ZODIAC Series Kit Aircraft

ZODIAC

ZODIAC: The affordable recreational kit aircraft for the sport pilot: Enjoy leisure flights, with exceptional 360-degree visibility... operate from short grass strips... make round trips of several hundred miles in a single day... cruise at 130+ MPH, covering up to 30 miles with every gallon of fuel. Take your partner for a local pleasure flight, or to a far-off destination (with overnight bags)...

EXPERIENCE IT ALL WITH THE ZODIAC

The ZODIAC is simple and affordable to build and fly, yet it's an airplane you won't easily outgrow.

The ZODIAC is the perfect project for the first-time builder and the demanding sport pilot, bridging the gap between performance flying and affordable costs: Simple and quick to build; easy and great fun to fly.

Well suited for low-time pilots, the ZODIAC offers exciting performance and good cross-country flying capabilities. New generation engines, such as the Rotax 912 series, offer exceptional efficiency and low operating costs. Loaded with standard features, the new ZODIAC models provide all-metal durability, first-class comfort for two large persons in a wide cabin, plenty of baggage space, and much more. New complete kits reduce building time, requiring basic skills and tools to put together.

First introduced in 1984, the ZODIAC design has a proven track record, and new models based on the original ZODIAC have evolved to offer the performance and features that sport pilots have been asking for. Not a 'high performance' aircraft, the ZODIAC is fun and simple to fly, even for the novice pilot, yet has capabilities and performance that will thrill the most experienced pilot.

ZENITH AIRCRAFT COMPANY, Mexico Airport, Mexico, Missouri 65265-0650 Tel: 573-581-9000 FAX: 573-581-0011
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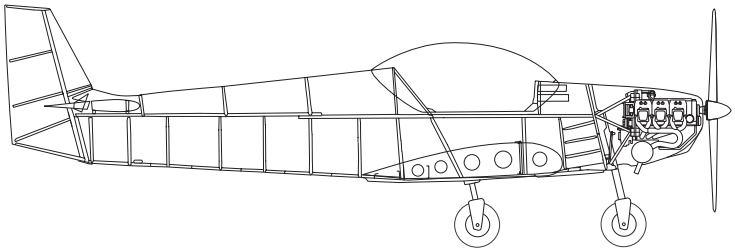
ZODIAC CH 601 Series DESIGN

The ZODIAC CH 601 series kit aircraft was developed to offer sport pilots with a design that was not only simple, quick and affordable to build, but also easy and fun to fly for recreational pilots (while also being inexpensive to operate and maintain).

The original ZODIAC kit aircraft was introduced in 1984, and was developed by aeronautical engineer Chris Heintz as a low-cost light-weight primary trainer aircraft: It featured a simple design for ease of construction and maintenance, the use of lightweight and efficient engines, comfortable side-by-side seating with excellent visibility, and good performance yet docile enough for low-time and student pilots.

The original Zodiac has evolved into several different models over the years, yet the original design philosophy remains the same. While some other kit aircraft designs offer higher performance than the Zodiac series, these same designs are also more costly to build and operate, and require more building time and skills, as well as higher-than-average piloting skills.



***MODELS OF THE ZODIAC**: Choose the model with the performance and features **you want** in an airplane:*

***ZODIAC CH 601 XL**: The newest ZODIAC model features a new wing design with flaps, a new landing gear system, a larger cabin with an increased gross weight, and many new standard features...*

***ZODIAC CH 601 HD**: The original ZODIAC has been popular with first-time builders and sport pilots since 1984.*

***ZODIAC CH 601 UL**: The lightest of the ZODIAC series, this model was developed specifically for "Advanced Ultralight" categories in Canada and in Europe, and is a lighter version of the ZODIAC CH 601 HD.*

***ZODIAC CH 601 HDS**: The "Super Zodiac" features shorter and tapered "speed wings." It uses the same fuselage as the ZODIAC CH 601 HD.*

"***...A playful, delightful airplane with side-by-side seating and a gorgeous bubble canopy. Handling is great, stablity is pleasant, and the kit is very straight forward. Highly Recommended.***" – US Aviator Magazine

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DESIGN FEATURES

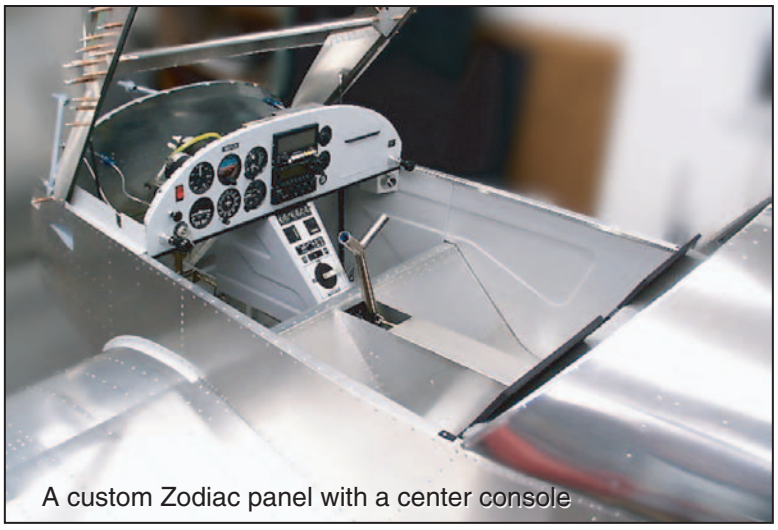
CABIN: The ZODIAC offers comfortable two-place side-by-side seating in an ergonomically designed 44-inch (1,1120 mm.) wide cabin. The cabin interior is designed to provide comfort for two large adults. To most pilots, the ZODIAC's seating arrangement provides 'Lazy-Boy' comfort, even on long cross-country flights. The bubble canopy opens to allow easy access to the cabin from both sides, while the large tinted plexiglass canopy also provides spectacular 360-degree visibility to both occupants. Access to the cabin is easy over the 20-inch wide reinforced wing walkway on both sides of the cockpit, and facilitated by a 'step' located below the trailing edge of the wing.

The ZODIAC XL features a new forward-hinging canopy, while the standard ZODIAC CH 601 HD canopy is hinged from both sides for easy cabin access.

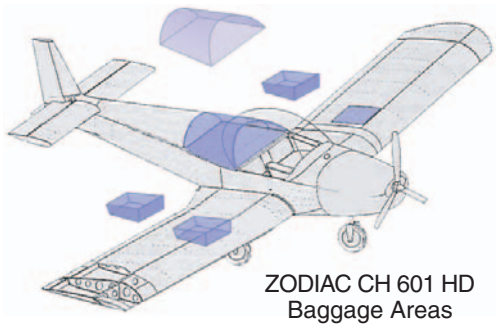
"The visibility under that big bubble canopy is outstanding and the hinging mechanism on the canopy, which can be opened from either side, is just plain ingenious, as well as simple." *– SportPlane Resource Guide*

The center-mounted control column (stick) can easily be used from either side, and does not limit visibility of the instrument panel. Throttle controls are mounted on both sides of the panel for easy access from either seat. A new Dual Control Sticks Option is now available for builders wanting to equip their ZODIAC XL kit plane with dual sticks. The standard dual rudder pedals also steer the nose-wheel, and are equipped with hydraulic toe-brakes on the pilot's side.

The cabin is fitted with a large instrument panel with dual controls accessible from both the left and right seats. The panel measures about 38 inches (955 mm.) across by 9 inches (230 mm.) tall in the center to allow for custom avionics installations. The formed instrument panel bulkhead is supplied 'blank' to allow builders to fully customize instruments and avionics installations – from basic VFR (visual flight rules) to full IFR (instrument flight rules) custom panels.



A custom Zodiac panel with a center console



ZODIAC CH 601 HD
Baggage Areas

The main baggage area is located directly behind the seats for easy access, and comfortably holds overnight bags. The ZODIAC XL offers an increased main baggage area over previous Zodiac models, while the ZODIAC CH 601 HD and UL models come standard with dual wing baggage lockers, which hold up to an additional 40 pounds of baggage in each wing.

Visit the online photo gallery for additional photos of instrument panels and interior views: http://www.zenithair.com

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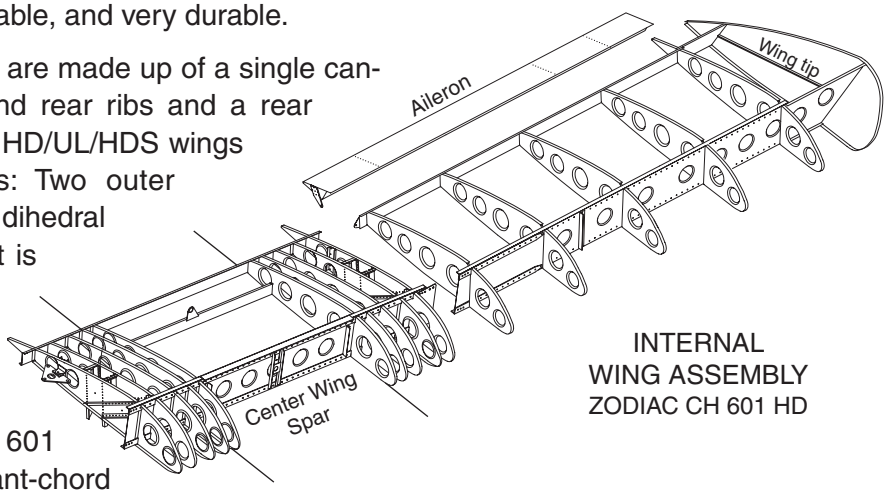
DESIGN FEATURES

The ZODIAC CH 601 series is the product of extensive research and development, designed by aeronautical engineer Chris Heintz, a leading designer of light aircraft. The modern ZODIAC design makes use of advanced technologies, while using proven design concepts and simple systems for easy assembly and maintenance. A professional design, the ZODIAC structure has undergone a complete and rigorous flight test and design stress analysis.

Developed for the inexperienced first-time builder and demanding recreational pilot, the ZODIAC aircraft is designed to be easy to build and to maximize flight performance and efficiency.

Simple systems, modern materials, and design ingenuity minimize required maintenance, and make the ZODIAC easy to build and fly, affordable, and very durable.

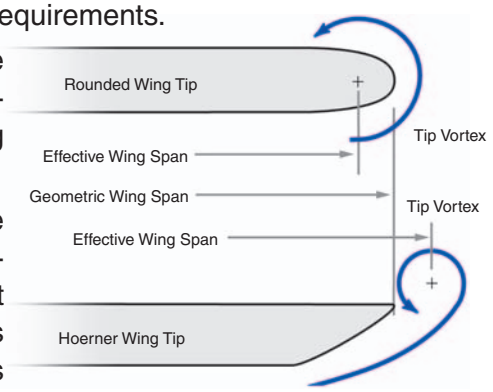
WING DESIGN: The ZODIAC wings are made up of a single cantilevered spar with internal nose and rear ribs and a rear spar channel. The ZODIAC CH 601 HD/UL/HDS wings are constructed in three sections: Two outer wings sections set at a 6-degree dihedral and a level center wing section that is fixed to the fuselage. The wings are fitted with near full-span ailerons. Flaps are not required with the high-lift wing designs of the ZODIAC CH 601 HD/UL/HDS. The CH 601 HD/UL model uses a simple constant-chord airfoil, while the CH 601 HDS and the new ZODIAC XL feature tapered wings. The high-lift low-drag airfoils provide an efficient cruise speed as well as desired slow flight and gentle stall characteristics. The outboard wing panels can easily be removed in 15 minutes each for trailering and storage. With the wings removed, the fuselage fits through the door of a standard single-car garage and can be trailered.

