

Cirrus SR22

# POWER BROKER

**Here's the deal:  
It's fast, stylish,  
and comfortable**

BY THOMAS B. HAINES





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**O**n that fateful December morning as a cold north wind whipped across the North Carolina sand dunes, the Wright brothers and a few onlookers in just 12 seconds revealed the really important stuff about aviation. In essence, the Wrights used up all the aeronautical magic.

All we have left are the laws of physics—unglamorous and unyielding. To go faster or farther than a similarly shaped airplane, yours must either be smaller or it must have more power. Period.

With that in mind, it is no wonder that the Cirrus SR22, with its 310-horsepower engine, outperforms its 200-hp little brother, the SR20, in every way. Horsepower is an amazing thing, and in this case it transforms the perky Cirrus into a real get-up-and-go traveling machine. Even the lofty field elevation at Jefferson

County Airport near Denver didn't

blunt the SR22's snappy performance. With two on board and full fuel, we still climbed away at an initial rate of 1,500 feet per minute. Through 7,500 feet, only 2,000 feet agl in that neck of the woods, the Continental IO-550-N still pulled us up at 1,200 fpm. At 9,500 feet the VSI showed 1,000 fpm. You could expect the SR20 to be down to 500 fpm or less under similar conditions.

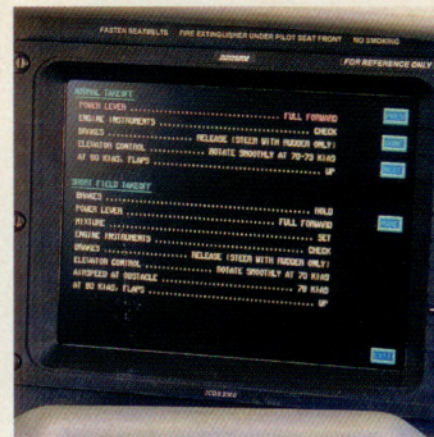
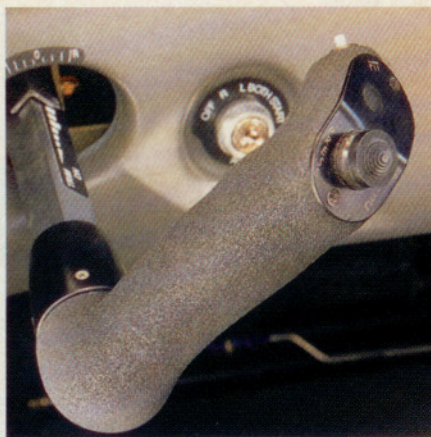
PHOTOGRAPHY BY MIKE FIZER







Two passenger doors (below left) and the unusual side-stick yoke (right) make entrance and egress easy in the Cirrus. The Arnav moving map (far right) doubles as a checklist. With the Arnav map (left), Sandel EHSI, dual Garmin GNS 430s, and big windows to see from, you have to work at getting lost while flying an SR22.



At cruise settings, the horsepower also makes a difference. The increase from the SR20's 160-knot cruise speed at 75-percent power to the SR22's 181 knots is impressive, but you might ask whether the additional fuel burn and extra \$60,000 to \$70,000 is worth it. If your budget can stand it, yes, it is worth it for those who plan to travel long distances. Even if you're not flying in the shadow of the Rocky Mountains, the excess horsepower available for improved climb is something you can use to your advantage on every flight. Getting to altitude more quickly and to higher altitudes altogether allow you to fly more efficiently. You'll always get higher true airspeeds at altitude, so if the wind is about the same at all altitudes, fly higher. The increased cruise speed also means that any headwind represents a smaller percentage of your overall speed. With the SR22 you'll spend less time in the headwind. With a tailwind, you can pull the SR22's power back to match the speed of the SR20—but does anyone ever really decrease power much with a tailwind?

