


Visualizing with Augmented Reality

by
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VWAR –Space Rockets.



How Space Shuttles Work



The **Space Shuttle** was a spacecraft which was used by the American National Aeronautics and Space Administration, or NASA. Space Shuttles were used to carry astronauts and cargo into space. Cargo such as satellites, parts of a space station or scientific instruments were taken up into space by the space shuttle. The Space Shuttle was made up of 3 parts. These were the orbiter, the external fuel tank and solid rocket boosters. with wings and a tail. This allowed the Space Shuttle to glide and land on a runway. This allowed the reusable part of the Shuttle to be very large. Many spacecraft which came before the Space Shuttle, like the Mercury, Gemini and Apollo used parachutes when landing, and landed on the ocean. People have said that the Shuttle was very much like a pickup truck because of its usefulness. The shuttle was launched out of Earth's gravity and into space by

3 rocket engines on the back of the orbiter along with help from 2 long white Solid Rocket Boosters (also called SRBs). External Fuel Tank (also called ET). Before the shuttle reached orbit, the SRBs were released and fell into the Atlantic Ocean where they were towed back to shore for reuse. The ET was also released but broke up and fell into the Indian Ocean and was not reused. airplane with wings and a tail. This allowed the Space Shuttle to glide and land on a runway. This allowed the reusable part of the Shuttle to be very large. Many spacecraft which came before the Space Shuttle, like the Mercury, Gemini and Apollo used parachutes when landing, and landed on the ocean. People have said that the Shuttle was very much like a pickup truck because of its usefulness. The shuttle was launched out of Earth's gravity and into space by 3 rocket engines on the back of the orbiter along with help from 2 long white Solid Rocket Boosters (also called SRBs). External Fuel Tank (also called ET). Before the shuttle reached orbit, the SRBs were released and fell into the Atlantic Ocean where they were towed back to shore for reuse. The ET was also released but broke up and fell into the Indian Ocean and was not reused.

Cargo Bay add-on: Orbiter had a payload bay for various missions rather than deploying satellites. They were the following:



- **Spacelab:** A laboratory used for experiments in space.
- **Spacehab:** Similar to Spacelab, but it has multiple kinds.
- **Inertial Upper Stage:** Upper stage used for sending payloads into higher orbits.
- **Payload Assist Module:** Similar to IUS, but used solid propellants.
- **Extended Duration Orbiter:** Cryogenic kit used for extending the duration of the missions.
- **Multi-Purpose Logistics Module:** Cargo container used for supplying the cargos to International Space Station.
- **Canadarm:** Robotic arm used for any missions.

Falcon Heavy 2019

From Wikipedia, the free encyclopedia

The **Falcon Heavy** is a partially reusable heavy-lift launch vehicle designed and manufactured by SpaceX. It is derived from the Falcon 9 vehicle and consists of a strengthened Falcon 9 first stage as the center core with two additional first stages as strap-on boosters.

