

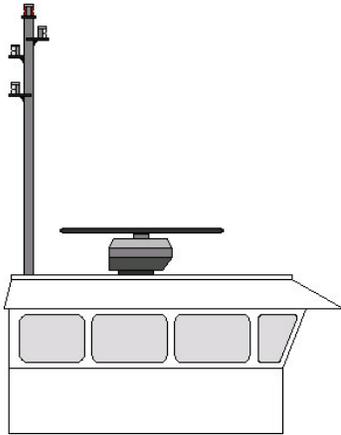
# Working Radar For Model Boats

## Tom Guglielmo

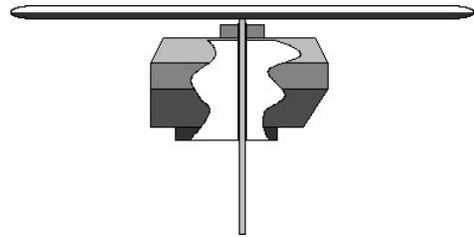
How would you like to have rotating radar for your model boat? To accomplish this is pretty straightforward and depending how scale looking you want it could range from very simple to fairly complex.

I'll first cover the simplest plan for getting working radar.

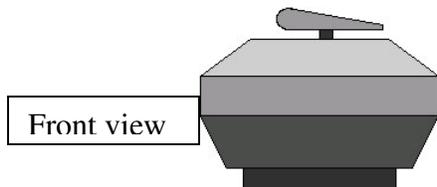
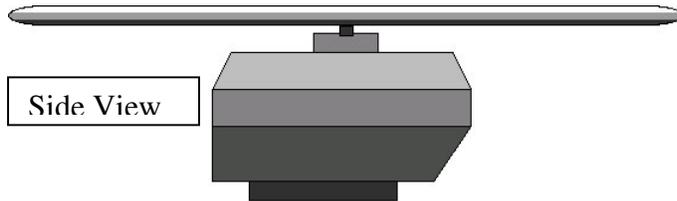
1) The first is a plan that has the radar unit mounted on top of the pilot house as seen below:



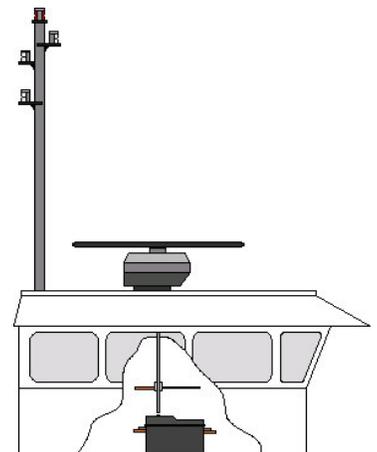
The first step is to buy or build your radar unit. This can be done with blocks of balsa sanded to shape or you can use styrene to build it up. The important thing to remember is that the radar bar (Rotating thing on top) is connected to a shaft that will rotate inside of a tube. So the important thing is to be sure and have enough support around this tube, as this is what will be supporting the radar bar as it rotates.



To give you an idea what a radar unit looks like here's a couple of pictures:



