



# ***RODDENBERRY.COM***

## **#PRP1782**

# ***Star Trek: Voyager "Endgame"*** **Science Mark OSX Tricorder** **Prop Kit Assembly Manual**



The Roddenberry.com *Star Trek: Voyager* “Endgame” Science Mark OSX Tricorder instructions are for making a non-functioning “dummy” prop as seen in the last episode of *Voyager*, which takes place 25 years after the crew made it back to Earth on a journey that started out from the other side of the galaxy, 70,000 light-years away.

This tricorder was designed for easier assembly than the older tricorder props, but some model and prop making experience will be helpful.

*To aid in adding an optional electronic circuit board to this Roddenberry.com kit either now or in the future, limited electronics preparation instructions are in italics, and some pictures reflect these modifications.*

***No electronic parts or circuit board installation instructions are included with this kit.***



## PARTS INCLUDED:

- 1 Top body (resin casting)
- 1 Bottom Body (resin casting)
- 1 Flap (resin casting)
- 1 Bottom Door (laser-cut styrene)
- 1 Flap Cover Door (laser-cut styrene)
- 1 Clear Screen Window
- 3 Hinges
- 12 Screws for hinges
- 8 @ 0-80 Screws for bottom doors
- 1 Ribbed Detail Plate (will be incorporated in future castings as part of the detail)
- 1 Graphics Sheet (printed vinyl sheet)
- 1 Front Acrylic Rod
- 1 Red Square

## TOOLS NEEDED:

- Dremel moto tool with a 1/8" or smaller cutting bit
- Drill with a 1/16" drill bit
- Pliers (needlenose or other)
- Screwdrivers (small jeweler's Philips screwdriver for the 0-80 screws, and a larger one for the hinge screws)
- Scissors
- Hobby knife (X-acto brand or similar)
- Plastic straightedge (a ruler or drafter's triangle – see-through is helpful but not necessary)

## SUPPLIES NEEDED:

- Cyanoacrylate (CA) glue, medium gap filling recommended; and CA cure accelerator
- Bondo plastic filler, and automotive spot putty
- Sandpaper (220-320 grit rough sanding, 400-600 grit finish sanding)
- Testors Clear Parts Cement

## OPTIONAL TOOLS AND MATERIALS:

- Soldering iron with solder, wire (24ga. or thinner)
- 1/8" drill bit, and a countersink bit
- Self-healing cutting pad (available at art supply stores)
- 5-minute epoxy (clear type)
- Baking soda (bicarbonate of soda)

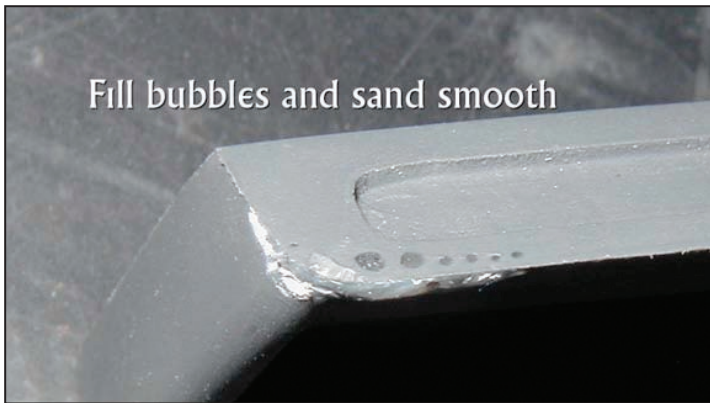
## PAINTS NEEDED [spray paints unless noted]:

- Primer (sandable-type recommended)
- Medium metallic gray, such as Plastikote Medium Charcoal Gray or similar
- Plastikote Black Metallic (small can)
- Brush paints (Tamiya, Testors, or your choice of brand):  
Black (flat or semi-gloss), Gold, Copper, and Metallic Brown (Plastikote Dark Brown Metallic #1552 or #1078 (big can) or #FM8074 (small can), or a small jar of hobby paint if you can find it)



**Step 1:** Wash your resin parts with a chlorine-based cleaner such as Ajax or Comet brands and rinse with water to remove traces of mold release, which might interfere with the eventual paint finish.

