MOONEY MUSTANG

FLIGHT LEVEL PONY

You won't confuse this one with the others in the Mooney spotter's guide.

BY THOMAS B. HAINES

Marc P. Mosier lifts the unusual bifold door of his Mooney Mustang up and out of the way as the lineman strolls over to inquire about our fuel needs. He stops in mid-sentence, backs up, and looks at the airplane. Mosier, meanwhile, settles back into the right seat, awaiting the question.

"Is that a Bonanza?" the lineman queries.

Mosier puts on a practiced grin and replies, "No, it's a Mooney Mustang."

"It sure don't look like a Mooney, except for the tail."

Over lunch at the Greenbrier Valley Airport in Lewisburg, West Virginia, Mosier explains that the unusual Mustang draws stares and questions at

every stop.

And it's no wonder. The nose looks like one from a Bonanza, and the cabin and windshield might be a ripoff from a Twin Bonanza. The tail is definite Mooney. The wing, too, is stock Mooney, but you will have a hard time convincing skeptics of that. It just doesn't look the same with the boxy cabin sitting on it.

Unlike other Mooneys, the Mustang sits tall on its gear, and the whole airplane looks beefy—like a Mooney on steroids. Most unusual about the Mustang when compared not just to its trimmer brothers, but to all light general aviation airplanes, is its pressurization system. The Mustang was the first single-engine pressurized airplane certified. It was 1966 when the FAA signed the Mustang certification papers, 11 years ahead of the Cessna P210 and 17 years ahead of the Piper Malibu, the only other two pressurized piston singles.

Mooney had great hopes for its 310-horsepower Lycoming-powered Mark 22. The manufacturer promised all five Mustang passengers could ride in pressurized comfort at altitudes up to 24,000 feet while cruising at 200 knots, 222 knots flat out. The new "automatic" pressurization system would provide 4.0-psi cabin differential, permitting an 8,000-foot cabin at 20,000 feet and an 11,000-foot cabin at 24,000 feet. According to the November 1966 issue of *The AOPA Pilot,* 83 Mustangs were on order when production started that October. Unlike many airframe manufacturers' optimistic claims of the day, Mooney's performance figures for the Mustang are surprisingly accurate.

During the 115-nautical-mile flight from Mosier's home base at Louisa County/Freeman Field Airport in northern Virginia to Lewisburg, N66179 showed a true airspeed of 184 knots at 16,500 feet when leaned 100 degrees rich of peak at a best-power setting of 74 percent. We beat the book figure by 1 knot. Our fuel burn at that setting was about 18.4 gallons per hour. We were unable to climb to 24,000 feet because of a pressurization problem. The complex cabin door, the design of which Mooney thought enough of to patent, would not latch properly. Difficulty in maintaining the integrity of the latches and the seals around the cabin and baggage doors is a common problem in the airplanes. Though we couldn't take the Mustang up to its maximum altitude, Mosier said he regularly sees the book speed of 200 knots at Flight Level 240.

We obtained a best-economy power setting of 64 percent using the same 29 inches of manifold pressure and 2,400 rpm but leaned the engine to 25° lean of peak, as recommended by Mooney. Our true airspeed dropped to 172 knots, equal with the book speed, and fuel flow dipped to 14.1 gph.

The engine suits the Mustang well, but the -541 engine is an unusual one, and as a result, parts can be difficult to find. Aside from displacement, it has little in common with the popular TIO-540. A similar version of the -541 engine was used on the Beech Duke, and the geared version, called the TGIO-541, powers the pressurized Piper Navajo. Some Mustang owners elect to STC the more plentiful Duke engine in their airplanes at overhaul time, somewhat alleviating the parts shortage dilemma.

Despite the reported order book of 83, Mooney sold only between 27 and 32 Mustangs, depending on who you talk to, from 1966 to 1970, when production ceased.

According to Mosier, Mooney has been cooperative in releasing drawings so that the owners can have airframe parts manufactured, but the company no longer supplies parts. Al Peach, a former Mooney dealer, bought the manufacturer's supply of Mustang parts in about 1980. Most Mustang owners use him as a clearing

Dainty isn't the word you'd use to describe the Mustang's complex and heavy cabin door. Mooney thought it was a winner and patented the design. The generous elevator trim wheel and hefty gear lever dominate the center panel (left).

house for buying and selling parts.

