

Van's Newest Ship

Build your personal fighter aircraft on a budget



By Alton K. Marsh

Soon there may be as many Van's aircraft flying as there are men named Van living in northwest Oregon. There are more than 1,650 examples of Dick Van-Grunsven's designs flying, counting the RV-3, RV-4, RV-6, and the new RV-8, and thousands more abuilding.

The RV-8 is the newest of the line, a bigger, tandem-seat aircraft that is comfortable on cross-country trips but can roll upside down to keep things interesting. Those with average skills in flying tailwheel aircraft and using a stick, rather than a yoke, will have little trouble making the transition.

Pilots like these new airplanes because they seem similar to a factory-designed and -built aircraft. They are not only homebuilt airplanes, but are considered by some to be the king of the homebuilt airplanes. Most of the Van's kits take 2,000 hours to build, but the new RV-8 is estimated to take only 1,800 hours; the cost is \$14,000, not including the engine, instruments, and avionics (which are not included with the basic kit), and about \$40,000 with an average-priced 160-hp engine. Van's now offers only the tail and wing portions of the RV-8 kit but should be offering kits for the entire



The wide stance of the landing gear means that landings will be as easy as possible for new tail-wheel pilots. RV pilots have long appreciated the clean lines that give all of the aircraft in the series a sporty appearance. Once inside, they'll find a tidy panel that equals or supasses factory-designed layouts for neatness and utility. Engine instruments represent the newest technology.

airplane by the time you read this.

You can tell a lot about how the aircraft will fly just by looking at it. The wide-chord wing that means center-of-gravity worries are greatly reduced. The huge tail means that the aircraft not only wants to track straight ahead, it *has* to. Will Van's ever seek FAR Part

being determined in flight testing. The company promises that it will fly faster than 180 KTAS at higher altitudes.

The RV-8 has a lot of pilot-friendly features, too, such as electric flaps that are operated at the flick of a switch on the stick. Balanced ailerons are easy to move, and little rudder is needed for

VanGrunsvan pulls a lot of performance out of such a small airplane. The air

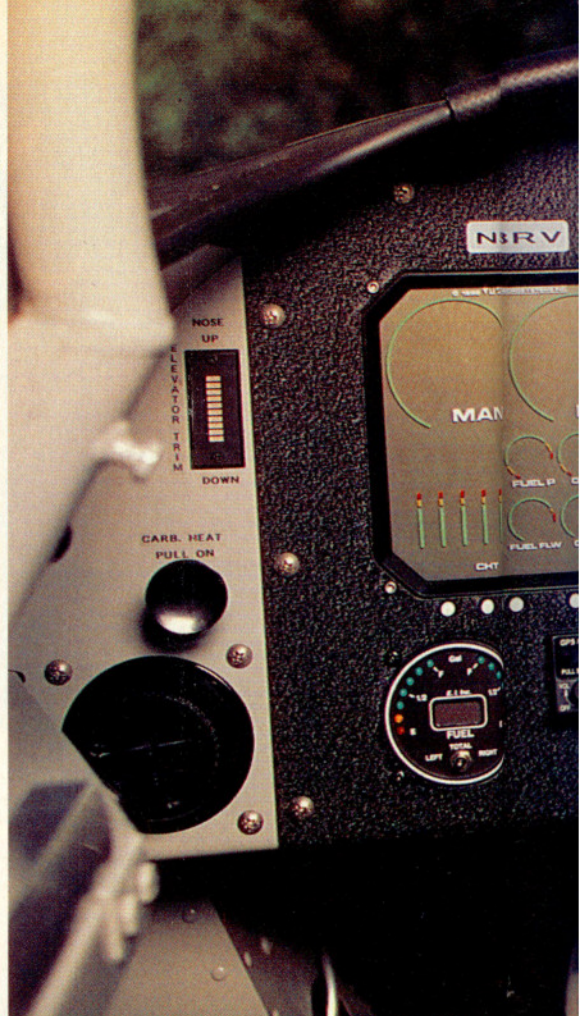
23 certification and offer the RV-8 as a factory-built aircraft? No—the certification route is too costly, and there would be some minor redesign required. There are too many unknowns that can affect the cost of the certification process.

But there are alternatives for pilots not wanting to attend a 1,800-hour birthing of the RV-8, no matter how good it is. They are called *quick-build kits* and can reduce the building time by a third. The quick-build kit will be available in a year and will cost about \$8,000 more.

VanGrunsvan pulls a lot of performance out of such a small airplane. Through tweaking, the 160-horsepower engine has been coaxed to deliver 168 hp. (The kits are designed for any Lycoming engine from 150 hp through 200 hp.) The aircraft climbs at greater than 1,000 feet per minute and flies, at least on the day I flew it, at 165 knots true airspeed. That was at 3,500 feet in turbulence. Performance figures are

most maneuvers, including stalls. The wide-track landing gear and polite behavior on landing and takeoff allow pilots new to the aircraft to make an easy transition. As a matter of fact, I did reasonably well on my first-ever landing in the RV-8.