The SR22 also carries a longer wing—about three feet longer. The greater span improves the climb rate, decreases stall speed, and gives the SR22 really nice landing characteristics. I found the SR22 to be easier to land than the SR20, partly because it seems more stable on approach, but mostly because the larger wing provides more opportunity in ground effect to finesse the landing. With the SR22, I felt as if I could work the airplane more in ground effect, getting it to the point where it would chirp, chirp onto the runway every time.

The greater span is the result of 18-inch wingtip extensions not found on the SR20. Beyond that, the SR22's wing looks much like the SR20's. However, there are a number of internal differences, including a stronger spar. The SR22 weighs about 40 pounds more than the one in

the SR20. The landing gear attach points are also different—beefed up to handle the SR22's 3,400-pound maximum gross weight. The SR20's max gross weight is 2,900 pounds, but Cirrus hopes to have a 100-pound increase this month. Several ribs have been moved in the SR22's wing to accommodate the 81 gallons of usable fuel, versus the SR20's 56 gallons. The SR22's landing gear is three inches taller and a bit stiffer than the lighter airplane's.

### Spin doctors

The SR22 maintains the unusual leading-edge cuff on the outboard sections of the wing that debuted on the SR20. The cuff helps direct the airflow over the ailerons at high angles of attack, allowing the pilot to maintain roll control with the ailerons at very slow speeds. The devices make the Cirrus airplanes docile in stalls and virtually impossible to spin. Cirrus test flights show that both airplanes behave conventionally in spins, but, like most high-performance airplanes, neither is approved for the maneuver.

The fuselages of the two airplanes are identical. Here's how you can impress the other airport bums when a Cirrus taxis by: If it has a small vortex generator—looking a bit like a transponder blade antenna—sticking out of each side of the cowl just ahead of the wing root, it's an SR22. (Of course, you could also read the swooping SR22 on the tail.) According to Cirrus engineers, the VG lowers the stall speed and improves low-speed handling by shedding a vortex at high angles of attack, keeping the air energized over the wing root. The VG quits working at a point that still allows the stall to properly propagate from the root outward.

Of course, if the situation gets out of control and you're more than a few hundred feet above ground level, you have the option of popping the unique







Cirrus Airframe Parachute System (CAPS). As on the SR20, a pull of the T-handle on the cabin overhead deploys the SR22's rocket-powered parachute from the aft fuselage. The parachute lowers the aircraft at about 1,700 fpm—a rate likely to destroy the airplane, but save the passengers.

Other telltale external differences: The SR22's landing light is in the nose cowl instead of in the cooling air inlet next to the spinner. There's a slight change in the angle of incidence of the SR22's horizontal tail, and the elevator control horns are a bit different as well. The SR22 comes with an electrically actuated rudder trim tab. You'd think that with 310 hp it would need it, especially on takeoff, but, at least at Jeffco's elevation of 5,600 feet, it didn't seem all that necessary.

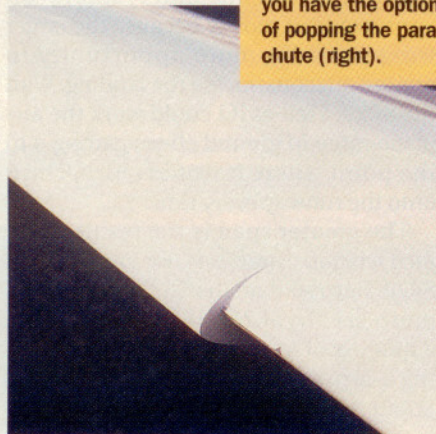
### Cowl tipping

Peek under the SR22's sleek cowl and you'll see what looks like a giant squid draped over the engine. The plumbing equalizes the amount of intake air and its velocity as it enters the cylinders. This tuned induction provides better fuel specifics because all of the cylinders are more likely to put out equal power. If the cylinders are operating equally, you can lean more aggressively, reducing fuel flow, or opt for greater power on a higher fuel flow—your choice. Likewise, a tuned exhaust system allows the engine to operate more efficiently. Out front, the three-blade Hartzell propeller is standard on the SR22; most people opt for a three-blade propeller on the SR20, although a two-blade is standard on that model.

