

Angara - A5V



Russian space agency Roscosmos has launched a study program for the enhancement of the new medium-heavy carrier Angara A5 in a version capable of carrying up to 40t in LEO and 12.5t in GTO.

The Angara A5V, where V stands for “vodorod” (hydrogen), will maintain the configuration of the first two stages and presumably will have a third and fourth cryogenic stage.

The new version will spare Russia the development of the proposed Angara A7, similar to the A5 but with the second central stage with a larger diameter and therefore decidedly expensive, both for a different production line and for all the assembly and launch facilities.

On March 12, the Russian space agency therefore announced that it had entrusted the two historic state-owned companies Khrunichev and Energia with the task of developing preliminary studies for the A5V and its possible uses also for manned capsules for missions to the moon.

The design of the newly developed third stage for the Angara-5V was expected to be similar to previously proposed hydrogen boosters, such as such the second stage designed for the cancelled Rus-M launch vehicle or the UKVB booster that was previously proposed as the third stage for the Proton-M2 and for the Angara-5/UKVB rockets. In March 2016, First Deputy Director at GKNPTs Khrunichev Aleksandr Medvedev confirmed that it had been decided to equip the URM-2V with a pair of RD-0150 engines.

To support human missions to the lunar orbit, Angara-5V would also need the fourth stage or a space tug, which would be employed to ease the PTK NP spacecraft, lunarorbital station or lunar lander into the orbit around the Moon. This component could be based on the Block DM stage propelled by kerosene and cryogenic oxygen or on theFregat stage, powered by storable propellant. In the initial technical proposal for the Angara-5V rocket, RKK Energia did offer the use of its Block DM in the project. (745) Block DM also appeared to be depicted in the scale model of the Angara-5V rocket displayed in the Kremlin during a meeting between President Vladimir Putin, Deputy Prime Minister Dmitry Rogozin and Roskosmos head Igor Komarov on April 13, 2015.

By the end of 2020, the development of the Angara-5V variant was at a virtual standstill at the preliminary design level due to lack of funding.

As a result, industry sources indicated that the first projected launch of the Angara-5V variant slipped from 2026 to 2027 or 2028, at the earliest. Even those dates would depend on resumption of funding.

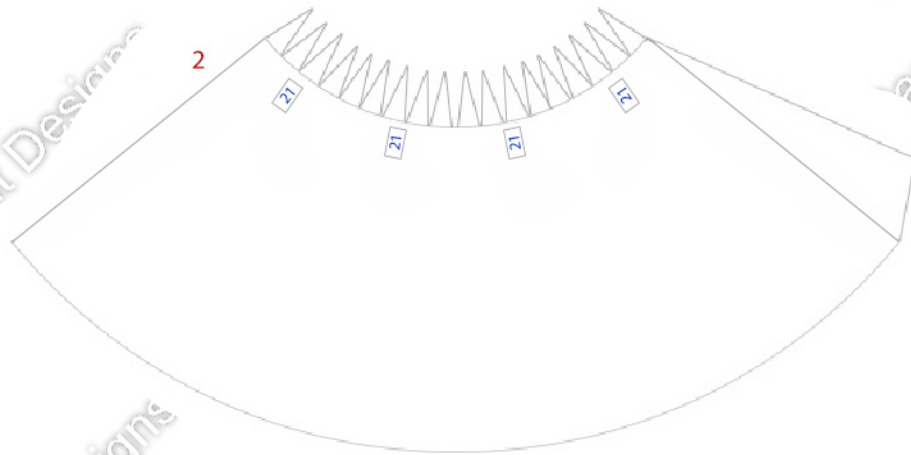
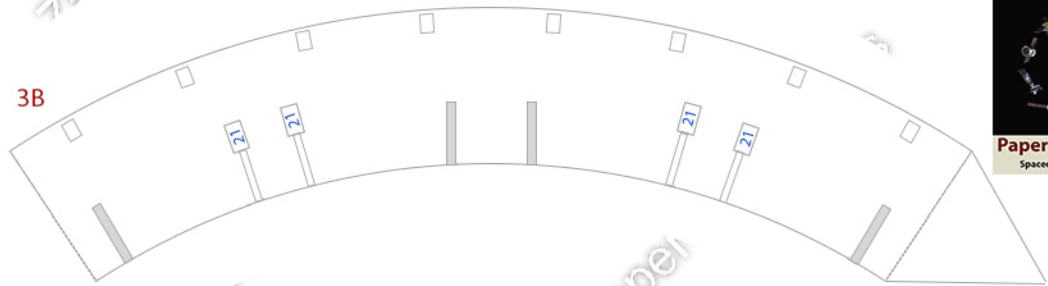
In the meantime, the growing realization in 2020 of the challenges facing the super-heavy rocket project prompted Roskosmos to take a second look at the Angara-5V variant as the carrier of the nation's lunar exploration plans. Whether that interest would translate into real budget for the prospective launch vehicle remained to be seen at the end of 2020. There were reports that in mid-December 2020, Rogozin approved the development of a lunar expedition architecture relying on Angara-5V rockets. During his visit to Angara's production plant in Omsk on December 19, Rogozin promised to begin testing of the Angara-5V variant in 2027.

