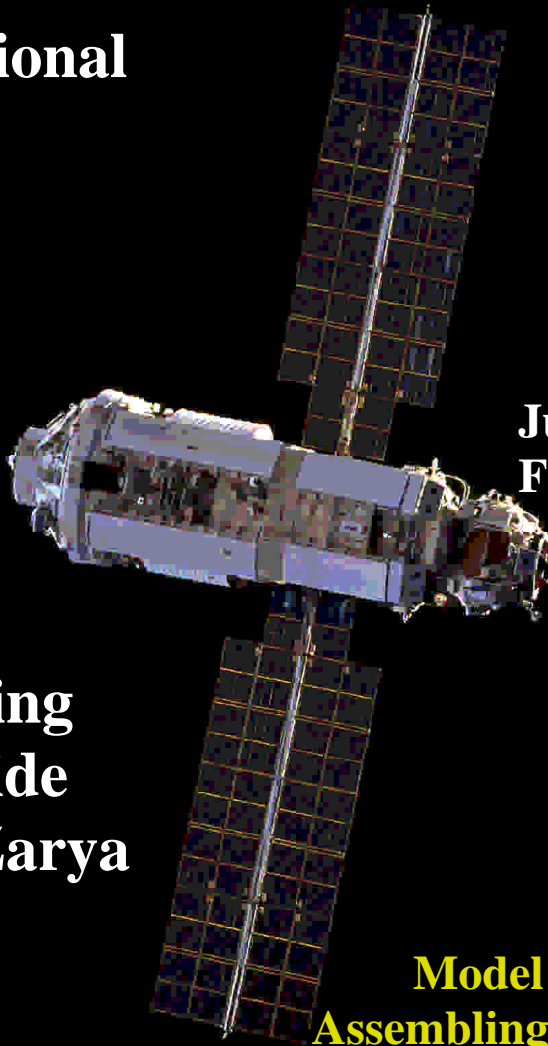




# International Space Station Paper Model



**June 1999 Version**  
**Flights: 1A/R**  
**STS 88 ISS 01-2A**

## Assembling User Guide Part 2: Zarya

**Model Design: R. Fortezza**  
**Assembling Drawings: G. De Chiara**

### NOTE:

This Model is a test version. It was built from scratch on the basis of photos published by NASA. Please notify Raimondo Fortezza any error or discrepancy you could find during the assembly. The e-mail address is: [fortezza@marscenter.it](mailto:fortezza@marscenter.it)

Detailed pictures are available at NASA WEB site at: [station.nasa.gov](http://station.nasa.gov). Please check these images before the assembly to control the correct positioning of each part.

The modifications will be implemented according to your suggestions. Please notify them via e-mail. You will be kept informed when the updated version will be made available.

This model is free ware, and the idea is to develop the model 1:100 of the entire ISS.

If you want to support the initiative please send 10 US \$, or even more if you like, to the developer. Your name will be posted in the Supporter List published on the Paper-ISS page at MARS WEB site and you can download all the updated version of the ISS with the new Modules that will be launched up to the end of the year 2000.

Quality printed model is available based on uncompressed files and 1440 dpi ink-jet printer. The cost is US \$ 25 or an equivalent value in your currency. Send the money directly via mail to the address indicated at page 9. The model is shipped using ordinary post service. If you want express courier please send an e-mail for a quotation.



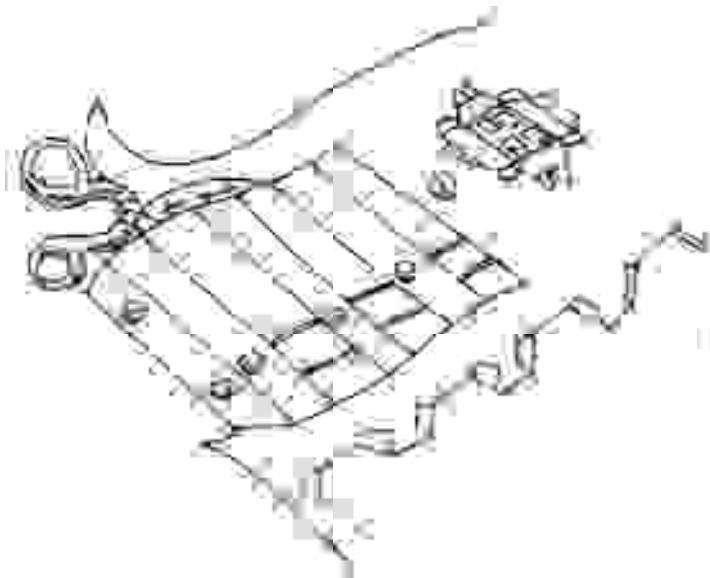


## Zarya Assembling Guide

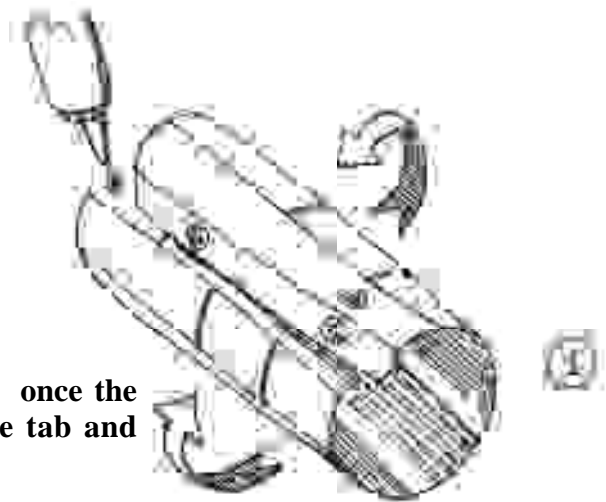
Cut out and bend the parts following the line. For best results use a sharp hobby knife and a metal straight edge. For some parts small scissor is better. Glue together the parts using a thin, even coat of ordinary white glue. Print the sheets on a color printer. The format of this model should be compatible with both A-4 or US Letter sheet size. I used EPSON 750 Color ink-Jet Printer with a resolution of 1440 dpi with excellent results.

Zarya is formed by three separate sheets. The first two should be printed on glossy paper. The numbered parts belonging to this sheet are identified by the letter G followed by the part number.

The third sheet should be printed on card board paper (or Photo Paper) and its parts are identified by the label P

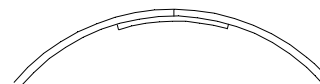


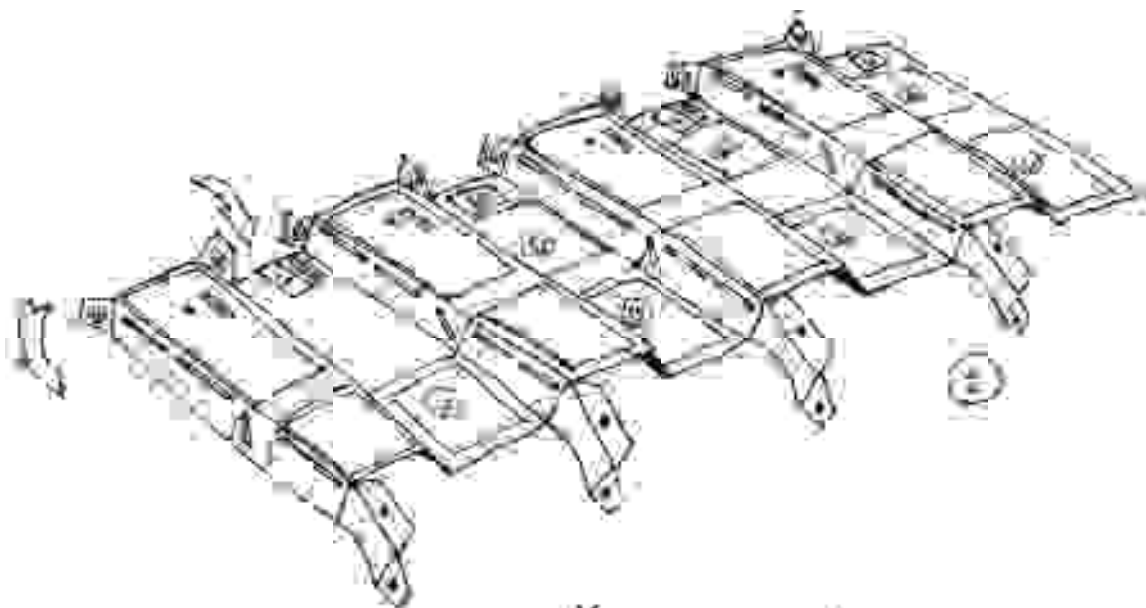
Cut the G-1 part. This is the internal part of Zarya structure.