Power management is handled by just two levers in the cockpit—the throttle and mixture controls. There is no propeller control. Instead, as with the SR20, the throttle also controls prop rpm. At full throttle, the prop turns at 2,700 rpm. When you initially reduce power, the prop goes to 2,500 rpm, but manifold pressure stays the same. Further reductions decrease manifold pressure until reaching a detent. Below the detent, both rpm and manifold pressure are decreased. As a practical matter, you fly it just as you would any other airplane, except with less fussing around. Set full throttle for takeoff, reduce to 2,500 rpm for initial climb, and leave it there until you level off. In cruise set whatever manifold pressure you want (or, at higher altitudes, leave it alone for whatever is available). If the engine fails, you can pull the throttle back and the prop changes to a coarser pitch to reduce drag. There are no cowl flaps to mess with.

At a cruise setting of 75 percent and optimum altitude of about 8,000 feet, the SR22 trues out at 181 knots or a bit higher on about 18.4 gallons per hour. The fuel burn is higher than what Continental specifies, but it is what the engine needs to run comfortably rich of peak. Fuel burn can be reduced by running lean of peak, but power output decreases. At 75-percent power, the airplane can travel about 3.5 hours with reserves, equal to 650 nm in still air. The SR20, burning only about 11 gph, can travel 4.3 hours with reserves or about 695 nm at 160 knots. So in that case, the tortoise wins, although at 160 kt it's one fast tortoise.

The drooped leading-edge cuff (below) improves slow-speed handling. If things get really out of control, you have the option of popping the parachute (right).







Working with the leading-edge cuffs, the vortex generator at the wing root (below left) gives pilots a great deal of control at slow speeds.

With a typical empty weight for a well-equipped airplane at 2,250 pounds, the SR22 ends up with a full-fuel payload of about 664 pounds, meaning you can put in four 170-pound adults and, by the time you taxi out, be right at the maximum takeoff weight. Not many four- or six-seat airplanes can take off with the seats and the tanks full. With a typical full-fuel payload of about 575 pounds (at the new 3,000-pound maximum gross weight), the SR22 can carry three adults and bags.

#### Command module

Like the SR20, the SR22 utilizes a side-stick control yoke, which despite its look, is surprisingly easy to use. In fact, it feels perfectly natural right from the start. To rotate, all you need to do is press your arm into the armrest and the airplane sprints away from the runway. In flight, the Cirrus responds crisply to control inputs. Even at slow speeds, you have plenty of authority in the ailerons to keep the airplane from falling off on a wing. A coolie hat-type switch on the top of the side stick handles aileron and elevator trim. The switch engages small motors that drive spring cartridges attached to the control surfaces. The tension on the spring determines the flight control position. The elevator trim operation is just like in any other airplane you've ever flown. The aileron trim takes a bit more getting used to, but is soon another tool to simplify your flying.

You sit high in the cockpit with the front seats well ahead of the wing leading edge. As a result, the pilot and front passenger have a terrific view down, up, and all around. The backseaters, too, will be comfortable looking out of their own big windows.

The seats are firm and felt especially so in the cool Denver morning as we launched before dawn for the photo mission. But the seats soften up a bit

as they warm up. They are supportive and undoubtedly comfortable on long trips. The seats, their foam, and the honeycomb structure under the seats form part of the intricately designed safety system that will crush during a crash or during a landing under the parachute. The crushing slowly dissipates loads to spare the pilot and passengers. Leather is standard on the SR22; it's a \$3,300 option on the SR20.

Of course, the pilot, mesmerized by the SR22's thousand-points-of-light panel, will forget about all of the safety stuff and simply drool on himself. It is amazing what can be done to a panel when you start with a clean sheet of paper, as Cirrus did with the SR20. The SR20 comes with a 10-inch Arnav moving map and Garmin avionics in a variety of combinations. The SR22 goes a couple of steps further, including, in addition to the Arnav display, an optional Sandel 3308 electronic horizontal situation indicator/moving map. This EFIS-like HSI provides excellent situational awareness. The Sandel unit is standard on the "B" package, which includes dual Garmin GNS 430s (each with its own moving map, IFR GPS, and VHF nav/com). If you get lost while flying an SR22, you should tear up your pilot certificate and promptly return it to the FAA.