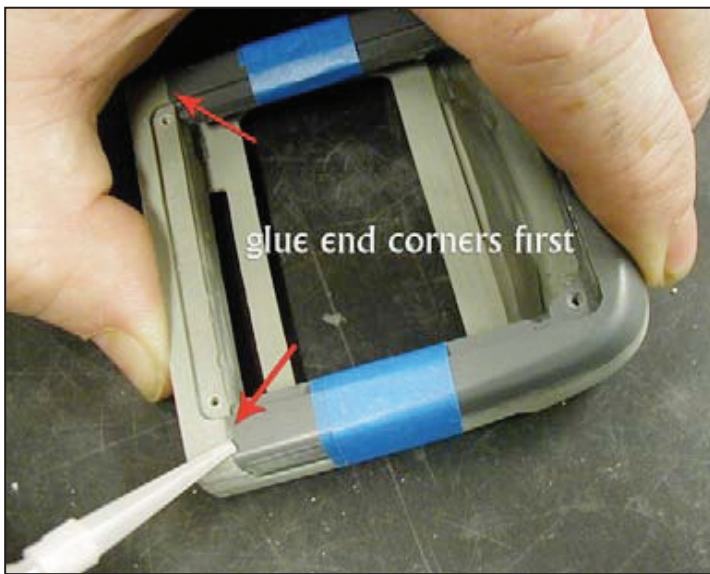
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**Step 2:** Sand all mold lines/flashing and molding sprues until smooth, making sure you also lightly sand the inside edge of the display screen hole. Fill in any bubbles in the castings with CA glue or bondo. You may need to use your hobby knife to poke through any suspected voids, and pay particular attention to the pointy edge of the flap.

Also sand the flashing from the two bottom doors.

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**Step 3:** Now you will glue the two body halves. Sand as much flashing as possible from the parts. You will have gaps at the back (hinge) ends of the "U" piece – remove any material that is keeping those ends from closing together, as this will also make the front curved seam more even.

Hold the parts together as best you can evenly – use tape to hold them together if necessary – then glue the two ends of the "U" first.





**Step 4:** Once cured, push the front corners together so they are as even with each other as possible and glue the front corners only.



**Step 5:** After curing, you may screw the bottom door on the body and take care it goes in the right direction, as the holes are not symmetrical because of how the master sculpture was made. When the door is secure, clamp the sides closed with your hand and glue together. Also put some in the front detail side – make sure you don't have any excess glue blobbing up in there – you can glue this seam from the inside if you like.

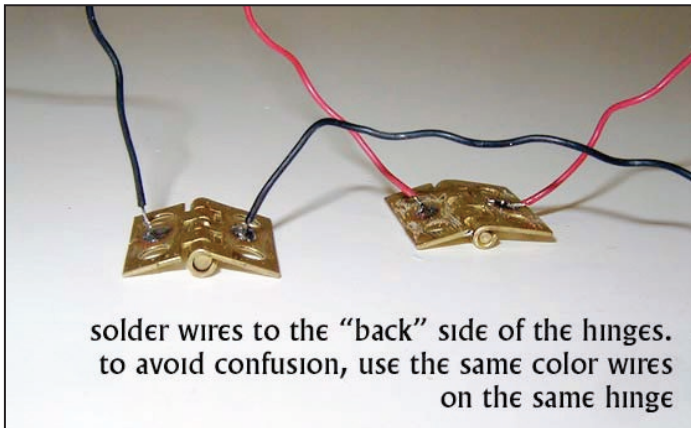


**Step 6:** The screw holes in the flap door are placed where they are because of how the master flap part was originally made with an interior cavity not even on all sides, and original props were put together with the cover permanently glued on with the circuit board in place. Because of this, the cast-in screw inserts are not even and the flap door will fit best in one direction only, so all you need to do is screw the cover on for now.