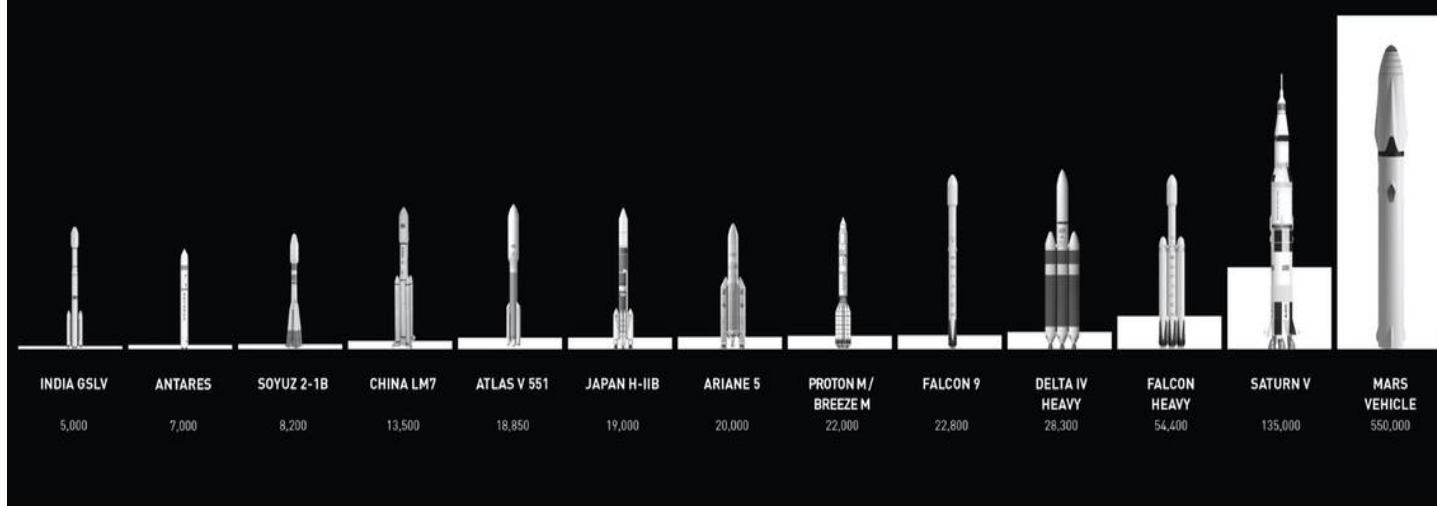
Falcon Heavy

	
 <p>The Falcon Heavy used in flight 3 awaiting launch at Kennedy, June 2019</p>	
Function	Orbital heavy-lift launch vehicle
Manufacturer	SpaceX
Country of origin	United States
Cost per launch	<ul style="list-style-type: none">Reusable: \$90MExpendable: \$150M
Size	
Height	70 m (230 ft) ^[3]
Diameter	3.66 m (12.0 ft) ^[3]
Width	12.2 m (40 ft) ^[3]
Mass	1,420,788 kg (3,132,301 lb)
Stages	2+
Capacity	
Payload to LEO (28.5°)	63,800 kg (140,700 lb)
Payload to GTO (27°)	26,700 kg (58,900 lb)
Payload to Mars	16,800 kg (37,000 lb)

A photograph of a Falcon rocket launching from a launch pad. The rocket is ascending vertically, leaving a large, billowing cloud of white smoke and orange fire at its base. The launch pad's service structure is visible to the right, and a crane arm is extended to the left. The sky is a clear, deep blue. The text "LAUNCH OF FALCON" is overlaid in large, white, bold letters with a blue outline.

LAUNCH OF FALCON

Payload to Pluto	3,500 kg (7,700 lb) ^[3]
Associated rockets	
Family	Falcon 9
Comparable	<ul style="list-style-type: none"> Delta IV Heavy Long March 5 New Glenn Saturn C-3 Vulcan
Launch history	
Status	Active
Launch sites	<ul style="list-style-type: none"> Kennedy LC-39A
Total launches	3
Successes	3
Landings	<ul style="list-style-type: none"> 1 center core landed / 3 attempted 6 boosters landed / 6 attempted
First flight	February 6, 2018 ^[4]
Boosters	
No. boosters	2
Engines	9 Merlin 1D per booster
Thrust	Sea level: 7.6 MN (1,700,000 lbf) (each) Vacuum: 8.2 MN (1,800,000 lbf) (each)
Total thrust	Sea level: 15.2 MN (3,400,000 lbf) Vacuum: 16.4 MN (3,700,000 lbf)
Specific impulse	Sea level: 282 seconds ^[5] Vacuum: 311 seconds ^[6]
Burn time	154 seconds
Fuel	Subcooled LOX / Chilled RP-1 ^[7]
First stage	
Engines	9 Merlin 1D
Thrust	Sea level: 7.6 MN (1,700,000 lbf) Vacuum: 8.2 MN (1,800,000 lbf)
Specific impulse	Sea level: 282 seconds Vacuum: 311 seconds
Burn time	187 seconds
Fuel	Subcooled LOX / Chilled RP-1
Second stage	
Engines	1 Merlin 1D Vacuum
Thrust	934 kN (210,000 lbf) ^[3]
Specific impulse	348 seconds ^[3]
Burn time	397 seconds ^[3]
Fuel	LOX / RP-1



From left to right, Falcon 1, Falcon 9 v1.0, three versions of Falcon 9 v1.1, three versions of Falcon 9 v1.2 (Full Thrust), three versions of Falcon 9 Block 5, **Falcon Heavy** and Falcon Heavy Block 5

The Falcon Heavy design is based on Falcon 9's fuselage and engines.