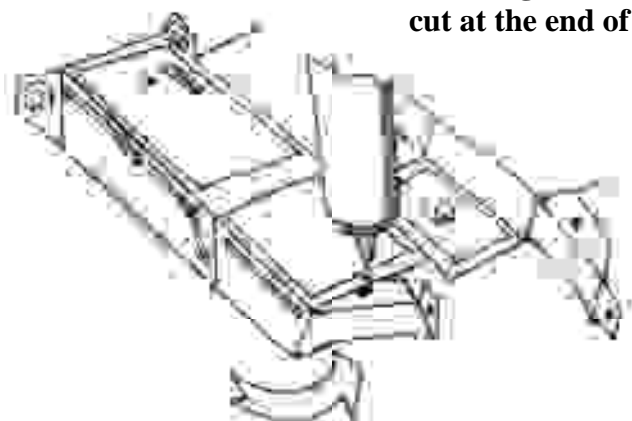
Roll the G-1 part on a table edge and, once the shape is similar to a cylinder, glue the tab and form the Unity body.

To improve the model accuracy you can decide to cut the gluing tabs from any cylindrical part and make a new separate one to eliminate the gap formed when a single part is rolled and glued on itself. See the following sketch to understand the modification.



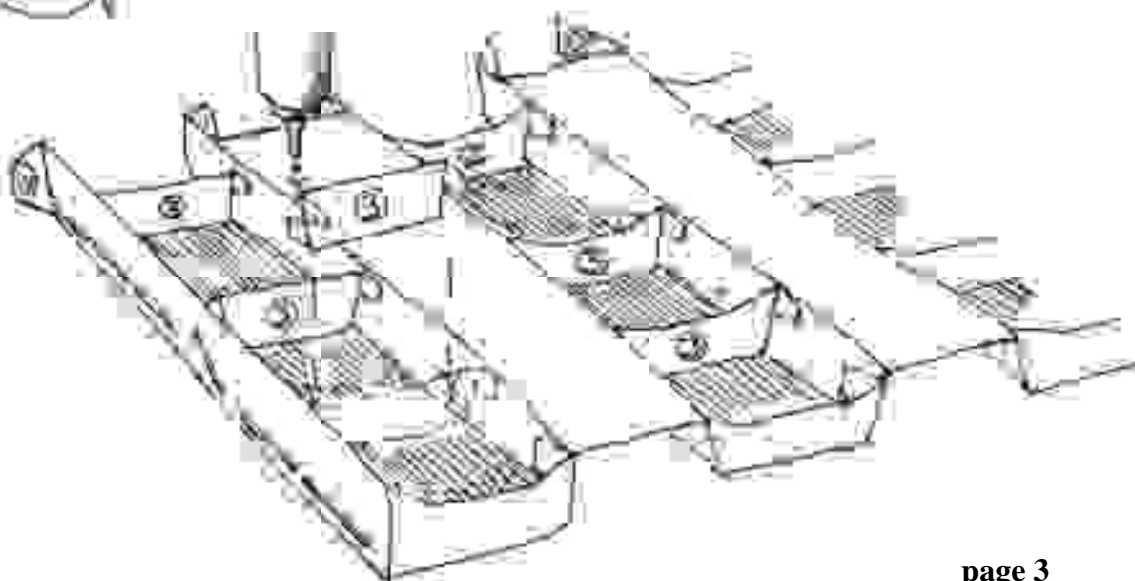


**Cut the G-2 part and bend carefully the four U shaped structures. The angles they should formed with the base is approximately the one shown in the figure. Use a straight edge to bend along each line. Make a small cut at the end of each line to easy the operation**



**Glue each box cover. Align carefully the two edges and glue from the inner side.**

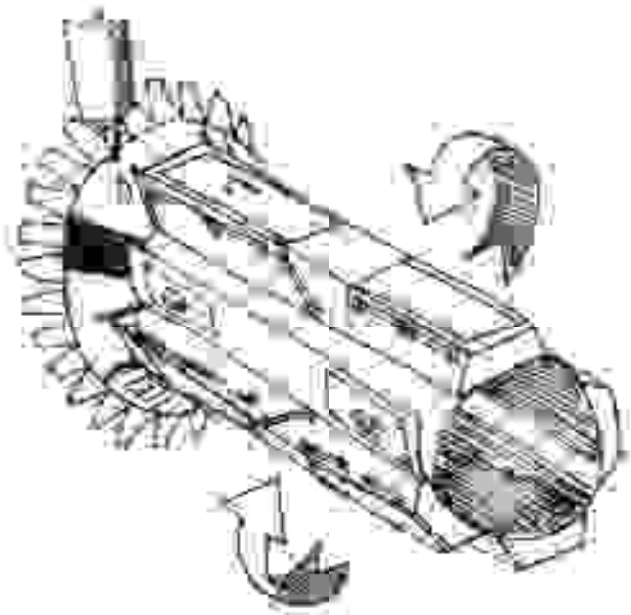
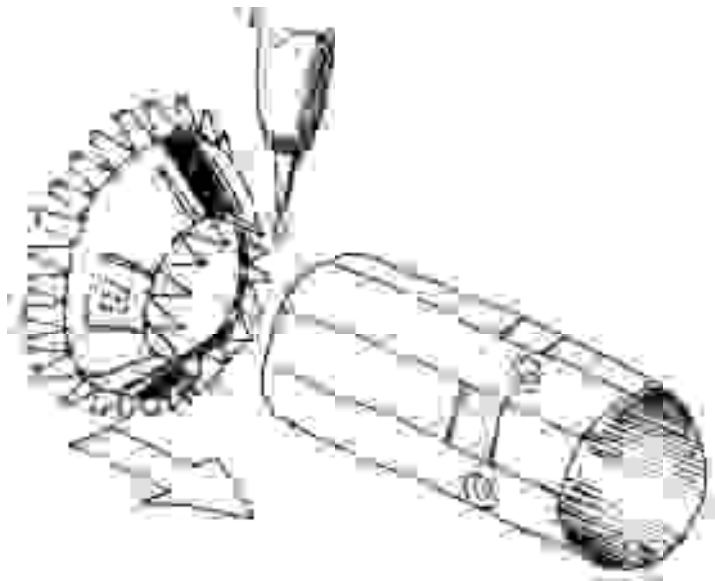
**Cut the nine P-3 parts. Glue them inside each box. The position should correspond to the line marked on the G-1 Tube. Bend the two tabs at each end at 90 degrees on the opposite sides.**





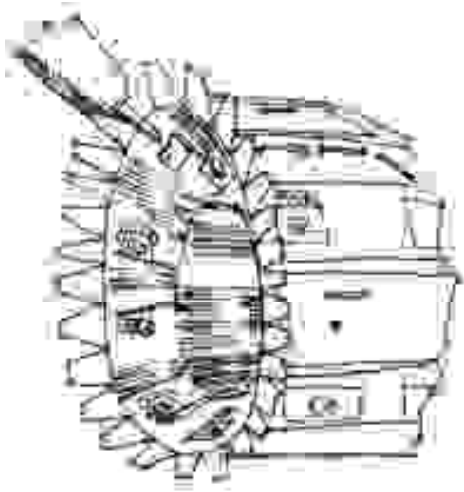
**Cut G-4 part. Remove with a sharp razor the red stripes. Roll it to form a cone.**

