

# FROM THE MOONEY MOLD



**E**fficiency. It's a Mooney hallmark. Traditionally, no other production airplane has sucked as many knots from each gallon of fuel as the M20 Mooneys. Low drag thanks to a small cabin cross section and an efficient wing propel the airplanes from Kerrville, Texas, at fast cruise speeds on miserly fuel burns. Modern cowl designs really help, too; the Ovation's is one of the best in the business. ■

Aerodynamics is one thing. Manufacturing is another. The traditional monocoque design found in Cessnas, Beeches, and Pipers, for example,

***The new Eagle  
flies into a  
proud lineage***

BY THOMAS B. HAINES

lends itself to an efficient production-line manufacturing process. From a safety standpoint, pilots appreciate the Mooney's welded steel-tube cage that surrounds the cabin and the remarkably strong wing with its tip-to-tip continuous carry-through spar. Manufacturing experts, though, wring their hands at the number of hours that it takes to build a Mooney. Inefficient as the process may be, the end product seems to justify the means. Pilots keep buying Mooneys, and while other manufacturers have come and gone and sometimes come back, for decades Mooney has hung in there, churning out airplanes year after year. Sure, there were tedious months and brief manufacturing hiatuses years ago. And as recently as a year ago, the company seemed on the brink of bankruptcy, buried under unprofitable subcontracting deals with other aerospace manufacturers.

***The Eagle's 10-550 makes life easy on the pilot: push all three levers forward and leave them there for the initial climb.***

In mid-1997, Paul Dopp and his investment firm of AVAQ Partners bought a controlling interest in Mooney; previously, a French consortium owned the majority of the company. Dopp is no stranger to Mooney Aircraft. He owned it and Aerostar Aircraft in the early 1970s. Dopp's new management team shed the unprofitable subcontracts and set about recapitalizing Mooney. In mid-1998, Dopp's son, Chris, was named president, and he has been running the operation ever since.

Recognizing that there is little new efficiency to be gained in manufacturing the Mooney's complex wing and fuselage, the management team looked at the product line to see if it could be trimmed down to reduce costs. At the time, Mooney was building four models: the Allegro (nee MSE, nee 201), the Encore (nee 252), the Ovation, and the Bravo (nee TLS). The Allegro and Encore used the shorter fuselage; the other two shared the longer fuselage that debuted with the Mooney PFM in 1987. The Dopps decided that building only one fuselage style would be more efficient. Knowing that pilots favor the longer ver-





sion, they discontinued the shorter one, leaving the Ovation and the Bravo as the only products. Recognizing that the Ovation's nearly \$400,000 price would be an obstacle to many buyers, Mooney decided to offer a lower-cost version that still utilized the longer fuselage.

The result is the Mooney Eagle, which debuted late last year at AOPA Expo '98 in Palm Springs, California. Mooney considers the M20S Eagle its entry-level airplane, replacing the Allegro. Because of the Eagle's \$319,000 price tag, *entry level* is obviously a relative term. But when you look at what you get for the Eagle's price versus what the Allegro offered, it should be fairly



Overhead light switches (above) and a well-designed panel give the Eagle a professional look. Among the options are a second nav-com, a Stormscope, and the eagle-head-and-talon paint scheme.

easy for prospective buyers to justify the 10-percent premium that the Eagle commands over recent Allegros. In addition to the 20-inch-longer fuselage, the Eagle offers greater performance through the 244-horsepower Continental IO-550-G, which turns a two-blade McCauley propeller. The Allegro flew behind a 200-hp Lycoming IO-360 and a two-blade McCauley. Unlike the Allegro, the Eagle comes standard with dual batteries. It also carries a maximum gross weight of 3,200 pounds, 300 pounds more than the smaller airplane. Eagle fuel capacity is up nine gallons to 75 usable. Like the Allegro and the rest of the Mooney fleet, the Eagle comes with an AlliedSignal Bendix/King avionics stack.

