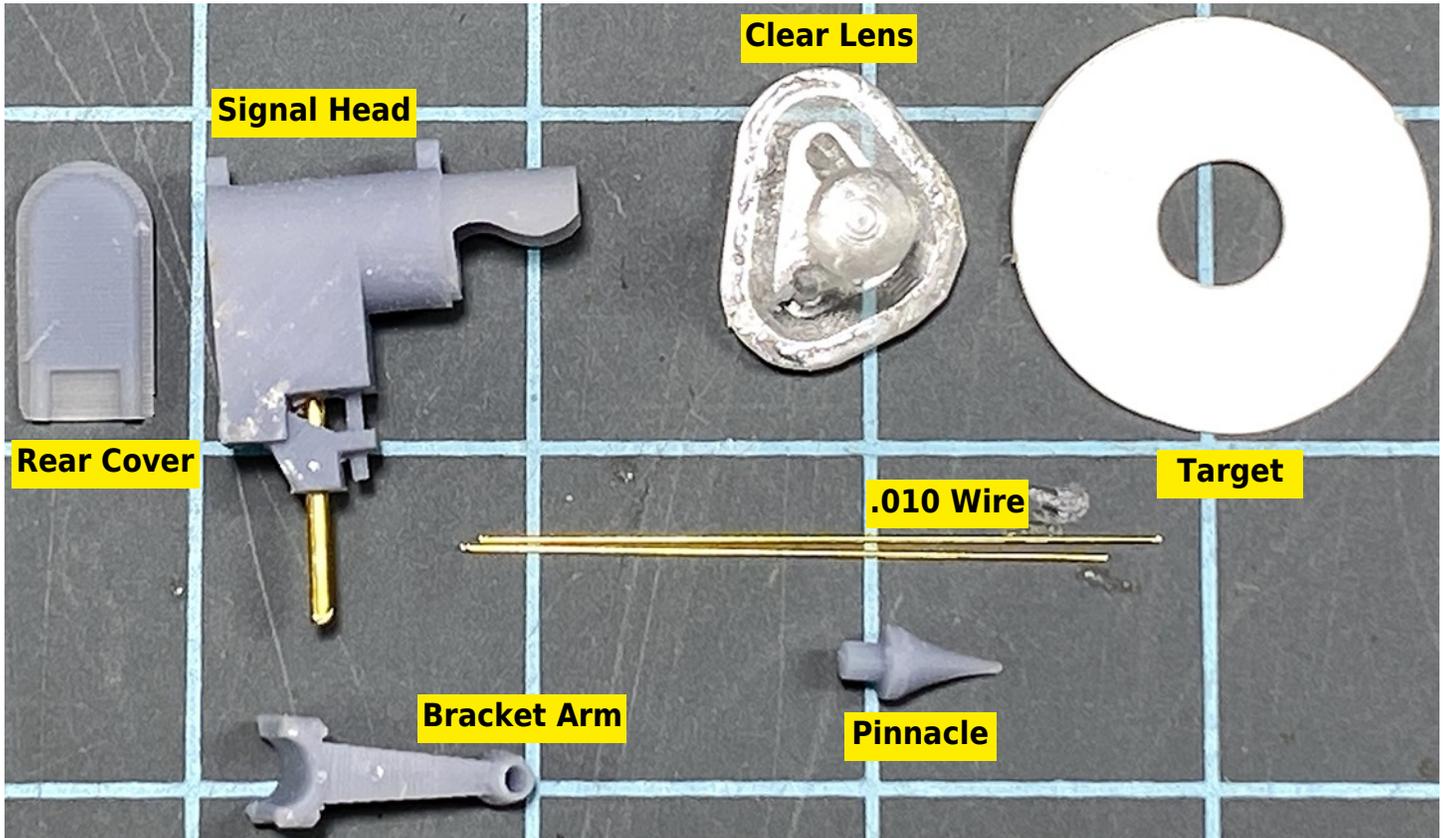


# MODEL RAILROAD RESOURCE LLC

## 3D DIVISION

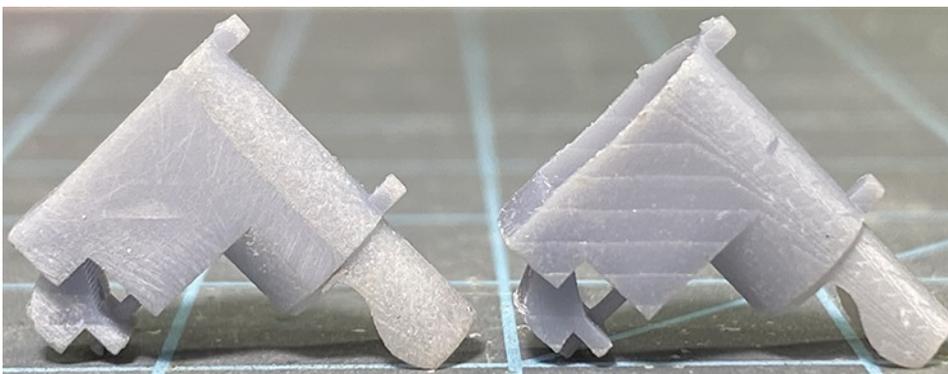
Thank you for purchasing our SA Color Light Signal. Please be careful as there are some very thin parts on the signal head. We recommend a good thin ACC type glue for assembly. **Please read through the instructions before starting the build.**

