

# CTLS





# CONTENT

The next generation from the market leader	4
Aerodynamics	6
Happy landings!	7
Please fly safely!	8
Production	10
Structure	11
Get comfortable	12
Durability	14
Glider towing	14
Service	15
Engine data	16
Travel	17
Fractional ownership clubs and rental	18
Standard Equipment	19
Operating costs	20
Flight schools & photography	21
Cockpit options	23
Design	24



## THE NEXT GENERATION FROM THE MARKET LEADER

The CTLS is the newest evolution for the Flight Design CT line of aircraft. Longer, lower and sleeker, the CTLS was designed specifically for the Light-Sport category and offers many features to improve comfort and performance.

Flight Design has conducted extensive customer research including questionnaires at leading air shows. Based on those results and the design opportunities allowed under the ASTM Light-Sport standards, the CTLS was developed.

The Flight Design development team has worked for more than 24 months on development of the CTLS and invested significantly in this evolved design.

Flight Design used industry specialists and advanced tools including full-scale wind tunnel testing in the Mercedes wind tunnel to further refine the new aerodynamic design. Next generation computer flight test systems were used to develop the flight dynamics in a first for the Light-Sport Aircraft industry.

**Flight Design is committed to remain the leader in the Light-Sport Aircraft category. Employing progressive design concepts and modern safety know-how, Flight Design joins the latest engineering techniques and software to state-of-the-art materials.**

The CTLS is an aircraft capable of flying non-stop from Chicago to NYC, Charlotte to Dallas, and London to Frankfurt or Munich to Rome... flights of 1,800 km (1,000 miles). The large comfortable cabin and excellent visibility of the CTLS makes all your flights more enjoyable and a better environment for learning how to fly.



In production since 1997, more than 1,700 Flight Design CTs have been delivered to customers, worldwide.

By operating the CTLS in some of the most challenging conditions on earth, Flight Design team members continue to learn and improve the aircraft.

The CTLS incorporates evolutionary changes that make it a great airplane for the demands of flying clubs and flight schools as well as private owners.

A modern aircraft should have all the safety improvements available for protecting the pilot and passenger. Every CT has a time-proven rigid carbon fiber cockpit forming a safety cell plus four-point harnesses. The standard equipment airframe parachute system is an important addition to the list of safety features on the CTLS. The system is always available should you need it.

A German Airworthiness Certificate was first issued in 1997. The Special Light Sport Aircraft FAA Airworthiness Certificate was issued to a CT in April 2005. Compliance of the Aircraft has been verified by the independent LAMA audit in March 2008.

DGAC of India registered the CTLS in October 2009 for India. November 2009 the CTLS received the Chinese Type Design Approval, issued for the first time ever for an LSA aircraft by the CAAC of China in combination with a Production Approval. And in 2011, the CTLS will receive EASA Type Certificate.

Since the first flight, over a thousand owners have loved the high cruise speed, low stall speed, and the spacious cabin of all CTs.





## AERODYNAMICS

The fuselage on the CTLS is 390 mm (1 ft 1 in) longer, which increases pitch stability and dampening significantly. The result for pilots is a smoother ride in turbulence and much easier landings.

By optimizing the shape of the fuselage, drag has been reduced while cleaning the airflow to the stabilizer. The smallest improvements were executed to further increase lift and reduce drag.

The stabilizer trim tab incorporates a new flexible elastic hinge, which is aerodynamically cleaner plus the control linkage has improved gearing for finer control and better trim feel.

The wing of the CTLS uses the same efficient airfoil as the CTSW. Advanced winglets reduce induced drag, improving climb, cruising range and aileron control at low speeds while conveying a 21st-Century look.

In total, the aerodynamic changes have improved the CTLS's stability and its ease of flying significantly. While the top speed of the unlimited CTLS is impressively high, all CTLS fly with efficiency and low fuel consumption at all speeds.



## HAPPY LANDINGS!

New urethane polymer shock absorbers in the nose gear give high dampening and help to smooth out hard landings. The new composite main gear, developed and produced by a certified aerospace supplier is rugged and absorbs more than 50% of the energy on the first rebound.

Five-axis CNC milling technology produced the metal molds for the new composite main landing gear.

New tires developed together with our partners give the correct balance of durability, performance and light weight.

## PLEASE FLY SAFELY!

The Flight Design engineering staff created the CTLS with safety, performance and comfort in mind. A new aircraft should employ modern construction techniques for many reasons.