Zach's

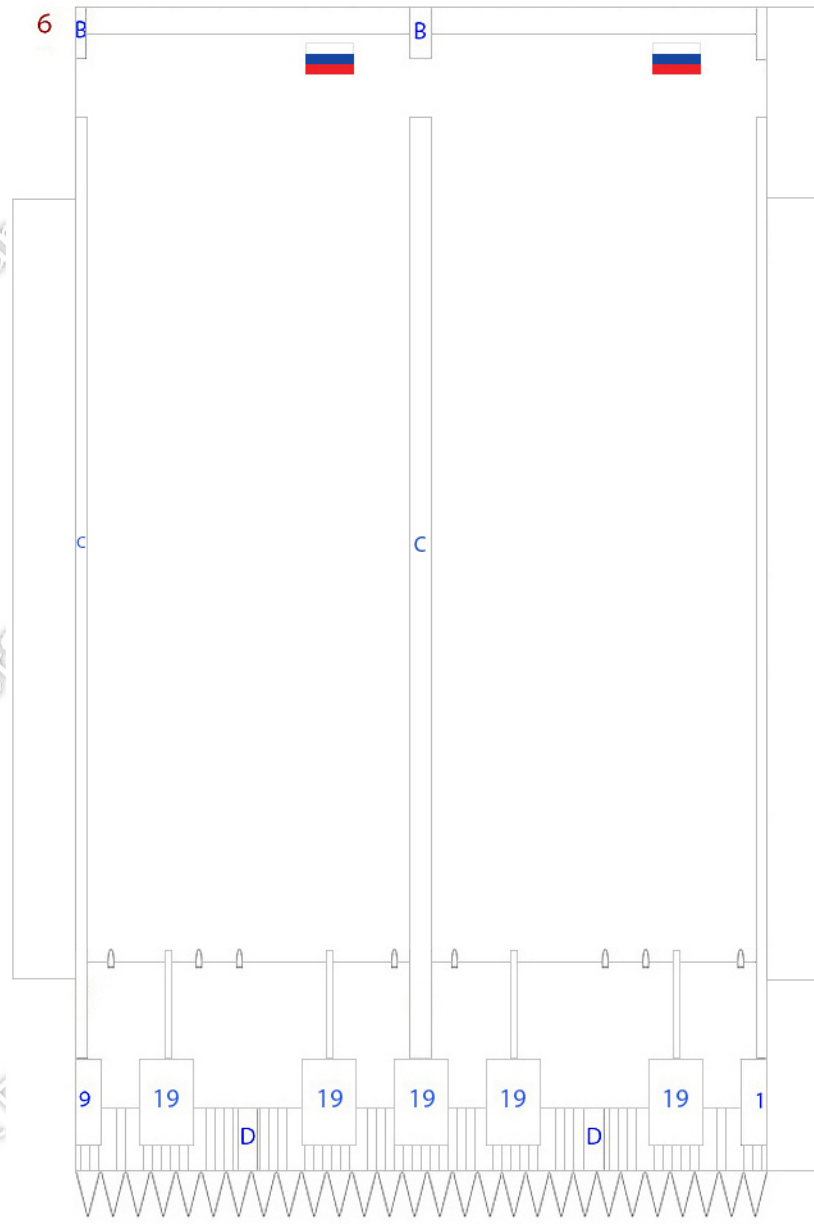
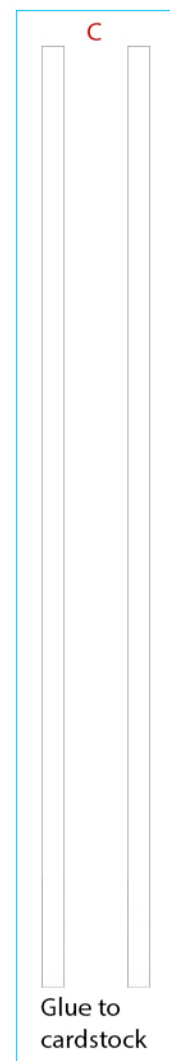
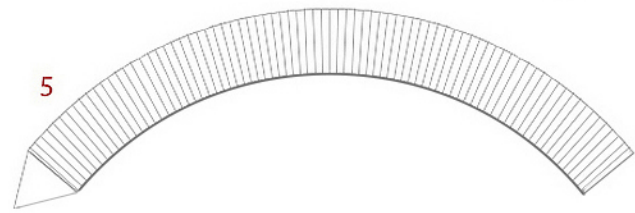
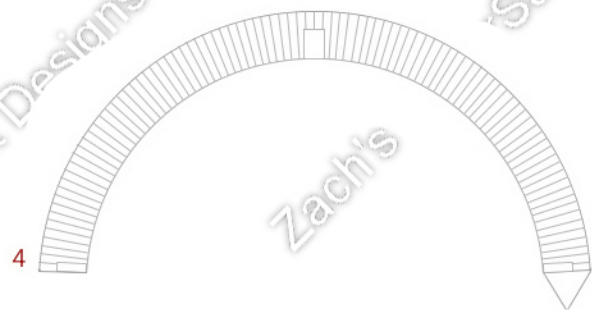
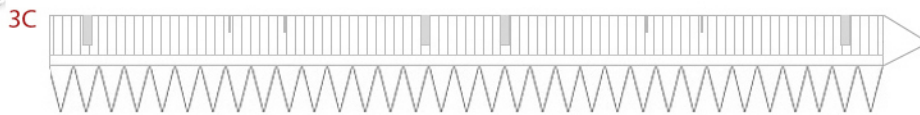


