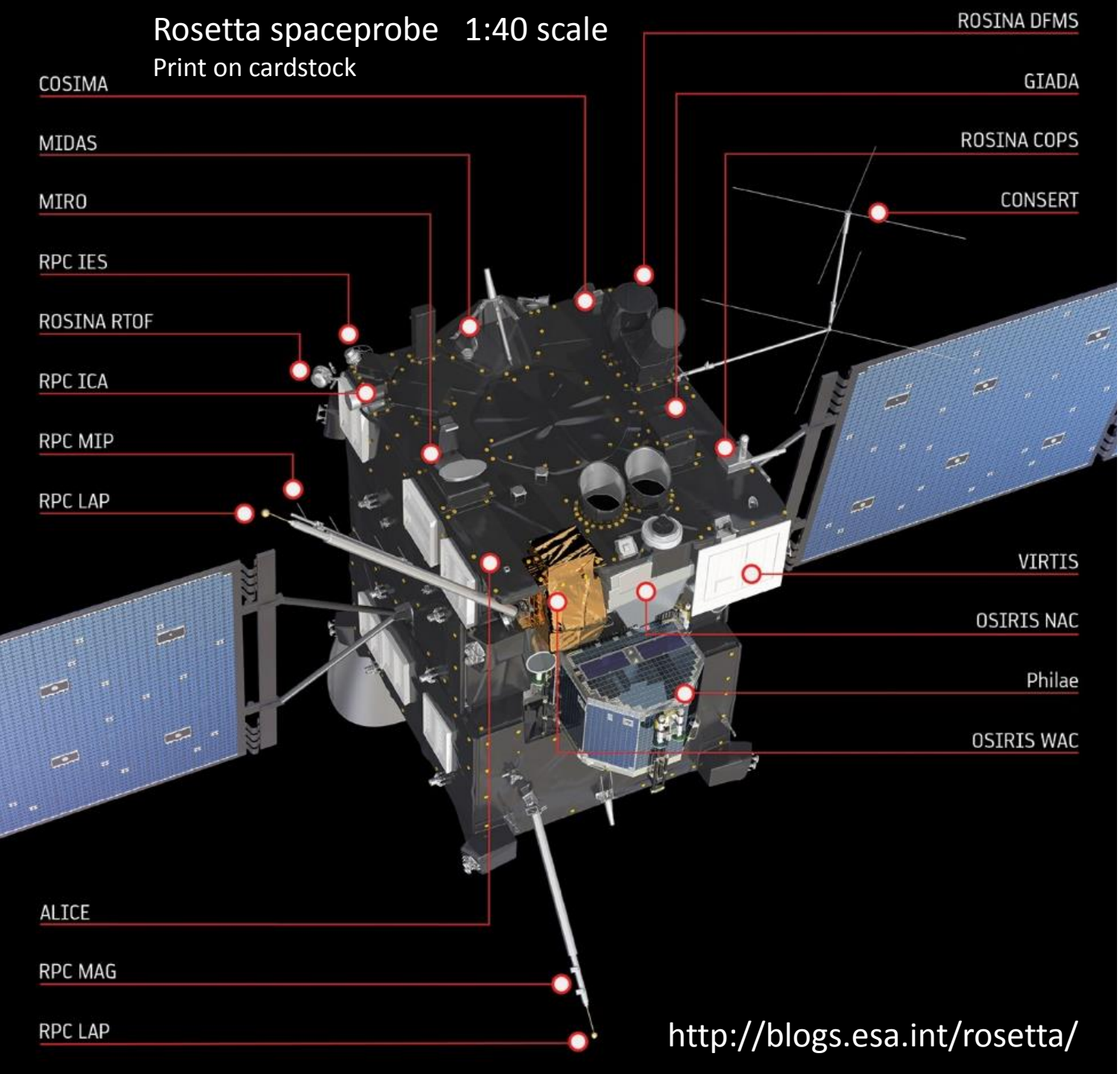
Rosetta spaceprobe 1:40 scale

Print on cardstock



http://blogs.esa.int/rosetta/

COSIMA (Cometary Secondary Ion Mass Analyser) will analyse the characteristics of dust grains emitted by the comet, including their composition and whether they are organic or inorganic.

MIDAS (Micro-Imaging Dust Analysis System) studies the dust environment around the asteroids and comet. It provides information on particle population, size, volume and shape.

MIRO (Microwave Instrument for the Rosetta Orbiter) is used to determine the abundances of major gases, the surface outgassing rate and the nucleus subsurface temperature.

RPC (Rosetta Plasma Consortium). In this instrument, five sensors measure the physical properties of the nucleus, examine the structure of the inner coma,monitor cometary activity, and study the comet's interaction with the solar wind.

GIADA (Grain Impact Analyser and Dust Accumulator) measures the number,mass, momentum and velocity distribution of dust grains coming from the nucleus and from other directions (reflected by solar radiation pressure).

ROSINA (Rosetta Orbiter Spectrometer for Ion and Neutral Analysis) contains two sensors which will determine the composition of the comet's atmosphere and ionosphere, the velocities of electrified gas particles, and reactions in which they take part. It will also investigate possible asteroid outgassing.

CONSERT (Comet Nucleus Sounding Experiment by Radiowave Transmission) probes the comet's interior by studying radio waves that are reflected and scattered by the nucleus

. **OSIRIS (Optical, Spectrocopic and Infrared Remote Imaging System)** has a wide-angle camera and narrow-angle camera that can obtain high-resolution images of the comet's nucleus.

VIRTIS (Visible and Infrared Thermal Imaging Spectrometer) maps and studies the nature of the solids and the temperature on the surface of the nucleus. Also identifies comet gases, characterises the physical conditions of the coma and helps to identify the best landing sites.

Assembly: score fold lines marked with red arrows or red dotted lines, cut out parts. Refer to the labelled graphic on page 1 for details on instrument locations.

1. Fold the **Philae** lander into a box and glue using the tabs. Glue the landing legs together as indicated but do not glue the gray tabs at the ends together. Refer to the landing leg assembly diagram to glue the legs together using the gray tabs. Glue the completed legs to the gray underside of Philae using the dotted lines for reference; folded legs go up toward the top of Philae. Fold the pads to make a two sided part and glue to the ends of the legs as indicated. For deployed legs use alternate leg parts and attach pads to ends – unfolded legs will not fit in orbiter.

