Build Instructions for Sherman M7 Priest Conversion
by Paul E. Howald © Feb 2019

Goal:

1. Convert Heng Long M4A3 Sherman (BB shooting type) w/ Vandra Resin parts to create an M7 "SPG". There are 3 general types of M7s (M7, M7B1 & M7B2). I chose to create a "late" production run of the M7 version because this is the type Upper Hull Vandra supplied. Since Vandra also supplied the bolted type transmission cover, this would have to be used w/ new VVSS heavy duty bogies and return rollers that extend rearward with the M4A3. To be absolutely correct, a cast transmission cover should be used instead, but I liked the Vandra bolted cover and elected to say this was the last one left over from an "early" production run of the prototype.

2. Vandra Resin parts are nicely cast and the resin is strong, but still needs normal trimming and clean-up of flash. However, not all parts are correct for the conversion. Some details from the M7B1 and M7B2 variants were used. The major changes required include:
    a. Wrong front transmission cover for the upper body type
        i. Should be cast type not 3 part bolted type for the HL Sherman wheels on the M4A3
    b. 105 mm gun design lacks a lot of details and parts are too large
    c. The gun's trail legs are slightly too long and not shaped correctly
    d. The gun and carriage mount is completely wrong (not a boxy shape)
    e. Rear deck intake vent is too large
    f. Rear deck does not have the cut out areas at rear corners for taillights
    g. Rear deck storage boxes are too large
    h. Floor of fighting compartment is wrong diamond plate pattern
    i. 2 rear deck air vents are totally wrong and need replaced
    j. Seats are fold down type, not fold up w/ springs
    k. Rear tow hook is missing
    l. Right side ammo box has too many compartments along the back and is missing 2 in the front.
    m. Missing 2 fuel filler caps on rear deck (should be 4 total). I did not add 2 more (no room).
    n. Oil cooler and electric junction box are M7B1 types
    o. Cover plate for "fixed" fire extinguisher system is M7B2 type

General Notes:

1. In general I tend to build a model by making the inside parts first and adding the outside details last. This keeps the outside details from being broken off later on in the construction process. However, I did finish the front outside details on this model early on, because they are somewhat protected and they were made from cast metal and brass sheet.
2. **Reads these entire instructions before starting any work. Understand the processes followed.**
3. Normally I paint all subassemblies and parts before gluing them in place, but for these instructions, most parts were "tack" glued for taking picture, and were then removed and painted before final assembly and re-gluing.

Total Parts Used:

1.	Basic Heng Long Sherman M4A3	$150.00
2.	Vandra Kit	$135.00
3.	3D printed parts from Shapeways Printing	
	a. 105 mm gun in Green Processed Versatile Plastic	$42.00
	b. MB-48 Antenna Base	$ 3.00

c. M7 Priest AA Mount (2 @ $10) $ 5.00 (use 1)
d. M7 Gun Parts $19.00
e. 105 mm Ammo Canisters $15.00
f. Pressed Steel Sherman wheels (6 @ $56) $37.00 (use 4)
g. Fire Extinguishers (6 @ $16) $11.00 (use 4)

4. Tamiya TBU unit $95.00
5. 11.4v Lipo 3 cell battery $17.00
6. Schumo Head/Taillight & Bracket Upgrade Parts SH0019 & SH0026 $25.00
7. Schumo Sherman Tow Cable & Brackets Part SH0027 $18.00
8. Hitec HS-55 Micro servo (2) $22.00
9. IBU2 Base Electronics & Micro Card $156.00
10. Low Profile HL Gearboxes $55.00
11. 6 1/18 scale 21st Century US Ultimate soldiers $45.00
12. Misc. screws, glues, resin parts, brass sheet, bar, tube, paints, decals $50.00

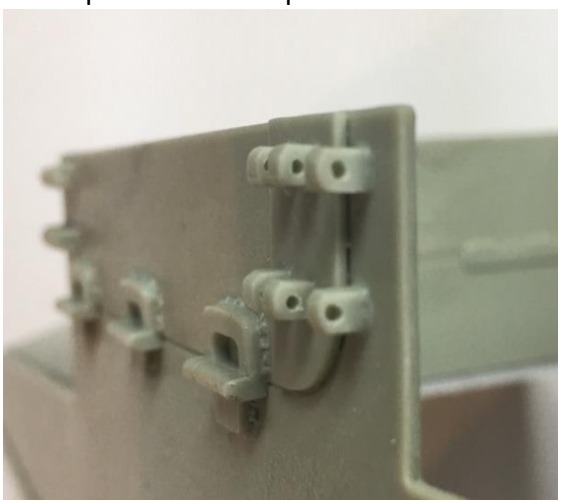
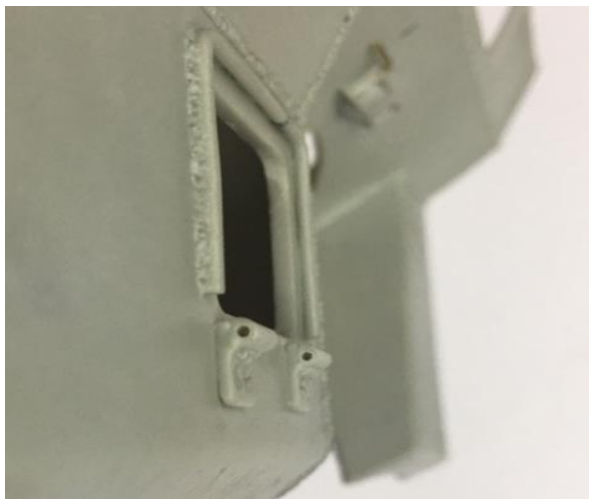
Total $900.00

Research Materials used:

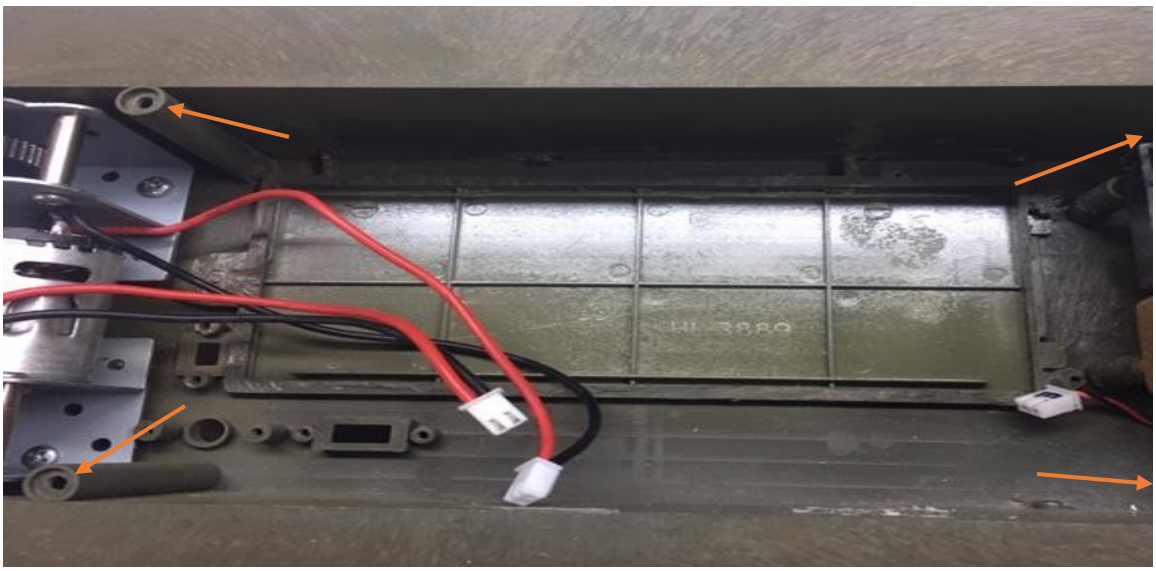
1. Squadron Signal M7 Walk Around book
2. Squadron US Self Propelled Guns book
3. Allied-Axis Photo Publ. #17
4. Numerous Internet photos……of both models and prototype
5. Vandra pictures with kit. These picture numbers will be referenced thru out following steps

Commence Work:

1. First select all the photos from the reference books & internet that show the type model you are creating and what details are to be modified and copied. Make Xerox copies for easy referencing during the construction process. Now make a list of what needs to be done overall, and decide in what order to complete the work. Also determine what lateral holes will need to be drilled out in the resin parts of the Upper Hull and do this very early in the process. Examples of where to do this are:

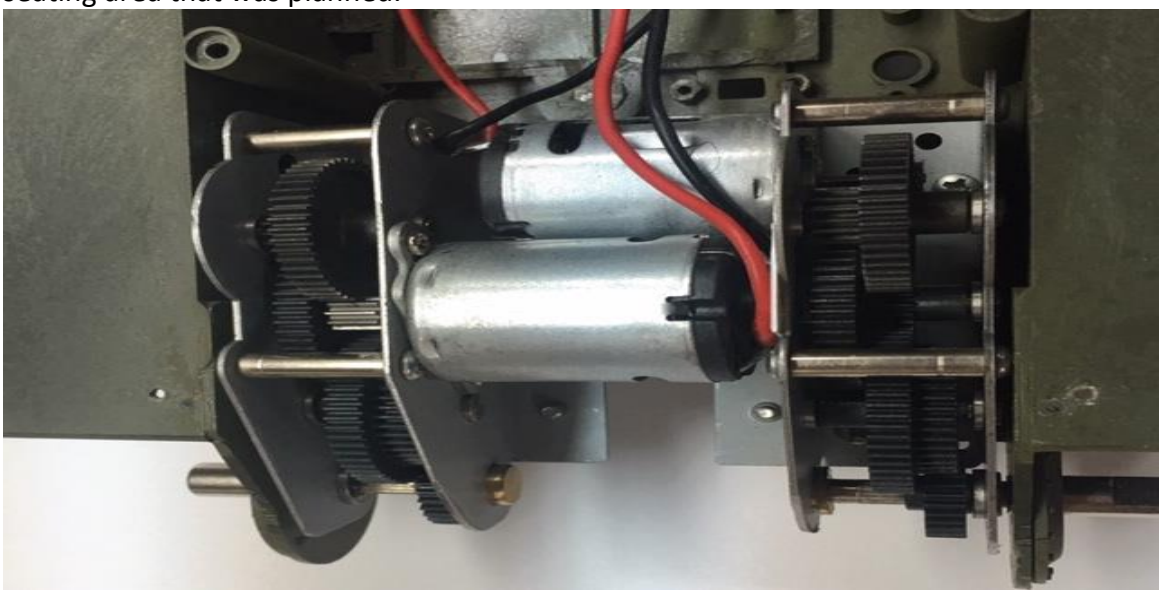



2. Cut out or grind off “extra resin casting portions” of major Vandra parts (Vandra #1 & #4).
3. Remove the HL Sherman Upper Hull and turret. These are not needed. Remove tracks, wheels, drive sprockets and return rollers for later use.
4. Remove all HL electronics….save speaker for reuse.
5. Cut out battery box and secure bottom cover plate w/ glue. (Vandra #5a & 5b don’t show enough material removed). Remove any extra plastic anchor tabs and obstructions so you have a clean interior area, but **DO NOT REMOVE THE 4 TALL PLASTIC POSTS** (2 in front, 2 in rear……see red arrows). These are used for anchoring top hull later on.

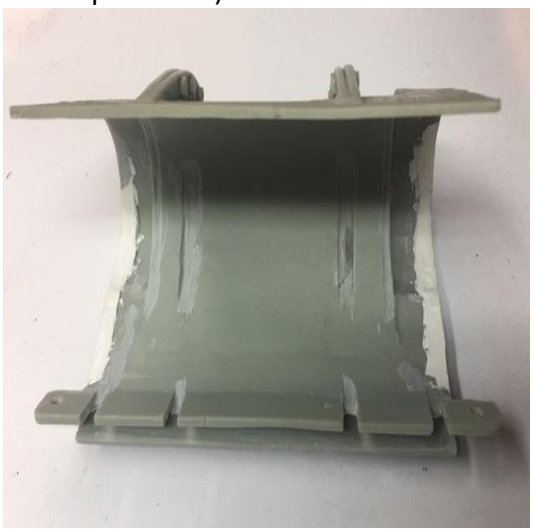


Glue over any holes and openings in the lower hull and side walls with styrene or putty.

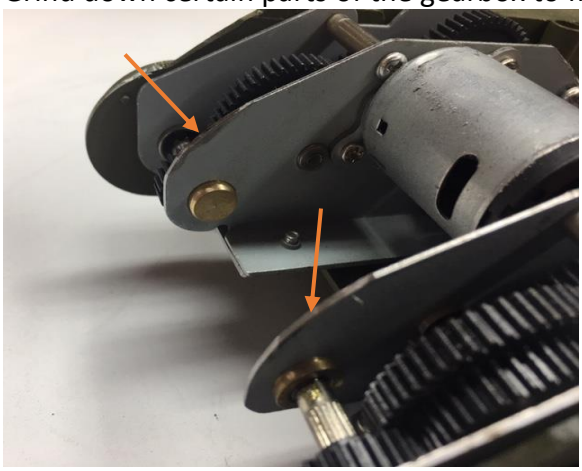
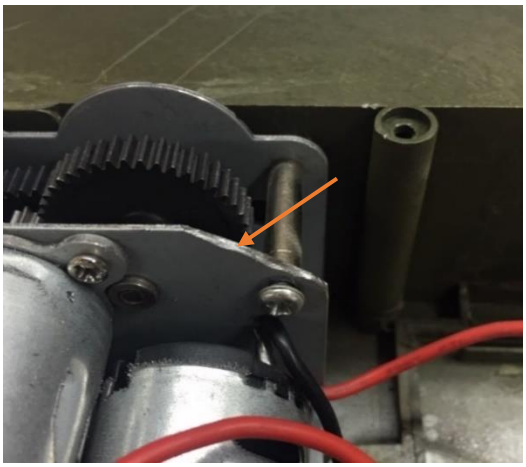
6. Remove existing gearboxes and replace with low profile HL units so the inside Vandra deck floor fits properly. This change also provided extra room for detailing the driver seating area that was planned.



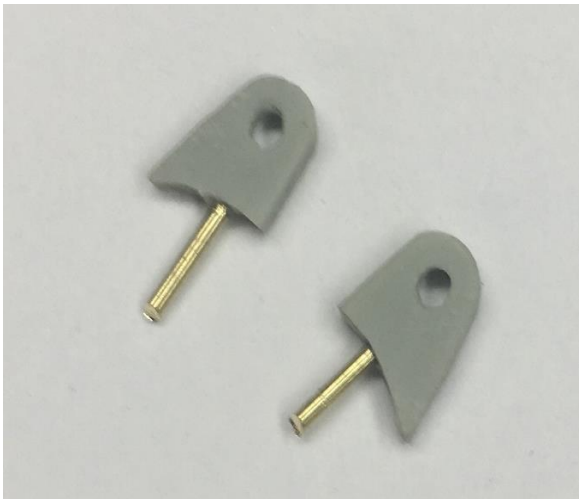
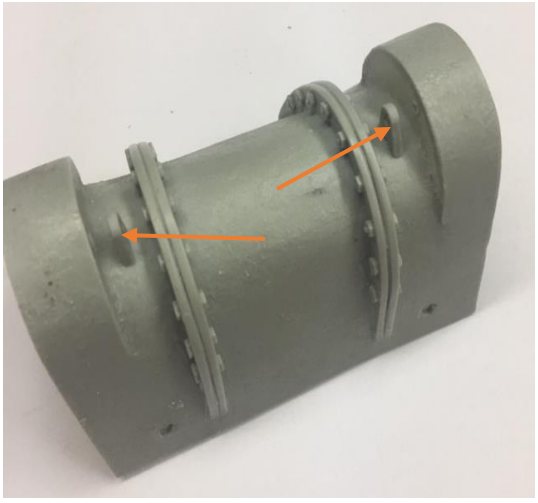
7. Fit front transmission cover over gearbox, cut and grind out as needed. Fill in with putty where required for tight fit (see Step #8 for clearance problems).



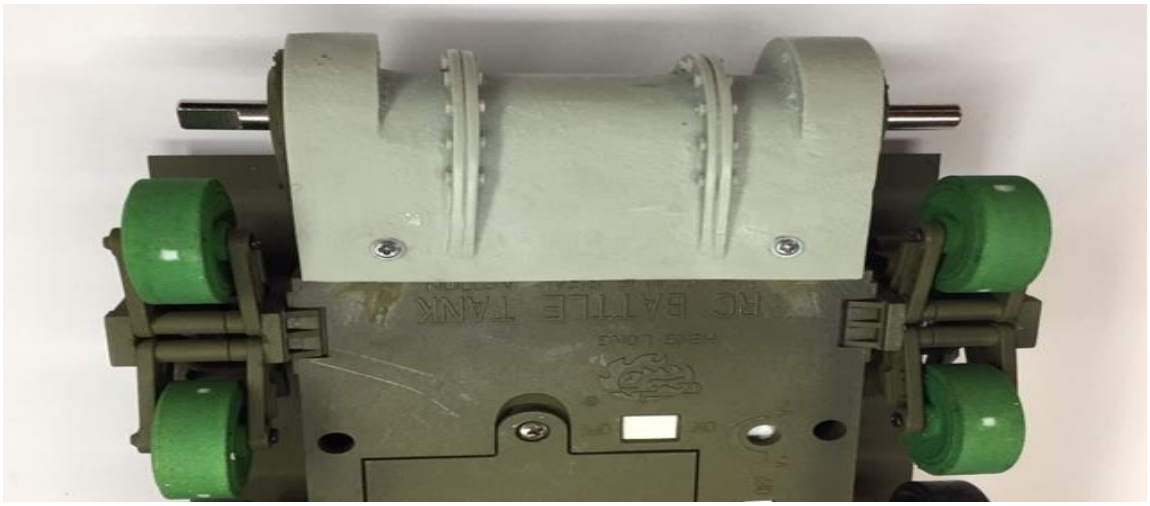
8. Grind down certain parts of the gearbox to fit transmission cover and inside deck floor.

9. Add two tow hooks with pins and glue (Vandra #3).

10. Mount transmission cover w/ 4 screws (Vandra #2).

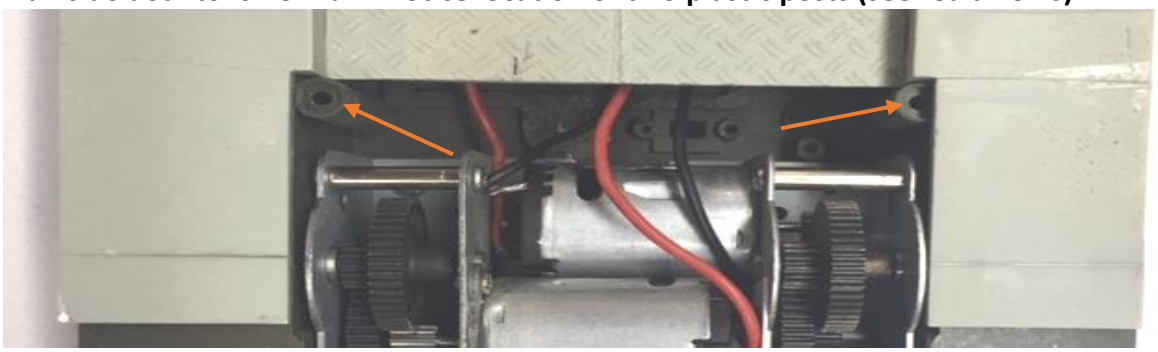


Note: Installing 4 of the solid wheels to front bogies is an optional choice.

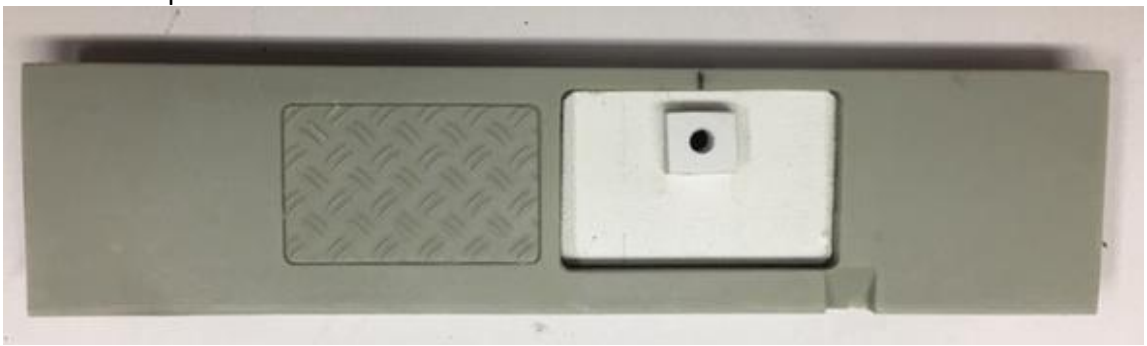
11. Glue rear wall to inside deck floor and drill out two 2 mm holes as shown in Vandra #6.

Glue outside joint area also

12. Fit inside deck to lower hull. **Notice location of two plastic posts (see red arrows).**



13. Locate front cross piece (Vandra #7) to fit on top of inside deck floor. Disregard white insert in the picture for now…more on this later.

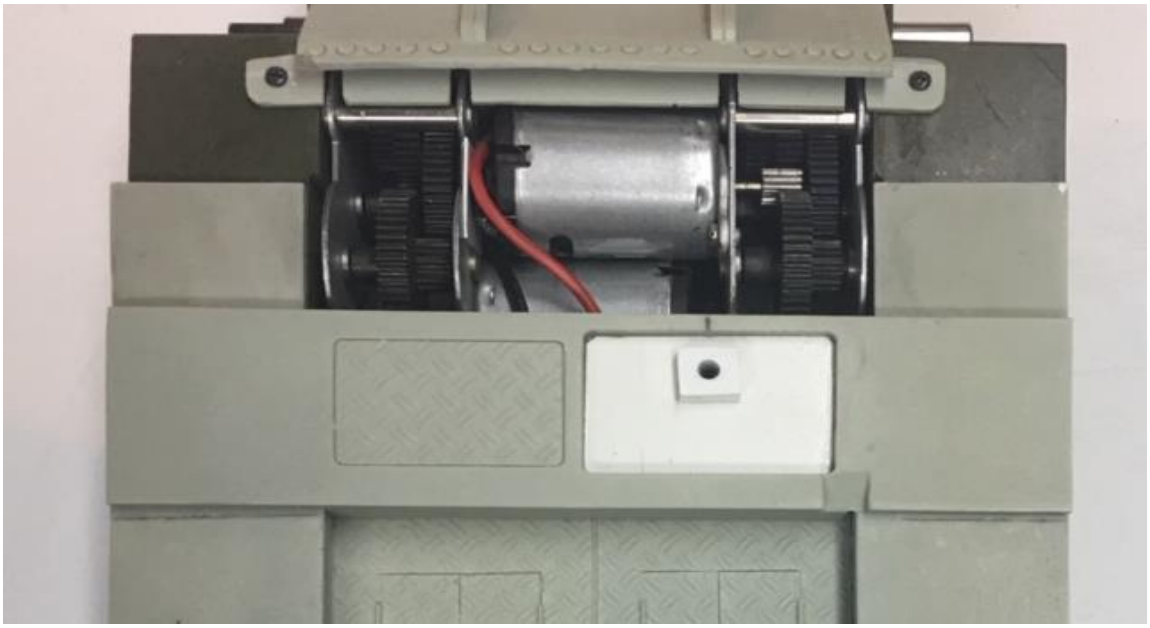


Note: I chose to anchor the top hull to the lower hull using a “lift out or lift off design”, by installing 4 brass locating rods that will align with and set inside the 4 plastic posts

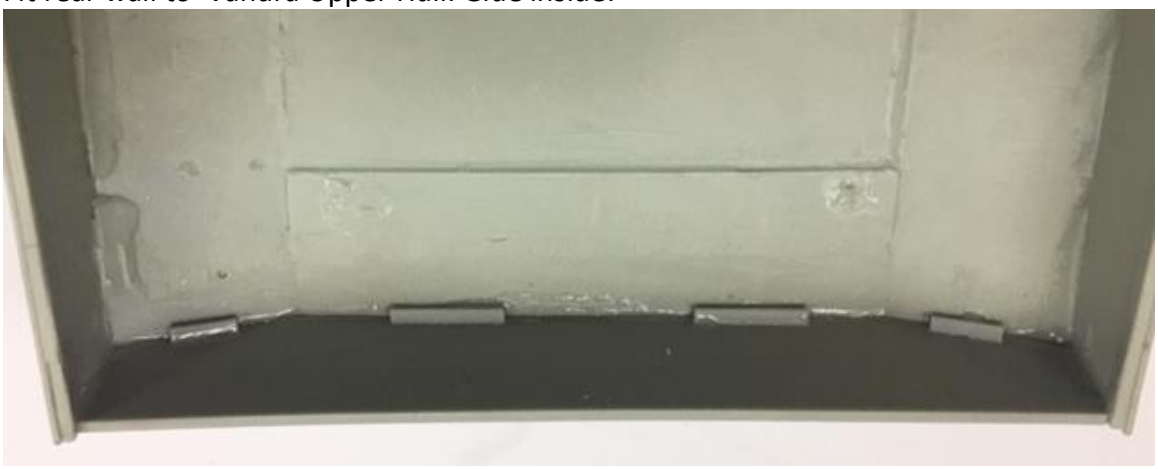
(front 2 shown above in Step #12). The brass rods are 2.5 mm in diameter and long enough to extend into the plastic post about 1". Round the end of each rod so they slip into the plastic posts easily.