PaperSat Designs
Spacecraft Paper Models

Angara - A5V



Angara - A5V



Angara - A5V

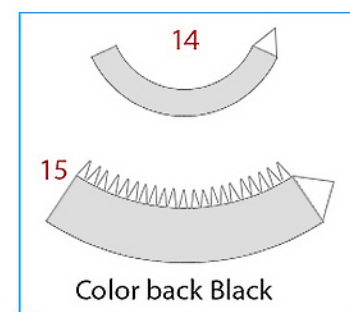
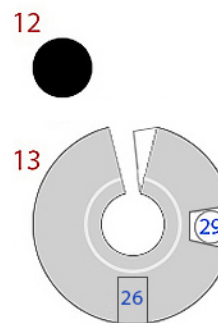
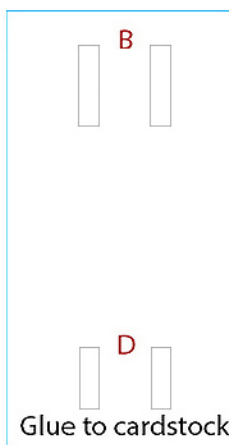
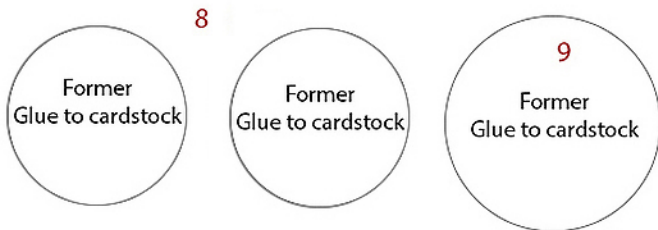
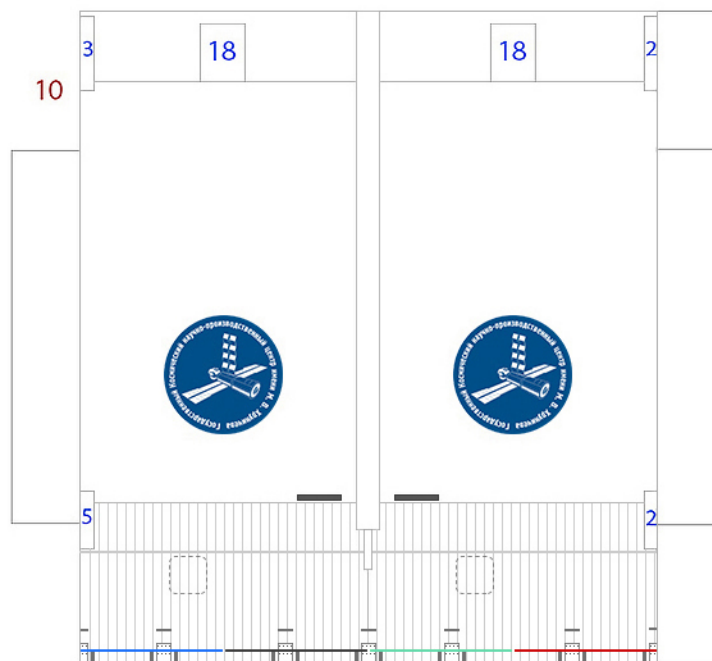
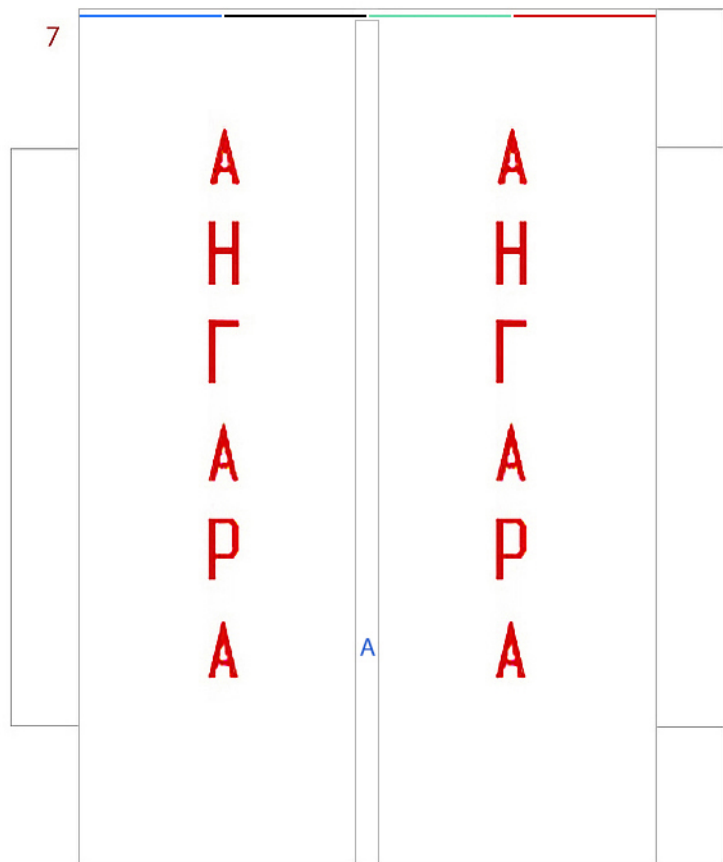
Zach's



PaperSat Designs
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5 to 7 connector