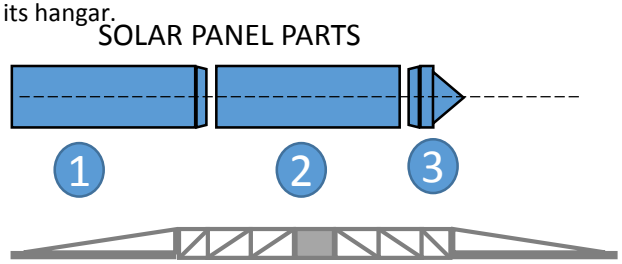
2. Fold the **Rosetta** orbiter into a box and glue using the tabs. Roll the **LAUNCH SUPPORT RING** into a wide band and glue to the bottom of Rosetta over the big circle. You can omit the small detail parts if desired and go directly to step 3 to assemble the HGA communication antenna.

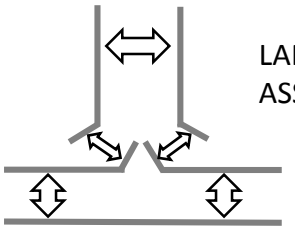
DETAILING: Glue the **RADIATORS** to thick card and glue to Rosetta over the printed graphics. Fold the **THRUSTERS** into small boxes and glue to Rosetta over the gray rectangles on the sides and bottom. Fold the **MIDAS** instrument into a prism and glue to Rosetta over the graphic. Glue part A of the **MIRO** into a flat box; glue part B into a tall prism as shown then glue part B to A; fold part C as indicated and glue to part A; finally glue the completed MIRO to Rosetta. Roll the **RPC ICA** into a cylinder and close the ends with the attached disks, then glue to Rosetta over the graphic. Fold one part of the **RPC IES** into box, roll the other part into a short cylinder. Glue the cylinder to the box over the circle, then glue the completed assembly to Rosetta. Roll part 1 of **ROSINA DFMS** into a cylinder and glue to Rosetta over the circle on the corner of the deck. Fold part 2 into a box, then roll part 3 into a cylinder and glue to the top of part 2. Glue the completed ROSINA DFMS to Rosetta over the graphic. Fold **GIADA** into a box and glue to Rosetta over the graphic. Roll the two **STAR TRACKER** barrels into cylinders and glue to Rosetta over the light gray circles. Cut two toothpicks to length for the **RPC LAP** booms. Glue to Rosetta using the light blue circles on the side – refer also the labelled picture on page 1.

3. Cut out the HGA parts and supports; roll the **HGA DISH** into a flat cone. Fold the **HGA WAVEGUIDE** and glue to the back of the HGA DISH. Roll the **HGA feed horn** into a narrow cone and glue into the center of the HGA DISH. Fold down the legs of the **HGA REFLECTOR** and glue to the DISH with the legs evenly spaced. Glue the **HGA MOUNT** and **LAUNCH SUPPORT** parts back to back to make two sided parts, being careful to not glue the rounded end tabs together. Bend the parts as indicated in the images and glue to Rosetta using the round ended tabs and position over the black circle and gray triangles. Glue the HGA WAVEGUIDE to the MOUNT positioned as desired.

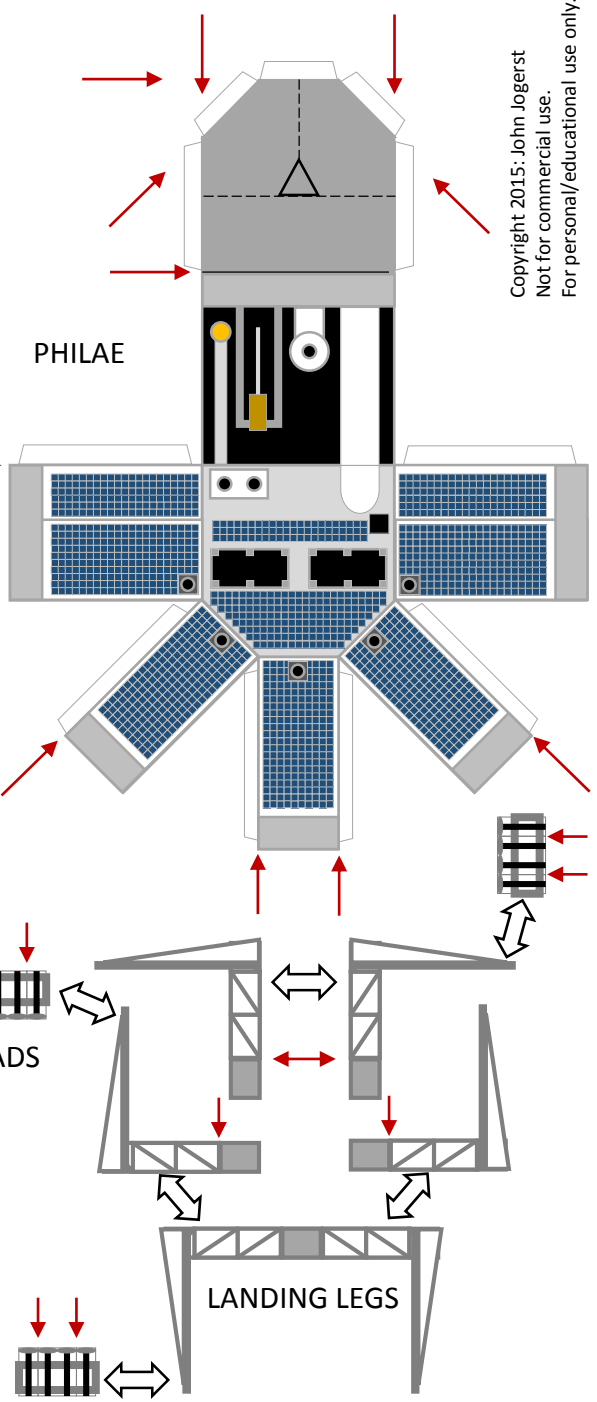
4. Fold the SOLAR PANEL part 1, insert a 32 in/80 cm support wire (or thin dowel) down the center and glue. Fold parts 2 and 3 and glue, using the tabs as indicated to connect the parts into a completed wing. Pierce the small red circles on the sides of Rosetta and pass the wire through. Glue up the second set of solar panel parts around the wire support to complete the panels. You can cut panels short for a more easily handled model, if desired.

