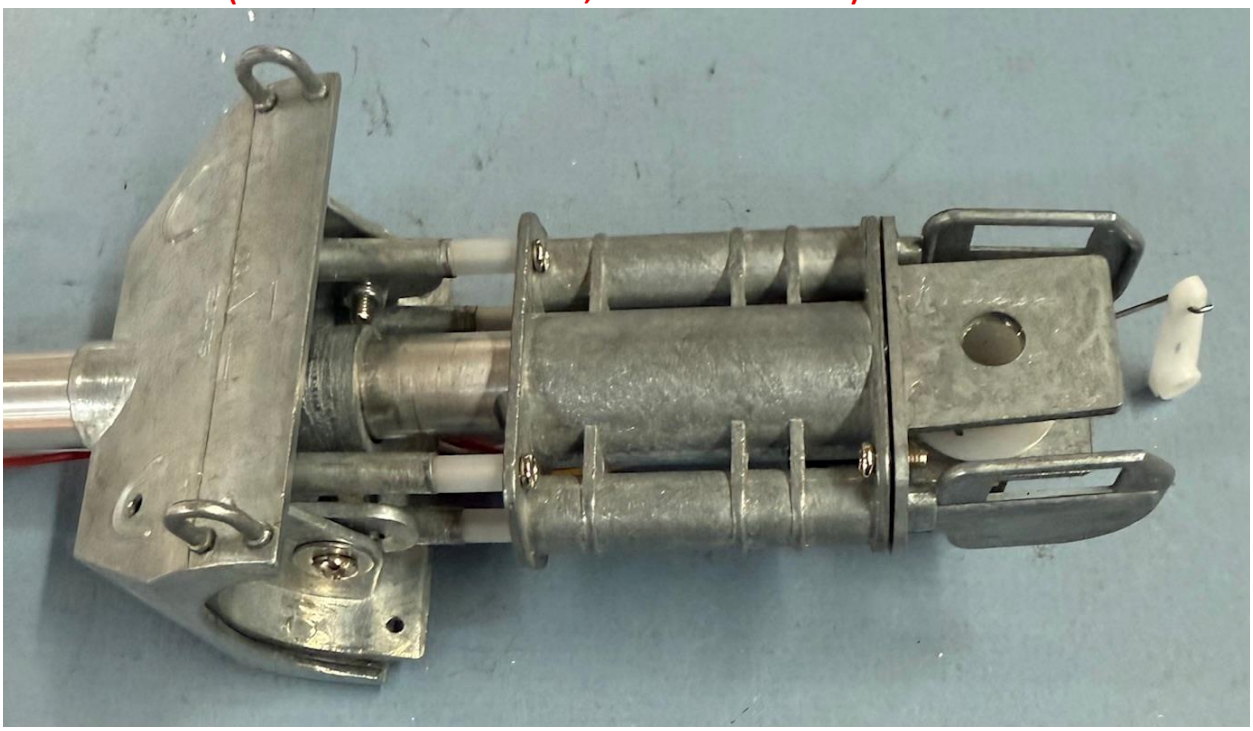


10. Turret Work:

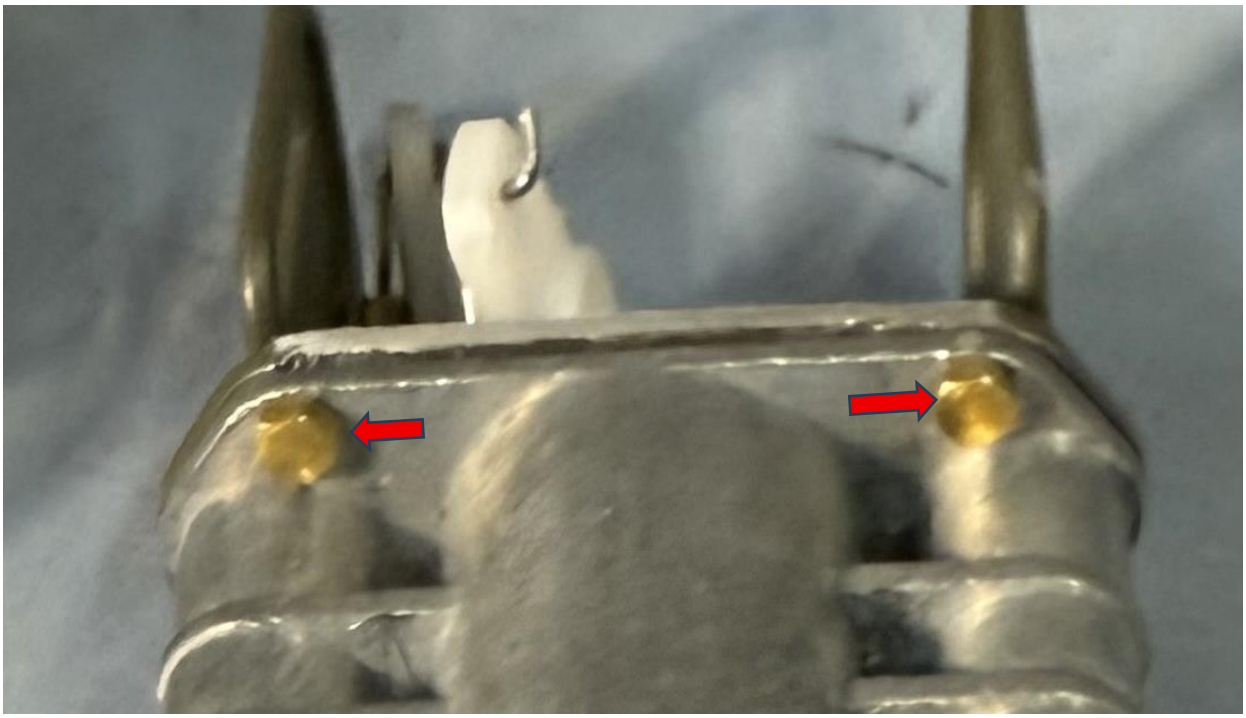
A. **Mato Metal Turret:** I started with this metal assembly from Mato. If you chose to make a resin Turret from the Vandra kit, your Turret will look slightly different.



