The Early Pioneers

Pioneer II

Pioneer IV

Assembly Instructions

Pioneer 2

Part #	Name/Nomenclature	#/kit
1	Body shell top	1
2	Body shell bottom	1
3	4th stage motor frame	1
4	4th stage motor rocket motor(s)	8
7	Retro rocket	1
10	Base	1
11	Micrometeoroid plate	1
17	Cable connector	1
14a	TV camera main body	1
14b	TV camera mirror	1
14c	TV camera fore body	1
14d	TV camera secondary spider	1
19	Pedestal (similar to internal mount for satellite to booster)	1
Jig	Jig for antennae alignment	1
Antennae	16 gauge wire, 1.45” long	2

Pioneer 4

Part #	Name/Nomenclature	#/kit
5	Despin weights	2
6	Spin balance weight(s)	2
8	Pedestal bottom	1
9	Base	1
12	Body shell lower	1
13	Pedestal top	1
15	Camera	1
16	Body shell upper	1
18	Spike antenna	1
Despin cables	39 gauge wire, ~15” long	1

Introduction

Welcome to this, our second offering. We chose to call it “The Early Pioneers”, which is the first in a line, we hope, of models from the beginning years of space exploration.

One of the subjects of this kit, Pioneer 2 was nearly identical to its blue and black predecessors, Pioneer 0 & 1. They were designed to be the first American spacecraft to leave earth orbit and achieve the ambitious goal of orbiting the moon. None of the three Pioneers in this series were successful, due to problems with the launch vehicle, the Thor-Able 1. Notably, after the launch failure of Pioneer 0, by the USAF, the program was handed over to the newly formed space agency, NASA, and Pioneer 1 became NASA’s first (albeit unsuccessful) space vehicle launch on October 11, 1958. (Explorer 1, America’s first successful earth satellite, was launched by the US Army Ballistic Missile Agency).

The gold Pioneer 4 was the second of its kind. Pioneer 3 also suffered a launch failure. The launch vehicle for these two probes was the Juno II. Pioneer 4 was the first American spacecraft to achieve earth orbital escape velocity. On March 4, 1959 it passed within 37,300 miles of the moon (though its original mission plan was a pass at 22,000 miles).

We believe these two spacecraft are an important part of the early history of space exploration, and we plan more kits like this in the future. Our future plans also include early Soviet spacecraft.

Thank you for spending your hard-earned model money on our kit.

Working With Resin Parts

The two most common problem areas modelers have with resin kits are gluing and painting. The most important part of assembling any resin kit is to **Read the instructions!**

There is a definite difference between styrene ("plastic") kits and polyurethane resin kits. While both materials are technically a form of plastic, they are chemically different. **Assembling resin kits requires different glues and techniques than used when working with styrene kits.**

Cleaning

Most manufacturers of resin kits use a **mold release agent** to allow the resin castings to release better from the rubber mold. This decreases breakage of parts, and greatly increases the number of parts that may be made from a mold. Both of these factors help to keep costs significantly lower.

Mold release does, however, leave an oily residue and will prevent paint from adhering well to the parts. For this reason, **castings must be cleaned to remove the mold release agent**.

Some will recommend a special mold release removal agent. However, a good soak in a sink full of warm water and dish detergent is generally enough to remove most mold release agent. A degreaser such as **Simple Green** used in conjunction with this method will almost surely remove any other agent still sticking to the parts. You can also use a soft plastic toothbrush or plastic scrub pad to help remove the residue.

After all parts have been cleaned, carefully rinse the parts with lukewarm (**not hot**) water. A sieve is great to hold tiny parts so they are not rinsed away. Ensure all parts are well rinsed, and allow to air dry over night.

Pour Plugs

Resin parts are cast from a liquid and may well come still attached to the casting block, also called the pour plug, or lug. If this is so, then they need to be separated. If the attachment point is thin then it might be separated with repeated passes from a sharp hobby knife. However, if the attachment point is thick it will need to be cut off with a fine saw, sometimes called a **razor saw**, which is designed for hobbyists. Normal saws available from hardware stores cannot be used as the teeth of the saw will be too large. The sawing process can be difficult and time-consuming, especially if the link between the part and the casting block is large, but there is no way to avoid it. You may wish to try using a motor tool such as a Dremel to speed up the process, but great care is needed when doing this. If too much friction is generated, the resin may melt.

The greatest difficulty can be cutting away the casting block without damaging the part. Sometimes it is better to cut away the bulk of the casting block, leaving a small amount behind that can be trimmed away with a modeling knife.

Note that whenever cutting resin like this, or sanding it, there will be a fine dust produced which is very bad for the lungs (toxic). Wear a filter mask and clean up your work area afterwards.

When the parts have been removed from the casting blocks, they need to be cleaned up. Any remaining lug where the part was attached to the casting block will need to be cut away with a knife or sanded/filed away. There is also likely to be a seam that will need to be removed with a sharp blade.

Warping

Occasionally resin kits may contain parts that have warped.

These may be straightened with the use of **gentle heat**; cover the part with boiling water for a few seconds, or use a heat source such as a hair dryer. Remove **carefully** so as not to burn your fingers, and reshape the part until the warp is gone. To flatten a straight casting, lay it on a flat surface, and

hold flat. For curved pieces, hold in the correct shape and allow it to cool in position. Once cool, it will keep the new shape. If the part will not straighten, contact the manufacturer.

Gluing

Resin kits must be assembled using Super Glues (ACC) such as Zap-a-Gap or 5 Minute Epoxy. **Solvent glues that are for bonding styrene** (Testor's Liquid Cement, Tenax, Plastruct, etc.) **will not bond resin parts together**.

The most common mistake many modelers make with super glues is using too much glue. **Less is best!**

Do not apply glue to kit pieces directly from the bottle; instead, pour out a tiny "puddle" of glue on a scarp piece of styrene and use an applicator (toothpick, dental tool, wire) to pick up a drop of glue from the puddle, and apply to the kit piece.

Use one tiny drop about every half inch to an inch along a long joint (such as a structure's wall, or car frame to body). Once this has set you may reinforce this joint with additional glue along the inside of the joint.

There are different thickness' of super glues, the most commonly used are the thinnest (fastest setting), and the medium (a little slower setting). There are also thick glues for filling larger areas.

The thin is excellent to use on a good fitting joint. Hold the two pieces to be glued in position, and place a drop of thin super glue on the inside of the joint. Capillary action will draw the glue along the joint.

The medium glue is good for the joints that may not fit as well. This type of glue is often referred to as "gap filling". Place required drops along the joint edge of only one of the two pieces to be joined. **Do not put glue on both** pieces. Place the two pieces together, and hold for a few seconds. The joint may then be reinforced on the inside if necessary. Thicker glues are also useful for bonding small photo-etch parts. The viscosity of it will help hold the part in place as the glue cures.

If you are unsatisfied with the resulting glue joint, it may be easily broken by using a debonding agent. These are available at hobby shops in the same department the glues are sold in. After you have separated the two parts, you will need to sand or scrape all traces of the first application of glue from the parts. Super glue does not adhere to itself, and if you do not remove the glue, the new joint will be weak or not set at all.

Super glues also have a short shelf life; if glue is not bonding well, it is time to discard it and buy a new bottle.

For really large parts or very small, fragile photo-etched parts, sometimes 5 minute epoxy is a good choice. It usually comes in two containers (the epoxy and a hardener) that are mixed at a 1:1 ratio by volume. Epoxy is VERY strong and it has the additional property of having some “give” to it, so unlike super glues, which are very brittle, the part won’t pop off if it gets bumped around a little.

Air Bubbles and Voids

Resin kits may occasionally have small air bubbles in the parts. If these are on the back of the part and will not show on the finished model, there is **no need to worry** about them.

Air bubble holes that **will show** may be filled with a medium super glue (gap filling) and the patch sanded or filed smooth. A good filler for larger holes or gaps is a **mixture of gap filling (medium) super glue and either talc or corn starch**. File or sand the patch as soon as it is hard to the touch; as the mixture will become harder than the surrounding resin.

Voids are larger areas where the resin did not reach fully into the mold cavity during the casting process. These can be filled with putty and sanded smooth after the putty has hardened.

Note that the normal fillers intended for polystyrene such as Squadron ‘Green Stuff’ and ‘White Stuff’ will not adhere to resin because they are designed to ‘melt’ the surface of polystyrene. This does not mean that they cannot be used in certain situations, but you should be aware that they may flake away if spread thinly. Epoxy putties such as Milliput, or other fillers that have a natural tackiness, should normally used in preference when filling resin parts.

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Painting

Painting resin kits requires different preparation and techniques than styrene kits.

Cleaning the parts before assembly ensures you will not accidentally get the cleaner on any styrene parts (steps, etc.).

If removing the mold release agent step is omitted, the paint will not adhere properly to the kit. The completed kit may be carefully washed with lukewarm water and mild soap to remove oils and dirt from handling during construction. Another method is to wipe it down with alcohol. Allow to air dry.

Lacquer and enamel based paints provide the best adhesion to resin, however water based acrylic paints will also give excellent results with careful preparation.