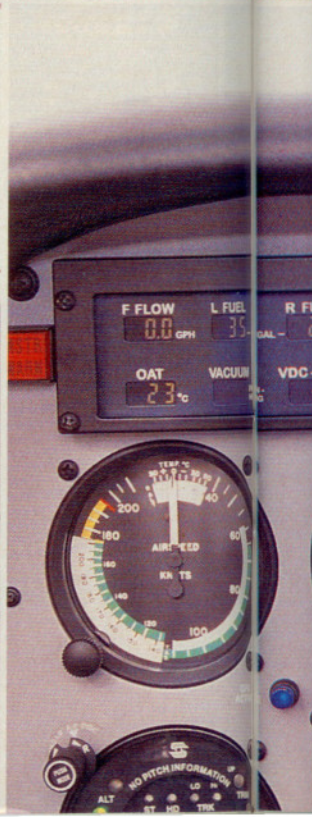
Mooney at first announced that the Eagle would carry Trimble's TrimLine avionics. The change was an attempt to differentiate the lower-priced Eagle from

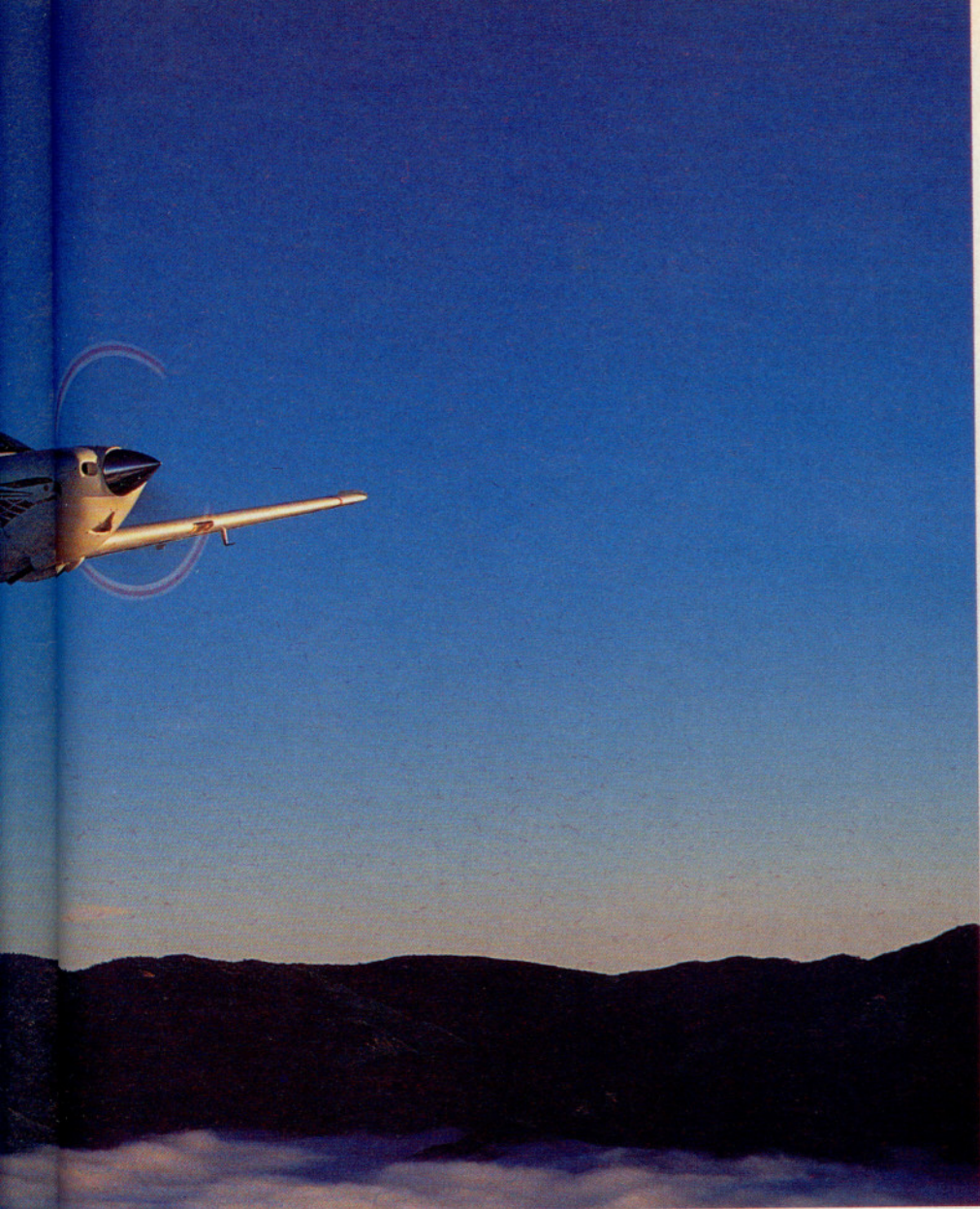
the Ovation and Bravo, which Mooney considers its top-of-the-line products. (The 1999 average-equipped prices for the Ovation and Bravo are \$405,900 and \$467,900, respectively.) Last fall, however, Trimble announced that its general aviation avionics product line was for sale. No buyer quickly emerged, so—fearing an orphaned product line and needing to move quickly—Mooney decided to equip the Eagle with a limited Bendix/King stack. The standard airplane carries a single Bendix/King VHF navcom with glideslope, a KLN 89B IFR GPS with moving map, and a transponder; a PS Engineering PMA 7000 audio panel with intercom and marker beacons; and an S-Tec System Thirty two-axis autopilot.