Note: At this point you need to trim any areas of the lower edge of the Upper Hull that do not allow a tight fit of the Upper Hull over the lower hull. Consult prototype pictures to see how they align.

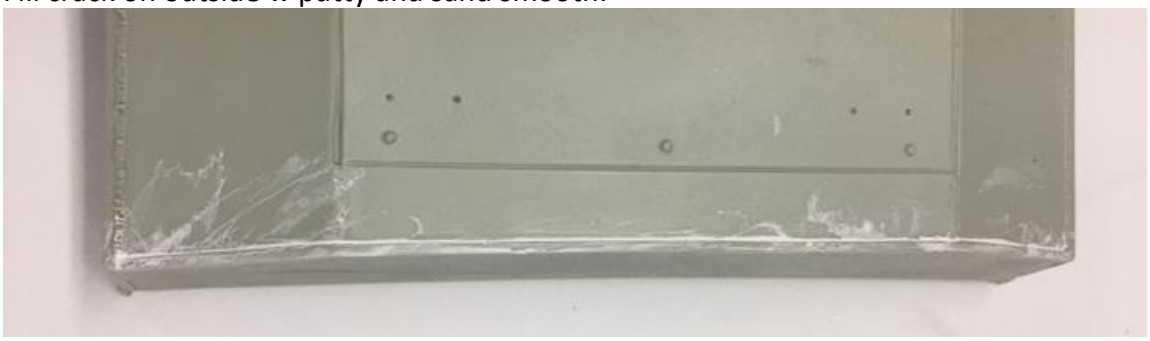
13. Fit cross piece #7 over top of inside deck while laid on lower hull. The objective is to figure out exactly where the two parts are positioned on lower hull "when" the upper Vandra hull is also in position. Part of this fitting process also requires completing Steps 14 & 15 below. Trim and fit floor and cross piece and glue together, but be positive of the fit and location.



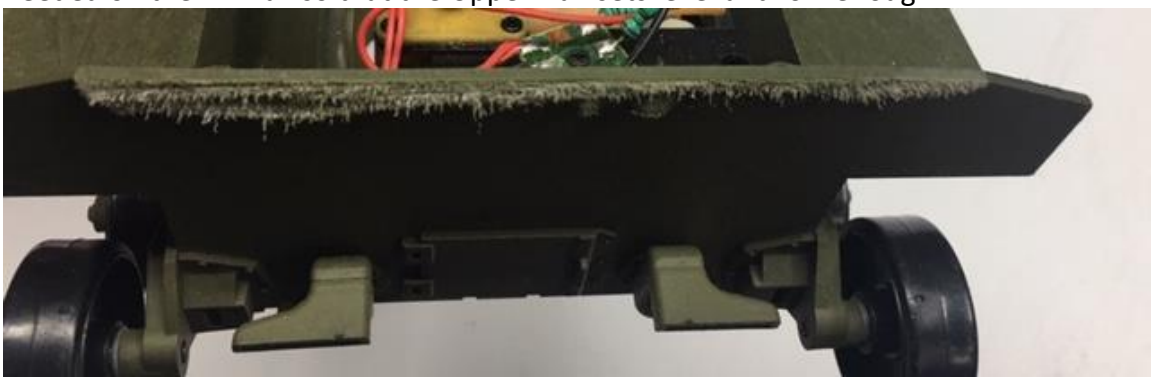
14. Fit rear wall to Vandra Upper Hull. Glue inside.



Fill crack on outside w putty and sand smooth.

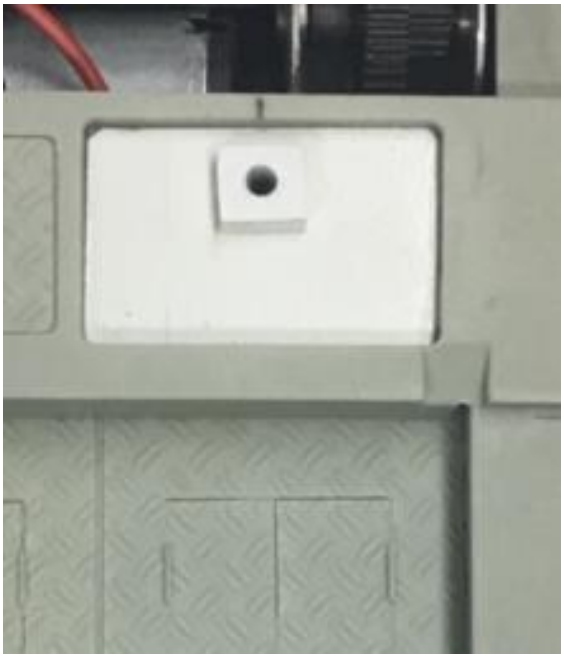


15. The Upper Hull will lay on top of HL Sherman rear wall, but some grinding and shaping is needed on the HL wall so that the Upper Hull sets level and low enough.



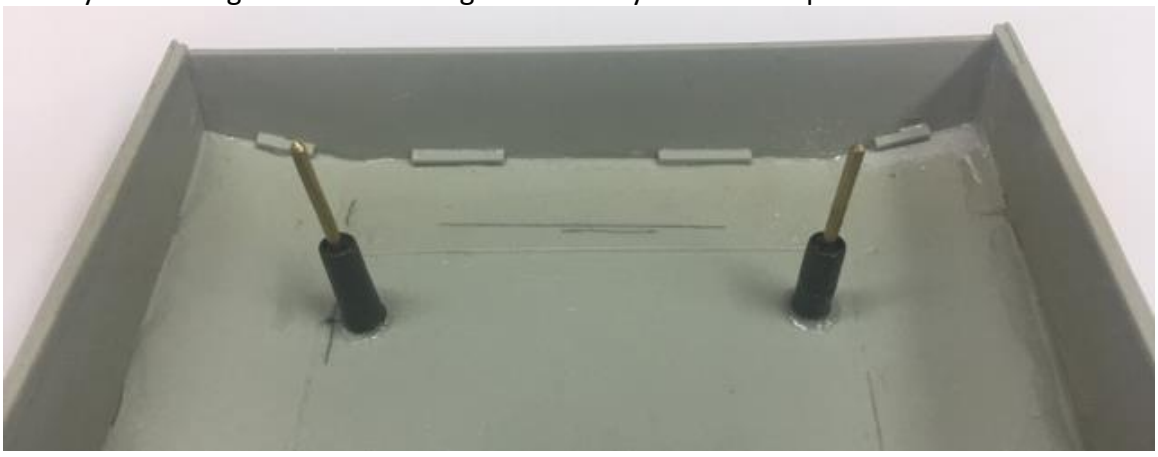
After grinding, remove excess plastic and file clean.

16. There will be some grinding required on the underside of the Vandra #7 cross piece so that it fits over the gearboxes. Do not cut away too much as I did, which happened because I was trying to fit over the original higher profile gearboxes (see Step #6). If you use the lower profile gearboxes, not much grinding should be required. My mistake required inserting the white styrene piece into the recessed area for reinforcement. But Vandra part #8 was not included in my kit so I used this big white styrene filler piece and another smaller square one (see below), to achieve the required thickness as Vandra #8.

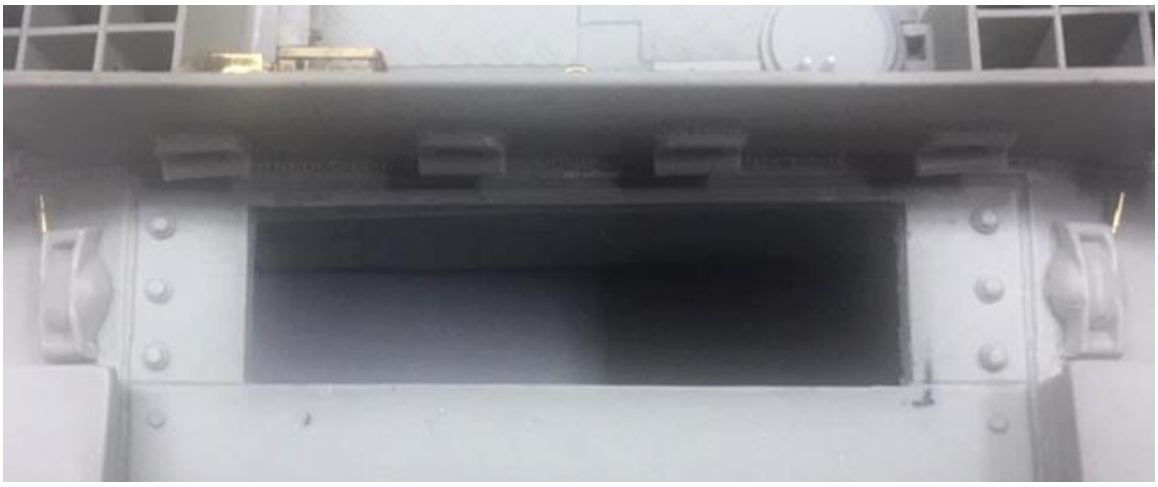


17. Add the 2 front brass locating rods to the Vandra #7 cross piece.

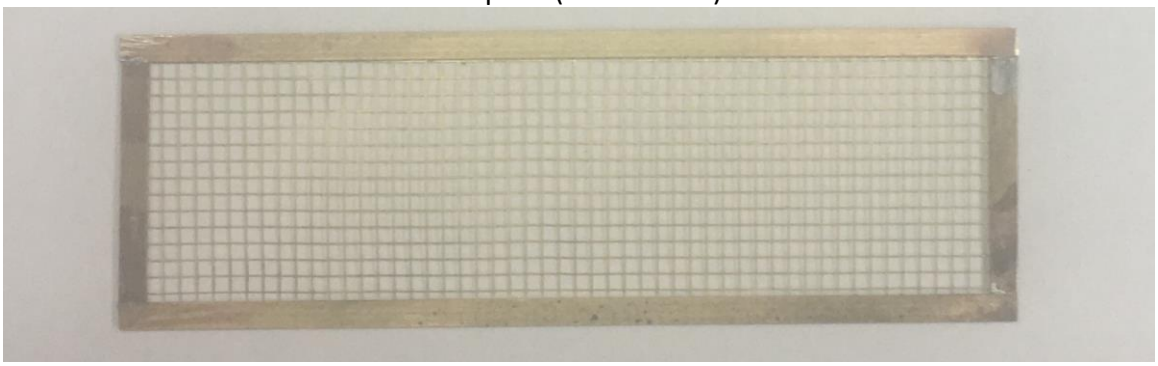
18. Add the 2 brass rods to the rear underside of the Upper Hull, so they line up with the rear 2 plastic posts in the Lower Hull. I did this by setting the upper and lower posts together and sticking clay on the top of the upper one. Then I forced the Upper Hull in place and the upper plastic posts stuck to the Upper Hull enabling me to locate the posts and glue them in place. In the picture below, the posts look like they angle out, but this is not true, as they stick straight down. The angle is cause by the camera position.

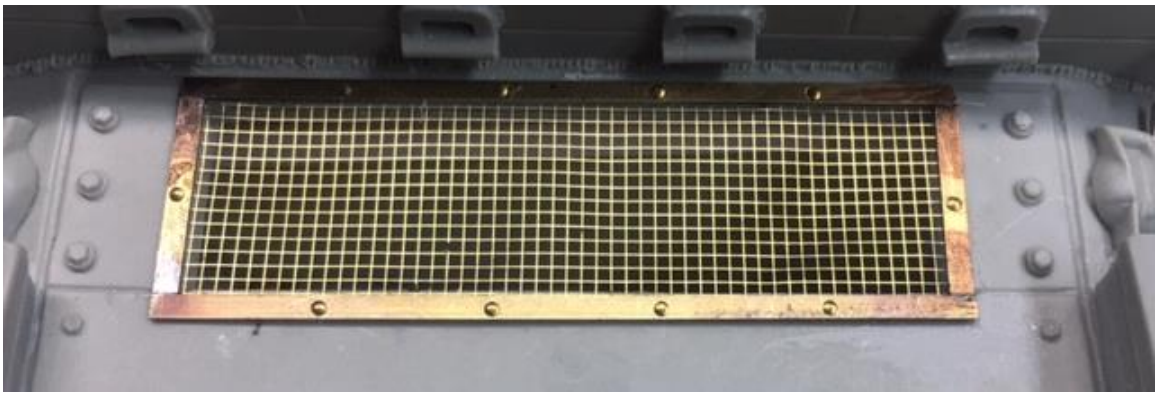


19. Cut out vent in Upper Hull (Vandra #44).

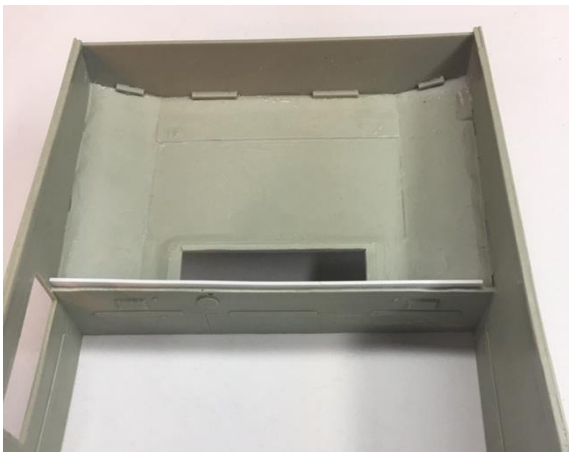


20. Make a brass frame, solder corners together and add wire mesh on bottom. The wire mesh is #15 size. Drill holes for brass pins. (Vandra #45)



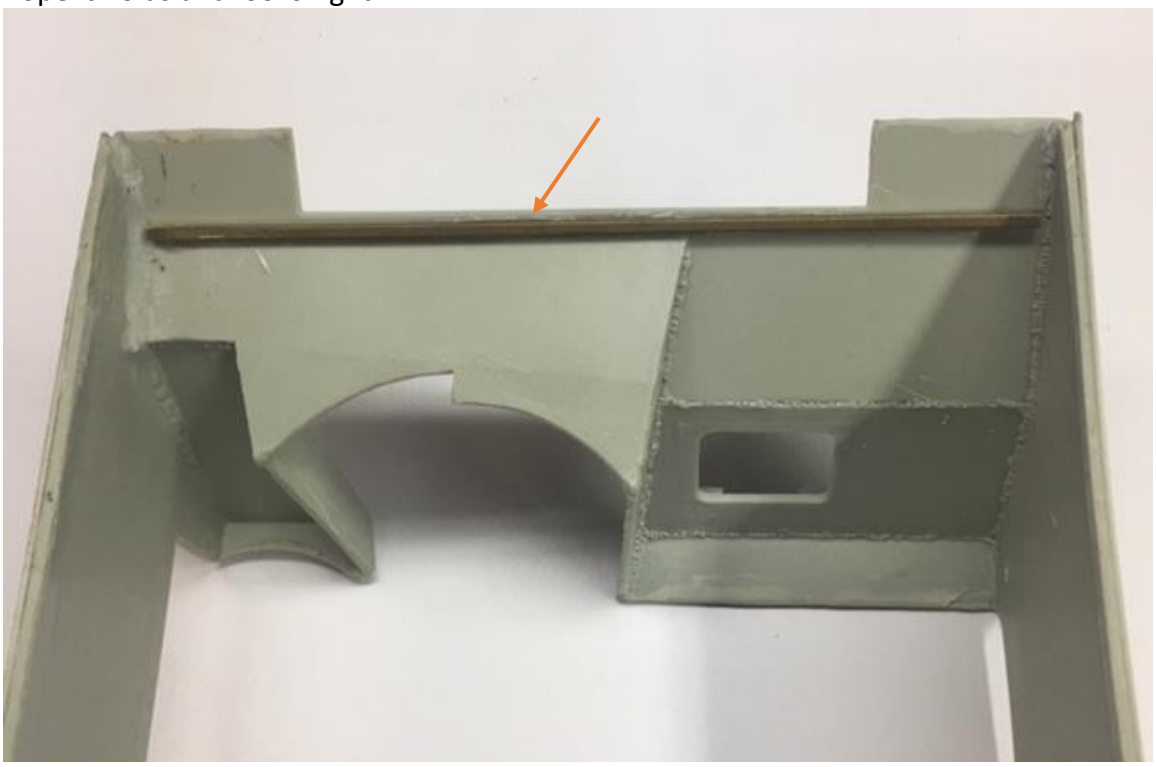


21. Add styrene strip to back of the inside wall of Upper Hull next to the vent. The back wall of the inside deck floor will seat against this styrene strip when glued in place.

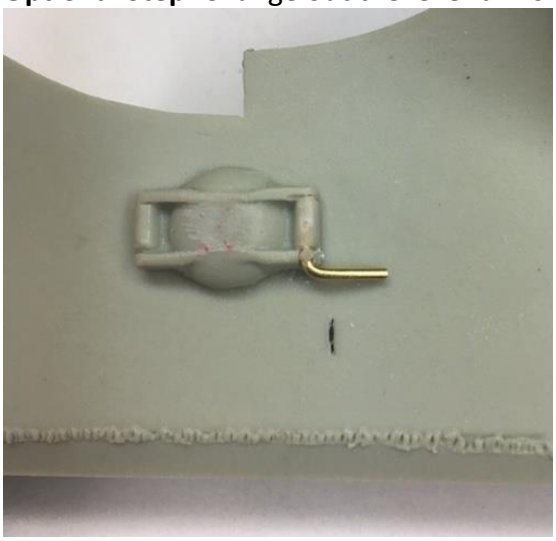


22. My Upper Hull was slightly bowed toward center, so I elected to glue a brass bar across the front area (see red arrow), to stiffen it. I also added a support piece between the lower deck underneath the gun shield side wall (see Step #58). Another way to remove the bow of the resin part is to heat it (possibly with a hair dryer or hot water immersion)

and flex it out until it becomes cold. This is a lot of effort and does not always work. So I have elected to just pull my Upper Hull wider when gluing to the inside deck floor and hope it holds and looks right.



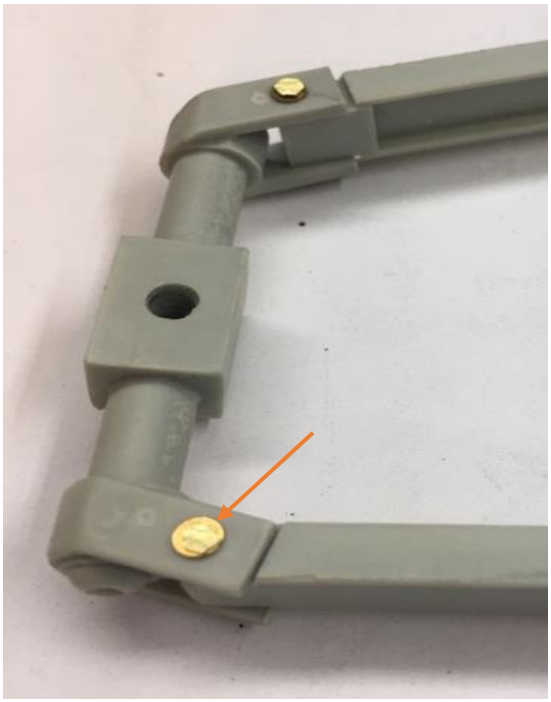
23. **Optional Step:** Change out the lever arms on all fuel caps to brass.



24. Now work on the inside deck floor and gun mount. Clean the two legs and drill out holes (Vandra #11 & #12) Brass nut and bolts are 0-72 size for holes. I have elected to use these legs even though they are slightly too large and do not have the proper angles.

25. When mounting the legs and gun base, I chose to use brass hex head screws & nuts.

One hex head has to be filed fairly flat so that it fits level when mounted in place.

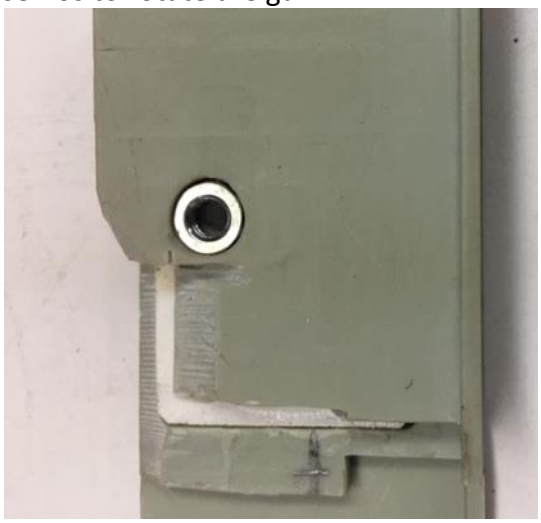


Note: This crossbeam part (Vandra #9), together with Vandra Part # 10 and 29 form the gun and carriage mount which is not very accurate. It should look more like this part if you wish to scratch build a correct version. I chose not to do so. And, the Shapeway version of this assembly was too small and fragile to use.

26. Use a 2" threaded screw and nut for the pivot point of the gun base. Screw will be cut to length needed. Screw is 1/8th inch diameter.

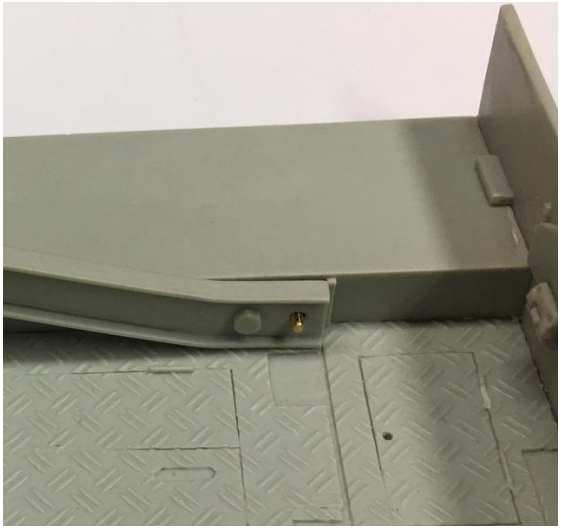
27. Make the pivot arm from brass stock and solder to screw. Length is 1.4” x .35” wide x .080” thick. Big hole is .142” diameter. Small hole .078” diameter. Taper and round edges.

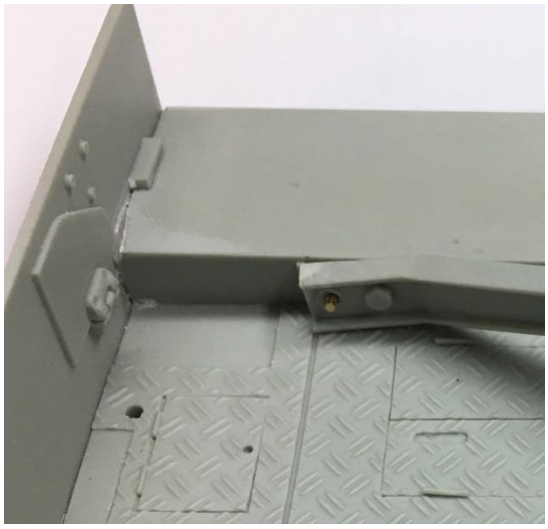
This pivot arm will connect to one of the micro servos to rotate the gun.



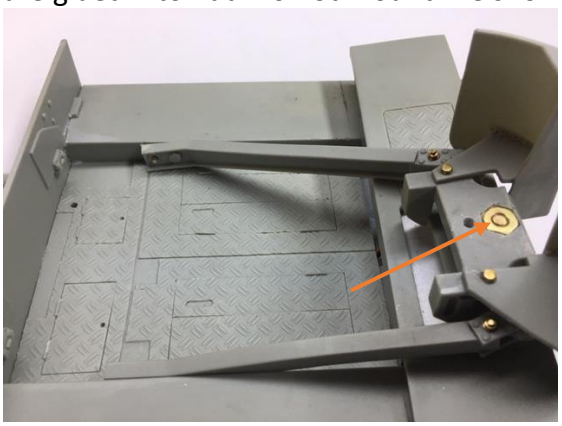
Insert washer into cross piece hole to provide a bearing surface for the screw to set on.