When painting a multiple color paint scheme **where masking is required**, you should use a low tack tape like Tamiya yellow or 3M blue tape. If your tape still pulls your paint up when you remove it, try to decrease the tackiness of the masking tape by sticking it to a clean surface and repeatedly pulling it up and resticking it before using it, and carefully and gently remove the masking tape as soon as possible.

Stripping Paint

If you are unsatisfied with your paint job on a resin kit, do not use the "traditional" methods of removing the paint. **Brake fluid, acetone, and other strong solvents will ruin resin castings**.

Floquil's DioSol will remove Floquil and other solvent based paints, but again take great care not to get it on styrene parts.

Pioneer II

Assembly

Step 1: TV Camera

Find Parts 14a, 14b, 14c, and 14d on the parts runner. Cut them free and make sure that Part 14d has three smooth bottoms to the three legs of the tripod, as these will need to rest flush on the inner lip of Part 14a. Part 14a has two different sized ends. The top has a ring that is not as tall as the bottom. In Figure 1 the arrow denoting #14a is pointing to the top ring, also, the part is attached to the runner at the bottom ring. After test fitting Parts 14d and 14c (see Figure 2), glue Part 14d's feet to the inner lip of Part 14a's upper ring. We suggest glueing Part 14c over the top of Part 14d as shown in Figure 2. This will help center the tripod on the lip of Part 14a as the ring 14c is designed to fit between the legs and the outer, upper ring on Part 14a.

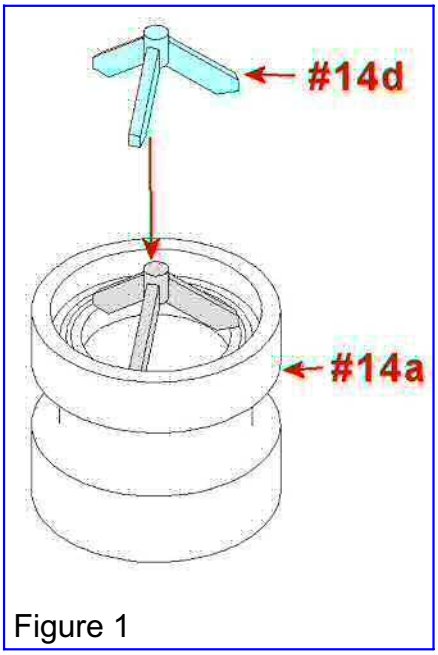


Figure 1

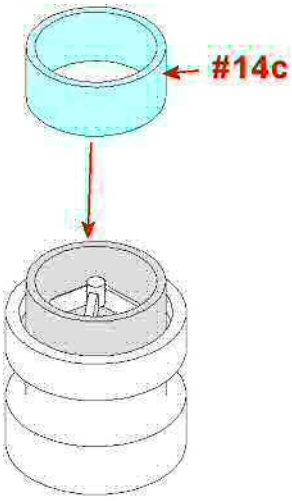


Figure 2

Part 14b has a concave surface, on one side, as shown in Figure 3. This is the mirror of the camera. Please use whatever method that you like best to silver this surface. Once this has been done, glue Part 14b into the bottom, taller ring, with the mirror facing into the tube. This completes the TV Camera.

Figure 3

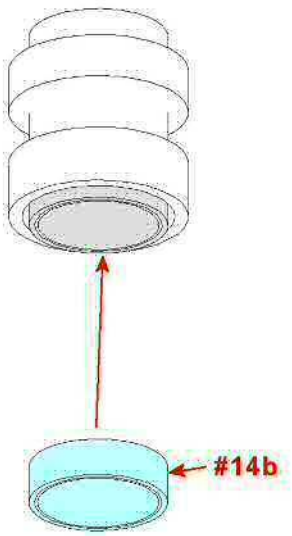
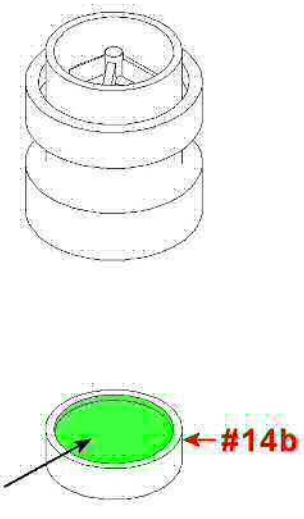


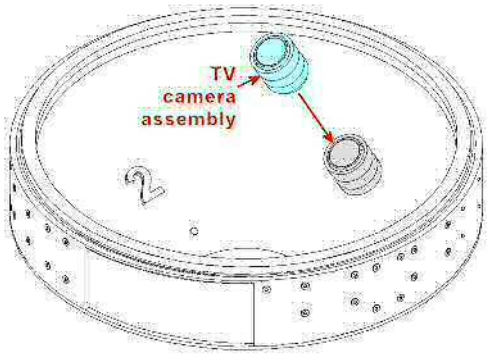
Figure 4



Step 2: Install TV Camera

Glue the TV Camera assembly into the hole in the body shell Part 2 with the open end of the TV Camera assembly facing out.

Figure 5



Step 3: Install Retro Rocket

Find Part 7 on the runner and remove it. This part is glued into the bottom of the body shell Part 2 over the round lip at the center as in Figure 6.

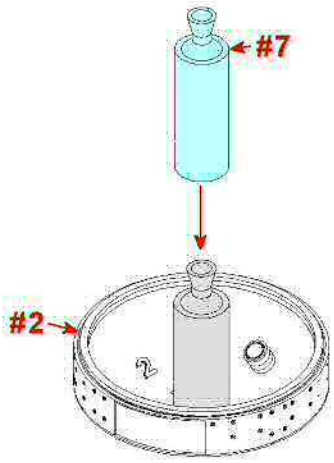
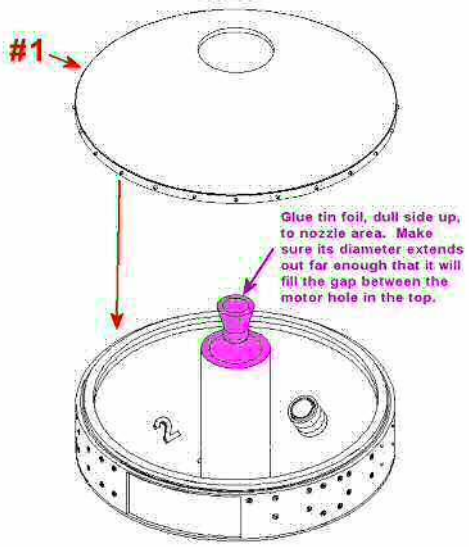


Figure 6

Step 4: Install Top Body Shell

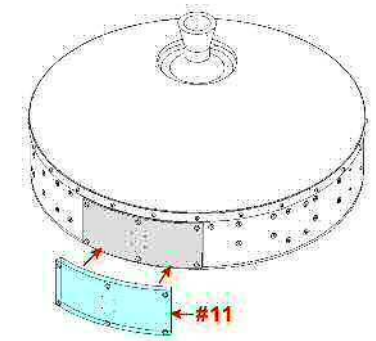
Start with the assembly from Step 3 and glue tin foil over the top of the retro rocket (to make the model look as flown) with the dull side facing out, as shown in Figure 7. You can leave the nozzle opening covered as if the motor had not been fired or you can cut out the nozzle opening, as if the motor was fired. Make sure the foil has a lip around the rocket body, so that when the top body shell is installed the foil will cover the gap between the opening in the body top shell and the cylinder of the rocket. Now glue the body top, Part 1, over the lip on the top edge of Part 2.

Figure 7



Step 5: Install Micrometeoroid Plate

Figure 8

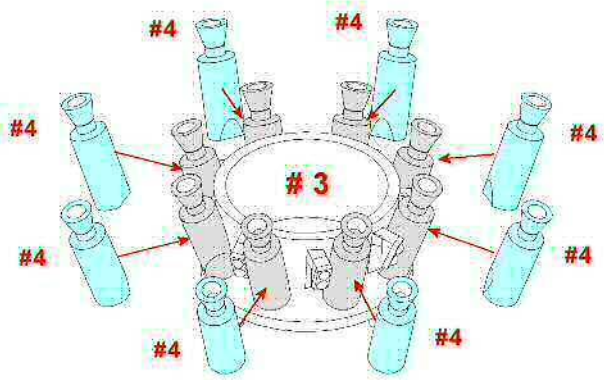


Find Part 11 and again please use whatever method that you like best to silver the outside of the curved surface. Once this is done glue it into the recessed area on the side of the body as in Figure 8.

Step 7: Assemble 4th Stage Motor

Find Part 3 and eight of Part 4 and make them ready for assembly. Part 3 has five pins on its bottom. Four short ones near the outer edge, and one longer one at its center. Make sure not to cut these pins off. Glue one Part 4, side with flat indent, into one of the recesses around the outside of Part 3, as in Figure 10. Continue around Part 3 until all eight rocket motors are installed onto the frame.