7 to 10 connector



Angara - A5V

Parts 11, 16 and 17 were deleted for this model



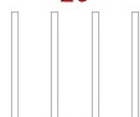
18



19



20



Glue to cardstock

21



22



Glue to cardstock

A

Glue to cardstock

Optional Detail Parts

Glue on the matching graphics on part 6



*spares

Optional Detail Parts

Glue on the matching graphics on part 3B

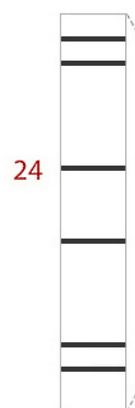


*spares



23

24



24

26



27



28



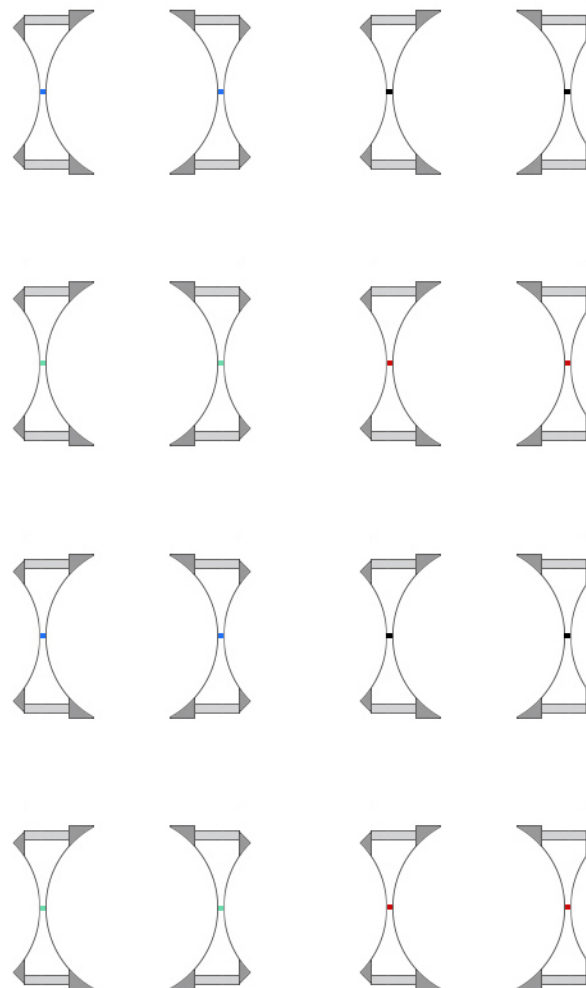
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25



Booster Brackets



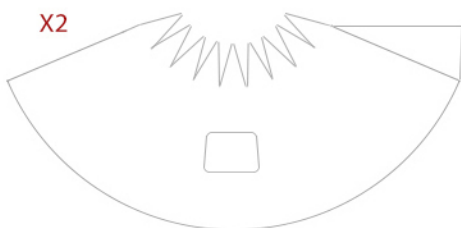
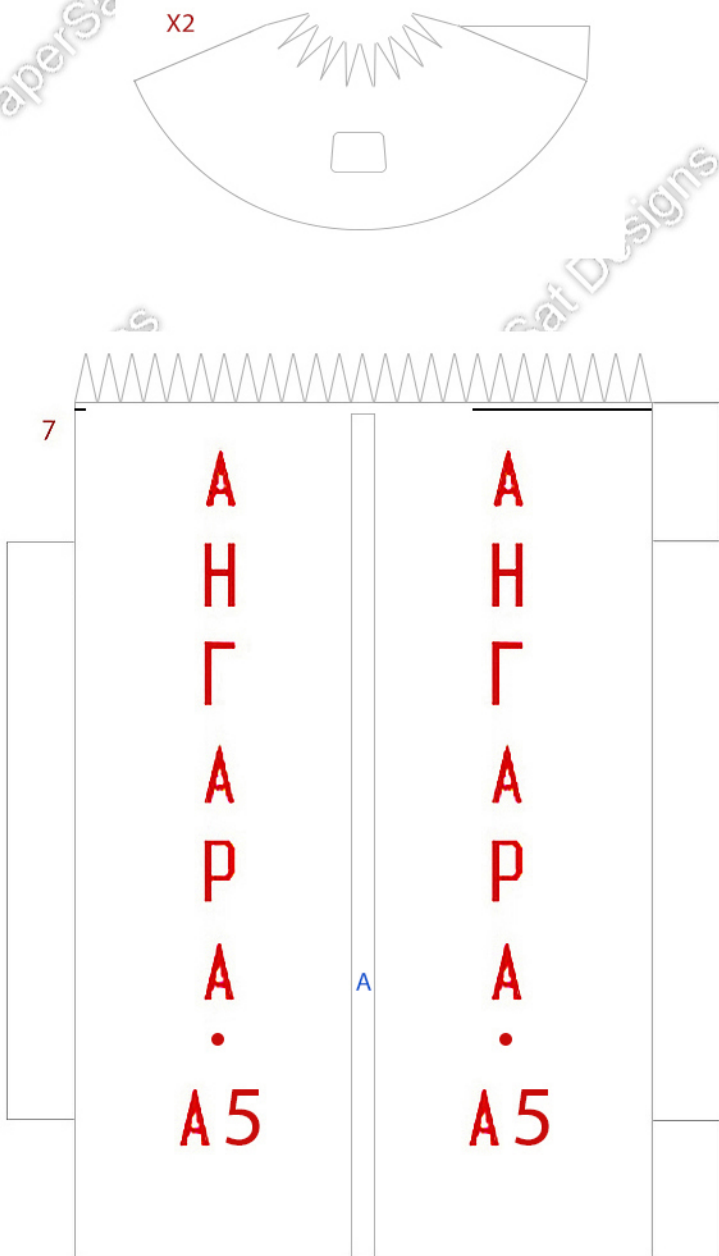
Glue all to cardstock, cut out and glue each pair back-to-back