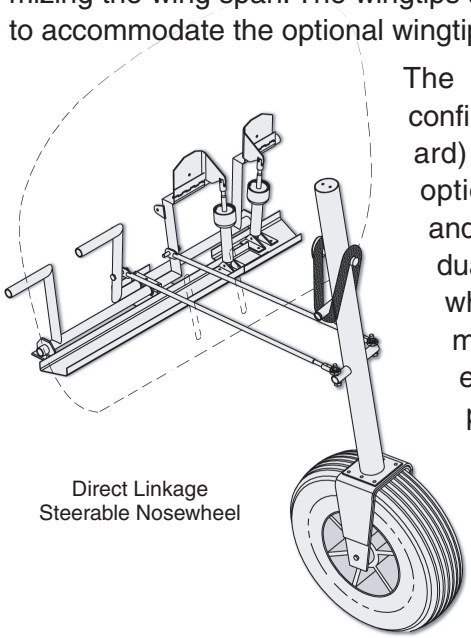


INTERNAL
WING ASSEMBLY
ZODIAC CH 601 HD

The ZODIAC XL wing does not utilize the center wing section of the previous ZODIAC models, and bolts right to the fuselage. Conventional electrically-operated flaps are unique to the ZODIAC XL model, and allow for a lower stall speed to meet the new Sport Plane category requirements.

Hoerner wing tips have become a trademark of Heintz designs. The tapered tips maximize the effective lift area of the wing while minimizing the wing span. The wingtips are fitted with a fiberglass fairing to accommodate the optional wingtip strobe and navigation lights.





Direct Linkage
Steerable Nosewheel

The rugged landing gear may be configured either as tricycle (standard) or as tail wheel (a no cost option*). Large eight-inch wheels and a heavy-duty gear which uses dual 'bungee' shock absorbers provide effective rough field capabilities, while minimizing gear maintenance and complexity. The ZODIAC XL model utilizes a new spring main landing gear. The main wheels are equipped with standard hydraulic disk brakes, and optional wheelpants (fiberglass fairings) are available to provide additional aerodynamics to the sleek aircraft. Direct linkage from the rudder pedals to the nosewheel provides very effective ground handling capability.

The large wheels, rugged gear and excellent take-off and landing performance make the ZODIAC kit aircraft well suited for grass-field operation.

* Tailwheel option currently not available for the ZODIAC XL.

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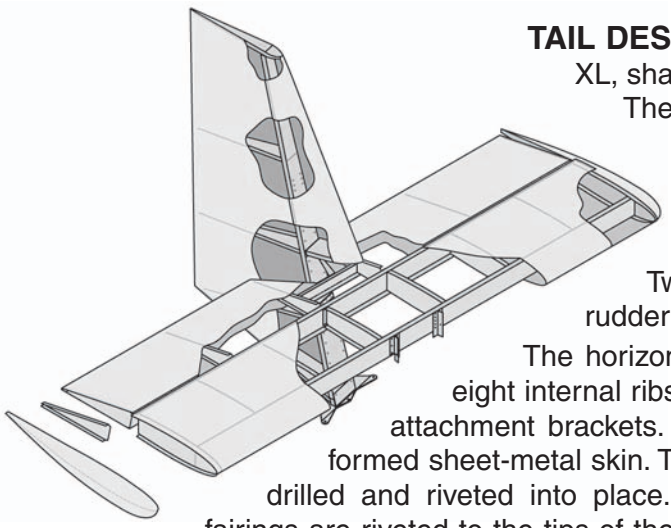
DESIGN FEATURES



TAIL DESIGN: All ZODIAC models, including the new ZODIAC XL, share the same tail (empennage) sections.

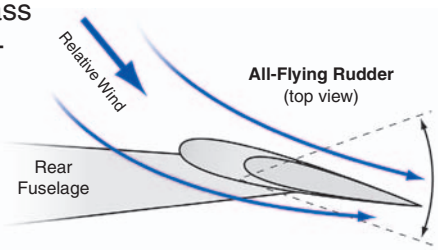
The ZODIAC design features a full flying (all-moving) vertical tail (rudder) section for maximum cross-wind capability. The all-flying rudder provides responsive rudder control, while also minimizing weight and complexity (there's only one vertical tail section). Two rudder bearings bolt to the rear fuselage to fix the rudder to the fuselage.

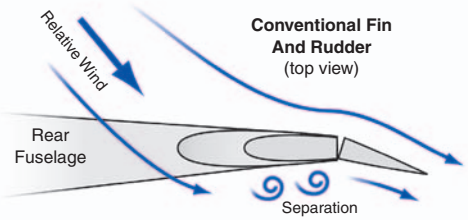
The horizontal stabilizer tail section is built up of two spars and eight internal ribs, with reinforcement doublers on the spar for the spar attachment brackets. The internal assembly is then covered with the pre-formed sheet-metal skin. The skin is wrapped around the internal assembly, and drilled and riveted into place. Rounded fiberglass fairings are riveted to the tips of the elevator. The elevator is bolted to the top of the rear fuselage.

The elevator is constructed of a single pre-formed skin with reinforcing internal ribs. It is attached to the stabilizer with a conventional piano-hinge. The elevator is equipped with an electric trim tab, delivered as standard equipment in the kit.

Many builders start construction of the aircraft with the tail sections. These low-cost sections are the smallest components of the aircraft and can easily be built in a small workshop.

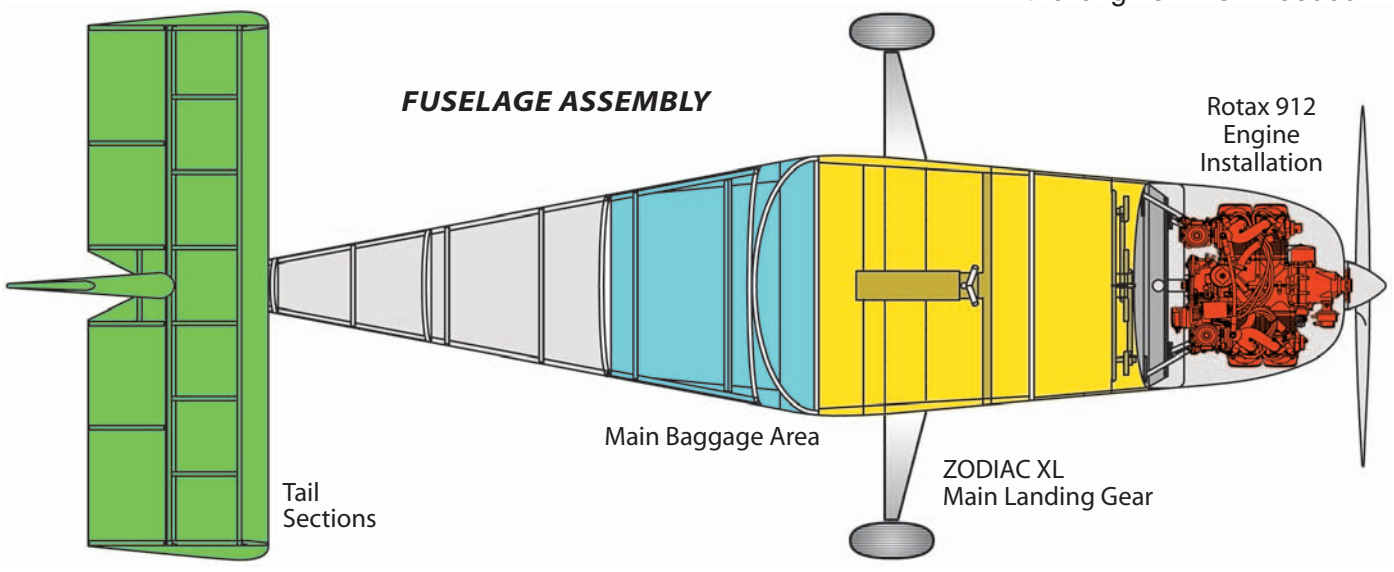
The rudder tail section is available as an introductory Starter Kit to allow builders to gain hands-on building experience before committing to the full kit.





FUSELAGE DESIGN: The fuselage is designed for maximum cabin size and for ease of construction. The fuselage is constructed in two sections: The rear half, and the forward cabin / firewall section. The cabin is fitted with a round bubble canopy that offers exceptional 360-degree visibility. Once the fuselage has been built, the tail sections, landing gear, control system and engine / instruments are installed.

The steel firewall makes up the front of the fuselage. The standard tricycle nose gear is installed forward of the firewall assembly. The large firewall has been developed to accommodate different engine types. Since the engine installation is one of the last components in the process, most builders only purchase the engine when needed.



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The new ZODIAC XL

The new ZODIAC XL is the latest model of the popular ZODIAC CH 601 series kit aircraft, designed and engineered by Chris Heintz. Popular with amateur kit builders since 1984, the ZODIAC series kit planes have developed an excellent reputation worldwide for their ease and simplicity of construction, affordable costs, and great flying qualities.

The new ZODIAC XL is a completely updated version of the ZODIAC – to offer more performance and capability, new powerplant choices, and an increased gross weight. Furthermore, the new XL has been optimized specifically for the FAA's proposed Sport Plane / Pilot category. The ZODIAC XL continues the tradition of simple construction and low-build time – making it the ideal project for the first-time kit builder and/or low time pilot.

You asked for it... We listened: As the latest ZODIAC model, the ZODIAC XL offers the features and performance that sport pilots have been asking for.

SUMMARY OF NEW FEATURES

- The ZODIAC XL has been developed for more power (100 - 125 hp) to take advantage of new aircraft engines on the market and to increase performance, while still being a very efficient and economical two-seat aircraft.
- NEW WING: The ZODIAC XL features a completely new wing design with flaps for increased performance. New dual welded-aluminum wing tanks are now standard features.
- MORE LEGROOM: The fuselage has been stretched by 6 inches to increase pilot and passenger comfort on long cross-country flights. The rear baggage area has also been expanded for additional baggage space.
- New double-cantilever spring landing gear and forward-hinging bubble canopy.
- The new kit makes the ZODIAC XL the easiest and quickest ZODIAC to build... with new standard kit features... new CAD drawings... and more. Build it from the complete kit or component "buy-as-you-build" kits, or scratch-build the aircraft from the drawings.

