

Instrument panel and controls of N9053V. Throttle quadrant is in center (red knob is mixture control). Pilot's wheel has clock in hub, PC cutoff button on upper left corner. PC can only be cut off by holding the button down. The annunciator panel and gear switch are just to right of altimeter. Photos by the author

■ ■ If I were going to buy an economical, high-performance single-engine airplane for my own use these days, I'd look long and hard at Mooney's *Chaparral*. I recently flew *Chaparral* No. 4 from the factory at Kerrville, Tex., back to Washington, D.C., on a delivery flight, and found myself more than passingly enamored of this excellent little ship. It's fast, surprisingly gentle and forgiving, and if its immediate predecessors can be used as a guide, above average in reliability and economy.

The *Chaparral* has the smaller of the two cabins currently being offered in the four-place models. If I were going to fly alone most of the time, I'd take the *Chaparral*. But if I wanted to carry any passengers with reasonable comfort, particularly in the back seat, I'd prefer the *Executive 21*, the top of Mooney's single-engine line. Basically, it's the identical airplane with a somewhat bigger cabin.

Quite a bit of modernization has gone into the *Chaparral*. The gear and flaps are electric, standard equipment. The instrument panel and other interior fittings have been noticeably improved. So has the exterior; for the first time in a long time (my personal opinion) the overall external color schemes now are attractive and in good taste. Gone for good, I hope, are some of the rain-

Quite a bit of modernization has gone into the *Chaparral* (the *Super 21*'s new name). After ferry flight from Texas to Washington, D.C., PILOT editor describes new model as 'fast, surprisingly gentle and forgiving' and above average in reliability and economy

bow nightmares that have been so characteristic of this line of planes.

The redesign of the instrument panel is attributed largely to the participation of John Allen (AOPA 126865), former head of Alon, which was the last company to produce the *Erco* (or *Aircoupe*) in its original form. When Alon merged with Mooney in October 1967, Allen and Lee Higdon (the other half of "Alon") joined the Mooney staff. Allen now is Mooney's production head; production is his speciality. For years he ran Beech's Plant No. 2, which produced *Bonanzas* and *Debonairs*.

Allen's expertise can be seen in the *Chaparral*'s interior layout, particularly the instrument panel. He's also had a marked effect on production methods, and already has cut the number of total man hours needed to produce one of these planes.

The *Chaparral* is the former *Super 21*, and wasn't produced last year. The reason it wasn't, I was told, was that they wanted to concentrate on the *Executive 21* with the larger cabin. Now they've

revived the *Super 21* and renamed it *Chaparral*; Mooney's leaning more and more toward western names (*Mustang*, *Ranger*, etc.).

The *Chaparral* is No. 2 in a four-model line based on the Model 20 design. Top is the *Executive 21* (M-20F) with the bigger cabin and a 200 h.p. fuel-injected Lycoming IO-360-A1A; base price is \$23,200. The *Chaparral* (M-20E) is next, with the same engine but smaller cabin; base price is \$20,755. No. 3 is the *Statesman* (M-20G) which is the *Executive 21* with the 180 h.p. Lycoming O-360-A1D carburetor engine; base price \$20,400. No. 4 in the line is the *Ranger* (M-20C) with the small cabin, the 180 h.p. engine, and a base

53V at Washington National. There's still a little ice on the leading edge of the wing and on the thermometer after letting down through that cloud deck from on top at 11,000 feet. Color scheme is a lot more attractive than that on previous Mooneys, one of which is standing next to 53V.

price of \$17,480. Mooney expects the *Ranger* to be the biggest volume seller in 1969.

The *Chaparral* I picked up at the plant was for Metropolitan Mooney, Teterboro, N.J., Mooney's distributor for a large northeast area. N9053V proved to have the full basic complement of instruments for IFR, but just one lone radio: a single Mark 12A. I say that not because a Mark 12A is not ample for VFR flying; it certainly is. But the weather was terrible at Kerrville from the moment I arrived, and was forecast to stay that way. On top of that, it was winter, and wherever there are clouds you're almost sure to find ice. So I was facing a return flight in some undetermined amount and breadth of instrument conditions.

