

WHISTLE VALVE AND TURRET

The whistle valve and turret went together fairly well, though there were not any dimensions given for the placement of the bell crank pin. I gave myself about 1/16 of an inch of clearance from the bottom of the bell crank to the slot cut in the top cap. This should provide enough of a push to loosen the check ball and let steam through for the whistle.

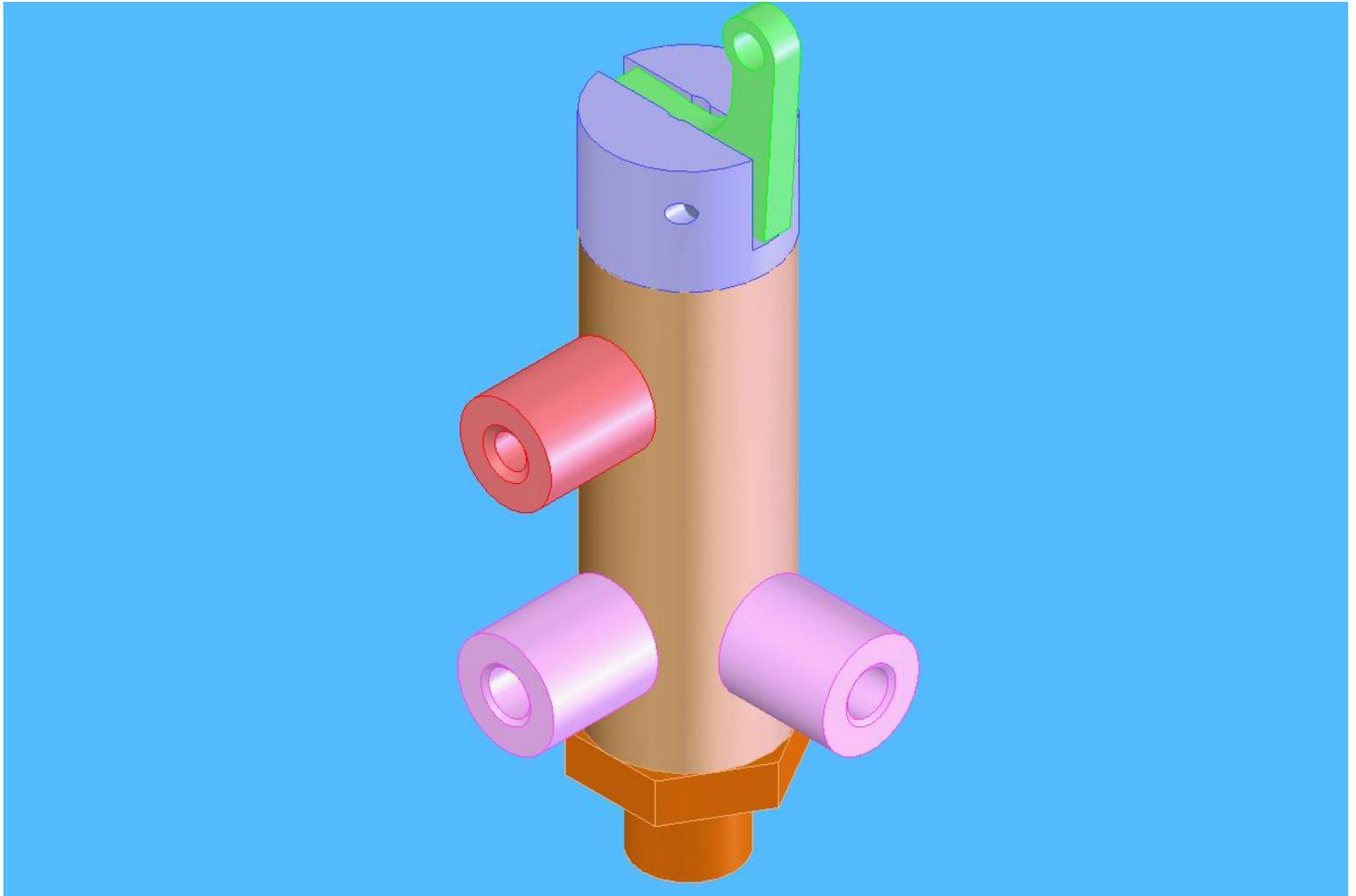


Figure 1; Whistle Valve and Turret Assembly

Figure 1 shows the whistle valve turret assembly and figure 2 shows the assembly cut in half to show the spring, ball, and rod. I also slightly domed the top of the rod where it meets the bottom of the bell crank, in doing this I think it should provided for a better sliding action between the two parts.

