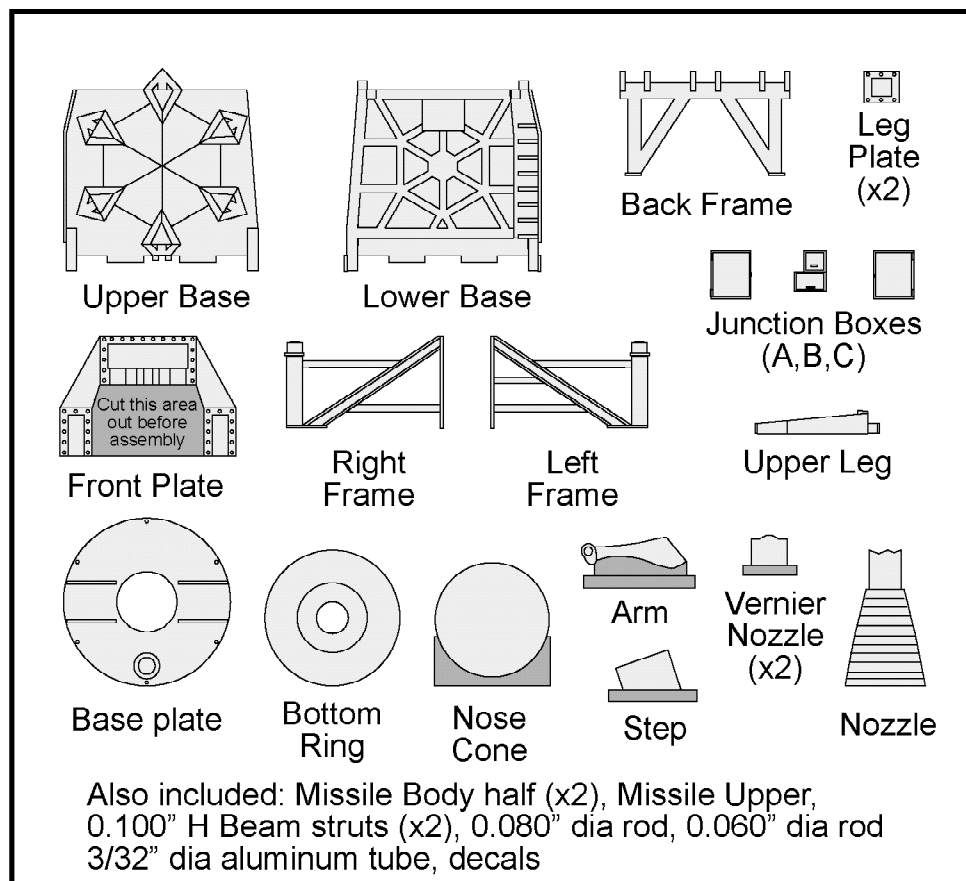


Belcher Bits BL-12: Thor Missile 1/72

Background

The SM-75 Thor was an intermediate range ballistic missile (IRBM) developed in the mid 50s, intending to get a ballistic missile in service sooner than the longer-term Atlas. It used the same engine as the Army Jupiter missile, and the inertial guidance of the Atlas. It carried a 4 Mt W39 thermonuclear warhead. Its 1500 mile range required forward deployment to reach the USSR, and 60 were deployed with the RAF Bomber command between 1961-65. The decision to also base these in Turkey precipitated the Cuban Missile Crisis and they were quietly withdrawn from there soon afterwards.

The Thor was transported to its launch facility on a special trailer which formed part of the launch erector. It was carried horizontally, linked up with the launch stand and brought up to vertical for fuelling and launch. This kit provides a basic, simplified launcher/erector. The basic stand with hinged base plate and support legs are included. On operational missiles, there is a triangular extension on the right side of the base plate which supports a large latticework mast; as well, the fuelling structures and the transport trailer are not included. Markings for USAF or RAF versions are included.