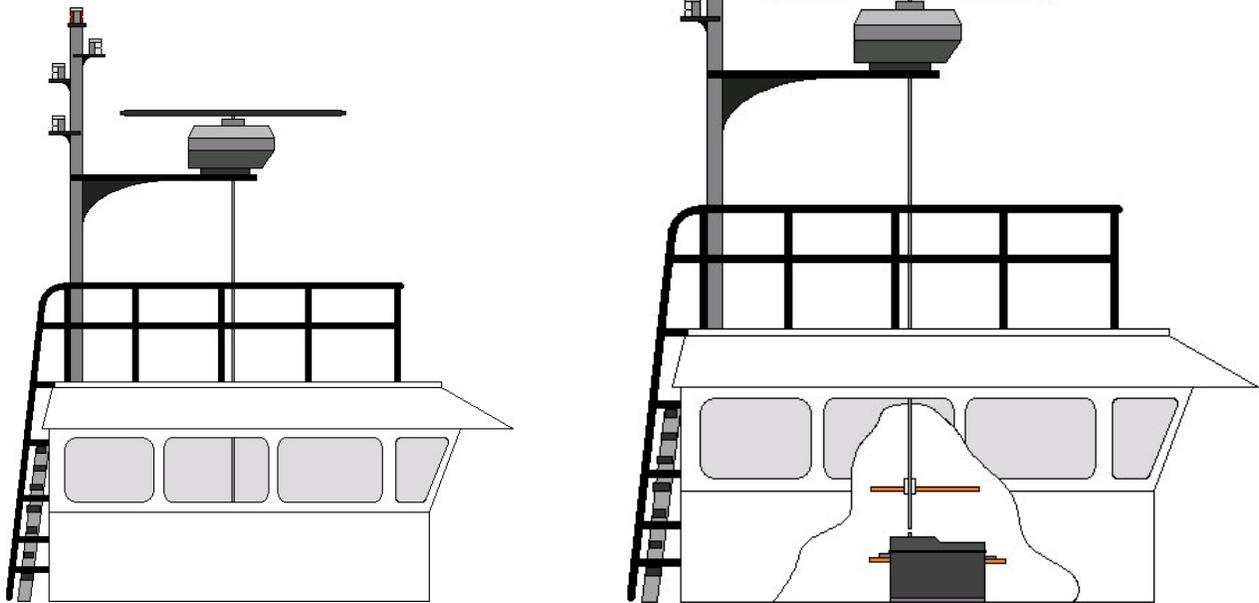
With this version all you do is run a shaft from the radar bar (Thing that rotates) down through the tube and is connected to a geared motor as seen to the left. This geared motor could be anything from a modified servo (More on this later) to a store bought gear system. Also note that there is a support bracket mounted internally to



support the shaft tube. Remember that if you accidentally bump the radar unit you would like to not see the thing fall apart.

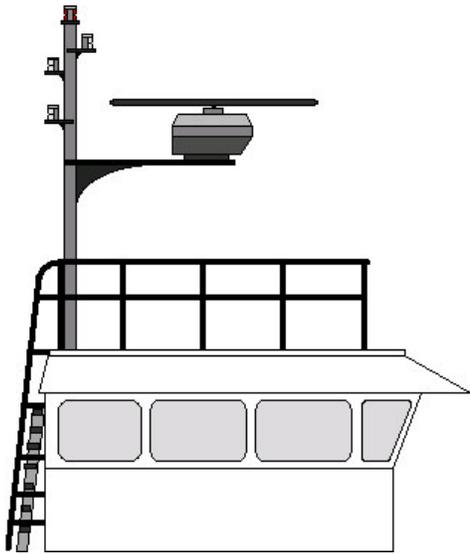
2) The second is a plan that is a little more scale (Remember the higher the radar scanner the more coverage they could get) that has the radar unit mounted on top of a platform that is mounted to a pole or light mast as seen below:

This version is very similar to the one above except that the radar unit is just mounted higher. The down side to this version is that you have the radar bar shaft sticking out in the open. This is a compromise as you have the scale looks and is still easy to make with the drawback being you have the shaft out in the open.



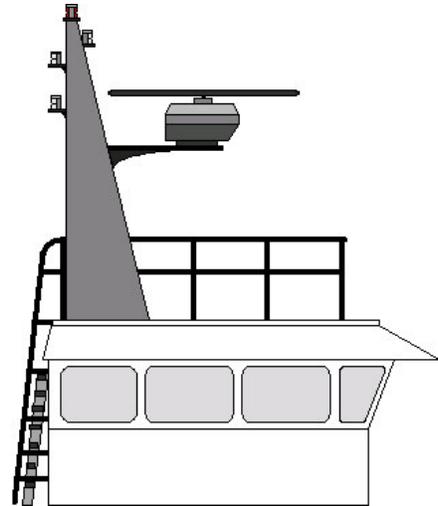
One tip would be to paint the drive shaft some color that would seem to blend in with you model. In other words if your boat and cabins are white then painting the shaft white would somewhat hide the shaft. Also my suggestion would be for you to build the light mast and support platform out of brass and silver solder this together. This would give you the greatest strength, which you will probably need as this piece will eventually get bumped and you want something pretty strong. Another benefit of building this out of brass would be that you could use the metal as a ground when hooking up your lights. Meaning that you only need to run one wire (Hot wire) from your lights down through the pole. The other wire would just need to be soldered to the tube close to where the light bulb is mounted. Then all you have to do is just ground the tube inside the cabin to a ground wire. There was an article on mast lighting in one of our previous newsletters that describes this technique.