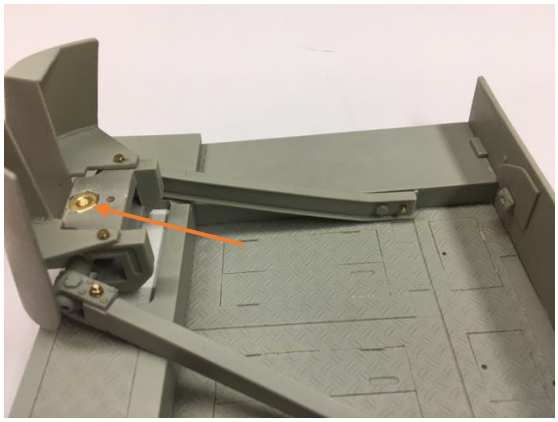
28. Assemble Vandra parts #9, 10, 13, 27 & 28.



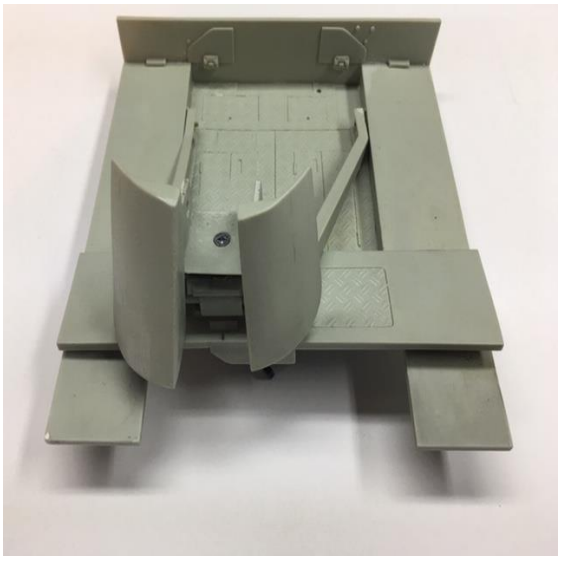


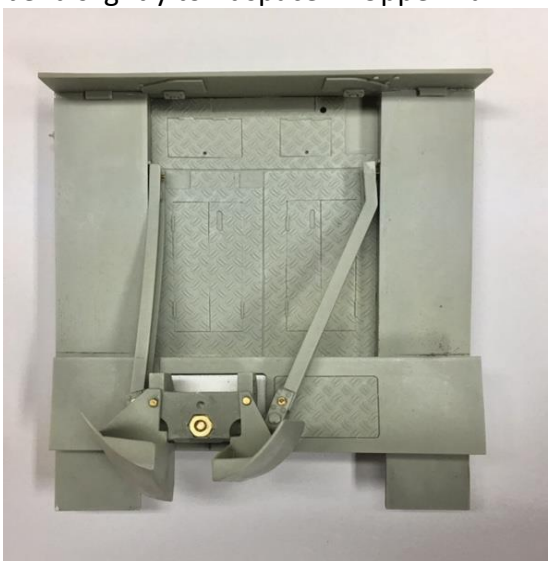
Note: The nut for 1/8" diam. screw is glued into the Vandra part, and the screw threads are glued into nut. Do not mount like shown in Vandra #14.





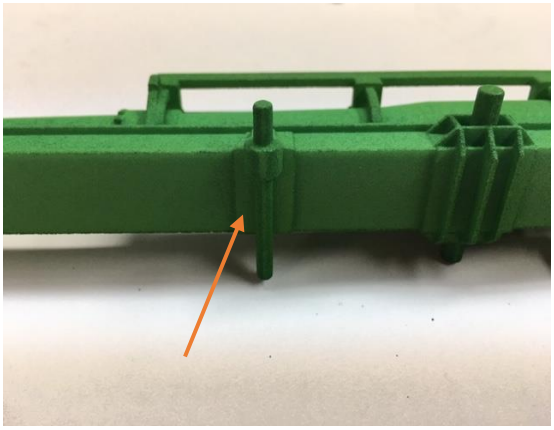
Gun shields are Vandra #28. I had to heat and bend slightly to fit space in Upper Hull.

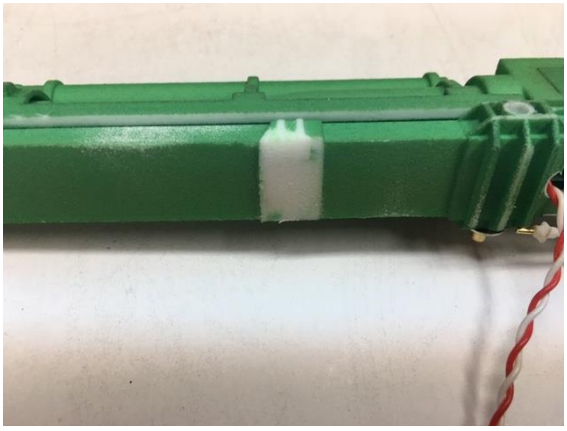




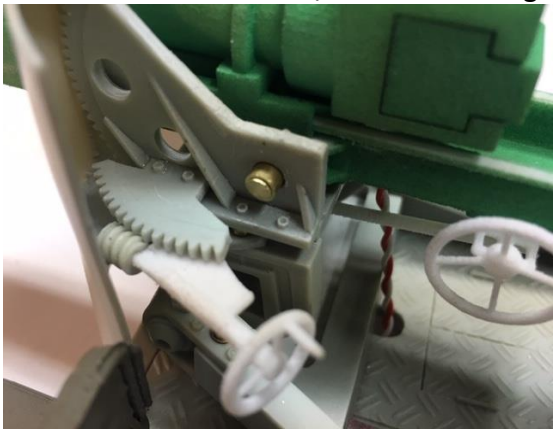
29. Install Vandra #29, but use a tapered head screw instead for mounting.

30. Skip all of the Vandra pictures #19 - #26. Install Shapeways gun instead. Start by cutting off the extra hinge point.



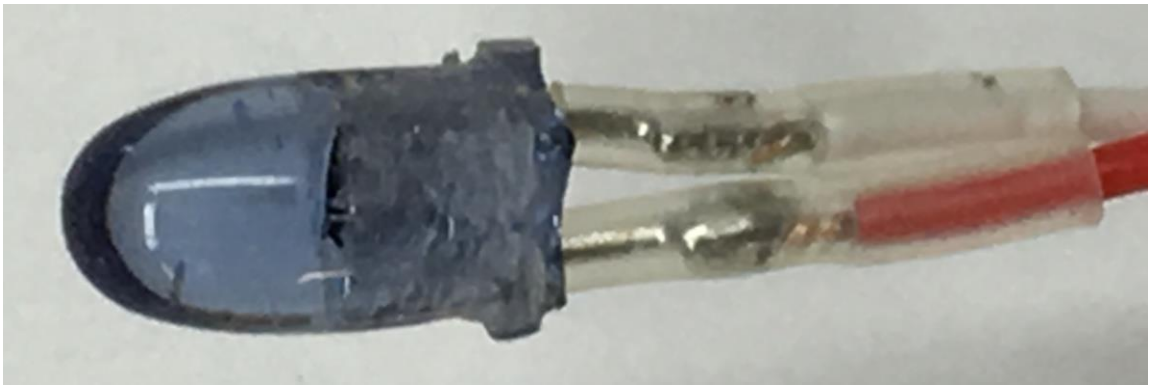


31. Do not follow Vandra #30 or #31. Cut and fit 2 brass rods and tubes for pivot points. Each rod sticks into the gun cradle and the tube then inserts over the rod and into the cradle bracket. The rod is 1/8" diam. x .26" long. The tube is .155" OD with 1/8" ID x .18" long.



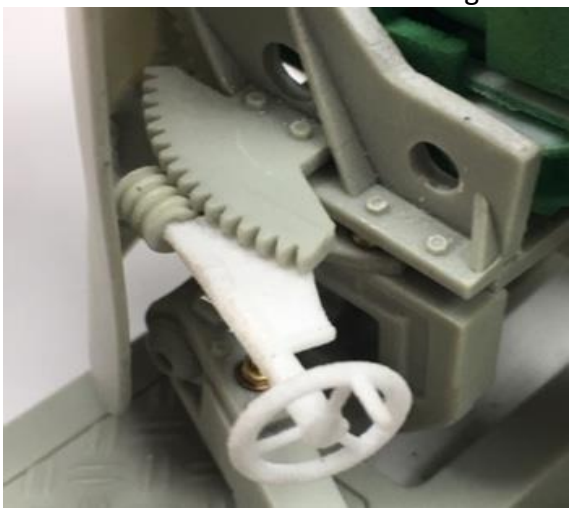
32. **Optional Step:** Install IR emitter bulb, wire and brass tube down thru the gun tube and out the bottom. Wire then extends thru floor of inside deck to electronics.

Bulb has to be filed down at the rear to fit into tube.

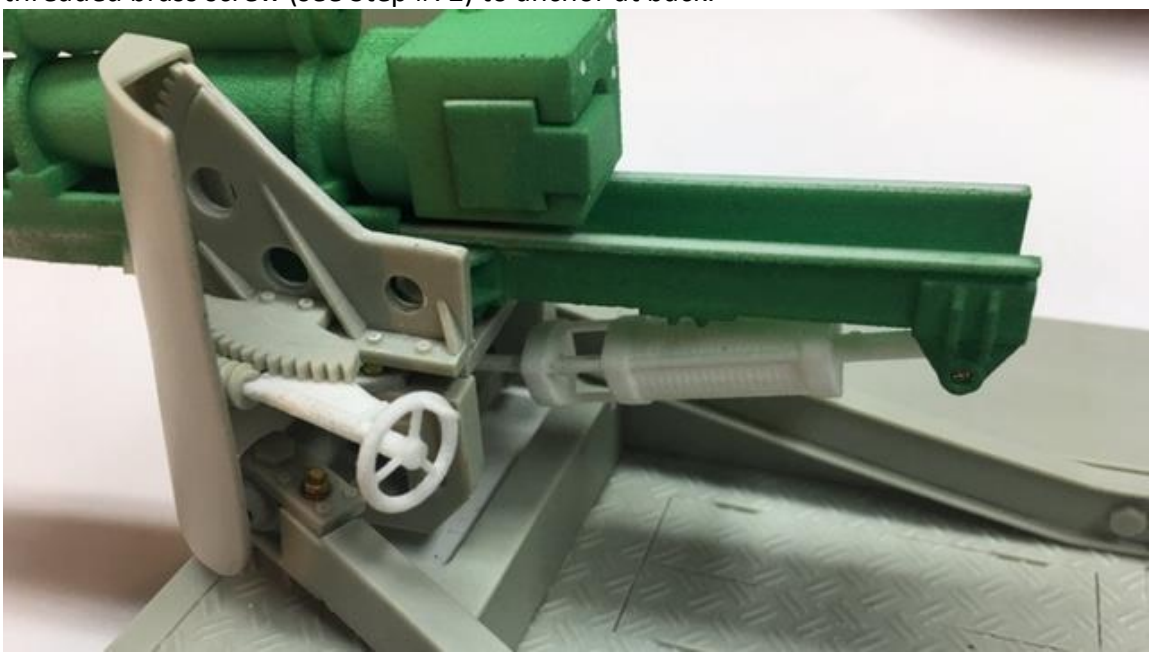


Add .020” thick styrene disc to front of tube. Drill center hole #45 (.082” diameter).

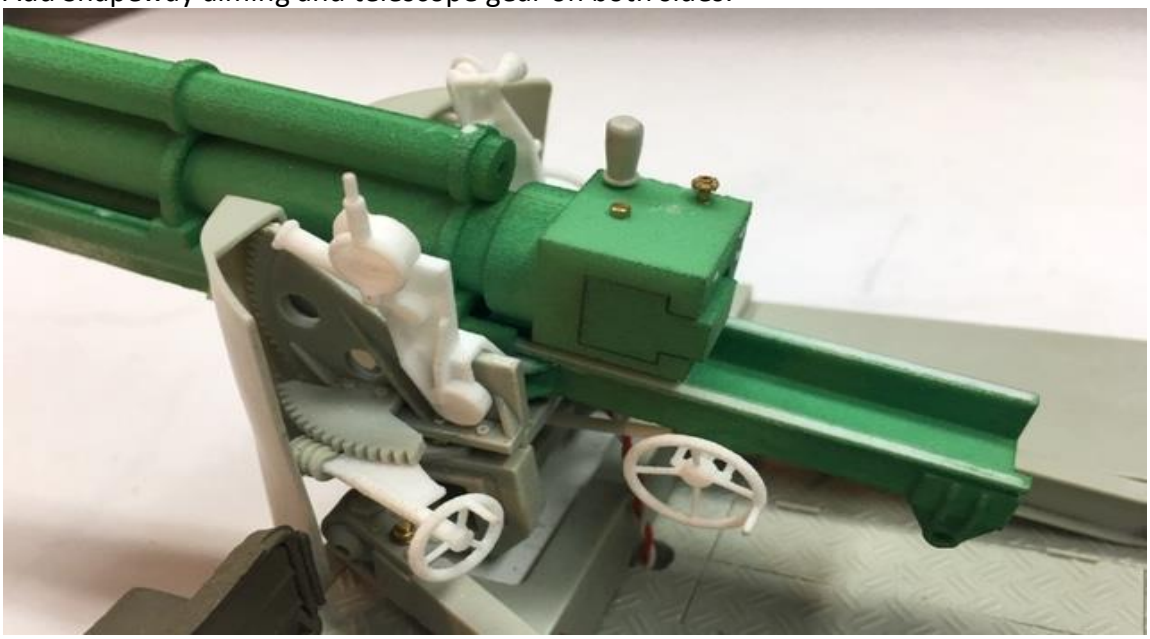
33. Install traversing bracket (Vandra #37) onto the cradle bracket. Install Shapeway shaft and hand wheel….mount Vandra worm gear on end (secure with glue and pin).

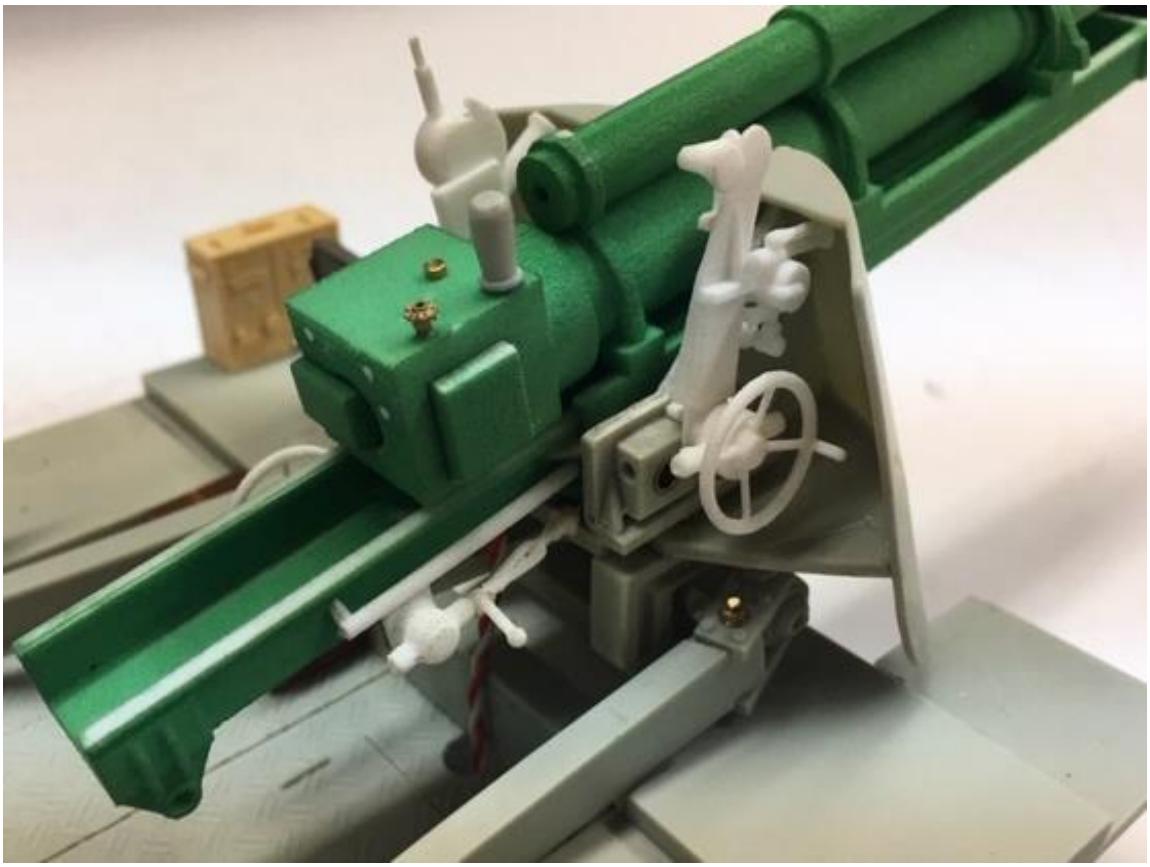


34. Fit gun into cradle bracket. Install Shapeway recoil spring below (Vandra #35). Use the threaded brass screw (see Step #72) to anchor at back.

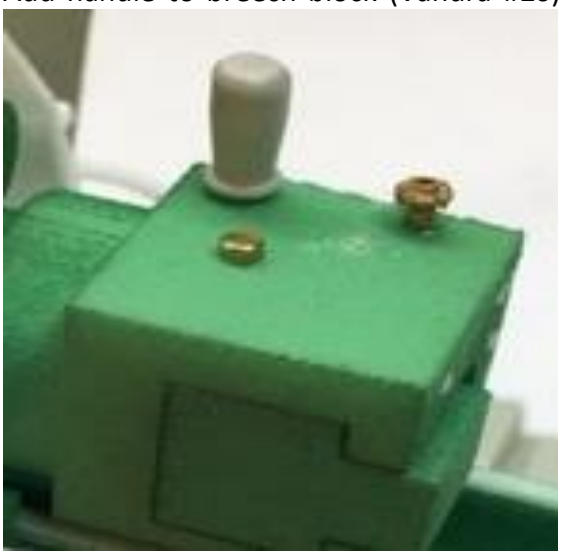


35. Add Shapeway aiming and telescope gear on both sides.



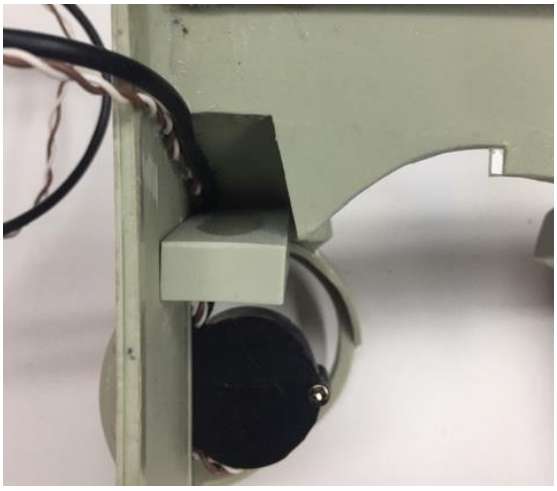
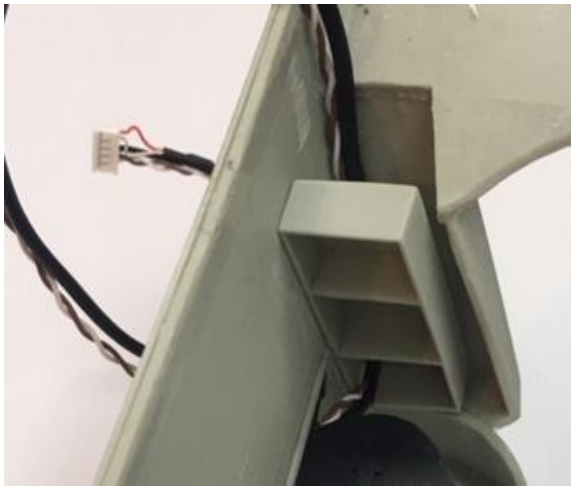


36. Add handle to breech block (Vandra #20) and two other pieces from your scrap box.

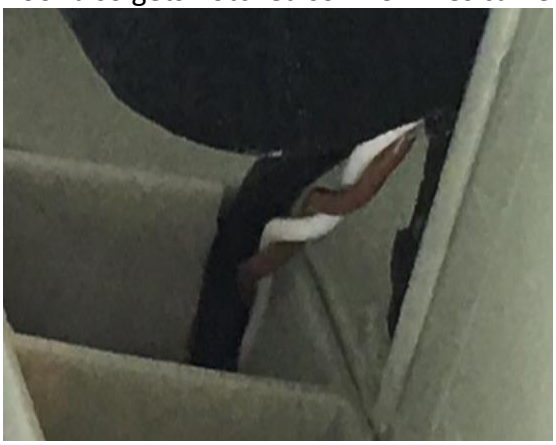
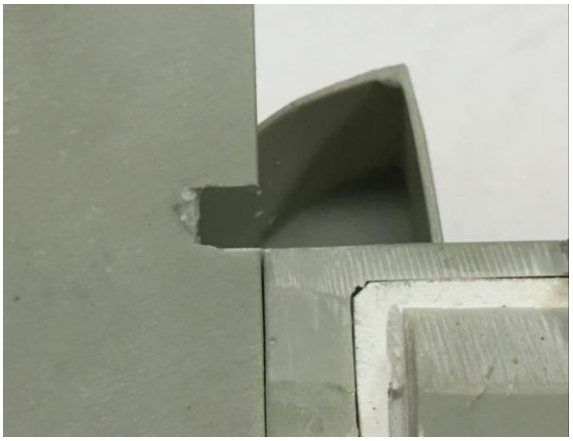


37. Glue MG pulpit to Upper Hull and add weld seams using putty (Vandra #47).

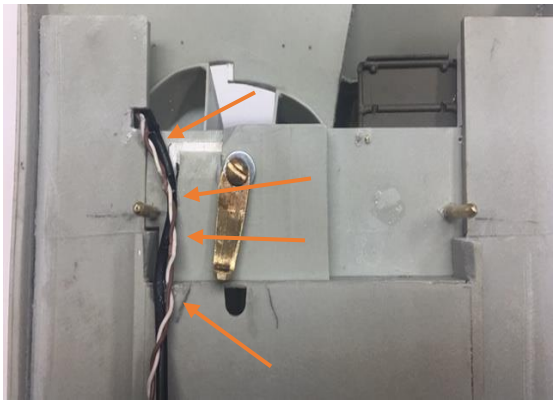
38. **Optional Step:** Cut and fit TBU base inside of pulpit. Run wires down corner behind shelf installation (Vandra #46)

39. Shelves will need to have back top corner notched so wires and shelf fit. Inside of the deck floor also gets notched so TBU wires can extend below floor into Lower Hull.

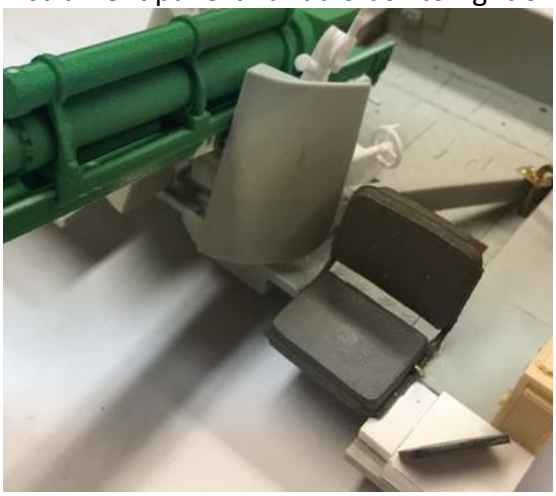



Notice in next picture where the TBU wires go underneath the floor. Places where they are glued to the floor are marked w/ an arrow. The wires must be located away from the brass rod so it seats down into the plastic post (refer to Step #18).