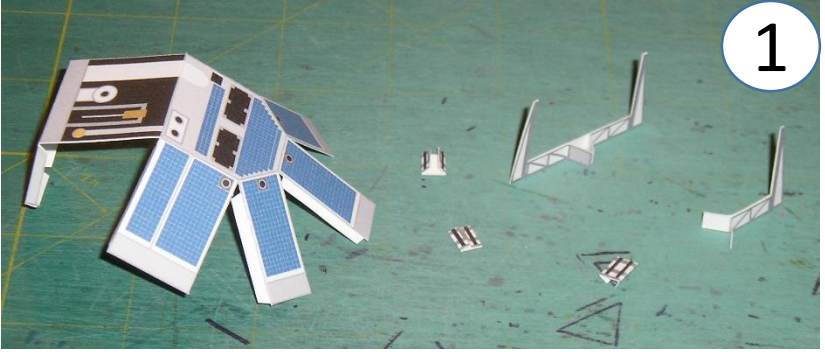
5. Cut out the marked white area on the side of Rosetta, fold the tabs inward, and insert the Philae lander into its hangar.





LANDING LEG ASSEMBLY

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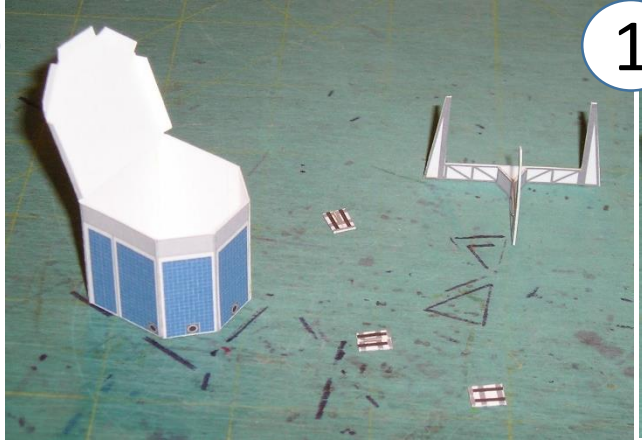
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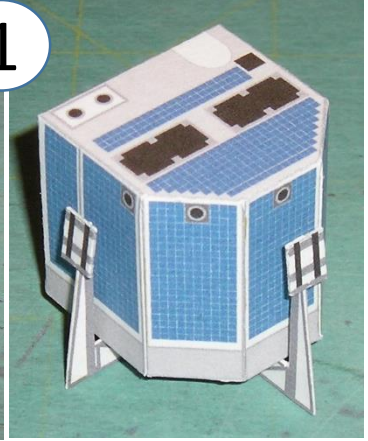

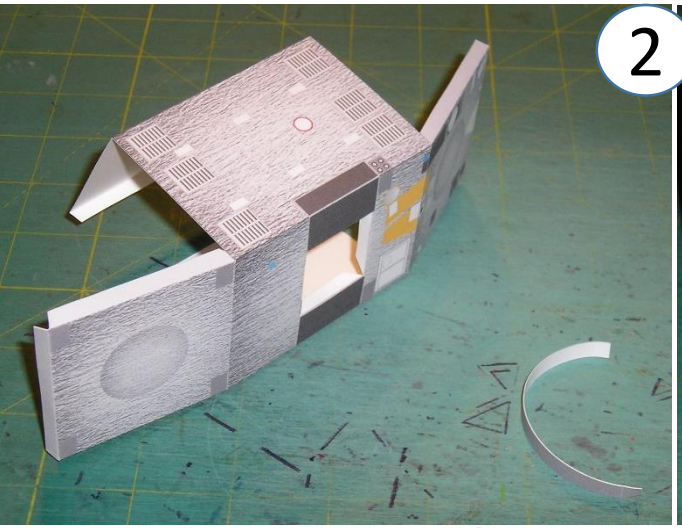
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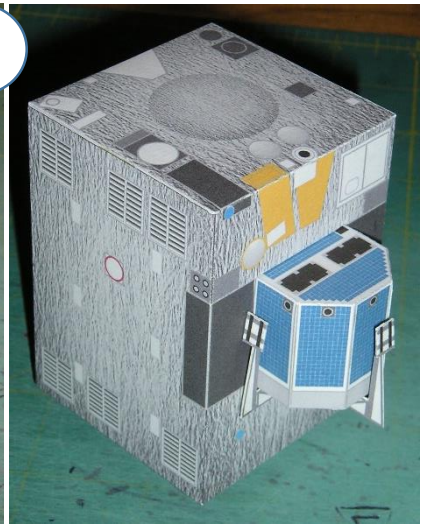