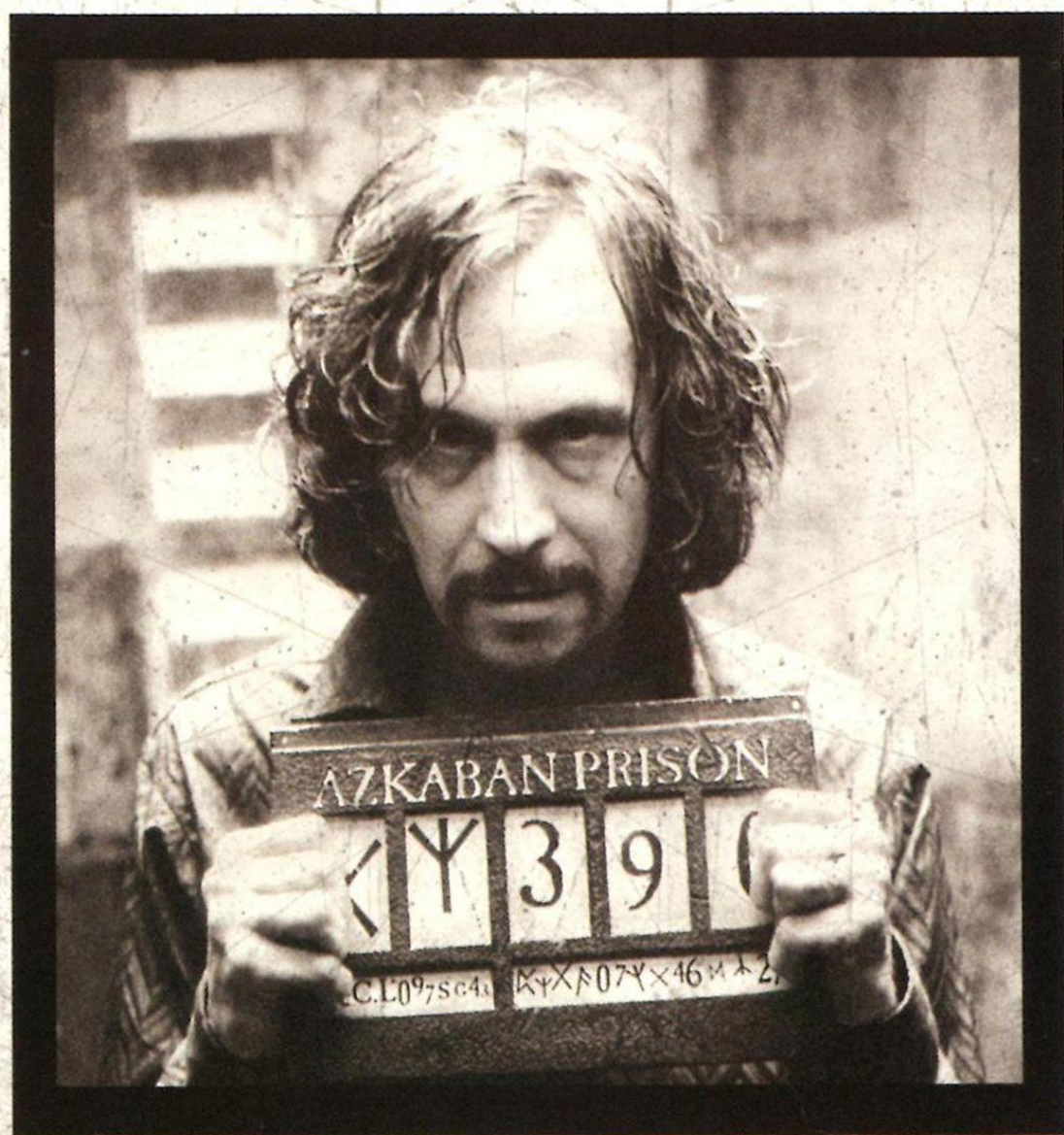
By 2008, SpaceX had been aiming for the first launch of Falcon 9 in 2009, while "Falcon 9 Heavy would be in a couple of years". Speaking at the 2008 Mars Society Conference, Musk also indicated that he expected a hydrogen-fueled upper stage would follow 2–3 years later (which would have been around 2013).

By April 2011, the capabilities and performance of the Falcon 9 vehicle were better understood, SpaceX having completed two successful demonstration missions to LEO, one of which included reignition of the second-stage engine. At a press conference at the National Press Club in Washington, DC. on April 5, 2011, Musk stated that Falcon Heavy would "carry more payload to orbit or escape velocity than any vehicle in history, apart from the Saturn V Moon rocket ... and Soviet Energiarocket".

In 2015, SpaceX announced a number of changes to the Falcon Heavy rocket, worked in parallel to the upgrade of the Falcon 9 v1.1 launch vehicle.



HAVE YOU SEEN THIS WIZARD?



APPROACH WITH EXTREME CAUTION!



**DO NOT ATTEMPT TO USE
MAGIC AGAINST THIS MAN!**



**Any information leading to the arrest of this
man shall be duly rewarded**

Notify immediately by owl the Ministry of Magic - WitchWatchers Dept.