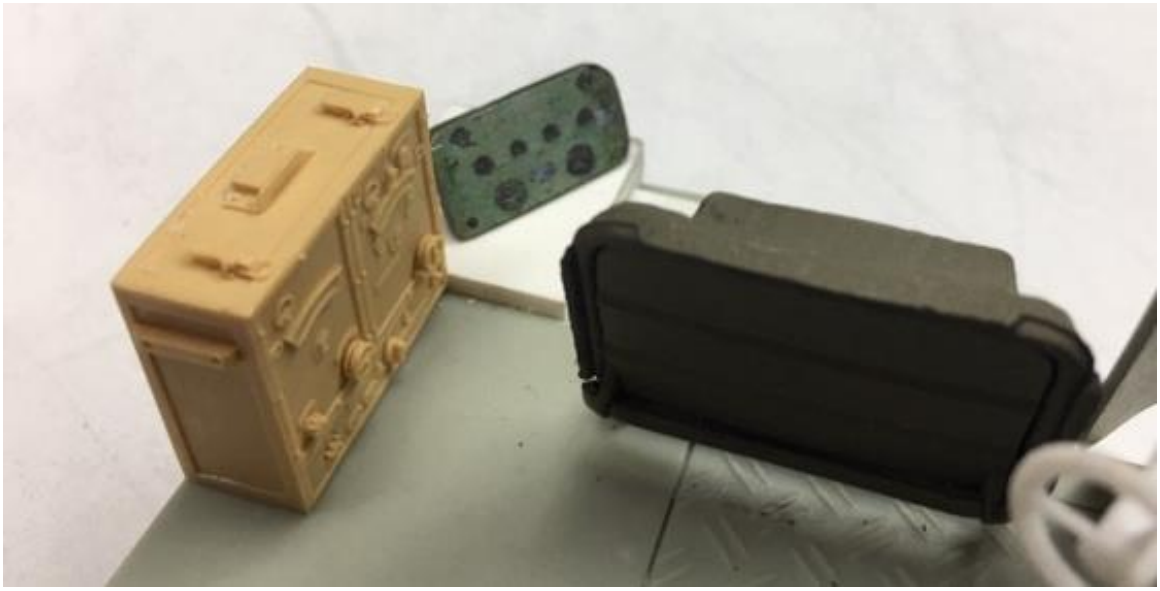


40. Add the brace to inside of pulpit (Vandra #49). Add weld beads as shown in Vandra #50c.

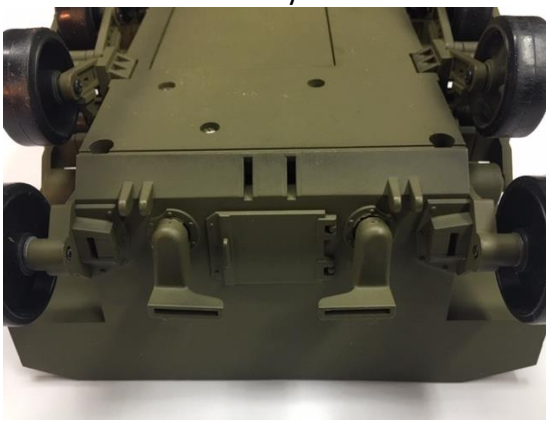
41. **Optional Step:** Install seat for driver. I used an extra seat from a 1/16th scale jeep. Add instrument panel and radio box to right of seat. Build up area with styrene.

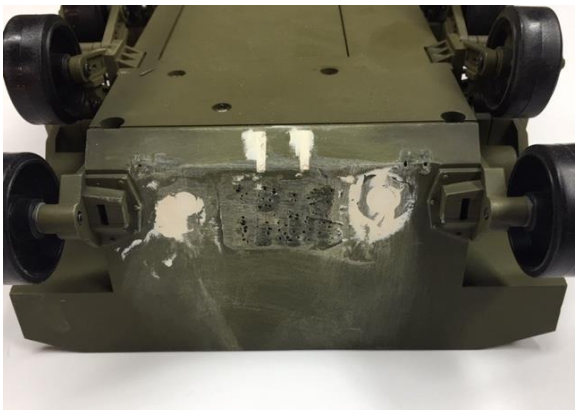


Instrument panel is a copy from picture in ref book, reduced, printed and glued to styrene back. Radio is actually a German model made by Verlinden. The 2nd part is mounted overhead of the driver to his left.

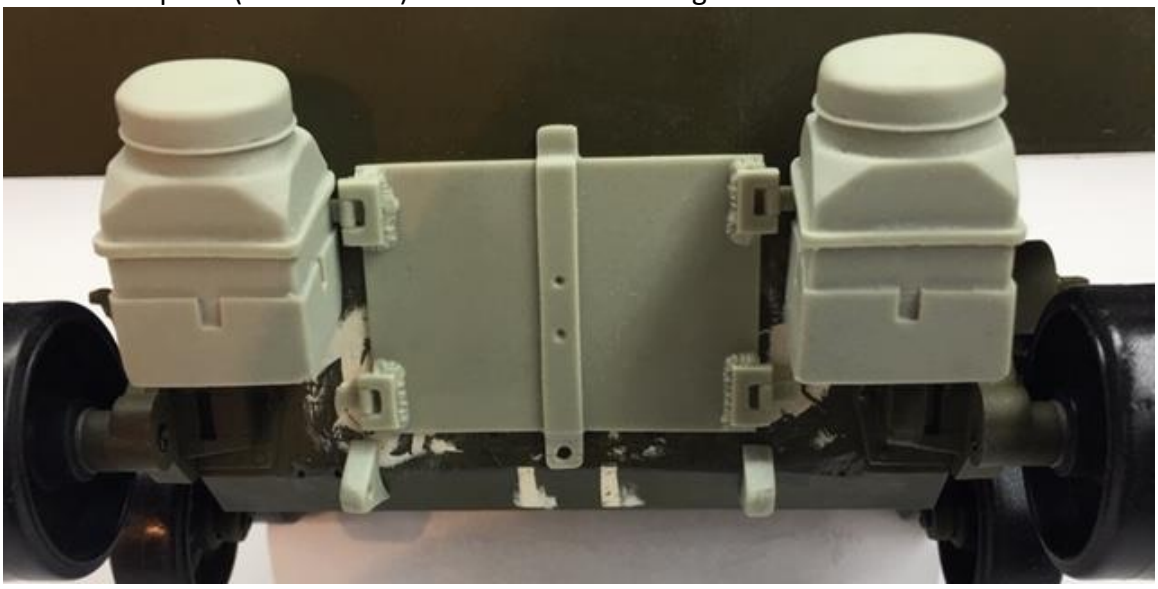


42. Cut off the HL exhausts and fittings on outside of lower hull rear wall. Fill with putty and sand smooth when dry.

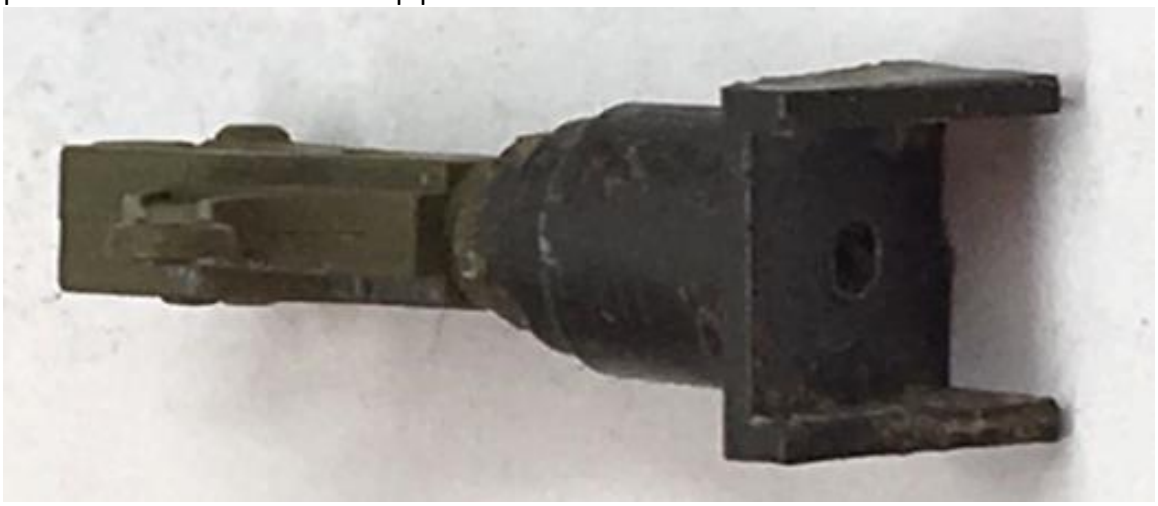




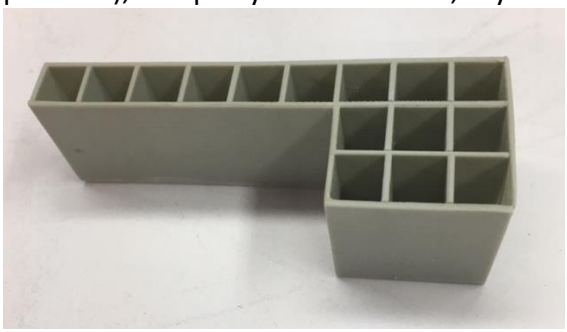
43. Install resin parts (Vandra #73) to rear wall. Pin and glue tow hooks.

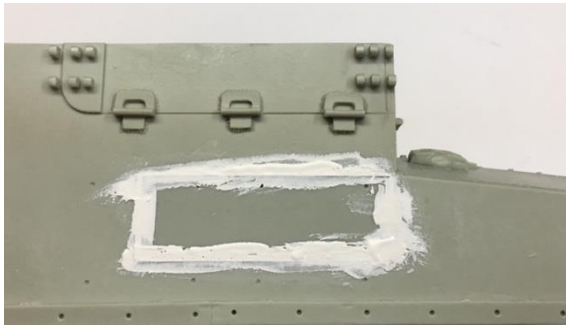


Drawbar and mount are glued and screwed to rear lower hull wall. Drawbar is an HL part and mount was from scrap parts.



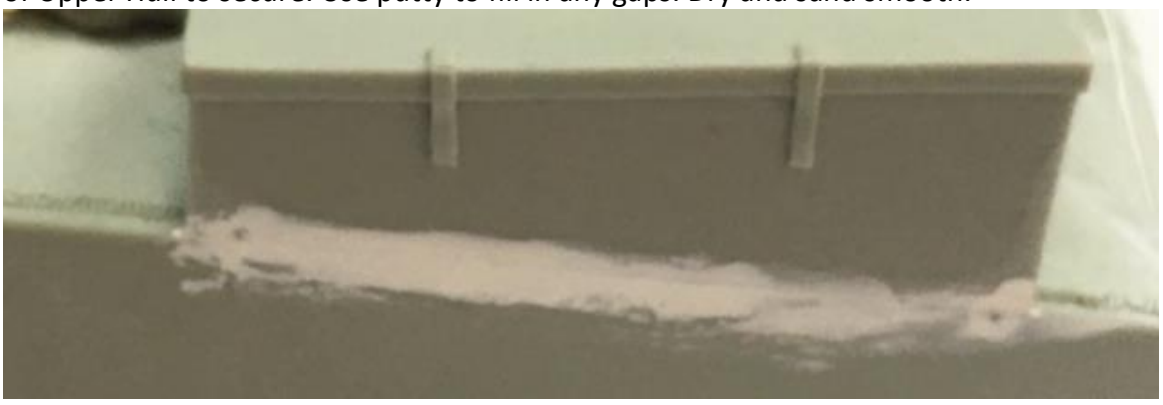
44. Glue the ammo box into left side wall of Upper Hull (this is the opposite one of the one pictured), add putty to hide seams, dry and sand smooth.

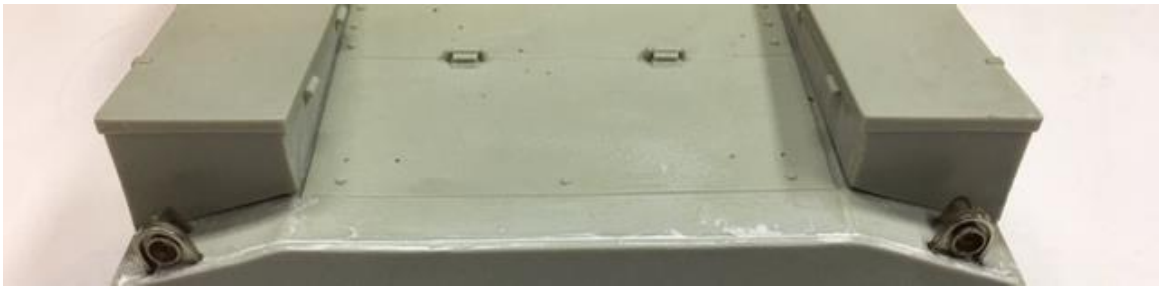




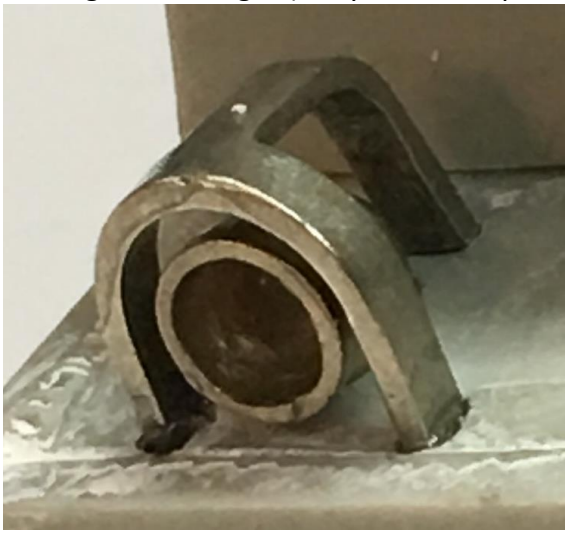
45. The right side ammo box (shown above) is oversized. I cut one square off the end, and will add 2 compartments later at Step #74.

46. Add 2 large stowage boxes on rear deck of Upper Hull. These had to be first squared up and the bottoms sanded smooth. Mount with glue and drive small screws thru underside of Upper Hull to secure. Use putty to fill in any gaps. Dry and sand smooth.

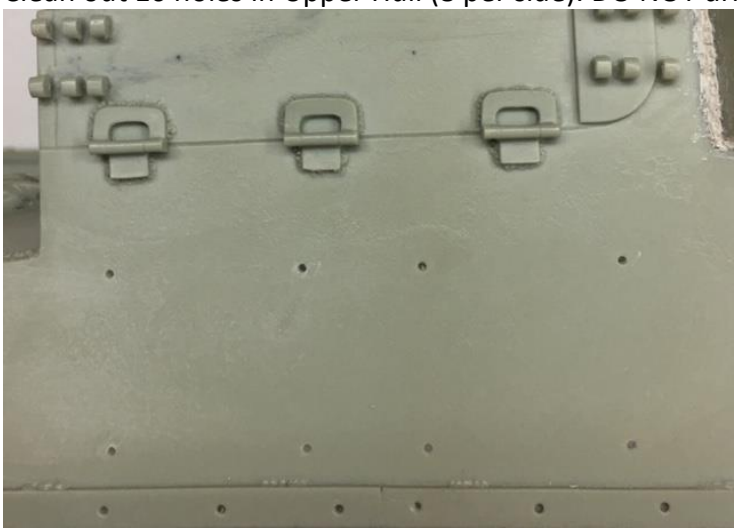




47. Install 2 rear tail lights and protective guards as shown above and below. Fill the lens ring with Micro Krystal Klear and when dry, paint red and glue onto tail light. Add weld seam to 3 legs of each light (not yet done in picture).



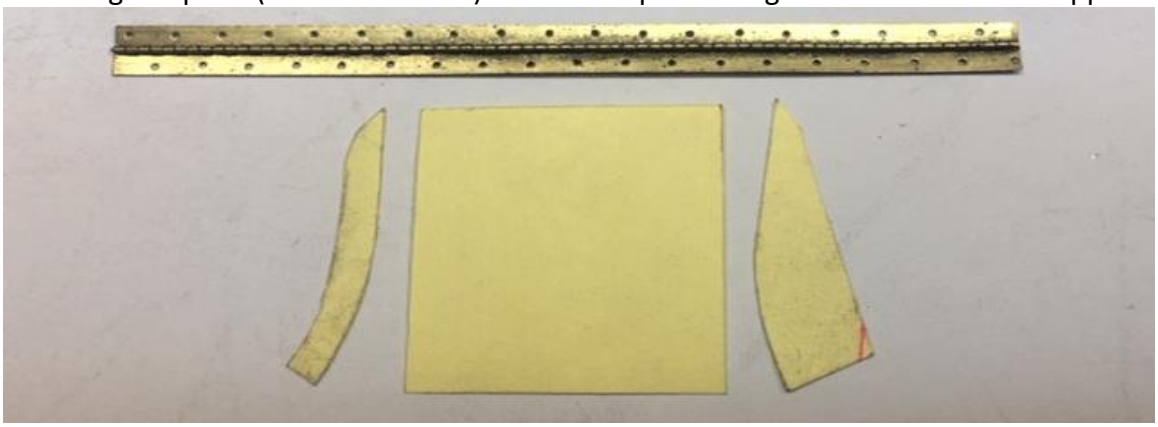
48. Clean out 16 holes in Upper Hull (8 per side). DO NOT drill clear thru.

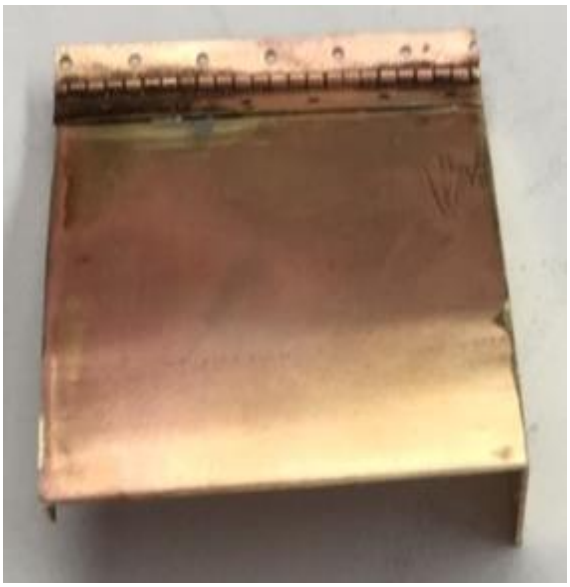
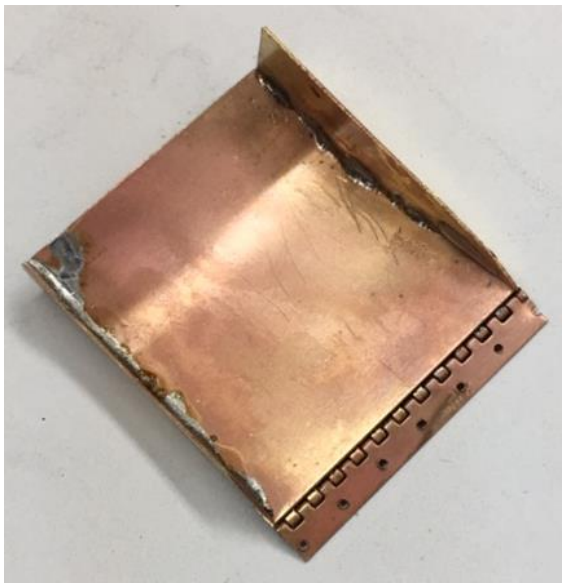
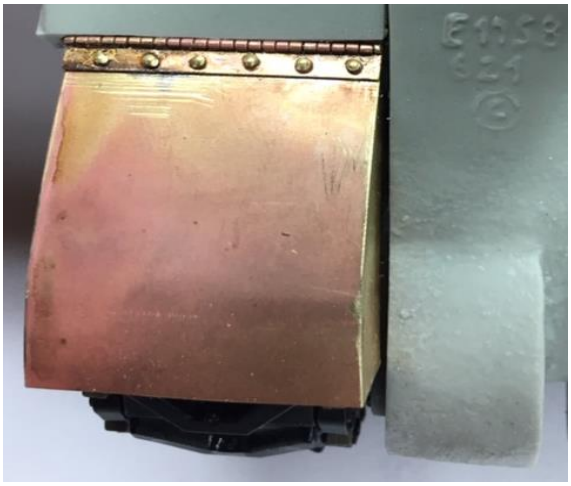
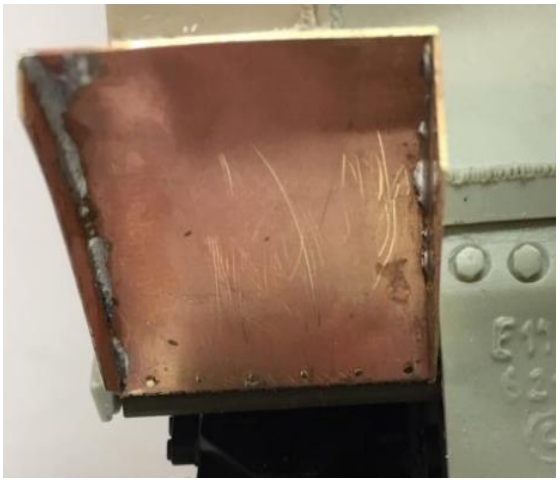
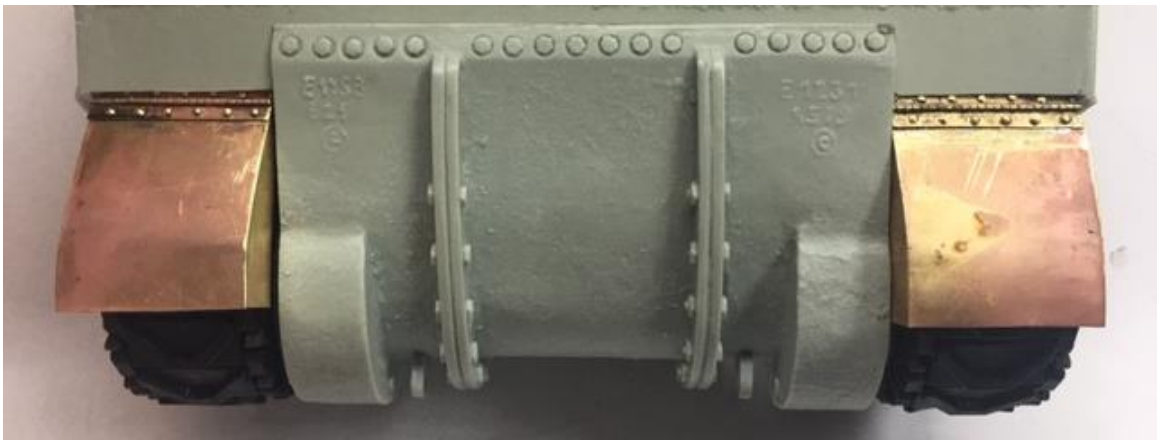


49. Install front head lights and protective guards (shown on next page). The circular mounts for the lights are a brass tube of the correct size, glued into holes drilled into the front resin wall of the Upper Hull. Fill the lens ring with Micro Krystal Klear and when dry, paint silver and glue onto light. The tube pieces soldiered to each protective guard are shaped from misc. brass tube w/ tiny chain added. On the prototype tank, these hold the plugs for the light mounts when lights are removed. Add weld seam to all legs (not yet done in picture).

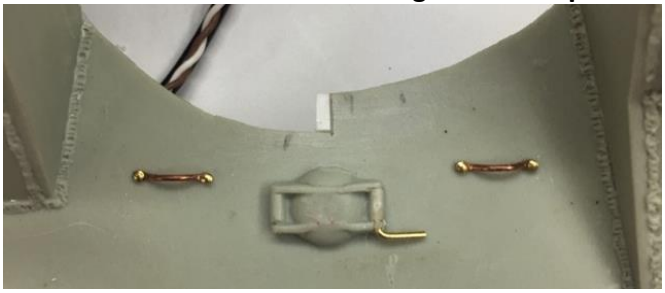
50. Solder Horn to mount. Make mount using a small piece of brass sheet, bent to an “L” angle w/ a 1/8” stem sticking out on each back edge. Drill 2 holes in hull and glue stems into holes.

51. Make 2 brass fenders for front over tracks. Use .020” thick brass sheet. Cut using following template (size it to fit area). Soldier all parts. Hinge is from doll house supplier.