The carbon-aramid composite safety cell helps to protect you and your passenger. The engine mount and carbon fuselage attach points reduce the possibility of engine intrusion into the cell.

Standard four-point harnesses along with crushable elements of the fuselage construction absorb energy and reduce possible loads to the pilot and passenger. Strong windshield-uprights and massive upper construction complete the protective environment. Fuel tanks are sensibly located in the wings, well away from the occupants. Numerous improvements to the CTLS fuel system are incorporated to give proper fuel flow even in extreme





conditions while maintaining the safety of single lever operation.

The wide speed range and high structural margin of the CTLS give you peace of mind even in the strongest conditions. Tested and certified to perform up to 600 kg (1,320 pounds) the CTLS can take the load and haul it, too!

The CTLS has been subjected to numerous static tests and complete flight-testing as a part of certification to major Airworthiness Standards including ASTM-FAA Light-Sport Aircraft requirements and German LTF-UL 2003. Each CTLS is fully flight tested by our engineering test pilots and flown again after being reassembled and checked by factory-trained experts in the country of destination.



## PRODUCTION

Production of the CTLS is performed in Ukraine by our young and highly motivated staff near the Black Sea resort area of the Crimea. Along with development of the original CT, our own R&D and manufacturing company was created. We are constantly expanding our production facility and staff to meet the growing demand. Ukraine has a strong aviation culture going back to the beginning of manned flight. Major airframe and component manufacturers are now sourcing engineering and manufacturing in Ukraine to take advantage of low production costs as well as one of the world highest engineering educational standards.

**The balance of safety and performance is attained through rational design, well-organized manufacturing and the use of dependable Western materials.**

CTLS was designed and tested using the most advanced CAD programs available and these systems are also applied in production of the aircraft.

We are proud to be at the vanguard of aviation technology and a leader in bringing that structural and aerodynamic technology to the light plane industry.



# STRUCTURE

The CTLS structure is made from the very latest carbon fiber construction with rigid foam core and epoxy matrix using vacuum technology. All supporting structure consists of carbon and/or Aramid fibers, and since 2008 a new foam core material is used in exposed areas to provide improved resistance against weather, fuel and

chemicals. All materials used in the construction are from Western suppliers and correspond to either DIN or Aviation standards. The CTLS wing surfaces are post cured at 80°C (176 degrees) as it is customary in aircraft construction.



# THE FUTURE OF FLIGHT





# GET COMFORTABLE

The 1.24 m (49-inch) cabin width of the CTLS has been increased in length to fit very tall and smaller people equally well. People with heights of 1.55 to 2.00 m (5 feet 1 inch to 6 feet 6 inches) sit more comfortably than ever. More storage space in the cockpit is provided by a new convenient jacket shelf for in-flight access and bigger outside baggage doors now give better access for bulky items stored aft of the cockpit. Two new windows in the rear give the cockpit a more open feeling and improve rearward visibility.

Large gull-wing doors held up by gas struts make entering and taking your seat easy. Three-point latches and door seals keep you secure inside. Comfortable seats with molded foam padding and pneumatically adjustable seat cushion and lumbar sections offer incomparable comfort and easy adjustment in height and length. From these seats, the remarkable visibility of CTLS will give you the feeling that you are in a helicopter with a sweeping view of the world.

The new engine installation reduces vibration and cabin noise is reduced further. Full dual controls and centrally located throttle quadrant are features of this ergonomically arranged cockpit. Easy to reach storage space and convenient map holders are thoughtfully provided. Standard ventilation and heating allow CTLS flying in all seasons.

The CTLS allows up to 50 kg (110 pounds) of baggage (total) to be safely stored in the dual storage compartments aft of the cabin area.

If you are finding it hard to find a Light Sport Airplane that fits you, try the CTLS. We think you will be pleasantly surprised.

## CT SAFETY CABIN DESIGN

The design of the CTLS carbon fiber cockpit has been intentionally done following reliable design principles known from the passenger cabins of modern cars, where crash loads are transferred through the passenger area to the crash-zones at the end of the vehicle, so that the cabin remains stable while the energy is absorbed in the periphery areas.

Looking at the CT models safety cabin you can find all key car design features as well.

The following illustration generalizes the force flow in the CTLS:

- Forces are introduced in a crash from the engine and nose gear through the big engine mount (1) into a strong A-pillar (2) and to the center tunnel (5).
- The door sill (3) is designed to transport the loads backwards and into the sandwich composite shell.
- The fuselage root rib area (4) is designed as a stiff roof rail to transports the loads backwards.

