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MARCH 1972/75¢

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**The New Beech Sierra**  
**Mitsubishi MU-2J**  
**Fuji FA-200**  
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# The Japanese Aviation Industry:



Is It Zeroing in on Us?

text and photographs by Stephan Wilkinson



REMEMBER THE Honda? Remember the Nikon? The Sony? The Aero Subaru?

The . . . Aero Subaru?

Don't feel bad. Japan's sole serious attempt to enter the lightplane market hasn't yet proved particularly memorable. The Fuji Aero Subaru, however—an airplane that looks like what might have happened if Piper had gotten some old Navion blueprints mixed up with its Cherokee plans—is felt by some to presage a Honda-horde of single-engine lightplanes pouring forth from a country that has already proved its ability to beat the West at its own game in playgrounds as crowded as the economy-car and electronics fields.

How realistic are the fears? Not very.

The Japanese aviation industry is admittedly a remarkable and largely self-sufficient one, producing everything from STOL flying boats to supersonic trainers just a little better than anything the Europeans have been able to come up with. The Japanese make radar, loran, tacan, omega and almost every other kind of high-level avionics, as well as aircraft instruments, tires, hoses, large jet engines, spark plugs and ignitors, bearings, electrical components and motors, pumps and actuators, and an almost endless array of other aviation supplies.

(All of these are of original design, and are quite apart from the vast range of license-built aircraft, engines and accessories that the Japanese have been producing since 1952: F-86s, F-104s, F4s, P2Vs, Sikorsky and Bell helicopters, Cessna L-19s and Beech

Mentors, among others.)

There is no doubt about Japan's ability to design and produce aircraft. The Japanese are currently carrying on research in fixed-wing high-speed helicopters, vertical takeoff and advanced STOL technology, supersonic fighters and small commuterliners, heavy flying boats and light fanjets. Their MU-2 is easily the world's best-performing light turboprop; the Shin Meiwa PS-1 four-engine flying boat makes rough-water landings and STOL takeoffs that no other waterplane in the world, past or present, could imitate; the baby-brute XC-1 short-haul jet that Nihon is developing features the world's first application of *quadruple*-slotted Fowler flaps; and the Nihon YS-11 twin turboprop airliner, though a comparative sales flop, is an outstanding design with a brilliant reputation for safety and reliability—and remember, it is only the first postwar airliner the Japanese built.

It's easy to take cheap shots at Aero Subarus and kamikazes and awkward Japanese-to-English translations for panel placards—but the world also laughed when they sat down to design the Zero.

The Japanese have long shown an ability to look carefully at an existing product or a potential marketing area and figure out how to build it or fill it better and cheaper. This has often been mistaken for outright imitation, but this is a shortsighted and incomplete view. The usual pattern is that the Japanese develop a product that is somewhat off

target; their first motorcycles looked like overdressed Italian scooters, their first economy cars had ridiculously small engines, their first snowmobiles were so heavy they had to have reverse gears, and we'll tell you about the Aero Subaru in a moment. While the world is clutching its sides laughing at quarter-ton snowmobiles or sewing-machine-powered automobiles, though, the Japanese retool, rebuild, retrench and return with a product so right that it stops the competition dead in its tire tracks.

If they wanted to, the Japanese could probably carve up the U. S. general-aviation market with the precision of a *sushi* chef slicing up a side of raw tuna. Their military and commercial airframes are superb; their electronics industry is one of the most advanced in the world; and Japanese recip engines power more ocean-going vessels, automobiles, locomotives, chain saws, motorcycles, road graders, generating plants, snowmobiles, model airplanes and anything else that moves than the engines of any other nation but the U.S.

Today, even their reputation is good, after years when "Made in Japan" was synonymous with lousy. Gone are the days when, as it was once rumored, a small town in Japan was renamed Usa, to provide an address for manufacturers who wanted to label their products "Made in USA." Today, few aviation names are more respected than Mitsubishi, for one.