With Charlie Prince (Mooney's single-engine sales manager) along, I even had to fly around the local area getting acquainted with 53V under low clouds. We finally found a hole and went up on top to feel out 53V's flight characteristics. I'm glad we did, because they're a joy and delight. With PC (that's Mooney's "Positive Control," their single-axis Brittain autopilot which is on all the time, and can only be turned off by holding down a cutout button on the control wheel) the *Chaparral* in slow flight was so quiet, gentle and maneuverable that it reminded me of a sailplane. Even with the PC button held down, the *Chaparral* stalls with great gentility, and retains excellent maneuverability. But with PC operating normally, the careless or unfortunate

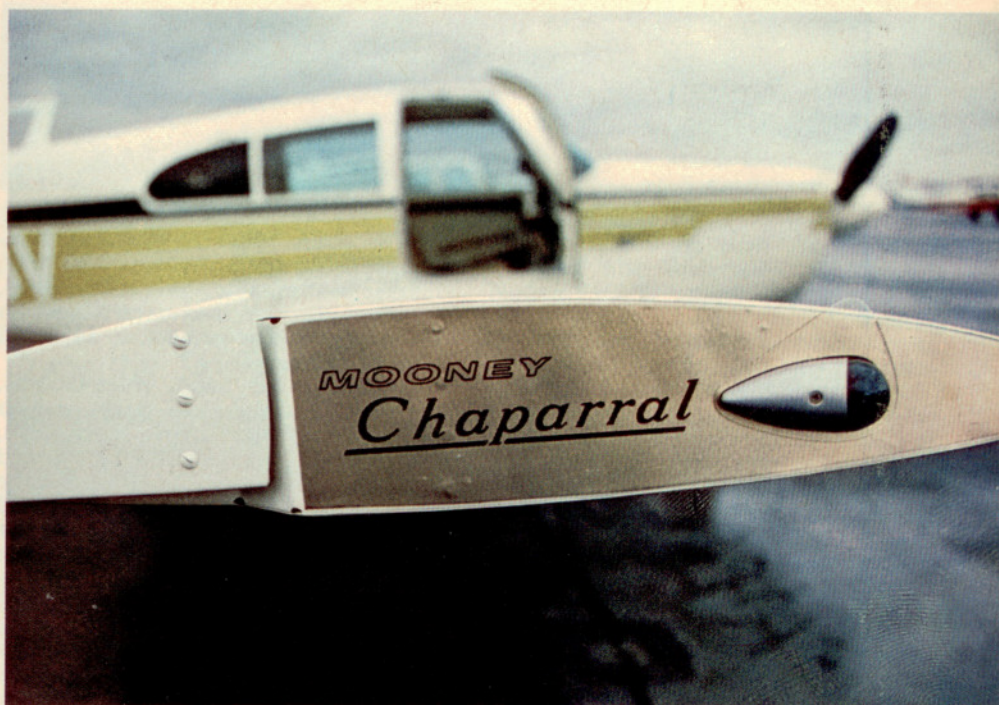
pilot getting caught on top of a 10,000-foot overcast would only need to keep his wits about him, advise someone on the ground of his problem, then lower the gear, ease off the power, trim the nose up a little, put his hands in his lap and wait until he saw the ground. In slow flight, for example, with flaps and gear down and holding about 70 m.p.h. indicated, PC does an excellent job of holding the airplane straight and level; it's so quiet, it gives you the impression of just hanging there, like a free balloon.