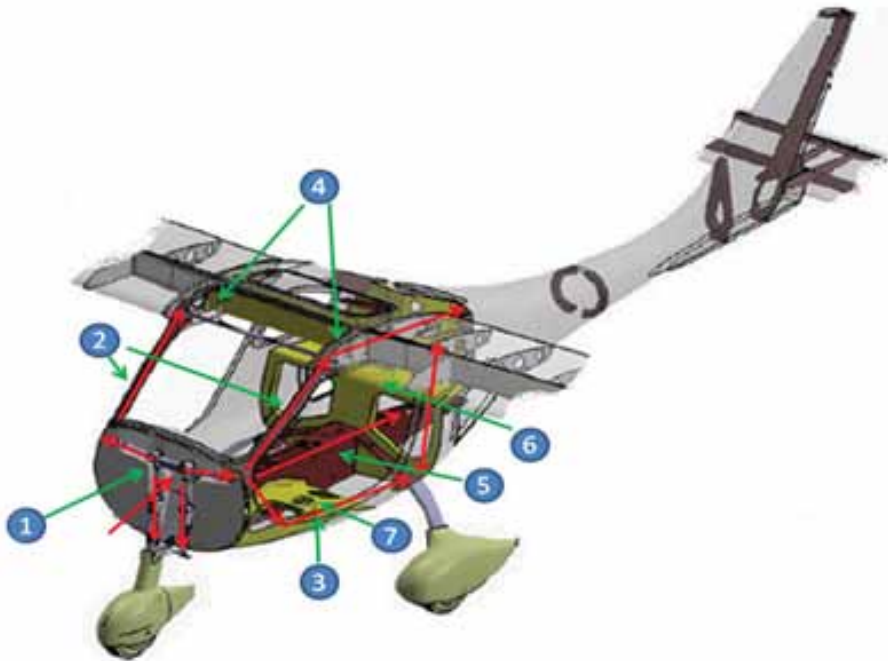
- The middle of the cabin is stiffened with a tunnel (5) that extends from the nose gear attachment area to beyond the luggage compartment.

- The cabin is closed at the end with the main bulkhead (6) that serves together with the door sill as B-pillar. All longitudinal elements extend to and beyond this main bulkhead.

- The floor section below the seats is designed with "Pyramids" (7) installed to the cabin floor, supporting the seats and stiffening the floor.

- The inner laminate of the cabin skin is done in Aramide, providing best occupant protection against splintering. The outer skin is designed as carbon fiber providing maximum stiffness and strength.

The suitability of this design has been proven in service now for 13 years. Accident history shows that the cabin provides a maximum of occupant protection even in severe crash.



# DURABILITY

A modern airplane should be built with modern technology. Carbon fiber-epoxy aircraft construction offers unparalleled strength, durability, corrosion and fatigue-resistance. Despite high material and labor costs, carbon fiber construction is being used more widely every year. Due to its advantages, carbon fiber construction has been adopted for many new military and commercial aircraft replacing older aluminum & rivet construction.

Repair costs with carbon fiber construction are typically far less than those for conventional metal or tube and cloth aircraft. New core foam which is now used is much more resistant to environmental damage. Repairs can be locally performed around the country.

The CTLS is finished in a two-part polyurethane paint, which is very UV-resistant. Beautiful and easy to take care of, the CTLS polyurethane finish will last years when properly maintained.

# GLIDER TOWING

Since the beginning of the glider towing tests in Europe, the CTLS has shown surprising aptitude. The climb speed is just right for comfortable climbs with gliders under tow. The CTLS has dem-

onstrated this even on grass with a fixed pitch propeller.

# SERVICE

The new engine mount and control system design was developed with service and repairs in mind. The CTLS requires only a minimum of maintenance. At our Service Centers you can have this work done by our properly trained staff. You can also participate in a two-day owner-training course at one of our Flight Design Service Centers. This course will enable you to do simple maintenance yourself

supported by our detailed maintenance manual and parts manual supplied with each CTLS.

Our local Service Center technicians are available for specialized work and repairs or to assist local mechanics on the basic maintenance of the CTLS.