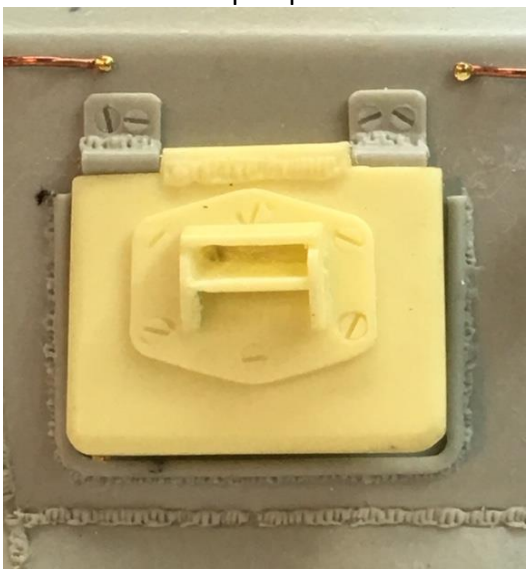


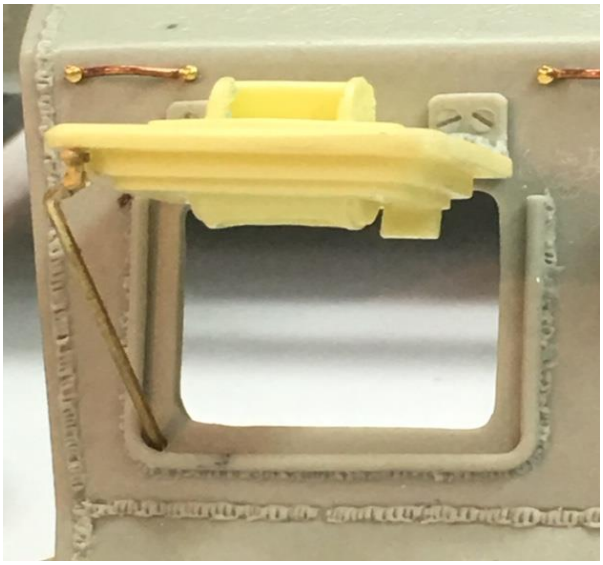






52. Add Footman Loops where desired. This is an example of 2. I drill out each end and glue to the surface with a tiny pin in each hole. There are probably 20 places where these are used on a real tank to tie stowage down. **Optional:** Grind the top of each pin flat.



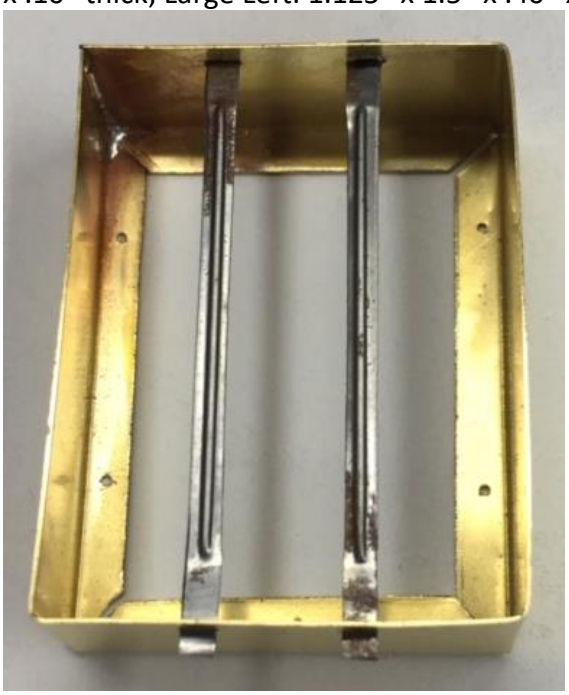
53. Add the driver's hatch. Insert brass wire into hinges. Create a brass rod on the right side to hold hatch in open position.

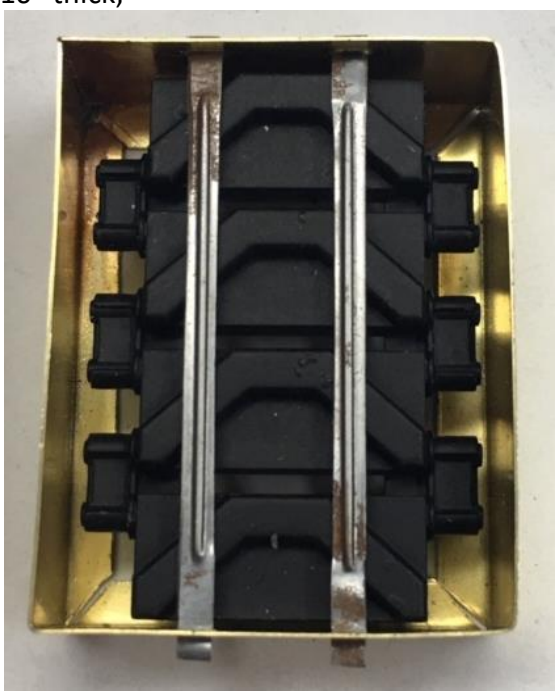


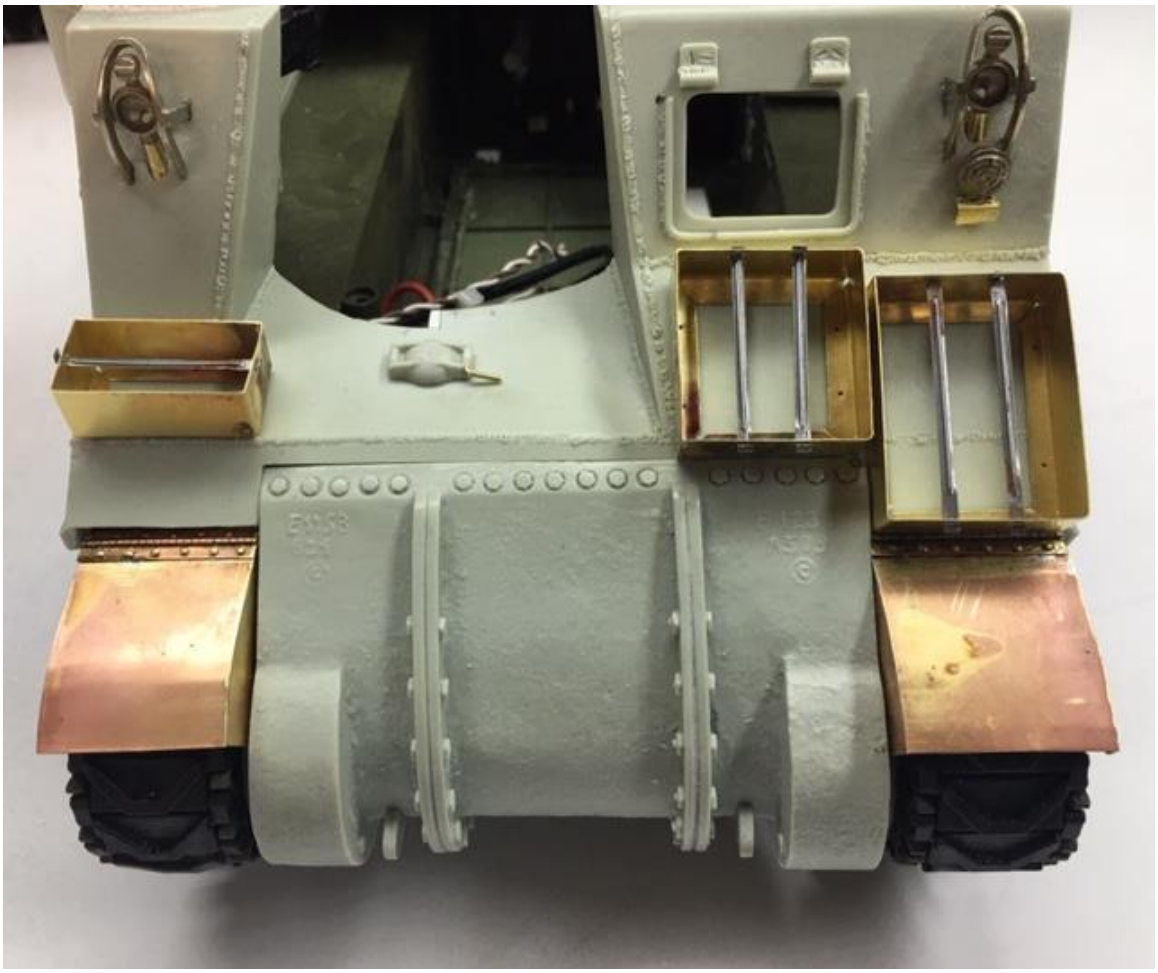


54. Fabricate the 3 metal stowage boxes for the front of the tank. Use .010" sheet brass. Cut parts out, drill out access openings, drill holes, fold and soldier square. The steel straps were made from loose pieces in scrap box.

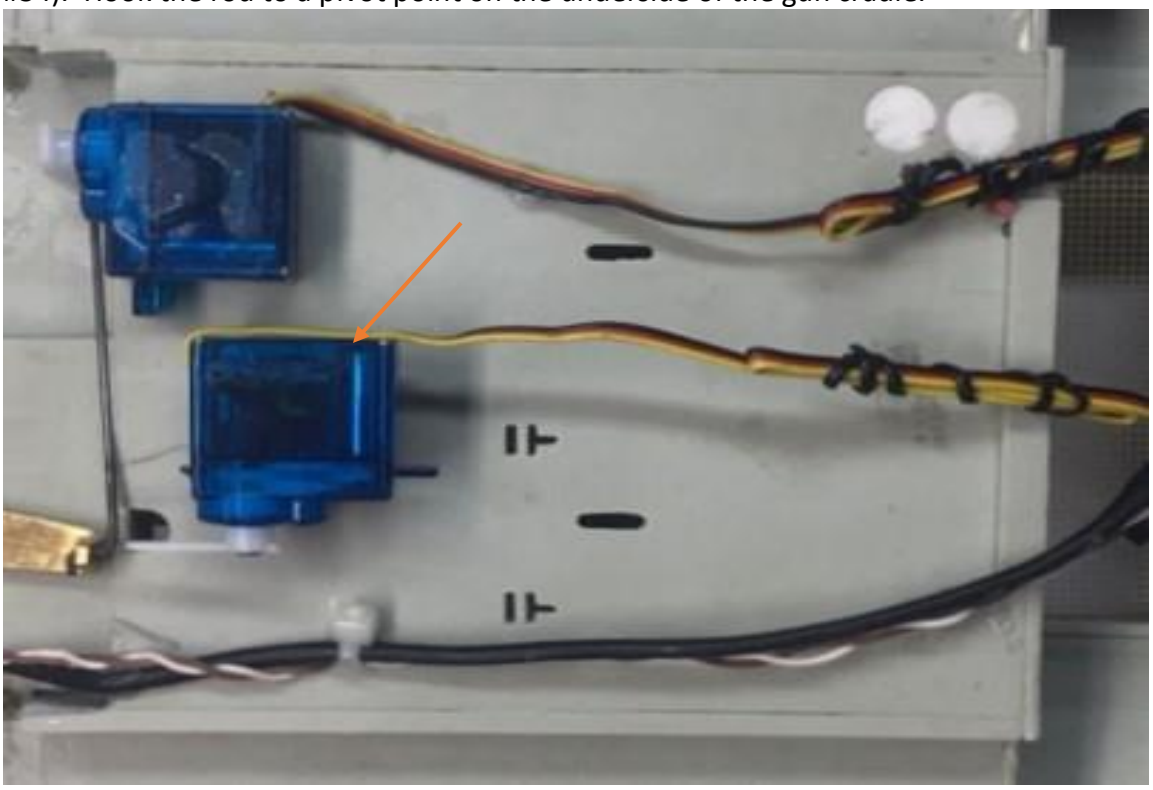
Box dimensions are: Small Right: .60" x 1.2" x .40" x .10" thick; Center: 1.125" x 1.2" x .40" x .10" thick; Large Left: 1.125" x 1.5" x .40" x .10" thick;



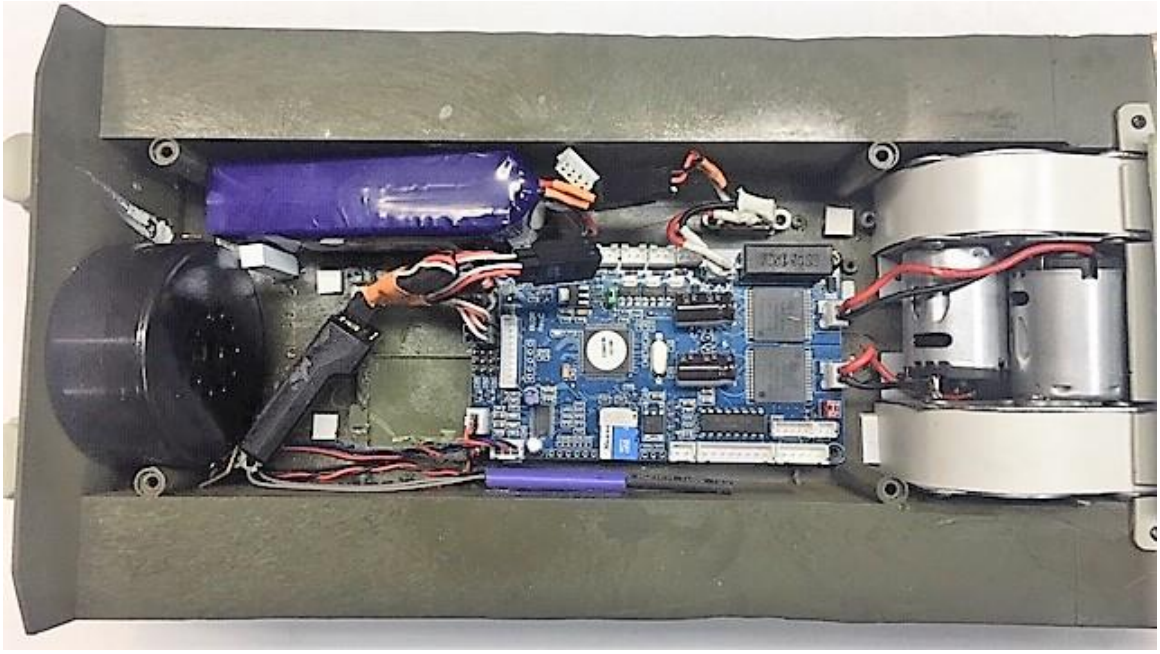




55. Before moving on with additional details, finish the installation of the second servo and linkage under the inside deck. Raise and lower the gun cradle with a rod linkage from this servo up thru a hole in the floor (connect once model is painted). Use a thick paperclip for the two part rod. Join the parts together with tiny loops, so the rod will bend (around the gun's recoil spring) as the gun cradle is raised and lowered (see recoil spring in Step #34). Hook the rod to a pivot point on the underside of the gun cradle.



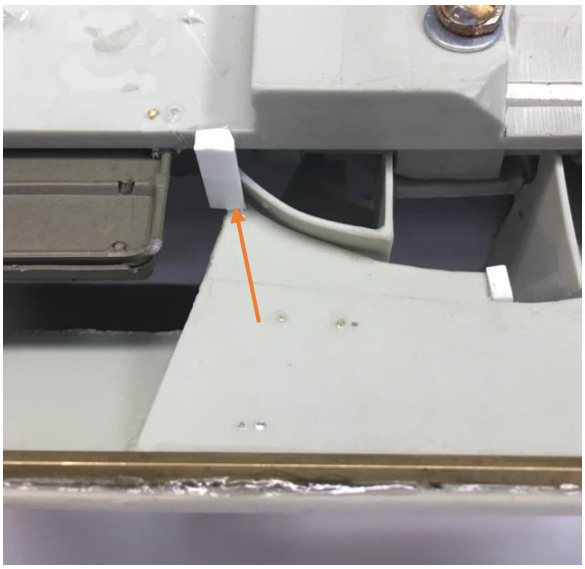
56. Next mount the IBU2 controller (I used the Basic not Full Option version), Lipo 3 cell 11.1v battery, 3 W speaker (from HL Sherman), radio receiver/transmitter (I chose a FlySky 2.4 GHz 6 Channel transmitter w/ FS-IA6B receiver and used the I-BUS Configuration), and install the HL on/off switch and volume control for speaker. I shortened and re-soldered all wire leads to make the area compact. I also fit thin styrene strips over the gear areas to keep grease that was applied to the gears from splashing out onto the IBU2. Program the IBU2 for the 105mm R975C engine sound. Test run the tank to make sure it does all you want before proceeding.



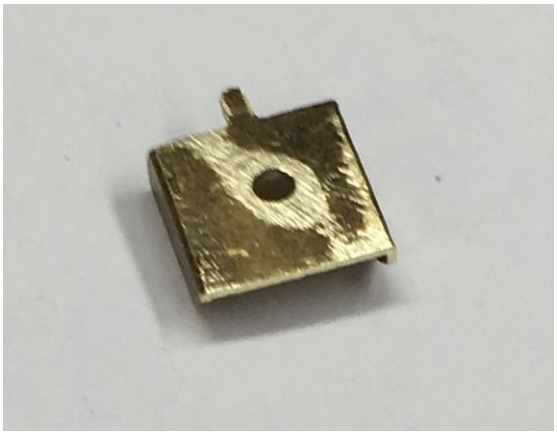
Time now to finish the inside deck area:

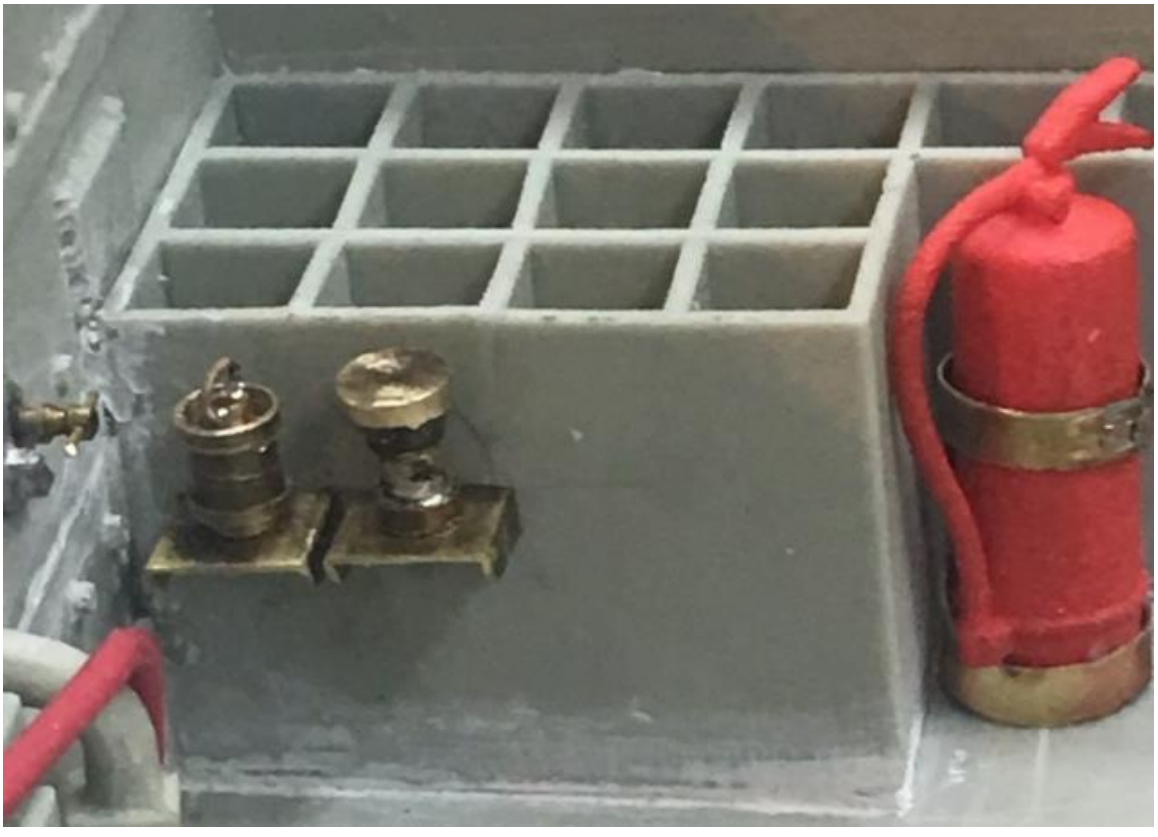
57. First remove the gun assembly from its mount to give more room to work. Then glue the inside deck to the Upper Hull. Start by gluing the rear wall of the inside deck to the Upper Hull where you previously glued that styrene strip. This joint will also need patching with putty. Next position the Upper Hull & inside deck on to the Lower Hull. Make sure everything is properly aligned and be sure when you glue the sidewalls, to pull the sides outward "if" your Upper Hull is bowed inward like mine. Glue one side at a time. **Note:** I had to cut off 1/16th inch at the bottom of the pulpit brace to have everything fit properly.

58. Once the inside deck is glued to the Upper Hull, glue a short styrene brace between the lower deck and gun shield floor so as to raise it up slightly for better clearance when the gun shields rotate (see red arrow in next picture).

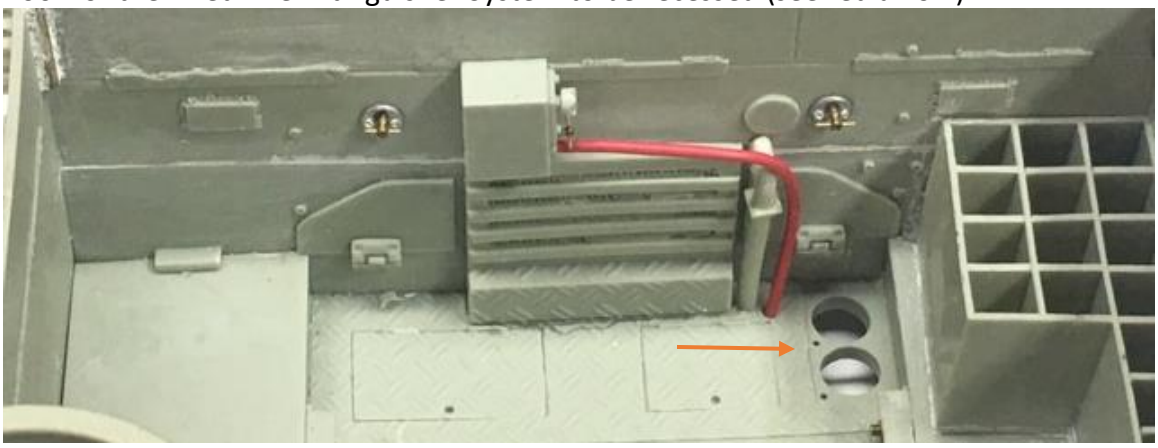


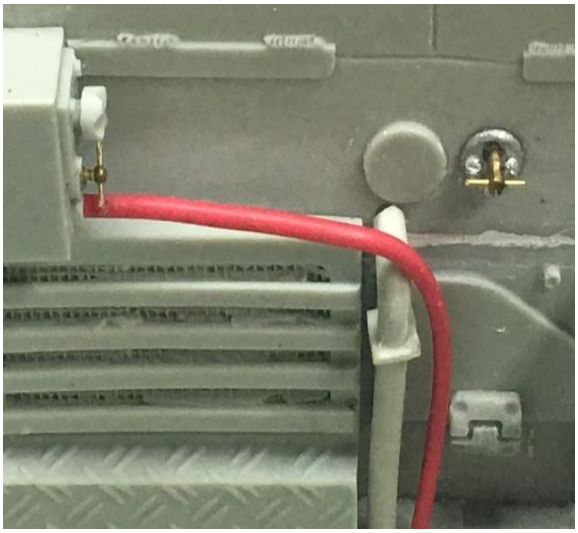
59. **Optional Step:** If you plan to replicate the Bore Brush and the Rammer Tool, these each have a bracket mounted to the sidewall of the left ammo case, and you should drill the two holes for mounting the brackets…. “before” ….gluing the left ammo case in place. Make the brackets from brass square tube filed to shape.

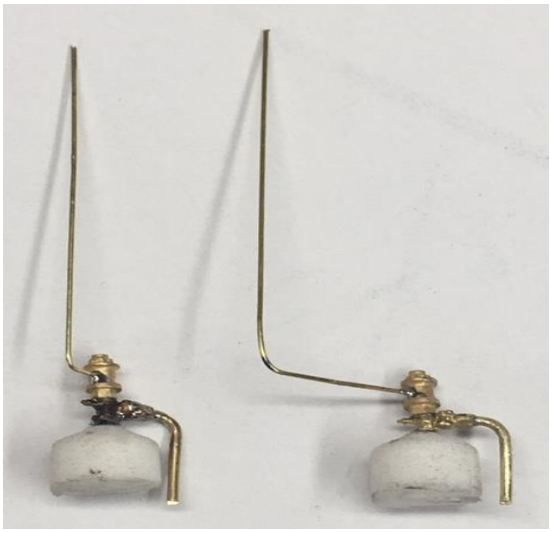




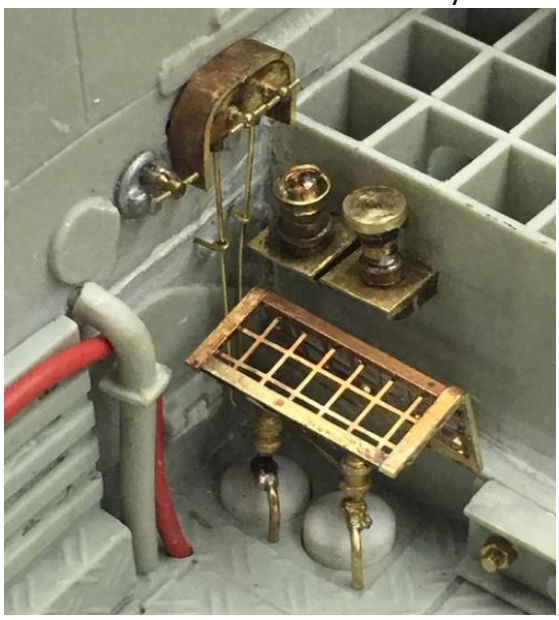
60. The Vandra radiator, electric junction box and “Fixed” Fire Extinguisher System box are not M7 types, but could still be used (Vandra #51 & #52). For total accuracy though, these 3 parts should be scratch built. However, I elected only to re-make the Fixed Fire Extinguisher System and to just add more wires and handles to the other Vandra parts. This decision meant I also had to install the emergency actuating handles above the fire extinguishers with their associated piping. Notice the two lg. & two small holes cut in the floor for the Fixed Fire Extinguisher System to be recessed (see red arrow).