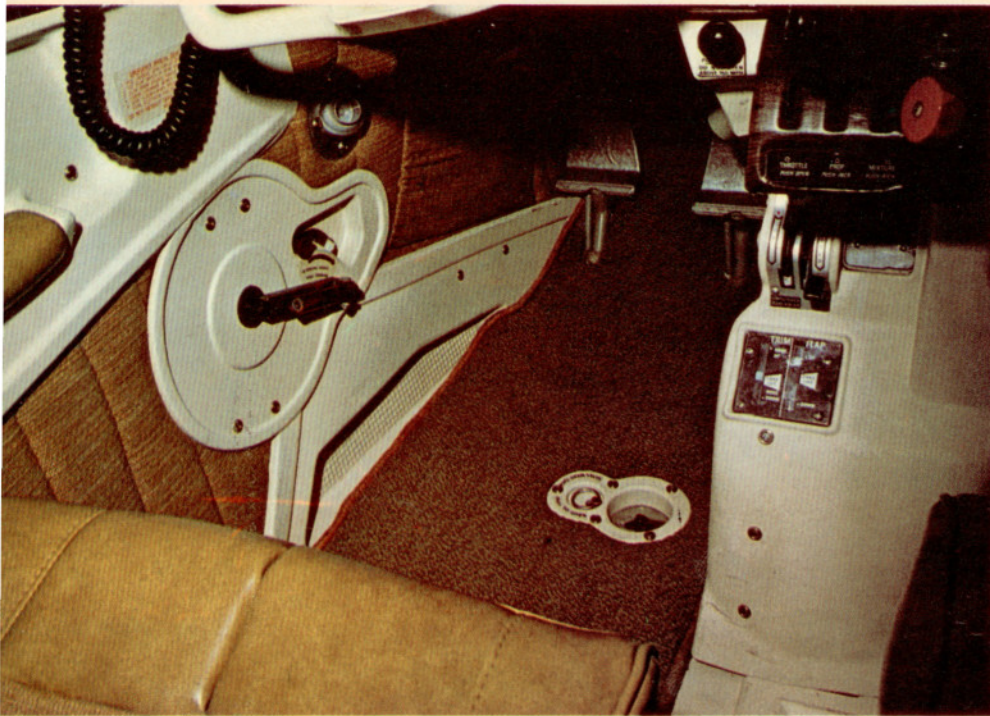
Stalling speed with flaps and gear

The *Chaparral* trademark is on the wing tips. For you who are not Texans, a *chaparral* is a roadrunner, which is a bird noted for its speed.

The Mooney Chaparral

by MAX KARANT AOPA 18





This is the emergency gear-extension system, on the left side of the cabin wall on the pilot's side. In front of the pilot, on the floor, are the combination sump drainage system (spring-loaded ring at left) and fuel selector valve for the plane's two tanks. Directly below the throttle quadrant are the trim and flap indicators. Above them is the ram-air knob for use only during climbs and cruising.

down is 57 (flaps are 33° down fully extended). With flaps and gear up, stall is 64, according to the manual. The stall itself is mild and gentle. You use half flaps for takeoff, and pull back on the wheel when the airspeed gets to 60. When it hits 80, retract the flaps, then go to 120 for cruising climb. One peculiar point: the flaps apparently are sturdier than the gear; gear speed is 120, flap speed 125.

At 65% power, true airspeed was about 175 m.p.h. This is only approximate, however, because 53V's primary instruments, including the airspeed indicator, altimeter, directional gyro and horizon, vibrated and oscillated constantly. The power instruments were a little steadier, and I assumed that the settings for 65% power were accurate. However, the Alcor Ekonomix EGT system also seemed to have something wrong with it; when leaning the mixture at cruising altitude the EGT needle went down instead of up, and I was never able to get a clear temperature peak. As a result, I could only rely on a nonstop range somewhat shorter than the airplane is able to fly. This was particularly annoying because I was IFR much of the time from Kerrville to Washington.

This IFR operation, incidentally, was interesting to me for two reasons. First, I was on edge most of the time, because 53V's total radio capability consisted of that lone Mark 12A. Secondly, I was interested in why I felt that way. Of course, one radio is minimal for IFR. But I reflected at some length on the amount of IFR that used to be done routinely with one radio, and the tremendous amount of flying that was done with no radio at all. I couldn't help thinking about how far general aviation has advanced, to the point where today I find myself feeling sort of naked flying IFR without two VOR and

ILS receivers, dual 360-channel communications, DME, transponder, ADF, marker beacon, autopilot with couplers, excellent aircraft instruments, and so on. Surely we have reached an advanced state of snobbery . . . ?

On the other hand, there I was, either in the solid cloud deck, or with a VFR-on-top clearance, with one radio, shaky instruments, in a new, untried airplane. What would I do if I lost the radio? Or if the permanently cocked horizon quit entirely? In the former case, and depending on where I was at the time, I'd probably turn off the airway and let down slowly until I was VFR underneath. The loss of the horizon wouldn't have bothered me, because 53V also was equipped with a Turn Coordinator and PC—either or both of which would suffice. And because of the neces-

sity of keeping PC always operational, Mooney has added the heated pitot tube as standard equipment.

Also, it was winter. And although no one was reporting icing, I always figure that winter and clouds automatically constitute a threat. As a matter of fact, I got varying amounts of ice (none serious) on approaches to Monroe, La.; Nashville; Tri-Cities, Tenn.; and Washington. 53V performed normally, even though I was occasionally apprehensive. I kept asking the ATC centers for icing reports, and when I could reach them (sometimes I had to relay through other aircraft because of the Mooney's poor microphone) none had any reports. I ended up giving them a couple myself.