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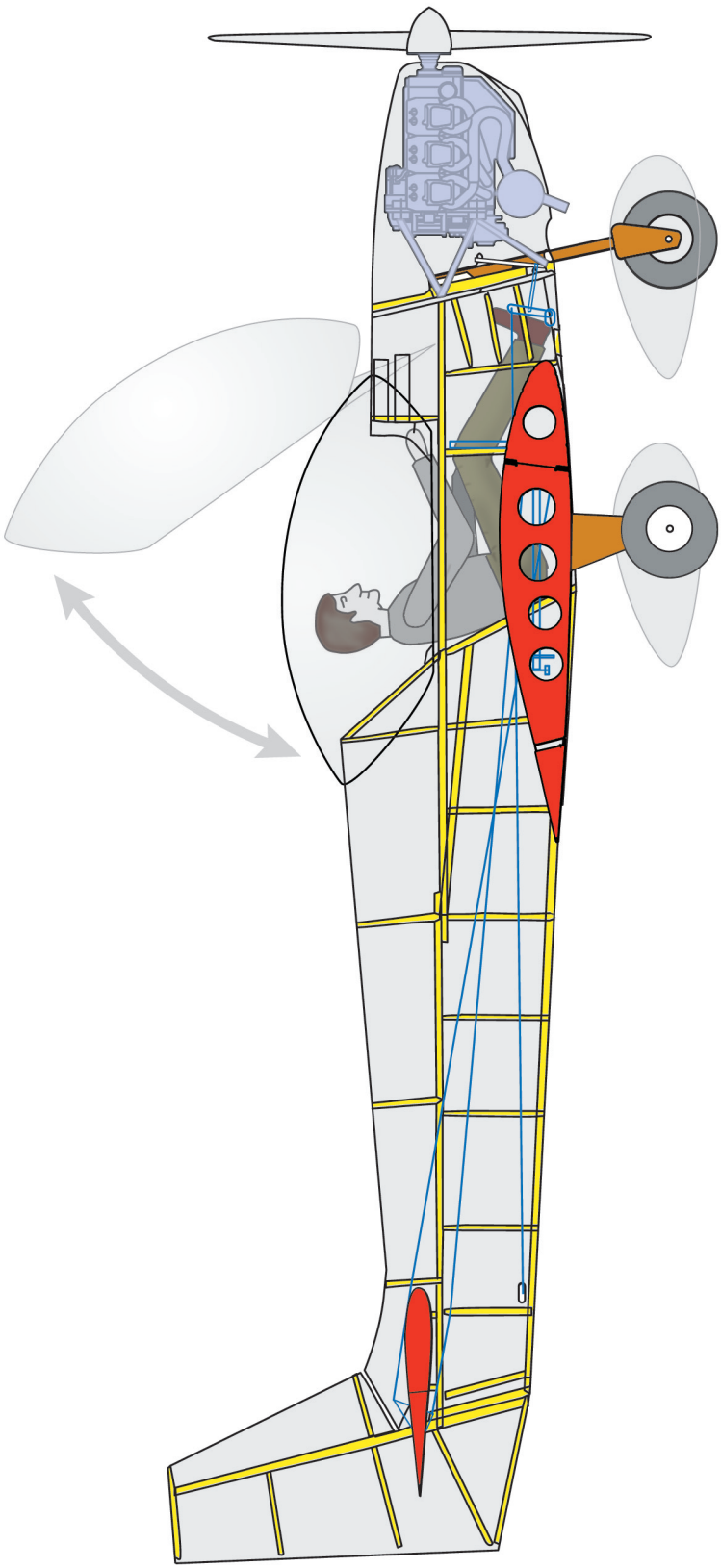
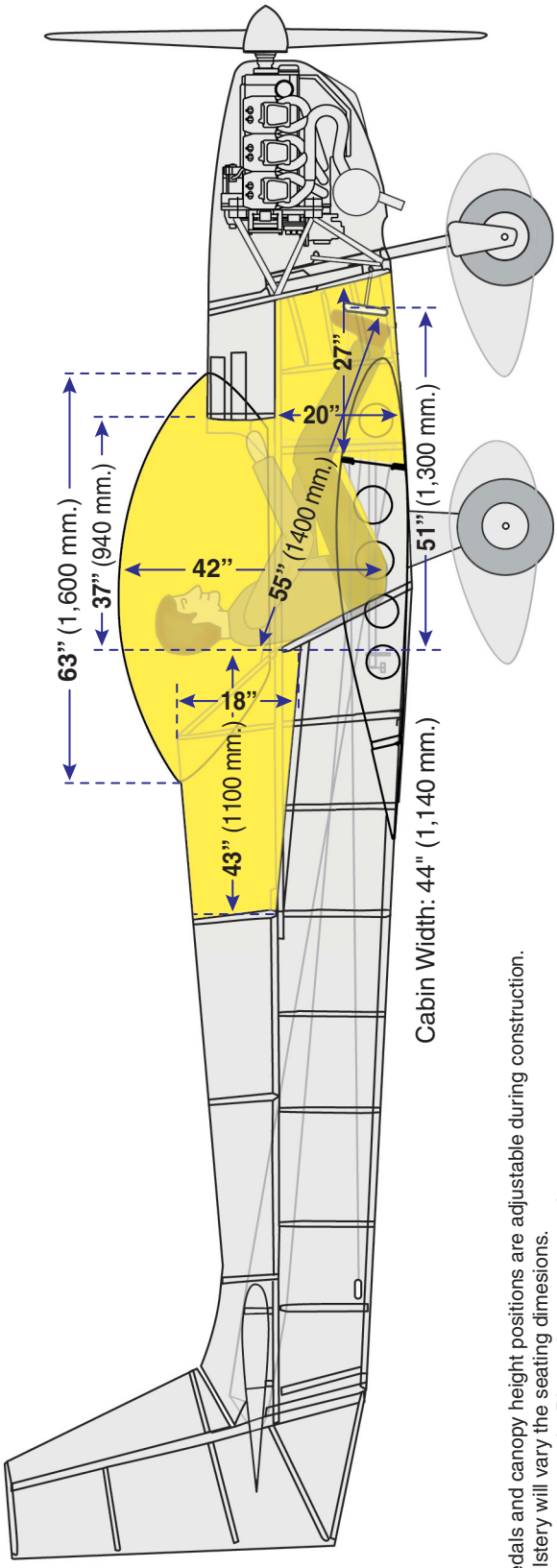
ZODIAC XL





Rudder pedals and canopy height positions are adjustable during construction.
Seat upholstery will vary the seating dimesions.
Drawing not to exact scale. Dimensions are approximate.

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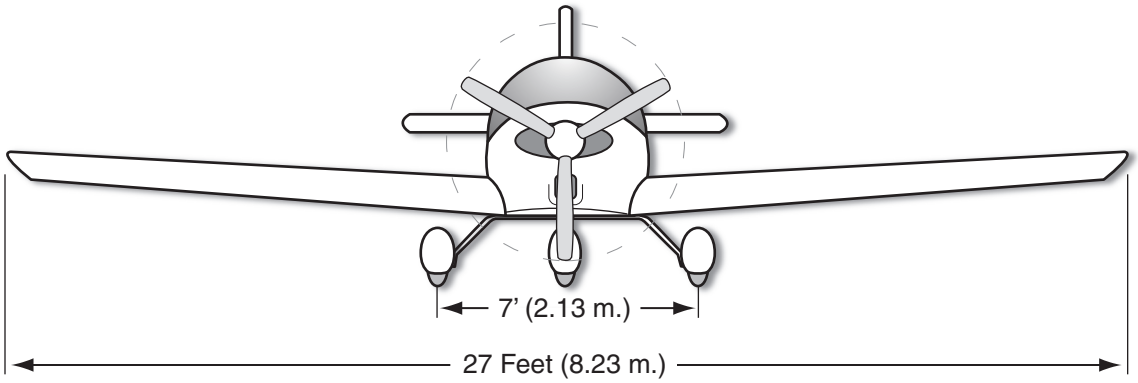

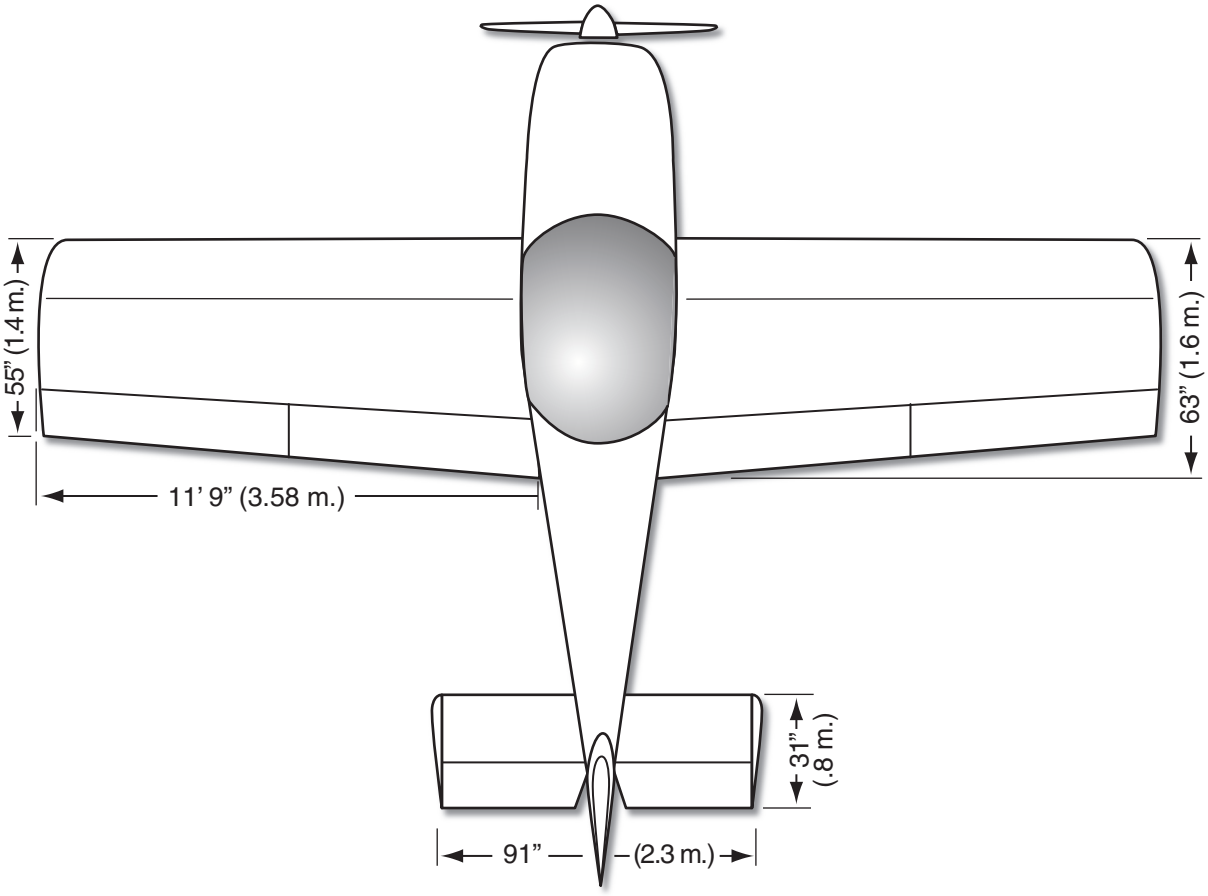

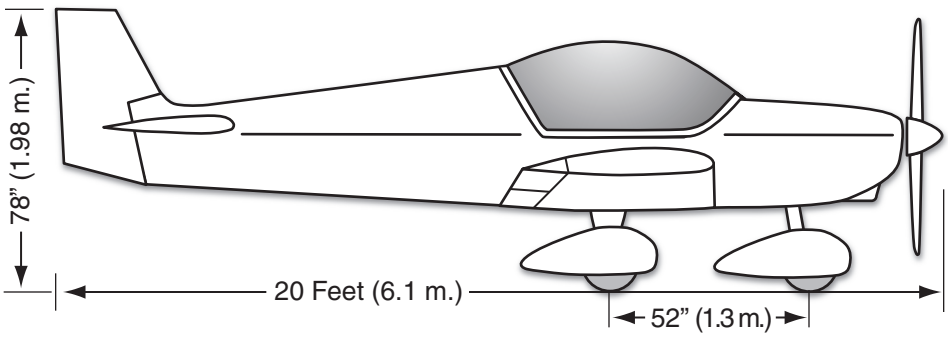

Drawing is not to exact scale. Dimensions are approximate, based on prototype. All figures subject to change and revision without notice.