## ENGINE DATA

- Rotax 912 ULS, 100 HP @ 5800 rpm, 2.000 hrs. TBO
- Slipper clutch
- 1352 c.c. 10.5 to one compression ratio
- Gearbox: 2.43 to one reduction ratio
- Fuel: Premium unleaded auto fuel or 100 LL Avgas
- Fuel consumption:
  - @ Max continuous RPM (5500) 25 l/h (6.6 GPH)
  - @ 75% RPM (5200) 18.5 l/h (4.9 GPH)





# TRAVEL

The further you fly-the more the CTLS superiority shows. With the CTLS's new long-range comfortable seats and large baggage compartments, countrywide flights become an achievable and affordable adventure! The CTLS gives you the performance and freedom to make you flying dreams a reality!



# FRACTIONAL OWNERSHIP CLUBS AND RENTAL

One way to get more people involved in your club is to lower the cost and offer exciting new aircraft. With rental and training allowed by the FAA on Special Light-Sport Aircraft, the CTLS is the right choice for flying clubs and fractional ownership

applications. With the new CTLS even less experienced pilots can enjoy the thrill of flying this exciting Light-Sport Aircraft after a proper training session.



# STANDARD EQUIPMENT

- 100-hp Rotax 912ULS with slipper clutch and 2.000hrs. TBO
- Airframe parachute
- Advanced three-blade composite propeller
- \*Garmin SL 40 Com, GTX 327 Mode C and GPS AERA 510 XM:
  - Radio Garmin SL40 installed with antenna
  - Transponder Garmin GTX 327 Mode A/C installed with antenna
  - Altitude Encoder ACK A30 (Classic) or Dynon Encoder (Advanced)
  - GPS Garmin AERA 510XM with USA database
  - ELT Kannad AF Compact 406 MHz
  - Intercom PM 3000 A with aux music input and connection to GPS Audio
  - Push-to-Talk buttons on each control stick
  - Two Headset Telex Echolon with plug connectors next to the seats
- Flight and engine instruments (ASI, altimeter, slip indicator & UMA advanced analog: RPM, CHT, EGT)
- Adjustable Sport seats (fore-aft & height) with headrests
- Electric flaps with LED pre-selector system -12° (-6° USA) to +35°
- Four-point harnesses
- Two large baggage compartments
- Wide gull-wing doors with gas struts
- One-piece windshield with light green tinting
- Two wing tanks with 130 l (34 gallon) total capacity
- Composite main landing gear: 4.00 – 6" main wheels with hydraulic disc brakes, steerable nose wheel 4.00 – 6"
- 10 cool new standard graphic patterns



Complete document package includes: Flight, Maintenance and Parts Manual  
\* this package is not standard in CTLS Classic Light Europe!

## OPERATING COSTS

CTLS was built to get up and go. With low fuel consumption and low operating costs, you can afford to fly as much as you want.

Hours per year	100	250	350	500	750
Total direct operating costs	\$ 34.50	\$ 34.50	\$ 34.50	\$ 34.50	\$ 34.50
Total indirect operating cost no hull insurance	\$ 20.15	\$ 14.54	\$ 13.47	\$ 12.67	\$ 12.05
Total indirect operating cost	\$ 50.83	\$ 26.81	\$ 22.24	\$ 18.81	\$ 16.14
Total operating cost including hull insurance	\$ 105.48	\$ 75.85	\$ 70.21	\$ 65.98	\$ 62.68



# FLIGHT SCHOOLS & PHOTOGRAPHY

Remarkably slow landing speed, controllability and rugged landing gear make the CTLS the right choice. Due to its modern strut-less (cantilevered) wing design and contemporary good looks, the CTLS is the right choice for Flight Schools seeking a way to attract new students. In Europe this change is already happening for many light plane schools. A revolution in personal flying in the USA is now underway with the Light-Sport Category!

Without a strut to block the view non-commercial aerial photography is a joy. An optional 16.5 x 25.4cm (6-1/2 x 10 inch) photo window is available, too.

With its roomy cabin and superb visibility the CTLS is an ideal aircraft in the agricultural world for the inspection of animals and crops and other not-for-compensation survey tasks.

\* With its short field performance and rugged optional tundra gear, a careful landing for inspection is easily performed.