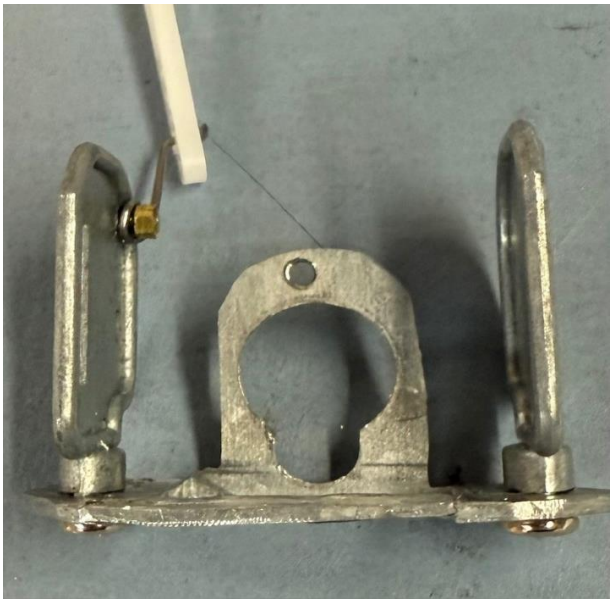
B. **Modifications to make to Gun**: I started with the Gun and Mantlet, so that I knew how it would fit in the Turret once modified. The gun supplied by Mato needed a number of changes for it to be more realistic. I used the 2 servo locations and connection methods that Mato designed, to move the Barrel Elevation and for Recoil. **Using Servos requires "3 wire" connections to the electronic board (HL 7.0 does NOT offer this, but 7.1 board does).**

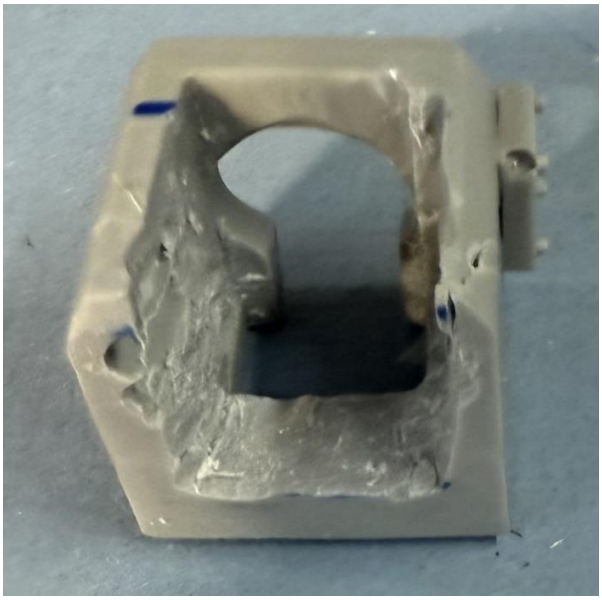


1. **Screw Heads:** 8 screws were changed from flat head to hex head. The 4 furthest from the Breech had to be filed by hand into a hex format. The 4 closest were just replaced with brass 2-56 screws. See red arrows.

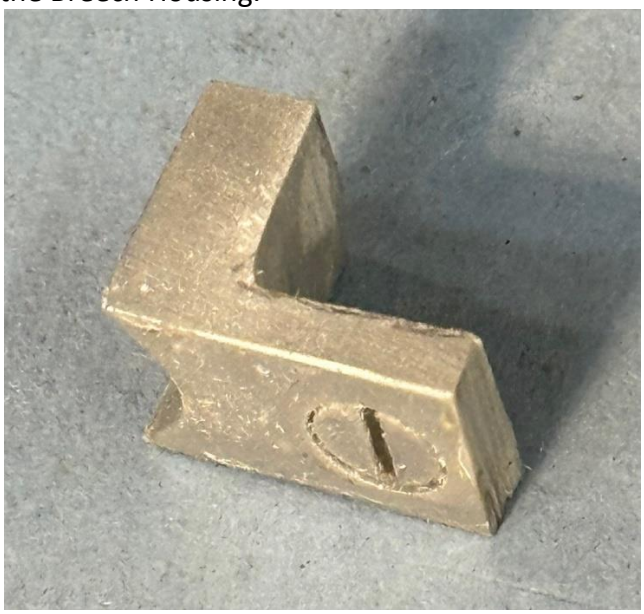


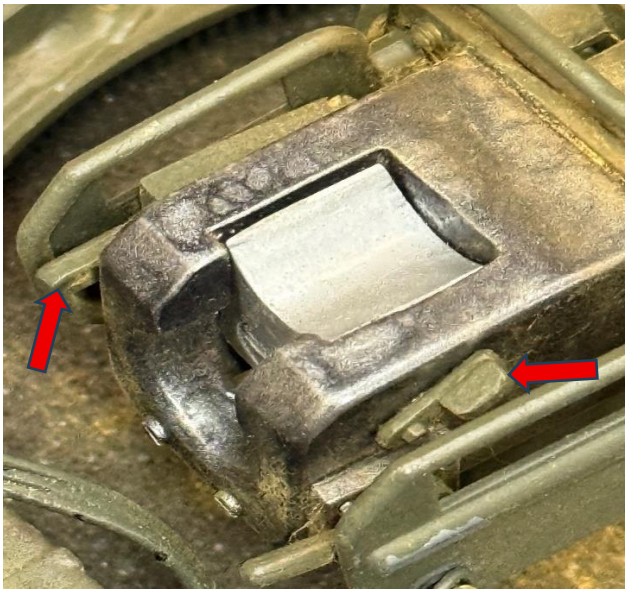
2. **Cannon Breech:** This consists of the Breech Housing, sliding Breech Block, Firing Handle and Ejector handle. The Breech Housing from the Vandra kit was carved out inside so that the Barrel Recoil servo would fit and operate properly. In order to mount the Breech Housing, the upper metal part or the gun frame (blue X) needed to be removed and the swing arm (red arrow below) needs to be cut and filed so it swings clear under the Breech Housing.