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SPECIFICATIONS

	LYCOMING O-235		ROTAX 912S	
LENGTH	20 Ft. 0 In.	6.1 m.	20 Ft. 0 In.	6.1 m.
HEIGHT (rudder tip)	6 Ft. 6 In.	1.98 m.	6 Ft. 6 In.	1.98 m.
WING SPAN	27 Ft. 0 In.	8.23 m.	27 Ft. 0 In.	8.23 m.
WING AREA	132 Sq. Ft.	12.3 m.sq.	132 Sq. Ft.	12.3 m.sq.
WING CHORD (root / tip)	5' 3" / 4' 7"	1.6 m. / 1.4 m.	5' 3" / 4' 7"	1.6 m. / 1.4 m.
HORIZONTAL TAIL SPAN	7 Ft. 7 In.	2.3 m.	7 Ft. 7 In.	2.3 m.
HORIZONTAL TAIL AREA	20 Sq.Ft.	2.24 m.sq.	20 Sq.Ft.	2.24 m.sq.
EMPTY WEIGHT	800 Lbs.	362 kg.	700 Lbs.	318 kg.
DESIGN GROSS WEIGHT	1,300 Lbs.	590 kg.	1,300 Lbs.	590 kg.
USEFUL LOAD	500 Lbs.	227 kg.	600 Lbs.	272 kg.
FUEL CAPACITY (Standard) – FUEL WEIGHT	24 US Gal. (2 x 12) = 144 Lbs.	92 *l.* (2 x 46) = 65 kg.	24 US Gal. = 144 Lbs.	92 *l.* = 65 kg.
FUEL CAPACITY (Extended Option) – FUEL WEIGHT	48 US Gal. (4 x 12) = 288 Lbs.	184 *l.* (4 x 46) = 130 kg.	48 US Gal. = 288 Lbs.	184 *l.* = 130 kg.
WING LOADING	9.8 Lbs./Sq.Ft.	48 kg./m.sq.	9.8 Lbs./Sq.Ft.	48 kg./m.sq.
POWER LOADING	11.2 Lbs./BHP	5.1 kg./HP	13 Lbs./BHP	5.9 kg./HP
DESIGN LOAD FACTOR (Ultimate)	+6 / –6 G	+6 / –6 G	+6 / –6 G	+6 / –6 G
CABIN WIDTH (Shoulders)	44 In.	112 cm.	44 In.	112 cm.
NEVER EXCEED SPEED (V_{NE})	180 MPH	290 km/h	180 MPH	290 km/h

PERFORMANCE

Peformance at Gross Weight	LYCOMING O-235		ROTAX 912S	
TOP SPEED	148 MPH	238 km/h	142 MPH	228 km/h
CRUISE SPEED (75%)	138 MPH	222 km/h	134 MPH	216 km/h
STALL SPEED (Flaps Down)	44 MPH	70 km/h	44 MPH	70 km/h
RATE OF CLIMB	930 fpm	4.8 m/s	900 fpm	4.6 m/s
TAKE OFF ROLL	500 Ft.	152 Ft.	550 Ft.	168 Ft.
LANDING ROLL	500 Ft.	152 Ft.	500 Ft.	152 Ft.
SERVICE CEILING	12000+ Ft.	3660+ m.	12000+ Ft.	3660+ m.
RANGE (Standard)	575 statute miles	925 km.	600 s.m.	960 km.
RANGE (Extended Option)	575 statute miles	925 km.	600 s.m.	960 km.
ENDURANCE (Standard)	4.2 Hours	4.2 Hours	4.9 Hours	4.9 Hours
ENDURANCE (Extended Option)	4.2 Hours	4.2 Hours	4.9 Hours	4.9 Hours
LOAD FACTOR (G)	+/– 6 g	+/– 6 g	+/– 6 g	+/– 6 g

Performance and specification figures based on prototype flight test results, with engine indicated, subject to change or revision without notice. Performance figures at standard atmosphere, sea level, no wind. Range and endurance figures without fuel reserve. Suitable power range: 80 - 125 BHP. Different engines and options will affect performance and specification figures.

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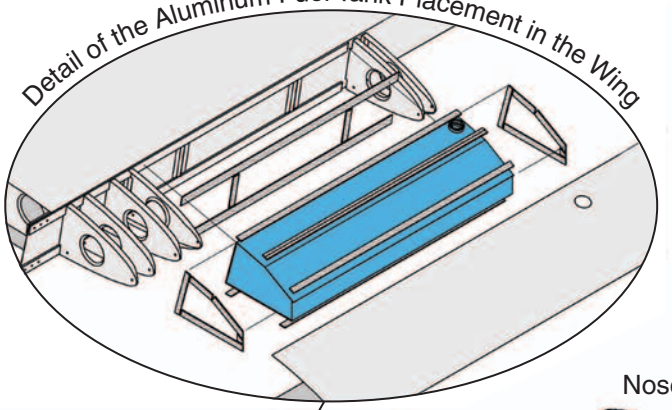
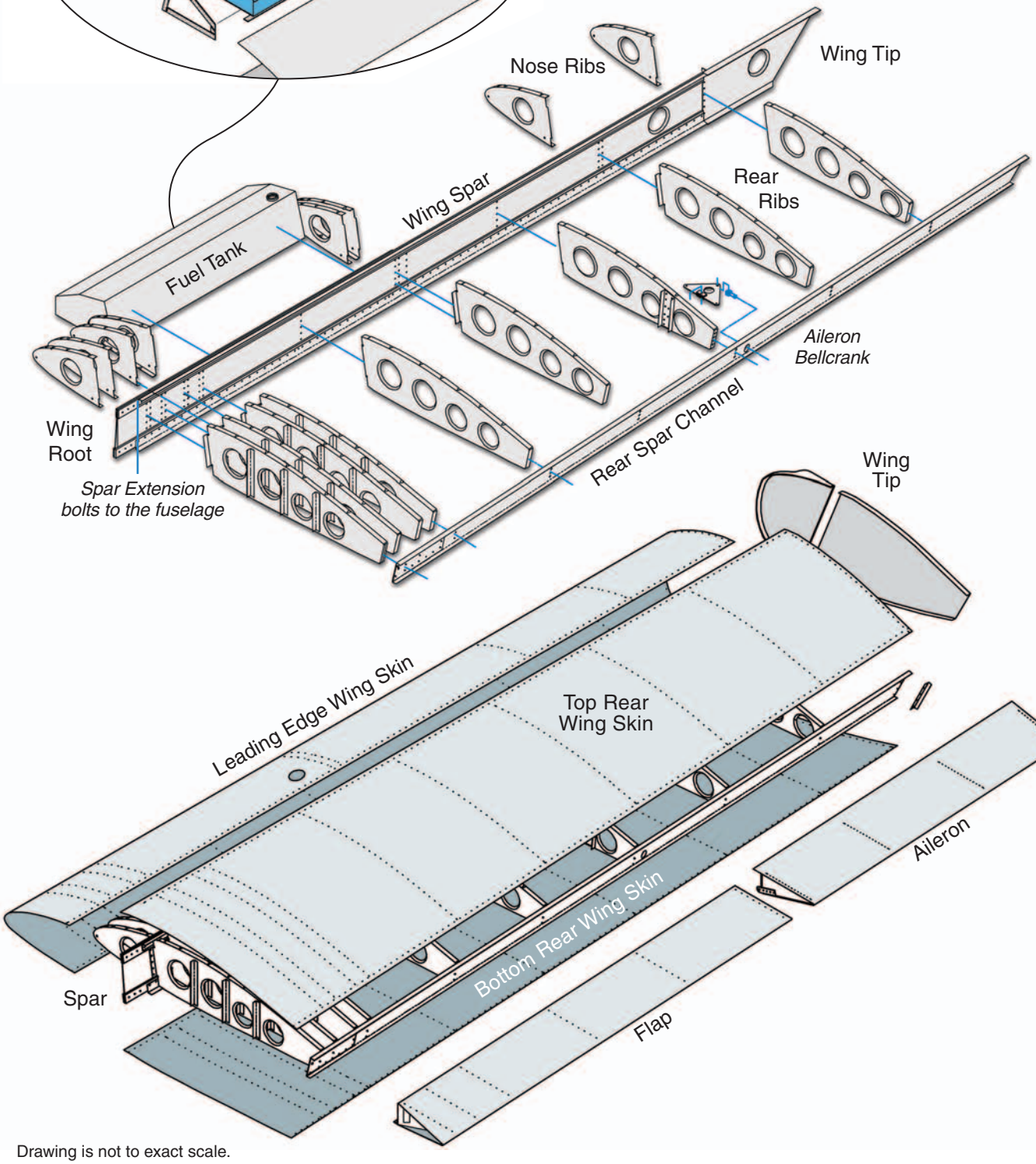
ZODIAC XL Wing Construction