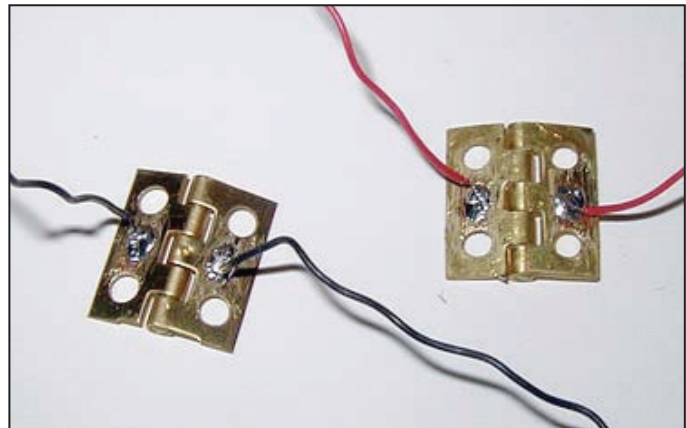
If you intend to make a dummy tricorder only without ever intending to install electronics, you have the alternative of simply gluing the flap cover door on, and later on you will bondo the seams and holes and sand for a smooth surface. Be sure of your decision -- if you change your mind later, you will cause considerable damage by attempting to pry a glued cover off, so using the screws is recommended.



**Step 7:** *Optional electronics preparation: You will need to glue a magnet somewhere inside the flap cavity, the actual location depends on the circuit board you have in order for it to activate a reed switch in the main body.*



solder wires to the "back" side of the hinges.  
to avoid confusion, use the same color wires  
on the same hinge



**Step 8:** *Optional electronics preparation: get 4 lengths of wire about 3" long for each hinge leaf – 24-gauge or smaller will work; they don't need to be very thick. To make it easier for you in wiring your tricorder, use two different colors of wire such as red and black, and be sure you'll remember which wire/color is positive and which one is negative/ground as you'll be wiring your circuit board into the flap, and you'll need to know the difference when wiring to your main circuit board/battery. Scrape clean the places on the hinges you'll be wiring, which will be the opposite side from where the hinge axle is; you may be scraping a protective clear lacquer from the hinge surface. Solder the wires to the hinges, being sure you use the same color wire on each hinge so one hinge will have two red wires and the other will have black, or whatever colors you wish to use.*



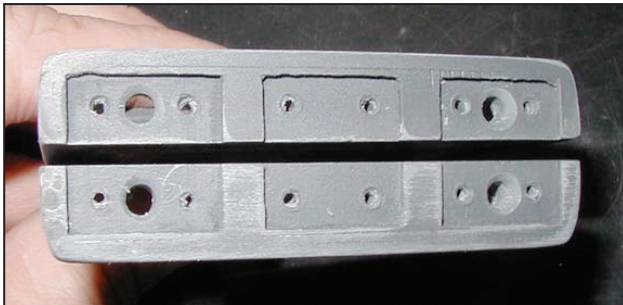
**Step 9:** Carefully 1/16" drill all 12 screw holes no more than 1/2" in the flap and main body for the hinges.

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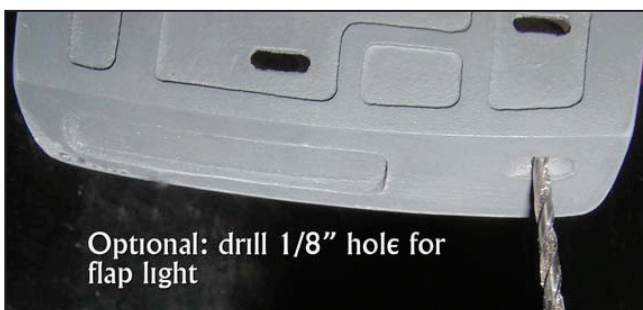
**Step 10:** For wired hinges, drill a 1/8" center hole in the two outer hinge slots of both body and flap, large enough for a wire to be put through. You may also want to countersink in slight depressions in the flap where you've drilled these center holes; that will make room for the wire to hinge solder joints so the hinges can sit flat in their slots.