Figure 10



Step 8: Install Antennas

Find the Part labeled as "JIG" and tape it into place on the bottom cone, in the position shown in Figure 11. The "JIG" has an alignment pin on the bottom of it as shown in Figure 12, that will stick into the hole on the bottom of the body cone. Due to casting limitations it may be necessary to drill out the hole (or depression) with a 1mm drill or 3/64th inch drill bit. This alignment pin will center the "JIG" on the bottom but you will need to turn the "JIG" clockwise or counter clockwise to line up the ears of the "JIG" with the two holes in the conical section of the bottom body. Again, you might need to drill out these to holes with a 1.3mm or 1/16th inch drill bit. You can use the "JIG" to help guide the drill bit at the proper angle. Using the 16 gauge wire rod, cut two lengths, each 1.4575 inches long. Now glue the antenna rods into the holes in the bottom conical section and tape them to the "JIG" in the position shown in Figure 11. Once the glue has set remove the "JIG".

Figure 11

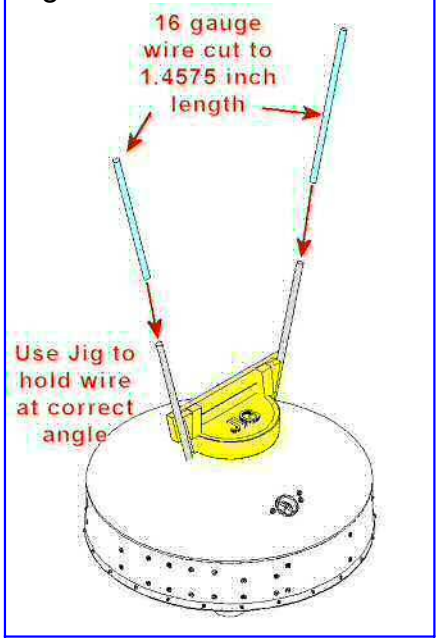
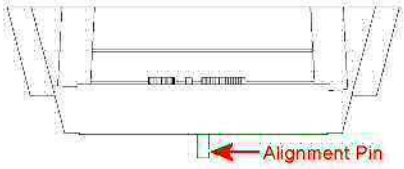


Figure 12



Step 9: Install 4th Stage Motor Assembly

Take the motor assembly that was assembled in Step 6 and glue it to the bottom of the body as shown in Figure 13. The long pin at the center will glue into the same hole that the "JIG" used for alignment. The four other short

pins simulate the mounting bolts that held the fourth stage to the spacecraft, and act as spacers for the model.

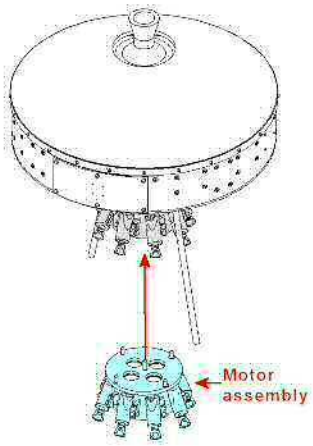
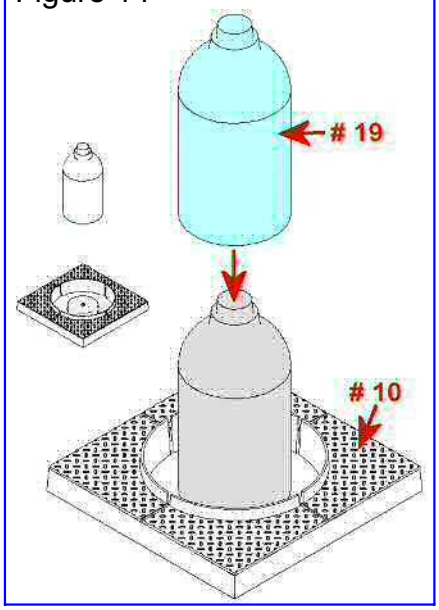


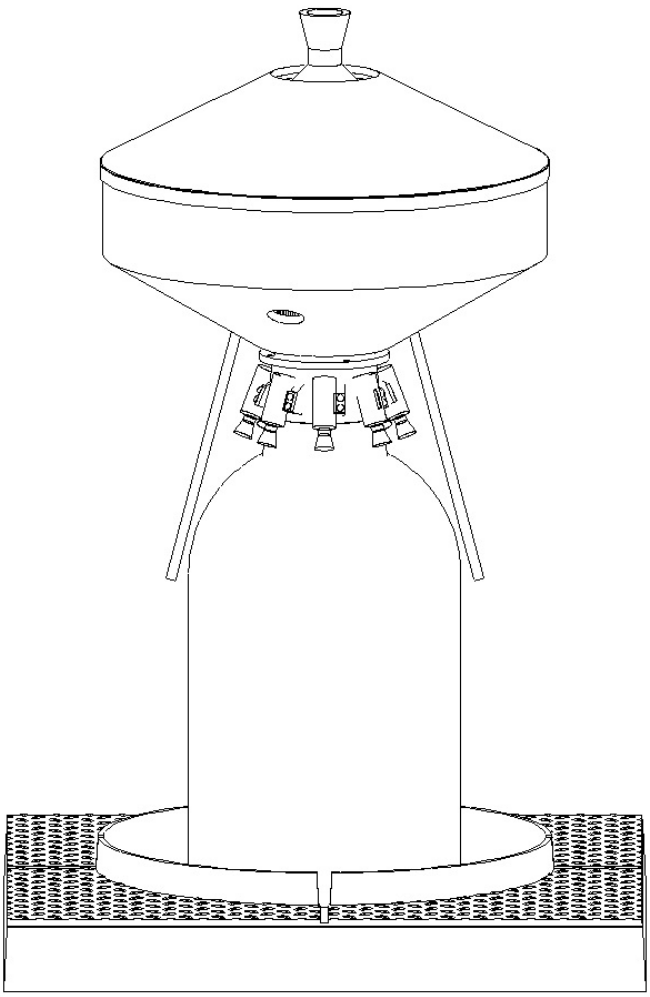
Figure 13

Step 10: Assemble Base

To assemble the base find Part 10 and Part 19 and glue Part 19 into position as shown in Figure 14. You can now either glue the completed Pioneer 2 model on top of the base, or you can just set it on top so that you may remove it at a future time.

Figure 14





Pioneer IV

Assembly

Step 1: Body Assembly

Find Parts #12 and #16 and glue together as shown in Figure 15. Please note that there is an alignment notch in part #12 and a tab in part #16.

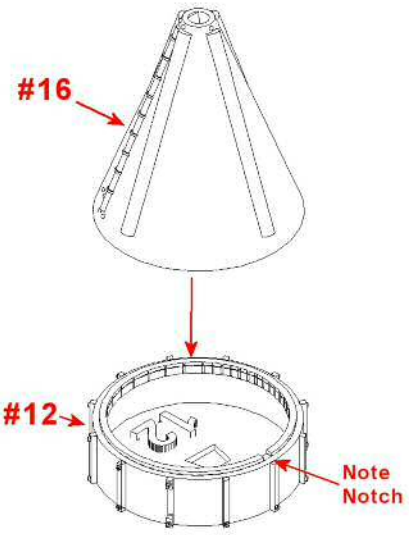


Figure 15

Step 2: Camera

Find Part #15 and glue it to the bottom of Part #12, as shown in Figure 16. The Camera (Part #15) is keyed to make sure it points in the proper direction. The Camera (Part #15) has a hole in the end where the lens would be. You can use any clear drying glue or sealer to approximate the lens, or it can be left as is.

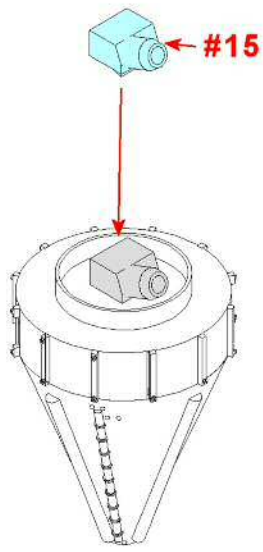


Figure 16

Special Note: You should apply decal "G" as shown in figure 24 to the base between the stringers, as after Steps 3, 4 and 5 are finished it will be very hard to apply the decals.

Step 3: Spin Balance Weights

Find Both Part #6s and glue them into place as indicated in Figure 17. Note that both Part #6s are identical, The thicker end will glue toward the right on both sides of the body, 180 degrees apart. **Note:** There are three stringers, on each side, of the body, that only have bolt heads, either at the top edge or bottom edge. That is where Part #6 is attached to the body. One at the bottom edge of the stringers, and the other, on the opposite side, at the top edge of the stringers.

