What Is a Rocket?

The word "rocket" can mean different things. Most people think of a tall, thin, round vehicle. They think of a rocket that launches into space. "Rocket" can mean a type of engine. The word also can mean a vehicle that uses that engine.

There are 3 basic parts to a rocket:

- the structural and mechanical parts (engines, storage spaces, tanks, fins)
- fuel (can be various materials such as liquid oxygen, gasoline or liquid hydrogen

  payload – what is being transported by the rocket (people, food, water, air, cargo)
- what are possible payloads (what types of things are being transported by rockets)

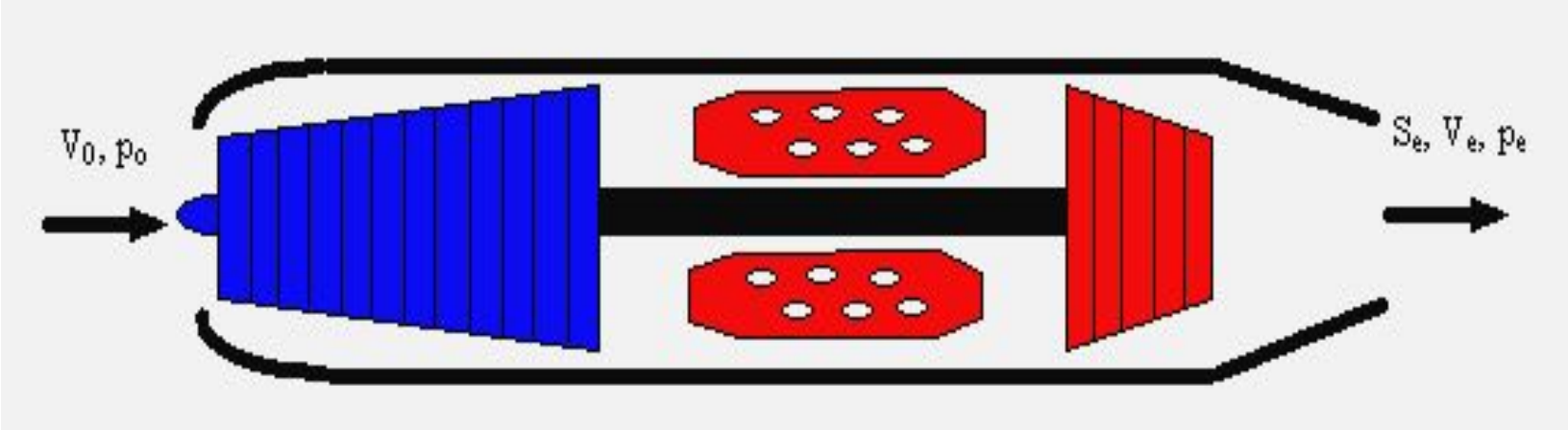
How Does a Rocket Engine Work?

Like most engines, rockets burn fuel. Most rocket engines turn the fuel into hot gas. The engine pushes the gas out its back. The gas makes the rocket move forward.

A rocket is different from a jet engine. A jet engine needs air to work. A rocket engine doesn't need air. It carries with it everything it needs. A rocket engine works in space, where there is no air.