Zach's

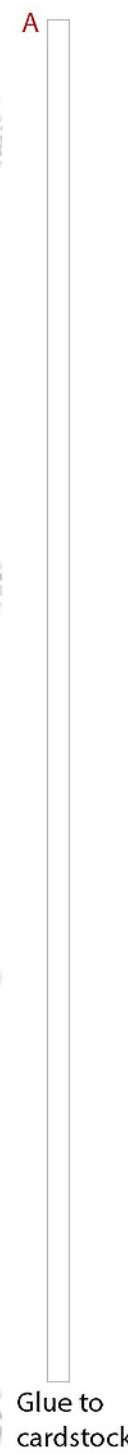
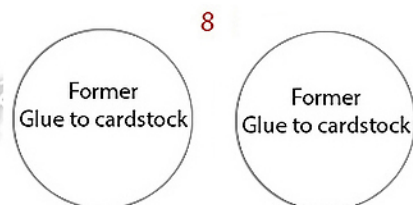
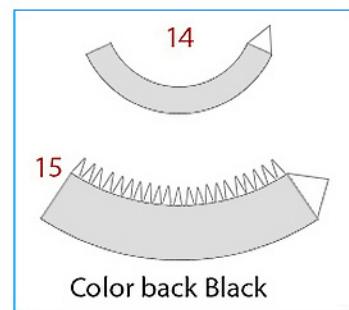
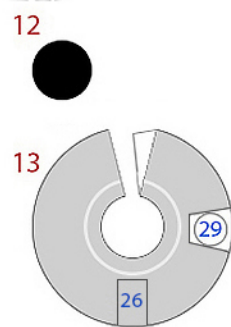
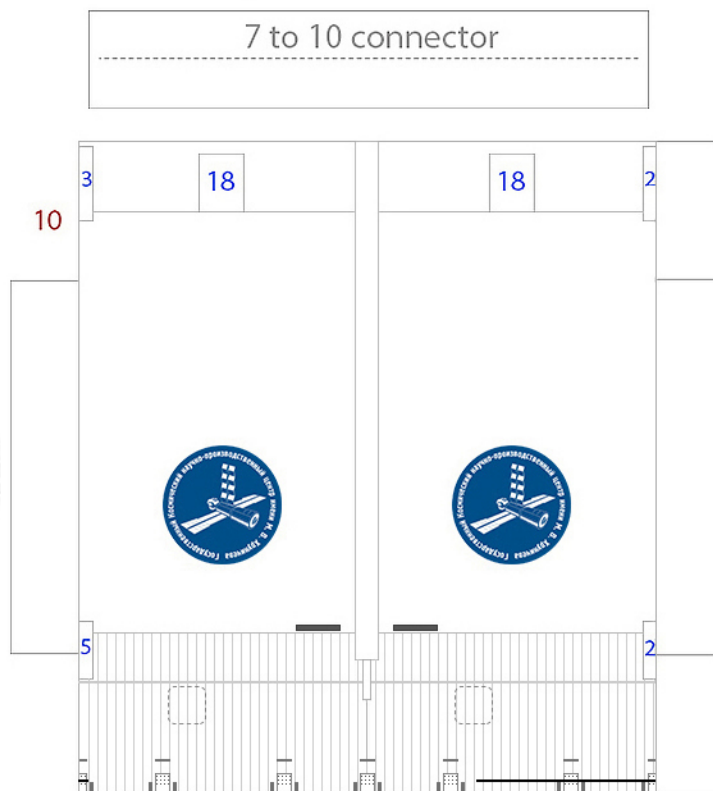