My cruising altitudes ranged all the way from 5,500 to 11,000 feet, depending on the cloud tops and winds aloft. At 5,500 feet, I used 24 inches and 2,400 r.p.m., for an indicated airspeed of 160 m.p.h. The engine delivers its full 200 h.p. at 2,700 r.p.m. You use 25 inches and about 2,500 r.p.m. for climb. At 65% power this engine is supposed to burn about 9.5 g.p.h., which would be a maximum endurance of 5½ hours for the *Chaparral's* 52 gallons.

The instrument layout and appearance are particularly attractive. Throttle, prop and mixture controls, for example, now are like those on a multi-engine plane, with a quadrant and individual handles that move back and forth. The electric switch for the flaps also is on this quadrant.

Just below the throttle quadrant is the ram air control. This novel little feature, familiar to Mooney owners, is simply a little door in the nose which, when opened, bypasses the air filter

COMPARATIVE DATA

	Mooney Chaparral	Piper Arrow
Gross weight (lbs.)	2,575	2,500
Empty weight (lbs.)	1,600	1,380
Useful load (lbs.)	975	1,120
Fuel capacity (gals.)	52	50
Span (ft.)	35	30
Length (ft./in.)	23/2	24/3
Height (ft./in.)	8/4	8
Wing loading (lbs./sq. ft.)	15.4	15.6
Engine	Lyc. 10-360-A1A	10-360
Power (h.p./r.p.m.)	200/2,700	180/2,700
Top speed (m.p.h.)	190	170
Range (statute miles)	1,015	857
Climb (f.p.m. @ S.L.)	1,400*	875
Stall (flaps and gear down)	57	61
Service ceiling	18,800	15,000
Base price	\$20,755	\$16,900

*At 2,200 lbs.

and takes its air directly into the engine. You only use it in climb or cruising flight, and then only when you're flying clear of dust or visible moisture. But when you do use it, it boosts the plane's performance by as much as 15 m.p.h., according to Mooney. I turned it on and off several times at cruising altitudes, and the manifold pressure actually increases about 1½ inches when it's open.

Most of the engine instruments are strung in a neat rectangular line across the top of the panel, including two fuel gauges, cylinder head temperature, oil pressure, oil temperature and the ammeter. One peculiarity: Mooney has for some time been calibrating the fuel gauges in pounds of fuel, instead of gallons. No particular reason I could find, but the pilot does have to divide what the instrument says by six to find out how many gallons remain. Mooney itself quotes its engines' performance in gallons per hour, notwithstanding this added little bit of confusion. Just to add to the confusion, the fuel pressure gauge is calibrated in pounds per square inch.

There's a novel little annunciator panel of six lights beside the flight instruments; any of those lights when on warn the pilot that that particular function is not normal. In the floor, between the pilot's feet, is a small metal ring attached to the lowest point in the plane's fuel system. You just pull up on the spring-loaded ring to drain the system during runup. In an emergency the gear can be lowered manually, by a folded handle on the left wall of the cabin, next to the pilot's knees.

The noise level in cruising flight is quite good, especially considering that there's a 200 h.p. engine running just ahead of the windshield. Using my tape recorder mike to test the noise level, I preset the volume control, then moved the mike slowly around the inside of the cabin. The needle reached its peak right at the center post of the windshield.

Mooney's using the latest version of PC: the Brittain Turn Coordinator, tied to PC. There's an added roll trim knob on the Turn Coordinator so that now, in effect, you can adjust the plane's heading with that knob while flying hands-off.

The cabin heater in 53V was excellent. At 9,500 feet the outside temperature was just 14°F, yet with just the slightest movement of the heater knob I had abundant heat in the cabin.

On the ground at Washington, I got into the back seat to see how it felt. My conclusion was that I would not relish carrying four people on a long trip. Maybe a couple of small children in back, with the front seats pulled forward, but certainly not four adults with any comfort. I can see why Mooney added the *Executive 21* and *Statesman* to their line, with their stretched cabins.

While I was at the Mooney plant, I asked about the rumors currently making the rounds. Everything from being short of cash to collapse and bankruptcy has been passed around by

gossips. So I talked with Ralph Harmon, company president; Dick Martin, vice-president for single-engine sales; John Allen; and others. The gist of what I got from them is that they are short of working capital, due almost entirely to the unexpectedly high costs of developing and marketing the Japanese turboprop MU-2, the pressurized *Mustang*, and the *Cadet* (which is what I'd call a loused-up *Erco*). Harmon says flatly that they're over all these cost humps now. But he also made it quite clear that he is now operating head of the company, and that Hal Rachal, an attorney and former operating head, now is board chairman and is concerning himself primarily with legal matters. He attributed most of the gossip I asked about to a couple of dissident sales representatives.

