Ryan Navion (L-17)

Navion

Portland International Jetport, 2004.

Role	Light fixed-wing aircraft
Manufacturer	North American Aviation / Ryan Aeronautical
Introduction	1948
Status	Active
Primary users	United States Military Private owners
Number built	2,634
Variants	Camair Twin Navion

Navion

Navion with open canopy

The **Navion** is a United States single-engine, four-seat aircraft originally designed and built by North American Aviation in the 1940s. It was later built by Ryan Aeronautical Company and the Tubular Steel Corporation (TUSCO). The Navion was envisioned as an aircraft that would perfectly match the expected postwar boom in civilian aviation, since it was designed along the general lines of, and by the same company which produced the North American P-51 Mustang, generally regarded as one of the best Allied fighter aircraft.

The Navion was originally designed at the end of World War II by North American Aviation as the NA-143 (but produced under the NA-145 designation). It was designed for the civilian market but also attracted the interest of the United States Army Air Forces. The Army Air Force ordered 83 of the NA-154 version, designated the **L-17A**, to be used as a liaison aircraft, personnel and cargo carrier, and trainer for the university-based Reserve Officers Training Corps flight training program, 35 of which were later converted to **L-17C** standard by the Schweizer Aircraft Company by fitting them with L-17B model features such as an auxiliary fuel tank.

Ryan Aeronautical Company acquired the design in 1948, and built approximately 1,200 examples over the following three years. Ryan designated the aircraft the Navion A with a 205 hp (153 kW) Continental E-185-3 or -9 and, later, the Navion B with 260 hp (194 kW) engines of either the Lycoming GO-435-C2, or optionally the Continental IO-470 engine. The Navion As became the basis for the military **L-17B**.

A single prototype Navion Model 72 was developed to compete for the US Air Force trainer aircraft procurement that was awarded to Beechcraft and resulted in the T-34. This Model 72 was not mass-produced.

Some L-17s were used for forward air control early in the Korean War, but they were primarily used for liaison and light transport duties. One L-17 was supplied to the ROK Air Force, which used it for similar duties.

The L-17 was used for a variety of purposes and had a storied service history. L-17s flew personnel and cargo from the carriers *USS Sicily* (CVE-118) and *USS Badoeng Strait* (CVE-116), sometimes landing on front-line roads. Both General Douglas MacArthur and Major General Matthew Ridgway had personal L-17s. Marilyn Monroe flew in Ryan L-17B 48-944 during her 1954 USO tour in Korea. L-17s were used briefly for Airborne Forward Artillery Control (FAC) to guide artillery on target, but were found to be too vulnerable and were by other aircraft such as the AT-6 Texan. After the Korean War, most L-17s were released to squadron "hack" duties, ROTC flight training, USAF Flying Clubs and finally the Civil Air Patrol (CAP) before moving into civilian hands in the late 60's.

TUSCO took over production of the Navion in the mid-1950s, manufacturing D, E and F models with a variety of enhancements including tip tanks and flush rivets. Navion Rangemaster aircraft were manufactured from 1961 to 1976. Their production followed that of earlier canopy-model Navion aircraft. In addition to the 39.5-gallon (150 liter) main fuel tanks, the Rangemasters added tip tanks with 34 gallons (128 l) each. The total fuel capacity of 107.5 gallons (407 l) gave these Navions the range for which they are named. TUSCO also introduced the Navion Rangemaster G model in 1960, which incorporated all previous advancements, replaced the Navion's sliding canopy with a side door, enlarged the cabin, created five separate seats, and standardized use of tip tanks and larger, late-model Continental engines. An H Model was produced as well, very nearly the same as the G Model except for a few minor enhancements. The last few Navions were manufactured (all H Models) by Navion Aircraft Company during a short production run ending in 1976 during one of several attempts to restore the airplane to commercial viability.

Ryan L-17 Navion on USS Leyte (CV-32), 1950.

Pre-World War II, light civilian aircraft such as the Piper J-3 Cub and Aeronca Champion typically were made of wood or steel-tube fuselages with wooden wings. These pre-war designs were also marketed after the war, but did not sell well. While Republic offered an amphibious aircraft, the Seabee, Cessna

offered the 195, and Beechcraft offered by far the most successful type Bonanza, which remains in production in 2009. All of these aircraft, including the Navion were significantly more advanced than prewar civilian aircraft and they set the stage for aircraft built from aluminum sheets riveted to aluminum formers. It was thought that wartime pilots would come home and continue flying with their families and friends under more peaceful conditions, but the postwar boom in civilian aviation did not materialize to the extent the manufacturers envisioned.

Sales of the Navion were helped by the visibility of several celebrities who flew them, including Veronica Lake, Arthur Godfrey, Mickey Rooney and Bill Cullen. Retired Utah Senator Jake Garn is a current Navion owner.

