

How Tesla's Flying Roadster Actually Works

On October 15, 2026, Tesla's new Roadster drove up a curved ramp, hung upside down, launched, flipped in mid-air and landed. Here is how the two systems behind that stunt work — and what Tesla has not proven yet.

WHAT THIS ADDS

Most coverage stopped at "the car flies." It doesn't, really: it sticks with suction and hops with compressed air. Once you see the two systems separately, the stunt makes sense — and so do its limits.

What Tesla showed

Tesla unveiled the new Roadster on October 15, 2026, at a SpaceX test site in Texas. In the first demo the car drove up a curved ramp shaped like half of a roller-coaster loop, went upside down, launched off the end, flipped in mid-air and landed. Elon Musk's reaction: *"Well, it worked."*

In a second run it accelerated toward a row of five parked Teslas, used thrusters to hop over them, and came down in a cloud of condensation.

System 1: fan suction

Most fast cars use wings to push themselves onto the road. The Roadster uses **suction**. Fans on the underside pull air out from under the car. That leaves low pressure beneath it, and the normal air pressure above presses the car onto the surface.

Lars Moravy, Tesla's vice president of vehicle engineering, said the fan suction system can "pull up to 2 Gs in order to make the car go upside down."

Why 2 G is the number that matters

To hang from a ceiling, a car has to be held up with more force than gravity pulls it down — that's 1 G. At 2 G, the fans press the car against the ramp with about twice its own weight, so it stays on the surface even upside down.

On a normal road the same suction means huge grip for cornering and launching. Tesla claims 0–60 mph in under one second.

System 2: cold-gas thrusters

This is the part Tesla says it borrowed from SpaceX. Cold-gas thrusters burn nothing: there's no fuel and no fire, just compressed air.

Moravy said 10 thrusters are fed by about 600 liters of compressed air. Tesla says the air is stored in carbon-fiber-overwrapped pressure vessels packed into "every usable void" in the car, and that the tanks can be recharged.

How a cold-gas thruster works

Open a valve and the compressed air blasts out of a nozzle. Newton's third law does the rest: the air goes one way, the car goes the other. Spacecraft have used cold gas for decades to turn and steer, because it is simple and gives short, precise pushes.

On the Roadster, Musk described "altitude control thrusters and main thrusters in the rear, so it can basically fly like a rocket." Thrusters around the body control the car's angle in the air; thrusters at the rear add forward push.

The stunt, step by step

1. **Stick:** the fans hold the car to the ramp, even upside down.
2. **Launch:** at the top of the curve the car leaves the ramp.
3. **Rotate and slow:** the thrusters turn the car in the air and soften its fall.
4. **Land:** it touches down in a cloud of condensation from the expanding air.

The three versions

Version	Tesla's label	What it adds	Reservation
Performance	Road ready	Fan suction system, no thrusters	\$50,000 deposit
Thrust	Race ready	Rear cold-gas thrusters for acceleration	\$250,000 deposit
Rocket	Air ready	Cold-gas thrusters around the body, one seat; not approved for public roads	Invite only

Tesla lists a range of more than 300 miles and a top speed above 230 mph. These are Tesla's claims and have not been independently tested.

Reality check: a jump, not a flight

- **Air runs out fast.** Cold gas is good for short, sharp pushes, not sustained flight. Tesla has not said how long the car can stay airborne.
- **Only short hops were shown**, in a controlled demo.
- **No price yet** — only reservation deposits.
- **Production is set for 2028**, for a car first unveiled in 2017 with production originally promised for 2020.
- Musk himself called it "not necessarily a safety-optimized car."

Treat the Roadster as two real technologies — fan downforce and cold-gas thrusters — packaged as a show. Watch for three things before believing the flight claims: published flight time, road approval, and a price.

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Sources

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