Figure 3 & 4 show the hole location I selected for the whistle valve turret, it is an 1/8 inch from center of hole to the end of the wrap. LBSC says to get as close as possible to the back head and then drill and tap for a 7/32-40 (I used 1/4-20) going thru both the wrap and the back-head flange. I believe there are a few things to consider here before proceeding.

Number 1, I dare not place the hole any closer to the edge of the outer wrap for fear of tear out. As it is the material, left after drilling the hole to the outer edge of the wrap is only .087 inches.

Number 2, the wrap as well as the back head is going to experience a dynamic load and by that I mean it is going to expand and contract from the heating and cooling of the boiler.

Number 3, when engaging threads of any kind it is always advisable to thread into the material at least as deep as the nominal diameter of the screw thread. The nominal diameter is .201; the thickness of both materials is $.093 + .125 = .218$, so as far as the thread engagement thickness goes we are good there. However, there will not be sufficient thread engagement in the flange due to how short the flange is; at best you are only going to have $\frac{3}{4}$ of a hole with $\frac{1}{4}$ of the hole open. Also, consider that when you pull the chain to sound the whistle you will be creating a torque at the valve turret.

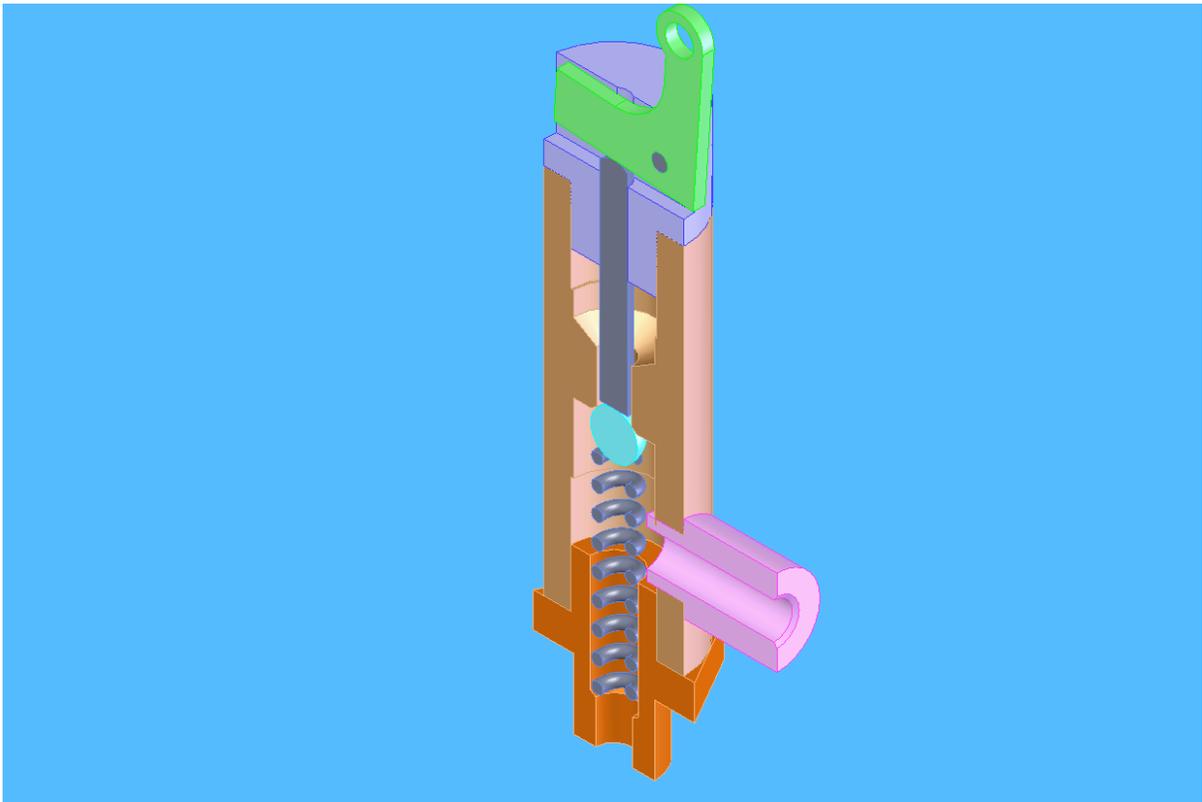


Figure 2: Section view showing interior of valve turret assembly.

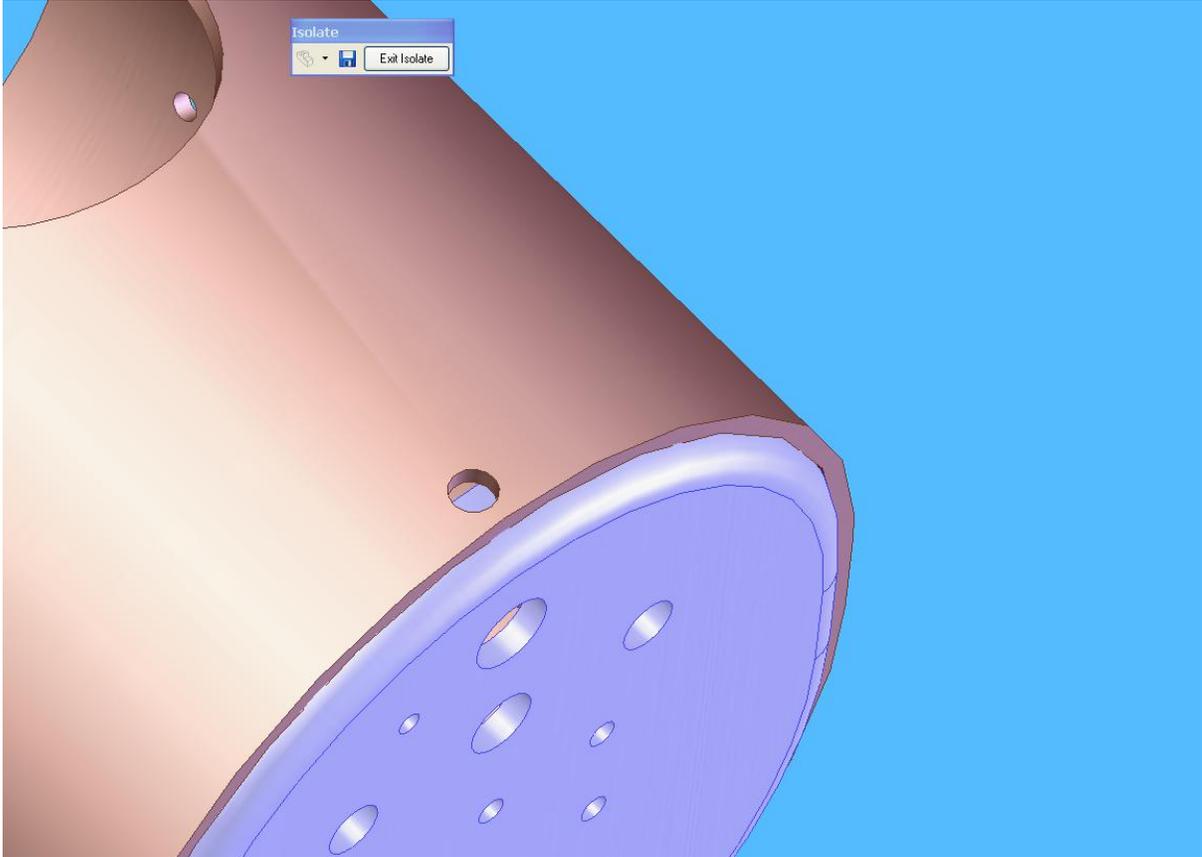


Figure 3: Hole for valve turret in the outer wrap of the boiler.