\* Get approval from local authorities on legality of all unusual or commercial operations



# THE FUTURE OF FLIGHT

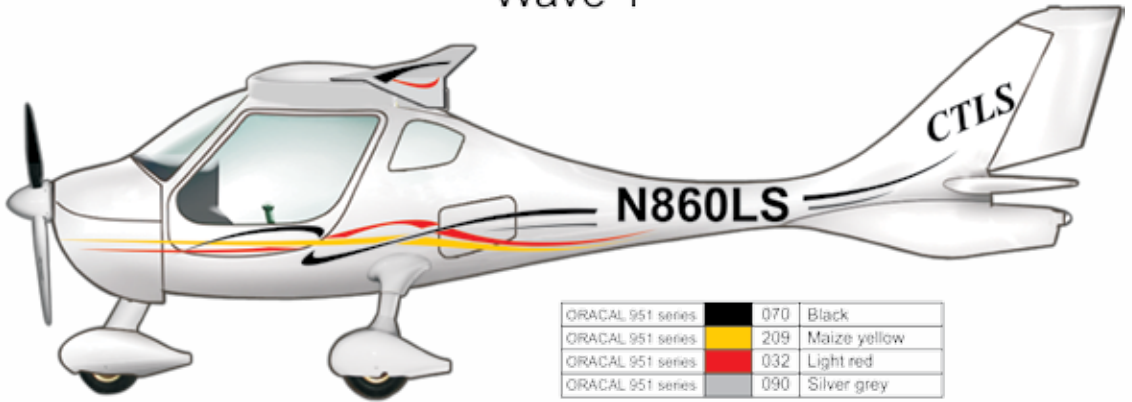


1	PS Engineering PM 3000 intercom
2	Transponder Garmin GTX 327 Mode A/C
2a	Transponder Garmin GTX 330
3	Radio Garmin SL40
3a	Radio Garmin SL30
4	Altimeter small (57mm), analog
5	Airspeed indicator small (57mm), analog
6	Trutrak FD-Pilot 2-axis / 2-axis + VS / VSGV
7	Dynon EFIS 100 Flight Information System
8	GPS Garmin AERA 500 / 510 XM
9	Hobbs hour counter
10	Dynon EMS 120 Engine Monitoring System
11	ELT 406 MHz
12	GPS Garmin 695 / 696 XM
13	Trutrak ADI-instrument to display bank angle, pitch and direction (electronic directional gyro)
14	Garmin GNS 530W Nav / Com / GPS
15	Garmin GMA 240 audio panel
16	Dynon Double Screens Dynon SkyView SV-D1000
17	Garmin Double Screens G3X PFD / MFD
18	Dynon SV XPNDR 261 - Class 1 Transponder