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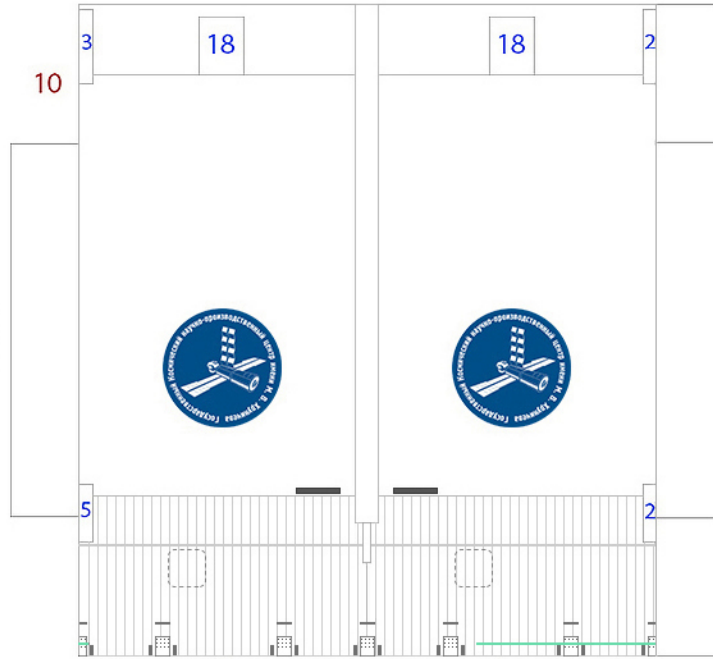
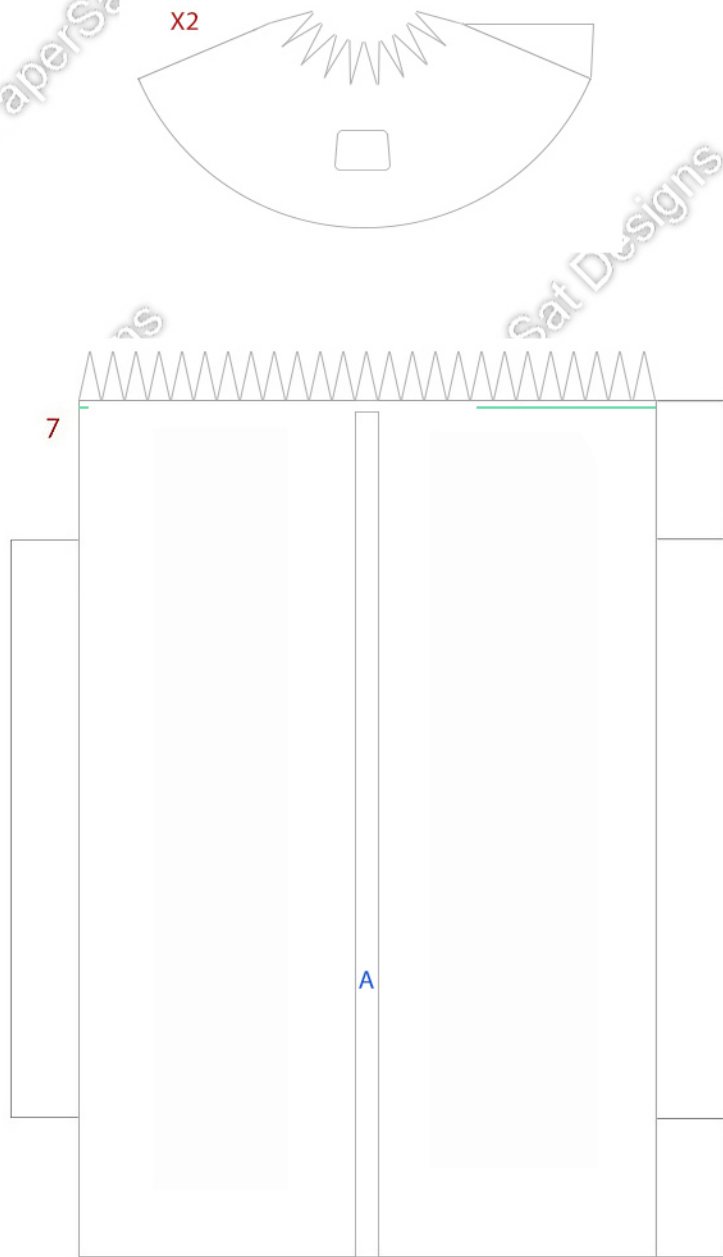


Boosters



Angara A5V

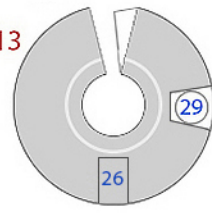
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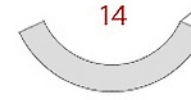
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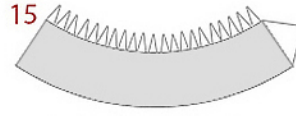
13