3) The third is a plan that “is” scale which has the radar unit mounted on top of a platform that is mounted to a pole or light mast but through a series of pulleys has the drive shaft hidden in the support structure. A word of caution is that this is complicated to build but out of all three is the best looking.

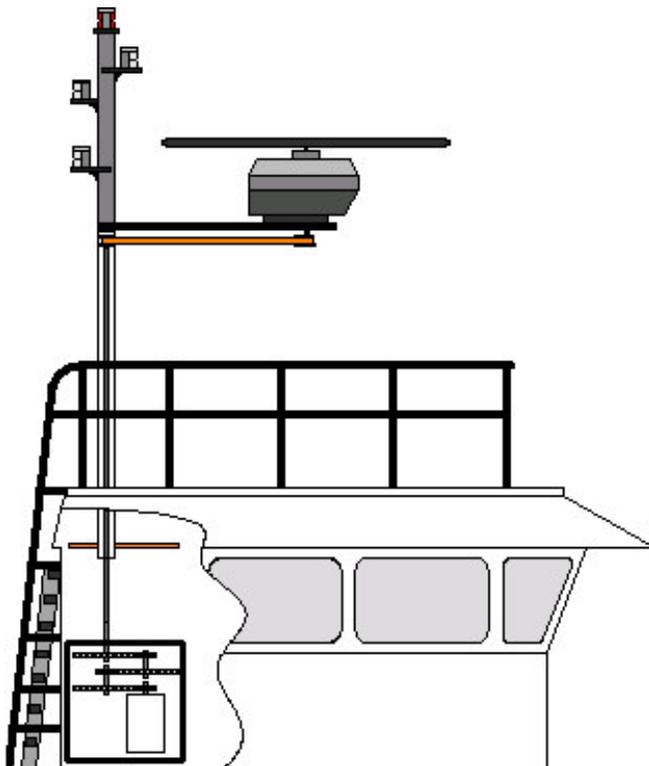


From this drawing you can see that there is no drive shaft seen. The drive mechanism is hidden in the light pole.

To the right is a drawing of the method that I used for my tug the difference between the one on the left and the one on the right is that my mast was more of a support tower so I was able to mount my motor inside the tower. I still used shafts and pulleys to drive the radar bar.



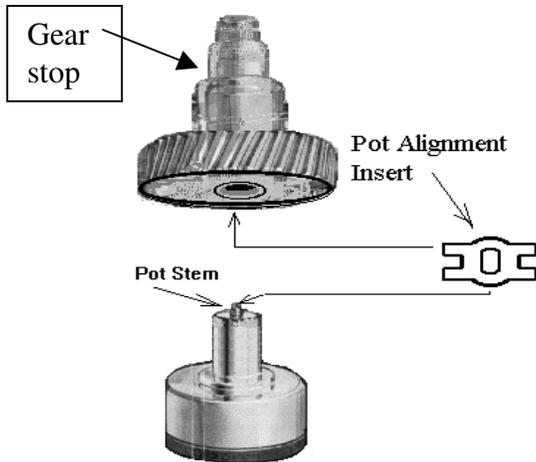
Below is a cutaway of how the pulleys and drive shaft is mounted and hooked up. Again while this is the best looking this is also the hardest to build. For pulleys I used several of my sons “Lego” pulleys, which were small and grooved just enough to allow a small rubber band to fit nicely around the pulleys. A hint is to use rubber O rings instead of rubber bands as rubber bands have a tendency to deteriorate over a short period of time and it’s a real pain trying to get a new one around the pulleys. Also note that the radar support brackets (Things on the side of the light mast that support the radar platform) perform an important role as the help strengthen the mast tube which is notched to allow the rubber O ring to go around the pulley inside the tube and out to drive the pulley under the radar unit. On mine I made a small lip all around the radar support platform so the rubber O ring is hidden.