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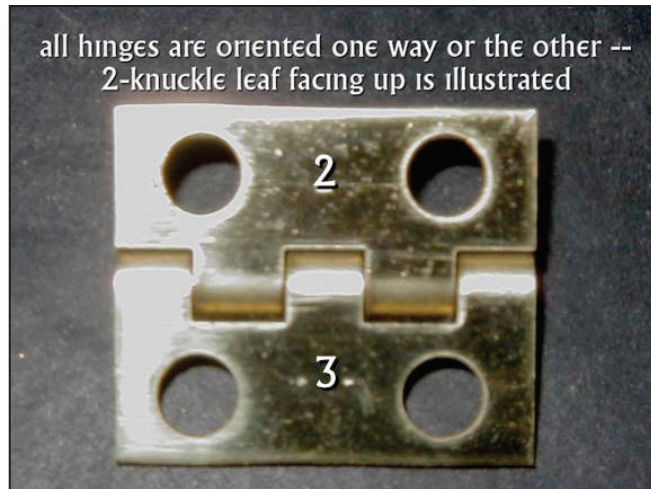
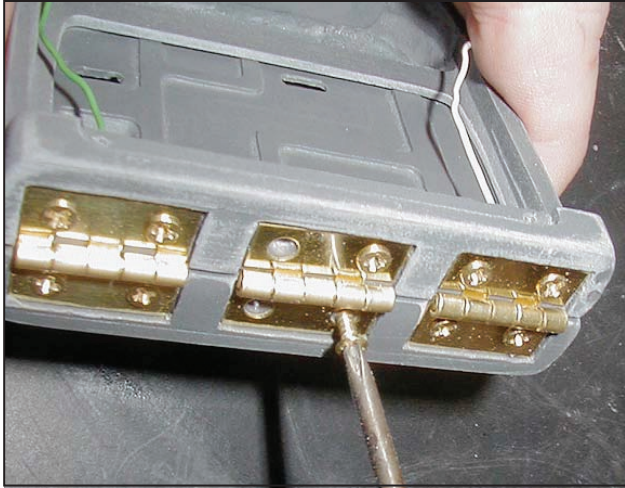
**Step 11:** Hinge face with all holes drilled.

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**Step 12:** Drill a 1/8" hole in the far right depression of the flap edge, and if desired, enlarge this hole into a slot with your Dremel tool. Be sure you're angling the drill bit so it goes in the flap well.

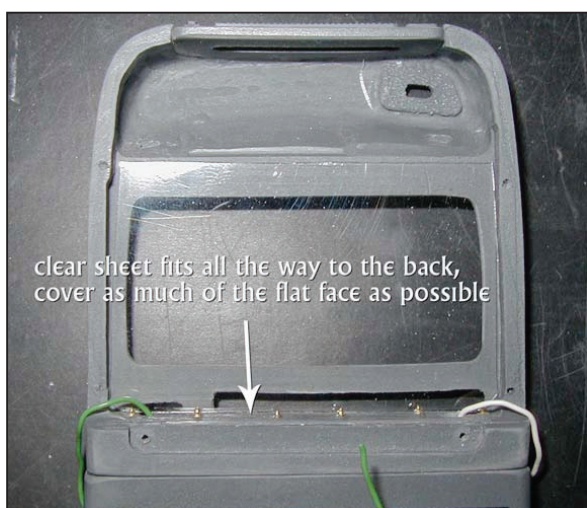
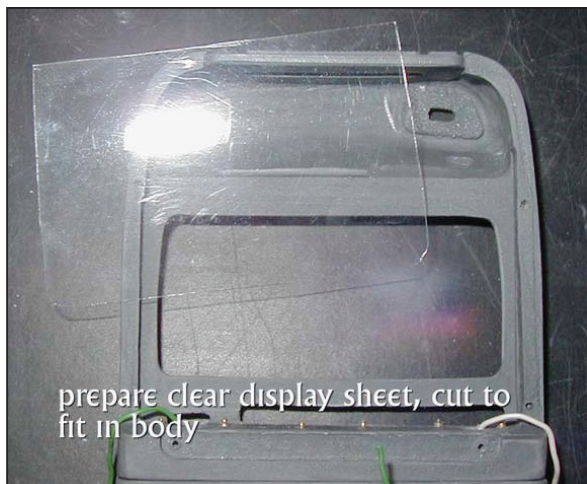




**Step 13:** Screw the hinges to the parts. You will find that this particular tricorder was designed to make it much easier to put the hinges on straight than any of the other original tricorder props. You may use a .010 - .020 shim in between the body and the flap if you wish to keep the two parts apart, necessary to keep from damaging the paint finish of the two surfaces where they meet when the tricorder is closed. Make sure the hinges are all oriented the same way – whichever way the hinge is (the 2 side or the 3 side) to the flap should be the same on all hinges.