14



15



Color back Black

8

Former
Glue to cardstock

Former
Glue to cardstock

18



A

Glue to
cardstock



23



24



25



26



27



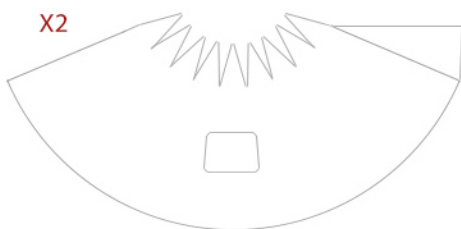
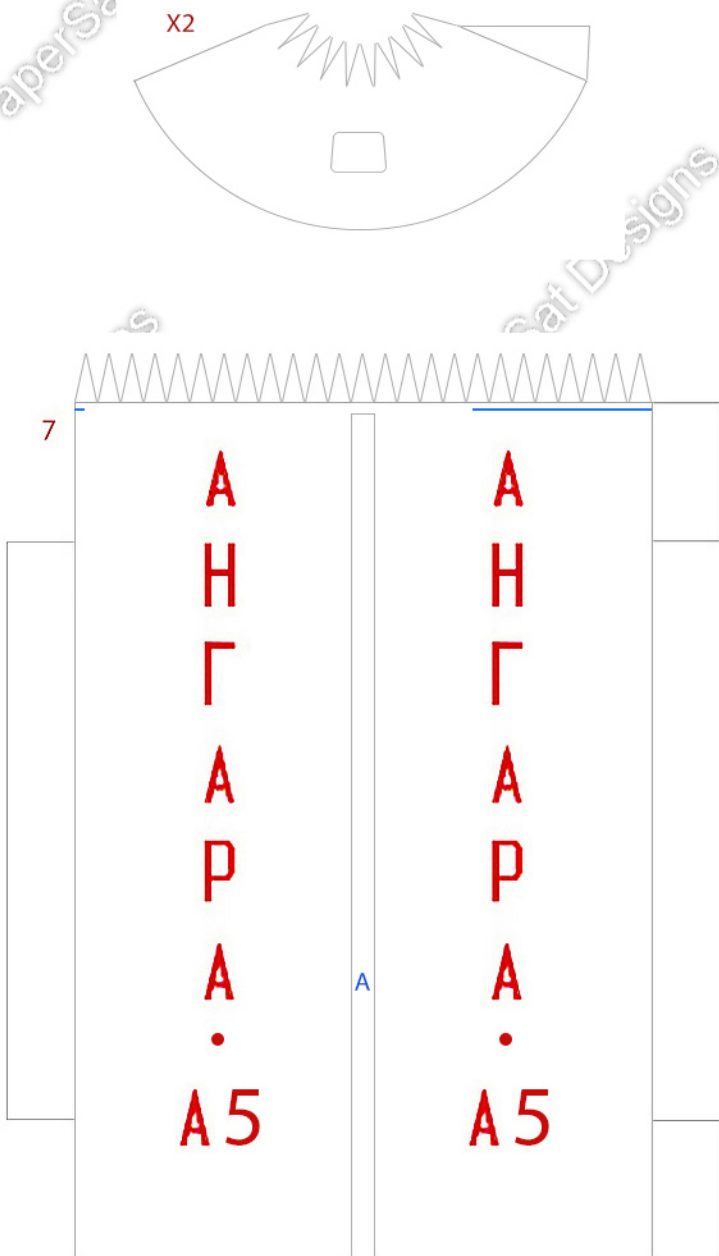
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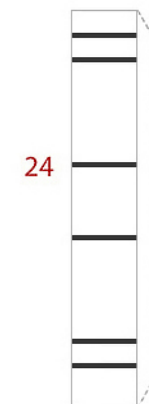
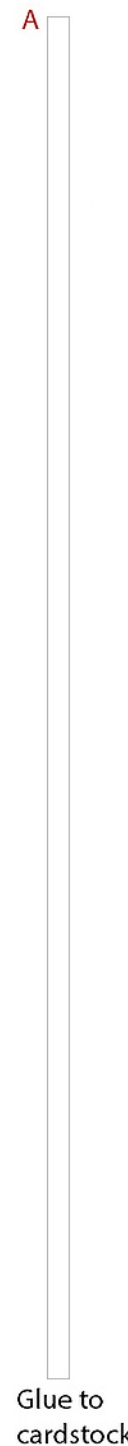
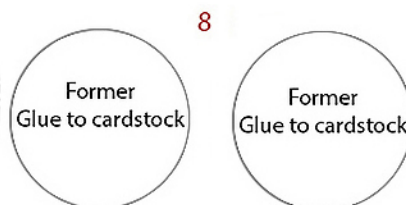
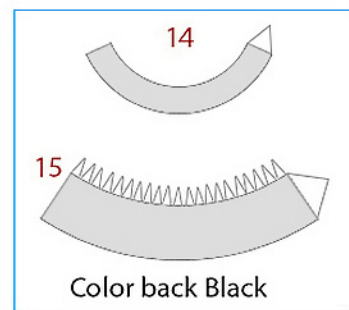
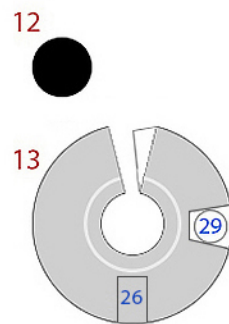