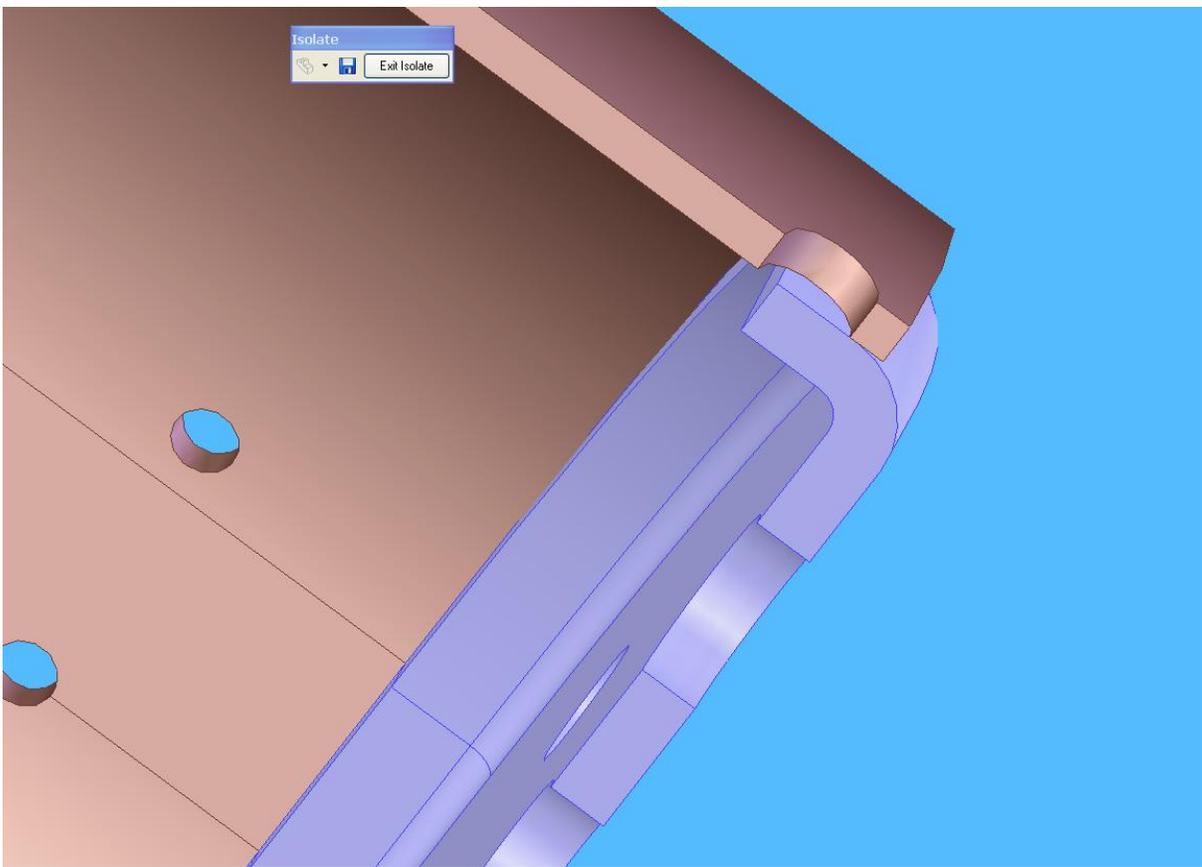


Figure 4: Cross section of hole placement in outer wrap.