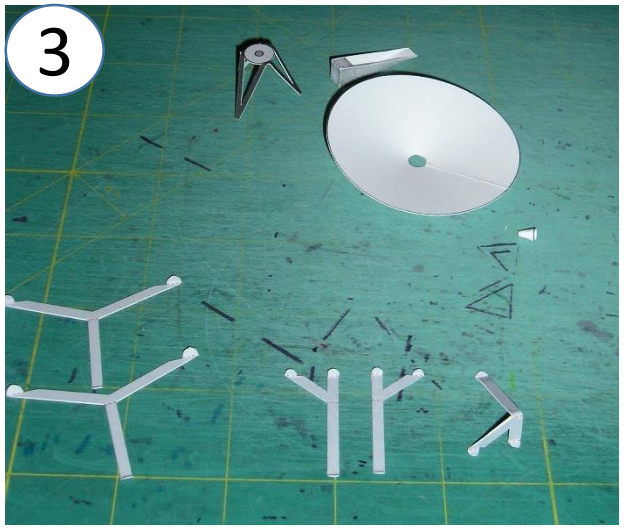
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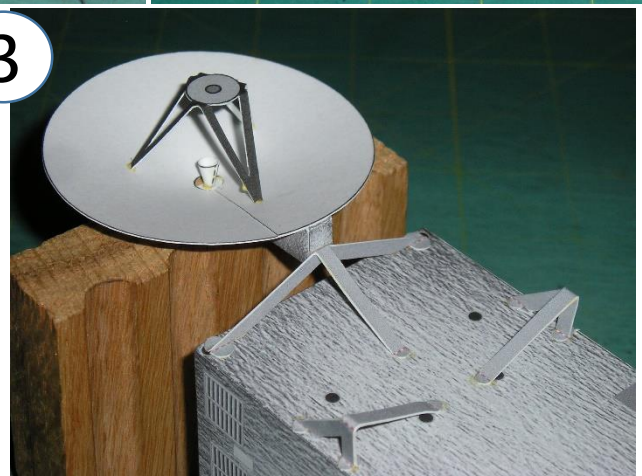
3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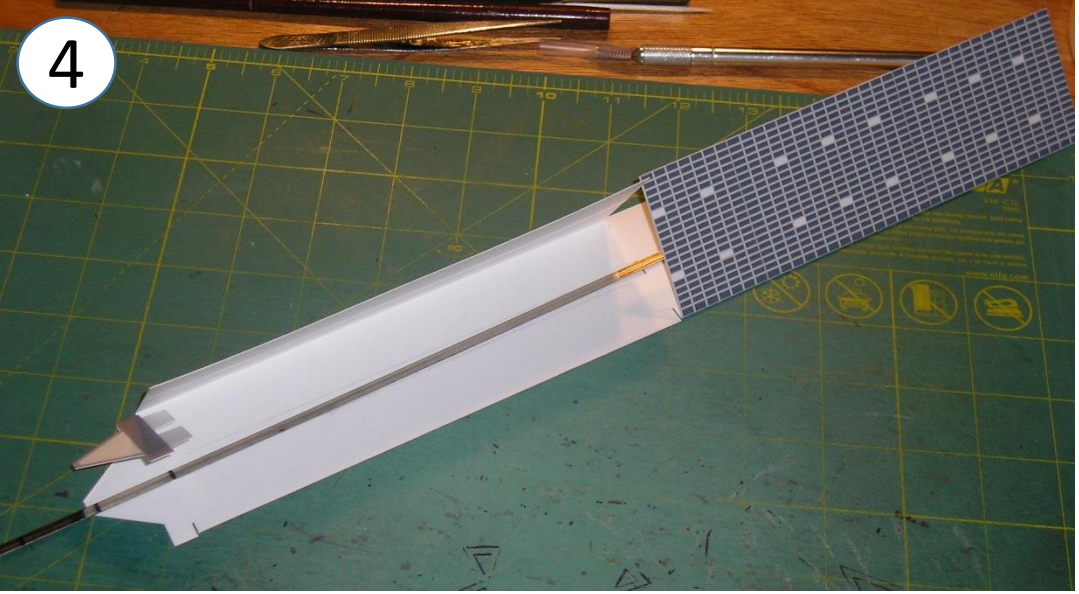
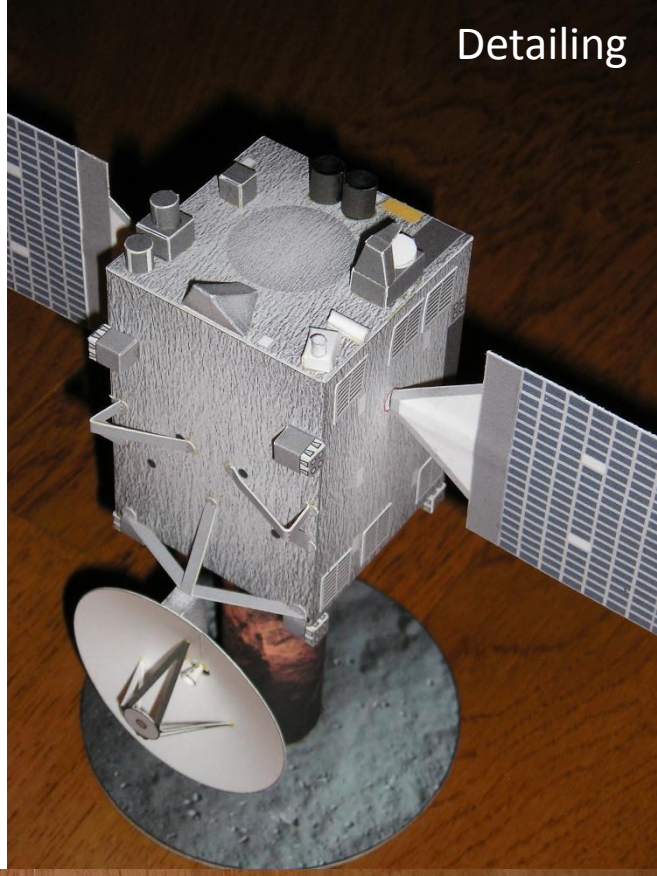
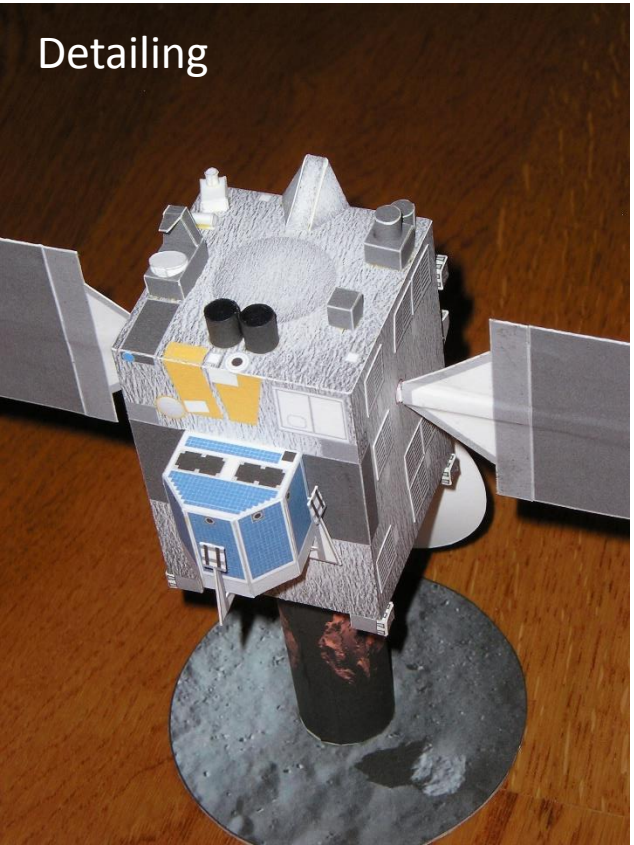
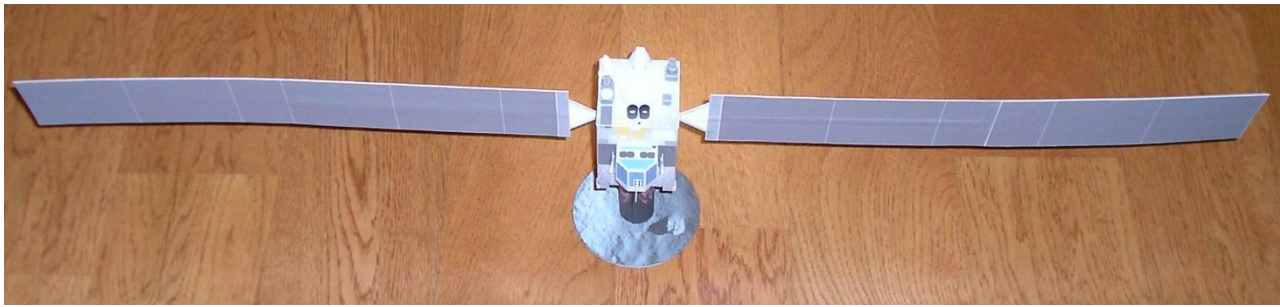