Below is the protection cover plate over the Fixed Fire Extinguisher Sys. Normally it would be a solid plate cover, but I opted for one that is “see thru” so the Fixed Fire Extinguisher Sys. can be viewed. The emergency shut off handles and bracket is located directly above.

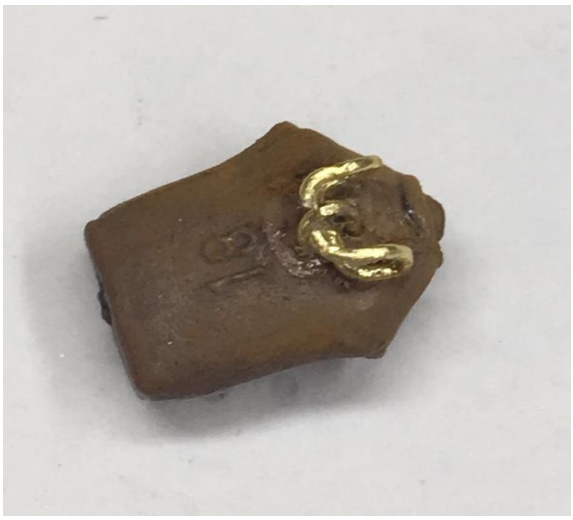


61. Make a tool box for under the left gun leg. I used a cast resin box and added two top lids of styrene, brass wire handles and a misc. brass piece that resembled a lock.

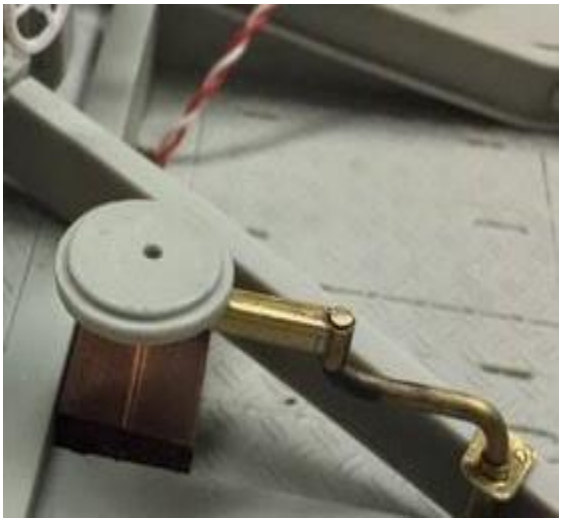
62. Install a first aid kit to the left front side wall and the second part of the radio set to the inside area above the driver (to his left). This will cover the headlight bracket legs which stick thru the resin surface. I had to grind some of these parts flatter to make a good glue joint. Although the radio was of a German design, it is similar to an American design and serves the intended purpose.

63. Add a canteen to the left side wall, and a seat (Vandra # 57 & #59). I chose to mount only one seat on the left side, not two. The vertical tube is for holding the OH canvass canopy rods. There are 4 of these and they are .086" OD x .7" long and the canvass canopy rods are 1/16" diameter brass rods. The 2 brass pieces on the ammo wall are for holding

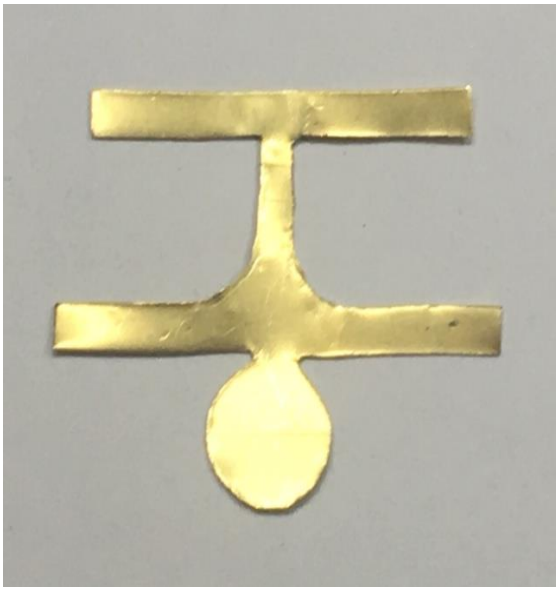
a submachine gun. The movable seat will extend forward for a gunner to sight the gun and make lateral adjustments. The tool box is below the gun leg.



The moveable gun seat shows up in prototype pictures and is made from brass “U” channel, tubing and 3/32” diameter rod. The hole in the center of the seal is to hold the gunner in place with a rod sticking down from his butt. 2 pins are anchored thru the U channel. The rod sets in a tube that sticks up from the floor, is glued to the leg with a sq. brass shape seated over it and pinned & glued to the leg.



64. Make 2 Fire Extinguisher brackets. 1 for each side of the deck area for the portable fire extinguishers.



This bracket is made from .010” brass sheet. Cut out a template and solder together. The bottom circle is .40” diameter; the upper arms are 1.22” wide; the lower arms are 1.54” wide. The height of the arms are .13” for the bottom and .11” for the top. I used an etched brass latch & hoop from Aber part # 16013 as the hasp on my bracket.

65. **Optional Step:** Add 2 Fuel Line “quick shutoff” handles on the back wall.

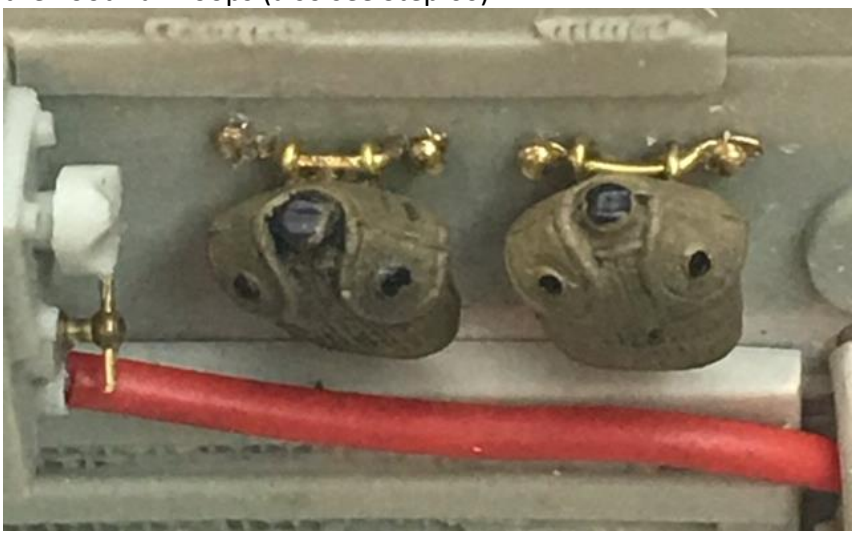
66. Next glue the right ammo case to the sidewall (Vandra #53). Fill in any cracks and voids with putty for both ammo cases.

67. Add red and white aiming stakes. I used a couple wire brackets to hold them that I had in the junk box. The red and white striping will be added with painting steps

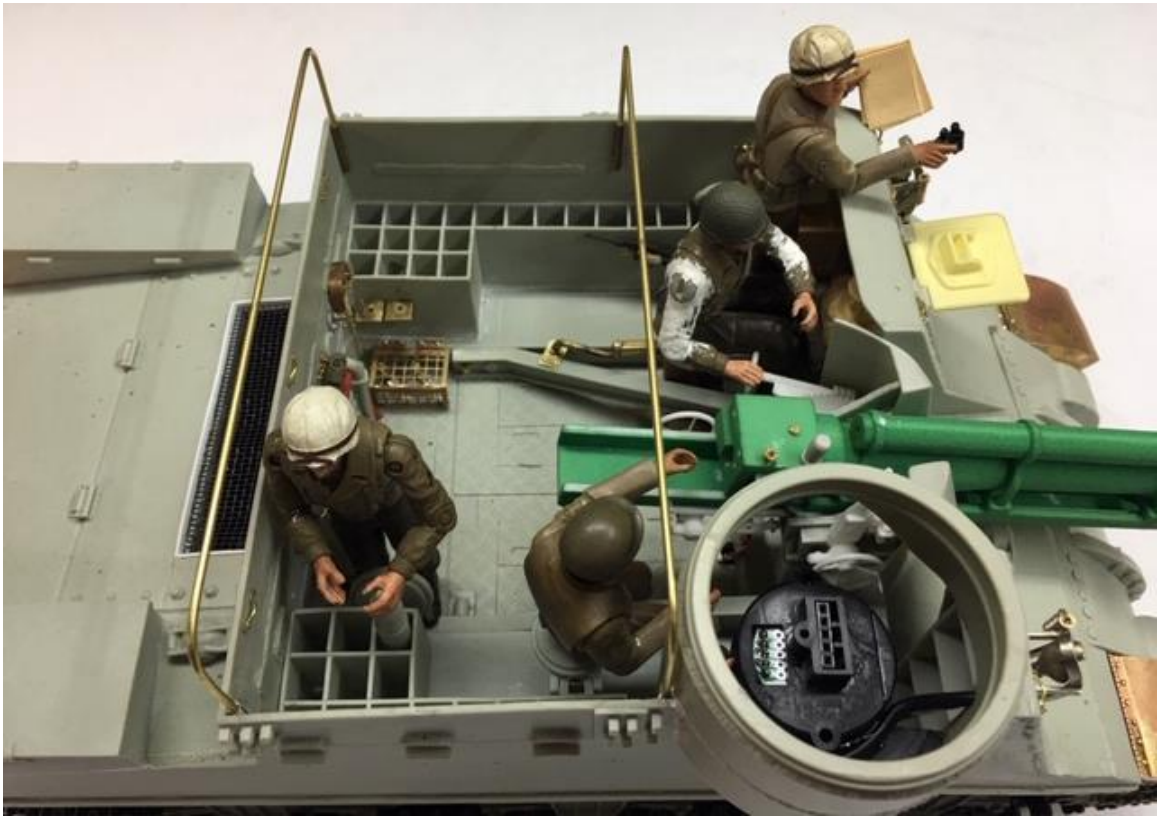
68. I also made 2 brackets to hold Garand Rifles, with one being installed by the aiming stakes and the other by the end of the left ammo box. Cut the pattern from .010 brass sht.

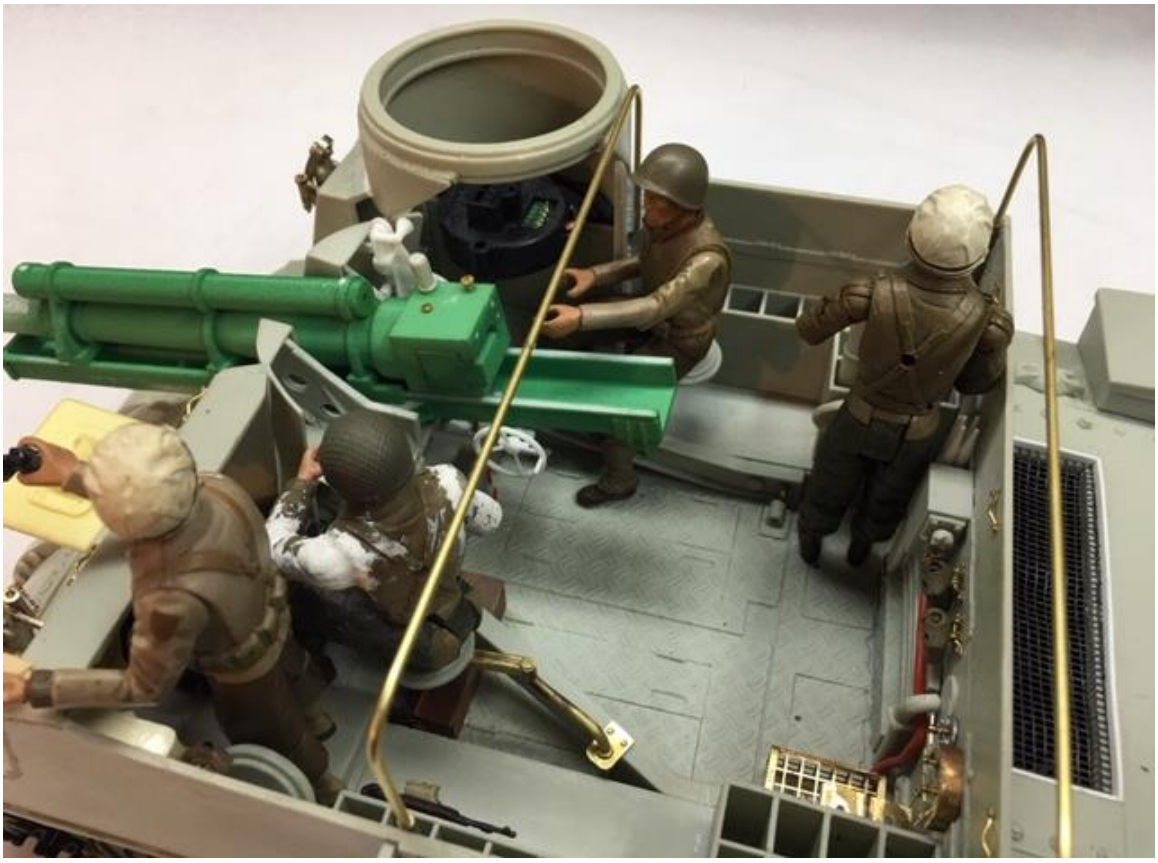
69. Add any Footman Loops that you want on the inside of the deck area for detail.

70. Add 2 canteens on the back wall. Fine wire bent to shape is used to hold the canteens to the Footman Loops (also see Step 60).



71. With pretty much everything in place in the fighting deck area, it is time to work out the positions for the 1/18th Ultimate Soldier posable scale figures. I used this size soldier because the smaller sizes fit better than 1/16th scale men. The soldiers have to be located out of the way as much as possible so that gun movement is not hindered. Use the OH canvas canopy rods for guidance. These scale figures will be filled in with putty after the positions are set, and then repainted. Anchor the soldiers to the floor and seats w/ small brass rods installed in bottom of shoes and rear ends.



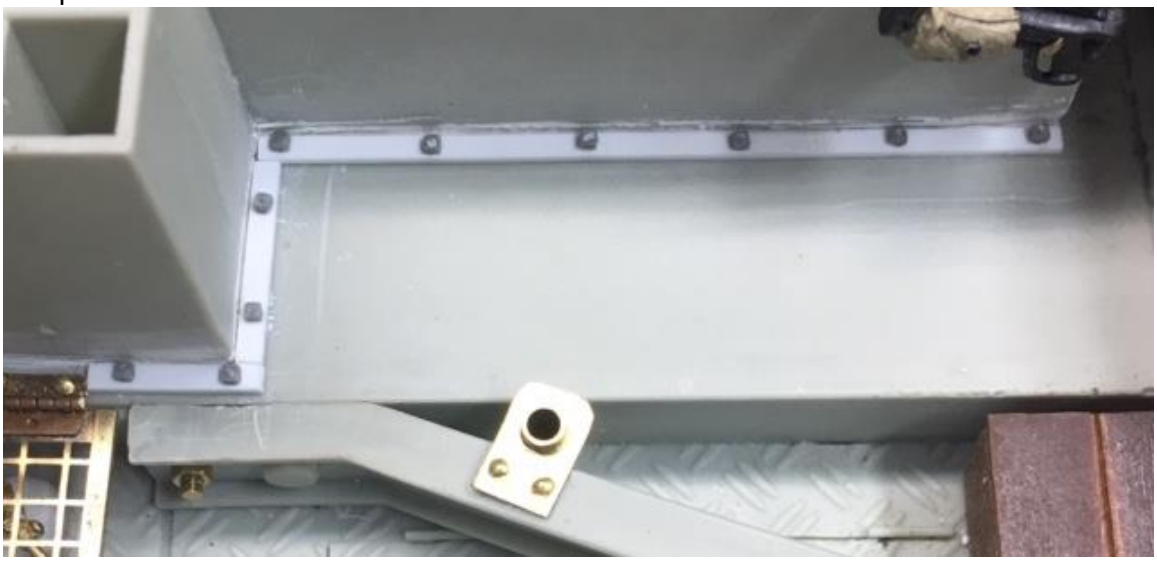


72. Do not install the wheel shown in Vandra #34, use Shapeway wheel instead. But the crank handle in #34 is used with the gun support bracket (Vandra #33). Where Vandra shows to mount the support bracket with the 2 pivot brackets, is wrong. I found no pictures to support that type mounting. Instead, cut holes in the floor as shown below (2 pictures in the Sherman Walk Around book shows this). I positioned the holes further forward to match up with the Shapeway gun cradle, which is shorter than the Vanda cradle. Detail part #33 with brass inserts and styrene ribbing.

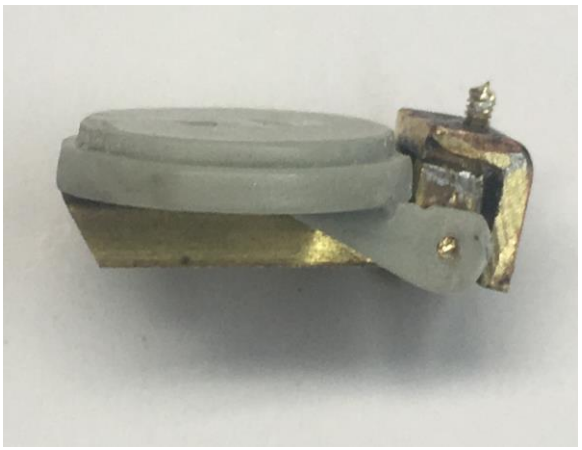
73. Since the support bracket is not installed where Vandra anticipated, those two areas (red arrows in above picture) need to be filled in with double diamond tread plate to match the floor. To do this, I simply made a mold of the floor area using clay, shaped a wall around it and poured in a thin layer of resin. These are then sanded thin and glued into the two areas.

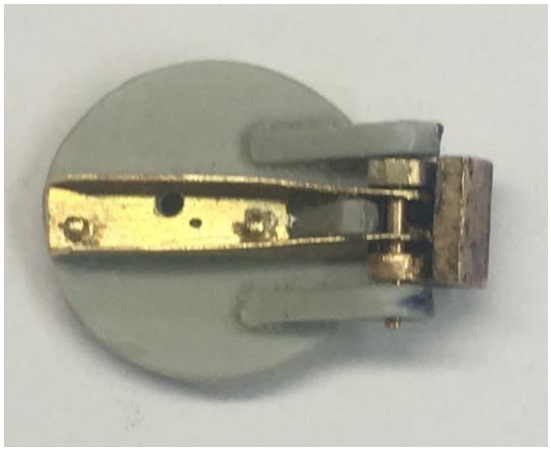
74. Now add the 2 missing compartments to the right hand ammo storage box. Use 0.040" styrene and patch with putty as needed.

75. Add a bolt strip around the ammo cases. Use .030” x .080” styrene strips and Grant Line #82 plastic bolts.



76. After placing the right hand seated soldier, it appeared that the resin bracket for the seat would not hold up over time, so a replacement w/ brass bracket and reinforcing “U” channel was made. The threaded rod will be securely glued to a hole in the ammo box wall.



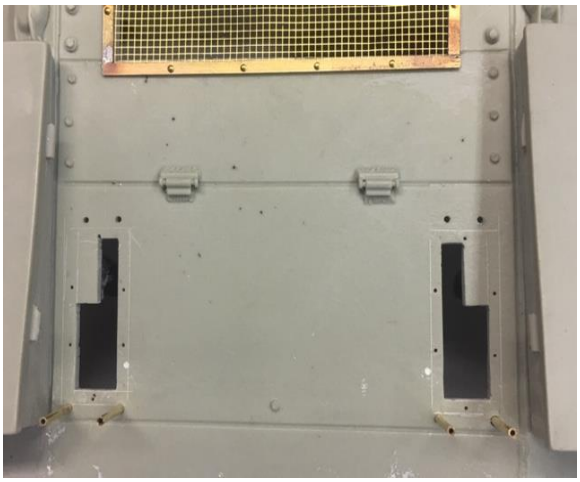


77. A 6th soldier normally complimented the crew and typically occupied the 50 cal MG pulpit. I again used a 1/18th Ultimate Soldier posable figure, but with legs and boots shortened to fit. I anchored him with a brass rod sticking into a hole in the Tamiya Battle Unit base (see red arrow).

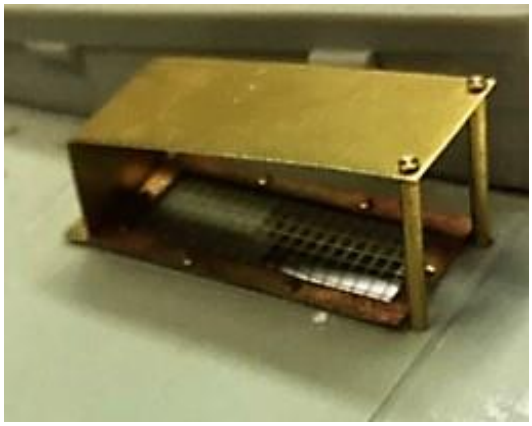
78. The 50 cal MG is fashioned from the original Heng Long Sherman MG with the Vandra mount and ammo case retainer. I added a 50 cal ammo box with no lid and detailed with a 50 cal ammo belt (see finished model pictures).

Time now to work on the outside areas:

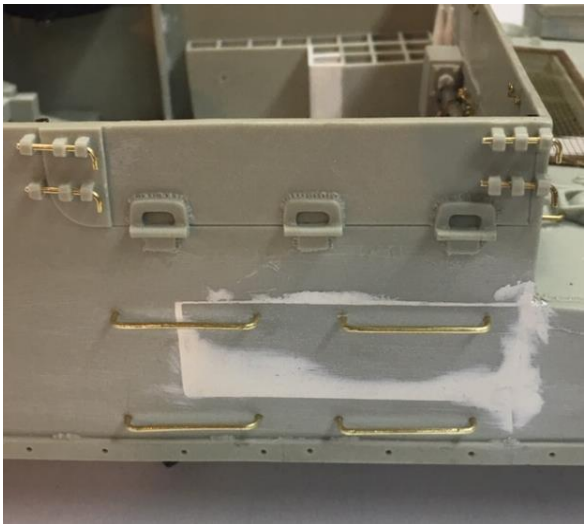
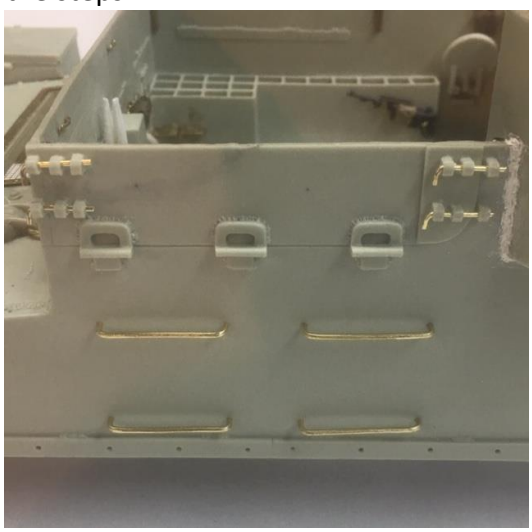
79. The rear deck lacks 2 vents and shields. This requires drilling out the appropriate area and filing the edges square. Unfortunately the two locator pins underneath are situated in part of the area to be removed, so a notch was required around them. Holes were drilled for the bolt and front rod locations. Brass sheet was cut and bent as required, and 4 holes were drilled into each. The bolts are 090 hex heads and the 2 small pins are from my spare parts box.