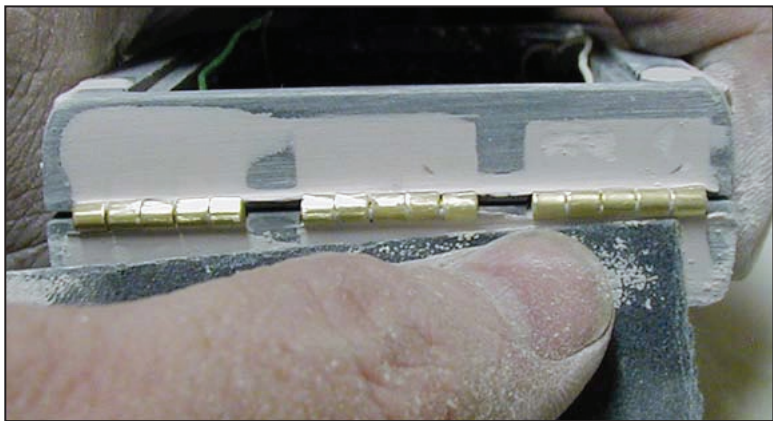
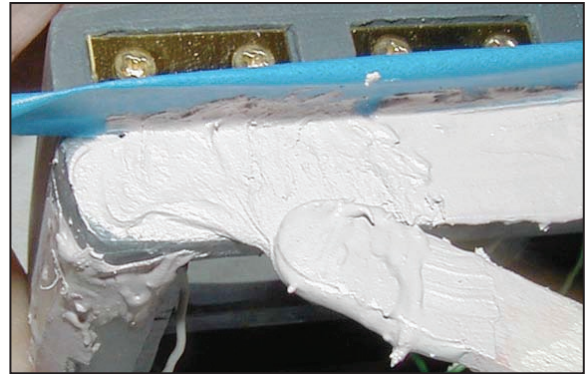
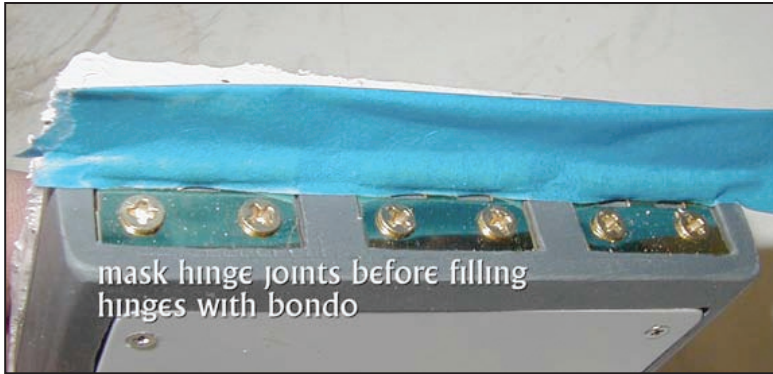


**Step 14:** When the hinges are all screwed in place, the tricorder should open up flat.



**Step 15:** Take the thin clear sheet and cut it with scissors so it will fill in the flat surface inside the main body; this will be the surface for putting on the main display graphic. If you cut it right, this will also cover the open slot at the hinge edge of the body. Glue in place with CA, make sure you don't get glue on the outside surface, and be sure you glue all sides.





**Step 16:** Fill the entire body joint with bondo (with the exception of the front detail well; you shouldn't have any gap there). In a separate operation (**don't try to do it all at once!**), mask off the 3 hinges at the joints with tape and fill all the hinge wells with bondo. When cured, sand all the bondo until smooth. If, after sanding, you have spots that aren't filled in completely, apply more bondo and sand until it looks good to you – you needn't use any sandpaper finer than 320-grit at this stage.