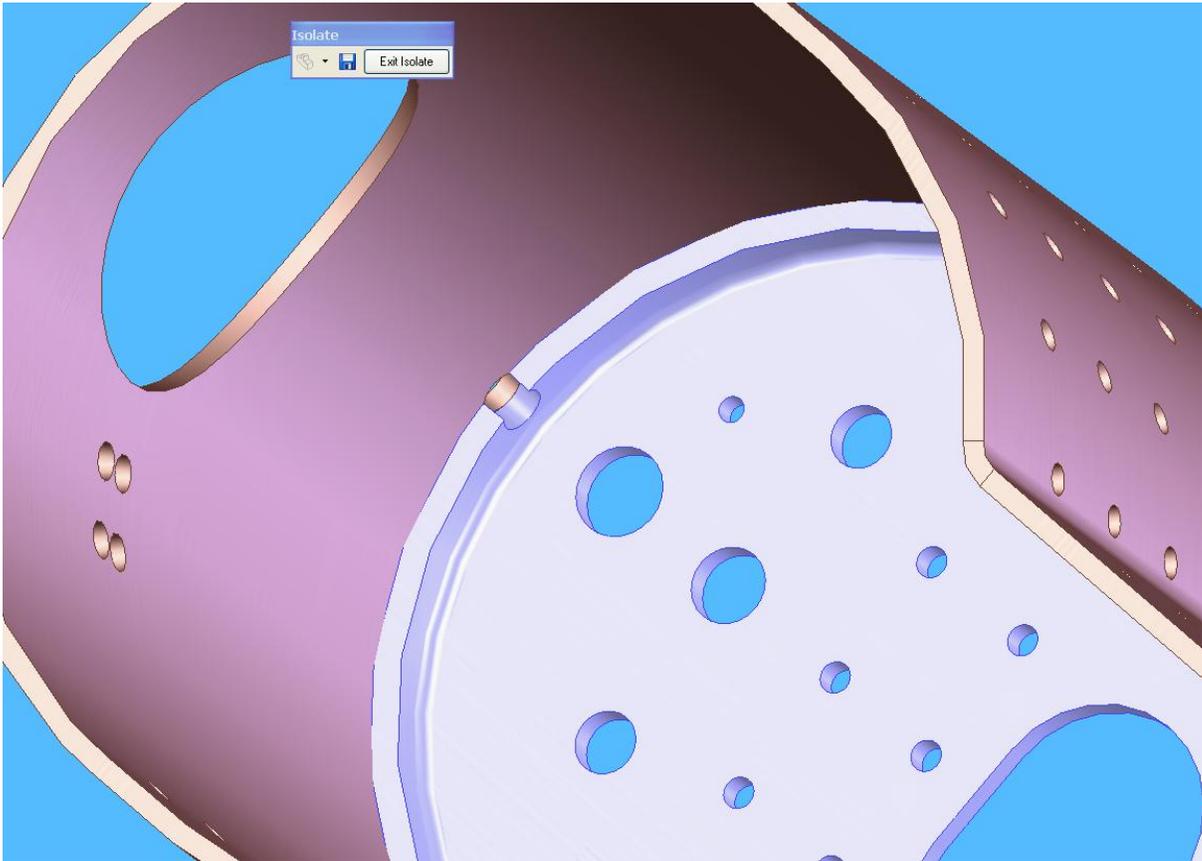


Figure 5: Hole thru the flange for the whistle turret.

Figure 5 shows the hole thru the outer wrap and thru the back head flange and as we see there just is not enough material for the hole thru the flange, this leaves a few options. Number 1 you can leave it like it is.

Number 2, you could extend the turret threads and fasten with a nut, you could also try soldering it in place as well. Number 3, you can extend the flange, albeit kind of late in the game to be doing this and in extending the flange you may have to notch your crown stays to accommodate.

On the other hand, you can simply put it elsewhere, but you will have to change the plumbing as well.

Me personally, I would extend the flange, I want that turret as rigid as possible. Consider not only that there will be a torque from the pull of the chain for the whistle but also, there will probably be a few pushes and pulls from the tubing that is connected to it and the fact both the flange and the outer wrap will experience expansion and contraction.