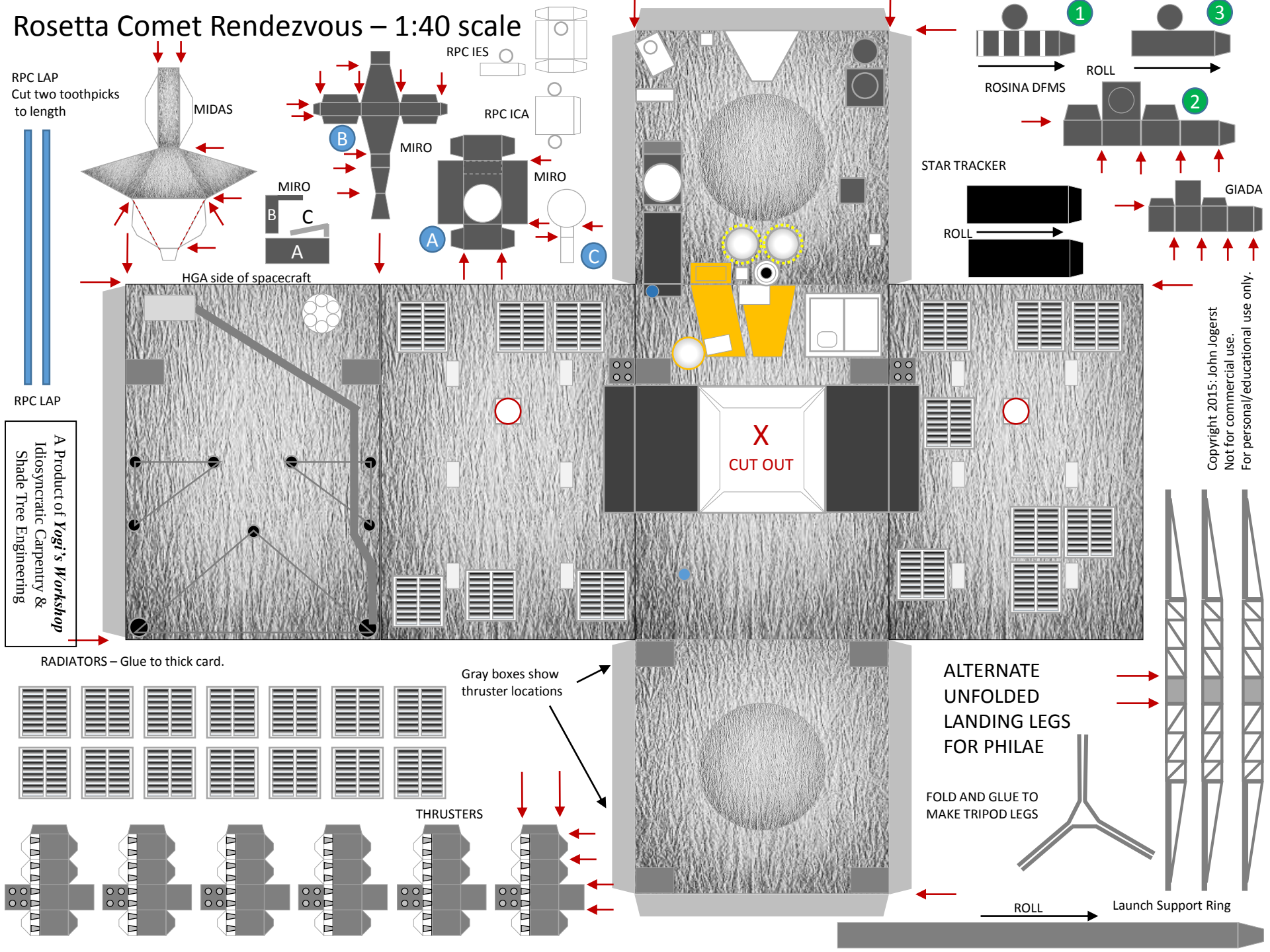


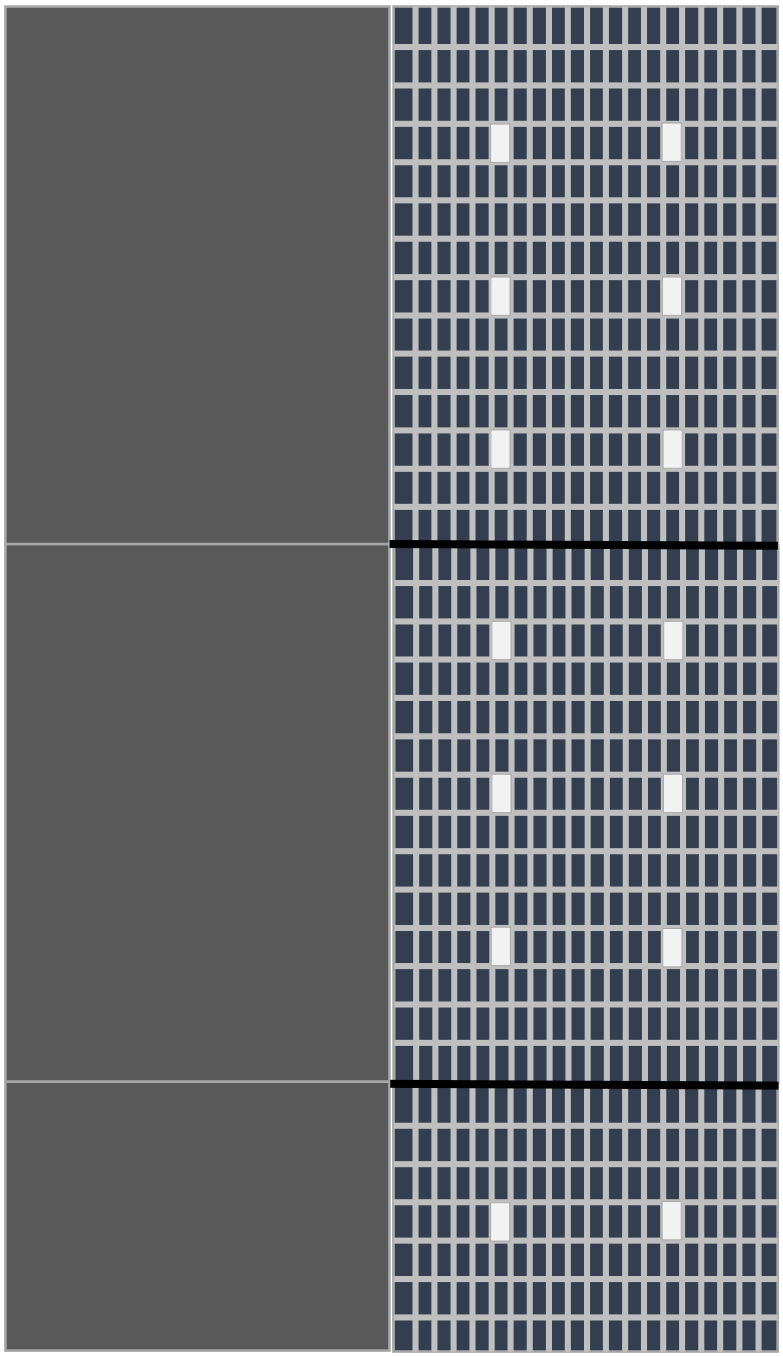


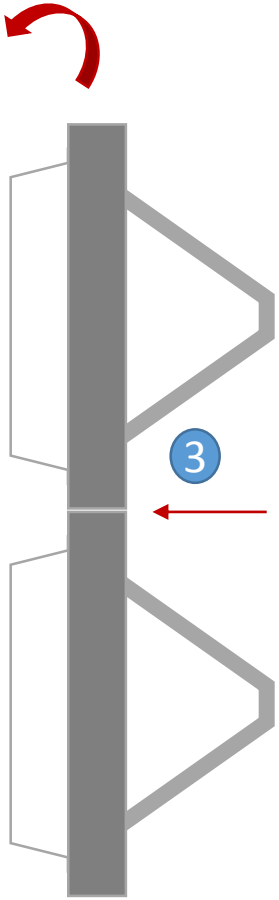
Rosetta launched in 2004 to rendezvous with Comet 67P/Churyumov-Gerasimenko. After three flybys of Earth and one at Mars, Rosetta reached its target in 2014. Traveling with the comet at 40,000 kph (24,600 mph) Rosetta will follow the comet as it makes its closest approach