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Initial Steps

Like all resin kits, wash the parts with a mild detergent to remove any release products. Use of cyanoacrylate glues is recommended, but remember to fit carefully and tack in place before applying the glue because it adheres VERY well and you will break parts if you need to reposition them. Sand or trim away the base flash carefully. It is also useful to have a small piece of glass to use as a work surface, because you want to make sure the launcher stand is built nice and square.

Base Plate assembly

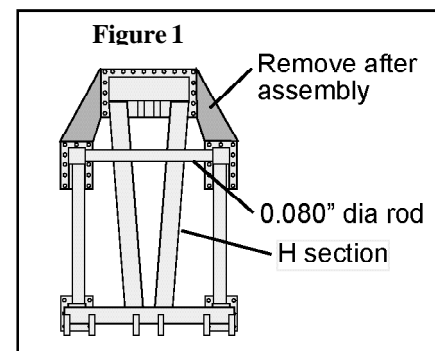
Sand the Upper and Lower bases. Clamp these parts together and when satisfied that they fit, run a little cyano glue into the joint. Clean up the edges and fill the seams. Use a 1/16" drill and drill holes in the two protruding arms, and sand a radius into the end of the arms. On the underside, sand a 45 degree chamfer on the two shallow tabs and the bars on back-side leg support, so that a 1/16" brass rod will pass through from side to side. Using the same drill, carefully drill out the six holes in the back frame and check alignment with the same brass rod. That rod will act as a hinge for the base assembly, but don't assemble that yet. It is time to build the bottom frame.

Bottom Frame

Sand the back of the Back frame and the Side frames. Clean out the open spaces. The two forward legs of the side frames are actually cylindrical parts so use a small file and clean these up a bit. Remove the flash around the Leg Plates. The flat plate on the side frames fits against the rear of the vertical leg of the Back Frame. The bottom of the side and back frames should sit down into the square relief of the Leg Plate, positioning them exactly. I suggest you test fit and tack them into position, make sure the side frame is at right angle to the back frame and apply glue when satisfied. Do both sides.

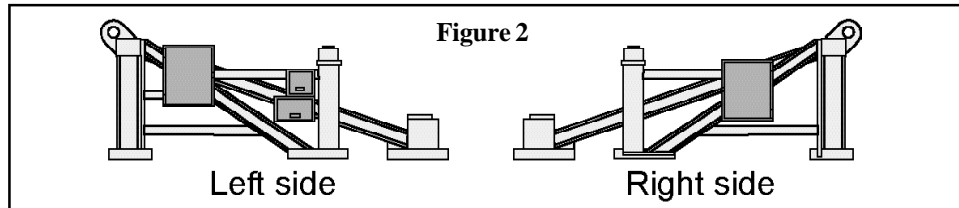
Sand the back of the Front Plate and carefully cut out the indicated area. This Front plate locates the step area precisely with the two front legs, so leave the remaining thin parts in place for now. Once the rest of the structure is glued in place, that will be removed. The front legs of the side frames should sit into the slots on the pads of the front plate. Put it together, make sure everything is sitting flat and then glue in position.

Now comes the tricky part. The two plastic H section strips (flat sides up) are glued between the back of the Back frame, in line with the two center hinge plates, and the two flat pads on the back of the front box on the front plate. See the drawing in Figure 1. Cut approximately to length and sand the ends, checking for fit as you go. Cut the 0.080" dia rod to 1.0" long and glue between the front legs of the side frames; it should sit about 1/16" or so above the H section bars. When all is in place and the whole assembly is square and solid, you can cut out those two area between the front box and the front leg bases.



The step (I'm not sure what this is, exactly but it looks like a step) is removed from its flash, and should sit on the H section bars between the box on the front plate and the round rod glued in between the two side plates. If it's tight, sand to fit.

Glue the junction boxes A and B on the Left frame, and box C on the right frame as per Figure 2 below.



Base Assembly continued

The reason we started with the launch stand instead of the missile is that the round Base plate of the missile is useful as a guide for installing the Upper Legs, but only before it is attached to the missile. Drill out the six small holes around the periphery with a 1/32" drill.