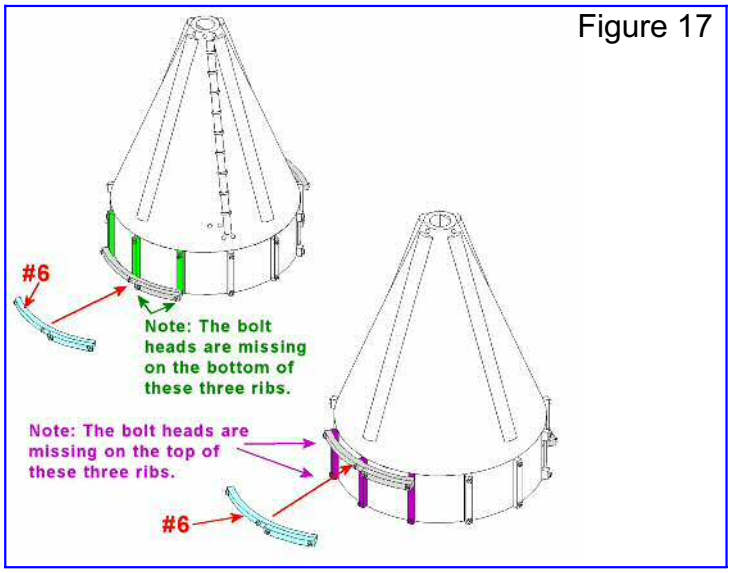


Figure 17

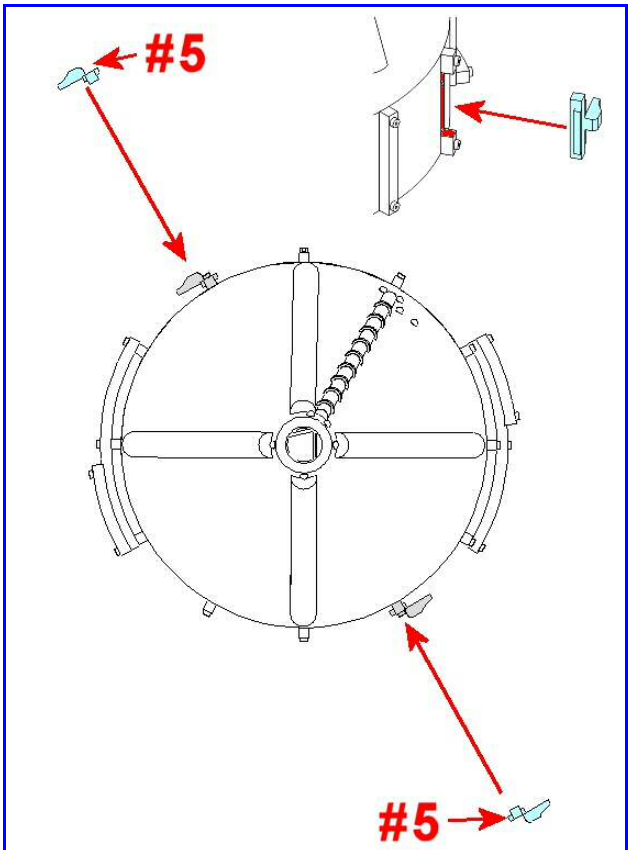


Figure 18

Step 4: De-spin Weights

Find both Part #5s and dry fit to the body as shown in Figure 18. There are two stringers, on the body, that have the centers cut out of them. Part #5 will glue into this gap, flush with the top and bottom part of the stringers on the body, in the next step. Make sure that the De-spin Weight "fingers" both point counter-clockwise, as seen from the top. This is critical to the next step.

Step 5: De-spin Cables

The kit includes a length of fine wire (39 Gauge). It is about 15 inches in length. Cut the wire into two equal lengths about 7.5 inches in length. Part# 5 has a small groove on the back side of it. Using Figure 18 as a guide, look down on the model, glue one end of both wires, in that groove, then glue De-spin Weight (Part# 5), located at the top left and bottom right (in Figure 18). Make sure the top wire extends to the right, and the bottom wire extends to the left. Wrap the top left wire, in a clockwise direction (as looking down on the model) around to the start twice, keeping the wire running along the top side of the De-spin Weights. After two wraps of the wire, continue half way around the body and trim the wire to glue to the lower, right "finger" and glue it as shown in Figure 19 in green. Wrap the second, bottom wire, as in Figure 19, and wrap clockwise two times. Keep the wire wraps running along the bottom side of the De-spin Weights. Continue half way around the body to the opposite De-spin Weight "finger" (Part# 5), trim and glue wire end as shown in Figure 19 in green.

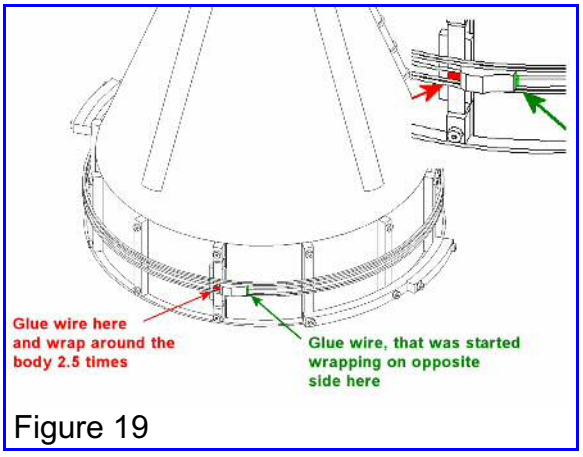


Figure 19

Step 6: Spike Antenna

Find Part #18. Before glueing in place (and after you paint it gold), paint a line as shown in Figure 20. The original spacecraft had a plastic washer between the lower, Cone antenna and the upper Spike Antenna. The color is a milky white. This part was made separate to make painting this line easier. Once this "washer" has been painted on, glue the Part #18 to the top of the body cone, as in Figure 21.

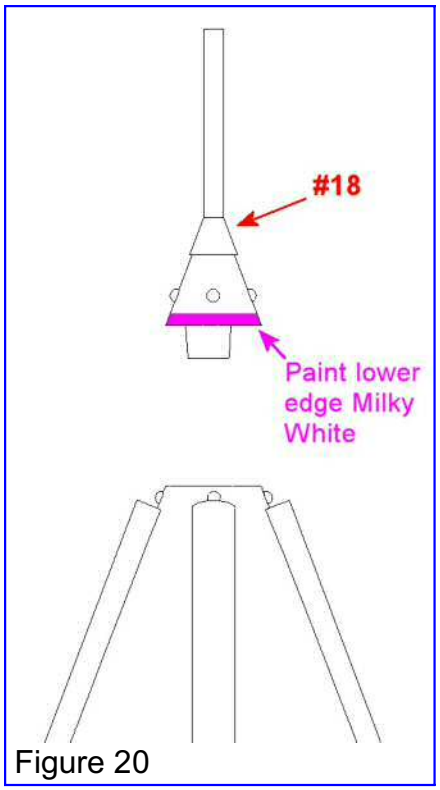


Figure 20

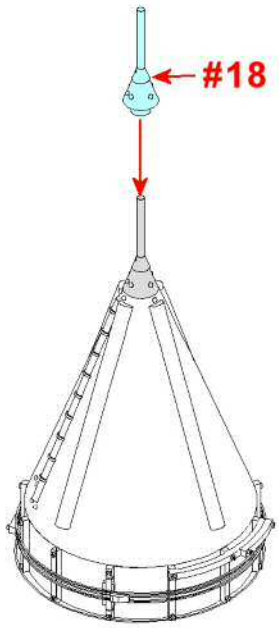


Figure 21

Step 7: Base Assembly

Find Part# 8, Part# 9 and Part# 13. As shown in Figure 22 glue Part# 8 onto the centering tab on Part# 9. Next glue Part# 13 to the top of Part# 8 as shown in Figure 23 to complete the assembly of the Pioneer 4 base. You may now glue your Pioneer 4 model to the base, or just set it on top for displaying the model. The following pages show the placement of the decals and painting instructions. Thank you for your purchase and we hope you enjoy your "Early Pioneers" kit.