to the sun. The Philae lander made a rough landing on the previously unknown surface of the comet on 12 Nov 2014.

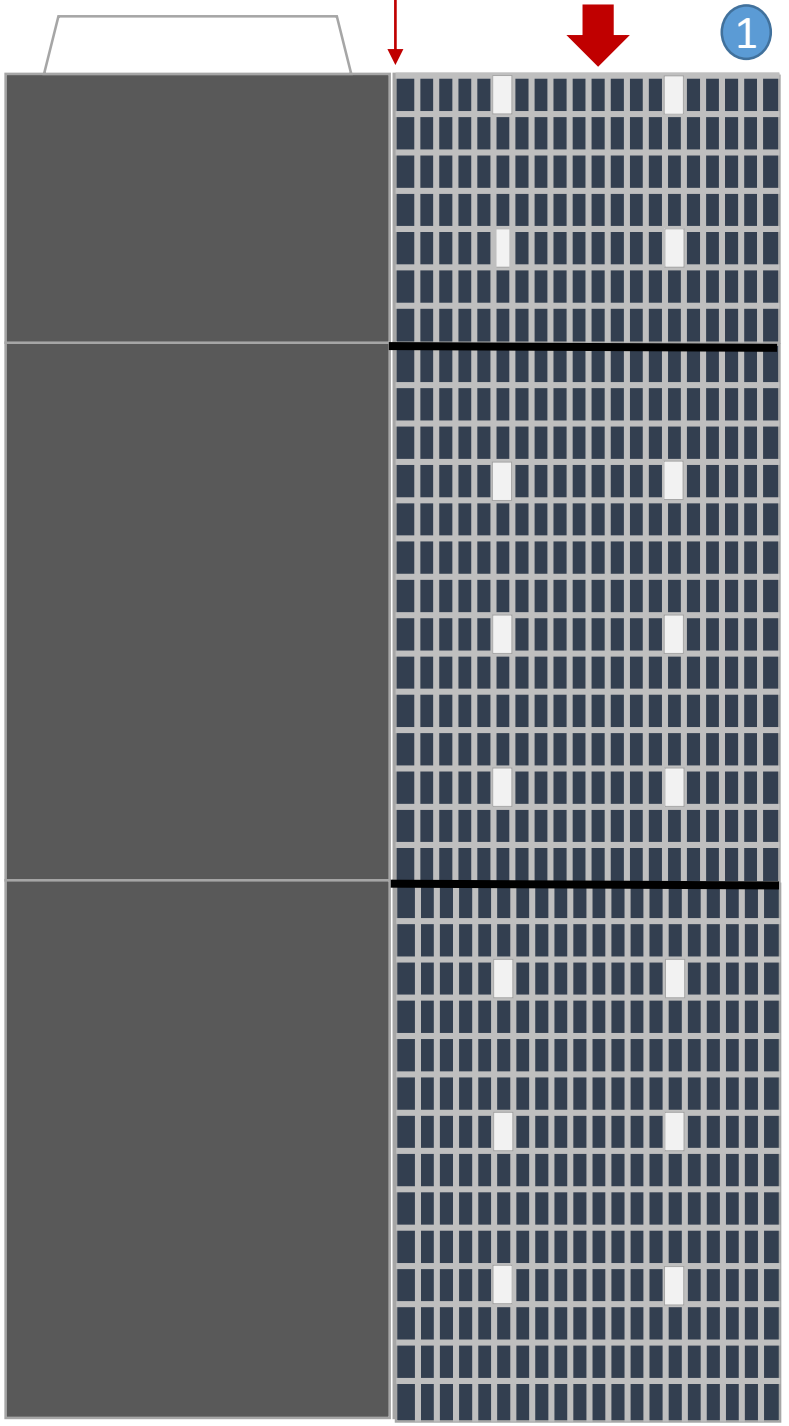


Rosetta Comet Rendezvous – 1:40 scale









Reinforce lengthwise with stiff wire.

SOLAR PANELS

A Product of ***Yogi's Workshop***
Idiosyncratic Carpentry &
Shade Tree Engineering

Print two copies

HGA DISH
Curve into shallow cone.