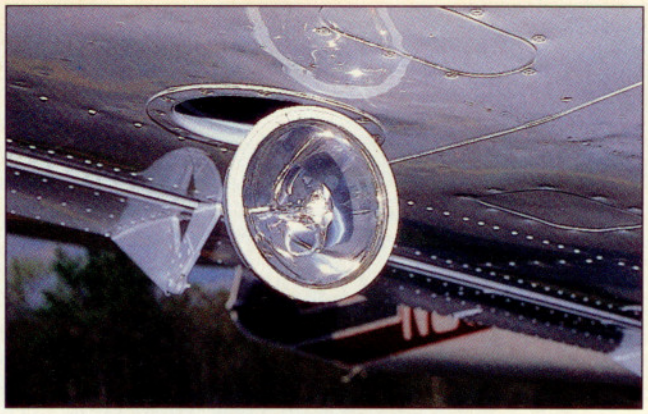
Mosier, a former executive at a large French bank in New York City, now spends his time brokering aircraft to customers in Europe. As part of the service offered by his company, European American Aviation Corporation, Mosier frequently ferries the airplanes across the Atlantic. He discovered the Mustang sitting on a ramp in Morocco after one such flight.

Mosier bought the airplane with the idea of fixing it up, flying it for a while, and then selling it. He flew it back to the United States, gave it a thorough mechanical reworking and a new interior and paint job, and set about the fun part—flying it.

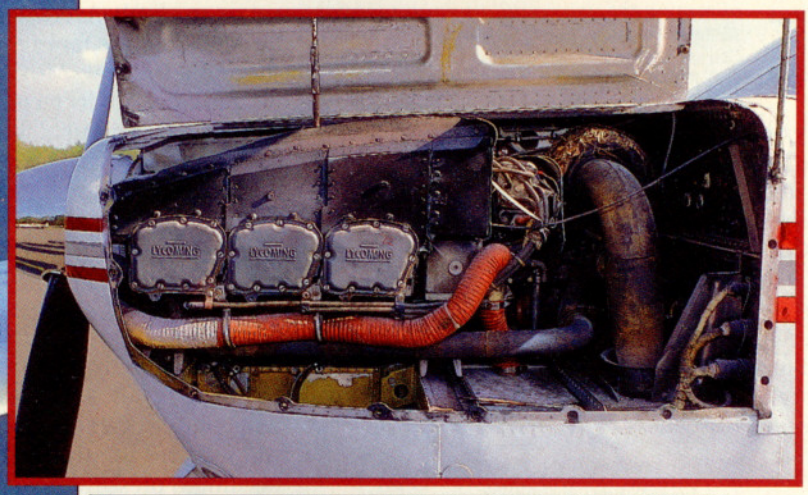
At altitude, the airplane is efficient and relatively easy to handle, but getting up and down can be a workout. As Mosier points out, the controls obviously were designed by an engineer and not by a pilot. During the first and last few minutes of every flight, the pilot is busier than a beginning instrument student flying an NDB approach in turbulence. Arms whirl around the cockpit as the pilot reaches across the panel for the small flap switch, tugs on the gigantic gear lever, and madly spins the large, but mostly ineffective, elevator trim wheel, all the while holding down the "Positive Control" (PC) override button on the left horn of the yoke. To make things even more interesting, the flight controls are very heavy around all three axes, even with the PC system disengaged. Mooney equipped most all of its airplanes of that era with the PC system, basically a full-time, vacuum-driven wing leveler. As the manual says, "the Mooney Positive Control system provides a high degree of roll and yaw stability, thereby enhancing the inherent wings-level flight characteristics of the Mustang."

Though spinning the saucer-size elevator trim wheel has little effect on pitch, the tiny aileron trim knob, located on the yoke and about as big around as a pencil, will roll the airplane right over. Unlike most Mustangs, N66179 is not equipped with electric trim. Other Mustang pilots we talked to said they would be hesitant to fly the airplane without it. The rudder trim system, which, like the PC system, is vacuum driven, is controlled by a horizontal wheel under the yoke and about as big around as a hockey puck. Like the aileron trim, the rudder trim is very sensitive. One swipe of the wheel will send it to full deflection. Of course, in the event of a vacuum pump failure, the pilot must all but stand on the right rudder pedal to get the same effect, Mosier says.

The back-seat passenger's view of the cockpit right after takeoff must be comical as the pilot flits about. Shortly after rotation, you must wildly trim nose down to let the speed build to about 90 knots. To retract the gear, grab the 6-inch lever and lift up through a stroke of about 4 inches, while carefully holding in the safety lock with your fingers. A tiny, dim red light verifies the gear is up and locked. Next, reach over in front of the copilot and bring the flaps up from the 20-degree takeoff setting to about 10 degrees (there is no detent, so you must watch the indicator), trim the nose down some more, and then bring the flaps the rest of the way up. By then, you've cleared the airport environment, and it's time to reduce the power from the maximum of 37 inches and 2,575 rpm to about 35 inches and 2,500 rpm for a normal climb. At that



The landing light retracts into the right wing. The jumbo turbocharger eats up a third of the nose cowling (below).



power setting, about 120 KIAS provides for good cooling and fair over-the-nose visibility and a consistent 600- to 700-fpm rate of climb while burning about 30 gph initially.