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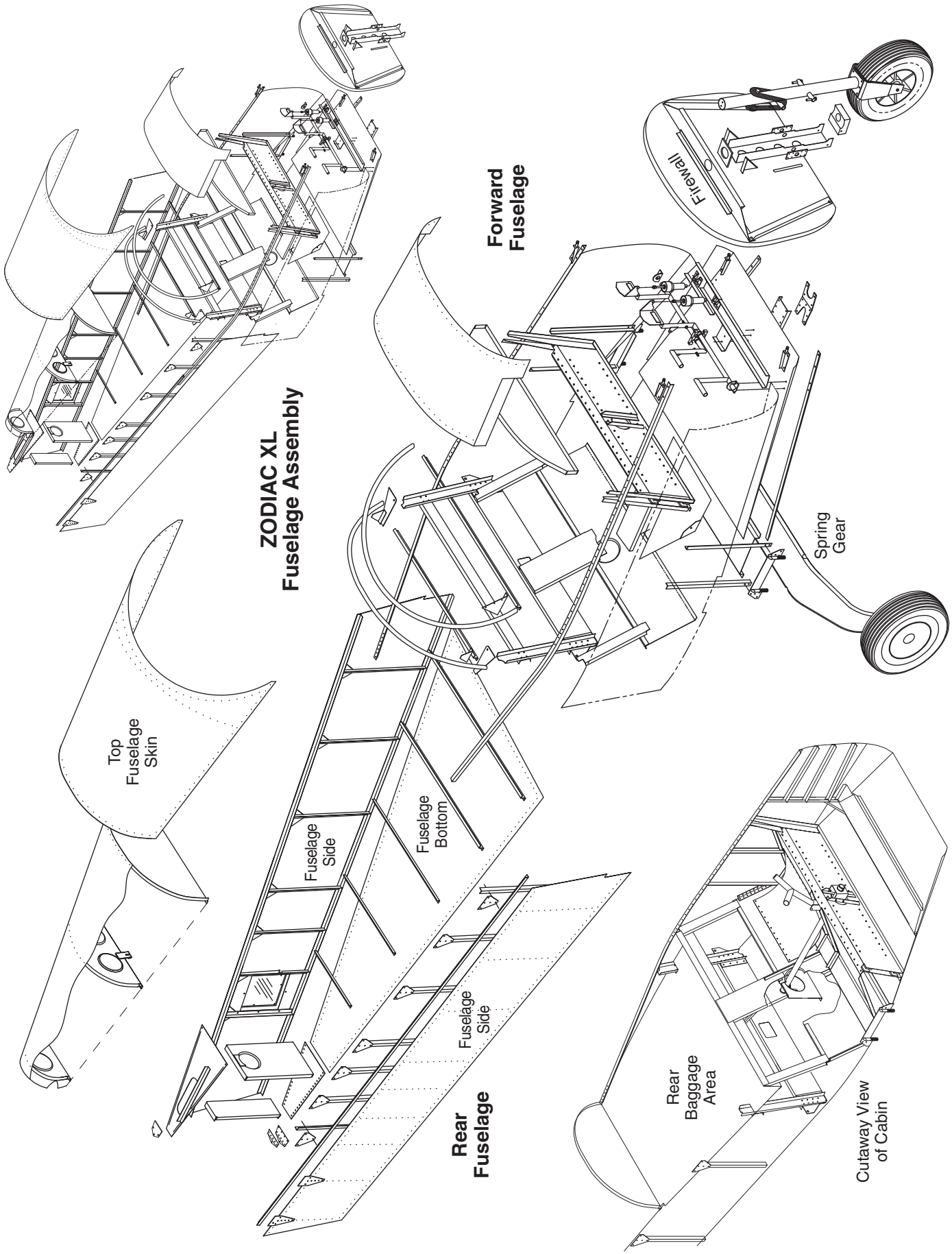

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ZODIAC CH 601 Series ZODIAC CH 601 HD

Popular since 1984, the ZODIAC CH 601 HD is the updated model of the original ZODIAC CH 600, which was designed by Chris Heintz as a low-cost primary trainer aircraft. New improvements to this model include a wider 44-inch cabin and a larger rear baggage compartment. Standard equipment in the kit includes wing baggage lockers, hydraulic disk brakes, electric trim tab, tinted canopy, and much more. Designed to meet the requirements of sport pilots, the aircraft offers sporty performance and is easy-to-fly with pilot-friendly characteristics, including a low landing (stall) speed. The aircraft offers good cross-country flying performance as well as short grass-field capability.

The 80-hp Rotax 912 is the standard recommended engine for the ZODIAC CH 601 HD, but most engines from 65 - 115 hp are suitable for custom installations (up to an installed weight of 265 lbs.).

Floats can be custom-installed to the Zodiac aircraft. Lightweight all-metal Zenair™ are easy to install, and are also available in an amphibious version with retractable wheels. The ZODIAC CH 601 HD shown above won the 1999 'Small Schneider Cup' International Seaplane Race in Lake Garda, Italy.

"I think the ZODIAC just might be the perfect first project for the erstwhile homebuilder and is even docile enough to learn to fly in. It is without doubt one of the most exceptional kit values on the market with little demands placed on either the builder or the pilot while offering a very pleasant payback in performance and handling. If you're looking for a mild mannered project that is both inexpensive and easy to build and fly; the ZODIAC is right up there at the top of our list. You couldn't pick a nicer airplane to start off with." – US AVIATOR magazine

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ZODIAC CH 601 Series **ZODIAC CH 601 UL**

The lightest of the ZODIAC series, the basic CH 601 UL model was developed specifically for the Advanced Ultralight (AULA) category in Canada and Europe (and other countries where applicable) and meets TP 10141 Design Standards. With a reduced gross weight, the ZODIAC CH 601 UL specifications are very similar to those of the CH 601 HD model, excepting a few modifications, such as a lower empty weight achieved by using lighter materials in selected areas.

Registered as an Advanced Ultralight (where applicable), the ZODIAC CH 601 UL makes an ideal basic trainer, and is available factory-finished. Alternatively, the aircraft may be registered in the 'experimental / homebuilt' category like the other ZODIAC models.

ZODIAC CH 601 UL – Tailwheel version

A fleet of six ZODIAC CH 601s used for flight training in Indonesia.

"Exquisite handling, combined with a complete absence of bad characteristics make the ZODIAC delightful and safe to fly. Simple systems make the plane a good trainer and also minimize expenses. With performance equivalent or superior to the Cessna 150 series, the ZODIAC costs much less to buy and operate while providing superior flying characteristics. Really, one would be hard pressed to find something to complain about in this recreational all 'round performer."

– RECREATIONAL FLYER magazine

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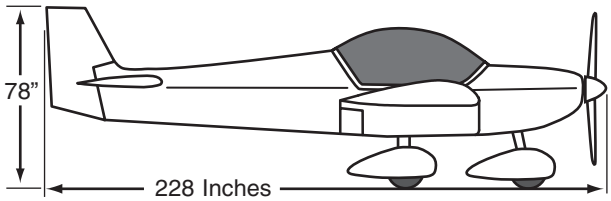
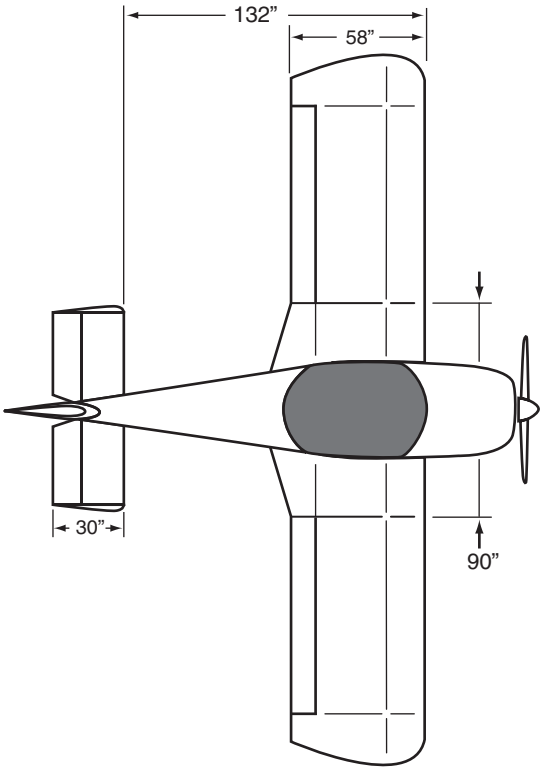
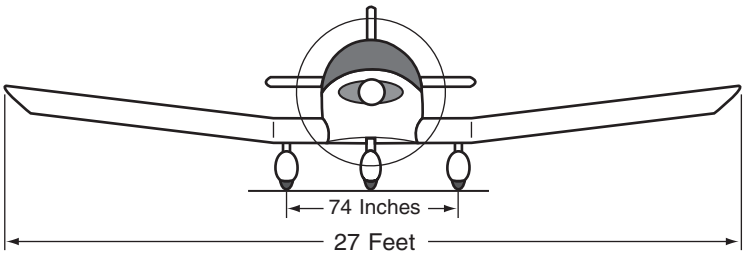
ZODIAC CH 601





ZODIAC CH 601 HD
ZODIAC CH 601 UL



SPECIFICATIONS

	ZODIAC CH 601 HD		ZODIAC CH 601 UL	
LENGTH	19 Ft. 0 In.	5.8 m.	19 Ft. 0 In.	5.8 m.
HEIGHT (rudder tip)	6 Ft. 6 In.	1.98 m.	6 Ft. 6 In.	1.98 m.
WING SPAN	27 Ft. 0 In.	8.23 m.	27 Ft. 0 In.	8.23 m.
WING AREA	130 Sq. Ft.	12 m.sq.	130 Sq. Ft.	12 m.sq.
EMPTY WEIGHT	570 Lbs.	258 kg.	550 Lbs.	250 kg.
DESIGN GROSS WEIGHT	1,200 Lbs.	544 kg.	1,058 Lbs.	480 kg.
USEFUL LOAD	630 Lbs.	285 kg.	508 Lbs.	230 kg.
WING LOADING	9.2 Lbs./Sq.Ft.	45 kg./m.sq.	8 Lbs./Sq.Ft.	40 kg./m.sq.
POWER LOADING	15 Lbs./BHP	6.8 kg./HP	13.2 Lbs./BHP	6 kg./HP
DESIGN LOAD FACTOR (Ultimate)	+6 / –6 G	+6 / –6 G	+6 / –6 G	+6 / –6 G
FUEL CAPACITY (Standard)	16 US Gallons	60.5 liters	16 US Gallons	60.5 liters

PERFORMANCE: Typical Load: 1,050 Lbs (476 kg.)

Equipped with the 80-HP ROTAX 912	ZODIAC CH 601 HD		ZODIAC CH 601 UL	
TOP SPEED	135 MPH	217 km/h	135 MPH	217 km/h
CRUISE SPEED (75%)	120 MPH	193 km/h	120 MPH	193 km/h
STALL SPEED	44 MPH	70 km/h	44 MPH	70 km/h
RATE OF CLIMB	1,200 fpm	6.1 m/s	1,200 fpm	6.1 m/s
TAKE OFF ROLL	430 Ft.	131 Ft.	430 Ft.	131 Ft.
LANDING ROLL	550 Ft.	168 Ft.	550 Ft.	168 Ft.
SERVICE CEILING	12,000+ Ft.	3,660+ m.	12,000+ Ft.	3,660+ m.
RANGE (Standard, no reserve)	480 miles	772 km.	480 miles	772 km.
ENDURANCE (Standard, no reserve)	4.0 Hours	4.0 Hours	4.0 Hours	4.0 Hours
V_{NE}	150 MPH	240 km/h	150 MPH	240 km/h

Specification and performance figures based on prototype (equipped with the Rotax 912) flight test results; subject to change or revision without notice. Standard atmosphere, sea level, no wind. Suitable power range: 65 - 115 BHP. Different engines and options will affect performance and specification figures. Schematic not to scale.