It is an interesting and important fact

# Pilot Report: Fuji FA-200 Aero Subaru

**"Made in Japan"  
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that much of the Japanese aircraft industry is in the hands not of specialty builders and comparatively small "aircraft companies," as it is in the U. S., but of industrial giants like Mitsubishi and Fuji Heavy Industries, which loom large in the world and stand absolutely immense in Japan. It's as though U. S. airplanes were made by General Motors, U. S. Steel, du Pont and a conglomerate that owned Boeing, Lockheed, Coca Cola, Mobil Oil and the rights to Howard Hughes's autobiography.

Big as Mitsubishi is, though—it makes the world's largest supertankers, the little Dodge Colt economy car and a *Yellow Pages*-worth of other products—its TV commercials open with a shot of the MU-2 flying into a sunset. The Japanese, after all, are aviation fanatics. Small children identify YS-11s with a certitude that would put a Piedmont dispatcher to shame, and during the 1971 Japan International Aerospace Show last autumn, bellboys and bar hostesses in Nagoya, where the show was held, knew more about the Hawker Siddeley Harrier than do the U. S. Marines (who recently bought 120 of them). The air show was jammed from hangar to hangar with humanity, eyes turned upward to watch a small fleet of Aero Subaru "sky-typing" at 8,000 feet—flatulating puffs of computer-timed smoke to spell out "Welcome to Airshow," a tame substitute for the Blue Angels, who were summarily sent elsewhere by the environment-conscious Japanese for

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THE JAPANESE do indeed take their flying seriously, and any attempt to fly even a Fuji Aero Subaru brings forth transport-category firebottles, squads of mechanics waving crank-engine fingers over their heads like lunatic jugglers, others bravely pulling chocks out after startup (much as though one were departing on a dawn patrol), and even a salute thrown as you finally roll down the ramp.

One look at the Fuji's instrument panel and you figure it's not inappropriate, for the layout has a military, rough-as-a-cob appearance, with big Stewart-Warnerish engine gauges, beefy switching panels, a fat pistol-grip throttle on a quadrant and even a practice gear-retracting handle and lights. (The Aero Subaru's wheels are firmly fixed.)

The phony handle isn't a bad idea, and if American manufacturers are so convinced that the people who buy their retractables are the same pilots who started out in their trainers, they should consider equipping their bottom-of-the-line machines with fake gear levers that set off a buzzer—as does the Fuji's—if you forget to put the "gear" down. It would be cheap, useful, and a constant reminder that there was a Bonanza, or an Arrow or Centurion, in one's future.

The Aero Subaru is a fairly ordinary (except that it's aerobatic) four-place, low-wing, fixed-gear airplane that comes in 160- and 180-hp versions. It is an airplane with few vices and few strengths. In styling and performance, the Aero Subaru is roughly equivalent to an early-1960s U. S. lightplane of

equivalent power—which is not all bad, since what you and I will be buying next year are, with few exceptions, early-1960s lightplanes with detail improvements.

Whatever the purists say about aileron rolls being good for gout, enforced celibacy and general malaise of the spirit, aerobic capability in a \$20,000-plus traveling machine is about as useful as brakes on a seaplane (as Beech learned a couple of years ago), and whether the Fuji's adroitness is a benefit is debatable.

With Fujita Shunichi, Japan's premier aerobatic pilot, accompanying me, I sampled the Aero Subaru's capability by flying through a couple of loops and spins, an Immelmann, an aileron roll, four-point roll, vertical roll, hammerhead and whipstall. My minimal aerobatic experience told me that the roll rate was a little slow (although the Frise-type ailerons were comfortably light), the spin stodgy and the vertical roll a decidedly marginal maneuver with 180 hp dragging this rather large machine behind it. It must be admitted, however, that the Fuji had none of that flapping, fluttering, oilcanning feeling that you get in other production aerobatic aircraft; it had the reassuring solidity (and perhaps the grace) of a Hudson Hornet doing moonshiner's 180s on a dirt road.

The airplane comes with optional sticks and an extra left-hand throttle and trim-wheel arrangement for the pilot, and the seat-backs on all models detach quickly, with Velcro tapes, to accommodate back-pack parachutes.