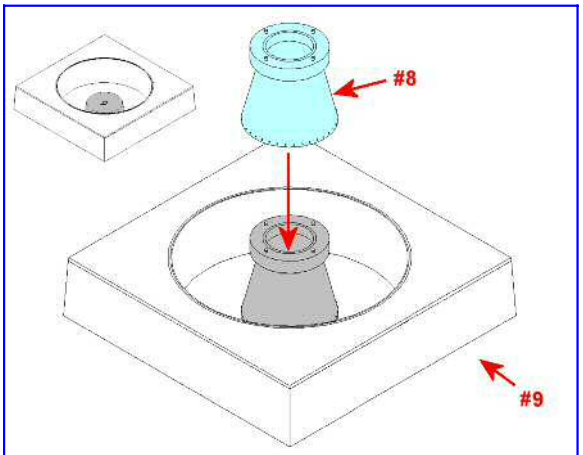


Figure 22

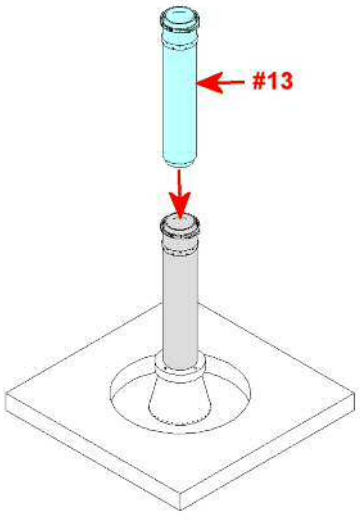
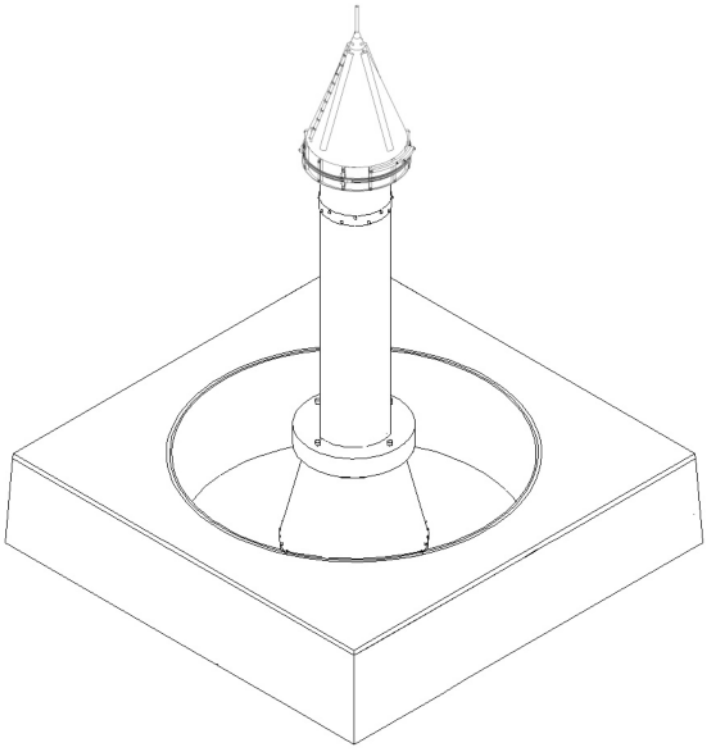
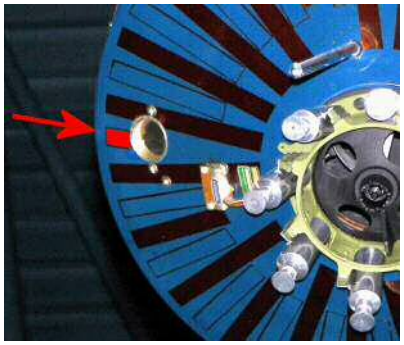


Figure 23



Please Note: In Figure 24, below, decal “C” has a red marker that is shorter than the rest of the stripes. On the actual decal sheet, this “red” does not exist, but the black outline of this shorter strip does. The red marker is to help point out the stripe that belongs between the outer edge of the body and the TV camera hole. Please trim as needed.



How to Use These Decals

from Jbot Decal website http://www.jbot.ca/application.shtml

These decals are printed on TANGO PAPA decal paper; sometimes the film is very thin. My artwork has been clear-coated to protect the art and to make the decal a bit thicker. I strongly recommend that you clear-coat them again, and even then, be careful when handling them.

Use an airbrush and spray the decals while still on the backing paper with TAMIYA or GUNZE SANGYO clear gloss acrylic paint.
WARNING: Enamel or lacquer based products will likely damage the art.

The decals are printed on clear film which covers the whole sheet of paper. Using a hobby knife, press softly and cut the film, all around the art, as close to the art as you want. You don’t have to cut all the way through the paper; just press enough to cut through the film on the paper. This is called "scoring".

Now, using scissors, cut the individual pieces apart from each other. Cut between your scored lines. The shearing force of the scissors can cause cracking in the art or in the film which is why scoring is important. Scoring also eliminates the excess film from around the art.

Hold the piece of decal paper with tweezers and submerse it for only a few seconds in a bowl of lukewarm water. Really, 5 to 10 seconds is enough. Then pull the decal out and let it sit on your work area for 10 to 20 seconds. If the paper curls do NOT try to flatten it. Let the paper straighten on its own. Rushing it will cause the film (and the art) to shatter. Remove any excess film from around the decal with tweezers.

Wet the surface of the model with water from the bowl. You can use a setting solution if you want. Some solutions are very strong; they can attack the paint and the decal. Remember, these decals are very thin so they should settle down onto practically any surface. Keep the surface of the model wet.

Place the decal and the paper on the model close to where you want the decal positioned. Using a brush or sponge or cotton swab, slide or push the decal off the paper onto the model. Remove the paper. If you try to lift, peel, or pull the decal off the paper it could curl or tear.

Keep the surface of the model wet. Slide the decal around until it is positioned where you want it.

I know this next step breaks all the rules of decal application but I do it and it works for me: Gently rock or roll a piece of foam / dense sponge across the decal. This soaks up the excess water and helps push the decal onto the surface, squeezing out any bubbles.

Let the decal dry. Don't touch it for several hours. After it is completely dry (a day or two) you can airbrush over it to seal it and bond to the paint and to the model.

While building our test model, Karl made the following observations;

I had really terrible results when I used Microscale decal solvent, so tonight I switched to plain water with some white glue mixed in with it, and it went MUCH better. I also "floated" the decal on the surface with a lot of the water/white glue mix, and tried to minimize how much I handled them. Those few steps seemed to do the trick.

PLEASE NOTE: as Jbot Decal's instructions say, the paper used for the decals is very fine. In order to help preserve the colors, we have coated the decal sheets with liquid acrylic (Future Floor Polish). During application, we observed that decal setting solutions were detrimental to the decals. It is strongly suggested that you do not use decal setting solutions. Instead, use water with a small amount of white (Elmers) glue to prepare the decal. When the decal is ready to be applied, apply a generous amount of this solution to the area where the decal goes (like a puddle) and "float" the decal in the

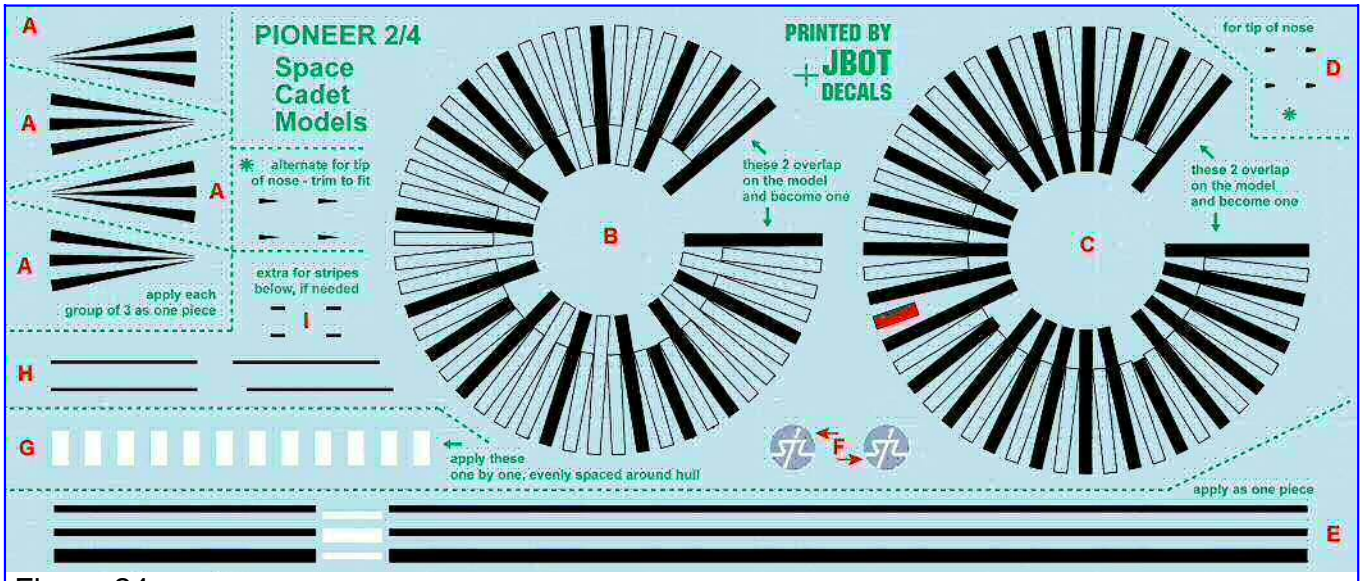


Figure 24

solution. Try to avoid moving the decal around or handling it as much as possible.

For the 2 big decals that go on the top and bottom of Pioneer 2, you may want to cut them (with a VERY sharp blade) into smaller sections. You should TEST FIT these 2 large decals before application to make sure they are placed properly (NOTE: DECAL “B” IS FOR THE TOP AND DECAL “C” IS FOR THE BOTTOM) so that the 2 edges come together. Be careful where the decal covers the tv camera opening and the raised details around it on the bottom body shell. We have prepared a small template if you should want to make cutouts in the decals for those details.

Decal “C”, for the bottom cone of Pioneer 2 has to go around several protrusions. We have added a small template (Figure 25) to allow you to pre-cut the decal with openings for the protrusions. It should be printed so that the vertical and horizontal, black bars print out as exactly one inch in size. Then find decal “C” and place the large circle so it is centered between the two long black bars, over the short bar shown in red in “Figure 26".