### WHAT YOU GET:

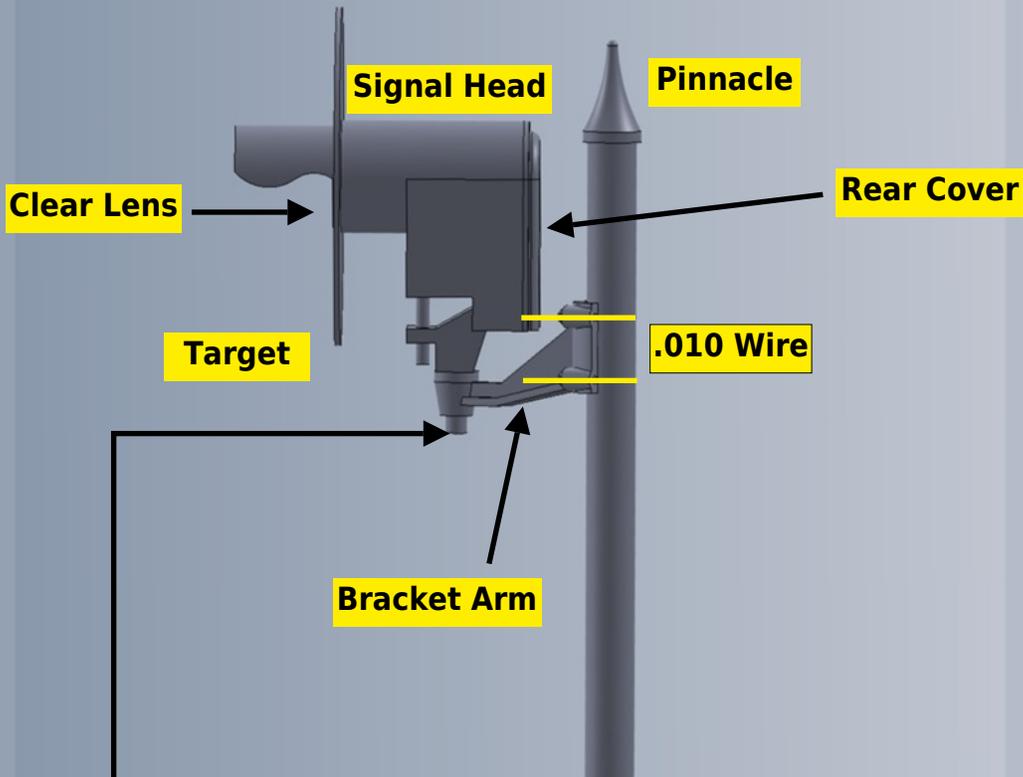


### WHAT YOU WILL NEED:

- 3/32 tube: (Brass: K&S #8126) OR (Aluminum K&S #8101) OR Plastruct tube.
- Bi-color or Tri-color LED
- Thin ACC
- Aleene's Clear Gel Tacky Glue, Canopy Glue or other clear glue if using a surface mount LED.

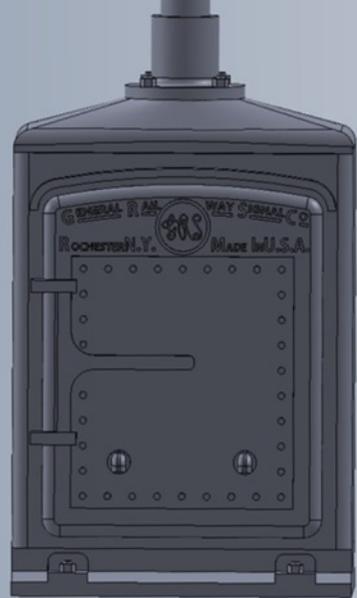


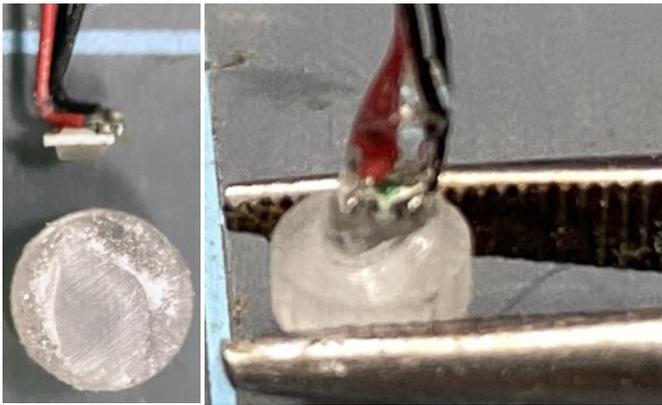
There may be some minor sanding needed on the parts. We removed all the supports, but there may be some small "bumps" where the supports were that will need to be sanded/filed off for a better fit.



**NEW Design:** The signal head, bracket arm and door are now made with a nylon type resin. This new resin is much less brittle and we no longer need a brass pin in the bottom of the signal head as it's part of the head assembly. The hole in the bracket has been sized for you so the head will fit and may be glued into any position you need.