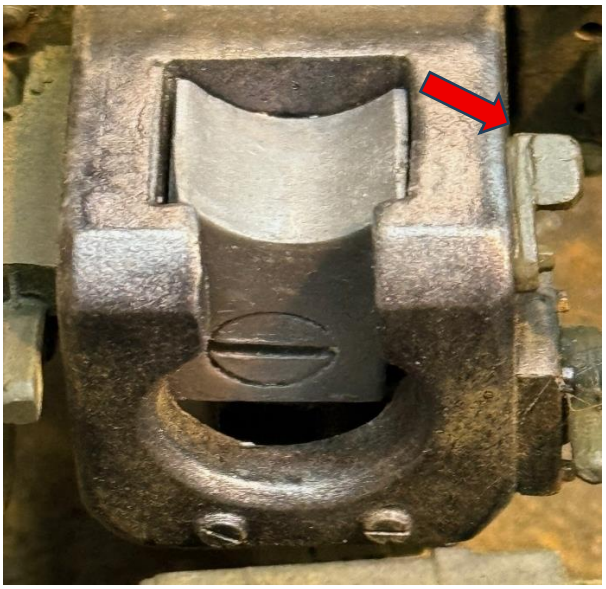




Once the Breech Housing fits easiy over the servo, the Breech Block (vertical sliding piece) needs to be cut down so it wil fit down into the Breech Housing.



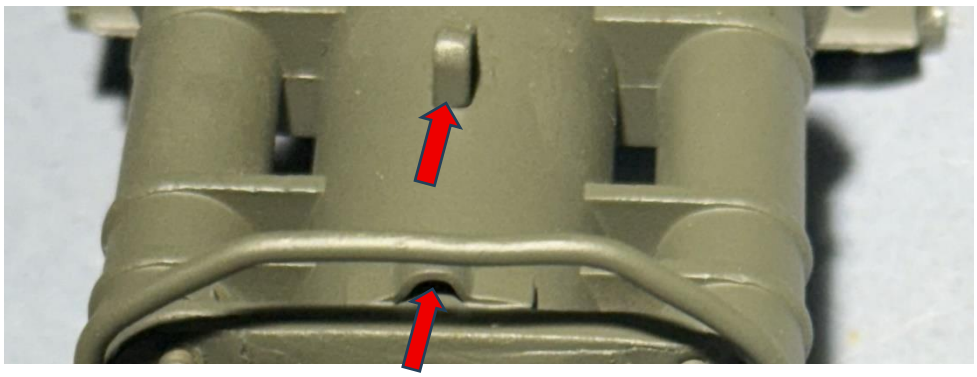




The Firing Handle and Ejector handle are marked with red arrows above.

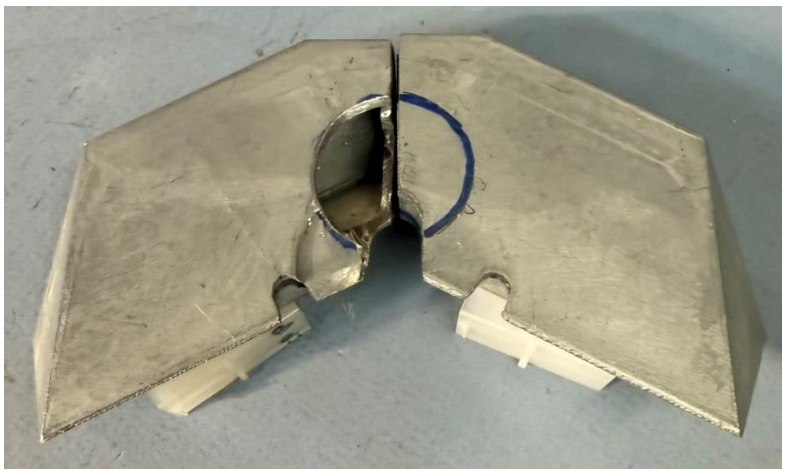
3. **Hand Firing Lever:** The M10 had a large diameter rod mounted over the Breech Housing front, so I bent and shaped a .068" diameter brass rod and mounted it with 0-80 brass bolts.

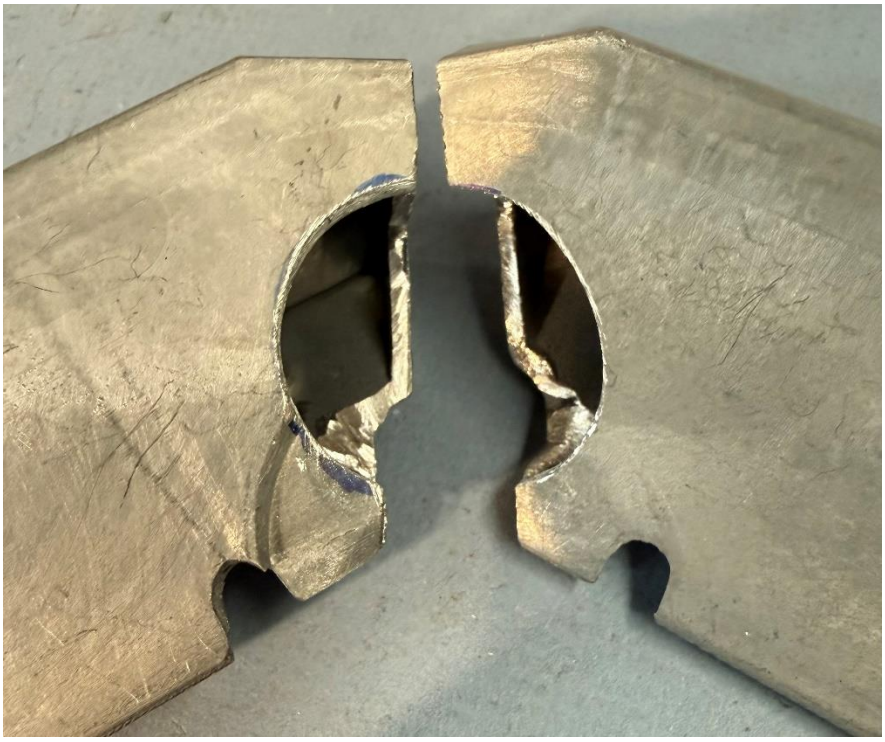
The resin triangle part (Vandra part #7) & a brass U bracket I fabricated, were glued to the center of the barrel.