**Align the G-4 cone to the G-1 tube. The black stripes should be aligned to the center-line of two opposite white parts. The two sectors with the yellow squares with two dots (thruster) should be aligned to the other white bands.**

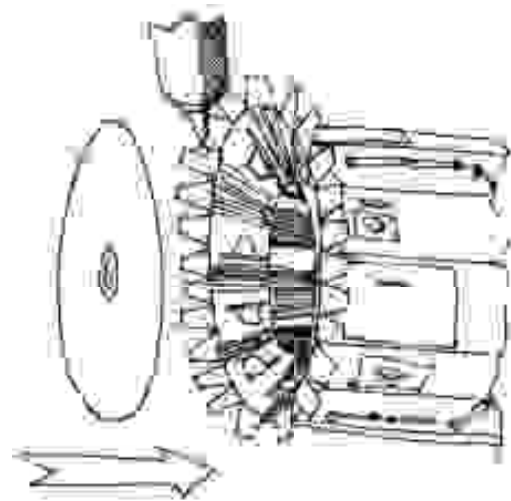


**Roll the G-2 part and glue it on the G-1 tube. The eight back tabs must be inserted in the slot of the G-4 cone. Glue the gray part of the tube one by one and roll the G-2 part on the tube carefully keeping the alignment on each segment. Try the matching of the G-1 and G-2 parts before to apply the glue.**

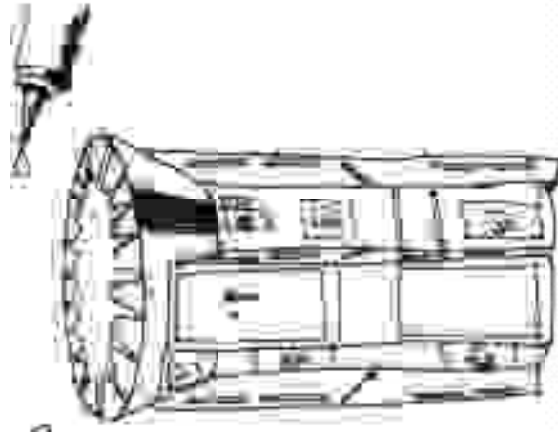




**Glue the back tabs on the back side of the G-4 cone.**

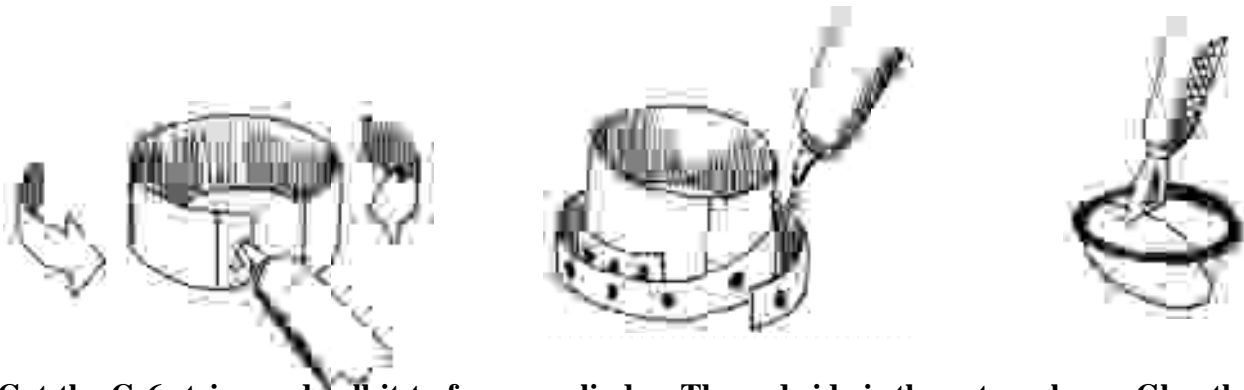


**Cut the P-5 disk. Insert it in the cone and glue the tabs of the cone on the disk.**

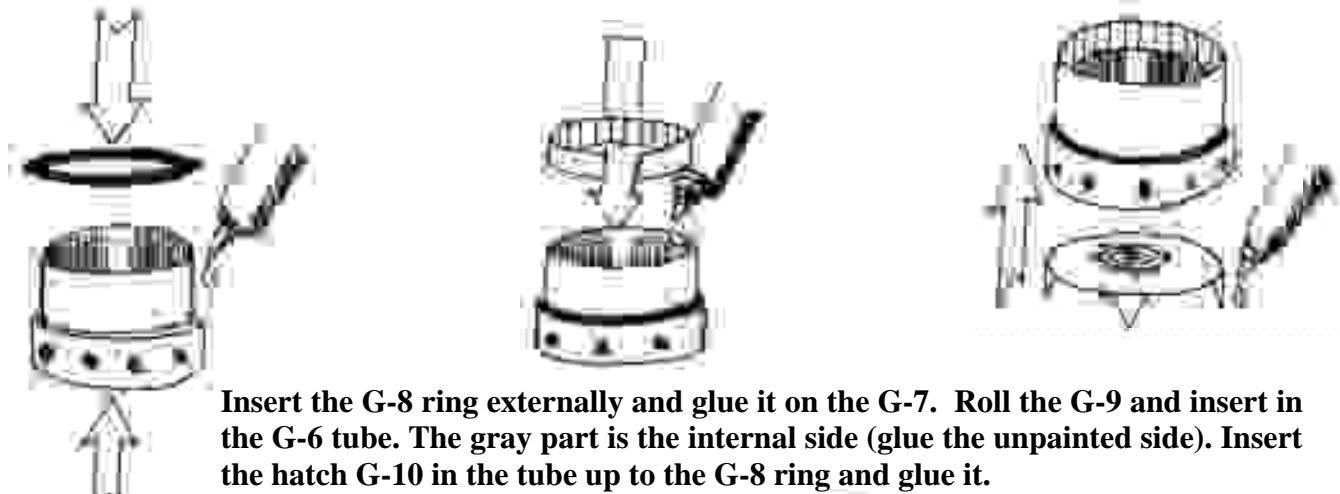


**The Tabs must be glued externally to the disk. Try to keep the disc orthogonal to the center-line. The tabs should be bent with care to form a perfect cone with flat base.**