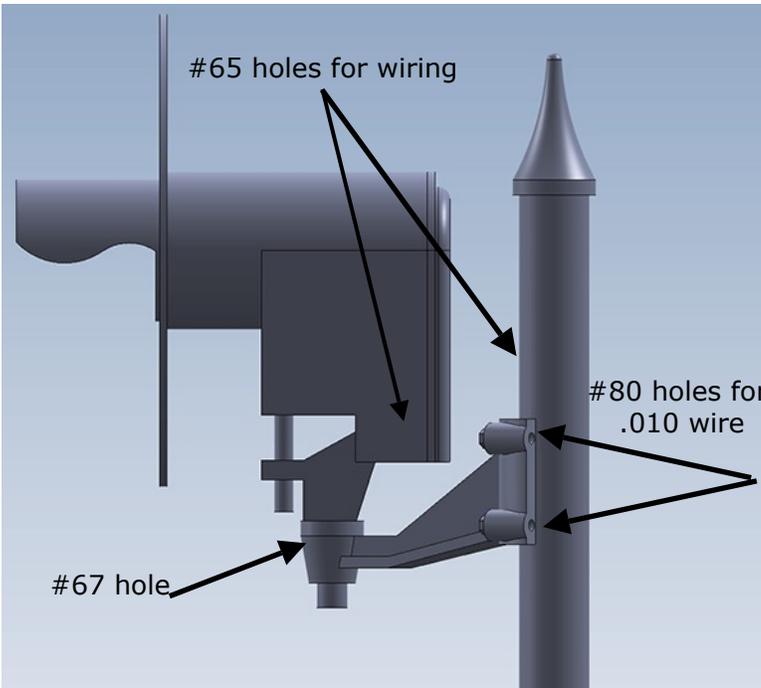
**Relay/Battery Box**  
 Your selection of RGRS-1,  
 RGRS-2 or RGRS-3,





You can use a 3mm LED for lighting, but a SMD 605 can be glued to the back of the clear lens and will be easier to install. We used Tony's TTX Ultra Micro Bicolor LED, 0605 Red & Green, 4 Pack, with resistors from Tony's Train Exchange.

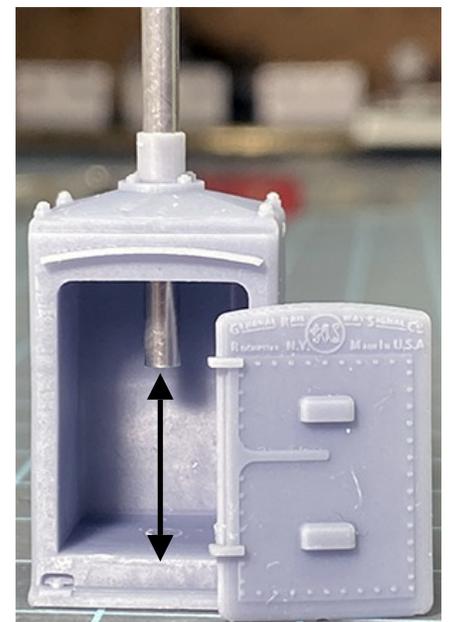
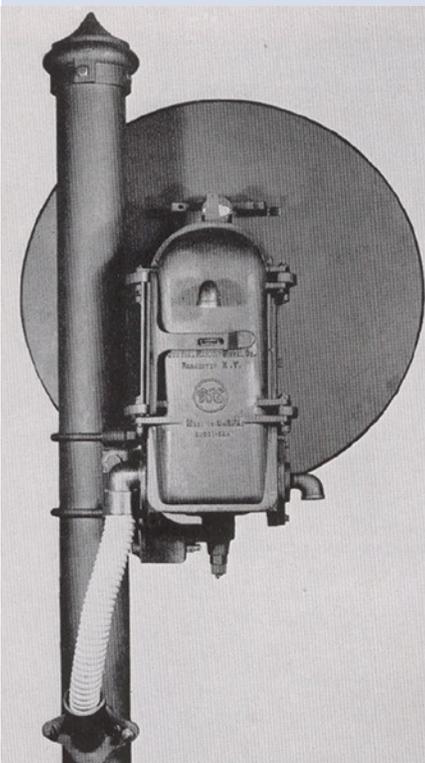
Rough up the rear of the lens using an emery board or fine sand paper. Cut the ends of the wires to a 45 degree angle and then using clear glue attach the LED to the lens.