Figure 25

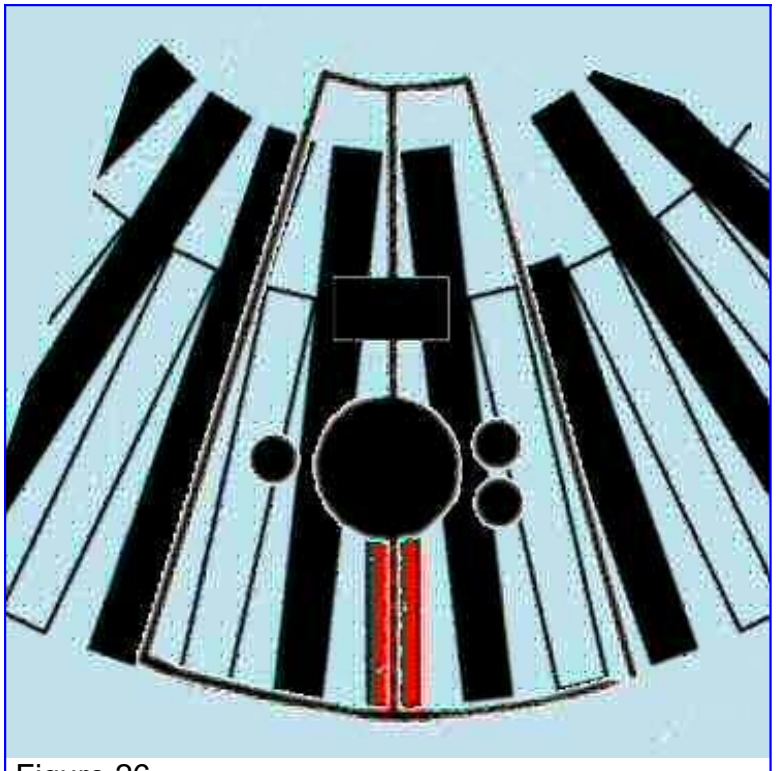
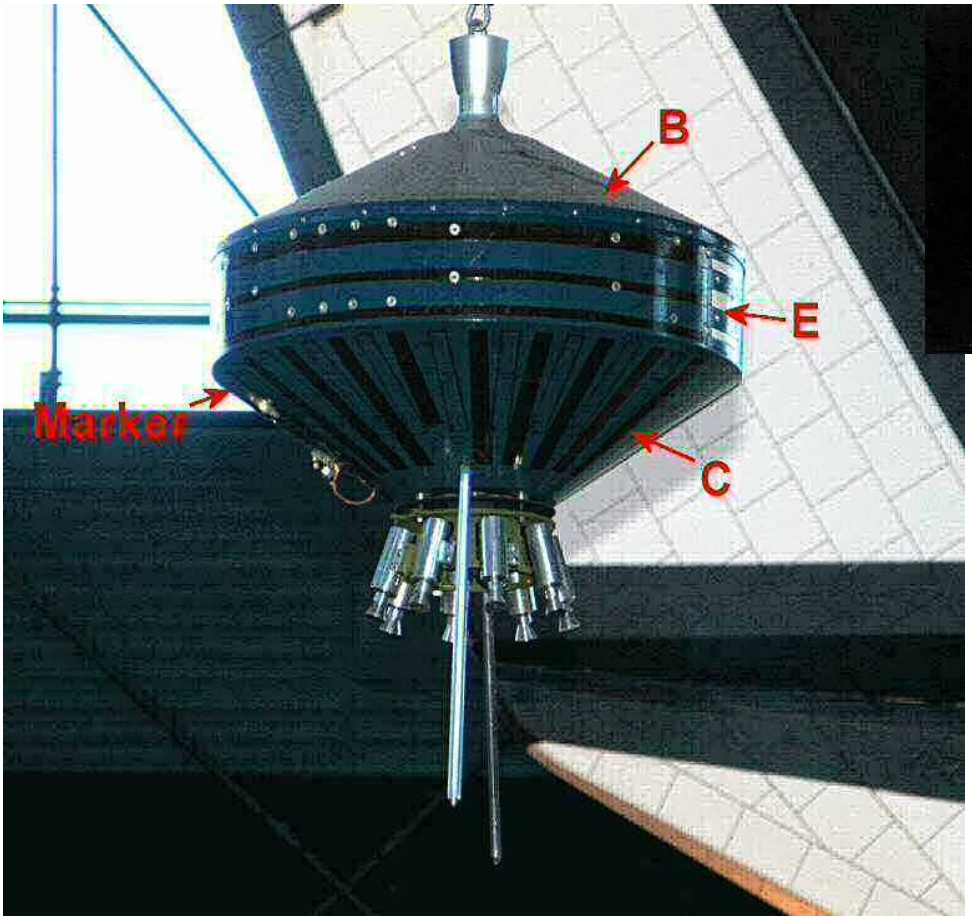
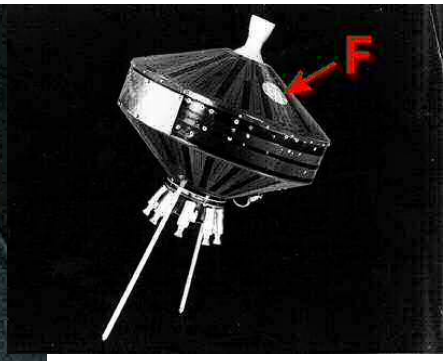


Figure 26





Decal placement.

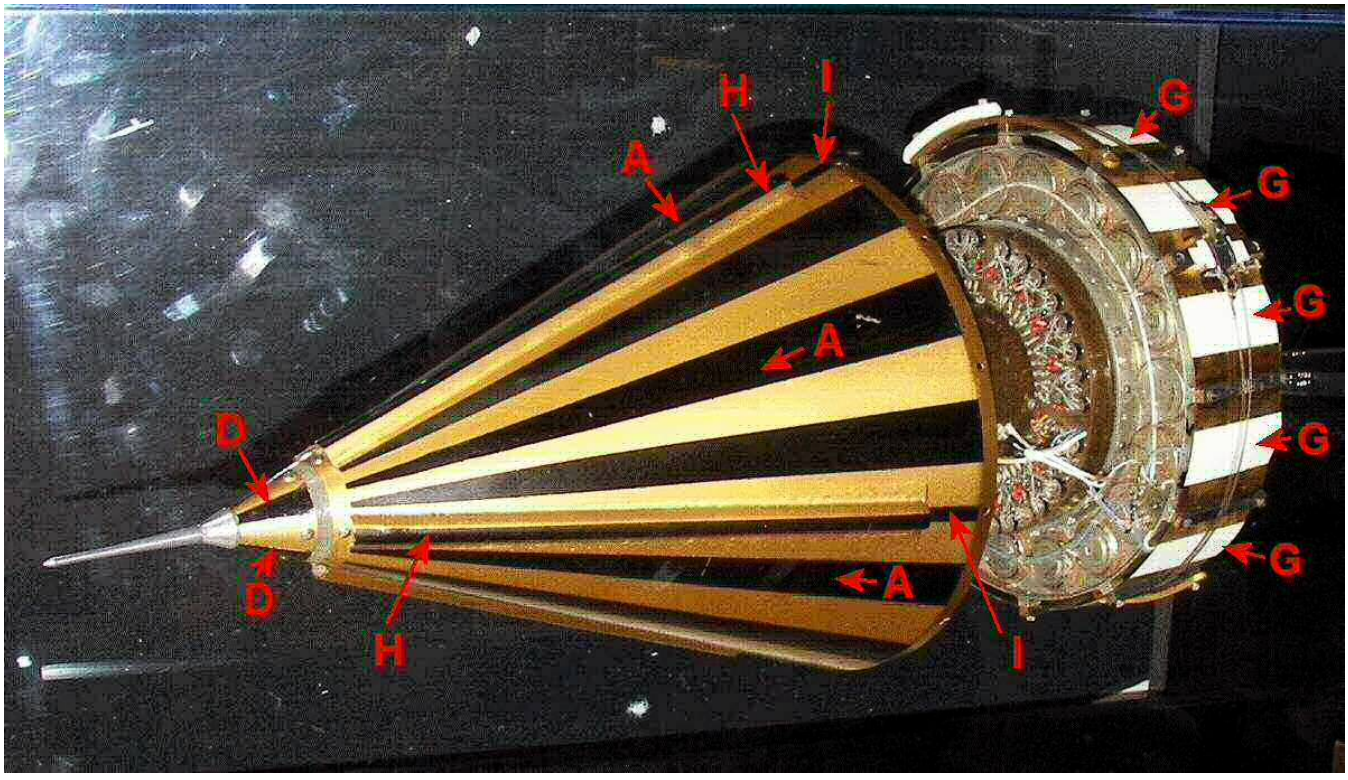



Figure 25

Special Note: On the decal sheet there are four decal "A"s. You will find it easier to apply the decal to the side with the extra vertical rib (as indicated in Figure 25 by the red arrow), by cutting one decal "A" into a single stripe and a duel stripe. Apply the single stripe as shown by the green arrow and the duel strip a shown by the two blue arrows.