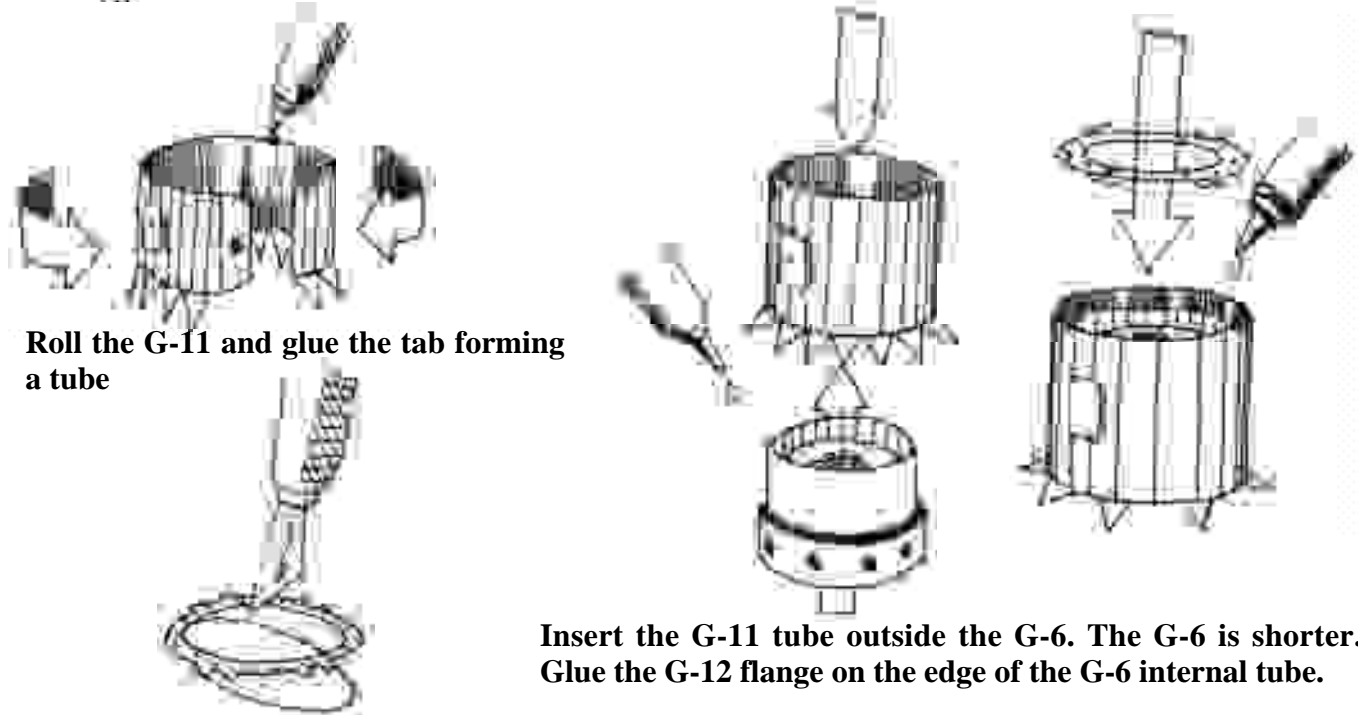




**Cut the G-6 stripe and roll it to form a cylinder. The red side is the external one. Glue the G-7 around the G-6 and glue it. Please check if the thickness of this roll correspond to the thickness of the G-8 disk. If not cut a part of it or add another piece obtained using the residual part of the sheet. Cut the G-8 ring.**



**Insert the G-8 ring externally and glue it on the G-7. Roll the G-9 and insert in the G-6 tube. The gray part is the internal side (glue the unpainted side). Insert the hatch G-10 in the tube up to the G-8 ring and glue it.**



**Roll the G-11 and glue the tab forming a tube**

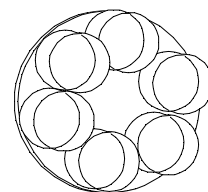
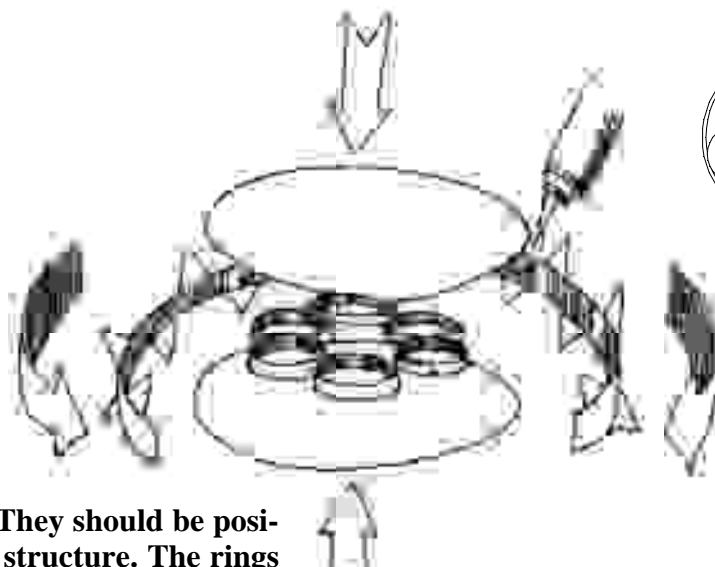
**Insert the G-11 tube outside the G-6. The G-6 is shorter. Glue the G-12 flange on the edge of the G-6 internal tube.**

**Cut the mating flange G-12**

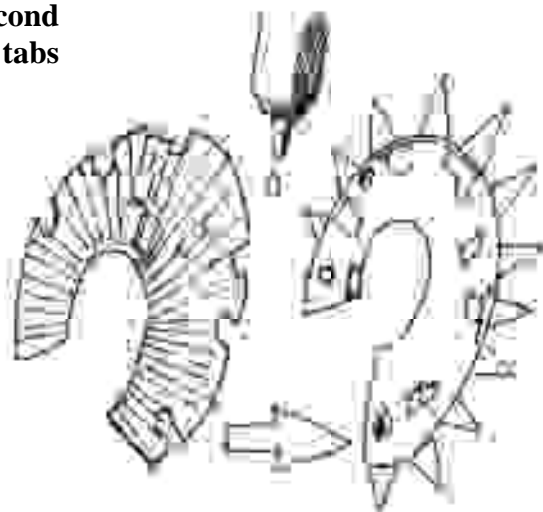




**Cut the six G-13 stripes and form 6 small rings. You can use a pencil to ease the operation by rolling on it the stripes.**

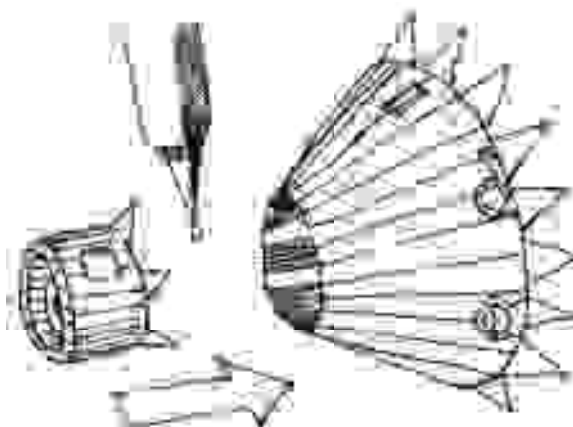


**Glue the six rings on the P-14 disk. They should be positioned to form a sort of honeycomb structure. The rings should not protrude from the disk. Glue on it the second P-14 disk. Roll around the G-15 stripe and glue the tabs externally to the two disk.**



**Cut the G-16 part. The chequered areas should be removed with a razor.**

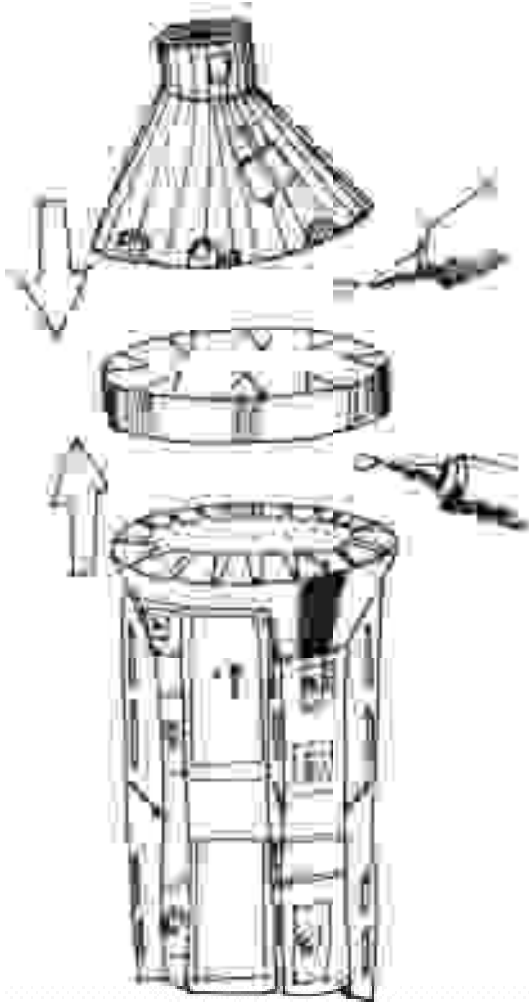
**Cut the G-17 part. Glue the G-16 and the G-17 part aligning carefully the edges. Leave the part opposite to the tab unglued.**