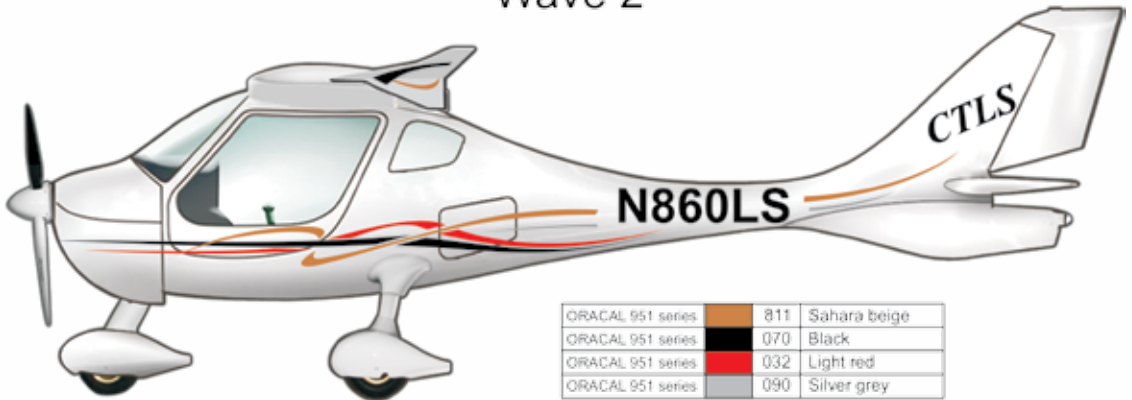


## DESIGN

Wave 1



Wave 2



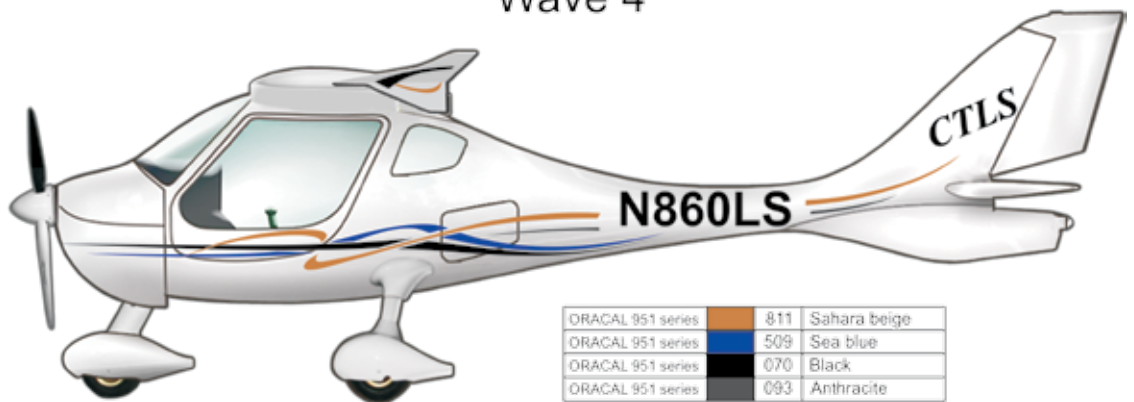
The colors reflected on the brochure are only approximations of the original colors.



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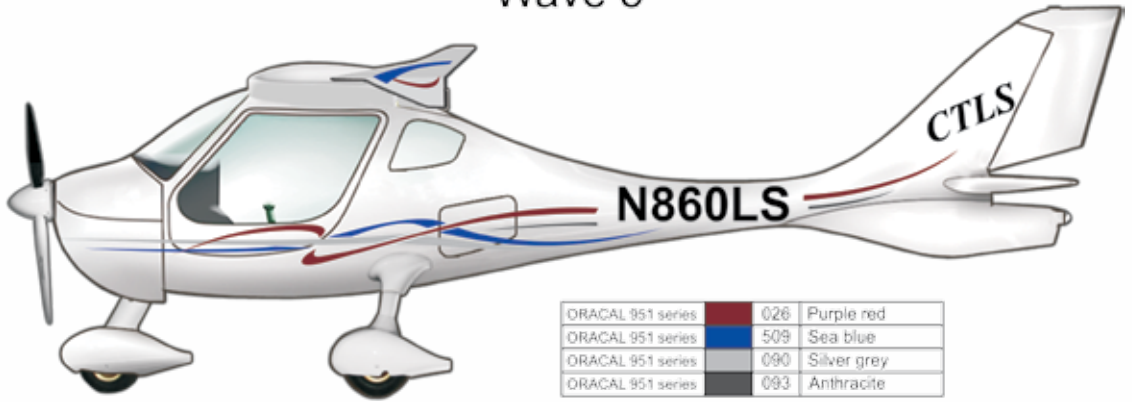


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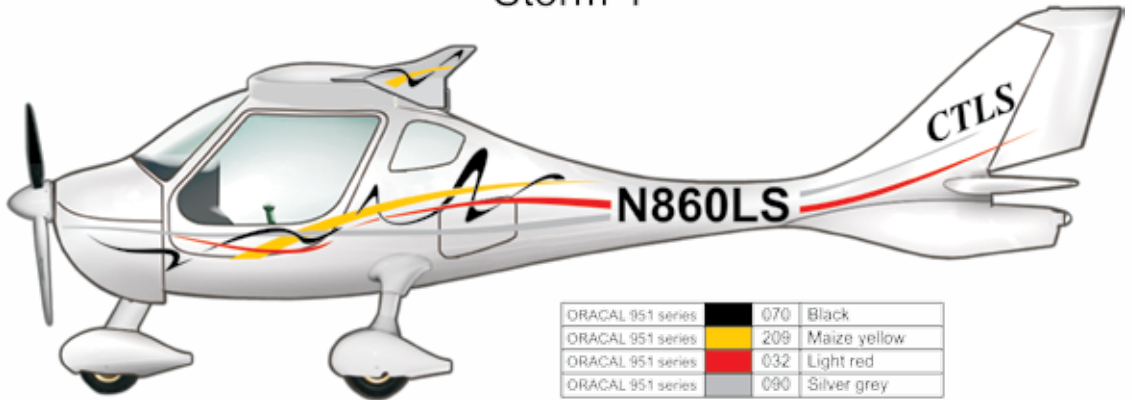