Painting Suggestions

Below are the suggestions for painting your new models. Painting instructions for Pioneer 2 are a best guess. After a large amount of research, a definitive color scheme could not be found. There are only two color images that we could find and both show conflicting colors. The rest are Black & White images. Documentation only states that they used a different paint scheme (referring to the stripes) for different calculated thermal loads at the time of year launched. The body was made out of fiberglass, which was normally green or blue. The display at the National Air & Space Museum is blue, and since NASM tries to make their displays as close to the real spacecraft, we opted for the blue as the most likely color as flown. Pioneer was coated in gold to make the fiberglass body act as the ground plane for the antenna.

Suggested Paints

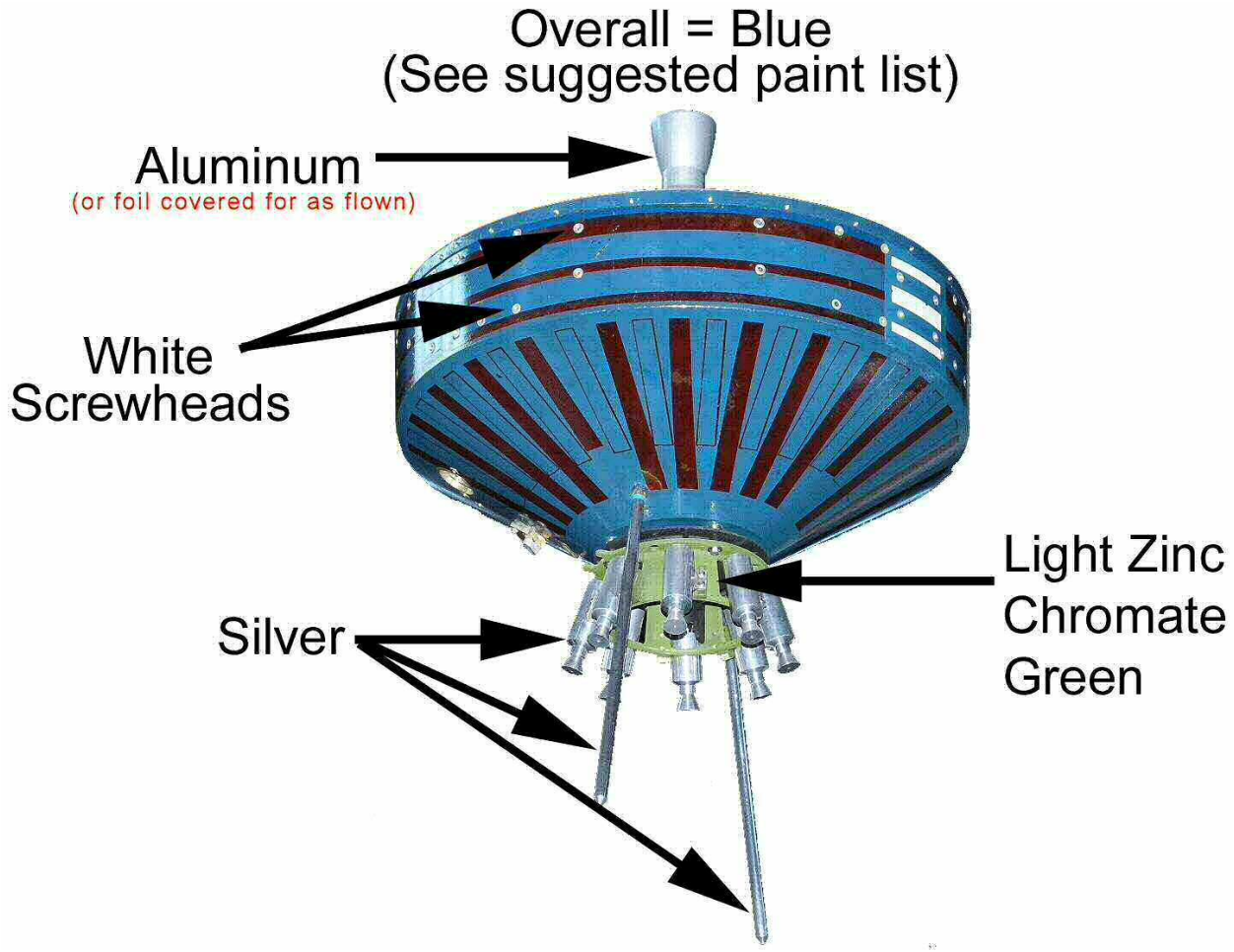
Testors Model Master Lacquer #28010 Ford Engine Blue
Testors Model Master Lacquer Thinner #28016 use a non-plastic container to mix in
Testors Model Master Zinc Chromate #1734
Testors Model Master Light Gray #1732
Testers Model Master Gold #1744
Aluminum
White (your favorite)
Tan (your favorite)
Brown (your favorite)
Chrome Silver (your favorite)
White
Black
Milky White
Gun Metal

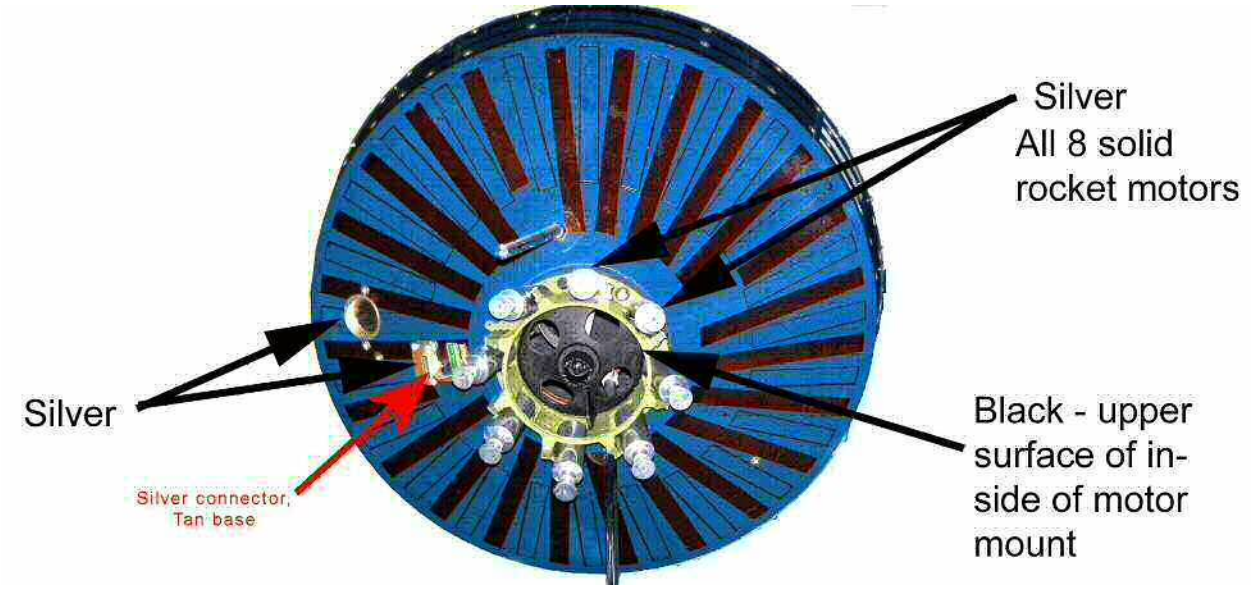
Mixed colors:

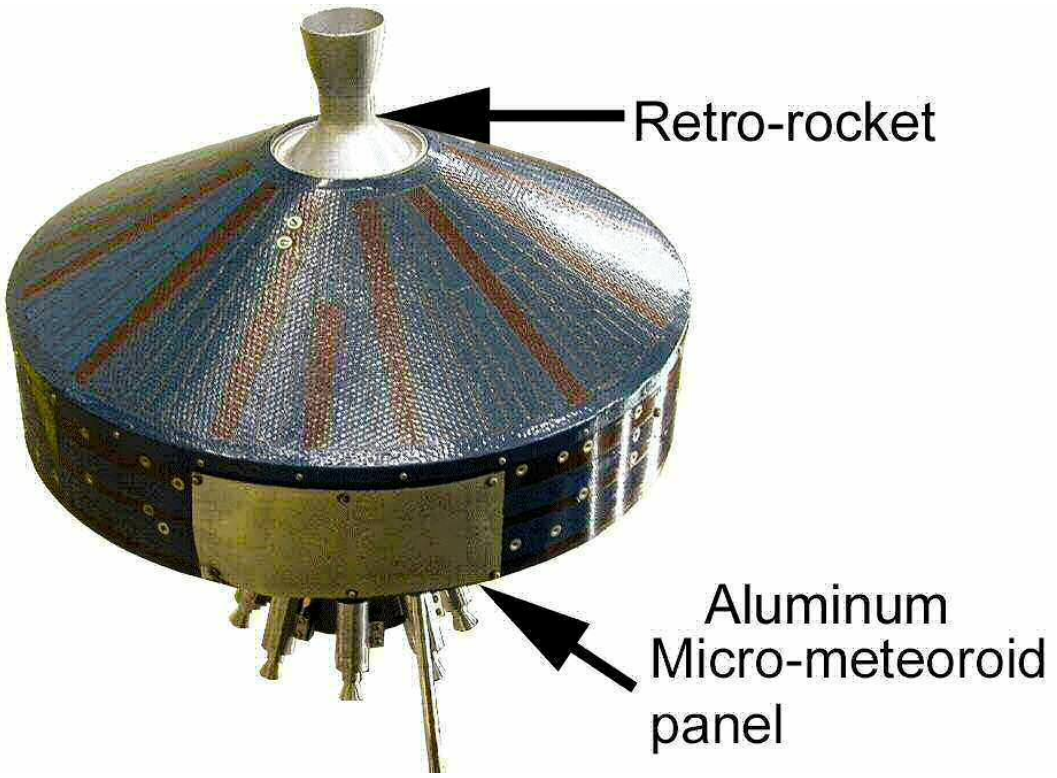
To make Light Zinc Chromate Green – mix Testors Model Master Zinc Chromate #1734 with a small amount of Testors Model Master Light Gray #1732