Drill a 1/32" hole in the top of each upper leg, and insert a short (0.15") length of brass or steel wire. Insert the legs in the round base plate using the pins to locate them, turning each so the rectangular plates do not protrude beyond the edge. On the bottom of each upper leg is a small cube, and this cube sits into the top of the slot on the top of each lower leg. Work your way around the six legs, gluing each lower leg to upper leg. When done, remove the round base plate.

Cut six lengths of wire 0.5" long and roll on a flat surface to straighten them. Remove 0.2" of insulation from each one by cutting through with a sharp knife while rolling on a hard surface, and then stripping off that section. Voila. Six small hydraulic cylinders. Insert the bottom of each in the recess at the bottom of the slot in the lower leg, and gluing the top to the little tab on the bottom outside of the upper leg.

Remove the arm from its casting base and clean up. The arm is glued between the two bars on the rearmost lower leg, projecting down. The arm has a double ended lug on its end, and a hydraulic cylinder attaches between the lower end of the lug, and the slot between the two H section bars where they attach to the rear of the step box. To make the hydraulic cylinder cut the aluminum tube provided to 1.2" long. Cut a 0.25" length of the 0.060" dia rod, and glue it in one end of the tube projecting out 0.15". Cut the remaining 0.06" dia rod to 1.375" long. Use a pair of pliers and flatten the end to 0.040" thick. Sand the flattened end to a smooth curve. The rod slides inside the tube, so it can be glued in place between the arm and the other end. If you want to get fancy, you can drill out a hole in the flattened end and the arm and insert a small pin to allow the unit to pivot, or you can simply glue it in place once the base is attached to the lower frame.

Cut a length of 1/16" brass rod to 1.5" long. This will serve as the hinge pin, and can be inserted between frame and base to allow the whole upper section to fold back if desired.

Assembly of the Thor missile

Sand the mating surfaces of the two main missile bodies to give smooth mating surfaces. Tape together and check the fit against the tapered upper missile body. When satisfied, glue the two halves together.

The upper body was cast solid and quite heavy, so it has been roughly drilled out to save weight. Fit the upper body, taking care to match the cable ducts on both sides and glue in place.

Remove the nose cone from its casting plug and clean up the edge. Glue to the top of the missile.

Sand the back of the bottom ring and glue in place in the bottom end of the missile. Test fit the nozzle top into the central hole, but do not glue it in at this stage. Sand the bottom of the missile flat and glue the round base plate on. Note that the bars on the bottom are lined up with the cable ducts on the sides of the missile body.

Clean up the two vernier nozzles. These are glued to the round base plate, between the bars with the nozzle end flush against the outer edge of the missile. At this stage, it is most convenient to paint the entire missile gloss white. The nozzle can be painted and glued into the hole in the bottom ring. On rare colour photos of the RAF missiles, the nozzle appears to be painted a brick red. On USAF versions, it seems to be aluminum.

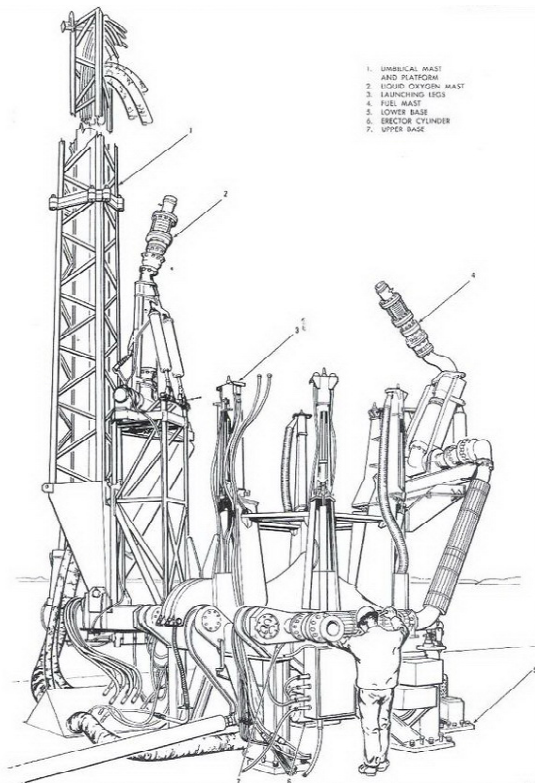
Apply decals per the scheme desired. My photos show a thin black strip right below the nose cone and this is way easier to do if you can find a decal stripe, but otherwise it could be masked and painted.