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ZODIAC Kit Aircraft

ZODIAC CH 601 HDS

Tapered and shortened “speed wings” increase the cruise speed of the ‘Super’ ZODIAC CH 601 HDS model. The wing span is reduced to 23 feet, and the wing area is lowered to 98 sq. feet, with the airfoil tapering to a 34-inch chord at the wing tips. The speed wings feature full-length ailerons for very responsive controls. The ZODIAC CH 601 HDS has the same fuselage and tail sections as the CH 601 HD model; the only difference being the outboard wing panels. In fact, the outboard wings of the SUPER ZODIAC and the ZODIAC CH 601 HD can actually be interchanged.

The sleek lines of the ZODIAC give the image of a high performance aircraft, while providing the durability and simplicity that only an all-metal aircraft can offer. This ZODIAC is one kit plane you won’t easily outgrow***!***

The Rotax 912 / 912S is the standard recommended engine for the ZODIAC CH 601 HDS. Many other engines from 65 - 115 hp are suitable for custom installations (up to an installed weight of 265 lbs.).

“Bridges the gap between high performance and affordability. With the Rotax 912, the ZODIAC becomes a truly great commuting aircraft. ...Cruise at 140 MPH at 80 percent power while still only burning four gallons per hour. Not bad for a plane with a fixed landing gear! ...The SUPER ZODIAC will carry two passengers and their gear as far as anyone is likely to want to travel. ...SUPER ZODIAC buyers are getting an extremely well-designed kit made up of excellent materials. They are getting a kit they can realistically build by themselves in a reasonable amount of time and without a lot of specialized tools... Strong, durable, cheap to maintain, and fun to fly.” – SPORT PILOT Magazine

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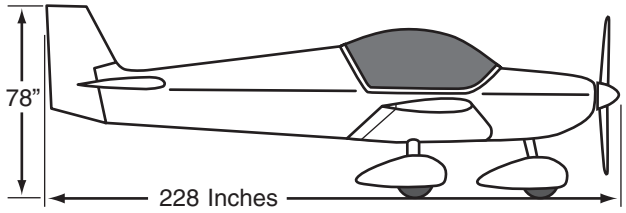
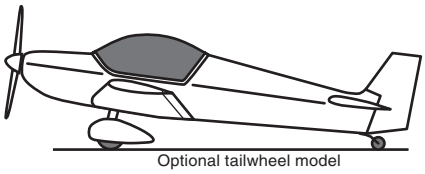
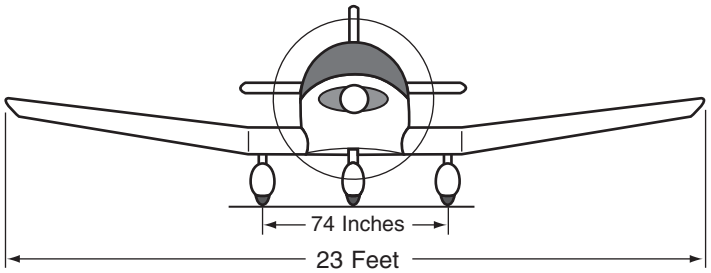
ZODIAC CH 601 Series

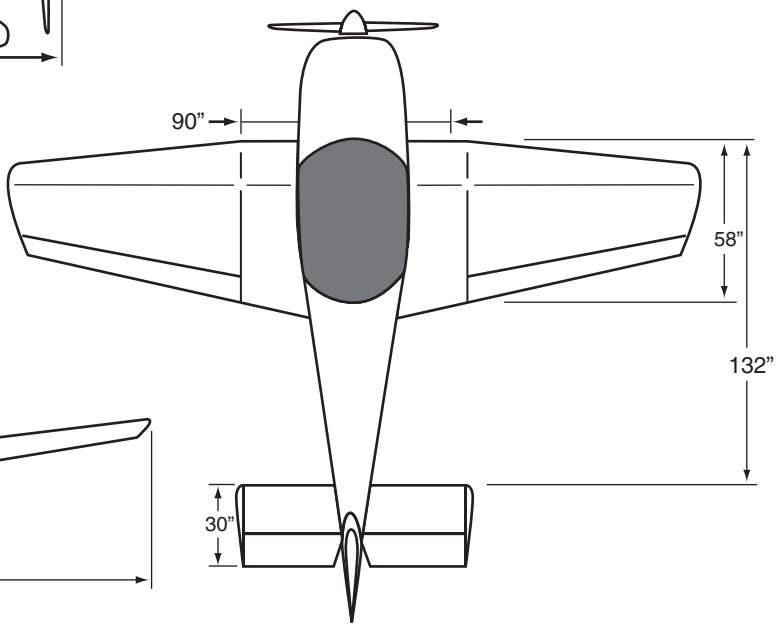
ZODIAC CH 601 HDS







Super ZODIAC
CH 601 HDS



SPECIFICATIONS

Equipped with the 80-HP ROTAX 912

LENGTH	19 Ft. 0 In.	5.8 m.
HEIGHT (rudder tip)	6 Ft. 6 In.	1.98 m.
WING SPAN	23 Ft. 0 In.	7.0 m.
WING AREA	98 Sq. Ft.	9.1 m.sq.
EMPTY WEIGHT	570 Lbs.	258 kg.
DESIGN GROSS WEIGHT	1,200 Lbs.	544 kg.
USEFUL LOAD	630 Lbs.	285 kg.
WING LOADING	12.2 Lbs./Sq.Ft.	59 kg./m.sq.
POWER LOADING	15 Lbs./BHP	6.8 kg./HP
DESIGN LOAD FACTOR (Ultimate)	+6 / –6 G	+6 / –6 G
FUEL CAPACITY (Standard)	16 US Gallons	60.5 liters

PERFORMANCE

Equipped with the 80-HP ROTAX 912	Typical Load: 1,050 Lbs (476 kg.)	
TOP SPEED	148 MPH	238 km/h
CRUISE SPEED (75%)	135 MPH	217 km/h
STALL SPEED	54 MPH	87 km/h
RATE OF CLIMB	1,100 fpm	5.6 m/s
TAKE OFF ROLL	550 Ft.	168 Ft.
LANDING ROLL	550 Ft.	168 Ft.
SERVICE CEILING	12,000+ Ft.	3,660+ m.
RANGE (Standard, no reserve)	540 statute miles	870 km.
ENDURANCE (Standard, no reserve)	4.0 Hours	4.0 Hours
V_{NE}	160 MPH	257 km/h

Specification and performance figures based on prototype flight test results; subject to change or revision without notice. Standard atmosphere, sea level, no wind. Suitable power range: 65 - 115 BHP. Different engines and options will affect performance and specification figures. Schematic not to scale.

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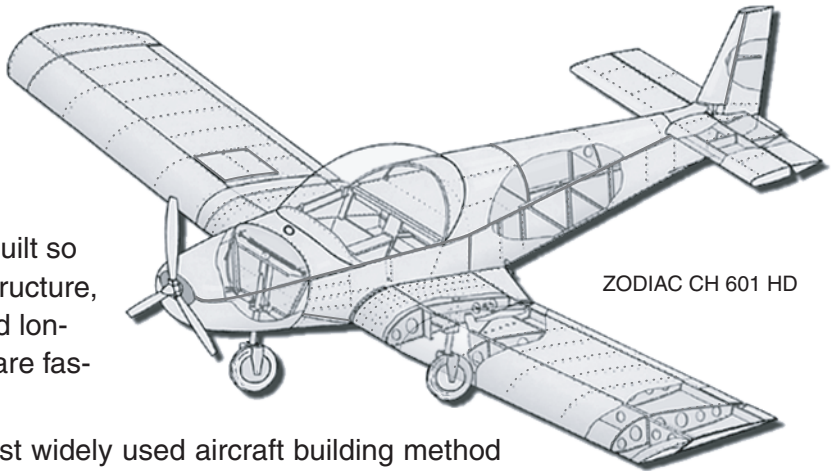
ZODIAC CH 601 Series **CONSTRUCTION**

The ZODIAC kit aircraft series is built of semi-monocoque stressed-skin all-metal construction, just like modern factory-built planes, but adapted specifically for the kit builder.



ZODIAC CH 601 HD

The airframe sections are designed and built so that the outer surface skin is part of the structure, with internal supports (ribs, bulkheads and longerons) to distribute the loads. The parts are fastened together permanently with rivets.

Sheet-metal construction is by far the most widely used aircraft building method around the world – used extensively from jetliners to light single engine airplanes and kits over the past five decades – and has proven itself as an ideal aircraft building material. Modern alloys are lightweight, strong, corrosion-resistant and durable, while being easy to work with.

Sturdy and low-fatigue aluminum alloys make the ZODIAC's airframe very rugged and corrosion resistant, making it well suited for outdoor storage. The modern 6061-T6 aluminum-alloy used in the construction of the ZODIAC CH 601 series kit aircraft is durable and corrosion resistant, ideal for even the harshest environment, and easy to repair and maintain on the field. The owner of a ZODIAC kit aircraft is assured of a long airframe life, with minimum required maintenance, as metal is not adversely affected by ultra-violet (UV) light and temperature changes like fabrics or composites (it's thus feasible to keep the aircraft tied-down outdoors - saving the owner ongoing hanger costs).

COMPOSITION OF 6061-T6 ALUMINUM ALLOY
(Percent of Alloying Elements in Addition to Pure Aluminum)

ALLOY	SILICON	COPPER	MAGNESIUM	CHROMIUM
6061-T6	0.60	0.25	1.00	0.25

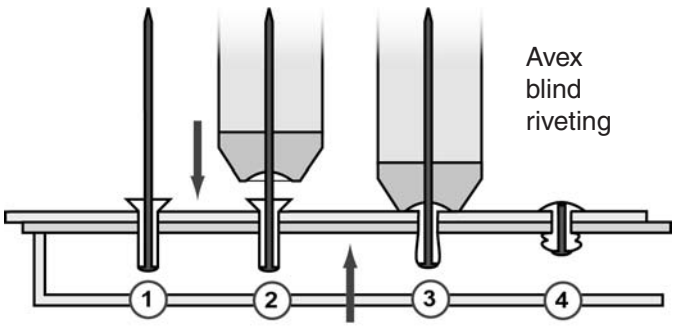
Unlike many other all-metal kit aircraft designs, the ZODIAC kit aircraft series is developed specifically for the novice aircraft builder, and is simple and quick to build, requiring just basic skills, tools or jigs to assemble in a home workshop, such as a single car garage or basement workshop. Designer Chris Heintz has extensive all-metal aircraft engineering experience, and has been designing all-metal kit aircraft for novice builders since the early 1970s. From conception, Heintz' designs are developed for amateur builders and pilots: This is accomplished by using readily available materials and simple systems, and by designing an aircraft that will produce the desired flight performance and characteristics while also being easy to build.