**Insert the gluing tab between the two layers and glue it inside to form a cone.**

**Insert the hatch inside the cone and glue the tabs internally.**

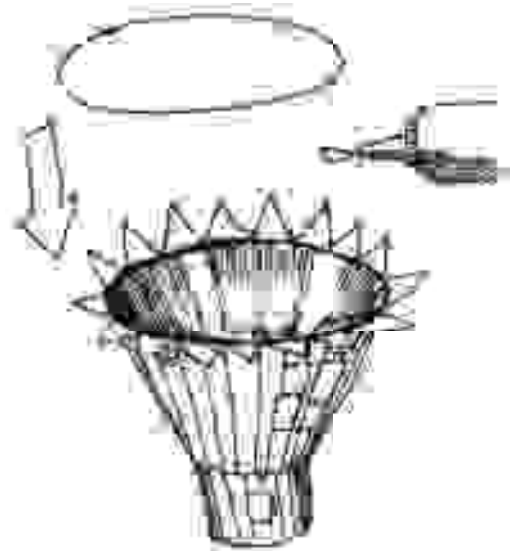




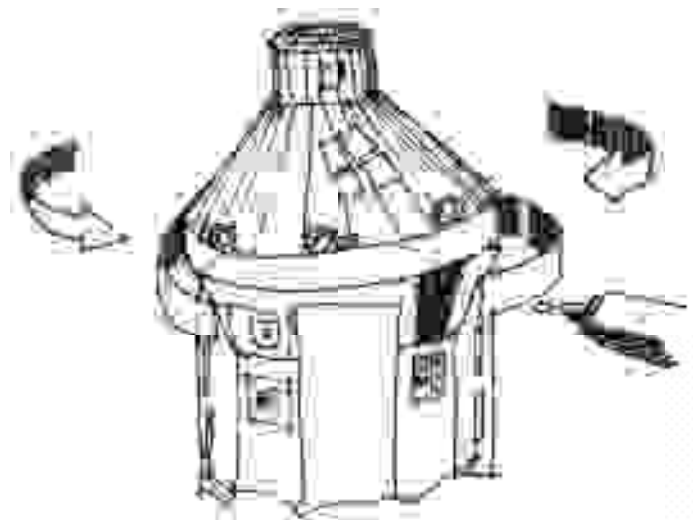
Glue together the three parts as indicated in the figure.

**Be careful with the alignment!**

The conjunction line of the back cone correspond to the center of the section 1 of Zarya body. The section 1 is marked on the body and is the one where the part 45, 42 and 40 will be attached.



**Cut the P-18 disk. Insert it in the back cone and glue the tabs of the cone on the disk. The Tabs must be glued externally to the disk. Try to keep the disc orthogonal to the center-line. The tabs should be bent with care to form a perfect cone with flat base.**



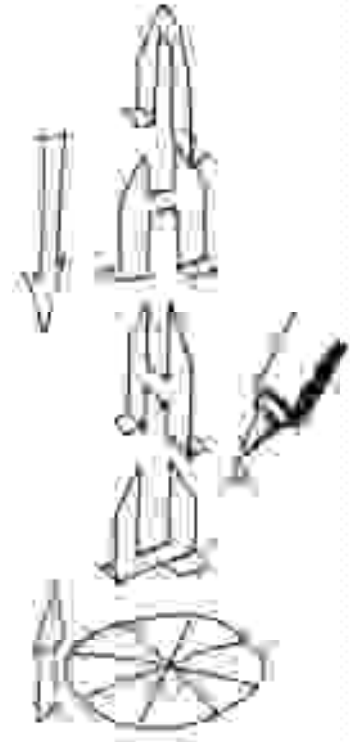
**Roll the G-20 around the central " drum ". Try it before and cut at the opposite part of the tab to fit tightly. Align the yellow squares with the black stripes of the cone (they are the thermal protection).**



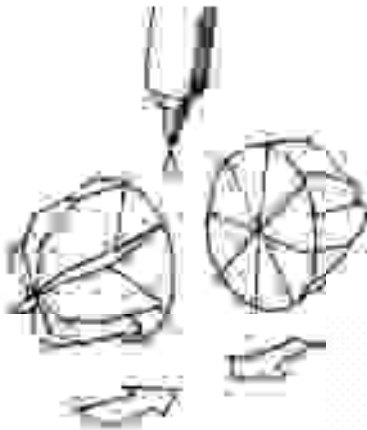




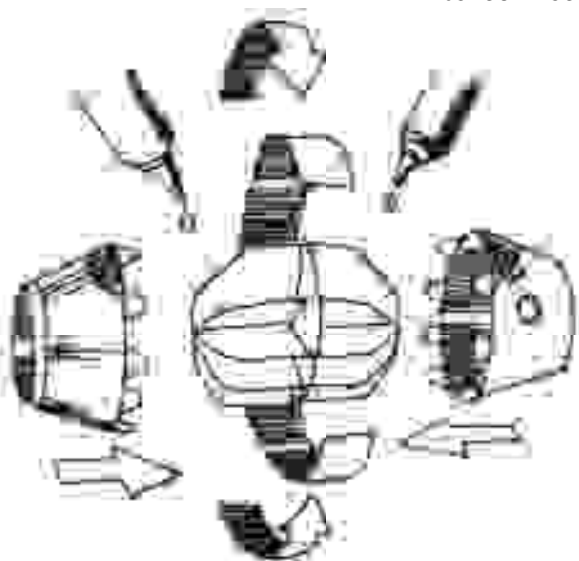
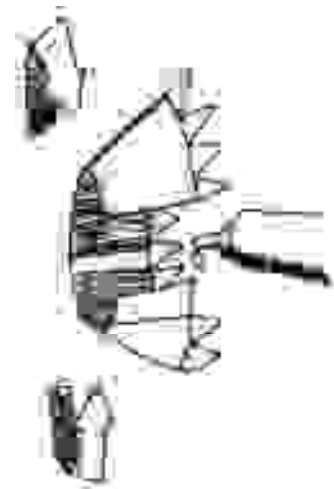
**Cut G-21, G-22, G-23, and G-24. There are two set of them. Cut carefully the slot inside each part; the segment connecting the two halves is located at different height on each part. Glue the part G-21 on the P-25. Align the part along a line. Glue the two small tabs orienting them on opposite sides. Try to keep G-21 aligned along the vertical. Glue then the G-22 rotating of 45 degrees respect to the G-21. Repeat the operation with G-23 and G-24. At the end you obtain e sort of "half orange" divided in segments.**



**Align the segments and glue the two " half orange" to form an entire "orange ".**



**Form two cones with G-26 and G-27 parts. The G-26 is the front part and G-27 is the back part of Zarya interconnecting node.**