Final Assembly

Drill the six holes in the lower base plate deep enough to seat the pins sticking out of the lower legs. Insert the legs into the base plate and glue in position.

At right, an image of a Thor missile being raised into launch position. Note the additional fueling towers on the base stand, the triangular extension of the base plate, the lattice mast supporting cables up to the nose area and under the missile, the transport trailer. Note how the fuelling lines are pivoted at the hinge point and disappear under the sub-floor of the launch pad.



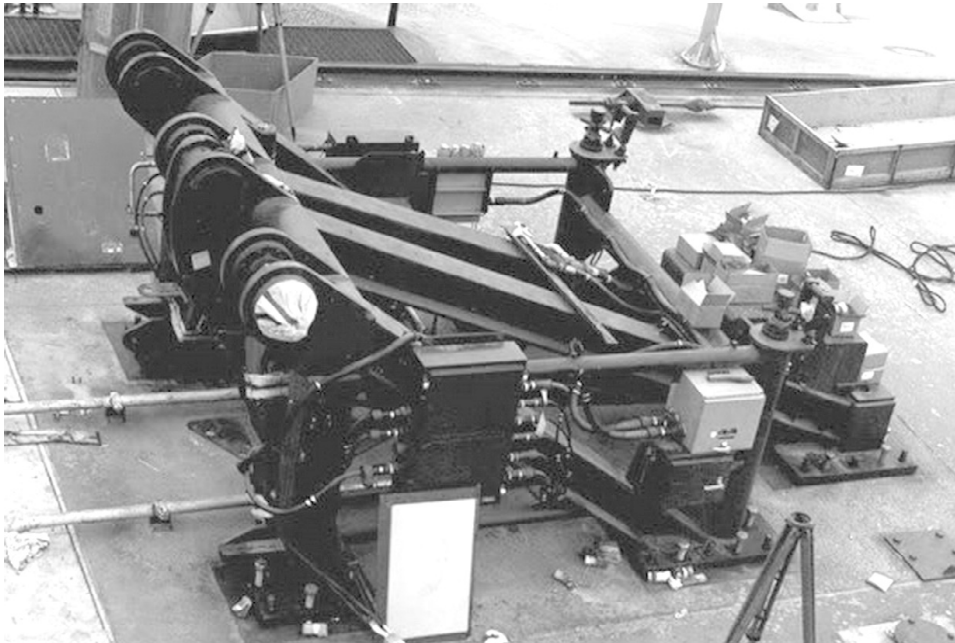
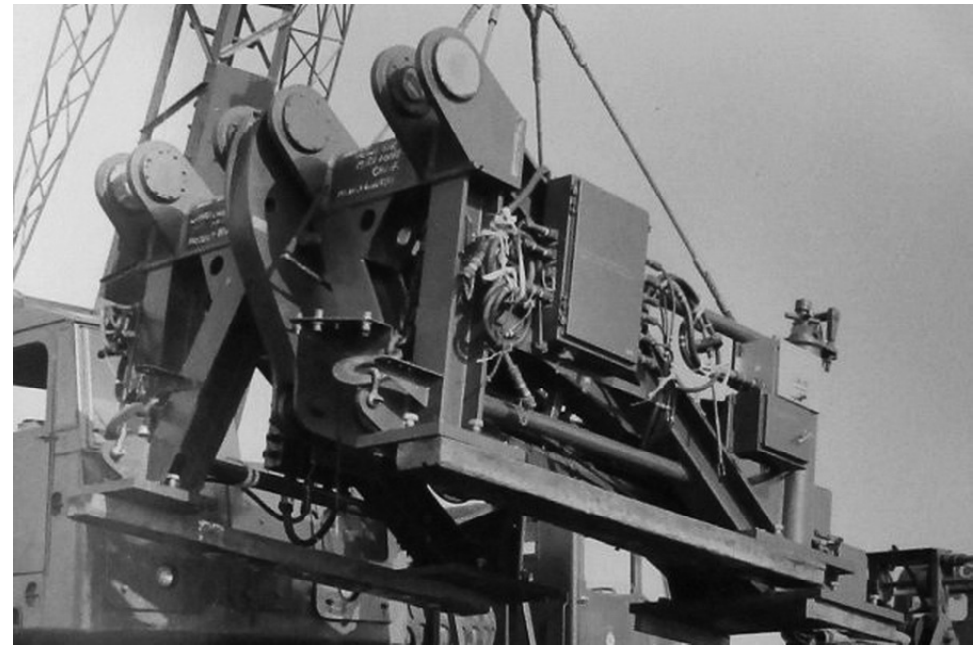