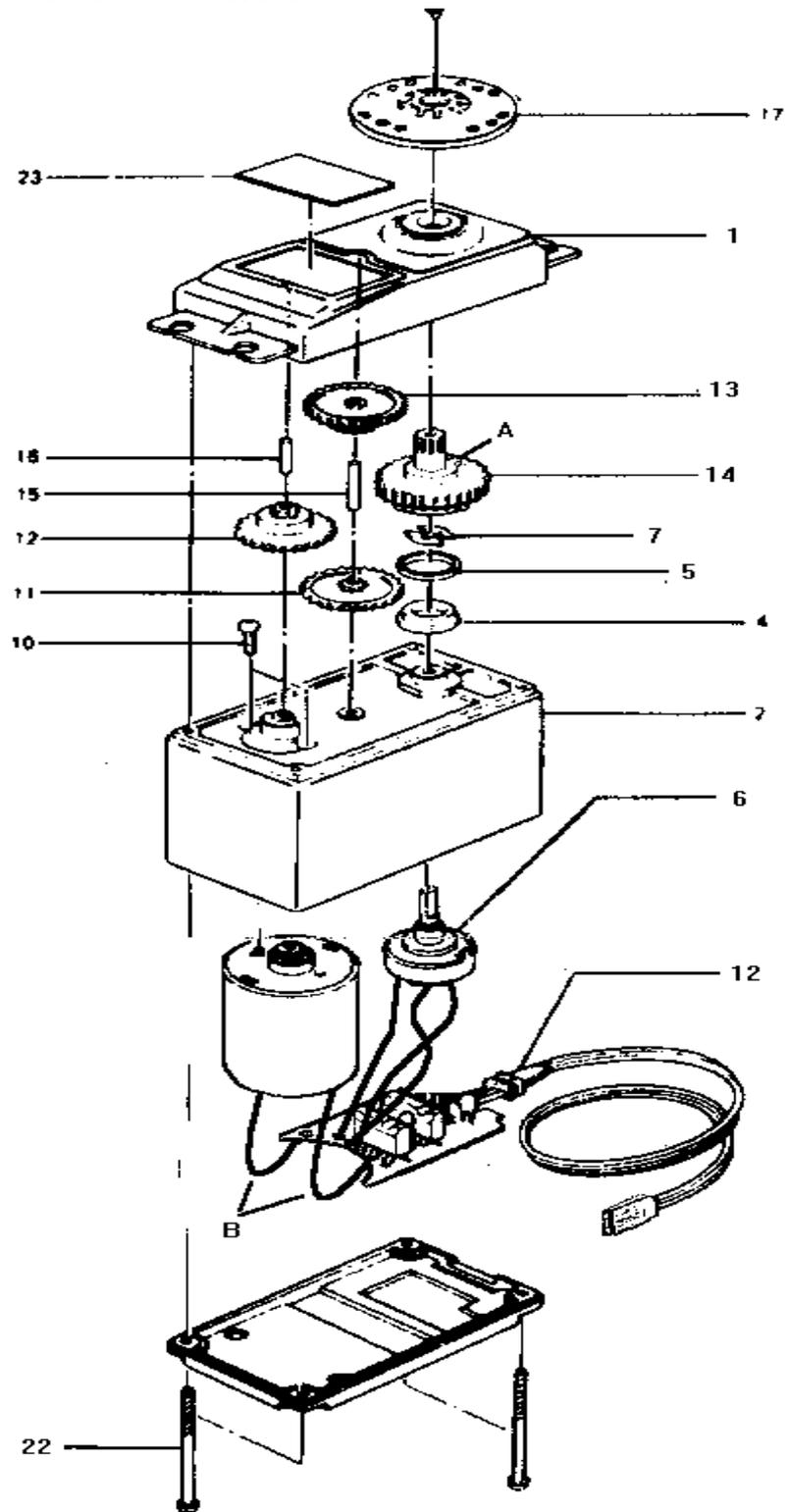
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## Servo Modifications for Radar

- 1) Remove four long retention screws (22) from bottom of servo.
- 2) Remove top servo gear cover. (1)
- 3) Remove center gear (13)
- 4) Remove pot gear (14) and cut gear stop from top of gear.



- 5) With small screwdriver remove pot alignment insert keeper ring (5)
- 6) Remove pot alignment insert (7)
- 7) Remove circuit board and motor.
- 8) Cut two motor wires at circuit board [8]
- 9) Cut three servo lead wires at circuit board [12] and discard circuit board and pot
- 11) Discard white wire and twist connect red and black wires to either motor wire.
- 12) Replace servo gears & cover
- 13) Remove servo connector and run black and red wires to 1.5 volt source.
- 14) If the rotation direction is wrong swap connections.



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