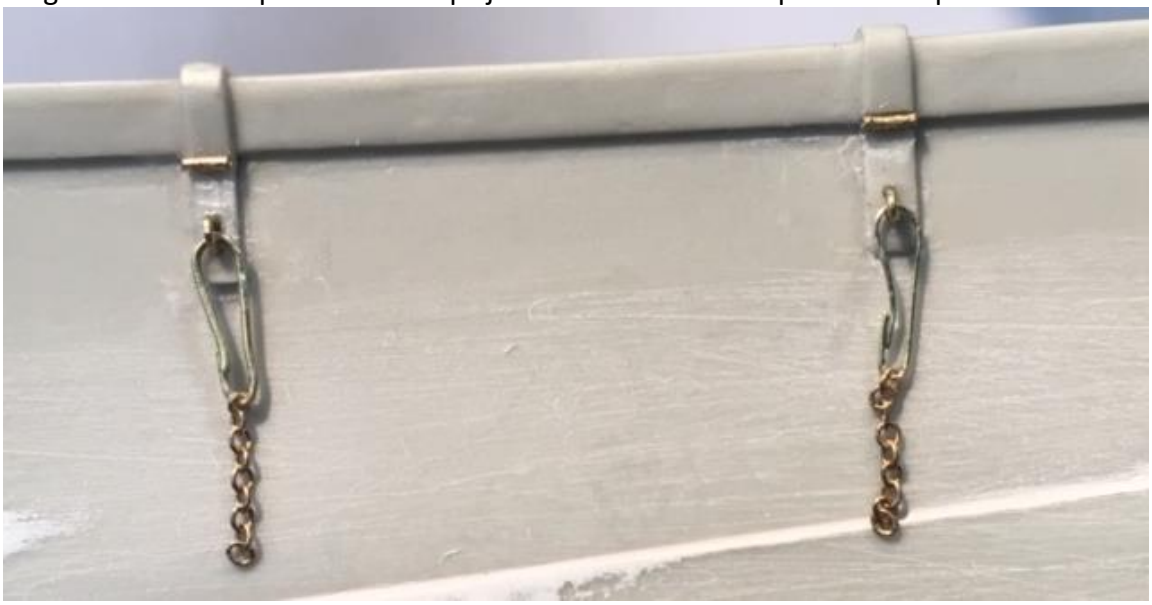
Fabricate 2 small screens to fit over the openings by soldering 4 thin brass strips like in Step # 20 to the same #15 size wire mesh. Drill holes for 6 brass pins in each.



80. Add the 4 step rods and the 4 “L” bracket rods on each side. I used .025” diameter brass rod for the “L” brackets and .045” diameter for the steps.

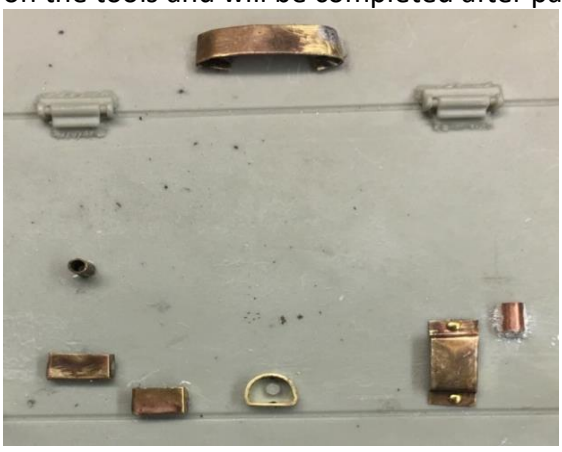
81. Add hinge wires, lock loops and snap locks w/ micro chains to each of the 4 locks on large rear deck stowage boxes. The micro chains will be anchored after painting. Shorten the length of the lower part of the hasps just below the “U” shaped lock loops.



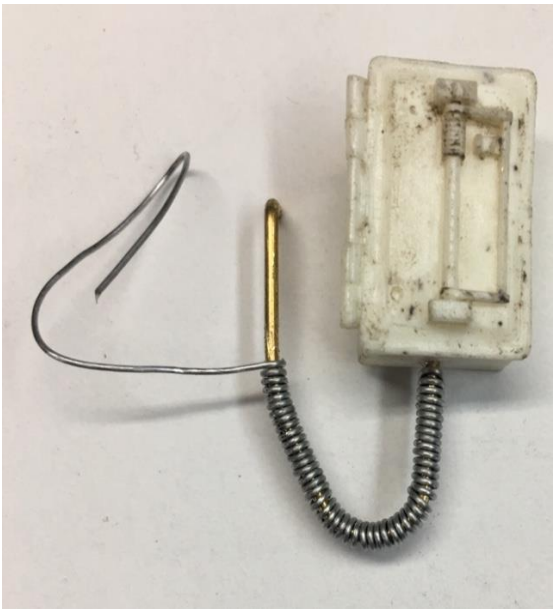
82. Add the various brackets for cable, OH canvass canopy rods, etc. to each side wall.

83. The gun cleaning rods are also fitted to the left side of the Upper Hull. These are .080" diameter brass rods x 2.7" long. The brackets were made from.010" thick brass sheet. The footman loop will be used for the leather tie down strap to be installed after painting. One end of the rod should be threaded to represent assembling all the rods together. I used a 3-48 Die for threading the rods.

84. Make thin brass brackets and leather straps to secure the tools on the rear deck from .006 thin brass sheet. To each tool affix 1 or 2 leather straps with a buckle fashioned out of very fine brass wire. Only one leather strap is shown below, as these are glued in place on the tools and will be completed after painting. Each strap is then glued to the deck.

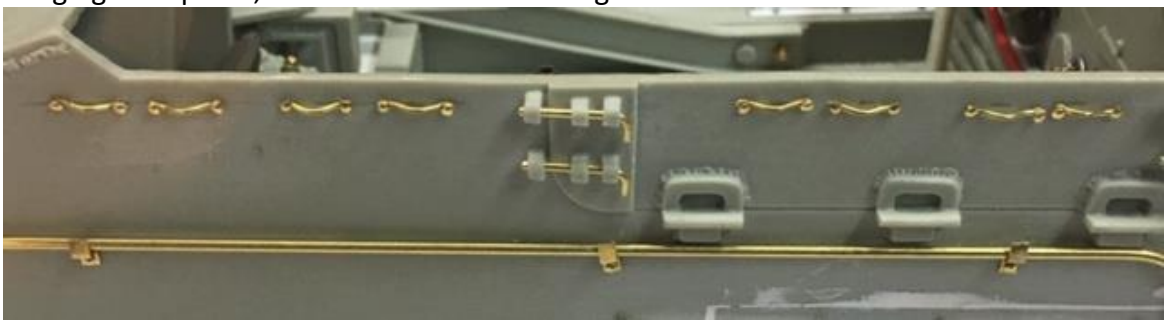


85. The back panel of the rear deck will hold 2 large wrenches that are anchored by 2 small brass tubes and 1 leather straps each. Wherever these type brackets are used, I filed off part of the rear of the tube leaving 2 thin points that are glued into holes drilled into the resin wall. Each tube is also drilled for a tiny cotter pin made from brass wire, bent to shape with a micro chain attached. The chains will be secured to the hull after painting so that the pins are not lost. Also an exterior radio box can be mounted on the right side, for communication between the crew commander and ground troops. Notice how the appearance of a “coiled phone line” is created by wrapping thin wire around a brass rod of small diameter. The radio box was an old casting found in my junk box.

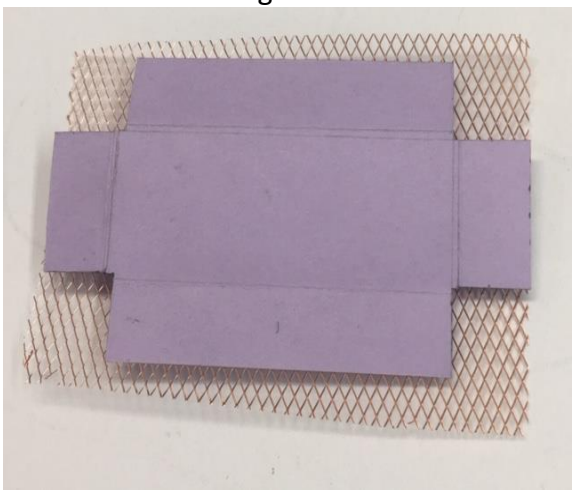


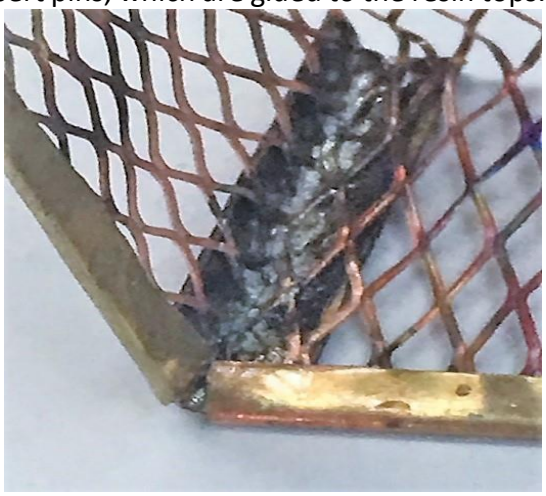
86. The remaining area of the back panel of the rear wall can be used for a folding shelf. I chose to show this in the folded down position for holding extra gas cans. I used a piece of .028" thick copper for stiffness. The cans will be tied down with rope after painting.

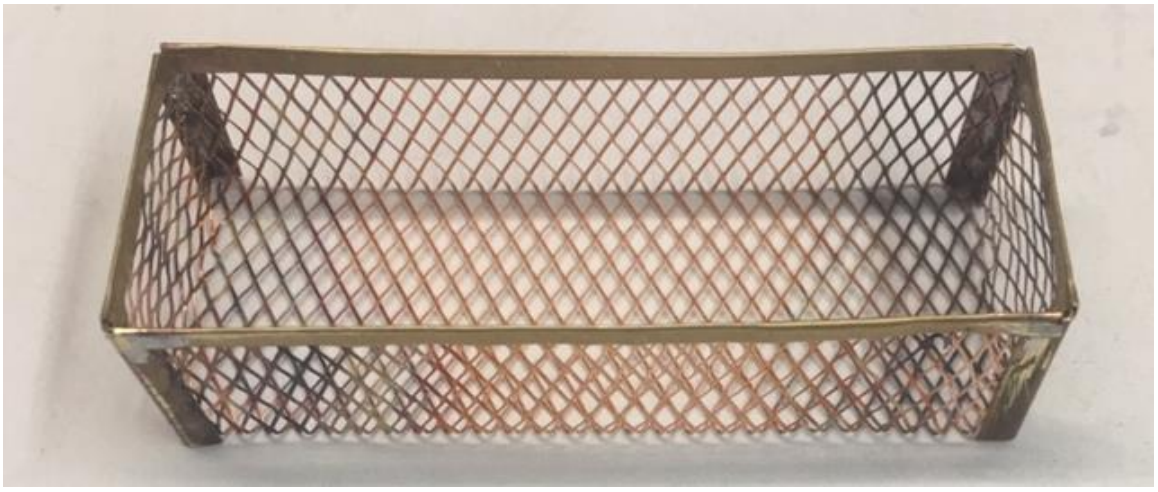
87. Install any Footman Loops that you want on the outside wall. These are typically used for hanging back packs, bedrolls and other stowage.



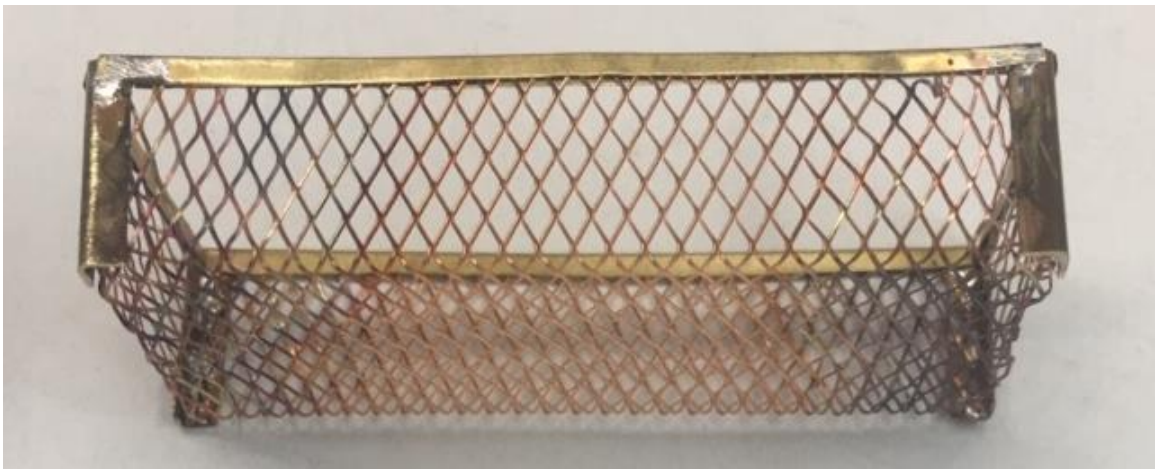
88. **Caution – very fragile parts:** Make 2 wire baskets to set on top of the rear deck stowage boxes. Use diamond shaped wire mesh (Blick Art product #334081006) cut into a cross shaped pattern. Then bend to shape and solder to .015" thick "L" brackets at each corner (which become corner posts). Add .005" thick brass strips .160" wide by length required, folded over the tops and then soldered to the corner posts. The inside of the basket requires strips of 1/64 thick x 3/32 wide brass bar to anchor the mesh to the resin tops of the rear deck stowage boxes. Drill holes and insert pins, which are glued to the resin tops.



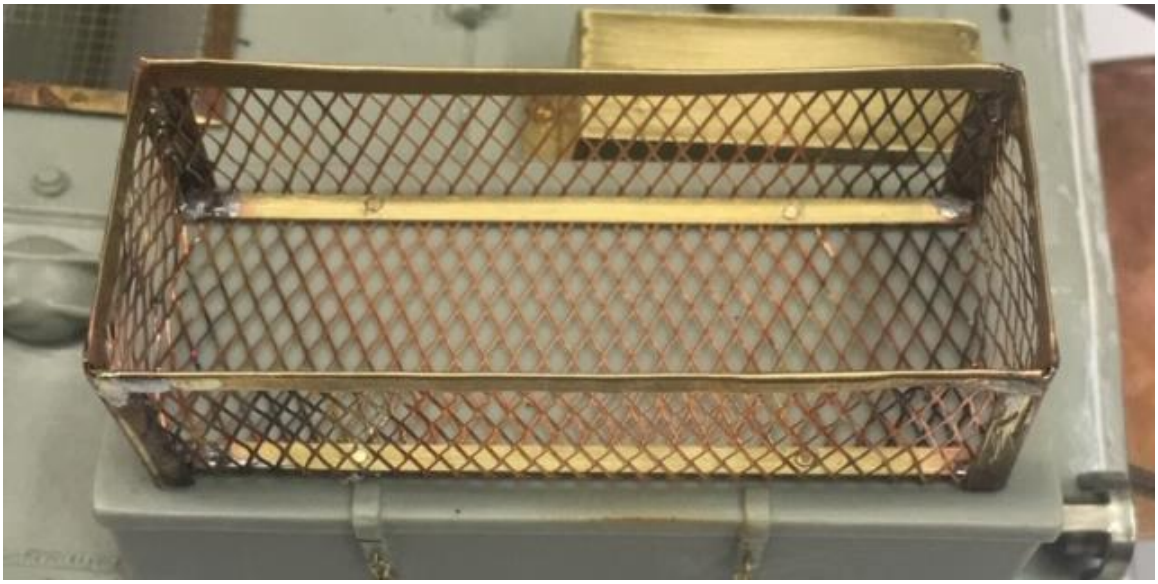




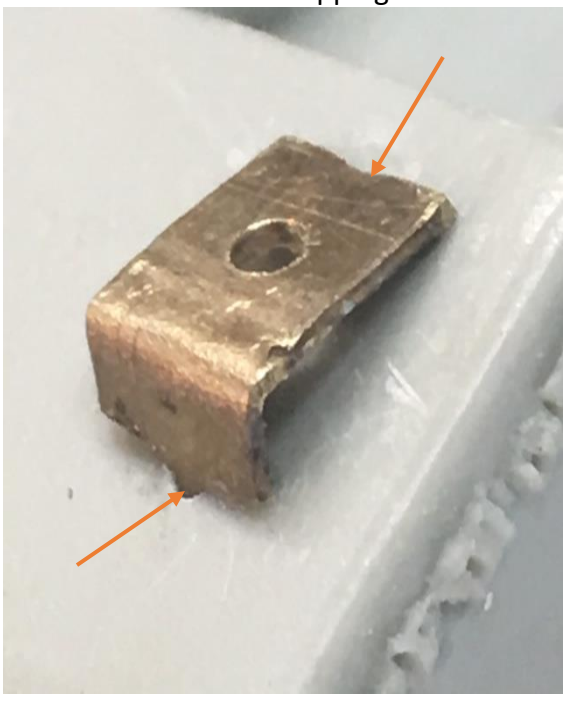
Top View

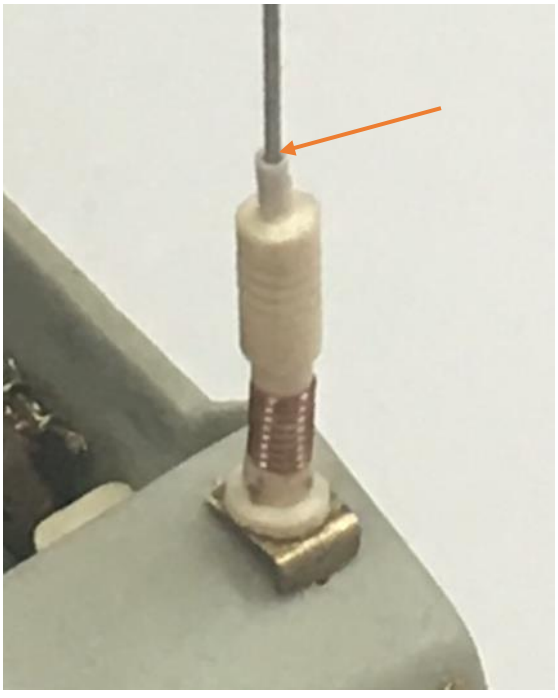


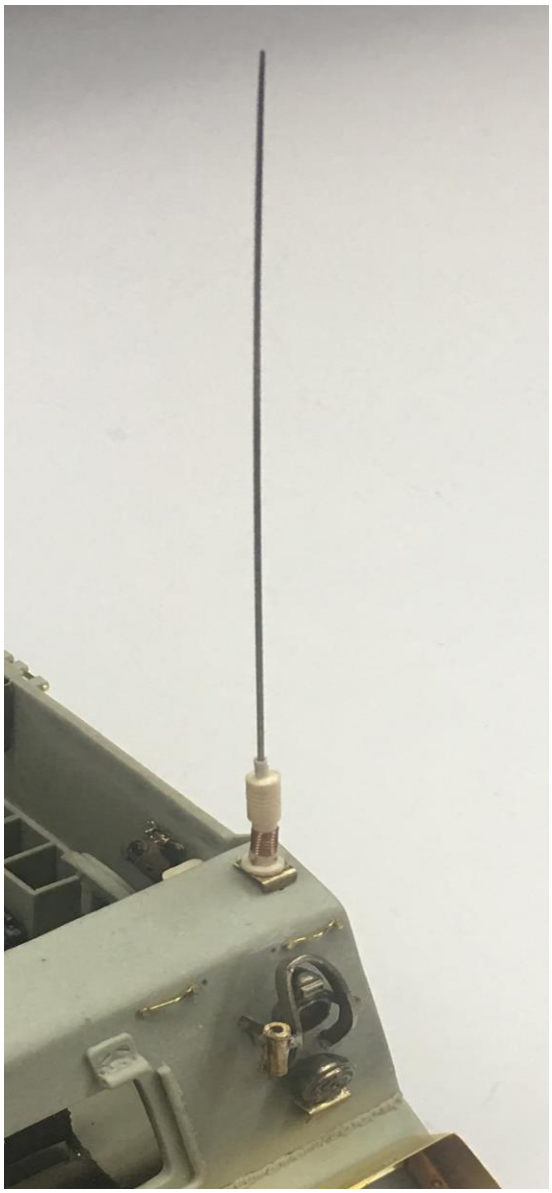
Bottom view



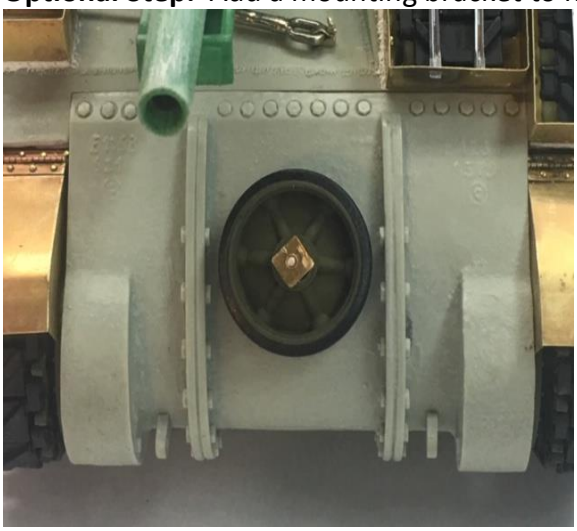
89. install an aerial on the front left top corner of the hull above the radio. I made a small “L” shaped metal bracket for mounting. File a short leg on each end of the L bracket, which is bent and inserted into holes drilled in the resin surface. The stiff wire for the aerial is detachable for when shipping the model. Add a wire inside to the radio set if desired.

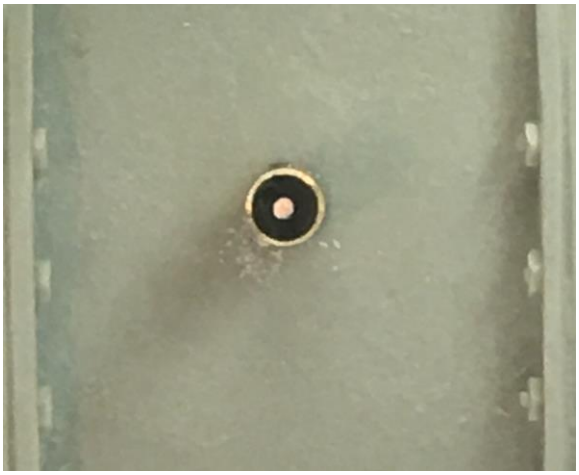


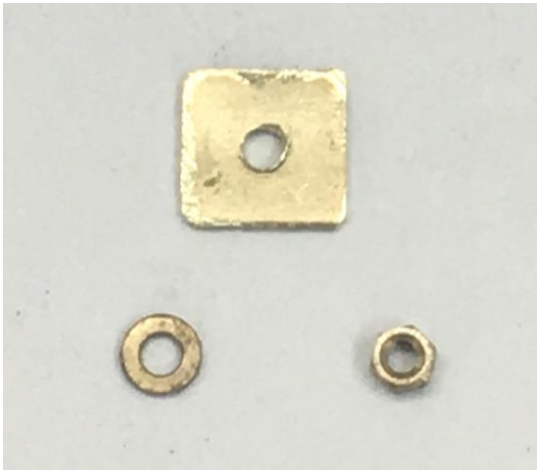




90. **Optional Step:** Add a mounting bracket to hold extra wheel to Tranny Cover.