At left, an illustration from the manual showing the complexity of the complete launch stand.

Below, a view of the lower base without the hinged top section, apparently while under installation.

At right, a view of aa assembled base being hoisted.

All images were gleaned from the internet and original sources are unknown.

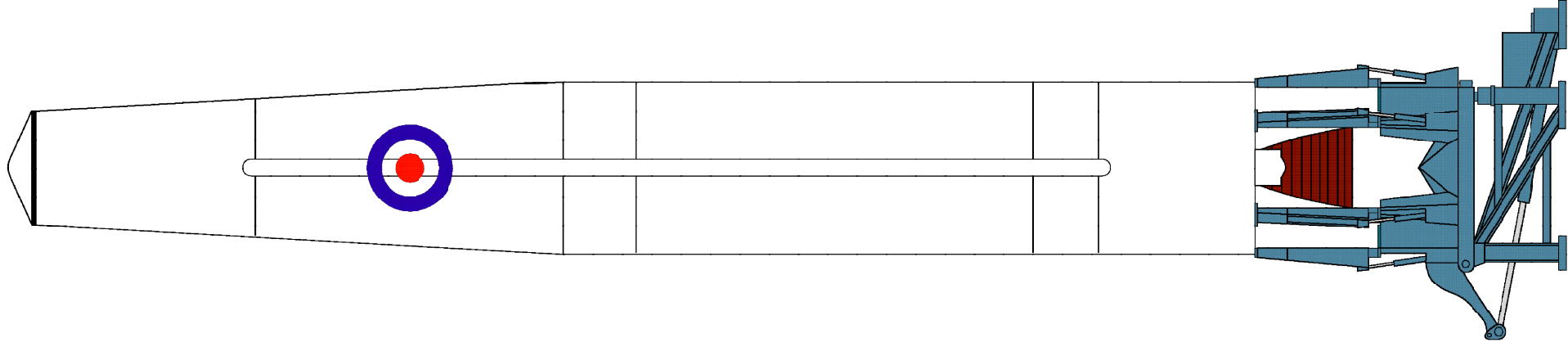


References and Further Reading

1. **Project Emily: Thor IRBM and the RAF**, John Boyes, History Press 2008
2. **Rockets of the World**, Peter Alway, Saturn Press, 1995
3. **US Guided Missiles**, Bill Yenne, Crecy Publishing 2012
4. **THORA study of a great weapon system**, Flight Magazine, 5 December 1958 (available online, and worth looking for. It is an extensive discussion of the entire weapon system)

At right, a view of a Thor missile being driven to a launch site on its transport trailer, which actually became part of the launcher. The rear wheels (note the auxiliary driver!) were removed once the trailer was hooked onto the launch stand.





RAF operational scheme 1963



USAF Museum scheme

References: Rockets of the World,
Peter Alway, 1997