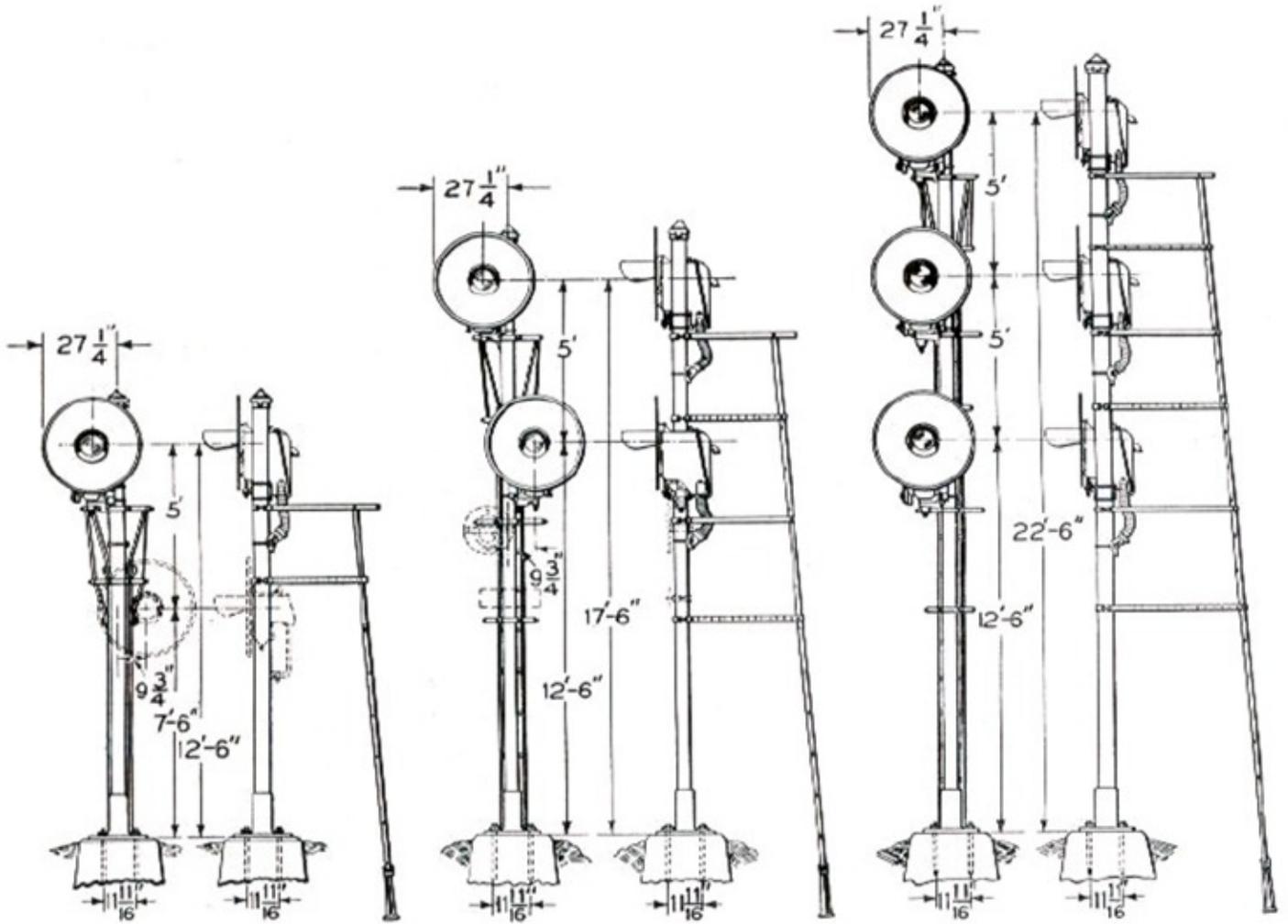


The signal head has four #80 holes and one #67 hole pre-drilled to size. The #65 holes, or whatever size you will need based on the wires you are using, will need to be drilled.

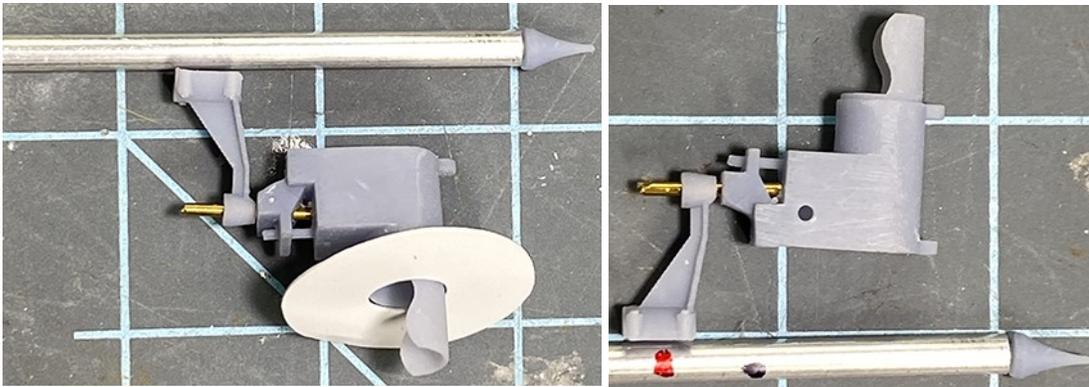
Note that on the actual signal, the wires come out the side or the bottom of the housing and then down to the pole. When drilling the hole into the side of the signal, be sure to go high enough to clear the solid base.

The height of the pole you use depends on the prototype, as well as, the terrain the signal is built on. Since you are mounting this on a box, you will have at least an inch or more of up and down play for adjustment.