## PAINTING AND GRAPHICS:



mask display before painting

**Step 17:** *If you're adding electronics either now or at sometime in the future, apply masking tape to the main display screen.*



hang tricorder so flap is partially open  
and you can paint the hinge area

**Step 18:** Now you're ready to start the painting process. Screw both the doors in place. Hang your tricorder with a thin wire hook in such a way that you can get all of the tricorder with paint – the flap will need to be partially open so you can spray the hinge area where it will hit when fully open, then spray the first primer coat. If the hinge is loose where the flap can't stay put when partly open, you'll have to spray the hinged surfaces first and let dry before spraying the rest of the tricorder.

add spot putty after first coat of primer,  
sand until smooth



**Step 19:** When dry, check your surface for imperfections; use spot putty or bondo to fill in any bad areas, then sand and primer again until everything looks good to you.

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**Step 20:** Use Plastikote Medium Charcoal Gray #1006 for the main color.

Spray your first color coat with your medium metallic gray; and when dry, wet sand with 600-grit sandpaper, then spray your final coat of paint and allow to cure at least several hours or overnight.

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after gray finish painting, mask for painting  
the front detail well



**Step 21:** When your surface can survive having tape applied to it, mask the tricorder so the front detail well is exposed, then spray with Black Metallic paint.







**Step 22:** Remove your masking tape. You may need to use a hobby knife on the tape edges to avoid paint on the tape lifting off paint on your prop, being careful of course not to put a knife line on your good finish!

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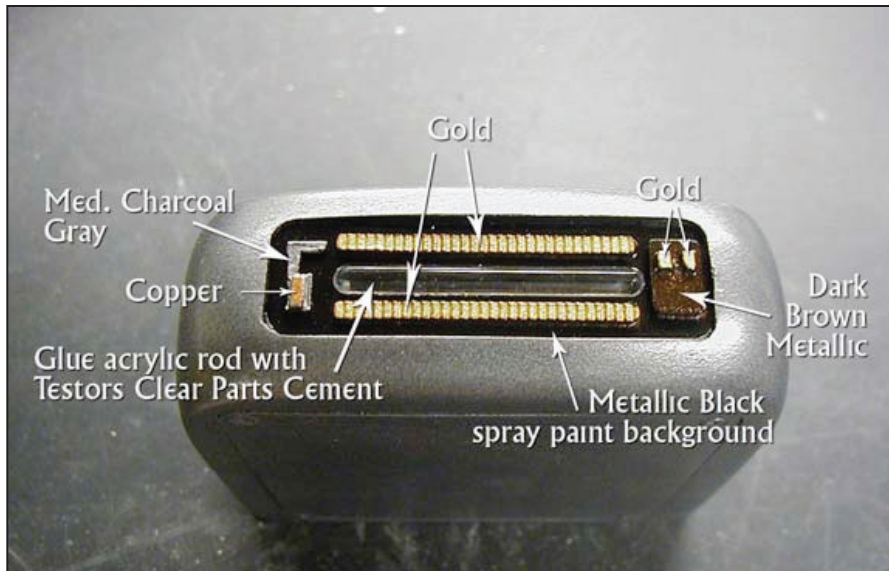


The ribbed detail plastic will be obsolete on future shipments of this tricorder as the details will be incorporated in the castings, and will be masked and spray or brush painted as part of the body detail; so until then, any reference to these separate detail parts remain in effect.