In addition, the "B" package includes a Garmin audio panel/intercom and transponder plus the S-Tec/Meggitt Fifty Five X autopilot with altitude preselect. You can save \$18,100 off of the





## SPECSHEET

### Cirrus SR22

Base price: \$276,600

Price as tested: \$294,700

#### Specifications

Powerplant	Continental IO-550-N
	310 hp @ 2,700 rpm
Recommended TBO	1,700 hr
Propeller	Hartzell three-blade, 78-in dia
Length	26 ft
Height	8 ft 10 in
Wingspan	38 ft 4 in
Wing area	145 sq ft
Wing loading	23.5 lb/sq ft
Power loading	11 lb/hp
Seats	4
Cabin length	10 ft 2 in
Cabin width	49 in
Cabin height	50 in
Empty weight	2,250 lb
Max gross weight	3,400 lb
Useful load	1,150 lb

Payload w/full fuel	664 lb
Max takeoff weight	3,400 lb
Fuel capacity, std	84 gal (81 gal usable)
	504 lb (486 lb usable)
Oil capacity	.8 qt
Baggage capacity	130 lb, 32 cu ft

#### Performance

Takeoff distance, ground roll	1,020 ft
Takeoff distance over 50-ft obstacle	1,574 ft
Rate of climb, sea level	1,304 fpm
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) @ 75% power, best power, 8,000 ft	181 kt/3.5 hr (110 pph/18.4 gph)
Maximum operating altitude	17,000 ft
Landing distance over 50-ft obstacle	2,325 ft
Landing distance, ground roll	1,141 ft

#### Limiting and Recommended Airspeeds

V <sub>X</sub> (best angle of climb)	78 KIAS
V <sub>Y</sub> (best rate of climb)	101 KIAS

V <sub>A</sub> (design maneuvering)	133 KIAS
V <sub>FE</sub> (max flap extended 16 degrees)	119 KIAS
V <sub>FE</sub> (flap extended 32 degrees)	104 KIAS
V <sub>PD</sub> (demonstrated parachute deployment)	133 KIAS
V <sub>NO</sub> (max structural cruising)	178 KIAS
V <sub>NE</sub> (never exceed)	201 KIAS
V <sub>R</sub> (rotation)	70 KIAS
V <sub>S1</sub> (stall, clean)	69 KIAS
V <sub>SO</sub> (stall, in landing configuration)	59 KIAS

For more information, contact Cirrus Design, 4515 Taylor Circle, Duluth, Minnesota 55811; telephone 218/727-2737; fax 218/727-2148; or visit the Web site ([www.cirrusdesign.com](http://www.cirrusdesign.com)).

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

"B" package price of \$294,700 by opting for the "A" package, which swaps the Sandel for a conventional electric HSI and trades one Garmin 430 for a GNS 420, which does not have the VHF nav capability. The base price for an "A"-equipped airplane is \$276,600.

What's most unusual about the SR22's panel configuration is that it is all electric. This airplane has no vacuum system. Dual alternators and dual batteries provide the power to the 24-volt system. In addition, the electrical system has

two buses—primary and essential. In the extremely unlikely event that the number-one alternator, the number-one battery, and the number-two alternator are all rendered inop, you can still operate for 45 minutes on the number-two battery. It powers the essential bus, which is protected from the rest of the circuitry by a circuit breaker. The essential bus includes the number-one Garmin 430, the attitude indicator, turn coordinator, and the autopilot. It is hard to imagine a situation where you wouldn't have power available to



## Shared vision

Want access to a Cirrus SR22 but don't want to wait? An Atlanta-based company is putting together a fractional ownership program comprised of SR22s. The concept may be coming soon to an airport near you. Currently, AirShares Elite has an SR20 in its fleet, but by midsummer it will take delivery of five SR22s with another five to be delivered later this year.