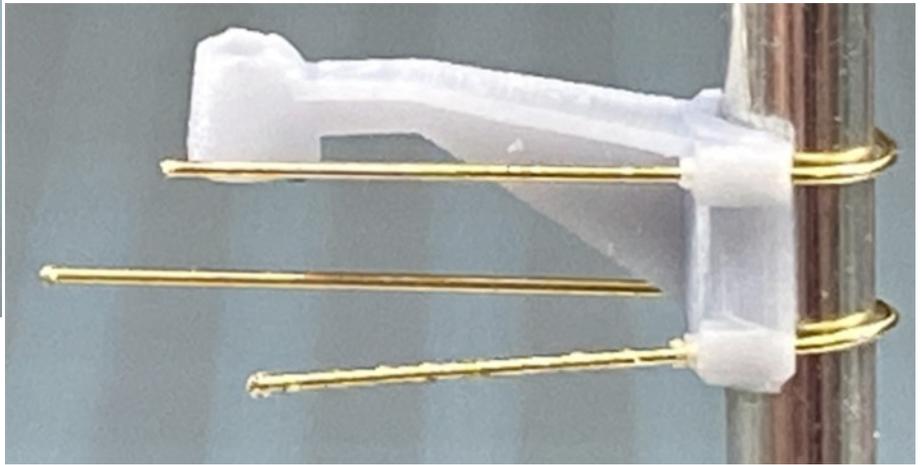
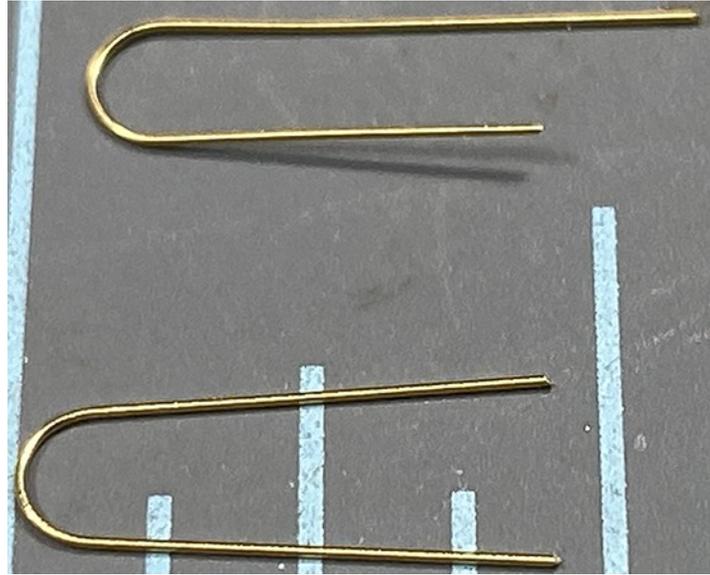
The diagram above is a guide for setting the height of the pole.



Do not glue, just simply lay out the signal head and mark where the bracket will be on the pole. Then mark the hole for the wires.

You will also need to drill a hole in the bottom of the box for the wires to run under the layout.

Now you need to decide on the paint color. Ours are silver with a black signal housing and target. Some railroads went all black. We did use a primer on all parts and then painted with a simple rattle can of Tamiya silver and black. Once dry, begin the assembly. In our case, the pole and bracket were the same color so we assembled those parts before painting as shown on next page.



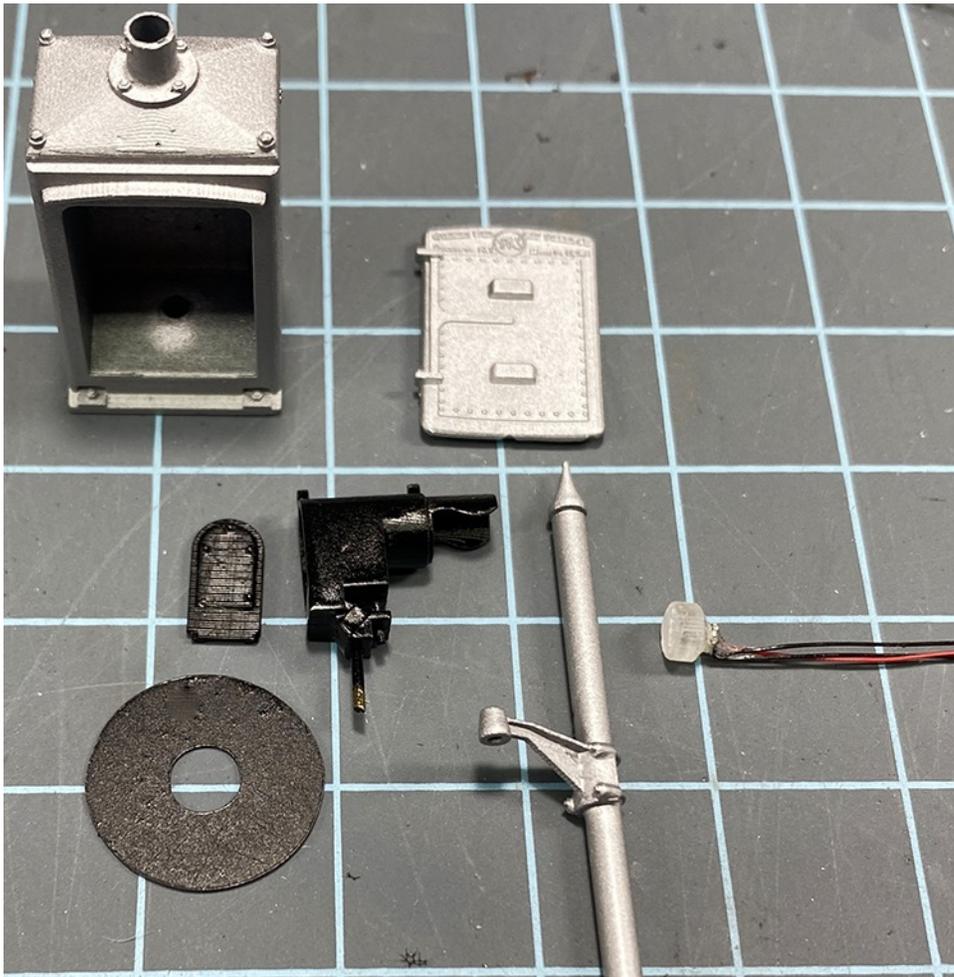
Glue the bracket to the pole using your guides from earlier. Once dry, bend the included .010 wire around the bottom of the pole to get the proper curve. Carefully push the wire through the holes for the U clamps and add ACC to the rear and to the wires where they pop through. After that is thoroughly dry, clip the wire flush with a good, sharp cutter.

