

URSA MAJOR

*The most powerful Cub
was also the end of the line*

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COLOR PHOTOGRAPHY BY THE AUTHOR



THE Piper Super Cub is used for tugging gliders, patrolling pipelines and airlifting injured skiers. Ranchers survey their property, geologists scout for minerals, and sportsmen probe deep into the wilderness in Super Cubs. They are operated by the military, crop dusters and government agencies. J. Dawson Ransome, president of Ransome Airlines, commutes to work in one (see "Commuter Cub," January 1985 *Pilot*, p. 34). The Super Cub fits so many job descriptions because it is tough, versatile and inexpensive to operate.

The PA-18 Super Cub was introduced in 1950, three years after the J-3 went

out of production, but there was another bear in the pack: The PA-11 Cub Special came between the J-3 and PA-18. (Piper switched to the designation PA, for Piper Aircraft, after World War II to distinguish new models from pre-war designs.) The PA-11 is a nearly identical twin of the J-3 in appearance and structure, but there are significant differences in the powerplants and fuel systems.

The cylinders on the Continental A65-8-powered J-3 are exposed to the slipstream, and fuel is carried in a 12-gallon fuselage tank positioned between the firewall and the pilot. The PA-11 has a 90-horsepower Continental C-90-8 engine that is completely enclosed in an

aluminum cowl for pressure cooling and an 18-gallon fuel tank in the left wing. The PA-11 can be soloed from the front seat because the fuel tank is almost on the center of gravity instead of far forward. Relocating the fuel tank also improved visibility over the nose. The instrument panel has the same layout and look as the J-3 panel, but it is not as tall. The front seat-back folds forward for easier entry to the rear seat, and the lift struts and landing gear shock absorber cover are streamlined. The last PA-11, an export model that went to Argentina, was built on January 26, 1948.

The first Super Cub, designation PA-18-95, was completed on November 23,



1949, and painted in the familiar high-visibility yellow with hickory brown trim. The Super Cub is a further refinement of the J-3/PA-11. It has the same modified USA-35B airfoil as the J-3 for low-speed efficiency and the same 18-gallon wing tank as the PA-11, but it is heavier than both and has a higher gross weight. The Super Cub also has more room and comfort. The spar attach point was changed and the front seat elevated to give the pilot better visibility and more head room. The rear sling seat

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used in the J-3 and PA-11 was changed to a wire coil spring-seat frame, and the baggage compartment was enlarged. Finally, the bottom door hinge was changed to provide a better seal.

The Continental C-90 engine with its crossover exhaust system provides the Super Cub with performance the underpowered J-3 has always lacked. Piper claimed the 90-horsepower Super Cub would climb at 710 feet per minute at

sea level, compared to 450 feet per minute for the 65-hp J-3. Recommended 75-percent-power cruise speed for the Super Cub: a blistering 87 knots (100 mph). Flat-out, the J-3 can manage only 76 knots (87 mph). The Super Cub has a 160-pound edge in useful load and 50 percent more fuel capacity than the Cub. The little two-seater that had made William T. Piper the Henry Ford of aviation had grown out of its primary roles as a trainer and personal airplane and into a utility workhorse.

BEACH BEAR

C...A...N...D...Y...

One by one, the six-foot-high fabric letters peel off the ground and trail behind Peter S. Green's straining Super Cub.

...S...T...O...R...E...

Green points the Cub's nose skyward at a crazy angle to gain altitude. It takes a few seconds for the banner to unfurl and clear the ground.

...L...A...D...I...E...S...

The last letter rolls off the grass, and the entire message can be read: "...CANDY STORE LADIES NITE FREE DRINKS CHAMPAGNE..."

Green turns east and heads off for a two-hour, back-and-forth tour of the Fort Lauderdale, Florida, beach. The sound of the Cub's droning Lycoming O-320 and the faint snap, crackle and pop of the banner arouse sunbathers' curiosity enough for them to squint through the blinding light and read the airborne advertisement for the Fort Lauderdale singles' bar before returning to their tanning ritual. At 300 feet above the sand, Green is too high to people-watch, so he passes the time looking for sharks.

Like Peter Greene's, there are thousands of Super Cubs that have put in years of hard labor and still do an honest day's work. Greene spends the winter towing banners over Fort Lauderdale in his 1958 PA-18-150, and in the spring travels north to work the beaches of Long Island, New York. In Florida he flies for Bannerama, Incorporated, at North Perry Airport near Hollywood. The walls of the hangar are lined with faded rip-stop nylon letters and numbers and the webbing they attach to on the banner. A woman spends each day hunched over a sewing machine, repairing frayed alphanumerics and arranging the day's banner messages. The message can contain a maximum of 45 letters. Drag, not weight, is the limiting factor.

The banner is unrolled backwards on a clear field at the east end of the airport. A rope attached to one end is draped between two poles about five feet off the ground. The challenge for the pilot is to fly low enough that the grappling hook trailing behind the aircraft will snag the banner rope, but not so low that the hook will drag the ground. The approach is made in a diving arc at full power. Just before the landing gear passes over the banner rope, the pilot pitches the aircraft up 45 degrees and sticks his head out the open door to watch. If the pick-up is successful, the hook will snag the rope, and the banner will follow. If the pilot misjudges the point at which to yank back on the stick, the tailwheel can snag the rope, causing the rudder to deflect fully in one direction. The only thing to do is land, immediately, with the controls crossed and the banner dragging along behind.

