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APRIL 2015



Text



MILAN BRISTELA SCORES WITH HIS
LATEST SPORT-AIRCRAFT DESIGN

BY JAMES WYNBRANDT | PHOTOS BY JIM KOEPNICK

A Taildragging Hot Rod FOR THE LSA Crowd



THE ANNUAL U.S. SPORT AVIATION EXPO AT SEBRING REGIONAL Airport remains the showcase for all that's new and exciting in the sport-aviation world, but a little more than a decade into the LSA revolution, real surprises seem few and far between. So, it was edifying to see attendees drawn to the booth of Bristell Aircraft of The Villages, Fla., where company president Lou Mancuso was extolling the virtues of the pair of sleek low-wing aircraft on display:

the trike-gearred Bristell and the Bristell TDO (taildragger option). Though this was his company's—and the Bristell's—debut appearance at Expo, Mancuso is no stranger to the LSA world.

Lou Mancuso

In 2008, Mancuso, who had spent his career selling pre-owned King Airs, Navajos and other high-end GA aircraft, decided to move into selling new LSAs. In the years since then, he has been an authorized sales agent successively for Flight Design, Evektor, Czech Sport Aircraft, Remos, the PiperSport and Tecnam. "Each year, we'd be looking for the best of the best," Mancuso says, adding that he feels that search has ended. "We found the Bristell, and now we're home where we belong—the final stop."

If you wonder why it took Mancuso so long to find the Bristell, the manufacturer, BRM Aero of the Czech Republic, wasn't established until late in 2009. And don't accuse BRM Aero of arriving late to the LSA party, either. The Bristell is the namesake of Milan Bristela, BRM Aero's founder, who has an illustrious career in sport-aircraft design. He previously served as head of design at Czech Aircraft Works and Evektor, and was heavily involved in the development of the Zenith 601 and 701, the amphibious Mermaid sport aircraft, and the Parrot and Czech SportCruiser LSAs. He says the Bristell is the culmination of all he has learned during that time. "I collected my whole 25 years in the aeronautical industry of communicating with customers worldwide about their expectations and what they would like in an LSA airplane, and put them all in the NG4," or the New Generation 4 project, as Bristela calls the Bristell, signifying his fourth major LSA design after the Mermaid, Parrot and SportCruiser. Today's Bristell and Bristell TDO represent NG5, he says. "I've already modified NG4 and made many design improvements compared to the NG4."

On The Ground

The Bristell came to market in 2011, a retract version appeared in 2012 and the TDO was introduced in 2013. Some 130 Bristells have been sold worldwide.

About 15 are retracts, and half a dozen are TDOs. When discussing the origins of the TDO, Bristela becomes animated—not an unusual mode for the designer. "I designed it for real pilots," Bristela says. "It's not so dramatic in the United States, but in Europe, there are many people with a lot of money who think they can be pilots, and many of them are very stupid and they don't care about physics, and many of them kill themselves using their airplanes improperly. [But] all pilots know only a good pilot can operate a taildragger safely. That's why, when customers land somewhere, everyone will know this is a real pilot because he has a TDO."

Mancuso's demo TDO is the first in the U.S., having arrived last November. Like the trike, the TDO is outfitted with a Fiti three-bladed composite prop. The aircraft is mostly metal, but the cowl is composite. Stainless-steel slotted screws button up the portside access door to the engine compartment. The demo TDO is equipped with a Rotax 912 ULS, but going forward, the 912 iS Sport, the second-generation fuel injected variant of the 100 hp Rotax, will be standard.

Check the oil level with the sardine can opener-style dipstick, burp the engine if necessary by turning the prop should oil level appear low and make sure the coolant reservoir on the stainless steel firewall is about $\frac{1}{3}$ full. (The reservoir can fill during flight as the coolant expands and fluid in the engine is returned; an overflow tube vents excess amounts of the corrosive fluid out from the bottom of the engine compartment.) Were this the trike version, you'd see the nosewheel is steerable rather than castering.

The demo aircraft is a Carbon Fiber Edition—a deluxe version that trims 15 pounds off the airframe's standard empty weight by judicious use of carbon-fiber parts in place of metal ones.

Low-draw LED landing lights on each wing "make it look like a Learjet on final," Mancuso says. AvioLights recognition and strobe lights on the wingtips and tail further enhance visibility. The wet wings hold a total of 32 gallons of fuel. One feature from the trike version missing from the TDO: a 44-pound-capacity baggage locker in each wing. The highly sculpted wingtip fairings are among the signs of

attention to detail, which includes the rounded, rather than flat, bottom of the fuselage, providing more stability in crosswinds and turbulence. One quibble: The small-bore tiedown rings aren't wide enough for a standard tiedown rope to fit through; instead, you need a clip to attach to the ring, to which you can secure a tiedown rope.

During the preflight, move the tail-wheel from side to side to confirm easy movement. A small red cap atop the gear protects the lubrication point, which should be greased every 100 hours.