Customers can buy one or more one-eighth shares in the SR22s. The shares are currently selling for about \$48,000 each. A share entitles the owner to 75 flight hours per year and 11 overnight stays. Besides the share purchase price, the owners pay \$500 per month for a management fee and buy their own fuel, which amounts to about \$40 per hour for the SR22. While an owner is buying a portion of one airplane, he's also getting access to a fleet of identical airplanes. Under the fleet concept, Air-

Shares Elite believes that an airplane will be available at virtually any time.

AirShares Elite pays for all maintenance, overhauls, insurance, and other expenses, and assures aircraft availability, including—in the case of its Atlanta operation—delivery of an airplane to any of several area airports. Customers have access to the company's corporate hangar, which also houses a lounge, flight planning room, and other amenities. The monthly fee also includes free charts, AOPA membership, and a host of other perks.

AirShares Elite started its operation in November 1999 with a fleet of Cessna 182s and 206s. However, with the arrival of the SR22, the company is switching its fleet to Cirrus products.

The company's primary operation is housed at Cobb County-McCollum Field, but it recently signed a lease to open an additional facility at Dekalb-Peachtree Airport. In addition, Air-

Shares Elite has signed a lease for property at Sugar Land Municipal/Hull Field near Houston. Other locations under consideration for additional fleets include Reid-Hillview Airport near San Jose, California; Palwaukee Municipal Airport near Chicago; and an airport near Fort Lauderdale, Florida.

AirShares Elite CEO David Lee says his company has had a successful launch because it is entirely focused on customer service. The objective is to take away the hassles of aircraft ownership and allow the owners to fly. "People don't want to deal with all of the issues required in aircraft ownership and at the same time many of them can't afford nor need an entire airplane," says Lee. "The customer service revolution has somehow bypassed aviation. Our goal is to fix that."

For more information on the AirShares Elite concept, contact Lee at 678/581-5962 or visit the Web site ([www.airshareselite.com](http://www.airshareselite.com)). —TBH

make it to an airport. Look for the company to add the Goodrich SkyWatch traffic avoidance system to the option list soon, joining the WX-500 Stormscope as a popular way to personalize your airplane.

### Maybe a little magic

Cirrus has delivered seven SR22s and expects that about a third of the 650 aircraft in its backlog will end up as SR22s. The Wrights may have uncovered all of the important aero-



## Model of efficiency

Cirrus Design works hard to work less

In manufacturing, the mantra isn't always "cost." More likely, it's "efficiency." Like any start-up manufacturing operation, Cirrus Design has struggled to efficiently build its products. Since delivery of the first SR20 in July 1999, the company's immediate goal has been to build one airplane a day in an effort to work off a backlog that, as of late March, stretches to more than 650 orders.

Cirrus achieved the goal of *finishing* one airplane a day in December 2000. The problem was that it was taking an all-hands effort from throughout the factory to do it. As a result, the company was not *starting* to build one a day. Predictably, January's build rate suffered considerably. In an effort to get things back on track and to rethink the entire production process, the company in February laid off 127 of its 640 employees.

After revising the production processes, the production rate rapidly increased. By late March the goal of starting *and* finishing an airplane a day had been met. Cirrus President Alan Klapmeier reports that overall there has been a 30- to 40-percent decrease in man-hours necessary to build an airplane. The company now reports it takes 2,869 hours to manufacture an SR20. Klapmeier expects the rate to ramp up even further and when it does the company will rehire most of the laid-off workers.

Through March, more than 140 SR20s and seven SR22s had been delivered. —TBH

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Links to additional information about Cirrus Design airplanes may be found on AOPA Online ([www.aopa.org/pilot/links.shtml](http://www.aopa.org/pilot/links.shtml)).

nautical magic, but with the SR22, the Cirrus team has brewed a powerful potion—one that appeals to pilots' desires to fly something that looks good and goes fast. The SR22 does both and in a level of comfort seldom seen in general aviation. There is no magic in what sells.

**AOPA**

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