Once cleaned up and established in the climb, the handling and operation is conventional, except for the heavy control forces. The auto wastegate on the turbocharger will maintain the selected manifold pressure and, as a result, a constant rate of climb all the way up to cruising altitude. Passing through 10,000 feet, it is necessary to turn on the high-altitude fuel pump.

Once cruise power is set, you will want to close the generous cowl flaps, using the long handle by the pilot's right knee. Mosier pushes it partway closed with his hand and uses his foot to shove the handle to the fully closed position. "It's a macho airplane," he quips. The cowl flaps are enormous scoops located along the side of the nose cowling.

Though the manual calls the pressurization system "automatic," it really is quite work intensive if you want to provide a comfortable ride. The book recommends just leaving the pressurization knob pushed in from soon after takeoff, but on hot days, crew and passenger alike will swelter because of the bleed air heated by the turbo. Instead, you must gradually move the control knob in about a quarter-inch at a time throughout the climb until about 8,000 feet, when the knob should be fully in and the cabin pressurized. Those without a deft touch will pop the passengers' ears every time.

Descent is just the opposite. Below 8,000 feet, you must begin backing the pressurization knob out. When it comes to slowing down, the Mustang is like all Mooneys—it doesn't like to. Approaches and pattern entries must be carefully planned. You can grapple with the gear lever at about 113 knots. Flaps can be brought in at 109 knots. Mosier recommends using the yoke switch to disengage the PC system to make pattern turns easier. With every power change and flap setting comes more rigorous spinning of the trim wheel.

Established on final, you should be at about 90 knots; cross the fence at 80, and it will land conventionally, but because of the tall gear, those used to flying other Mooneys will probably find themselves flaring too late.

Though it doesn't look the part of a Mooney, the Mustang shares the speed and economy roles of its brethren. The cabin is comfortable for four, and the noise level is low—true of most pressurized airplanes and their strengthened fuselages and thick windows. Like most Mooneys, filling the seats and the tanks is not an option. With a full 95 gallons of fuel in your Mustang, you will only be able to fill three seats of an equipped airplane before bumping into the maximum gross weight of 3,680 pounds. Trade fuel for payload, though, and you can bring along that extra friend and still end up with an endurance of about three hours with reserves.

So why didn't it work? The Mustang is fast and efficient, if a little tricky to fly. The airplane met most of the goals Mooney promised. It would seem that with a few ergonomic and mechanical fixes, the Mustang could have, well, soared. Yet it didn't. The reasons for

the failure are not all the fault of the airplane. Mooney was in over its head in the late 1960s.

Original projections were for the Mustang project to cost about $1 million from drawing board to certification. The actual cost was about $4 million, according to *The Complete Guide to Single-Engine Mooneys* by Paul Garrison. Mooney had asked its dealers what airplane they wanted, and most said they could easily sell a Mooney twin. Ignoring the dealers, the company developed and debuted the Mustang. The dealers were less than enthusiastic. It didn't look much like a Mooney, and according to some dealers, many pilots of the era were hesitant to fly above weather in a single-engine airplane.

Mooney officials promised early on that dealers could sell the airplane for less than $30,000. After about the first year, the price of equipped airplanes jumped to $45,000. According to Garrison, the company needed $50,000 to $60,000 each to make money. The low price, however, was an attraction. According to Peach, the typical Mustang customer was the pilot out to buy a Bonanza. With the Mustang, he could go faster in quiet, pressurized comfort for about the same money.

The heavy control forces didn't escape the notice of customers, report former dealers. According to one Mooney employee, the saying at the time was, "If you have the strength to lift the cabin door, you have the strength to fly it." In an attempt to reduce control forces, Mooney experimented by putting a T-tail on one Mustang. It didn't work.

To pressurize the airplane, Mooney had to abandon its typical welded steel-tube fuselage. It could not be efficiently pressurized. Instead, the company designed a new frame of ribs and stringers similar to the semi-monocoque structures of most current-production light aircraft. The engineers must have done a good job. There's never been an airworthiness directive on the airframe. But the design effort ate up more precious dollars. The workings of the pressurization system are similar in basic design to those later employed in the P210 and Malibu, but the outflow valves were expensive to build.