New to the Eagle and the entire 1999 Mooney fleet are the Moritz Corporation engine and power management gauges. The gauges provide both analog and digital readouts. Power, for example, can be quickly set by using the analog displays. Fine-tuning is easier with the digital readouts.

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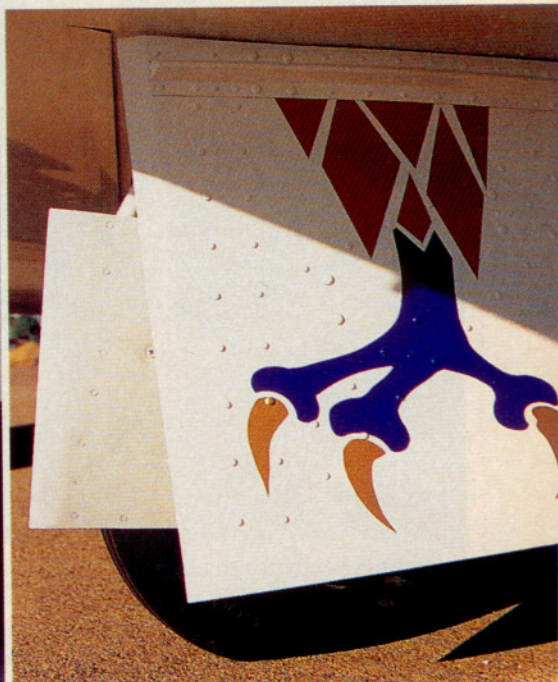
The Eagle and the Ovation have a lot more in common than their gauge packages and the long fuselage. They also share the same engine model. In the Ovation, the IO-550-G turns at a comfortable 2,500 rpm, producing 280 hp. Other variants of the IO-550 produce 300 or 310 hp at 2,700 to 2,800 rpm. Mooney engineers set a benchmark of a 175-knot cruise speed for the Eagle. It turns out that max power of 244 hp is necessary to deliver 175 kts at 75-percent power. According to the engineers, the engine delivers 244 hp at 2,400 rpm. At that rpm, the engine is not working very hard, and, as a result, it should routinely reach its 2,000-hour TBO. Mooney specs say that the Eagle at max gross weight and standard conditions will indeed do 175 knots true airspeed, versus the Ovation's 188 knots. On our test flight, when we were some 300 pounds below maximum weight and at 75-percent power, the Eagle turned in 181 knots true at 7,500 feet on about 13.5 gallons per hour.





The Ovation's IO-550 swings a three-blade McCauley prop. The lighter two-blade on the Eagle meant that Mooney could remove about 16 pounds of ballast from the tail. As a result, pilots will notice a slightly different pitch sensitivity between the two airplanes. The Eagle is a bit more responsive in pitch; in that sense it flies more like an Allegro than an Ovation.

