

The anatomy of a hot air balloon

Written by Staff Reports

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In New Mexico, the sight of a hot air balloon is common. But not everyone knows what parts make up this iconic vehicle.

There are three main parts of a hot air balloon, and they all work together to create an amazing flying machine.

THE ENVELOPE

The first part of a hot air balloon is the envelope. This is the “balloon” part of a hot air balloon.

The envelope, also known as the canopy or kapok, encloses all the other parts and helps the vehicle get off the ground. It has several different layers which serve multiple purposes:

Inner liner - This thin layer protects passengers from getting burned by embers that escape from the burner during flight

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Beaded netting or skirt - This layer holds in heated air after it leaves the burners, creating an inflatable shape

Outer shell - This outermost layer prevents heat loss while providing protection against environmental factors such as water and ultraviolet light damage

Envelopes are typically made of nylon and coated with a fireproof material such as Kevlar or Nomex. This ensures that if a fire does break out, it will not spread quickly or burn through the envelope.

The top of the balloon is held in place by a hoop of flexible fabric called the crown. This is the part that often has fun designs and colors, which adds to the beauty of a hot air balloon.

THE BASKET OR GONDOLA

The second part of a hot air balloon is the basket or gondola. This is where passengers stand and supplies are stored.

Typically, hot air balloon baskets are made of steel or aluminum alloy to ensure that they are lightweight while still being able to hold large numbers of passengers.

The parts of the gondola include:

Pilot seat - This is where the pilot sits to control the direction of flight

Passenger seats - These are used to transport people sitting down

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Supply area - This is where supplies or luggage can be stored during flight

Fuel tanks - These tanks carry propane or natural gas which is used to power the burners. The number of fuel tanks a hot air balloon has will vary depending on size, but each balloon must have at least two

Sand bags - These bags prevent the balloon from tipping over and helps it maintain balance under certain weather conditions

THE BURNERS

Lastly, the third part of a hot air balloon is the burners. Without a way to heat up the air inside of the envelope, a hot air balloon wouldn't fly.

The parts of a burner include:

Fuel container - This is where the propane or natural gas is stored during flight

Ignition switch - The pilot uses this switch to start the burner

Chamber - Air is forced through here, where it is heated and released to create a strong burst of hot air

Valve - This part controls how much propane enters the chamber

Combustion chamber - This part ensures that the fuel does not explode, but instead burns in a

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controlled way

Burner parts are typically made out of stainless steel to prevent rust from forming due to the humidity and rain that can get trapped inside of the basket during flight.

Usually, the burner or burners point directly into the mouth of the envelope to ensure that hot air is released as quickly as possible.

On average, most burners produce around 400,000 British Thermal Units of heat. This is equivalent to around 148,000 watts of energy.