As for overall sales, Martin—the salesman—says they now are "tremendous," and that they already exceed the company's ability to produce planes under the best conditions. In model year 1969 they expect to produce 784 units of all models; the best year they've ever had hit 779.

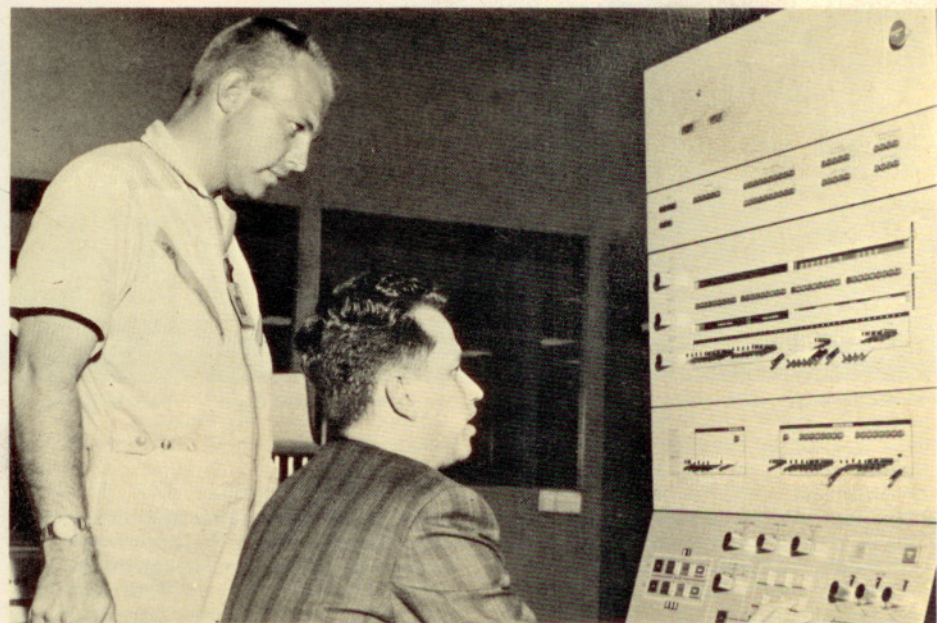
One quick word about the *Cadet*, largely because of my own personal experience with the *Erco* dating back to the early 1940's. Fred Weick (AOPA

9893), now with Piper at Vero Beach, designed that remarkable little plane nearly 30 years ago. It was originally certificated March 25, 1940. In its way, and all out of proportion to its size, it revolutionized private flying. It was certificated as spinproof, and its stall was little more than a gentle mush. Many of these *Erco*s still are flying, and the basic design itself has gone through almost as many changes as it has manufacturers.

The *Cadet* version currently being produced by Mooney is, in a way, a sad commentary on general aviation's progress. They've put a single rudder and fin on it, added rudder pedals, and have redesigned it back to the point where what was once the *Erco* now produces both a sharp stall—and a spin! Mooney said they had to add a trainer to their line and, when they merged with Alon, decided to use the *Erco*, then being produced by Alon, for that trainer. So, presumably to meet the requirements of flight schools and instructors, they have now deliberately put the full stall and spin back in!

Closest competitive plane to the *Chaparral* is Piper's *Arrow*. And it's because of the popularity of the *Arrow* that Mooney stopped claiming to sell the most retractables some time ago. □

Computer Designs Bell Helicopters



Gene Colvin, experimental test pilot for Bell Helicopter Company, left, is briefed by an engineer on Bell's new IBM data processing system designed to simulate test flights electronically.

Test pilots at Bell Helicopter Company, Fort Worth, Tex., soon will be test flying a newly designed helicopter before it has even been built.

The pilots will be using a mock-up cockpit that is linked to a specially designed IBM computing system. Called the Hybird, the system combines two analog computers with a digital computer—an IBM system 360 Model 44.

Linked to a mock-up cockpit, the IBM system will simulate flights electronic-

ally, showing both pilot and engineers how the proposed helicopter would perform, said IBM officials. The electronic system also will simulate external forces, such as wind and turbulence.

James F. Atkins, executive vice president at Bell, said, "The new system makes our design work more economically, gives engineers a better insight into their work, and greatly reduces the time involved in setting up and solving design problems." □