A forward-hinged canopy forms the one-piece cabin top. For entry, step up onto the wing with the inboard foot. Once standing on the wing, a post between the seats and a handhold on the glare shield provide support for cabin entry. While steadying yourself on the supports, swing your inboard and then outboard leg over the sidewall and onto the seat, and then slide your legs around either side of the stick and your butt into the seat.



Bristell's demo TDO is equipped with a Rotax 912 ULS engine.



The electrically actuated flaps can be set incrementally or all at once with the twist of a dial; the Bristell can take off or land with any flap setting.

The seats can be adjusted before flight. A removable block beneath each determines the basic height and is taken out to accommodate taller pilots, while cushions can be used to move the seatback forward or raise the height of the seat. Rudder pedals are adjustable, the extension activated by pulling on a handle located under the panel alongside each sidewall. Apply pressure to the pedals, and they lock back in the appropriate position.

The current standard avionics package calls for dual 10-inch Garmin G3X Touch display screens, but other glass panel options are available. The demo aircraft is outfitted with smaller dual Garmin G3X displays supplemented by an externally mounted Garmin 695.

A flat baggage area lies behind the

seats, and a triangular window on either side of the fuselage aft of the canopy improves aft visibility and the already expansive feel of the cabin.

The canopy can remain open while taxiing, but must be closed in flight. Pulled down into the closed position, the canopy latches and catches like an automobile door—no need to slam or turn a handle to hold it in place. To open, rotate the handle at its rear that locks the canopy, and push up gently. Despite its curvature, the canopy appears to induce no visual distortion. Its top area is opaque, reducing potential heat and glare without compromising the exceptional visibility, except when looking up at the 12 o'clock high position.

Having just flown, there was no need to use the choke to start the Rotax or wait

for the oil to reach the 122-degree minimum for using full power. Simply turn on the master, EFIS and fuel pump, all controlled by toggle switches set in a row along the bottom of the instrument panel on the pilot's side. Turn the key, and the engine fires up.

Engine run-up is performed at 4,000 rpm. Two independent engine control units manage engine operations, and turning each one off and back on to ensure the other is working properly takes the place of a mag check on the checklist.

Ten degrees of flaps is standard for takeoff, set electrically via the flap switch on the forward console, the dial reminiscent of a control found on an old kitchen appliance. Rotate clockwise to select the appropriate setting (zero to 30 in incre-



trim inputs take a little getting used to and, if not applied delicately, can quickly send the trim toward the stops, provoking bouts of up and down fine-tuning. But, once trimmed properly for straight and level, the TDO flies hands off nicely. Give the stick a healthy slap from any side, and it immediately snaps back to straight and level.

Through steep turns, chandelles and *(to page 63)*

ments of 10). Rotate the dial counterclockwise to raise the flaps.

In The Air

After taxiing to runway 31, reserved for aircraft participating in the daily showcase flights, we were cleared for takeoff. Apply full power, and the tail comes off the ground almost immediately, and liftoff speed of 45 knots comes at little more than 300 feet down the runway. The 500-foot ceiling of the showcase pattern wasn't high enough to gauge the Bristell's climb performance, but V_y is about 62 knots, and previous experience in the trike Bristell had revealed that 5300 rpm yields about 800 to 900 fpm on climbout at sea level in standard condi-

tions. (V_y is also best glide speed, which simplifies emergency procedures in the event of an engine out after departure.)

After two circuits around the showcase pattern, we departed the area and climbed toward the northwest for airwork.

Once airborne, the TDO behaves just like the Bristell trike. At 2,500 feet, Mancuso showed off its speed. At 5,450 rpm, just under maximum power, we broke the LSA limit, registering 122 knots TAS, while we topped out at about 118 knots at cruise power of 5,400 rpm.

The demo TDO is equipped with optional electric trim, adjusted via four buttons set at cardinal points atop the stick, the north and south controlling pitch, east and west rudder trim. The pitch

SPECIFICATIONS

Powerplant: 100 hp Rotax 912 ULS/iS

Wingspan (ft.): 27

Wing Area: 113 sq. ft.

Wing Loading: 10 lbs./sq. ft.

Length: 21 ft. 2 in.

Height: 7 ft. 6 in.

Cabin Width: 51 in.

Gross Weight (lbs.): 1320

Empty Weight (lbs.): 675

Useful Load (lbs.): 645

Fuel Quantity: 31.6 gals. usable

Endurance (hrs.): 6

Baggage Capacity: 40 lbs. total; 33 lbs. in baggage area, 10 lbs. on hat rack

V_{ne} (Never-Exceed Speed, kts.): 145

Max Cruise Speed (kts.): 120

Flap Extension Speed (kts.): 75

Stall Speed, Clean (kts.): 43

Stall Speed, Landing Configuration (kts.): 36

Demonstrated Crosswind Component (kts.): 15