A Product of *Yogi's Workshop*
Idiosyncratic Carpentry &
Shade Tree Engineering

Rosetta Spacecraft

LAUNCH SUPPORT

HGA MOUNT

HGA feed horn
Roll into small cone and glue to center of HGA

Discard

HGA REFLECTOR
Fold legs down and glue to HGA DISH as indicated.

HGA WAVEGUIDE
Fold and glue to back of DISH then glue to MOUNT.

HGA WAVEGUIDE

REFLECTOR

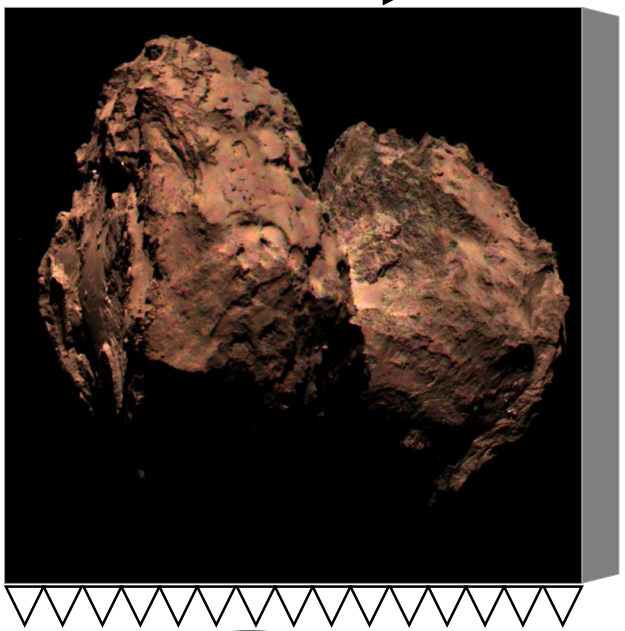
HGA DISH

HGA MOUNT
Glue back to back to make part, fold and glue tabs to Rosetta where indicated by the large triangle on the HGA side of spacecraft

HGA LAUNCH SUPPORTS
Glue back to back to make part, fold and glue tabs to Rosetta where indicated by the small triangles on the HGA side of the spacecraft

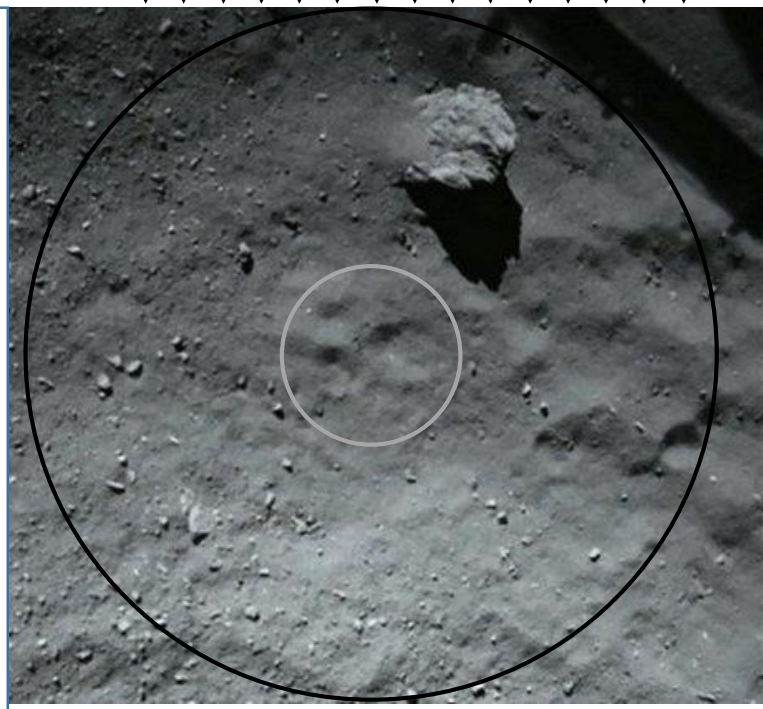
Rosetta Display Mount

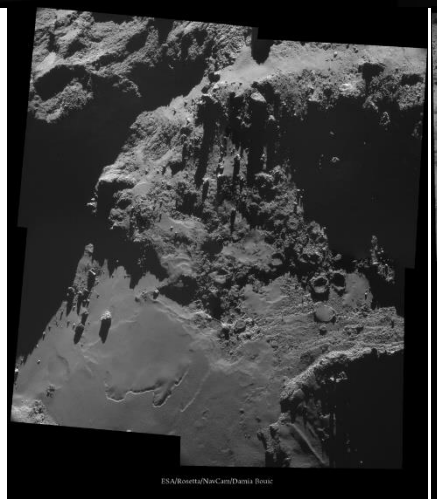
ROLL



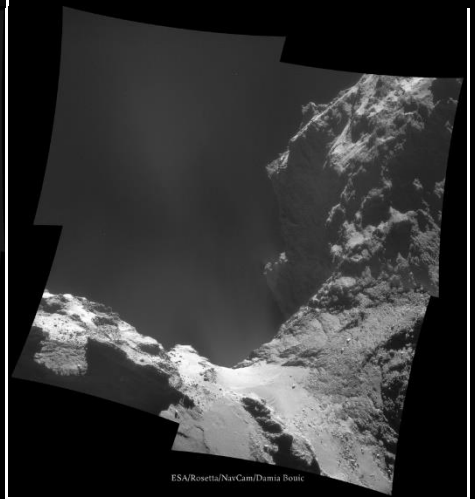
TOP MOUNT CYLINDER

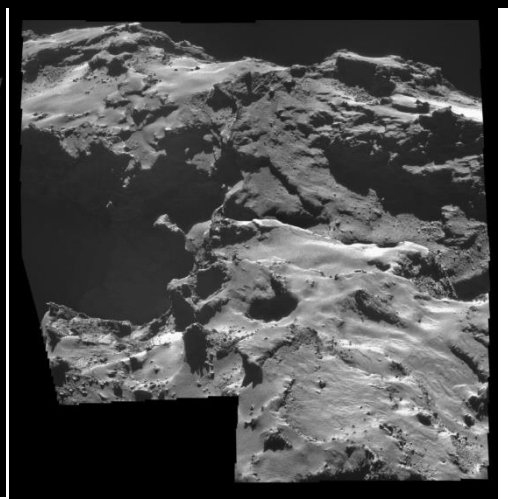
Cut top section and roll into a cylinder, folding the bottom tabs inward. Cut out the black circle on the lower picture (laminate to thick card if desired) and glue the cylinder to the center gray circle. The Rosetta launch support ring should fit over the top of the cylinder to display the completed model.