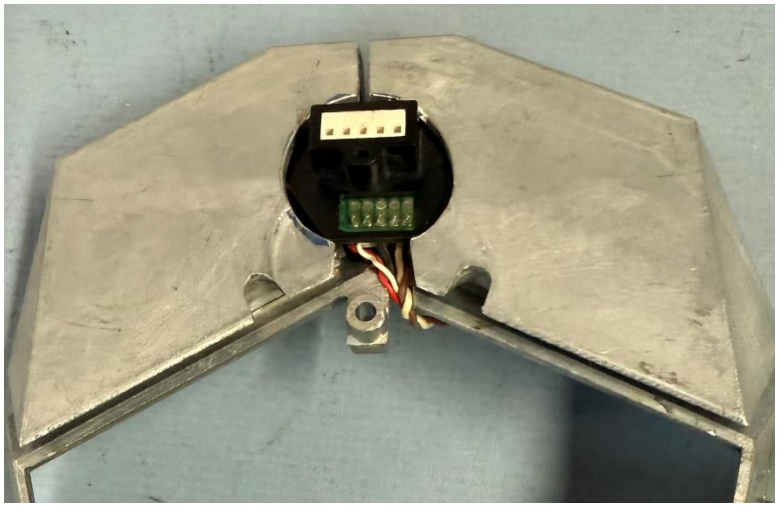


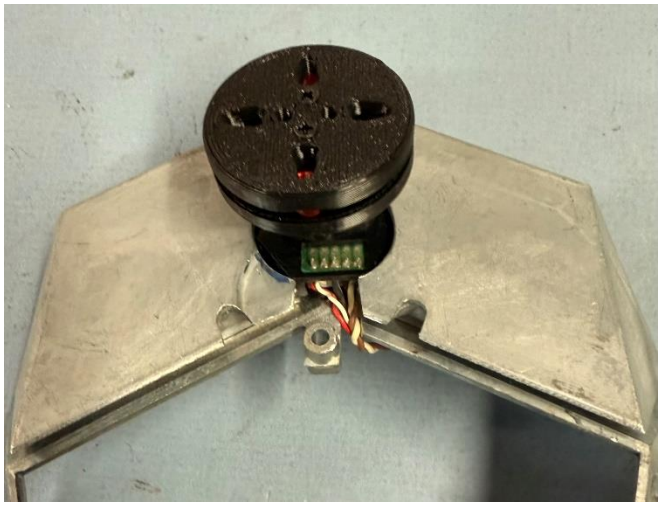
C. **Flush Mounting Screws:** I started work on the Turret by first removing the 4 round head bolts that hold the heavy weights to the back of the Turret. I wanted them to be flush, so I bought 4 flat head screws of the appropriate length and counter sunk the 4 holes. Before painting the turret, I added puddy to smooth over the 4 bolt heads.

D. Battle Unit Install: **Note: The following installation is for the Tamiya IR receiver w/ 5 wires that plug into the Tamiya electronic boards. If you are using a Heng Long (HL) 7.0 or 7.1 Board, then you should install an HL IR receiver set up or a LegoDEI set up for HL. During construction, I ended up switching from the Tamiya Boards to the Heng Long 7.0 Board (then I finally switched to a 7.1 Board). Using either HL Board requires splitting up the 5 Tamiya IR wires (to 3 wires and 2 wires with small enough plugs) so the Tamiya system could plug into the HL Board. Using an HL 7.1 Board allows for using the 2 servos in the Mato Turret (each with 3 wires) which can then be plugged directly in.** So, If you are using the Tamiya Electronic Boards, follow these instructions and install the Tamiya infrared battle unit by cutting away some of the metal in the center area of the 2 weights at the back of the Turret. This will allow the plastic base to set inside the metal weights and the TBU to only stick upwards a little bit. I measured and marked the area to be cut with blue ink, and then cut, ground and filed the area away. **If you are mounting a Heng Long or LegoDEI IR system, you will have to cut the weights differently.**



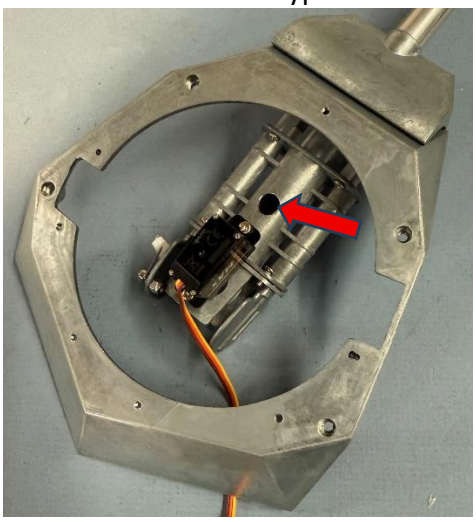
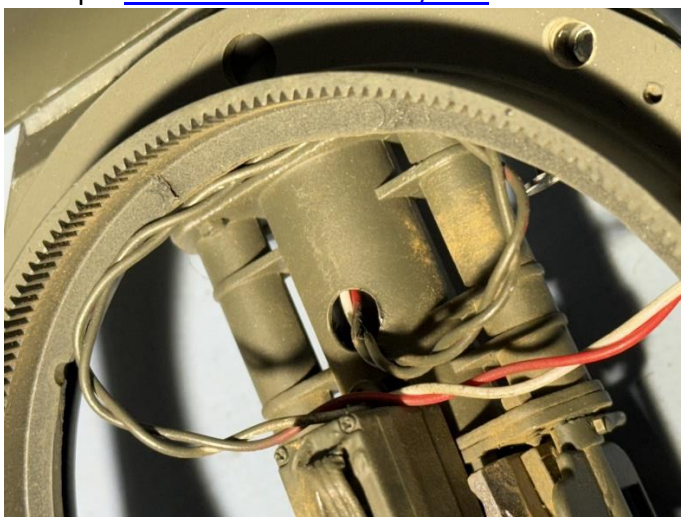
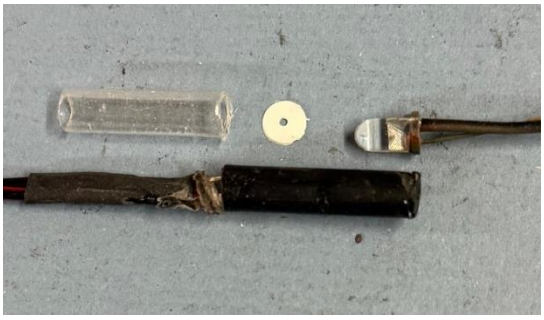
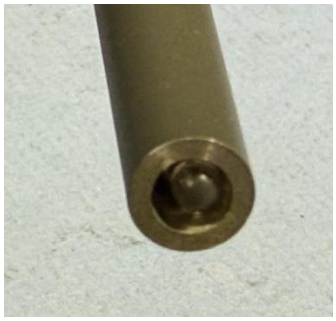