As of 2010, many Navions are still flying and there is an active Navion owner's community. On 18 March 2003 Sierra Hotel Aero of South St. Paul, Minnesota purchased the type certificate, design data, molds and tooling. Their long term plan is to preserve the existing fleet worldwide while simultaneously moving towards production of new Navions.

There are no two Navions alike, in part because numerous companies produced the airplane in different parts of the country, in part due to its long service history and many approved modifications, and because without the continuous manufacturing production and support of these airplanes for most of the last 40 to 50 years, owners and third-party organizations have successfully sought numerous improvements to the aircraft on their own *via* FAA field approval and supplemental type certificates. The airplane has been repeatedly modified with numerous larger power plants including the latest aircraft piston engine designs available. One Navion was fitted with a Czech built Walter turboprop allowing the aircraft to climb in excess of 5,000 ft. per minute.

A pair of highly-modified Navions were flown by Princeton University as the Variable-Response Research Aircraft (VRA) and the Avionics Research Aircraft (ARA). The VRA was given a pair of vertical side-force-generating surfaces mounted midway between wing roots and tips and a digital fly-by-wire (DFBW) control system, first installed in 1978, that parallels the standard Navion's mechanical control system and the fast-acting wing flaps that produce negative as well as positive lift. With these, the VRA can simulate the motions of other aircraft types through independent, closed-loop control of all the forces and moments acting on the airplane. Having completed over 20 years of research at Princeton University's Flight Research Laboratory, the VRA and its sister ship, the Avionics Research Aircraft (which is virtually identical to the VRA but does not have side-force panels) currently are owned and operated by the University of Tennessee Space Institute .

MAPS Aircraft

L-17 48-11078 in flight over NE Ohio

L-17B (Serial # 48-1078) was delivered to the 176th Infantry Regiment, Virginia Army National Guard, Washington DC on 18 February 1949, and transferred to the U.S. Army Field Forces in January 1951. On 05-05-1953 a repair tag was installed on the airframe from Far East Air Materiel Command 6400th Maintenance Group at SHOWA, Kisarazu A.B. Japan. It was returned from the Far East Air Materiel Command in 1955 and went on to serve with the Civil Air Patrol, Syracuse University ROTC (Air University) Elmira NY, 255th ROTC Detachment State University of Iowa, Iowa City IA, Strategic Air Command (flyable storage) Offutt AFB NE, and in 1961 Langley Aero Club, Langley VA. It was listed as destroyed in 1970 and sold as scrap. It was retrieved from a storage building 1993 and then went through a five year restoration, and at this time her military history was realized. In 1998 at her first airshow she received Best L-17 and a Silver Wrench Award from the Experimental Aircraft Association at Oshkosh Wisconsin, and Best Warbird at Oshkosh 98 from Navion Skies (one of two owners clubs). At Sun-n-Fun (Lakeland FL) in 1999 it received a fourth award.

Variants

- North American **Navion A** (NA-143/ NA-145]; civil variant
- North American **L-17A** (NA-154); military variant
- Ryan **Navion A**; civil variant
- Ryan **Navion B**; civil variant
- Ryan **L-17B**; military variant of Navion A (163 built)
- Ryan **L-17C**; military variant of L-17A (35 modified)
- Ryan **Navion Model 72**; military variant (one prototype)
- TUSCO **Navion D**; civil variant
- TUSCO **Navion E**; civil variant
- TUSCO **Navion F**; civil variant
- TUSCO **Navion Rangemaster**; civil variant (long-range capability)
- Camair Twin Navion - twin engine conversion

A twin Navion conversion

- TEMCO-Riley D-16A Twin Navion - twin engine conversion

General characteristics (L-17)

- **Crew:** one, pilot
- **Capacity:** three passengers
- **Length:** 27.25 ft (8.3 m)
- **Wingspan:** 33.38 ft (10.17 m)
- **Height:** 8.53 ft (2.60 m)
- **Wing area:** 184 ft² (17.09 m²)
- **Loaded weight:** 2,750 lb, (1,247 kg)
- **Power plant:** 1 × Continental E185 flat-6 piston engine, 185/205 hp (138/153 kW)

Performance

- **Never exceed speed:** 190 mph (306 km/h)
- **Cruise speed:** 155 mph (250 km/h)
- **Stall speed:** 64 mph (103 km/h) gear and flaps up, 50 mph (80 km/h) gear and flaps down
- **Service ceiling:** 15,000 ft (4,572 m)
- **Rate of climb:** 1,250 ft/min (381 m/min)
- **Wing loading:** (estimated) 11.4 lb/ft² (55.7 kg/m²)
- **Power/mass:** 13.4 lb/hp (8.1 kg/kW)