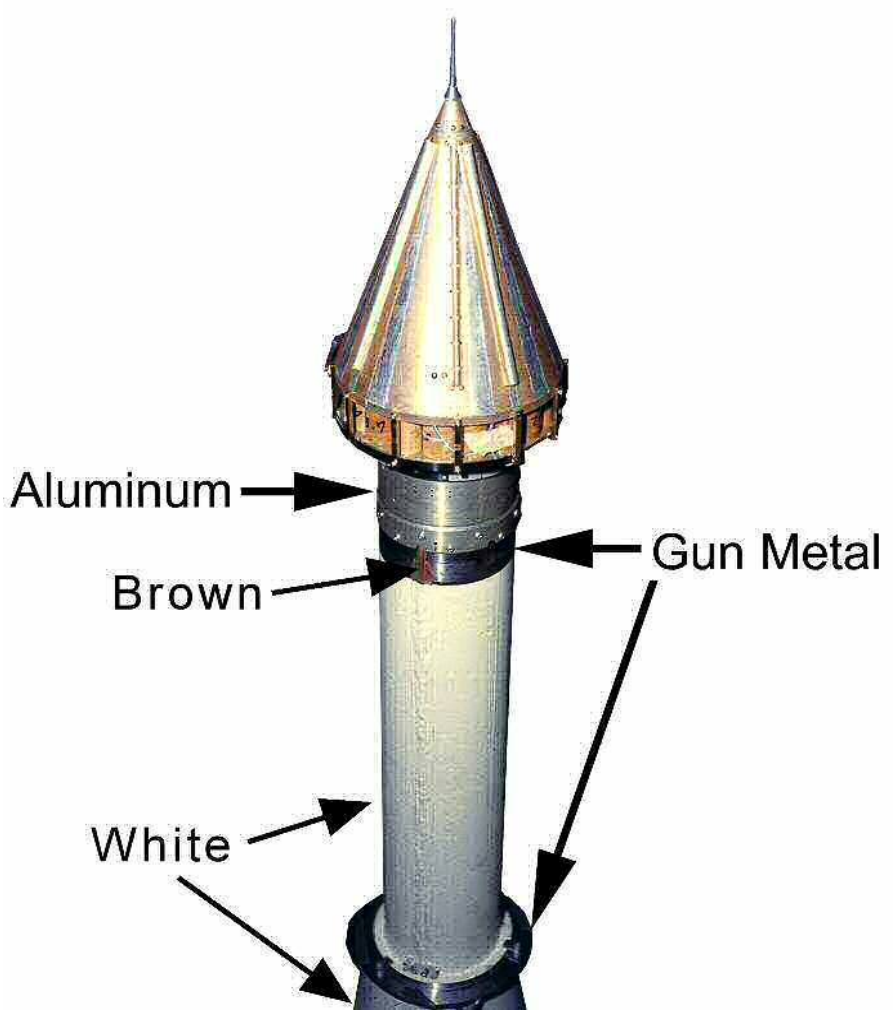
To make Gunmetal – mix a small amount of chrome silver with black

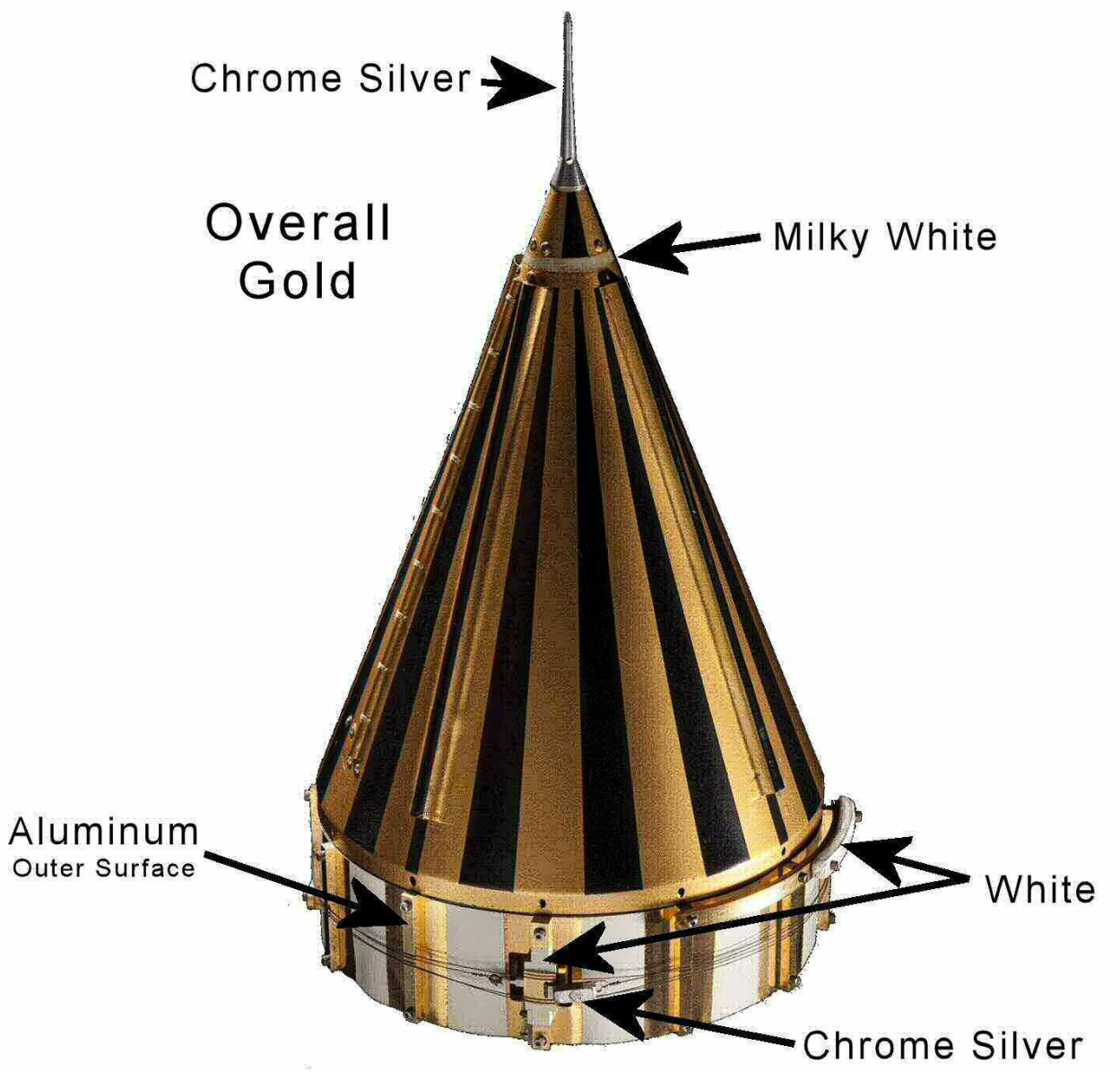
To make Milky White – mix white with a few drops of tan






Retro-rocket
Aluminum
Micro-meteoroid
panel


Aluminum
Brown
Gun Metal
White


Chrome Silver
Overall
Gold
Milky White
Aluminum
Outer Surface
White
Chrome Silver

Links to Respective Launch Vehicles

Paper model of Pioneer 2's Launch vehicle;
http://www.nielspapermodels.com/thab_1.htm

Resin kit of Pioneer 2's Launch vehicle;
http://mek.kosmo.cz/newware/nw034.htm

Paper model of Pioneer 4's launch vehicle;
http://www.ariespapermodels.nl/menu-ast.htm

Resin kit of Pioneer 4's Launch vehicle;
http://mek.kosmo.cz/newware/nw012.htm

Links to Information

Here's a good write-up on Pioneer 1
http://www.wmof.com/pioneer1.htm

The STL Library on Pioneers 0-2
http://www.sdfo.org/stl/pioneer02.php