It's at this point we went into painting. We used Mr. Surfacer 1000, but any good primer will do. You don't have to prime; however, it will cover and sanding marks or small printer lines. We then used Tamiya metallic silver (T'S-83) and black (T'S-14). Any good model paint will work once primed. Check your prototype for color.

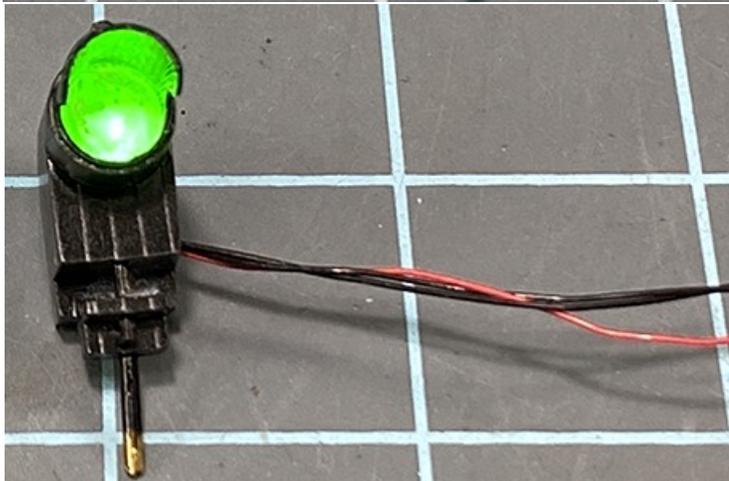
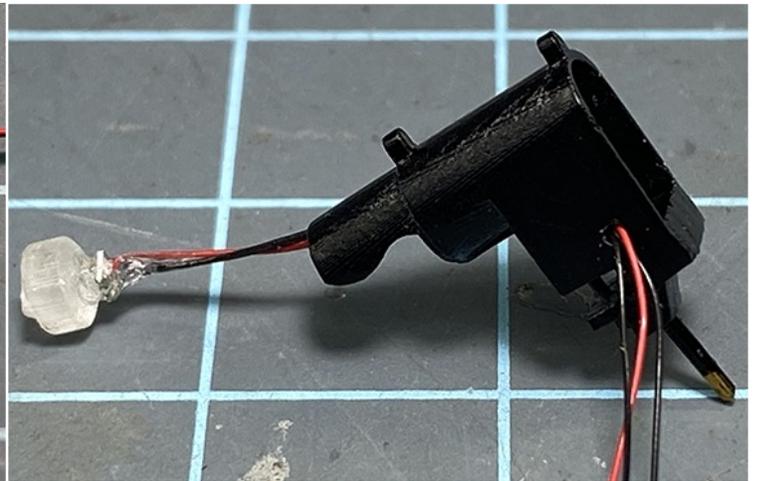
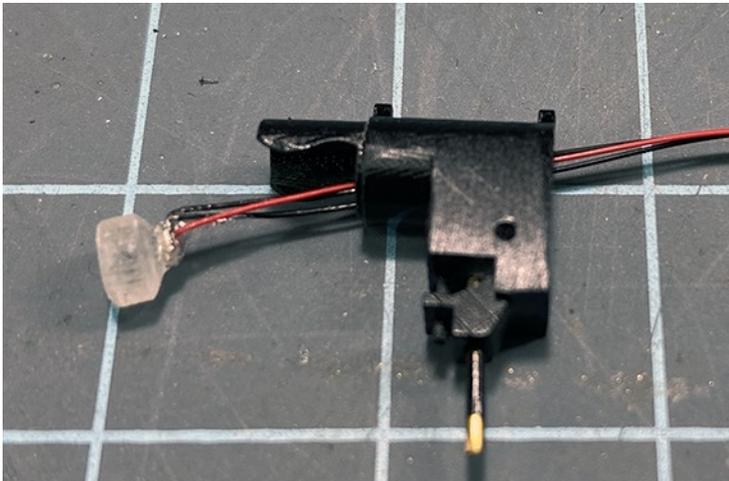
Once primed and painted, the parts are ready for assembly.



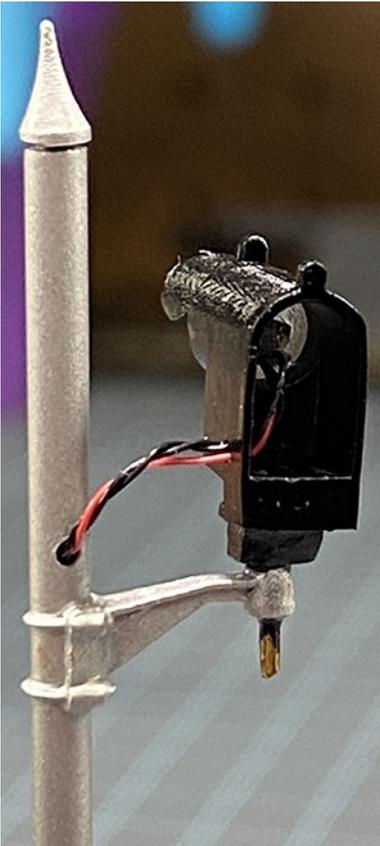
**NEW Design:** The signal head, bracket arm and door are now made with a nylon type resin. This new resin is much less brittle and we no longer need a brass pin in the bottom of the signal head as it's part of the head assembly. The hole in the bracket has been sized for you so the head will fit and may be glued into any position you need.