The Mustang wasn't Mooney's only money-hungry project at the time. While the Mustang was being developed, Mooney took on the task of marketing the MU–2 twin turboprop for Japan's Mitsubishi. The early airplanes needed much refinement. The resulting costs further eroded the company's financial stability, and finally in 1970, Mooney went into bankruptcy. All production stopped. A succession of owners came and went over the next few years, and though they restarted production of other models, none of them saw the merit in the Mustang.

Several former Mooney dealers we spoke to said the Mustang was ahead of its time. Pilots of the era were suspicious of pressurization in a single. Those who took a chance and bought Mustangs ended up loving them.

Most dealers now consider the airplane a classic, and they expect the prices to climb. Average prices today for Mustangs are far in excess of what they sold for new. Mosier considers his airplane with its recent paint, interior, and mechanical work to be exceptional. He is asking $70,000. Another Mustang was recently advertised for the same price.

For those set on owning a pressurized piston single, the other options are the P210 and Malibu. The Mustang cruises about 10 knots faster than the Cessna but is about 15 knots slower than the Piper. Likewise, the Mustang's 4.0-psi cabin pressure differential falls in the middle. The P210's maximum pressure differential of 3.35 psi provides a 12,000-foot cabin at 23,000 feet, the maximum operating altitude. Those flying a Malibu can fly at 25,000 feet in an 8,000-foot cabin, a differential of 5.5 psi.

Where the Mustang suffers the most is in payload. It can seat a maximum of five, and the fifth person must sit sideways in the back. The two newer airplanes seat six and have payloads with full fuel of about 900 pounds, compared to the typical equipped payload of 500 pounds for the Mustang.

Other disadvantages of the Mustang are age—the newest ones are now 22 years old; the unusual and expensive-to-maintain engine; and the small number in existence, which hurts parts supply. The FAA registry lists 664 P210s and 299 Malibus, plus another 91 Malibu Mirages.

To some pilots, though, the limited Mustang production run is reason enough to buy. For them, there's nothing quite as satisfying as taxiing up on the ramp and having people stop and ask about their unusual airplane. With the Mustang, there's no shortage of that. □

Mooney M22 Mustang
Base price, new: $33,950

Specifications

Powerplant	Lycoming TIO-541-A1A, 310 hp at 2,575 rpm
Recommended TBO	1,600 hr
Propeller	Hartzell, constant-speed, 80-inch diameter
Length	27 ft
Height	9 ft 10 in
Wingspan	35 ft
Wing area	167.3 sq ft
Wing loading	22 lb/sq ft
Power loading	12 lb/hp
Seats	5
Cabin length	9 ft 10 in
Cabin width	3 ft 6 in
Cabin height	4 ft 1 in
Empty weight	2,425 lb
Empty weight, as tested	2,618 lb
Gross weight	3,680 lb
Useful load	1,255 lb
Useful load, as tested	1,062 lb
Payload w/full fuel	703 lb
Payload w/full fuel, as tested	510 lb
Max takeoff weight	3,680 lb
Fuel capacity, std	570 lb (552 lb usable) 95 gal (92 gal usable)
Oil capacity	14 qt
Baggage capacity	270 lb, 25 cu ft

Performance

Takeoff distance, ground roll	1,142 ft
Takeoff distance over 50-ft obstacle	2,079 ft
Rate of climb, sea level	1,125 fpm
Max level speed, sea level	176 kt
Max level speed, 24,000 ft	222 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption)	
@ max cruise power, best-power mixture	222 kt/2 hr
24,000 ft	(199.2 pph/33.2 gph)
@ 73% power, best economy	196 kt/4.4 hr
24,000 ft	(96.6 pph/16.1 gph)
@ 65% power, best economy	187 kt/5 hr
24,000 ft	(86.4 pph/14.4 gph)
Max operating altitude	24,000 ft
Service ceiling	24,000 ft
Landing distance over 50-ft obstacle	1,549 ft
Landing distance, ground roll	958 ft

Limiting and Recommended Airspeeds

V_X (Best angle of climb)	83 KIAS
V_Y (Best rate of climb)	104 KIAS
V_A (Design maneuvering)	140 KIAS
V_{FE} (Max flap extended)	109 KIAS
V_{LE} (Max gear extended)	130 KIAS
V_{LO} (Max gear operating)	113 KIAS
V_{NO} (Max structural cruising)	174 KIAS
V_{NE} (Never exceed)	196 KIAS
V_R (Rotation)	70 KIAS
V_{S1} (Stall clean)	66 KIAS
V_{SO} (Stall in landing configuration)	60 KIAS

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. □