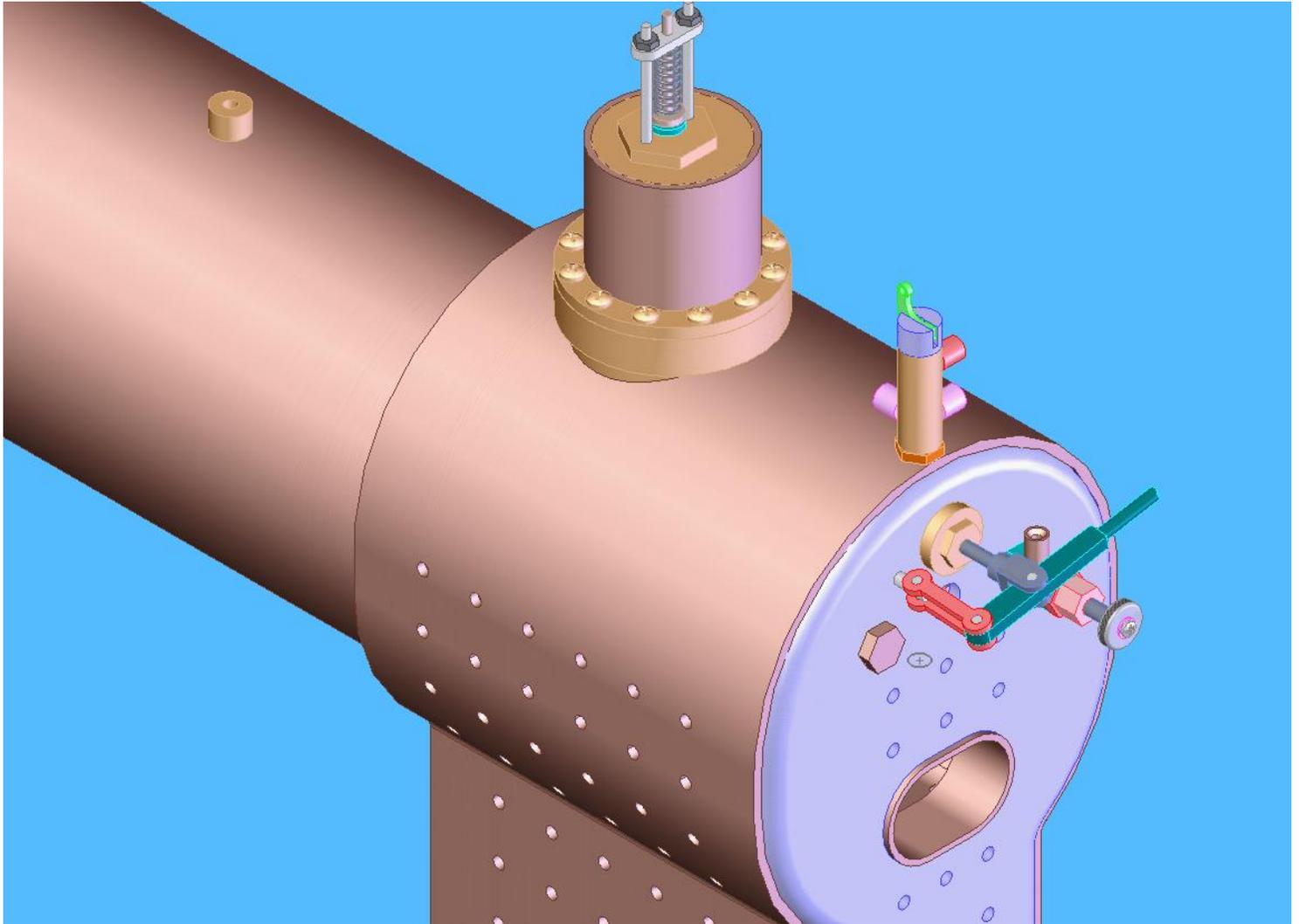


Figure 6: Whistle turret in place.

Figure 6 shows the placement of the whistle valve turret in the top of the outer wrap of the boiler.