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It's interesting to note—especially in light of the University of Kansas's research into STOL technology with a Robertson-modified Cessna Cardinal—that there is a modified Aero Subaru being flown by the Japanese National Aerospace Laboratory with flaperons, spoilers and, most intriguing of all, boundary-layer control powered by a little Fuji go-kart engine mounted in the back seat. (BLC is a system whereby laminar flow is achieved by sucking away, through thousands of tiny surface perforations, the turbulent air flowing closest to the wing skin.)

Easily the nicest single thing about the Fuji is the rollback canopy, which makes stepping into even the rear seat far easier than through a low-wing door. It's a long hike up onto the wing, however—unlike a Cherokee, the Fuji sits tail-high and well off the ground—and the broad, no-step flap over which one must walk makes getting a non-pilot aboard rather like trying to tell a tender-foot how to get into a canoe without putting his foot through the hull.

The canopy can be rolled open a certain amount in flight, which is the kind of thing one does about twice after buying such an airplane. (Ask a Yankee or Aircoupe owner.) Rear-seat room is limited somewhat by a hefty keel-box between the seats and the mainspar box under the front seats.

The FA-200 Aero Subaru's straight-line performance is weak. At one point during a trip from Nagoya to the Fuji factory at Utsun-

omiya, northwest of Tokyo, an immense Russian Mi-6 helicopter, big as a motel and twice as ugly, flailed directly over us, about 200 feet above. Fujita tried to keep up with it so I could savor the experience of sharing air with *The Other Side*, but at 25 inches and 2,500 rpm, our TAS worked out to a little under 125 mph at 3,000 feet, and the Soviets crept haughtily away.

At cruise-power settings, the airplane trued out at speeds from 117 to 126 mph at 2,000 to 5,000 feet, at temperatures quite close to standard. Such speeds are not exactly what Lycoming had in mind when they developed the fuel-injected IO-360 used in the Fuji. (The cheaper version uses the 160-hp O-320.) The factory advertises an optimum cruise of 137 mph for the 180-hp airplane, with a top of 147, but they must have a downhill calibration course.

The design of the Fuji is surprisingly clumsy in its details. The cowling is square and graceless, with the sort of latches one would expect to see on a DC-3's radials; the pitot tube atop the rudder also looks big enough to do duty on a heavy twin, and for some reason, this leisurely airplane has big static wicks everywhere. Cockpit lighting consists of one white spotlight overhead and five red floodlights, one of them on a foot-long swing-out bar so it can illuminate the circuit breakers—exactly the sort of simplistic solution you or I, non-engineers, might come up with.

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## Fuji FA-200

About 100 Aero Subarus have been exported to West Germany, Austria, Switzerland and South America, and some 70 are flying in Japan—including, as should be delightfully obvious, the one below. The Aero Subaru shown on page 47 framed by the tail of a Russian Tu-154 transport, is landing after giving an impressive aerobatic exhibition at the 1971 Japan Aerospace Show, at Nagoya.



Don't be complacent, however; the first Japanese sports cars to be exported to the U. S. suffered from the same sort of design errors and lack of market understanding, and today, Japan sends us cars that make Porsches seem like Plymouths. There's little chance that Fuji will soon be sending us Aero Subaru, however. The airplane has been certificated by the FAA, and, in fact, a factory demonstrator was being shipped to the U. S. last fall when it was caught first by the West Coast dock strike and then by Nixon's 10-percent import surcharge, at which point the demo tour was canceled.

Fuji insists they could sell at least 100 FA-200s a year in the U. S.; but to do so, they'd have to lose money. The 180-hp airplane costs about \$18,000 basic in Japan, and usually goes out the door for \$20,000. Shipping and duty would easily bring the cost up into direct competition with four-place retractables in the U. S.

Fuji boasts of the aircraft's light weight, which is achieved through a thin-skinned, many-stringered style of construction that does not lend itself to mass production. A cutaway view of an Aero Subaru looks like the plans for a balsa model, replete with formers, bulkheads, stringers, longerons, ribs and gussets; one almost expects to see them marked "F3, F4, F5 . . ." with instructions to insert tab A into slot B. Nonetheless, at 1,430 pounds empty, the airplane outweighs the Cherokee 180 by 105 pounds, the basic Cessna Cardinal by 65 pounds and the 180-hp Beech Sundowner by 20.