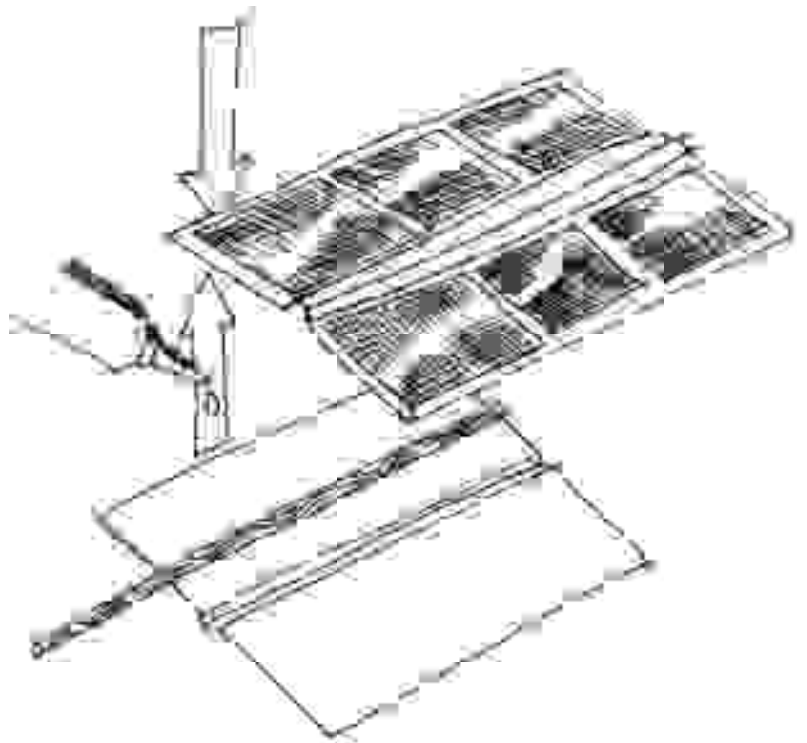
**Glue the two cones on the orange structure. Keep the red segment of circle aligned. Roll G-28 and glue on the structure. Align the upper hatch (the red circle) with the two red circle-segment to form a complete circle. The Circle should be oriented toward the top.**

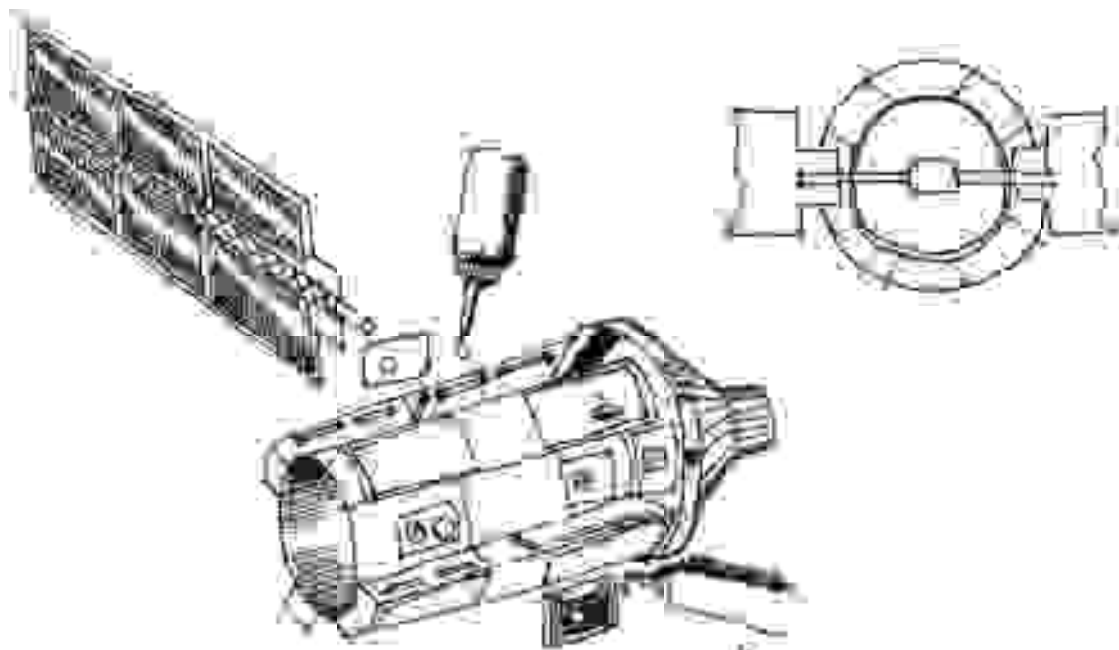




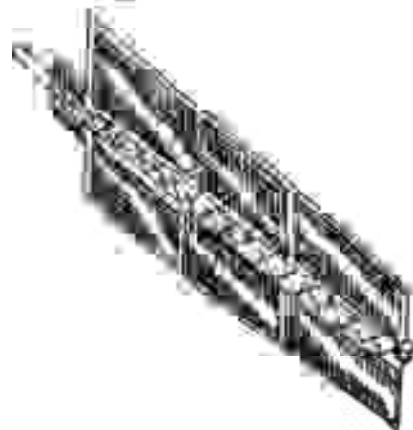
**Cut the G-29 part and form a cone. Cut the P-30 disk. Insert it in the G-29 cone and glue the tabs of the cone on the disk. The Tabs must be glued externally to the disk. Try to keep the disc orthogonal to the center-line. The tabs should be bent with care to form a perfect cone with flat base. Glue only half of the existing cone tabs on the disc (i.e. every alternate tab). The unglued tabs are used to attach the end cones to the Zarya body.**

**Solar Panels. Find a long toothpick. We use to prepare the brochette or skewer. Any other stick with a diameter of about 3 mm for Scale 1:100 or 2 mm for Scale 1:144 can be used. Cut P-31 and P-32 (two of them). Bend each part to form a concavity in which the small stick should be inserted. The stick has to be 15 mm longer than the solar panels. Align the stick to the large part of the solar panel and glue stick together with P-31 and P-32. P-31 is the sensitive part of the solar panel and usually is aligned orthogonal to the sun.**





**Glue P-33 parts to the Zarya body at the location marked on the body. With a small scissor or razor cut the hole and insert the solar panel stick. Align the two sticks. Prepare a small paper stripe. Form a small tube with an internal diameter equal to the one of the stick. Fill it of glue and use it to connect the two solar panels. Align them before the glue dries.**



**Cut G-34 parts (2 x) and cut the four marks on each of them. Glue G-35 (external) and G-36 (internal) together and form the mating ring (the tab should be glued between the two parts).**

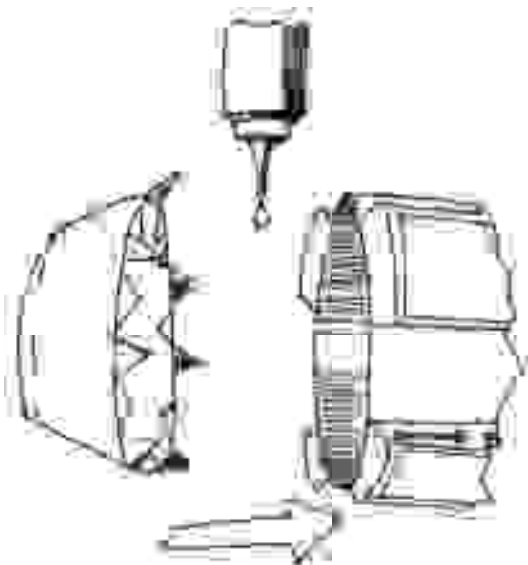
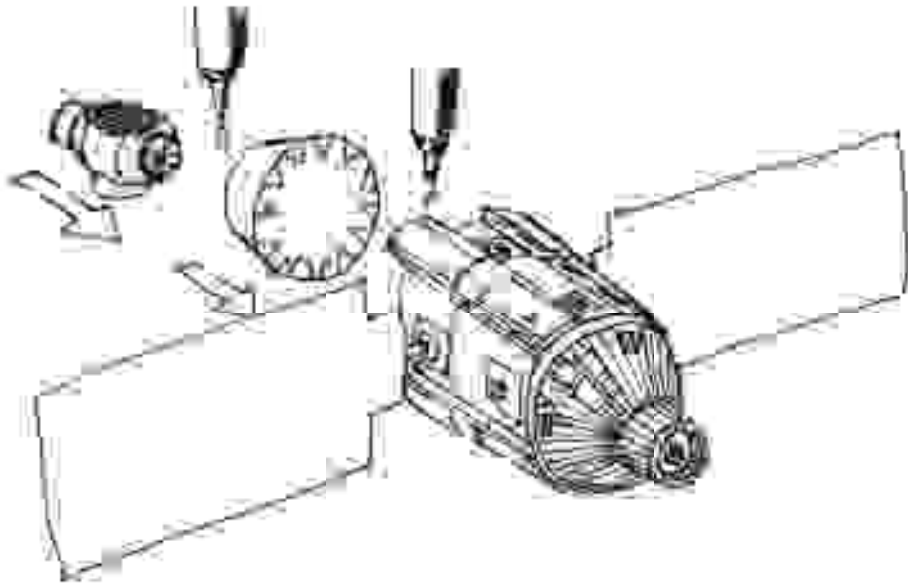
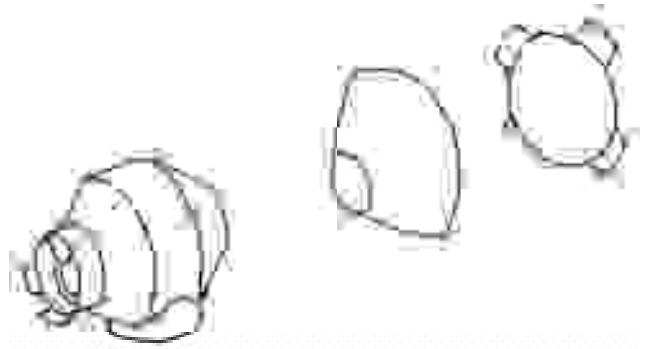


