

# Aero Vodochody L-39ZA Albatros – Information



The aircraft you will be flying in today was built in the late 1980s and was used as a gunnery trainer as well as a proficiency aircraft for Su-22 and MiG-29 pilots at the 12th UAB (training air base), Kamenets Air Force Base, near Levski Bulgaria. The Bulgarians owned thirty-six ZAs; it's a unique opportunity to see several of them together in their original colors.

All pilots flying the L-39 in the United States are required to hold an LOA (letter of authorization) from the FAA (Federal Aviation Administration). To meet the requirements of the LOA pilots must have a minimum of 1,000 hours of flying experience and must demonstrate knowledge of and proficiency in the aircraft.

You will notice the “EXPERIMENTAL” sign when entering the L-39. This sign is required by the FAA to inform you that “this aircraft does not meet the requirements for a standard type certificate”. Simply put, the Soviet Union never filed paperwork with the United States Government to obtain a Type Certificate and lacking another category in which to place these aircraft, almost all former military aircraft (of any origin) are lumped into this catch-all category. There are no “experiments” going on with the L-39 – it's Soviet military hardware, built like a tank, reliable, and well-maintained.

The FAA intends surplus military aircraft (a.k.a. “warbirds”) to be flown for “exhibition”, which generally means display – on the ground and in the air – at air shows. In order to maintain proficiency for these activities, the FAA requires pilots to fly regularly... and during those flights we're allowed to take passengers.

Safety is our primary concern. The L-39 is a safe aircraft, but this is a military jet and not an amusement park ride. You will be riding in the back seat, where the *instructor* normally sits, and *it is therefore important that you do not grab at anything along the sides of the seat...* the harness will do a very good job of keeping you secured; the best place for your hands is in your lap. The seat ejection system in this aircraft is disabled, as it would be dangerous to place someone in a “hot” seat without extensive training. The seat does, however, contain a parachute that can be used for a manual bailout. A parachute is required whenever aerobatic maneuvers are performed, and in the unlikely event that something might go wrong it's nice to know that you're sitting on more than a cushion. We will explain the manual bailout procedure to you when you're strapped in – there's no sense in wearing a parachute if you don't know how to use it!

The L-39 is an amazingly stable yet responsive aircraft and a real joy to fly. We will be demonstrating the various flight characteristics of the Albatros as we go along – ask questions! Basic maneuvers include aileron rolls, barrel rolls, loops, Cuban-8s, reverse Cuban-8s, wing-overs, chandelles, the split-S, the Immelman, high-G turns, rapid vertical climbs and dives, and even occasional periods of straight and level flight. Next time you watch “Top Gun” you'll be able to say, “Hey... I've done that.”

It's highly unlikely that you will become sick or “black out” during the flight. There are several things you can do to counter the effects of G loading – the easiest and most effective of which is to *tell us* that you'd like to take a little breather. Direct the air conditioning vent (we'll show you where it is) towards your face and look outside (not inside) the aircraft. A minute or two of level flight is usually all it takes for you to feel great again. If you'd like, we'll also explain the “anti-G straining maneuver” that you can use to push blood back into your head during heavy aerobatics.



12th UAB, Kamenets

## History:

Designed in 1966 by the Czechoslovakian manufacturer Aero Vodochody as a successor to their L-29 Delphin, the L-39 first flew in 1968 and entered full-scale production in 1972. The Soviet Union reportedly made a U.S. F-5/T-38, downed over North Vietnam, available during the design – which may account for the similar appearance to the American trainer. Approximately 2,850 L-39s were produced during the Cold War for use by over thirty Soviet satellites and allies (although 75% of the aircraft went directly to Russia) where they were used to train two generations of MiG pilots. The Albatros was produced in greater numbers than any other jet trainer in history, accumulating an unprecedented four million flight hours. Still the primary military trainer for many countries around the world, the L-39 has a reported sortie availability rate of 99.6% and an in-flight MTBF of over 300 hours. Over one hundred and fifty of these jet trainers are currently flying in the U.S. with a hundred more awaiting restoration and certification. This parallels the surplus of military aircraft that entered civilian hands at the end of WWII.

An excellent combination of Soviet-style rugged simplicity and Czech ingenuity, the L-39 incorporates an APU starter, pressurized cabin, anti-skid wheel brakes, automatic anti-ice/defrost, speed/dive brakes, a gyro-compensated gun-site, anti-G and oxygen systems, air-conditioning/suit-ventilation, and power seats. The later ZA (light attack) variant, of which 247 were built, features a 23mm chin cannon, beefed-up landing gear, and a reinforced wing for carrying additional weapons/stores on four hard points. Unusual among jet aircraft, the L-39 is capable of operating from unimproved (grass/dirt) airfields.

## Specifications:

Airframe:	Tandem two-seat, all metal semi-monocoque
Engine:	(one) Ivchenko AI-25TL, 2:1 high-bypass fan-jet
Thrust:	3,792 pounds (static) at sea level
Empty Weight:	7,800 pounds
Max Gross Weight:	11,618 pounds
Wingspan:	31 feet, 1 inch
Length:	40 feet, 5 inches
Height:	15 feet, 5.5 inches
Wing:	Trapezoidal construction, double-slotted flaps
Internal Fuel:	291 gallons main + 52 gallons (total) tip tanks
External Fuel:	80 gallons -or- 182 gallons (total) underwing tanks
Ejection Seats:	Minimum 0 feet, 81 KIAS / 93 mph

## Performance:

Take-off Run:	1,740 feet
Sea-Level Rate of Climb:	4,300 feet/min ( $V_y = 217$ KIAS)
Ceiling:	37,730 feet
Range (with reserve):	528 miles on internal fuel, 995 miles with tanks
Max Level Speed:	389 KTAS / 447 mph
Max Speed ( $V_{mo}/M_{mo}$ ):	495 KIAS / 570 mph / 0.85 Mach
Loading:	-4G to +8G (clean)
Roll Rate:	> 300°/sec at 250 KIAS
Nominal Cruise Speed:	310 KTAS / 357 mph / 0.5 Mach
Final Approach Speed:	120 KIAS / 138 mph
Stall Speed ( $V_{s0}$ ):	90 KIAS / 103 mph
Landing Rollout:	2,135 feet
Fuel Burn:	335 gal/hr at take-off, 78 gal/hr at FL370 economy

## Armament:

Twin-barrel 23mm chin cannon, 180 rounds

Up to 2,245 pounds of stores:

500Kg, 250Kg, and 200Kg bombs

57mm air-ground rocket pod

130mm air-ground rocket pod

7.62mm gun pod

S-5 air-air missile

Five-camera reconnaissance pod

Aircraft flying in the U.S. are not weapons-capable.



УБ-16 57mm Unguided Sixteen-Rocket Launcher