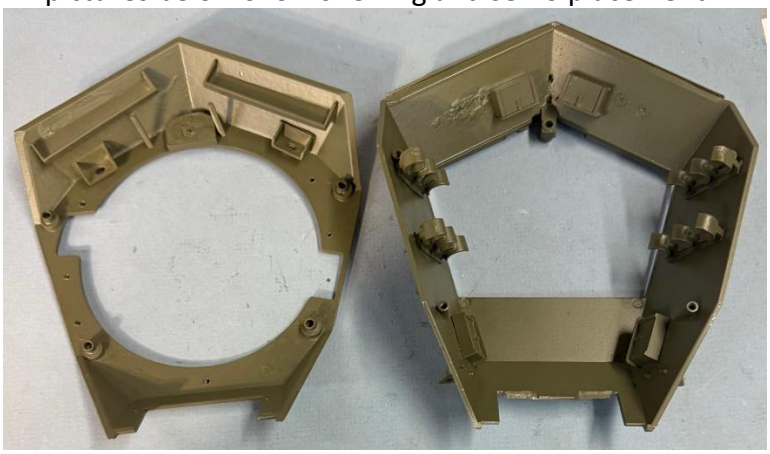
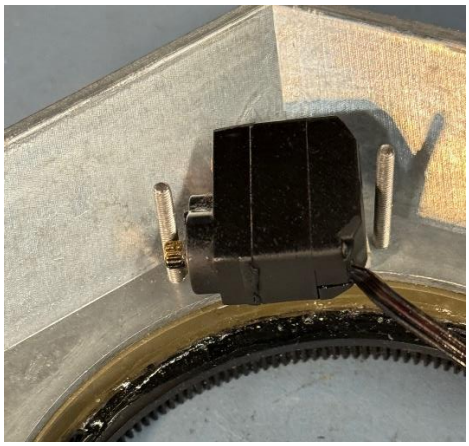


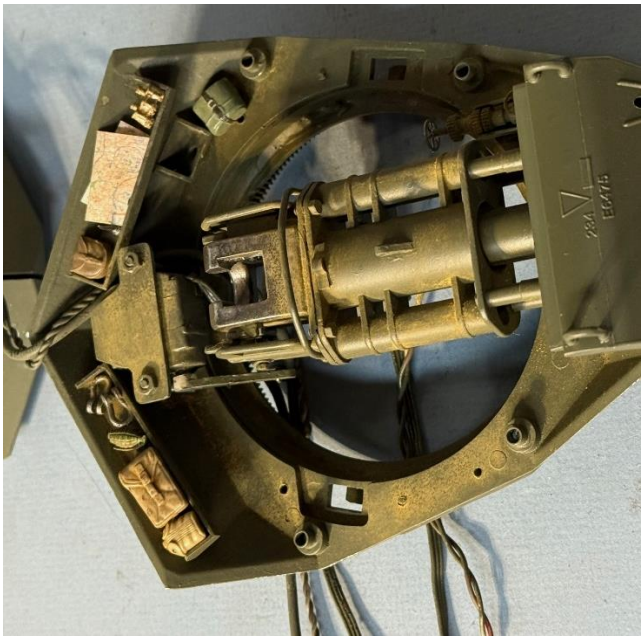
E. IR Emitter Wires: I then drilled a ¼" hole in the bottom of the Gun, so the IR Emitter wires could run back inside the barrel from the bulb and down to the electronics. The second picture shows the red/white wire of the IR bulb installed (partially painted Olive Drab). The IR emitter bulb has to be the 5mm version so the lip needs to be ground off so the bulb slides into the barrel. I had

wanted to use a 3mm bulb but found that they do not have the right code to interface with a Heng Long 7.0 or 7.1 Board. The FRAG Restrictor is also too big of a diameter to put inside the barrel, so I just glued the round styrene piece to the end of the Barrel and jammed the Emitter bulb up against it. This styrene piece will be hand painted Olive Drab so it blends in. See this link for how to make the typical FRAG Restrictor set-up. FRAG Mods to the TBU System

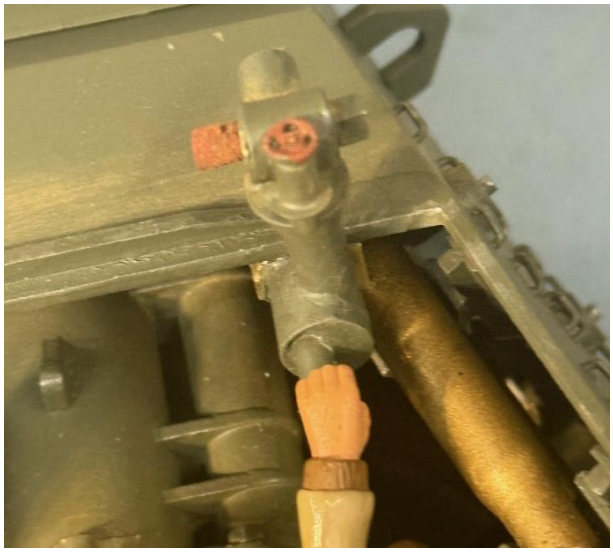

F. Installing Resin Parts to Metal Turret: I quickly realized that the Vandra resin parts for mounting inside the Turret, do not readily stick to the Mato "metal" w/ ACC type glue. So, I painted the inside with the Olive Drab spray paint and then the resin castings "kinda" stayed in place. Some of the parts had to be glued in place using 5 minute epoxy which stuck to the metal or paint somewhat better than the ACC glue. Some changes I made to the inside were: (1) Shell racks were moved to the sides (from the rear) bc the barrel servo has to be mounted near the back wall for clearance, (2) Shelves and other pieces were put on the back wall instead, and (3) two the crew seats had to be mounted higher bc of the Rotation/Slip Ring assembly motor position. I did not mount a 3rd crew seat for the Commander bc everything was too tight, so instead I placed him standing behind the Turret firing the 50 cal MG. This can be done only without the Battle Unit installed. Thus, there are only 3 crew members (of 5) shown with the tank model. The 3rd & 4th pictures below show shelving and servo placement.