Once the pick-up has been made, the tow is flown at 43 to 52 knots (50 to 60 mph) on about 75-percent power. Any faster and the letters and numbers will disintegrate, or the banner may break and flutter down onto a packed beach; any slower and you risk a stall, which can be disastrous. The banner can be released, but there is little time and altitude to recover. In addition to torn banners and a narrow performance envelope, the biggest threats are birds, kites, blimps (Goodyear bases one of its blimps in Fort Lauderdale), low-flying sightseeing pilots, pop-up thunderstorms and an on-shore breeze that ricochets off beachfront high-rises and buffets the banner.

A gentlemen's agreement among pilots holds that the banner messages are arranged so they can be read from the beach as the aircraft fly north. The pilots fly a racetrack pattern, hugging the coast on the northbound leg and staying offshore on the return. Occasionally someone will have a backwards banner and must fly south. This can lead to a test of nerves between converging pilots, as each jockeys for the prime inside position.

John S. Bergeson, who describes himself as a 19-year-old airline hopeful, also tows banners in a grizzled, multi-thousand-hour Super Cub, building time by flying for Benz Aviation of Ionia, Michigan. Bergeson also has logged much time in the J-3. (He is the son of John B. Bergeson, president of the Cub Club, Post Office Box 2002, Mount Pleasant, Michigan 48858.) How does Bergeson compare the two aircraft? "The J-3 is delightful. It is lighter, and weight makes a tremendous difference in the flying qualities. The Super Cub doesn't fly as daintily, but you have better control because there is more power. The front seat is much more comfortable, and you can see out the nose a lot better." The Super Cub is Bergeson's vocation, the J-3 his avocation. If the J-3 can be characterized as a grand old lady—Bergeson's description—then the Super Cub is a career woman. —MRT





Super Cub options included an electrical system, Edo floats, Federal skis and an agricultural spray rig. Piper even offered a bizarre four-wheel Whitaker main landing gear—that looked like a set of training wheels—for operating out of extremely soft, rocky or uneven terrain. Alaskan bush pilots have proven to be among the most creative Super Cub modifiers. Many of the dozens of modifications that have been developed for the Super Cub, such as huge 36-inch low-pressure tundra tires, enlarged baggage compartment, constant-speed propeller and 180-horsepower engine, originated in Alaska.

The Super Cub initially could be bought for \$3,595 with the Continental C-90, or \$2,995 with a 105-hp Lycoming O-235. The 90-horsepower Super Cub was in production until 1963. The last one was bought by a Piper employee. The O-235 was offered for only one year, then was dropped in favor of a 125-hp Lycoming O-290. In 1951 Piper also doubled the Super Cub's fuel capacity by adding a second 18-gallon wing tank, and added flaps and a balanced elevator. (The 90-horsepower version was not offered with flaps or the second wing tank.) In November 1950 Piper distributed a photograph that showed a 125-horsepower Super Cub with two people aboard taking off from Flushing Airport in Flushing, New York.

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The pilot began the takeoff roll with the flaps stowed, then dropped full flaps after traveling about 50 feet. At the 100-foot mark on the runway, the Super Cub was airborne. In 1952 Piper offered a 135-hp Super Cub, and in 1955 the PA-18-150 was introduced.

The 150-hp Lycoming O-320-A2A engine and Super Cub airframe proved to be a good match. Gross weight increased to 1,750 pounds for a useful load of 820 pounds, just 110 pounds shy of the empty weight. Even with a 200-pound pilot and a full load of fuel, 400 pounds of payload remained. Piper increased the number of ribs in each wing from 13 to 16 and increased the wall thickness in the structural tubing to support the higher gross weight. The big Lycoming gave the Super Cub takeoff and climb performance just short of spectacular. With flaps extended, the takeoff roll at gross weight is 200 feet, and the landing roll is 350 feet. The Super Cub will climb at just under 1,000 feet per minute fully loaded.

Piper built nearly 8,500 Super Cubs in 34 years, including 2,650 A-models with chemical spray tanks substituted for the rear seat. The price climbed steadily, with the increase averaging about \$1,000 annually. Then, between 1975 and 1976, the base rose from \$15,920 to

\$18,580. Four years later, it had zoomed to \$27,110. Production plummeted from 200 units in 1979 to 61 the following year. In September 1981, WTA, Incorporated, in Lubbock, Texas, a distributor of Super Cubs and Piper's two agplanes, the Pawnee and Brave, bought Piper's existing inventory of Braves and Super Cubs. WTA had arranged with Piper to be the exclusive worldwide distributor of the Super Cub and Brave. The Super Cubs were sold within a year, and WTA ordered a batch of 50 new aircraft. Most of those were sold within the next year despite a retail price of \$47,000 each, which included electrical and vacuum systems, radios, a night lighting package, emergency locator transmitter, large tailwheel and stainless steel control cables.

The last Super Cubs were delivered in early 1983. WTA, which has first refusal rights to purchase the PA-18 type certificates and tooling, made an offer, but Piper insisted that the new owner carry \$100-million worth of product liability insurance to cover all the Super Cubs that had been sold since 1950. No agreement was reached. WTA believes there is a worldwide annual market for about 100 Super Cubs and still maintains the hope of either going into production or convincing Piper to build more on its own. The Super Cub tooling is in storage in Lock Haven, Pennsylvania. □



Super Cub on Edo floats

Piper PA-18-150 Price (1955): \$6,595

Powerplant	Lycoming O-320, 150 hp
Length	22 ft 7 in
Wing span	35 ft 2.5 in
Wing area	178.5 sq ft
Empty weight	930 lb
Gross weight	1,750 lb
Maximum speed	113 kt
Cruise speed	100 kt
Rate of climb	960 fpm
Service ceiling	19,000 ft
Range	400 nm (36 gal)