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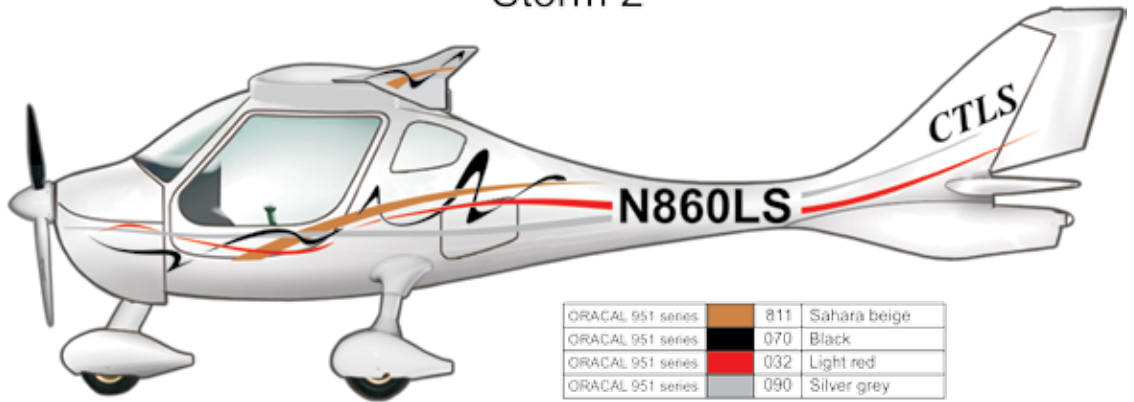