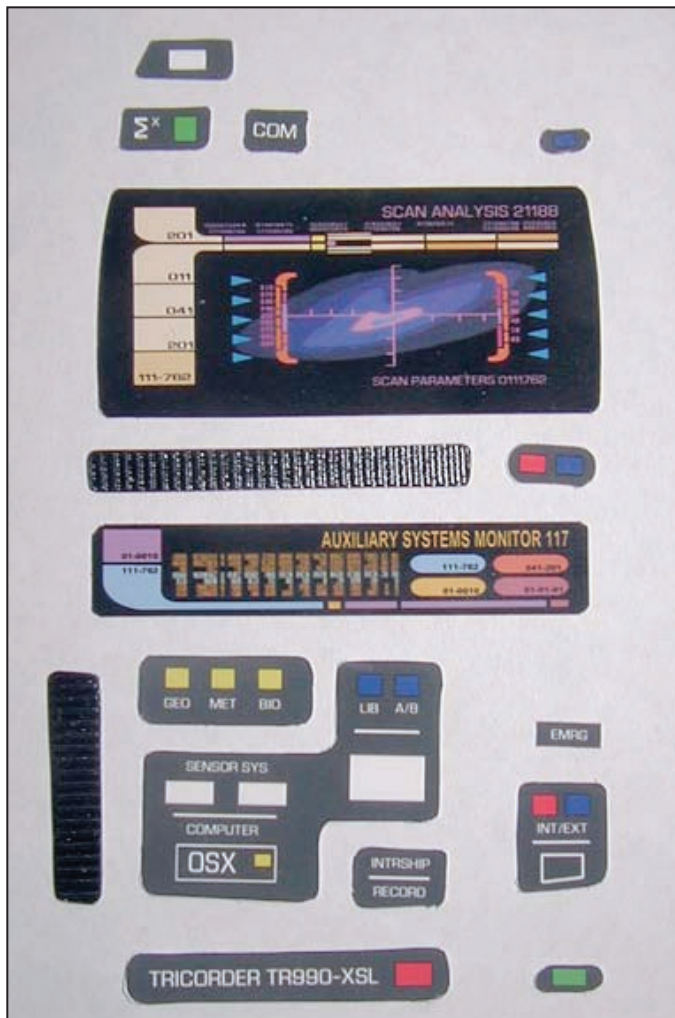
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**Step 23:** From the graphics sheet, cut out the ribbed detail cutting pattern and apply to the smooth back side of the piece of ribbed styrene plastic. Cut and/or sand this plastic to the lines and smooth the edges. Remove the cutting pattern, then spray primer and paint the ribbed side in Black Metallic and set aside.



**Step 24:** Brush paint the front details as shown. Note that the "L" looking piece is painted the same color as the tricorder. Glue the front acrylic rod in place using Testors Clear Parts Cement.



The graphics go on next. Instructions for altering the graphics for a functional tricorder are not included; they go beyond the bounds of these basic assembly instructions.

**Step 25:** Place your graphic sheet on a cutting board surface you won't mind putting knife lines on. A self-healing cutting pad available at art supply stores is best. With a plastic straightedge (a ruler or a drafter's triangle for example; metal rulers might damage the graphic), hold down your ruler securely and cut your graphic sheet along all edges. Use your knife or scissors to round all the corners, and apply as pictured. If you feel really adventurous, you could try cutting these graphics freehand as most of the shapes are irregular to match the holes they fit in.

**Test exactly where you want them first before peeling and sticking them on permanently – you may need to trim the graphics to where they'll fit.**

With the main graphic, peel a little away at a time and work from one edge (the top edge may be easier to line it up with), and lay it on so you can avoid leaving bubbles inside the graphic. Once stuck down, you probably won't be able to remove or reposition your stickers without damaging them. Apply the rest of the graphic pieces as pictured on the following page.





**Step 26:** Brush paint the EMRG well detail with flat or semi-gloss black. Do not paint on the surface outside this recess well.

The red EMRG square needs to be cut off to where it is about 1/8" long in length – when put in the EMRG well, it shouldn't stick out beyond the flat surface of the flap. Cut off, sand, and/or file away the excess from the opposite end of the good flat square end – this will be very glossy and either rounded or caved in compared to the rest of the surfaces. If you wish (especially if you're making a non-functioning dummy tricorder), you can stick on or glue a piece of common aluminum foil or aluminum tape to the bottom surface of the red square; it will make it show up better in your tricorder enough to where it appears to have illumination. Glue it in place in the black EMRG well with either CA or Testors Clear Parts Cement.

CA glue in place the two painted ribbed plastic details. As the patterns are asymmetrical, check the fit of both pieces before you glue them.







Congratulations, you have successfully assembled a  
Roddenberry.com "Endgame" Science Mark OSX Tricorder!

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#### **IMPORTANT NOTES:**

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