> "[***Chris Heintz*** *designs* ***have earned an excellent reputation among pilots, builders, and aviation authorities for their durable all-metal construction, normal flight characteristics, reliability, and low maintenance.***"
>
> – EAA Sport Aviation magazine, December 1999

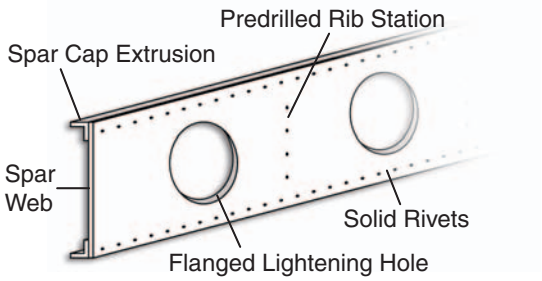
For the amateur builder, sheet-metal construction offers distinct advantages: The modular construction minimizes space requirements; the requirement for assembly jigs or fixtures is minimized, and the required assembly skills and tools are minimized with a Zenith Aircraft kit. Both external and internal structures can easily be inspected during and upon completion of an assembly. Once finished, an all-metal aircraft requires minimal maintenance, and is easy to inspect. Since they're very durable and easy to inspect and maintain, an all-metal aircraft will typically maintain a good resale value for many years after they have been put in service.

ZODIAC CH 601 Series **CONSTRUCTION**

Developed for the amateur builder, the ZODIAC series kit aircraft draws upon Zenith Aircraft's extensive kit manufacturing experience. The simple stressed-skin monocoque construction primarily uses single curvature sheet-metal skins riveted to internal structural members.

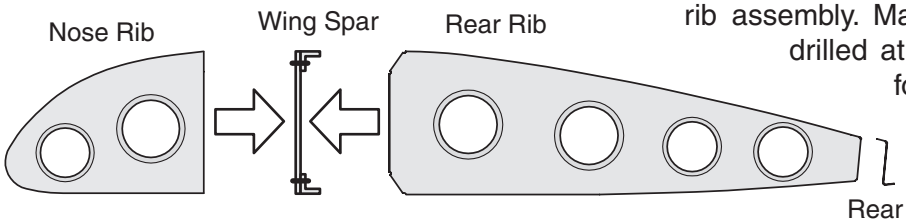


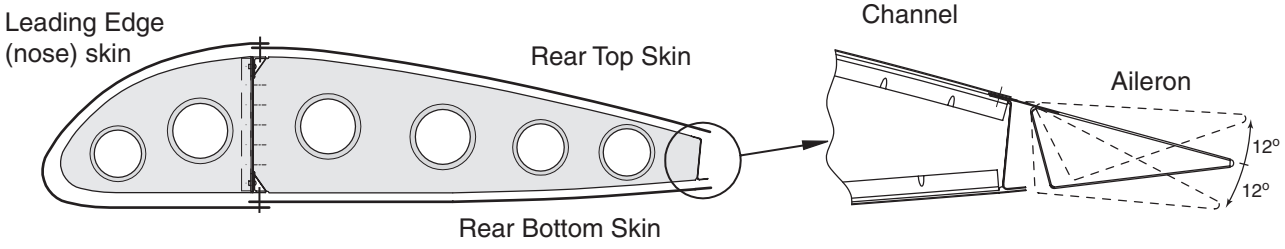
The sheet-metal skins, main wing spar, wing ribs, longerons and stiffeners are fastened together with Zenith's proven riveting method using Textron's Avex blind rivets, which are as easy to set as 'pop' rivets, requiring only a simple hand rivet puller (or a pneumatic riveter). The corrosion-resistent Avex rivets provide a permanent structural bond and tight low-profile dome finish, formed by the custom riveter head. The rivet stem becomes locked in after being set to provide a water-tight seal. The 1/8-inch and 5/32-inch Avex rivets used are very durable fasteners, and may be used over a wide grip area. The blind rivets are much easier and quicker to set than bucked rivets, and don't require the skills and tools needed to set solid bucked rivets. The builder does not have to counter-sunk rivet holes or put up with noisy pneumatic rivet hammering.



The sturdy main wing spar is a built up I-beam, with cap extrusions buck-riveted to the spar web. In the kit, the spar comes completely pre-assembled and finished (drilled and riveted, with flanged lightening holes). The rib stations on the spar are even pre-drilled - ready for wing assembly.

The aluminum wing ribs are supplied ready-to-assemble (preformed and finished at the factory with flanged lightening holes). Once the ribs have been riveted to the spar and the wing skeleton (internal structure) is completed, the outer skins are positioned to the assembly. The surface sheet-metal skins are blind riveted to the spar and rib assembly. Many flat surface skins are predrilled at the factory, and supplied preformed and cut, ready for assembly. Each section is built independently, minimizing space requirement.





The ZODIAC CH 601 Series kit aircraft features a unique "hingeless" aileron system. The aileron is made up of a simple preformed skin, with internal ribs. The top aileron skin extends to the wing trailing edge and flexes to provide aileron deflection. While unconventional, this aileron design provides a very effective gap seal, and has been thoroughly tested and proven. A piano-hinge can be substituted for the hingeless aileron.

"***Chris** [**Heintz**'] background as an aeronautical engineer ensures that his aircraft are solid and designed for everyday use with wear and tear kept to a minimum. Check out some of his kits with lots of flying time on them; compared to its competitors, the Zenith holds up very well. Chris is responsible for a lot of great ideas that are so logical you'll wonder why others haven't incorporated them before.*" – Aviation Quarterly

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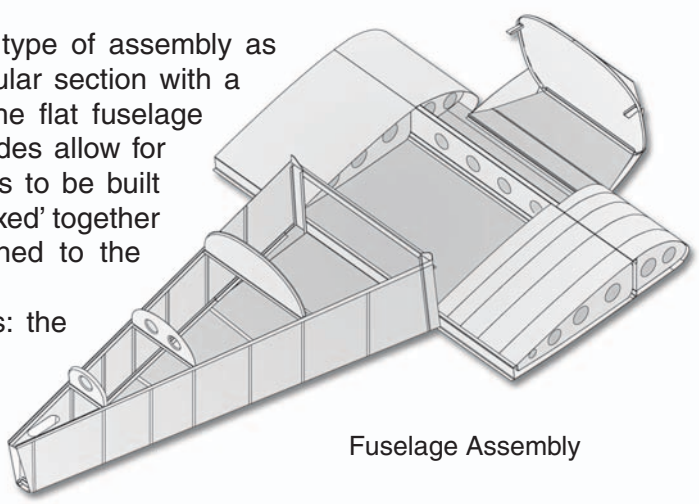
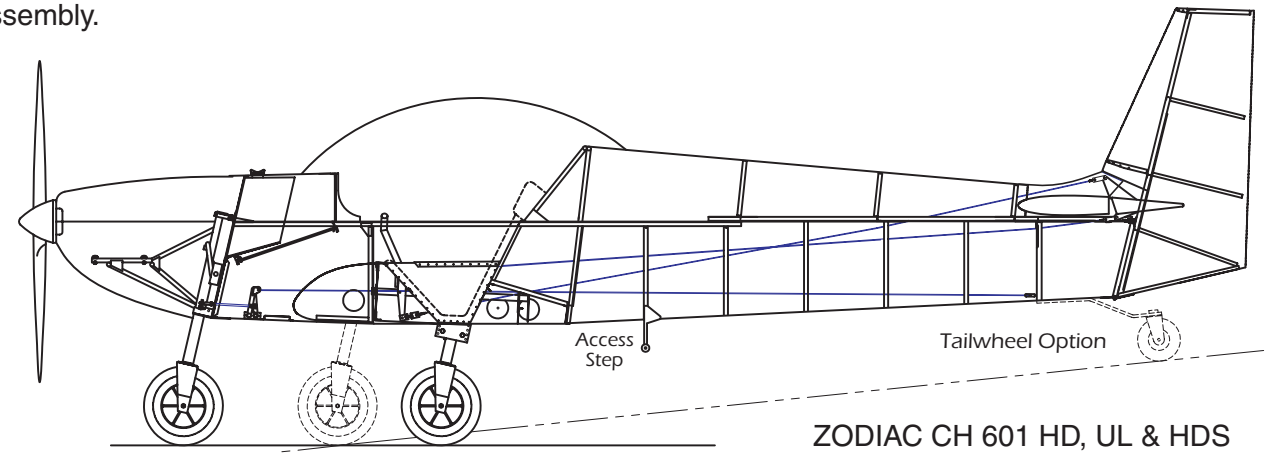
The semi-monocoque fuselage requires the same type of assembly as the wings. The rear fuselage has a basic rectangular section with a rounded top. Top bulkheads aesthetically round the flat fuselage bottom and sides. The flat fuselage bottom and sides allow for very easy assembly, allowing each of the 'flat' sides to be built individually on a flat workbench, and then simply 'boxed' together to form the fuselage. The bulkheads are positioned to the fuselage sides.



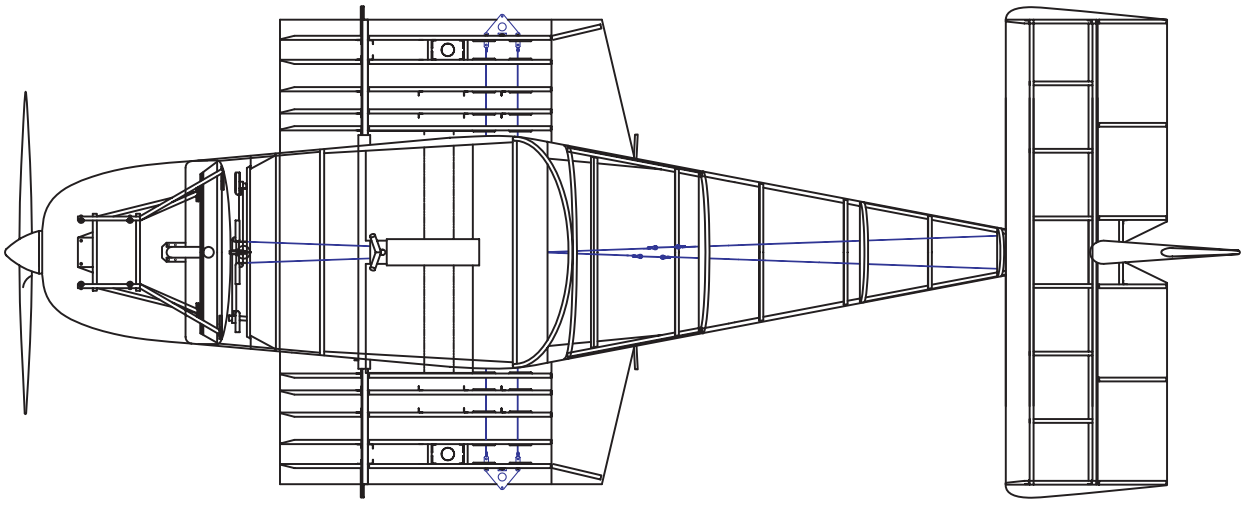
Fuselage Assembly

The fuselage itself is built in two modular sections: the rear half and the forward fuselage (cabin to firewall). All ZODIAC CH 601 models, with the exception of the new ZODIAC XL, share the same fuselage.

Construction begins with the assembly of the rear bottom skin, angle longerons, panel stiffeners and reinforcements. The flat rear fuselage sides are then each built up separately on the workbench, and then joined to the bottom. The round fuselage top bulkheads are positioned to the rear fuselage assembly.