The 1st picture below shows a modified radio panel which sets on top of the elevation servo to try to make it less obvious. The notch in the radio is where the MG mount (which is cast into the Turret top) happens to be positioned. The soldier shown in the 2nd picture will be positioned to look out of the Periscope Sight.


G. Periscope for Gunner: I chose not to build the M51 direct fire Telescope which would have been mounted to the left of the Gun bc the Gunner could not be positioned up close to it (but wish I had built it in hindsight), however I did scratch build the M12 Panoramic Vertical Periscope (similar to the one I built for my M36B1 Tank Destroyer), but it is the shorter version and less elaborate. There is a picture of this shorter version on page 33 in the Squadron Signal M10 book. If you prefer the more complex and larger version of the M12 Telescope, look on page 26 of the build article at f289ff_871da79c74c1444a8af149fe63af7c1d.pdf. These are all made from misc. brass parts.

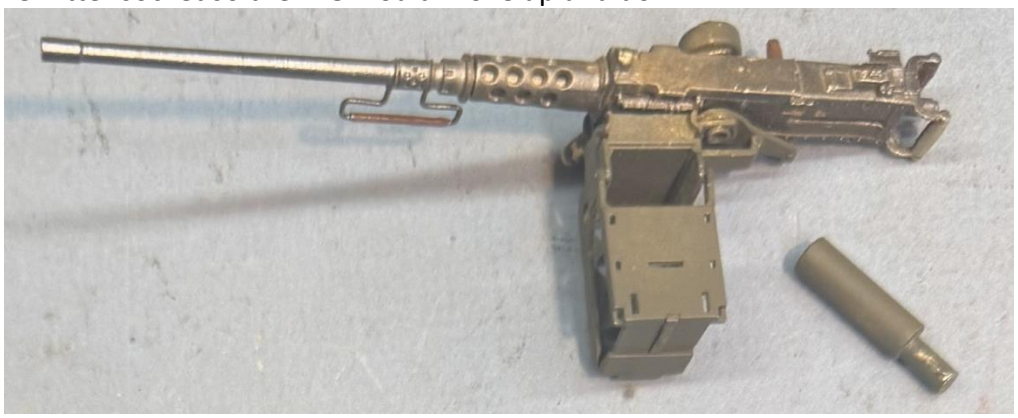



H. Tie Down Hooks: The Mato Turret comes with 19 Tie Down Hooks per side, which need to be glued into the predrilled holes. I used CA glue.

I. Fire Extinguisher: I used the Vandra part for this, painted it bright red and glued it in the front right corner of the Turret.

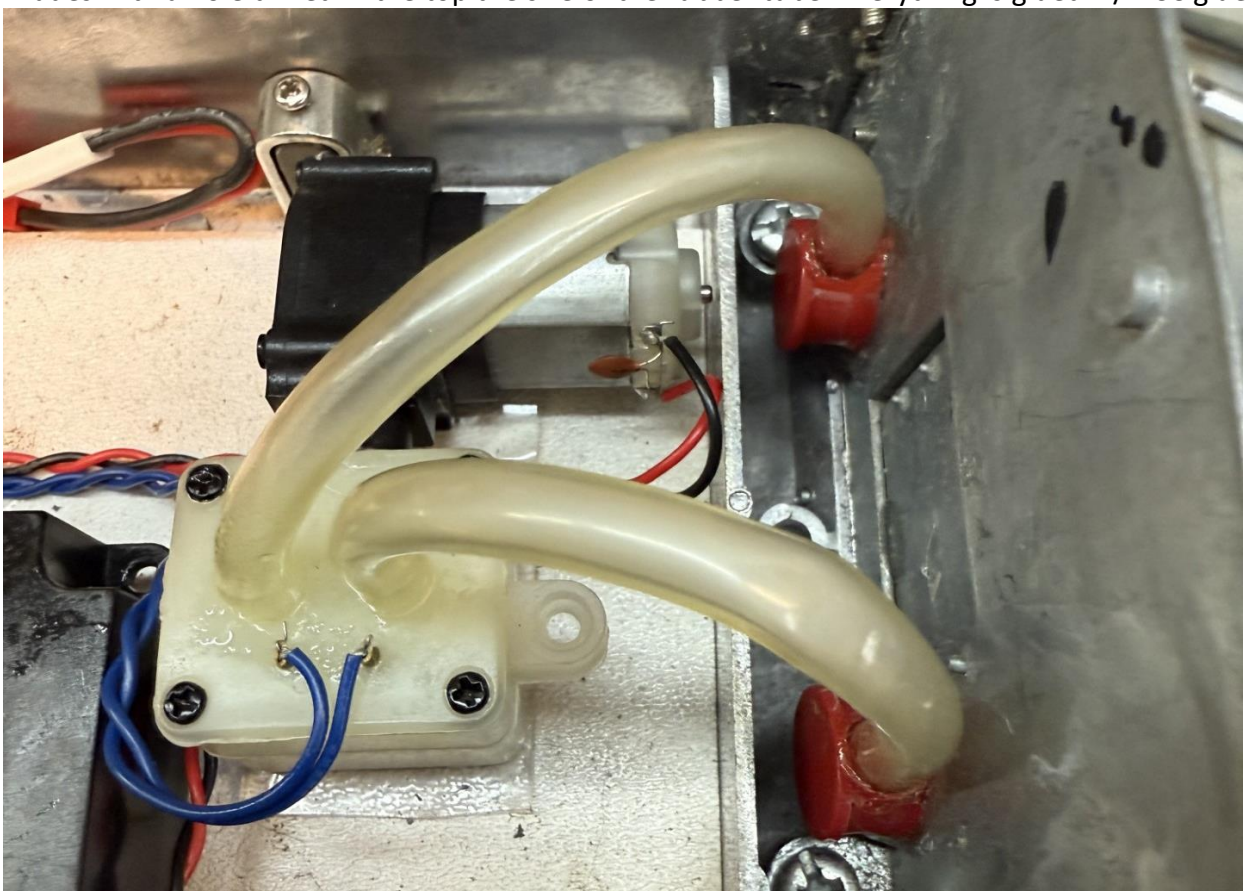
J. Ammo Racks: These hold 3 shells each and were moved a couple times before their position allowed for the seating of the 2 tankers. I ended up removing the top shell on the left to allow enough room for the loader soldier to be positioned to clear the Gun movement up-down.

