

**ANATOMY OF A JETLINER  
(Facts And More Facts)**

**Anatomy of a jetliner: The Boeing 777**



The design of the 777 was done completely on computers. Instead of building a full-size model, engineers used computers to electronically "assemble" the entire aircraft. This practically eliminated paper drawings and helped achieve unparalleled levels of accuracy.

The 777 has about 132,500 engineered parts that are custom-made for the airplane. Including rivets, bolts, and other fasteners, the airplane has more than three million parts.

**777-200**  
305 tri-class passengers  
632,500-lb (286,900-kg)  
maximum takeoff weight  
**777-200**  
8,165 miles/13,140 kilometers

The 777 flies up to 43,100 ft. (13,137 m) in altitude. That's more than eight miles high.

Depending on model and optional equipment, the price for a 777 is \$116 million to \$146 million.

Powerful radar watches far ahead for other aircraft and storms.

The 777 has "fly-by-wire" controls. Instead of using mechanically-connected cables to move rudders, flaps and other airplane control surfaces, the pilot sends commands electrically through computers and wires. This reduces weight, complexity, and maintenance.

An inertial reference system gives the pilot information about the airplane's location at all times, anywhere in the world.

With an interior cabin width of 19 ft. 3 in. (5.87 m), the 777 is almost as roomy as the 747. The spacious feeling is augmented by storage bins built high into the ceiling.

Airlines determine what kind of seats they want in their airplanes, and they order seats from a number of suppliers. Many airlines are also incorporating seat-back entertainment centers for in-flight movies and computer games.



The flight deck of the 777 incorporates state-of-the-art color liquid crystal displays. On-board computers check and re-check the airliner's operations in flight, and can even fly the airplane if the pilot so orders.



The long-range version of the 777 has an optional rest area for cabin crew members in the cargo area beneath the passenger deck.

There are two jet engines on a 777, each delivering up to 90,000 pounds of thrust—more than one-and-a-half times as much thrust as all four engines on the first 707.

**In developing the 777, what steps did Boeing take to protect the environment?**

**A** Noise is the most commonly recognized environmental concern for commercial aviation. The 777 was designed to be one of the quietest jetliners in the sky. The 777 is also more fuel-efficient than any airplane of comparable size. Furthermore, Boeing has invested tens of millions of dollars in new materials and manufacturing processes that eliminate or minimize environmental damage. For example, we've recently found ways to reduce solvent and particulate emissions from aircraft painting by approximately 50%.

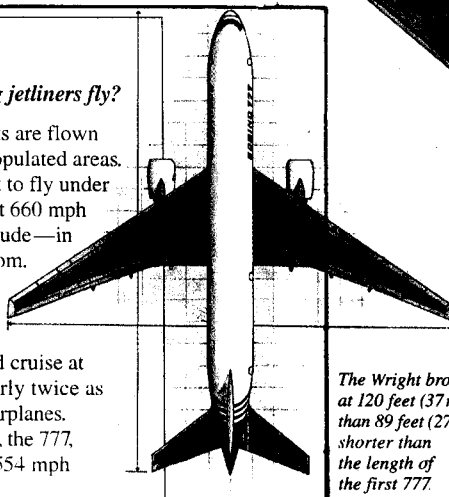
The 777 is equipped with galleys that have enough capacity to serve meals to 440 passengers on long flights.

The 777 has a fuel capacity of 31,000 gallons (117,335 liters) or 44,700 gallons (169,190 liters).

**Q How fast do Boeing jetliners fly?**

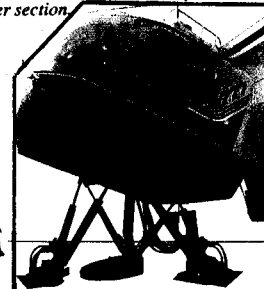
**A** Most commercial jets are flown extensively over populated areas. So most jetliners are built to fly under the speed of sound—about 660 mph (1,060 km/h) at cruise altitude—in order to prevent sonic boom. It's also much more fuel-efficient to fly below the sound barrier.

The original 707 could cruise at 528 mph (850 km/h), nearly twice as fast as propeller-driven airplanes. The newest Boeing jet, the 777, can cruise up to 554 mph (890 km/h).



All of the fuel is carried within the wing and structural center section.

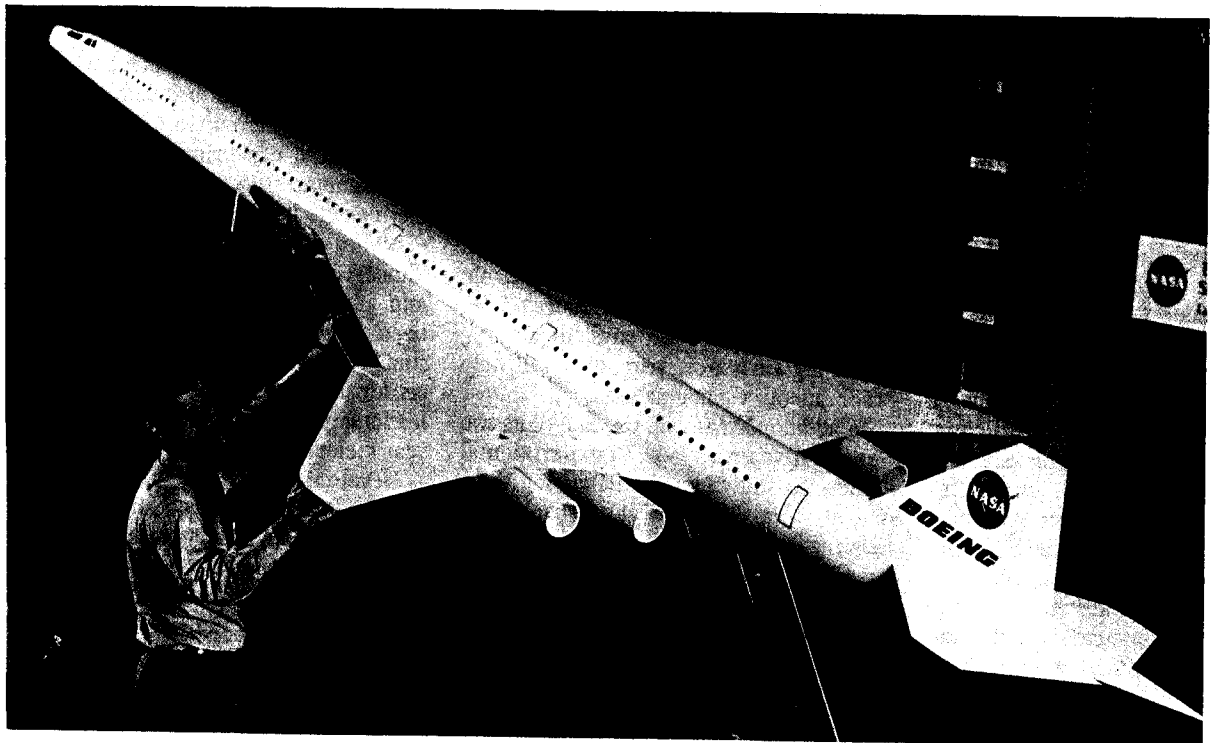
The Wright brothers' first flight at 120 feet (37 m) was more than 89 feet (27 m) shorter than the length of the first 777.



Motion-based simulators are frequently used for flight deck training. They help crew members become familiar with an airplane's controls and flight characteristics before the pilots fly the real airplane.



European Concept Being Developed



United States Development Program