The 200 is not the first lightplane that Fuji has built, though the company is best-known for its wartime Nakajima Kates and Oscars. Reconstituted in 1953 as Fuji Heavy Industries, the company's first Postwar production machine was the Beech T-34 Mentor, built under license from 1953 to 1959 and to this day being overhauled and reoverhauled by Fuji for the Japanese armed forces. In 1955, Fuji modified the Mentor to carry a four-seat cabin instead of a two-seat greenhouse—which is a roundabout way to build an ugly Bonanza—and then built a further derivation that carried a supercharged Lycoming IGSO-480 of 340 hp in place of the Mentor's 225-hp Continental O-470. The KM-2, as they call it, holds a class altitude record of 32,536 feet, and with its huge twin augments exhausts, supercharger scoop, three-blade prop, four-square tail and chunky, many-windowed cabin, is easily the toughest-looking single-engine lightplane ever made.

In 1956, Fuji also began building the Cessna L-19 Bird Dog under license, and today, they also manufacture Bell Hueys and nonmilitary Bell 204 turbine helicopters.

Starting from scratch is different than taking somebody else's design and adding detail improvements here and there, however, and Fuji engineers began to chafe that all they were doing was translating American blueprints into Japanese. Many of the country's better young aircraft designers had al-

ready moved into the booming automotive industry, so in 1964, Fuji decided to give their backroom boys an original lightplane project to work on, more as a realistic design exercise than as a viable product, though Fuji executives are quick to point out that the company can hardly afford to act solely as a lab for lightplane engineers.

The result was the Aero Subaru, and though it was largely brought into being by the demands of in-house practicality rather than long-range commercial desires, it didn't turn out so badly after all. It's a little awkward, a little slow and a little ugly—but a lot better than any other lightplane manufacturer's first serious try.—S.W.

#### Fuji FA-200-180

Basic price	\$18,000 (approx.)
Basic VFR price	\$20,000 (approx.)
Engine	Lyc. IO-360-B1B, 180 hp.
Propeller	McCauley constant-speed, 74-inch
Length	26 ft. 2 in.
Height	8 ft. 6 in.
Wingspan	30 ft. 11 in.
Wing area	150.6 sq. ft.
Wing Loading	16.8 lb./sq. ft.
Seats	4
Empty weight	1,434 lbs.
Useful load	1,101 lbs.
Payload with full fuel, average equip	739 lbs.
Gross weight	2,535 lbs.
Power loading	14.08 lbs./hp.
Fuel capacity	52 gals./312 lbs.
Baggage capacity	176 lbs.

#### Performance

Minimum runway requirement	1,476 ft.
Rate of climb	760 fpm
Service ceiling	13,700 ft.
Maximum speed	147 mph/128 knots
Cruise (75% @ 7,500')	137 mph/119 knots
Range @ max cruise (45-min reserve)	610 sm/530 nm
Duration @ max cruise (no reserve)	5.2 hrs.
Stall speed (flaps down)	60 mph/53 knots

#### Flight characteristics

Handling qualities (cruise)	Very good
Handling qualities (slow flight)	Very good
Stall recovery	Normal
Hands-off stability	Excellent
Runway and taxi handling	Good

#### Pilot utility

Visibility	Good
Seat comfort	Good
Accessibility of switches, etc.	Fair
Panel layout	Poor
Instrument lighting	Does the job

#### Cabin comfort

Entry-exit ease	Very good
Front-seat room	Adequate
Rear-seat room	Fair
Ventilation (in flight)	Good
Ventilation (on ground)	Excellent
Cabin sound (@ 75% power)	Poor

#### Quality

Interior finish	Fair
Exterior finish	Poor
Accessories and mechanisms	Good



## Fuji FA-200

The Aero Subaru is fully aerobatic, and has even won a number of national contests in Europe. The front-seat cushions are quickly detachable, to make room for parachutes, and Fuji offers an optional extra throttle and trim wheel for the pilot, mounted on the left cockpit sidewall, as well as overhead windows in the canopy and sticks in place of the control wheels.