K. **Turret 50 cal. Machine Gun:** I used the cast pewter 50 cal. MG from AFV-Models.de in Germany, Part No. DT16009A. It has crisp lines and when painted, looks superb. I chose to show the ammo box as open with a 50 cal cartridge belt fed into the gun breech. I also added a short ½" piece of brass tube with a short brass rod soldered into one end. This is to raise the MG higher over the Tamiya IR emitter socket so the MG would move up and down.



L. **"Spent" 50 cal. shells on top of Turret**: This picture is from a different model, but shows how these spent casings are added after all painting and weathering is done. The casings are brass and come from a couple sources on eBay.

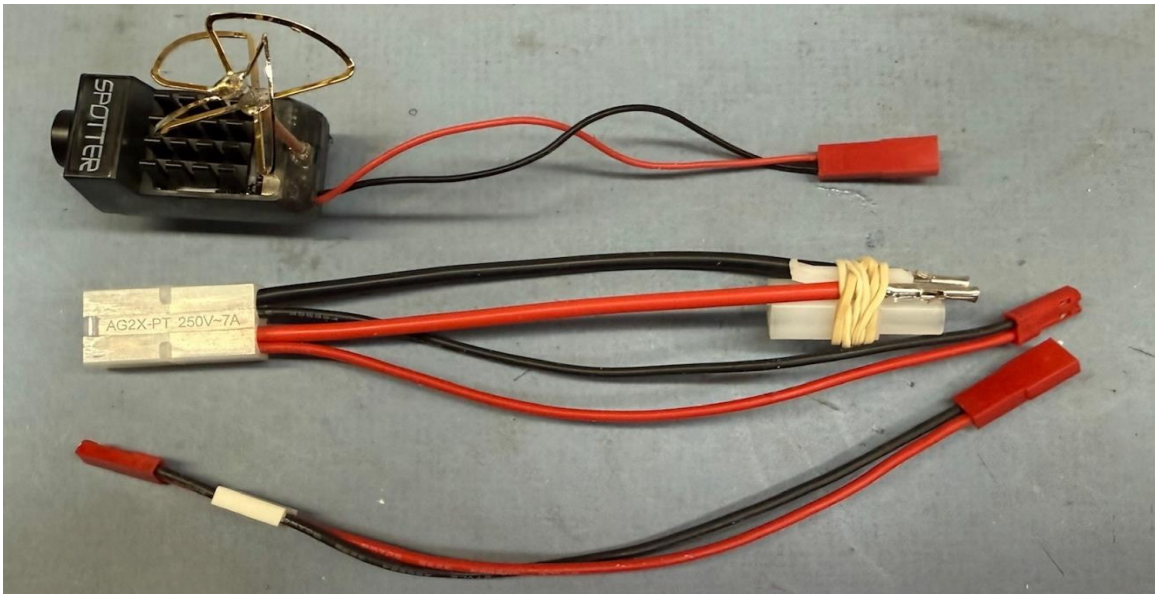
M. Smoker Unit Hook Up: There is not a lot of clearance along the inside back wall for hooking up the smoke tubing to the Exhaust Ports, so I fabricated an inlet box which the tubing goes down into from the top. The red inlet boxes are simply the red caps from a small container of X-acto Blades with a hole drilled in the top the size of the rubber tube. Everything is glued w/ ACC glue.



11. A Few Details to Consider Adding:

Fill in Vision Ports: The 2 vision ports on the driver hatches could be filled in with Micro Krystal Klear to replicate a glass prism. The white areas will dry clear.

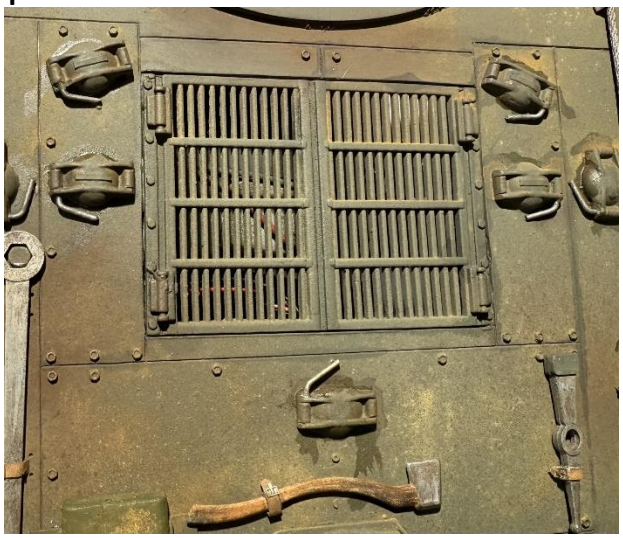
Wiring for FPV cameras: FRAG runs its battles using mini FPV cameras mounted on top the Turret. They are anchored either by a magnet glued under the Turret top or w/ Velcrow affixed on top using double sided tape. This installation proved to be very challenging as the camera is supposed to be centered over the barrel and I wanted the Commander Hatch doors to be open, and I still needed enough clearance for the Tamiya BTU Apple. This first picture shows all the wiring and camera that need to be installed. The camera gets power from the tank battery. The 2nd picture is how I used magnets to hold the camera. The camera has to be offset to the left a little bit to fit. Red wire goes down hole.