**Glue hatch P-34 (2 x) on the the interconnecting node. Glue also the mating ring on the front side of it (the back side is marked with white square n. 50). Form a ring with G-37. Glue to the bottom part of the node. Bend the gluing tabs and glue on them the hatch P-38.**





**Glue the Zarya interconnecting node with the G-29 cone. The white square marked 49 should be aligned with the upper red hatch.**



**Glue the Zarya body with the G-29 cone. The white square marked 49 should be aligned with the section III (the one marked with white boxes 44 and 41..**





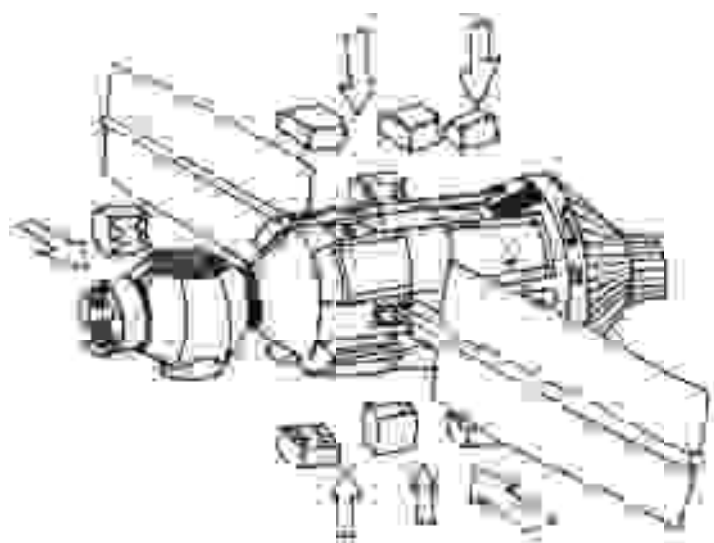
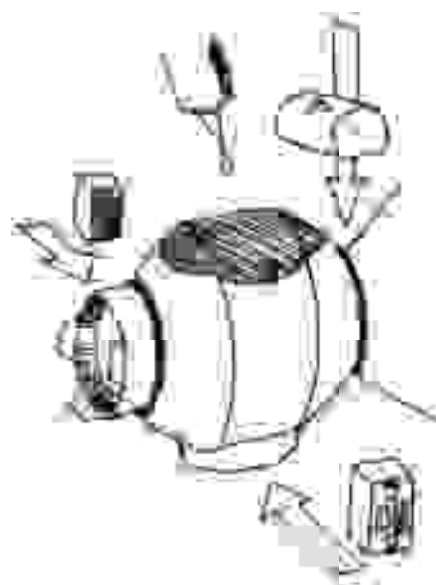
**Cut the two main engines G-40 and form two small boxes. Glue them in position on the Zarya Body on the corresponding white squares. Do the same with the thruster blocks G-43; the three small nozzles must be oriented toward the back cone.**

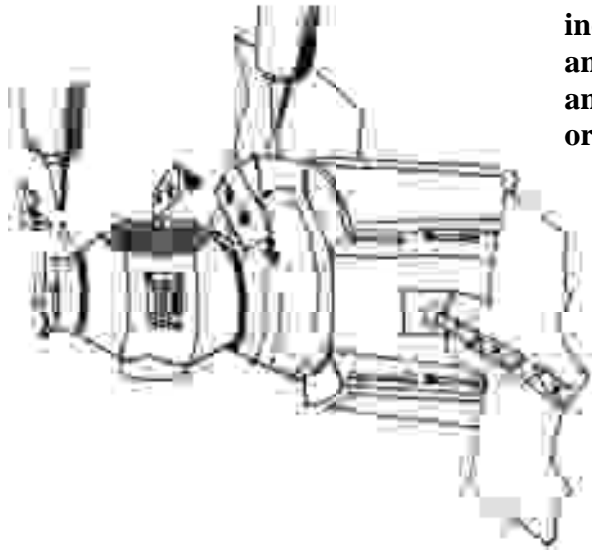


**Form other boxes with parts G-41, G-42, G-44, G-45, G-46 and G-47 and glue them on the corresponding location on the body . The part G-44 must be oriented with the label PMA forward (where is the node)**

**Form other boxes with parts G-48 (2 x) and 48 a (2 x) and glue them on the corresponding location on front part of Zarya body**

**Form other boxes with parts G-49, G-50, G-51 (2 x), G-45 and G-47 and glue them on the corresponding location on the body . The part G-44 must be oriented with the label PMA forward (where is the node)**

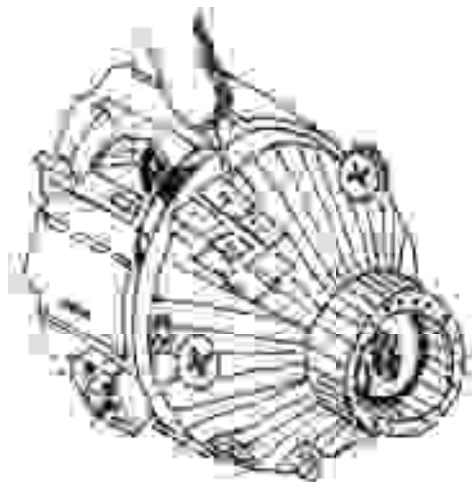




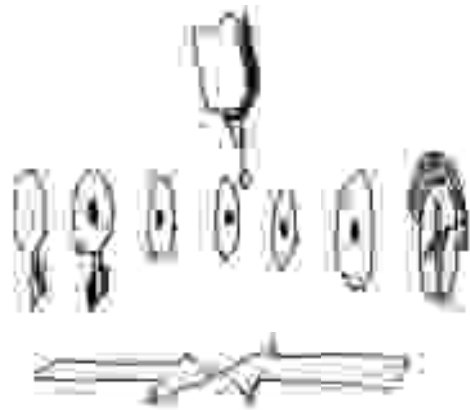
**Glue the targets P-62 and P-63 in the position indicated by the red dots on the front boxes and on the front hatch. Cut the small triangle and glue it on the back of each of these part to orient the target with the right angle.**