Okay, I dropped the aircraft in on the second attempt, but the result was only a more-solid-than-planned arrival. Pilots will love flying the aircraft, but not from the backseat, where guest pilots are placed. Pilots in front have excellent visibility over the nose when taxiing and for takeoff and landing, but the pilot in the rear has no more than that afforded by many high-performance aerobatic aircraft. There are no engine controls in back, either. When the aircraft began settling too fast on my second landing, I could only wince while VanGrunsvan, riding in front, flatly refused to add power in order to show me what it is like to “drop it in.” I already had a pretty good idea, but the solid thunk of the tires was less bone-





The aircraft climbs at greater than 1,000 feet per minute.



The aircraft was designed with a nod towards greater pilot comfort without sacr



without sacrificing performance. It loops and rolls to fight cross-country boredom.

jarring than anticipated.

The procedure for the takeoff is like that of a more powerful, high-performance aircraft: as soon as full throttle is added during the takeoff roll, raise the tail. As soon as that is done, the airplane is immediately ready to fly. Climb-outs at 69 to 78 kts result in a pitch angle that inhibits forward visibility but delivers a whopping 1,400 fpm climb rate. For better visibility, VanGrunsven used 95 kts.

The rudder "pedals" for the rear cockpit are bent tubes facing the pilot's feet and blunted on the end, while the front pilot has not only conventional adjustable rudder pedals, but also brakes. My advice: do your best on introductory flights so that the checkout pilot will let you fly from the front seat as soon as possible.

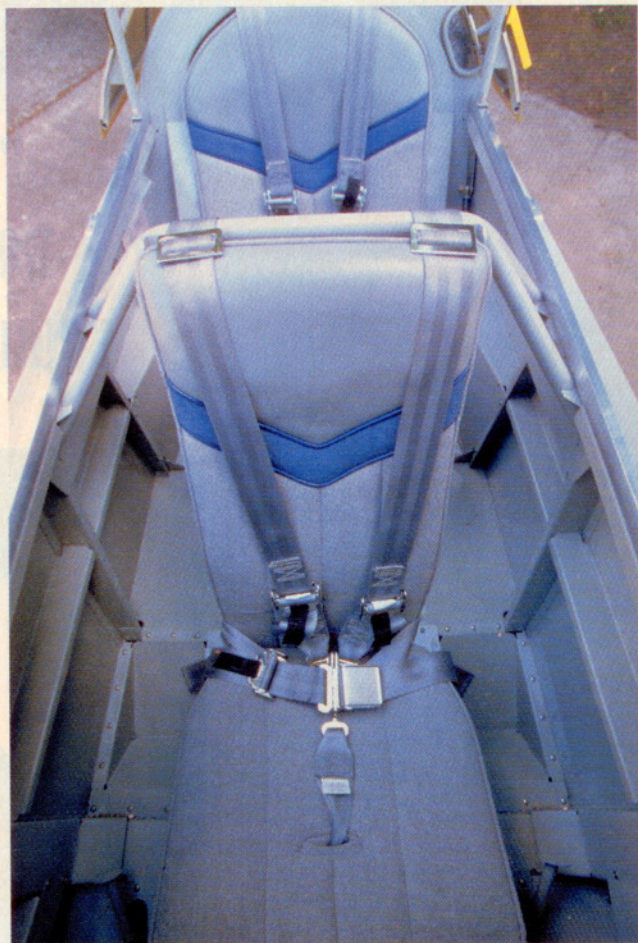
Once the aircraft is in the air, the performance is a delight to the recreational flyer. All of Van's designs, whatever the model, are capable of positive-G aerobatics. We did little more than aileron rolls and four-point rolls during a brief flight, but the roll rate was adequate to please the occasional aerobic flyer. However, full deflection of the ailerons into the roll produced minor buffeting because, in that position, the ailerons generate a slight amount of turbulence. Engineers will investigate whether the ailerons are stalling at extreme deflection.

That is not to say that the aircraft is unstable. Stalls were done with feet off the rudder pedals, and yet the aircraft tracked straight ahead in a stall, albeit buffeting mightily. Steep turns and slow flight only reinforced the impression of the RV-8's good manners. I compli-

mented VanGrunsven on the rigging of the aircraft, only to learn that it had been completed two weeks earlier and that there had not been time to tweak the rigging. Apparently, he builds them right the first time.