This assembly will vary depending on the lighting, if any, you are using. I ran the wiring with the LED/lens attached through the front of the head. Be careful as the shade is thin, and you don't want to damage it. Once the wiring is through, fish the wires out the side of the head. Now, slowly insert the lens inside the head and then carefully pull each wire taut inside. The lens will be a snug, but not super tight fit. If you get it catawampus, you can use a toothpick and gently push it out from the rear. Once in place, I did not use glue as it's a nice fit.



Now would be a good time to check the LED and make sure it works as the next step will be to run the wires through the pole and mount the head. Remember that a resistor will be needed when testing the LED on anything other than about 3 volts. We'll cover resistor values at the end.



With the head *NOT* attached run, each wire through the hole and down the pole. This may be tricky depending on the gauge of your wire. I had no problem with the LED I used. Magnet wire would be easier. If you have issues, you can make the hole in the pole a bit larger. Once the wires are through the pole, you can insert the pole in the box, but don't glue it. Note that because of the painting of the box and pole, the pole will be a tighter fit in the box. Be careful you don't break the collar on the box.

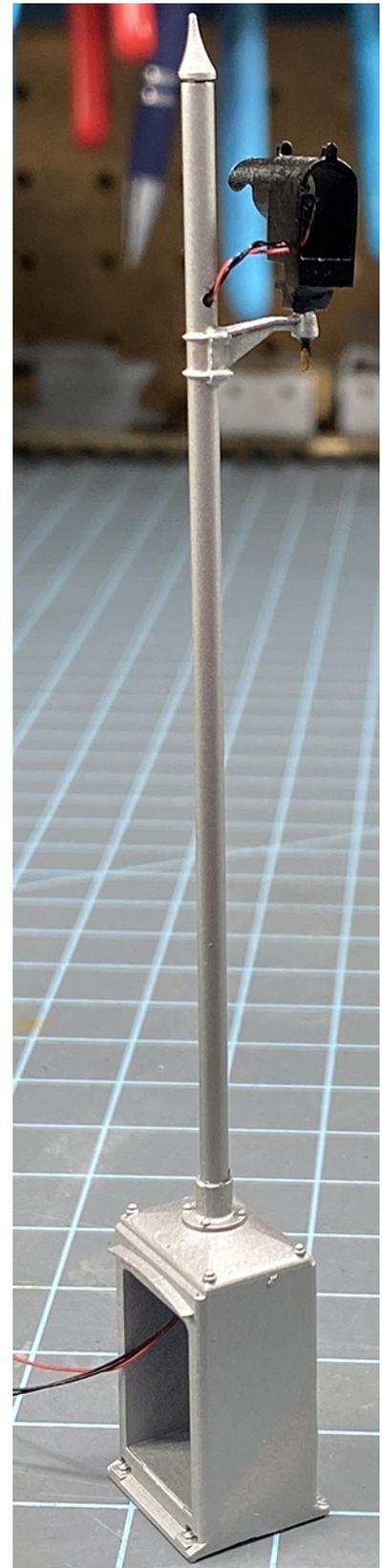
Glue the rear cover on the back of the signal head. There is an inside/outside of the rear cover. The side where you can see where the printer supports were removed faces in.

One thing I did was to twist the head around a few times to get the wires to twist into a tighter bundle. When the signal was fully assembled, I painted the bundle silver to make the colors match the pole.

Now glue the head to the support keeping it straight and aligned. The extra brass pin will be clipped off the bottom of the support after the assembly is dry.



The last step is the target. This is cut to fit and slips over the lens assembly.

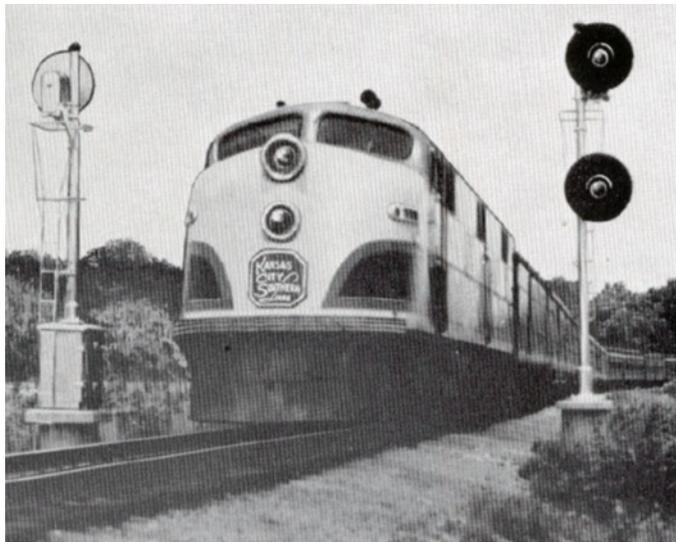




Drill a hole in the bottom of the box, run the wires out the bottom, and then glue on the door. You can hide the resistors inside the box or you can just run the wires through the box and add the resistors under the layout.

The resistor size, and how many, will be based on what LED you use. We can't cover all of the possible scenarios here. I will say that railroad signals are not Christmas trees so you don't want a super bright light. There can be light bleed if the LED is too bright. In my case, I used a 22K resistor for the green and a 2200K for the red running at 12V. You will need to experiment on the bench with your chosen LED before building.