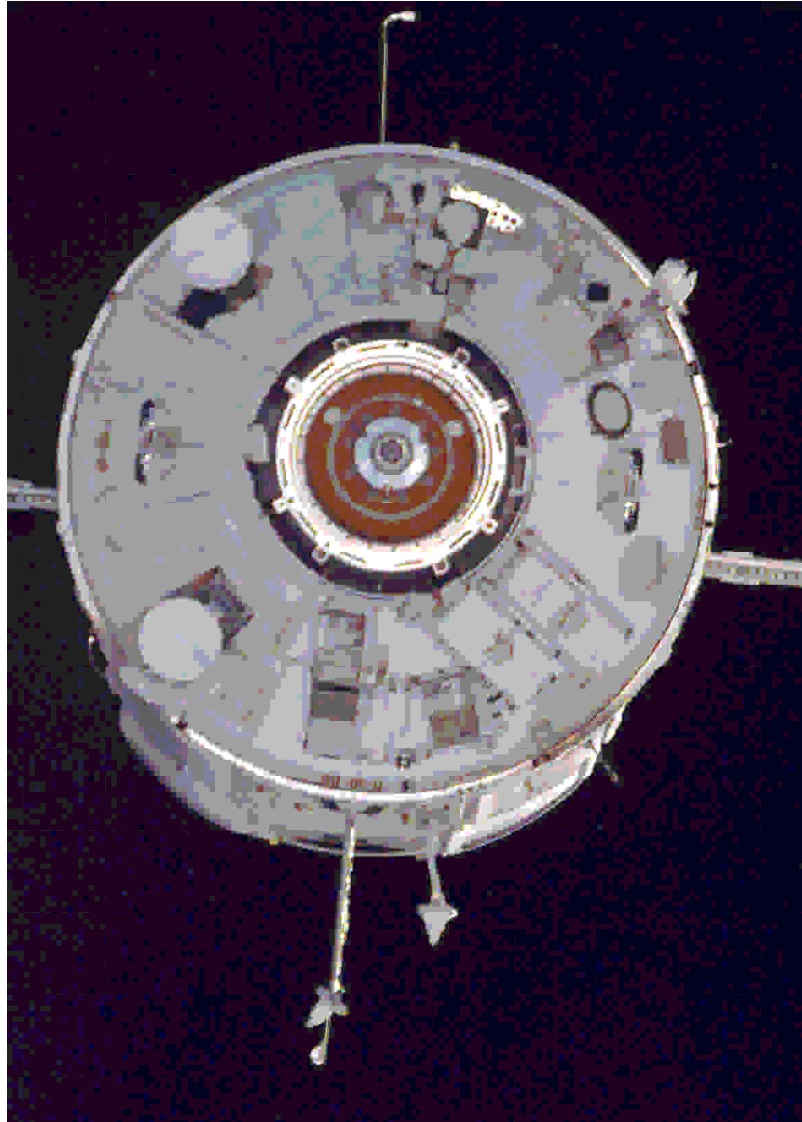


**Cut the part G-52 and form a strange box. Glue on it the disk P-53 on the marked position. Glue the support on the interconnecting node.**



**Cut the remaining parts P-54, P-55, P-56, P-57, P-58, P-59, P-60 and P-61. The last four parts are formed by several elements that should be glued together following the arrow. Glue each part on the back cone of Zarya. In the next page a picture of the back cone of Zarya is illustrated**

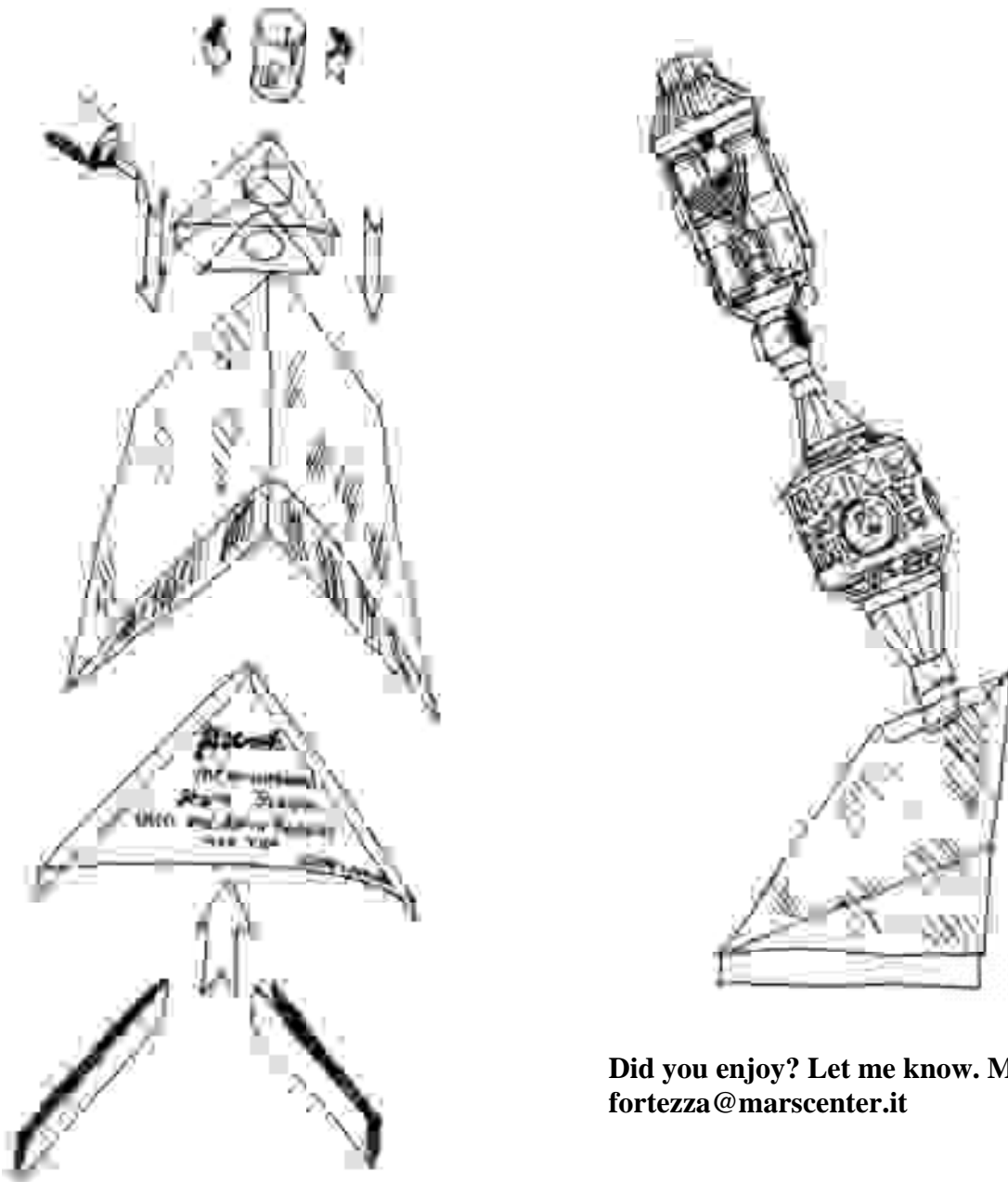






## Paper ISS Stand Assembling Guide

Print the stand sheet on transparent paper (the one used for transparency) Cut out and bend the parts following the line. For best results use a sharp hobby knife and a metal straight edge. For some parts small scissor is better. Glue together the parts using a thin, even coat of ordinary transparent glue glue. Print the sheets on a color printer. The format of this model should be compatible with both A-4 or US Letter sheet size. I used EPSON 750 Color ink-Jet Printer with a resolution of 1440 dpi with excellent results. The parts must be assembled as illustrated in the following figure. One part is contained in the Unity Paper sheet. On the base cut two part of a plastic binder (those small used to keep up to 10-15 pages together). I hope that the English term is correct. Keep the stand and the label plate together using the binder parts.



Did you enjoy? Let me know. My e-mail is:  
[fortezza@marscenter.it](mailto:fortezza@marscenter.it)

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