As in the Ovation, the IO-550 makes life easy on the pilot. For takeoff in the Eagle, push all three knobs forward and leave them there for the initial climb. Throughout the climb, the pilot's only engine management duty is to give the



*The new Moritz engine gauges show both digital and analog values (left), but the fuel, OAT, vacuum, and volt/amp gauges are only digital.*



mixture control about one turn every thousand feet or so to keep the engine leaned. The highly derated engine flies very cool and requires no cowl flaps. At cruise altitudes above 5,000 feet or so, the only engine management necessary after leveling off is leaning to best power or best economy. At lower altitudes, a slight reduction in manifold pressure may be necessary, depending on the performance desired. The slow-turning prop produces minimal vibration and makes for a quiet cabin.

With the 3,200-pound max gross weight and a basic empty weight of 2,194 pounds, the Eagle has a useful load of 1,006 pounds. Fill the tanks with 75 gallons of fuel and you have a payload of 556 pounds, enough for three adults and bags. At about 14 gph, the



endurance stretches to about 4.5 hours with a 45-minute reserve. To carry four adults, you need to take off with 54 gallons of fuel, which still allows more than three hours of flight with reserves.

The Ovation and the Bravo have max gross weights of 3,368 pounds, and they carry more fuel—89 gallons each. Their basic empty weights are higher than the Eagle's, however, giving all three airplanes approximately the same full-fuel payloads.

Pilots will appreciate the Eagle's comfortable cloth seats, the new engine gauges, and the reliable systems for which Mooney is known. They'll take comfort in the many redundant features and the proven avionics. But in the end, pilots will appreciate the Eagle for what it is: a fast new entrant to the Mooney family; an honest 175 knots on 14 to 15 gph. Manufacturing efficiencies or not—the Eagle fits the Mooney mold.

To view additional photos of the Eagle, visit the AOPA OnlineGallery ([www.aopa.org/pilot/gallery](http://www.aopa.org/pilot/gallery)). E-mail the author at [thomas.haines@aopa.org](mailto:thomas.haines@aopa.org)

#### Mooney M20S Eagle

Base price: \$319,000

Price as tested: \$334,500

#### Specifications

Powerplant	Continental IO-550-G 244 hp @ 2,400 rpm
Recommended TBO	2,000 hr
Propeller	McCauley two-blade, 75-diameter, constant-speed
Length	26 ft 9 in
Height	8 ft 4 in
Wingspan	36 ft 1 in
Wing area	175 sq ft
Wing loading	18.3 lb/sq ft
Power loading	13.1 lb/hp
Seats	4
Cabin length	10 ft 6 in
Cabin width	3 ft 8 in
Cabin height	3 ft 9 in
Empty weight	2,194 lb
Max gross weight	3,200 lb
Useful load	1,006 lb
Payload w/full fuel	556 lb
Max takeoff weight	3,200 lb
Fuel capacity, std	78 gal (75 gal usable) 468 lb (450 lb usable)
Oil capacity	8 qt
Baggage capacity	120 lb, 20.9 cu ft

#### Performance

Takeoff distance, ground roll	1,650 ft
Takeoff distance over 50-ft obstacle	2,000 ft
Max demonstrated crosswind component	13 kt

Rate of climb, sea level	1,050 fpm
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ 75% power, best power	175 kt/4.25 hr (89 pph/14.8 gph)
@ 8,000 ft	
@ 55% power, best economy	155 kt/7.5 hr (55.2 pph/9.2 gph)
10,000 ft	
Service ceiling	18,500 ft
Landing distance over 50-ft obstacle	2,400 ft
Landing distance, ground roll	1,150 ft

#### Limiting and Recommended Airspeeds

$V_X$ (best angle of climb)	85 KIAS
$V_Y$ (best rate of climb)	105 KIAS
$V_A$ (design maneuvering)	108 KIAS
$V_{FE}$ (max flap extended)	123 KIAS
$V_{LE}$ (max gear extended)	165 KIAS
$V_{LO}$ (max gear operating)	
Extend	140 KIAS
Retract	104 KIAS
$V_{NO}$ (max structural cruising)	174 KIAS
$V_{NE}$ (never exceed)	195 KIAS
$V_R$ (rotation)	68 KIAS
$V_{S1}$ (stall, clean)	66 KIAS
$V_{SO}$ (stall, in landing configuration)	59 KIAS

For more information, contact Mooney Aircraft Corporation, Louis Schreiner Field, Kerrville, Texas 78028; telephone 800/456-3033, fax 830/896-8180; or visit the Web site ([www.mooney.com](http://www.mooney.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.