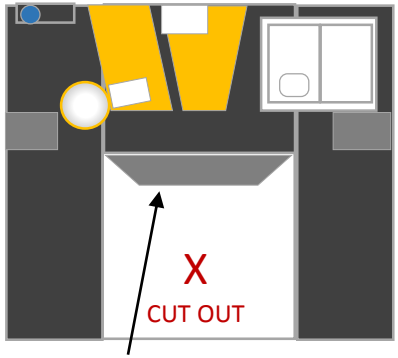

ESA/Rosetta/NavCam/Damia Bouic


ESA/Rosetta/NavCam/Damia Bouic

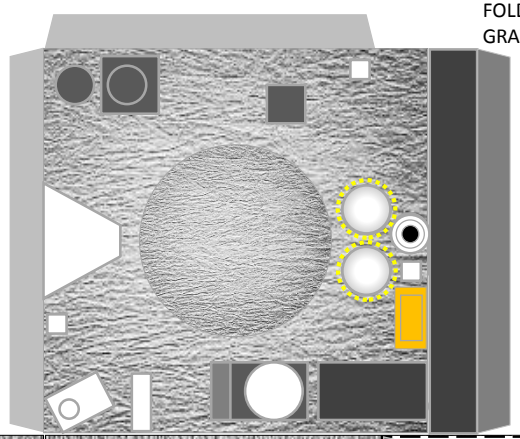

ESA/Rosetta/NavCam/Damia Bouic



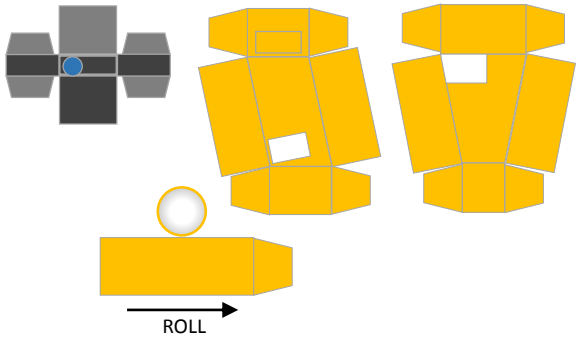
BACK PANEL

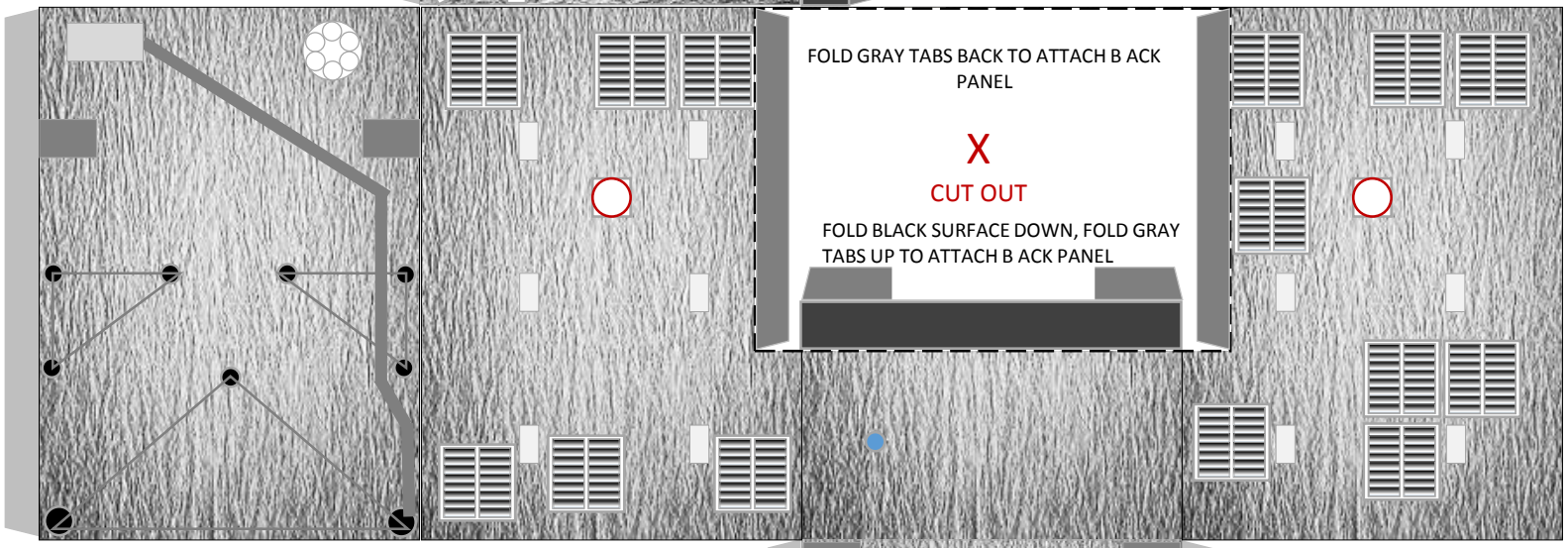


FOLD GRAY TAB OUT TO SECURE TOP OF PHILAE LANDER

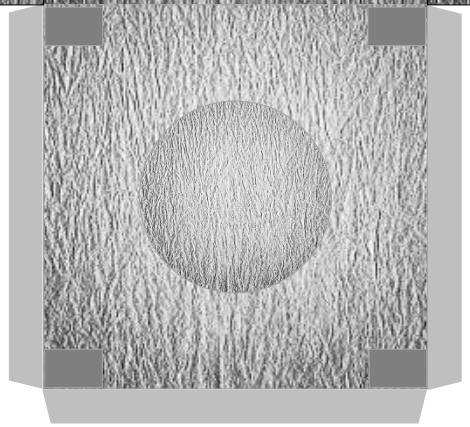


FOLD BLACK SURFACE UNDER, THEN FOLD GRAY TAB OUT TO ATTACH B ACK PANEL

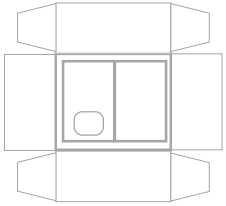




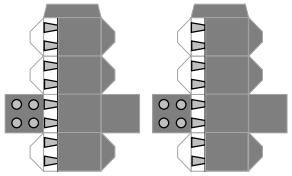
Alternate spacecraft bus detail



Fold/roll instruments and glue over graphics on back panel.



Additional thrusters – glue to back panel over gray rectangles.



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Shade Tree Engineering