

AAE 251 Vehicle of the Week: Lockheed Constellation



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Lockheed Constellation



- ▲ Design started in 1939
 - ▲ TWA needed aircraft for NY to LA flights
 - ▲ Four-engine piston-prop aircraft
 - ▲ Army took over orders as C-69 transport
- ▲ Began commercial service in 1946
 - ▲ First flown by TWA
 - ▲ NY to LA reduced from 18 to 10 hours

Design Description



Lockheed Constellation



Boeing 737-400

| Aircraft | Gross Weight | Length | Height | Wing Span | Wing Area | Passengers |
|----------------|--------------|----------|---------|-----------|-----------------------|------------|
| Constellation | 94,000 lb | 95.2 ft | 22.5 ft | 123.0 ft | 1,650 ft ² | 64 |
| Boeing 737-400 | 138,500 lb | 119.6 ft | 36.5 ft | 94.8 ft | 1,135 ft ² | 146 |

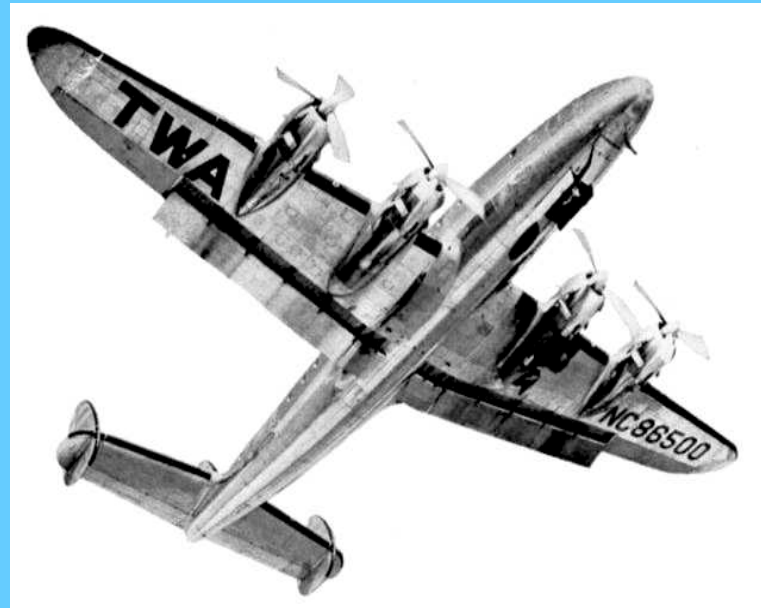
Propulsion and Performance



- Four Wright Cyclone engines @ 2,500 hp each
- Three-bladed propellers 15 ft 2 in diameter
- Range 2,500 mi
 - NY to LA
 - NY to London (one-stop)
- Cruise speed 298 mph (259 kts)
- 44 to 64 passengers with 5 crew

Significant Features

- ▶ Pressurized cabin for higher altitude
 - ▶ smoother ride
 - ▶ more efficient cruise
- ▶ Fowler flaps on wing
 - ▶ shorter take-off length
 - ▶ low drag for cruise
- ▶ Three vertical tails
 - ▶ stability maintained
 - ▶ fits DC-3 hangers
 - ▶ distinguishing feature



Super Constellation



- ▲ Introduced in 1951
- ▲ Improved performance
 - ▲ 66 to 129 passengers
 - ▲ cruise speed 327 mph
- ▲ “Turbocompound” engines
 - ▲ extracted energy from exhaust
 - ▲ better efficiency

Achievements



- ✦ Front-line aircraft for several major airlines
 - ✦ TWA, Pan Am, United, Lufthansa, BOAC
- ✦ Presidential transport aircraft for Eisenhower
- ✦ Improved Super Constellation (Starliner) first non-stop NY to London service
- ✦ Military versions of Super Constellations used as early warning aircraft (EC-121)



The End of the “Connies”

- ✦ Boeing 707 and Douglas DC-8 turbojet aircraft introduced in 1958 and 1959
- ✦ Turbocompound engine limitations
 - ✦ more complex than turbojet
 - ✦ forward speed limited by propellers
- ✦ Only a few still flying today
 - ✦ mostly preservation groups