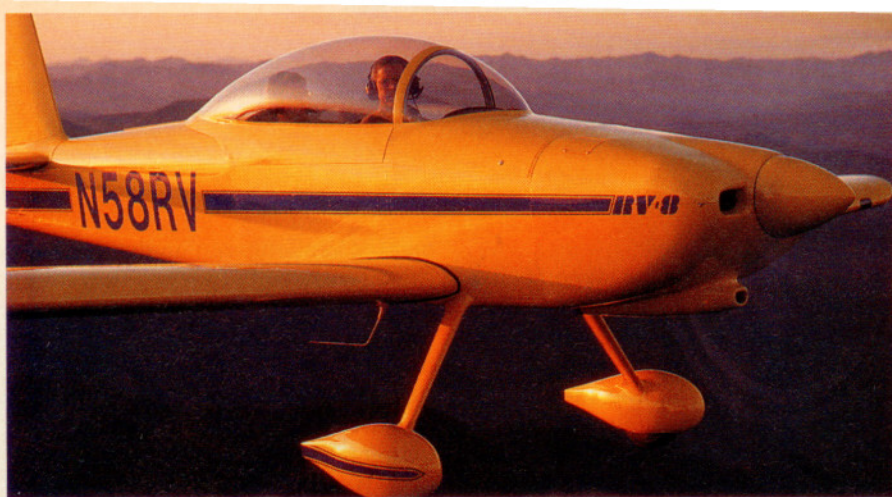
VanGrunsven and I elected not to permit takeoffs from the backseat, given that I was the first passenger to actually fly from that position. (It is not designed as a trainer, which explains why there is not a full set of instruments or engine

Clean design lines lend to the appearance of a factory-built aircraft. The rear cockpit has flight controls, but no engine controls or instruments. The aircraft was not intended as a trainer, but a pilot/passenger in the back can take over when the pilot needs to tend to navigation or communication duties.



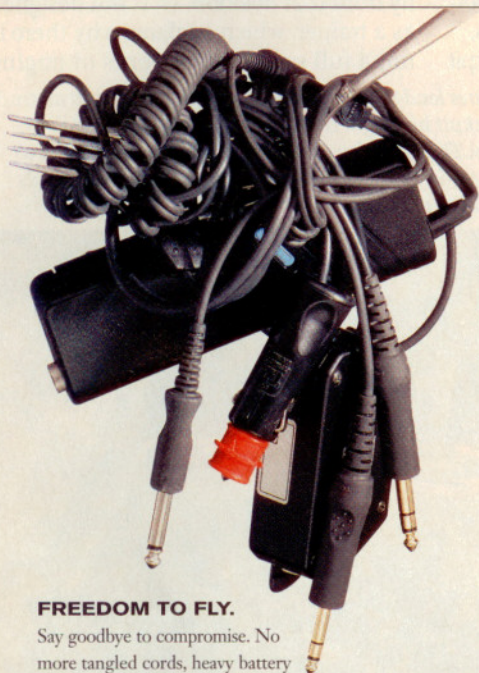
controls in the rear.) He claimed to be having a little trouble with his landings because of the taller-than-normal landing gear—compared to the RV-6—but skipped only slightly on the three-point and wheel landings that were demonstrated. Apparently his standards are set somewhere around perfect.

The aircraft had been completed just



The aircraft's strongest selling point is its fighter-like appearance. Owners of other RV-series aircraft have painted shark's teeth on the nose cowling. In a word, it is fun to fly.

in time for the April Sun 'n Fun Fly-in in Lakeland, Florida, and VanGrunsven was just getting used to the airplane. Fortunately, he has a lot of experienced help at the factory in Oregon and doesn't have to wait 1,800 hours to see how much fun it is to fly it. But if you have the time and want to be proud of a factory-quality aircraft you built yourself, the RV-8 is for you. □



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Van's RV-8

Base price: \$14,000, not including engine

Price as tested: \$42,000

(All figures are tentative; the aircraft is still in flight testing)

Specifications

Powerplant	Lycoming O-320, 160 hp
Recommended TBO	2,000 hr
Propeller	Hartzell HC C2YL, constant speed, 72 in dia
Length	21 ft
Height	5 ft 7 in
Wingspan	23 ft
Wing area	110 sq ft
Wing loading	16.36 lb/sq ft
Power loading	11.25 lb/hp
Seats	2 tandem
Empty weight	1,055 lb
Max gross weight	1,800 lb
Useful load	745 lb
Fuel capacity, std	42 gal (42 gal usable)
	252 lb (252 lb usable)
Oil capacity	8 qt
Baggage capacity	125 lb, 11.75 cu ft

Performance

Roll rate	140 deg/sec
Takeoff distance, ground roll (solo)	300 ft
Max demonstrated crosswind component	20 kt
Rate of climb, sea level (max gross weight)	1,500 fpm
Max level speed, 8,000 ft	177 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) @ 75% power, best economy, 8,000 ft	172 kt/3.65 hr (49 pph/8.2 gph)
Max operating altitude	18,500 ft
Landing distance, ground roll	500 ft

Limiting and Recommended Airspeeds

V _X (best angle of climb)	70 KIAS
V _Y (best rate of climb)	83 KIAS
V _A (design maneuvering)	124 KIAS
V _{FE} (max flap extended)	87 KIAS
V _{NE} (never exceed)	200 KIAS
V _{SO} (stall, in landing configuration)	48 KIAS

For more information, contact Van's Aircraft, Inc., Post Office Box 160, North Plains, Oregon 97133; telephone 503/647-5117; Web site (www.vansaircraft.com).

All specifications are based on manufacturer's calculations, which were still in progress at this writing. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.