



The development of the H3 launch vehicle, as Japan's next flagship launch vehicle replacing the H-IIA/H-IIB, started in 2014. MHI, as the primary contractor, has organized the vehicle development and is proceeding with the development of the engine system in cooperation with Japan Aerospace Exploration Agency (JAXA).

The primary objectives of the H3 launch vehicle are to ensure "assured access to space" and "competitiveness in the global commercial market." It is intended that aerospace industrial base is maintained and strengthened by ensuring sales for a constant number of vehicles including commercial satellite launches. To this end, in addition to "high reliability," which is the advantage of the H-IIA/H-IIB, the following three points were reflected in the development specifications based on the results of interviews with customers: (1) competitive launch capability and price, (2) operational improvement at launch site and ensuring launch on desired date, and (3) a comfortable vehicle with less vibration.

The H3 Launch Vehicles are liquid-propellant rockets with strap-on solid rocket boosters and are planned to be launched from Tanegashima Space Center in Japan. The first H3 is planned to be launched in the fiscal year 2021.

Each H3 booster configuration has a two-digit plus letter designation that indicates the features of that configuration. The first digit represents the number of LE-9 engines on the main stage, either "2" or "3". The second digit indicates the number of SRB-3 solid rocket boosters attached to the base of the rocket, and can be "0", "2" or "4". All layouts of the solid boosters are symmetrical. The letter at the end shows the length of the payload fairing, either short, or "S", or long, or "L". For example, an H3-24L has two engines, four solid rocket boosters, and a long fairing, whereas an H3-30S has three engines, no solid rocket boosters, and a short fairing.

As of November 2018, three configurations are planned: H3-30, H3-22, and H3-24.

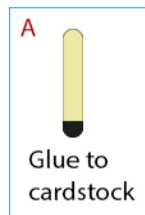
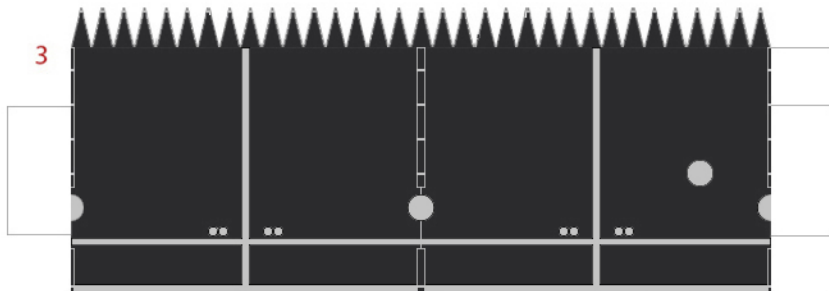
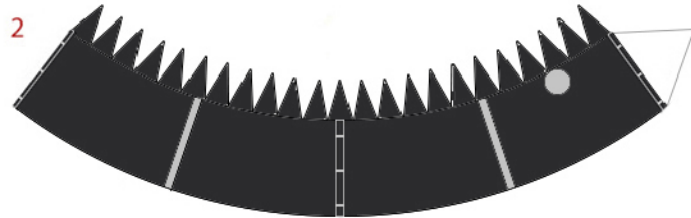
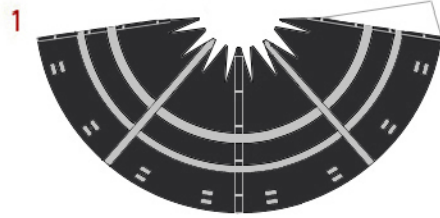
A previously mentioned variant, the H3-32, was cancelled in late 2018 when the performance of the H3-22 variant, sporting one less engine on the core booster, was found to be greater than anticipated, putting it close to the H3-32's performance.

First stage engine LE-9

The LE-9 engine is the world's first engine that is a first stage engine with no auxiliary combustion chamber (world's first large-thrust expander bleed cycle engine). It greatly contributes to the achievement of internationally competitive reliability, price and performance, which are the features of the H3 launch vehicle. The second stage LE-5B-3 engine is an improved version of the current LE-5B-2 engine.

H3-22S

H3-22 short fairing



3 to 4 connector