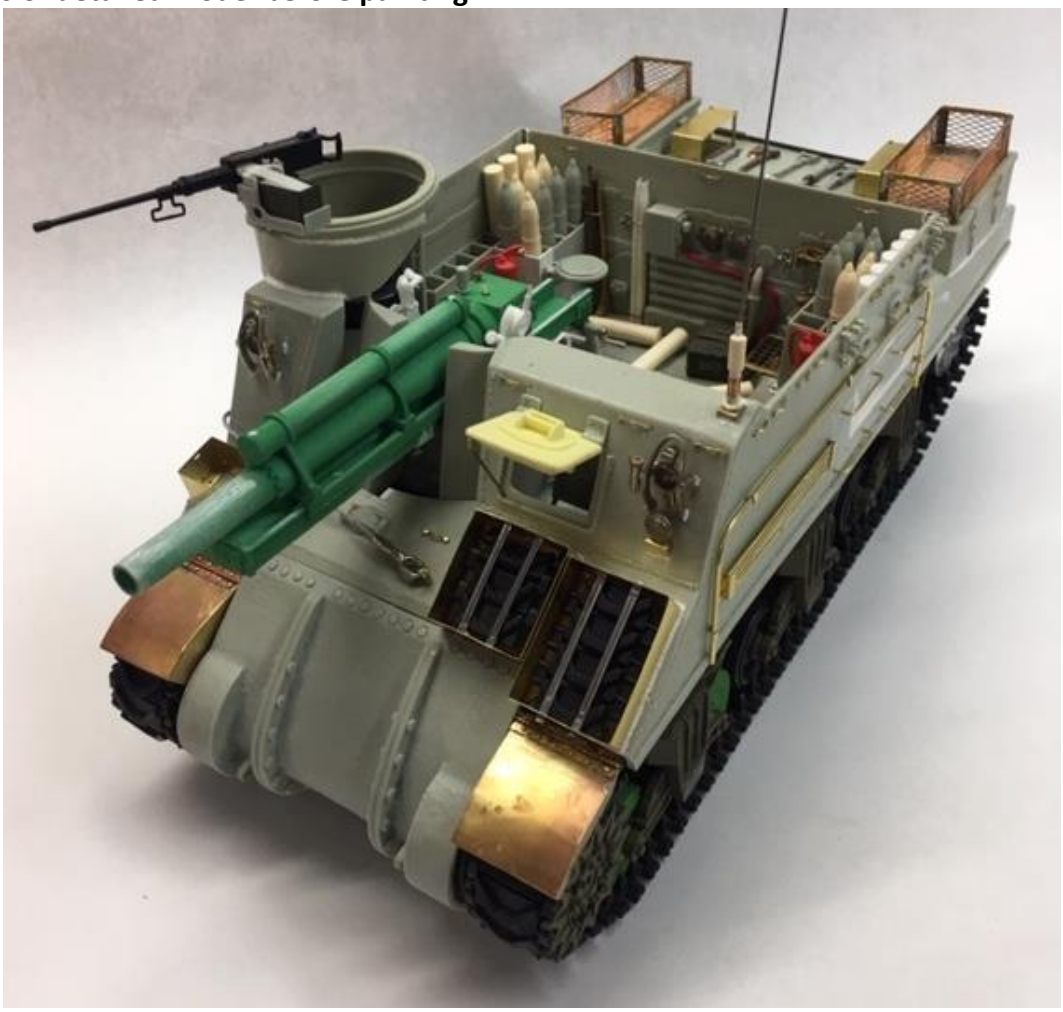


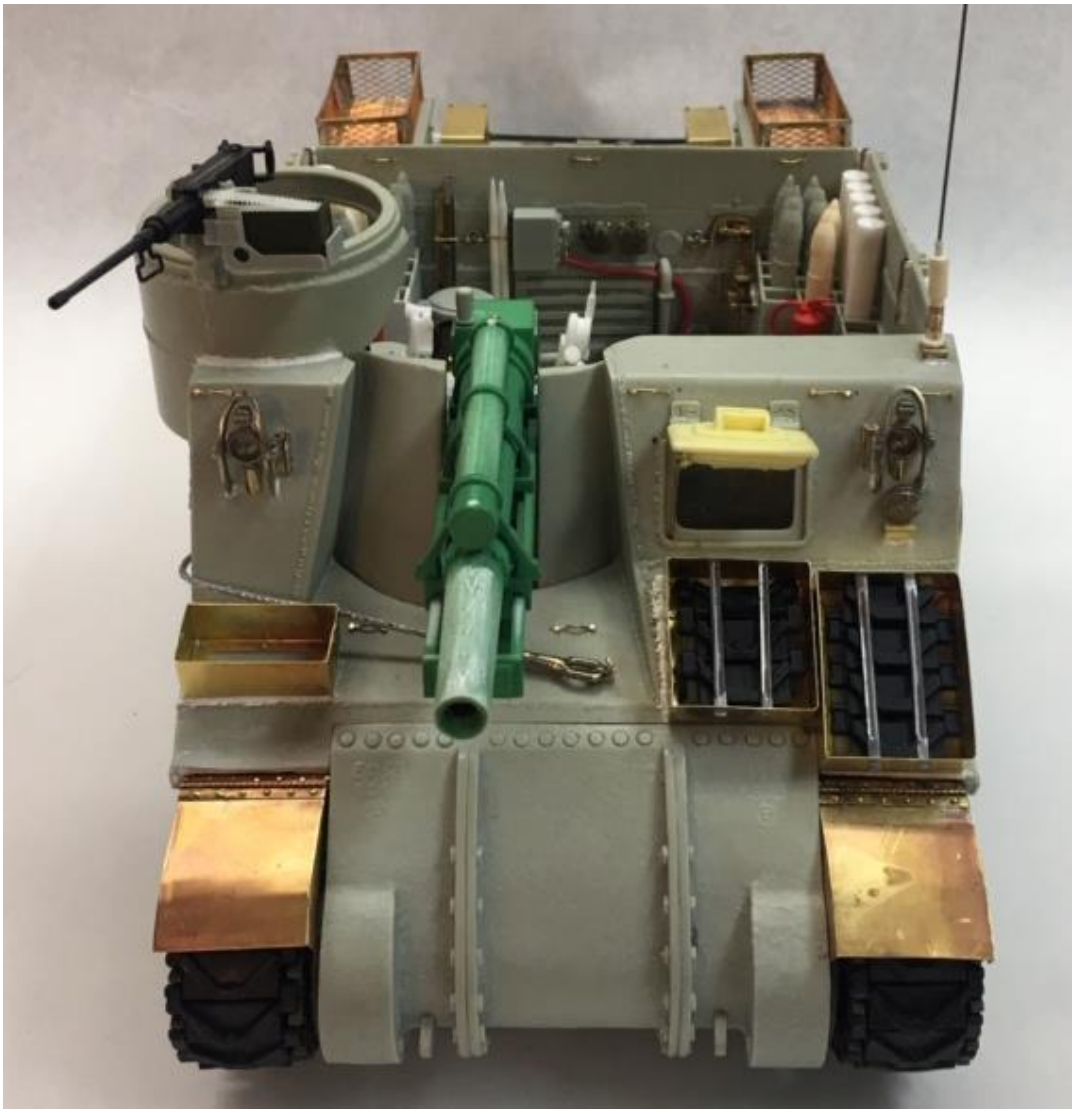


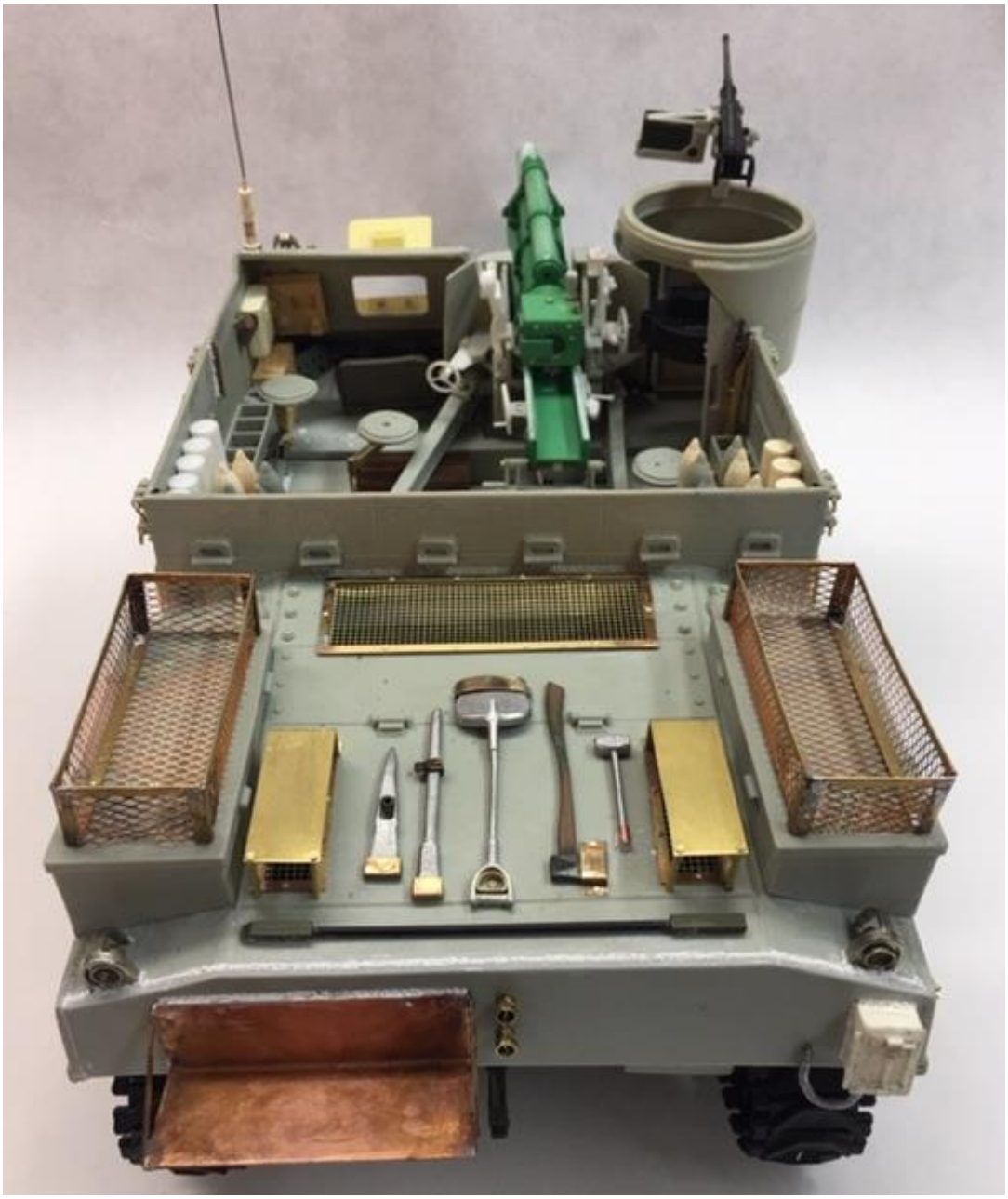


91. **Optional Step:** Add putty around most of the metal parts to simulate that they have been welded onto the hull. I used a Monoject 412 plastic plunger w/ curved tip to apply Tamiya White Putty. Difficult to do, but worth the effort. Clean the plunger thoroughly after each use or it dries hard and clogs up.

Pictures of detailed model before painting:





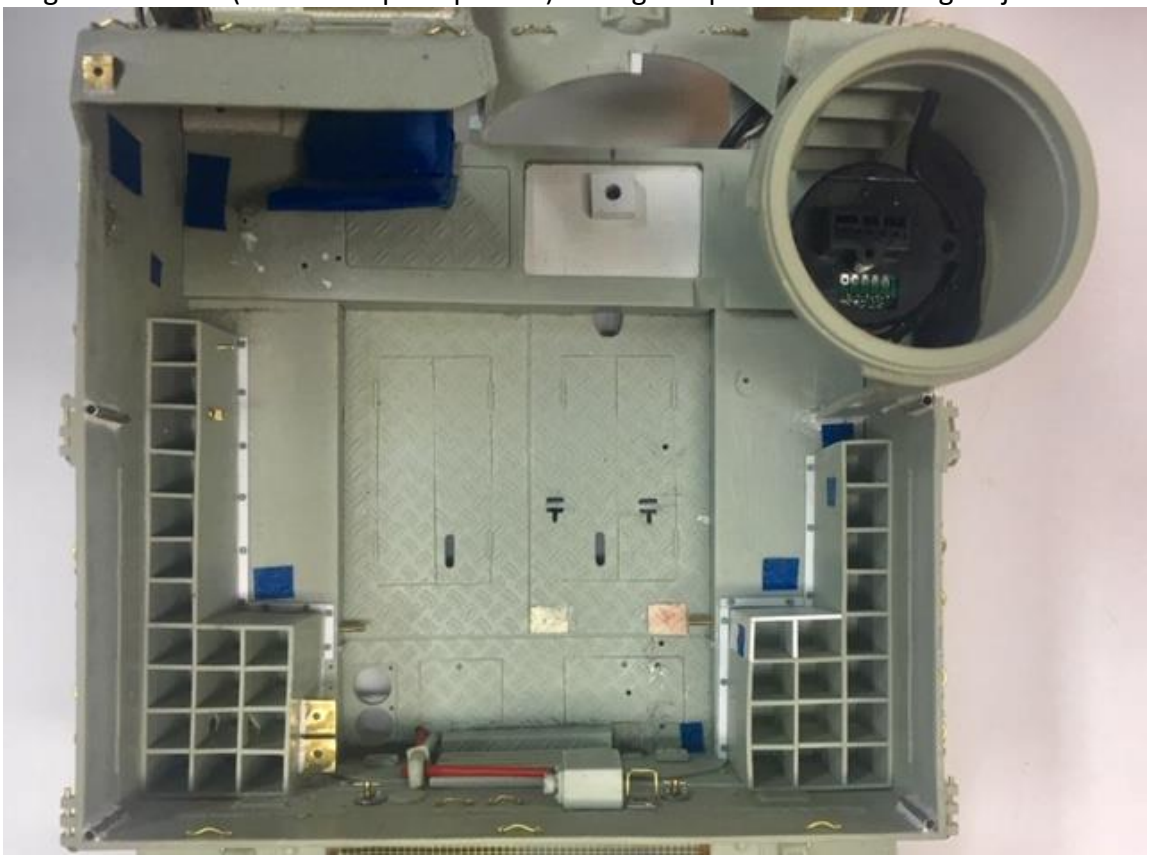


It is now time to paint, weather and detail the model:

92. Remove all small parts that will be painted separately and installed back on the model after the basic color scheme has been applied. For the main US Olive Drab color I used Krylon spray paint #4293 Ultra-Flat. **Note:** Spray light coats on and let dry between coats. Let dry a full 24 hours before reassembly of model.

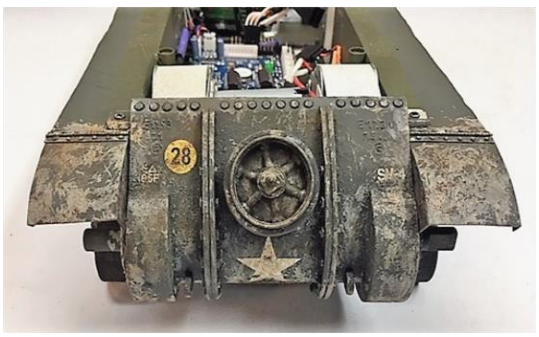
93. If you have already re-installed, remove the tracks, all the wheels, the drive sprockets and return rollers. **Warning Note:** I wanted to replace the existing Heng Long Sherman tracks, sprockets and return rollers with the Mato type T-48 (Part #P104-U) which are more correct for the M-7. However, the Mato front drive sprocket would not fit without a lot of filing and grinding and then the tracks kept coming off. So I kept the HL tracks and drive sprocket, but did however use the wider Mato metal return roller which stabilized the lateral movement of the Heng Long tracks.

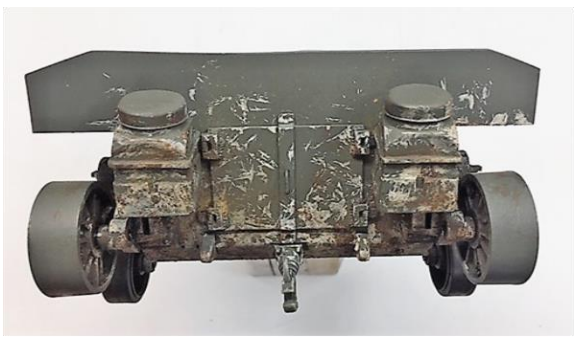
94. Prepare the Upper Hull for painting by applying tape over areas where removed parts will be glued back on (see blue tape in picture). Doing this provides a better glue joint.



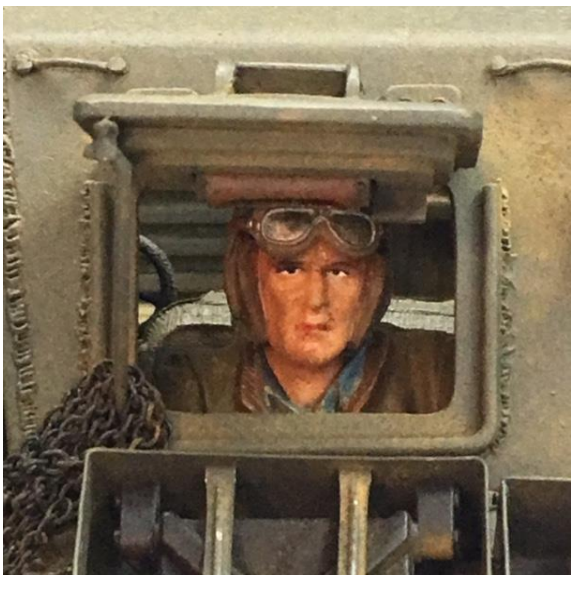
95. Paint the Upper Hull with multiple light spray coats from many angles…..be sure to cover all the small areas, nooks and crannies. Weather with chalks and earth tone sprays to show dirt and heavily used areas. Use silver color paint “dry brushed” to highlight bare metal areas that are walked on a lot.

96. Paint the Lower Hull and heavily weather with dirt and earth tone colors. I painted the wheels, drive sprockets and return rollers using the same colors as on the hull and then re-installed them on to the suspension system and Lower Hull. **Optional Step:** Use Vallejo Acrylic thick paints for caking mud and slop, but don't overdo this. Three good choices are: Thick Mud – Tan (73.810), Environment (73.828) & Thick Mud – Dark Brown (73.811).





97. After the soldiers have been shaped and filled with putty, they are re-painted and made to look dirty from work. Paint them with a couple shades of olive drab and add unit markings as desired. I used the 4th Armored Division.

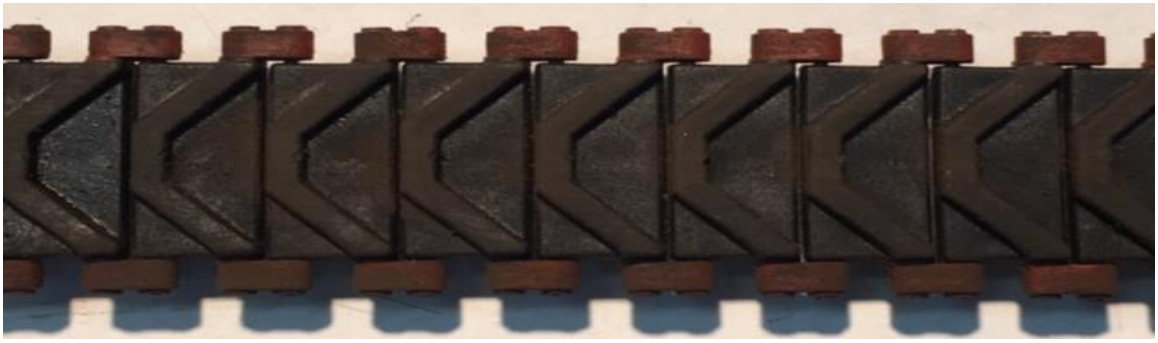


98. I added a tarpaulin and camo netting to the 2 wire baskets. The tarp is cut from an old, fine thread count, cotton shirt and sprayed on both sides with light dirt color spray paint, highlighted with a green spray color. The netting is made from medical gauze sprayed both sides with green paint. The paint stiffens the fabric and holds it in place after folding. Add cast resin parts (bed rolls, knapsacks, etc) as desired.

99. The tracks are painted and weathered to compliment the heavy weathering of the Lower Hull. First I painted all the end inks a rust color (used Krylon 51317 Red Oxide flat primer).

Then the upright teeth were “dry brushed” with a silver color on both sides to simulate the steel showing thru from wear and tear. If you did not apply this same step to the teeth on the drive sprocket, you need to because this is where the two parts rub together and the steel shows thru on both.

Then I sprayed Testor’s Dullcoat on about 12” of the track at a time, and coated everything with a dark colored dry pigment powder (sometimes called chalk powder), but this is done sparingly……you don’t want it everywhere, just here and there for a dirty effect (I used a ½” wide big soft paint brush with long bristles…sometimes dragging it over the parts and sometimes just poking it at them). Coat both sides of the track.



Repeat the above step with a lighter brown colored dry pigment powder on both sides.

Now add highlights with the light mud color Vallejo Acrylic paints you used on the Lower Hull. This is to simulate dried light colored mud and dirt that the tank accumulates while being driven.

Lastly add the dark colored Vallejo Acrylic mud to the “up-stream” side of the “V” shape on the outside of the tank tread. This is to simulate where clumps of mud have caked on the tread from the forward operation of the track.

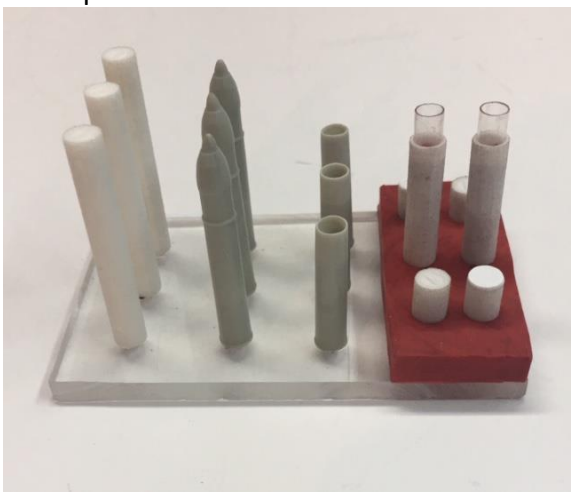
Finish by spraying the tracks with Dullcoat to remove any shine. Then install the tracks back onto the Lower Hull with the drive sprockets.

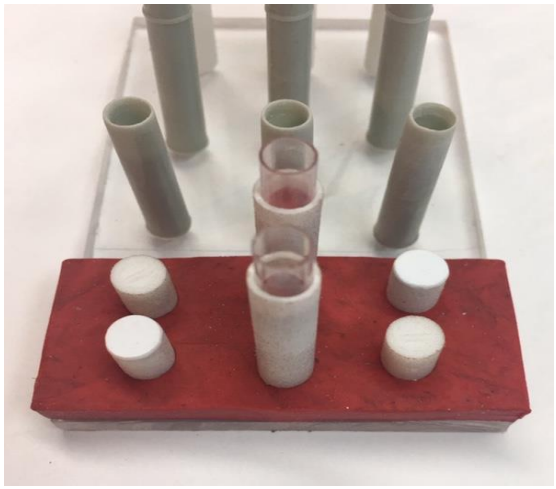
100. Now lightly spray a coat of yellow dust to all outside surfaces of the lower hull. Use a paint turntable if you have this to rotate the model and keep the spray paint can about 2 feet back from the model. You only want to spray a light coating (use a side swiping motion of the spray can) and by the time the paint mist travels to the model it tends to dry and once it hits the model it will look more like fine dust coat accumulated from driving the tank. Let this coating dry for a few minutes and then assemble the Upper Hull

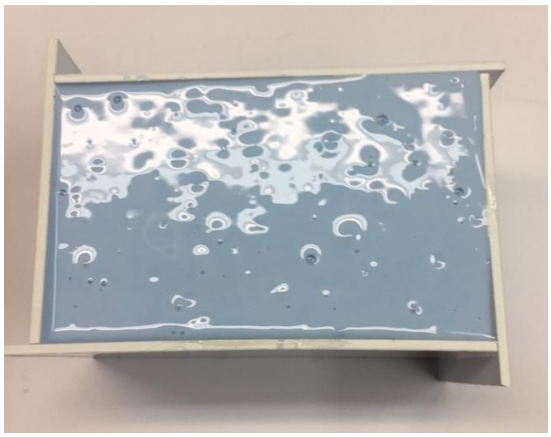
to the Lower Hull (but without the soldiers in place) and apply this dust coating process once more….which means the Upper Hull has only one coat, but the Lower hull has two.

101. Install the soldiers, the wire aerial and touch up any parts, scratches & mistakes you find.

102. **Note:** There were not enough "cardboard containers" and shells supplied by either Shapeway or Vandra, so I made a mold and cast additional ones. I also am planning to display this model in a diorama setting, so a couple of the containers were cut and modified to look like discarded empty ones laying on the ground in piles as seen in many WWII pictures. It will take a lot of resin castings to replicate those scenes.







Once the mold has cured, the red clay portion will be removed, and a second mold pour will be added in that area so that both ends of those parts can be cast in resin.

103. These are pictures of the finished model. Ammo canisters and shells have been added to the ammo storage bins with a few spent shell casings on the floor. A couple of open canisters are shown in the bins, with the lids on the floor. Don't forget to add a couple 50 cal ammo boxes into the shelving racks under the pulpit area. Overall, the model looks like it has been firing in action and all that is now needed is a diorama setting with camo netting overhead and piles of spent canisters and shells lying around on the ground. ☺

CANNON BALL

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