## Storm 1



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## Storm 2



## Storm 3



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Storm 4

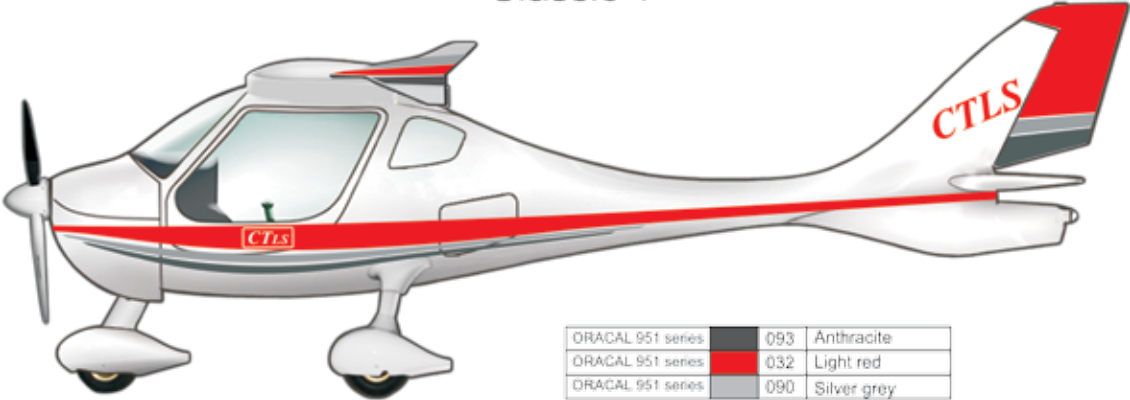


Storm 5



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### Classic 1

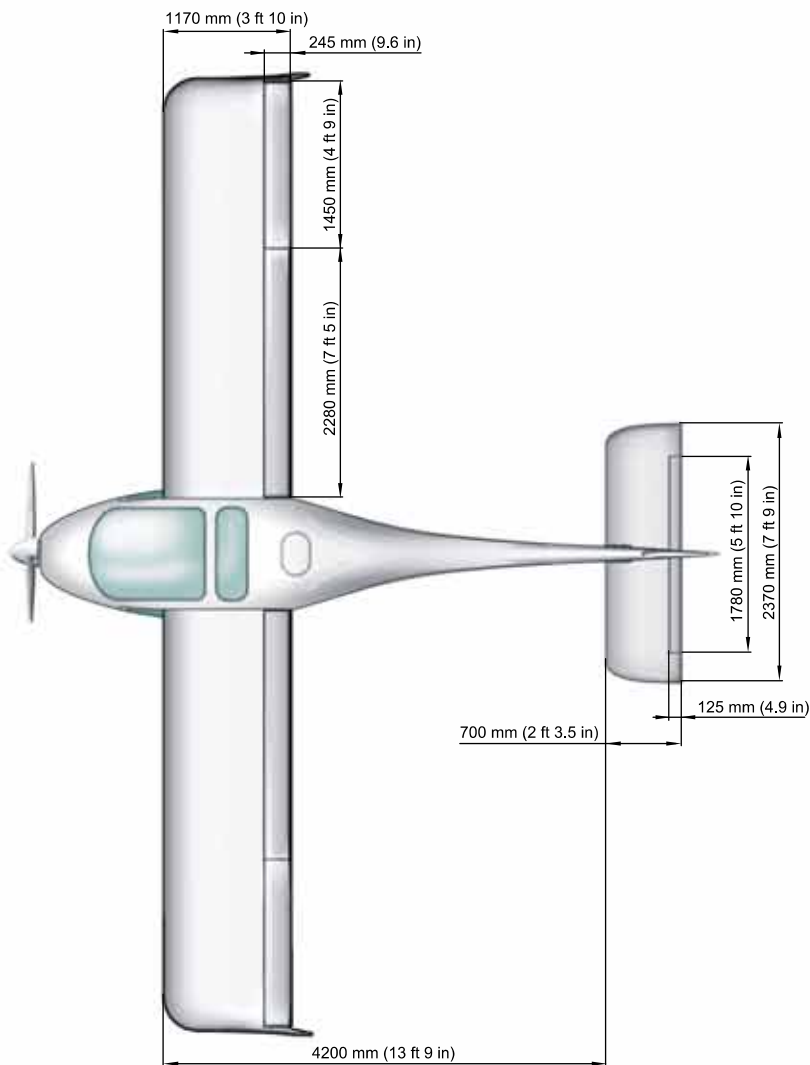
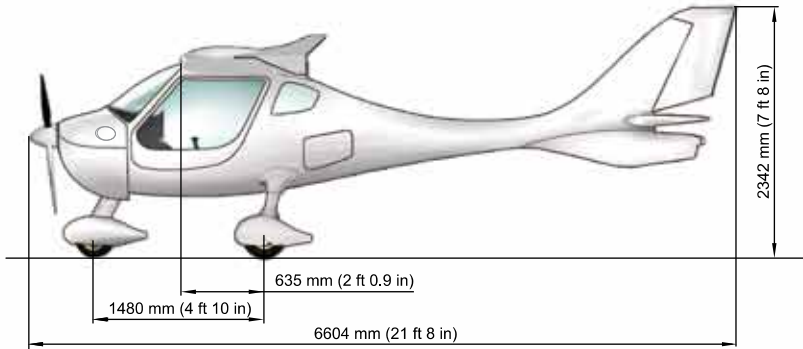


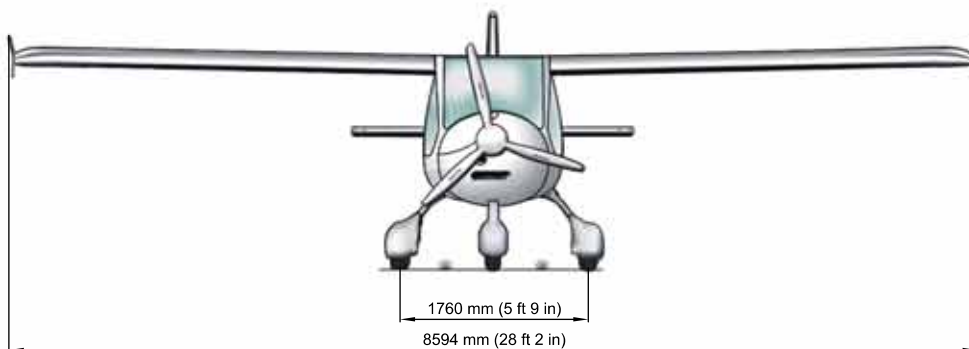
### Classic 2



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<b>Geometry</b>		
Max. length	6604 mm	21 ft 8 in
Max. height	2342 mm	7 ft 8 in
Wing span	8594 mm	28 ft 2 in
<b>Areas</b>		
Wing	9.98 m <sup>2</sup>	107.43 sq ft
Stabilator	1.60 m <sup>2</sup>	17.20 sq ft
Vertical tail	1.41 m <sup>2</sup>	15.16 sq ft
<b>Aspect ratios</b>		
Wing	7.29	
Stabilator	3.38	

#### Performance at MTOW

	472,5 kg	600 kg
VH: maximum horizontal speed	240 km/h	240 km/h
VNE: maximum permissible airspeed (red line)	300* km/h	300* km/h
Take-off run (flap +15degree)	140 m	250 m
Take-off distance over 15 m obstacle	250 m	450 m
Max. range (30 min reserve)	2000 km	1800 km

\*The never-exceed speed (VNE) demonstrated during flight testing is 300 km/h but is limited in the individual case by the ballistic recovery system installed or national regulations.

#### Weights and Dimensions

typical empty weight (equipped with rescue system)	326 kg
Max. take-off weight	600 kg
Fuel capacity	130 l



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