Instruction Manual: Space Launch System


**Designer’s comments:** This model has been designed without the benefit of engineering blueprints. Only publically available conceptual diagrams and illustrations have been used. As a consequence of this, a certain degree of ‘artistic licence’ has been used to create a model that exhibits at least a modicum of realism.

The assembly of a model should follow a procedure that vaguely resembles the method for cooking a meal; i.e.

- Prepare a place where you can work, without distractions.
- Get all of your equipment (utensils) out and ready.
- Get all of your parts for the model (ingredients) printed, cut out and ready to start.
- Lastly, try to have a location for your model prepared in advance, so that when it is finished, you will know where to place it.

The above image (credit: NASA) shows how the CEV crew cabin can be modified into a cylindrical crew habitat / airlock. To create a paper model of this spacecraft, it would be necessary to modify a pre-existing model of an International Space Station (ISS) module and then integrate it with the service/propulsion module of the Orion spacecraft.
The above image (credit: NASA) shows two astronauts performing an extra-vehicular activity (EVA) and exploring an asteroid. The image also shows a preliminary design for the NEO mission spacecraft. The modified CEV (left) provides additional habitation volume and consumables for the astronauts, as well as serving as an airlock.

The Orion spacecraft (docket to the NEO spacecraft and visible to the right of the image) would be virtually identical to the original CEV design to be used for lunar missions. When combined together, these two spacecraft would be able to provide redundancy to each other during the mission, exactly the same way that the Apollo Lunar Module acted as a “lifeboat” during the Apollo 13 mission.

1. These are the parts that you will need to commence the assembly of the NEO spacecraft.
2. First, cut out the conical parts for the top of the NEO spacecraft.

3. Once glued together, the cone-shaped top will have a “docking hatch” visible.

4. The conical top of the module is glued to the cylindrical side(s).

5. You will need to construct a small CEV vehicle – and then use the service module (right) as a part of the NEO-spacecraft.

6. The parts shown above are necessary to construct the NEO. Cut out the centre of the circle.

7. The circle needs to be placed over the cylinder (halfway down the length) – and then the cylinder will have to be glued to the module.
8. Your model should appear as above – of course, I have not yet attached the rocket engine(s) or the solar arrays.

9. Also, it will be necessary to be careful while cutting out the parts, lest your model have gaps at the joins.

10. This is the NEO spacecraft attached to the CEV crew capsule. However, it should be attached to a complete CEV spacecraft.

11. The NEO spacecraft can be “held” in place by a type of “payload scaffolding” (on the right-hand).

12. When you attempt to build your model of the NEO spacecraft, you will be faced with two different versions that you could make:

1. SLS-launch version: no solar arrays will be visible because they will be folded and stored away to allow the spacecraft to fit inside the payload shroud.
2. NEO-mission version: solar arrays deployed and the model is attached to an Orion CEV.