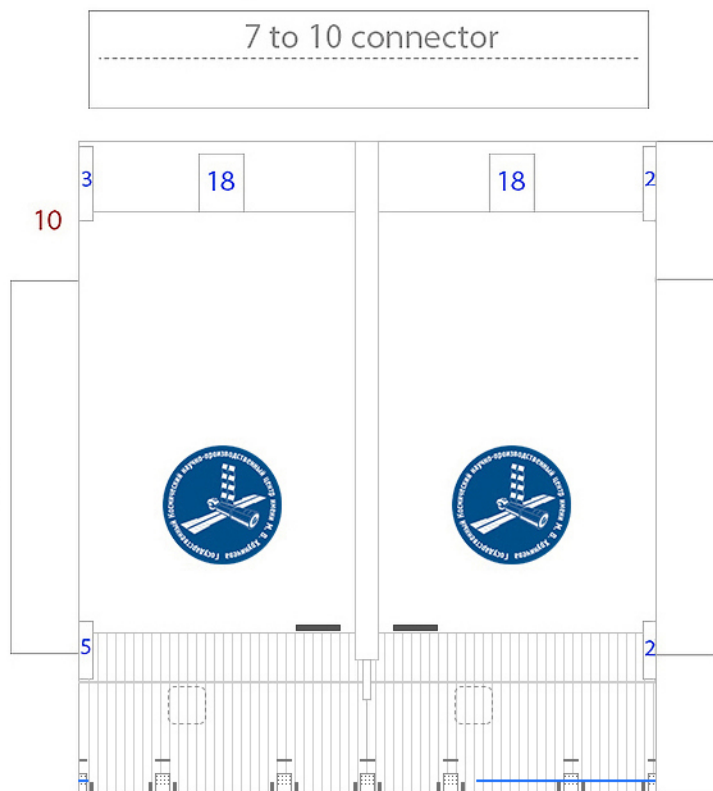
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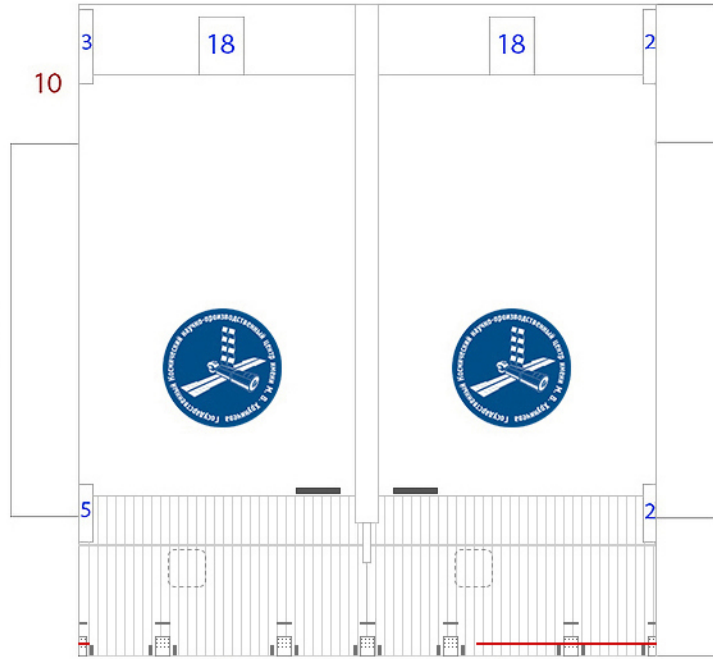
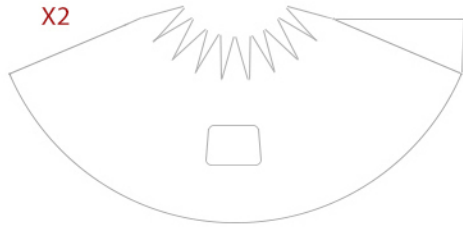
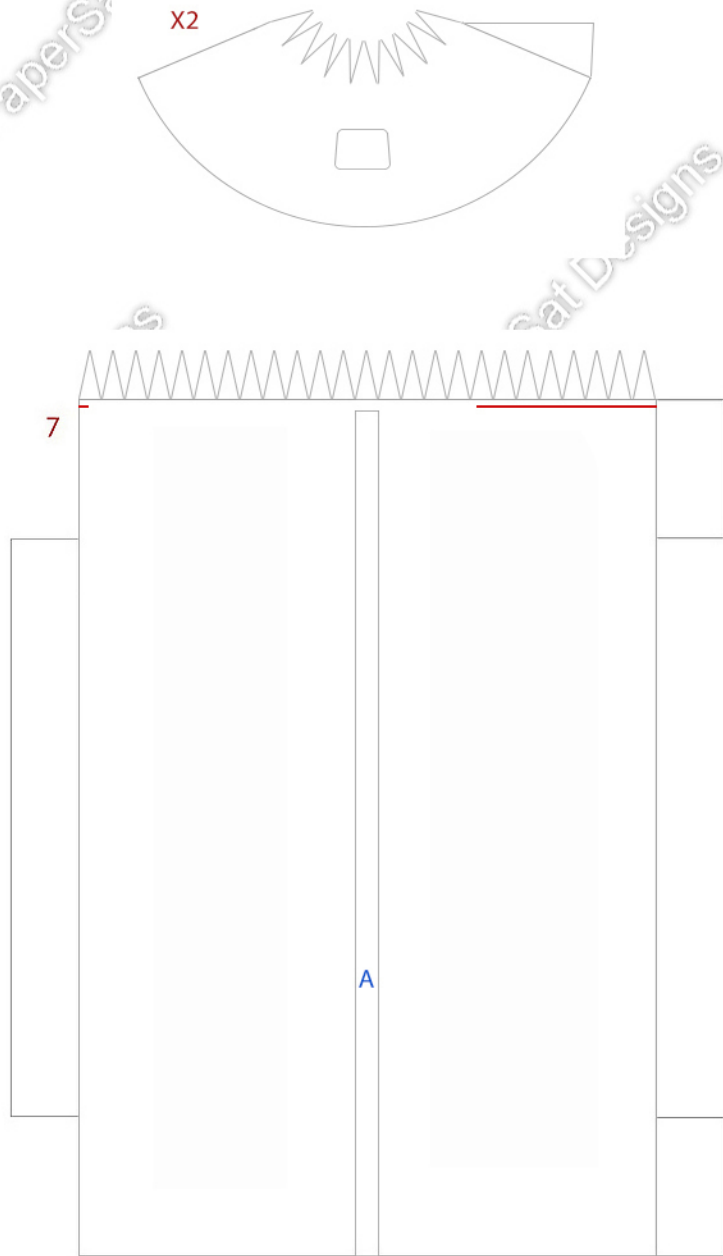


Boosters



Angara A5V

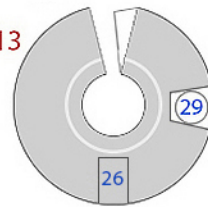
Boosters



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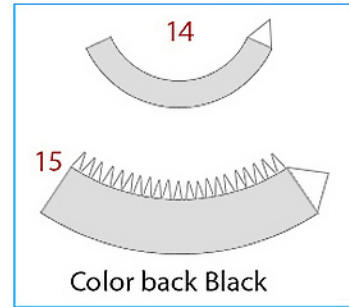
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8

Former
Glue to cardstock

Former
Glue to cardstock



A

Glue to
cardstock