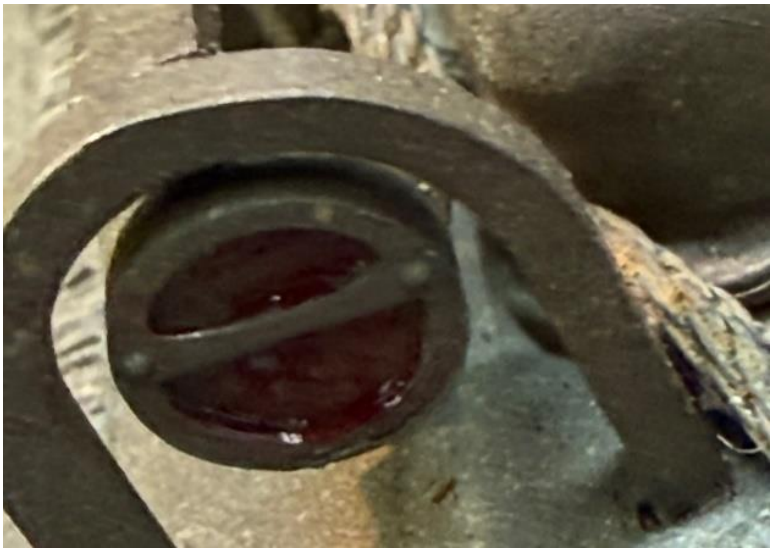
Netting and Stowage Items for Tank Use some netting items from a Value Gear package. All of these are anchored with .070" dia. brass rods inserted underneath and are glued to the Upper Hull after painting.

Home Made Netting: Can be shaped to fit any area & made from First Aid Gauze, painted green and weathered. The pictures below shows the short section I used next to 3 gas cans and another longer netting used on another tank.

Add fuel spills and oil slop:

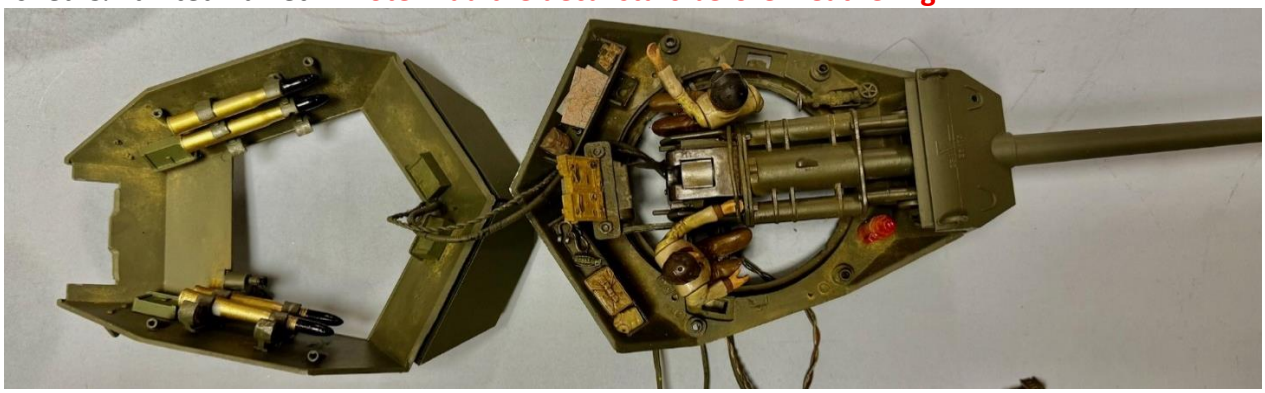


Paint taillights red:



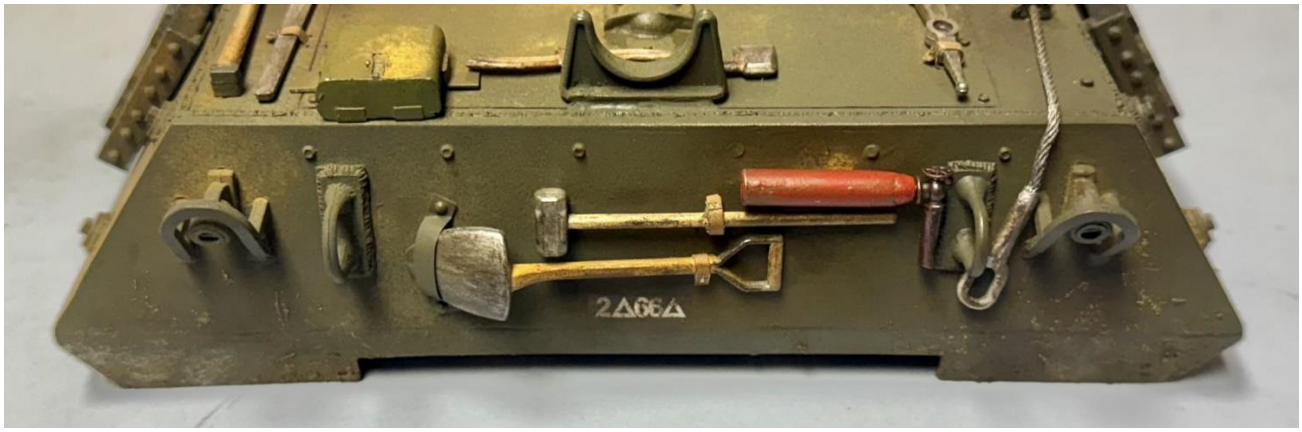
Paint fuel cap handles silver:

12. Finished & Painted Turret: **Note: Add the decal stars before weathering.**



13. WEATHERING THE UPPER HULL: **Be sure to add all decals before weathering.**

I prefer to use AIM Products Weathering Powders #110-3104 “Dirty Yellow” as the base coat, then #110-3122 “Dark Buff” #110-3122 “Dark Buff” here and there, and #110-3107 “Dark Earth” in a few places for contrast. Over all this is sprayed a fine layer of Testors #1260T “Dullcote”.



14. PICTURES OF FINISHED MODEL:


H2


H2


2Δ66Δ


2Δ66Δ