Airbreathing Engine

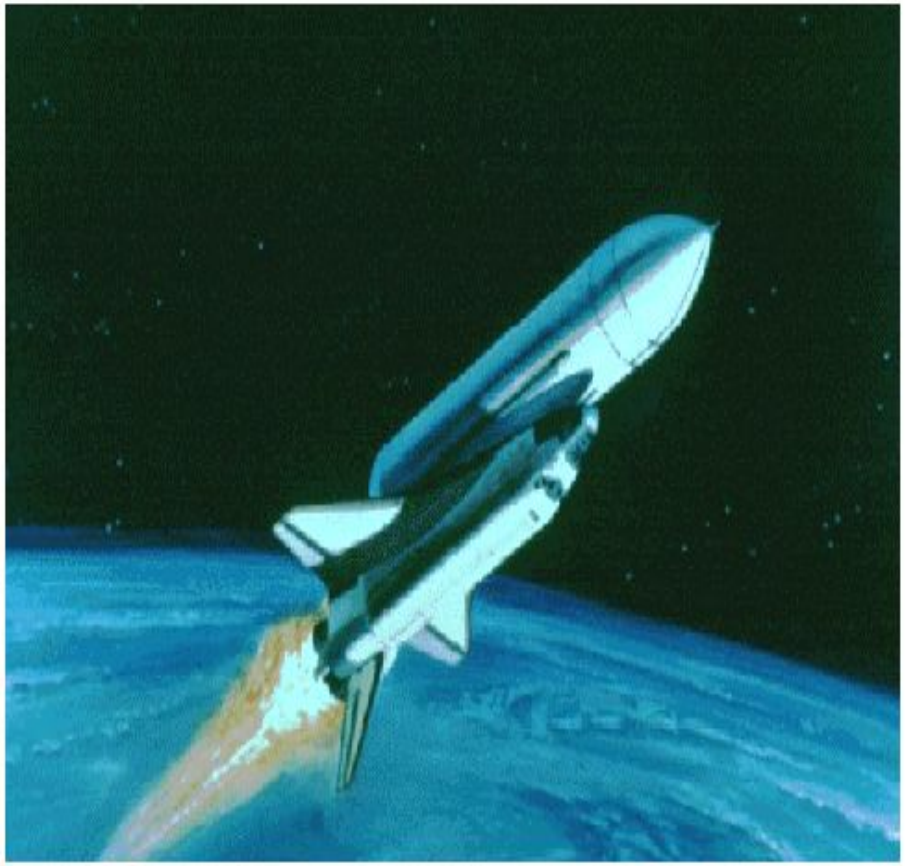
Inlet **Combustor** **Nozzle**



Compressor **Turbine**

Accessories: Afterburner, Thrust Reverser, Spoiler..

Why Does a Rocket Work?

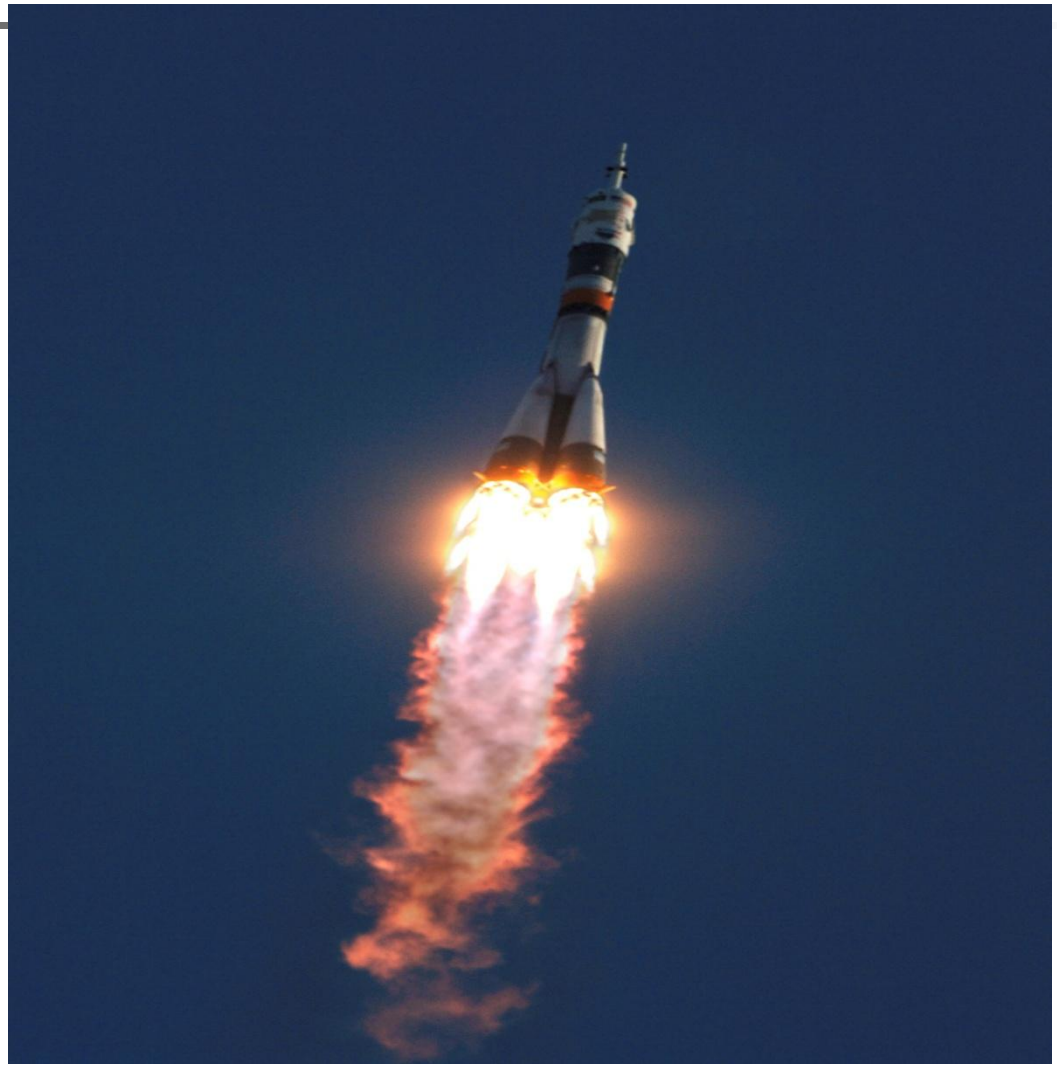


In space, an engine has nothing to push against. So how do rockets move there? Rockets work by a scientific rule called Newton's third law of motion. English scientist Sir Isaac Newton listed three Laws of Motion. He did this more than 300 years ago. His third law says that for every action, there is an equal and opposite reaction. The rocket pushes on its exhaust. The exhaust pushes the rocket, too. The rocket pushes the exhaust backward. The exhaust makes the rocket move forward.

Electrodynamic

MPD (magneto-plasmadynamic)

Utilize Lorenz Force in the magnetic field



Pulsed MPD thruster from Princeton University using Ar


USA

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