For some options, with a longer pole you could create a double headed signal as shown below.



You can also add mileage markers and signal designation markers.

The following page will show the ladder dimensions if you want to scratch build those.

We hope you enjoy your new signal. If you have any questions, please send an email to [3dPrinting@modelrailroadresource.com](mailto:3dPrinting@modelrailroadresource.com).

The prototype images were taken from the GRS Bulletin 163, February 1932 and GRS Bulletin 176, October 1947.

Go to <http://www.rsignalpix.com/documents.php> for downloadable books from Zachary Gillihan.

If you want to add ladders and extra detail, here are the dimensions for the standard SC signal to help get you started.

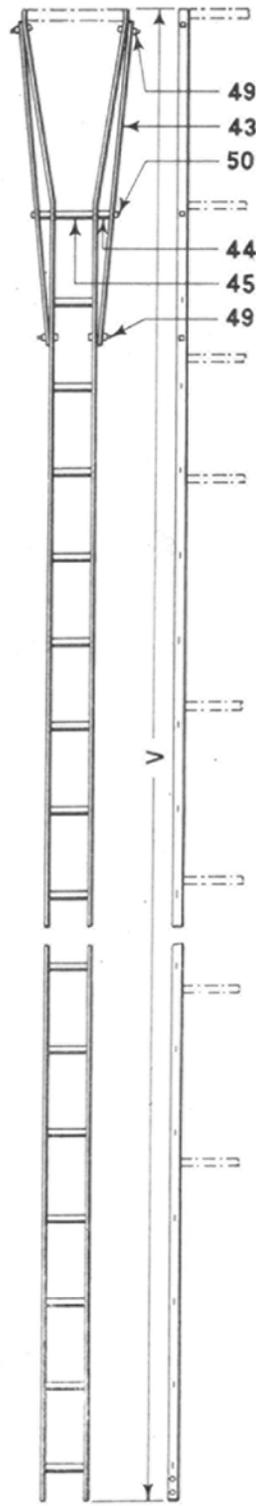


FIG. NO.	V
1	10'-0 <sup>10</sup> / <sub>16</sub> "
2	16'-0 <sup>10</sup> / <sub>16</sub> "
3	23'-7 <sup>10</sup> / <sub>16</sub> "
4	30'-5 <sup>10</sup> / <sub>16</sub> "
5	36'-5 <sup>10</sup> / <sub>16</sub> "

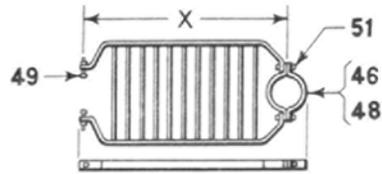
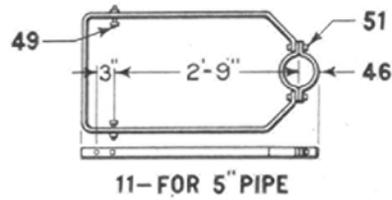


FIG. NO.	X
15- FOR 5" PIPE	3'-0"
16- FOR 5" PIPE	3'-7"
17- FOR SWAGED JOINT	3'-7"
18- FOR SWAGED JOINT	4'-1"

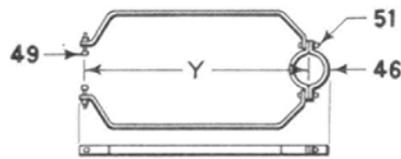
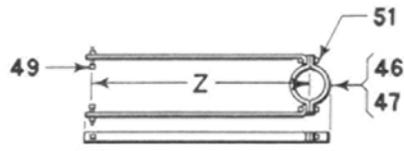


FIG. NO.	Y
12- FOR 5" PIPE	3'-0"
13- FOR 5" PIPE	3'-4"
14- FOR 5" PIPE	3'-10"



FOR 5" PIPE		FOR 6" PIPE	
FIG. NO.	Z	FIG. NO.	Z
19	1'-3 <sup>7</sup> / <sub>8</sub> "	31	2'-5 <sup>7</sup> / <sub>8</sub> "
20	1'-5"	32	3'-0 <sup>3</sup> / <sub>4</sub> "
21	2'-0"	33	3'-7 <sup>5</sup> / <sub>8</sub> "
22	2'-1"	34	3'-9 <sup>1</sup> / <sub>2</sub> "
23	2'-7 <sup>1</sup> / <sub>4</sub> "	35	4'-3 <sup>1</sup> / <sub>2</sub> "
24	2'-8"	36	4'-9 <sup>1</sup> / <sub>2</sub> "
25	3'-0"	37	4'-11 <sup>1</sup> / <sub>2</sub> "
26	3'-2"	38	5'-3 <sup>1</sup> / <sub>4</sub> "
27	3'-3 <sup>1</sup> / <sub>2</sub> "	39	5'-5 <sup>1</sup> / <sub>2</sub> "
28	3'-4"	40	5'-9 <sup>1</sup> / <sub>4</sub> "
29	3'-7 <sup>1</sup> / <sub>2</sub> "		
30	3'-9 <sup>1</sup> / <sub>2</sub> "		



FIG. NO.	W
6	10'-0"
7	15'-0"
8	23'-0"
9	30'-0"
10	36'-0"



### Ladders and Ladder Parts