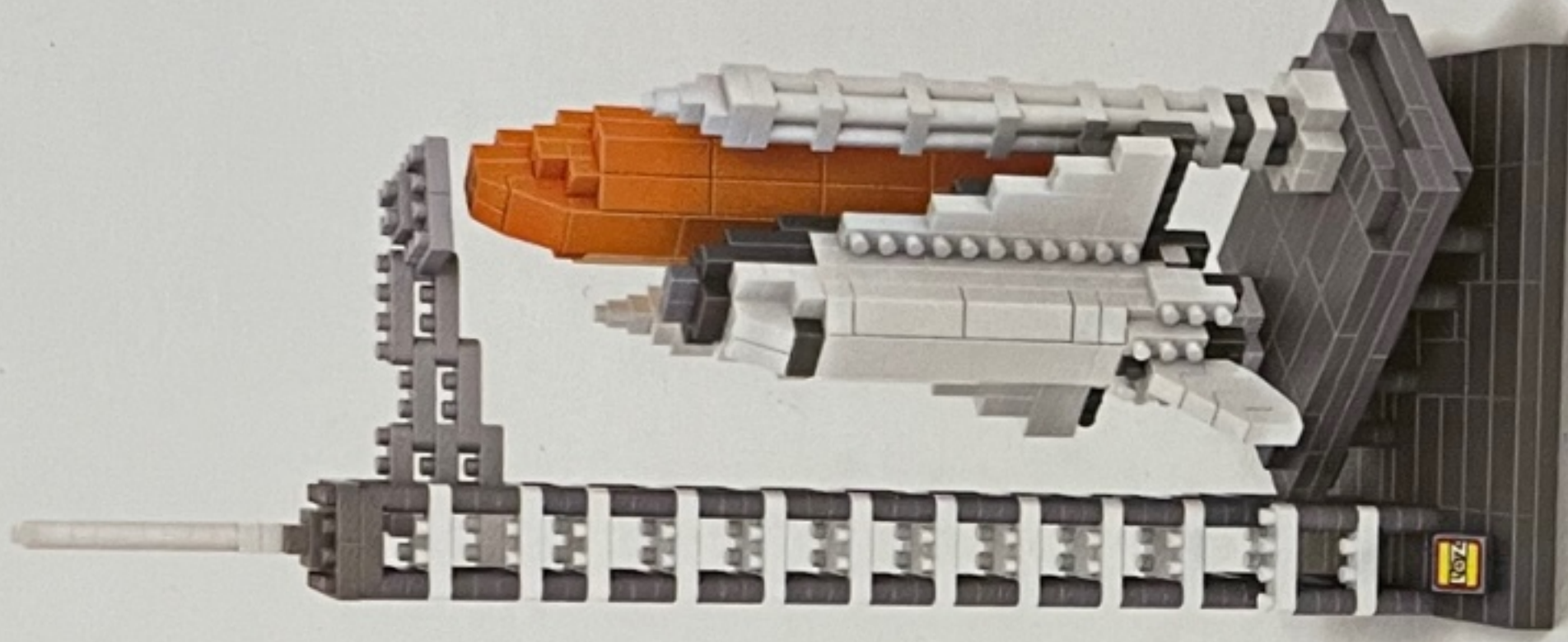




# Architecture

## Diamond Block

LOZ World Famous Architecture Series



The Space Shuttle was a partially reusable low Earth orbital spacecraft system operated by the U.S. National Aeronautics and Space Administration (NASA). Its official program name was Space Transportation System, taken from a 1969 plan for a system of reusable spacecraft of which it was the only item funded for development. The first of four orbital test flights occurred in 1981, leading to operational flights beginning in 1982. They were used on a total of 135 missions from 1981 to 2011, launched from the Kennedy Space Center (KSC) in Florida. Operational missions launched numerous satellites, interplanetary probes, and the Hubble Space Telescope (HST); conducted science experiments in orbit; and participated in construction and servicing of the International Space Station. The Shuttle fleet totaled 1322 days, 19 hours, 21 minutes and 23 seconds during missions.

Shuttle components included the Orbiter Vehicle (OV), a pair of recoverable solid rocket boosters (SRBs), and the expendable external tank (ET) containing liquid hydrogen and liquid oxygen. The Shuttle was launched vertically, like a conventional rocket, with the two SRBs operating in parallel with the OV's three main engines, which were fueled from the ET. The SRBs were jettisoned before the vehicle reached orbit, and the ET was jettisoned just before orbit insertion, which used the orbiter's two Orbital Maneuvering System (OMS) engines. At the conclusion of the mission, the orbiter fired its OMS to de-orbit and re-enter the atmosphere. The orbiter glided to a runway landing on Rogers Dry Lake at Edwards Air Force Base in California or at the Shuttle Landing Facility at the KSC. After the landings at Edwards, the orbiter was flown back to KSC on the Shuttle Carrier Aircraft, a specially modified Boeing 747.

The first orbiter, Enterprise, was built for Approach and Landing Tests and had no orbital capability. Four fully operational orbiters were initially built: Columbia, Challenger, Discovery, and Atlantis. Of these, Challenger and Columbia were destroyed in mission accidents in 1986 and 2003 respectively, in from service upon the conclusion of Atlantis's final flight on July 21, 2011.



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