

ORBITAL SPECIFICATIONS

Orbital altitude	190-330 miles (310-530 km)
Orbital period	97 minutes
Average orbital speed	17,200 mph (27,800 km/h)



ORBITAL MANEUVERING SYSTEM

00:02:00
27 MILES (44 KM)
ALTITUDE: THE SOLID-FUEL ROCKETS ARE JETTISONED.

ASCENDING PHASE

The space shuttle turns 120° and ascends upside down, with the crew in an upside-down position. It maintains this position until reaching orbit.

1

00:00:00

LIFTOFF

The two solid-fuel rockets and the three main engines go into action. They burn two million pounds (900,000 kg) of propellant, and the shuttle reaches an altitude of 27 miles (44 km). The solid fuel is completely consumed.

2,200 tons
THE LIFTOFF WEIGHT OF THE SPACE SHUTTLE

EXTERNAL TANK
carries fuel to be used in liftoff.

BOOSTER ROCKETS
are jettisoned and begin to fall toward Earth. Later they will be refurbished.

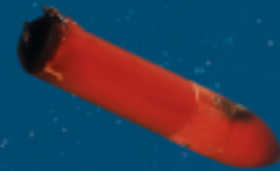
COMPARTMENT WITH THREE PARACHUTES
Used for jettisoning the rockets

CARGO BAY
carries the apparatus that will be put into orbit.

BOOSTER ROCKETS
provide the thrust essential for liftoff.

SHUTTLE
houses the astronauts and the cargo once in orbit.

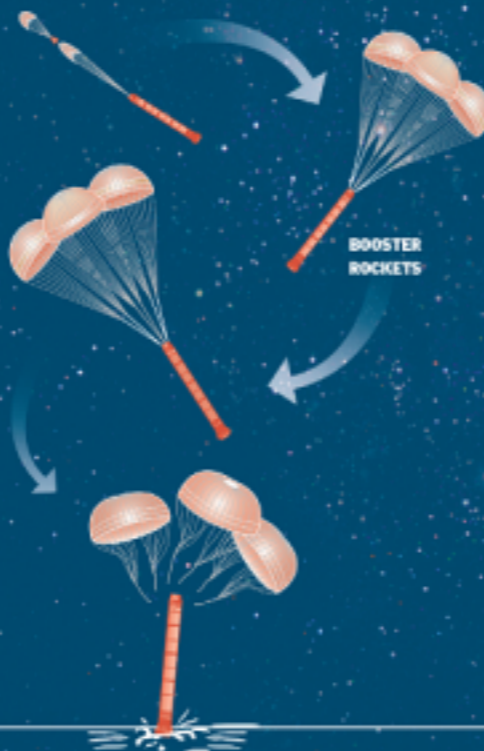
00:08:00
THE EXTERNAL TANK IS JETTISONED.



EXTERNAL TANK
Its fuel is fed to the shuttle engines until just before the shuttle reaches orbit. The tank is immediately jettisoned and as it falls it burns up through atmospheric friction.

Retrieval System

Two minutes after the shuttle's liftoff, the booster rockets have burned up their fuel. They are jettisoned, and the parachutes deploy for their fall into the ocean. Later the booster rockets are retrieved by ships and refurbished.



ORBITAL MANEUVERING CONTROL SYSTEM
puts the shuttle into an appropriate orbit. Depending on the mission, its altitude could be as high as 700 miles (1,100 km).



17,400 mph
(28,000 km/h)
SPEED REACHED BY THE SHUTTLE

2

5-30 DAYS

ORBITS IN SPACE

Once the necessary altitude has been reached for the mission, the shuttle remains in space between 10 and 16 days. It is then oriented for the return flight to Earth.



3

REENTRY INTO THE ATMOSPHERE

The shuttle undergoes a communications blackout because of the heated air that surrounds it.

4

LANDING

The shuttle landing sequence is completely automatic and takes in two minutes before returning to terra firma. It lands on a runway 3 miles (5 km) long.

20°

LANDING ANGLE



4,900° F
(1,500° C)
MAXIMUM TEMPERATURE

TURNS
It makes various "S" turns to reduce its velocity.