ZODIAC CH 601 HD, UL & HDS



The center wing section of the ZODIAC CH 601 HD / HDS models is actually part of the fuselage assembly, and is riveted to the forward-fuselage assembly. The main landing gear is assembled to the center wing section. The wings are designed for quick and easy attachment and removal with four bolts in the main spar, one bolt in the rear spar channel and one bolt for the aileron.

The airframe itself is designed to allow maximum customization by the actual builder. The ZODIAC CH 601 series aircraft is not designed 'around' a specific engine, allowing for custom powerplant installations by builders.

Measuring & Marking Tools

Hand Drill

'Cleco' temporary fasteners

Hand riveter for Avex rivets

Sheet-metal snips for trimming

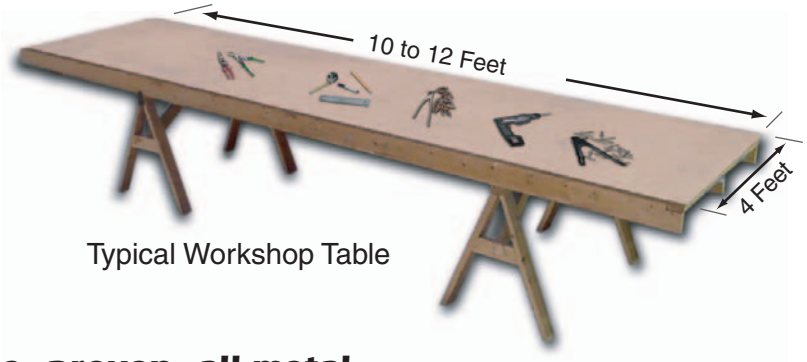
The ZODIAC CH 601 series kit aircraft has been developed specifically for the amateur builder: The philosophy behind the airframe kit is to supply all the parts and components in the kit so that the builder need only basic skills and tools to assemble and build the aircraft.

TOOLS: Simple hand tools are all that are needed for building – this means that there is minimal cost investment in tooling (most builders already have most basic required shop tools) and the basic sheet-metal tools are simple and easy to use.

WORKBENCH: Nearly all the assemblies can be built on a basic workbench table. The wings, tail and fuselage sections are all assembled individually on the workbench. A flat and level workbench is the main assembly 'jig' required – most assemblies require no additional fixtures or jigs other than the flat workbench (saving the builder the time and cost of fabricating assembly jigs).

WORKSHOP: The modular construction of the kit means that required workshop space is minimal – most builders construct the kit in a single-car garage or basement workshop.

Building a Zenith Aircraft kit is well-suited for 'homebuilding' – there's no need for specialized ventilation, temperature or dust control (as with composite construction), and the actual building is relatively quiet (no noisy pneumatic rivet hammers).



Typical Workshop Table

"***The proven all-metal construction requires only basic tools and clecos to hold sections together. The use of Avex pull-type rivets greatly reduces the challenges associated with other forms of riveting.***" – Aviation Quarterly

"***Attention to small details ensures that the kit can easily be completed... the ribs are not only shaped, but the lightening holes are made, beveled and smoothed to a finished state. Look at other kit manufacturers for this attention to detail. The builders of some of the 700 flying planes I've had a chance to interview tell me the company time estimates are valid and the support is unsurpassed.***"
– Recreational Flyer magazine

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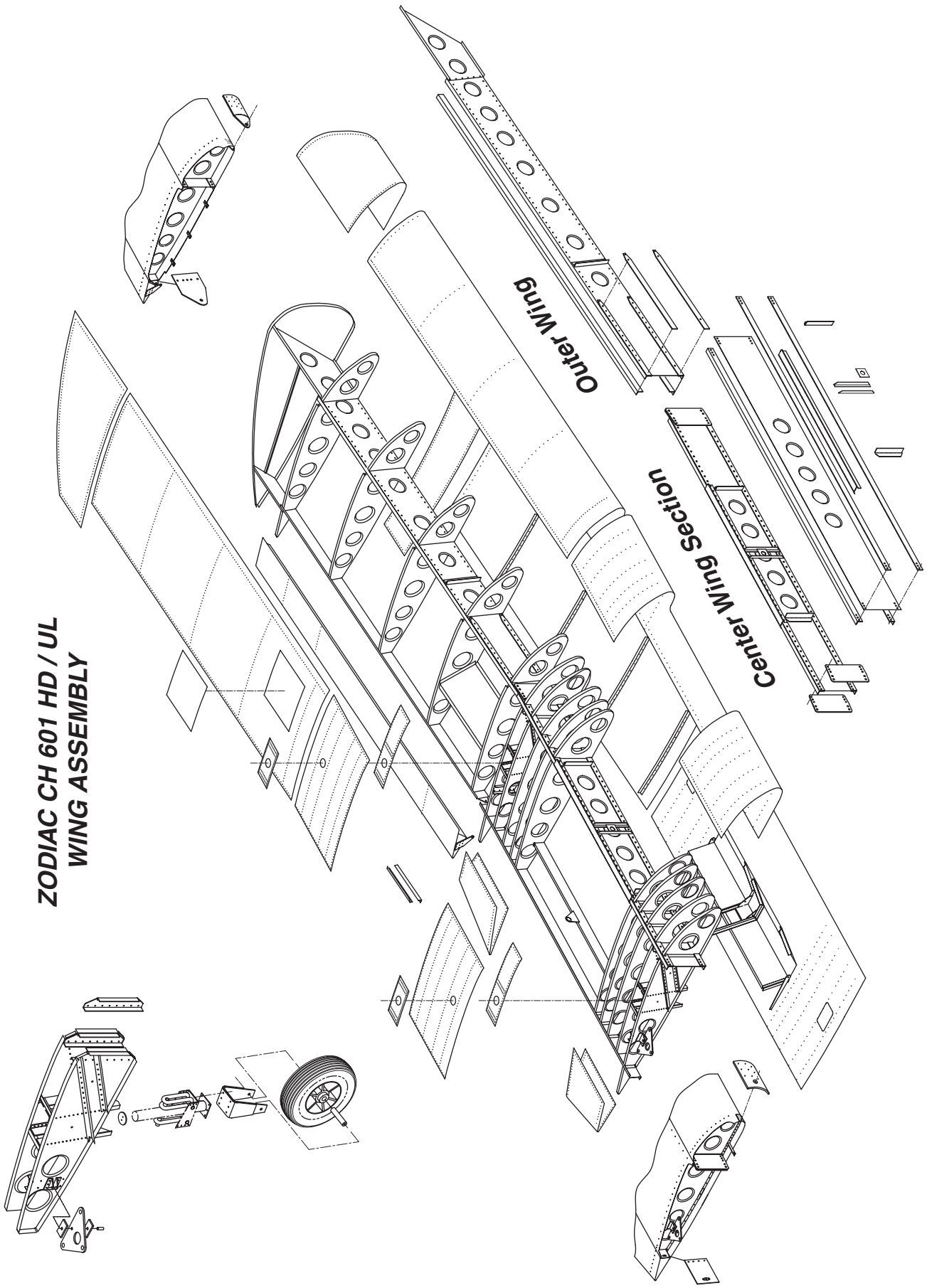
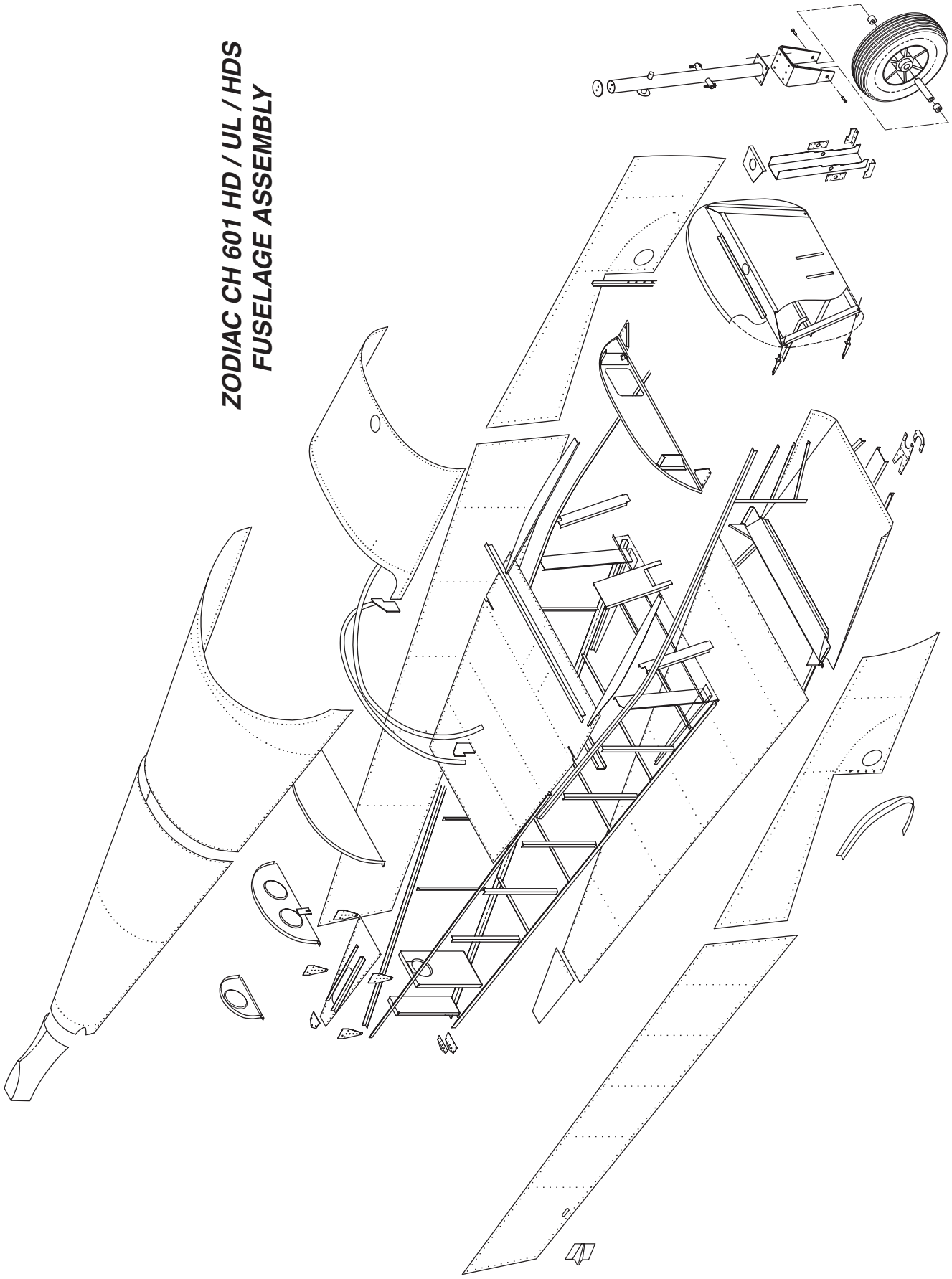
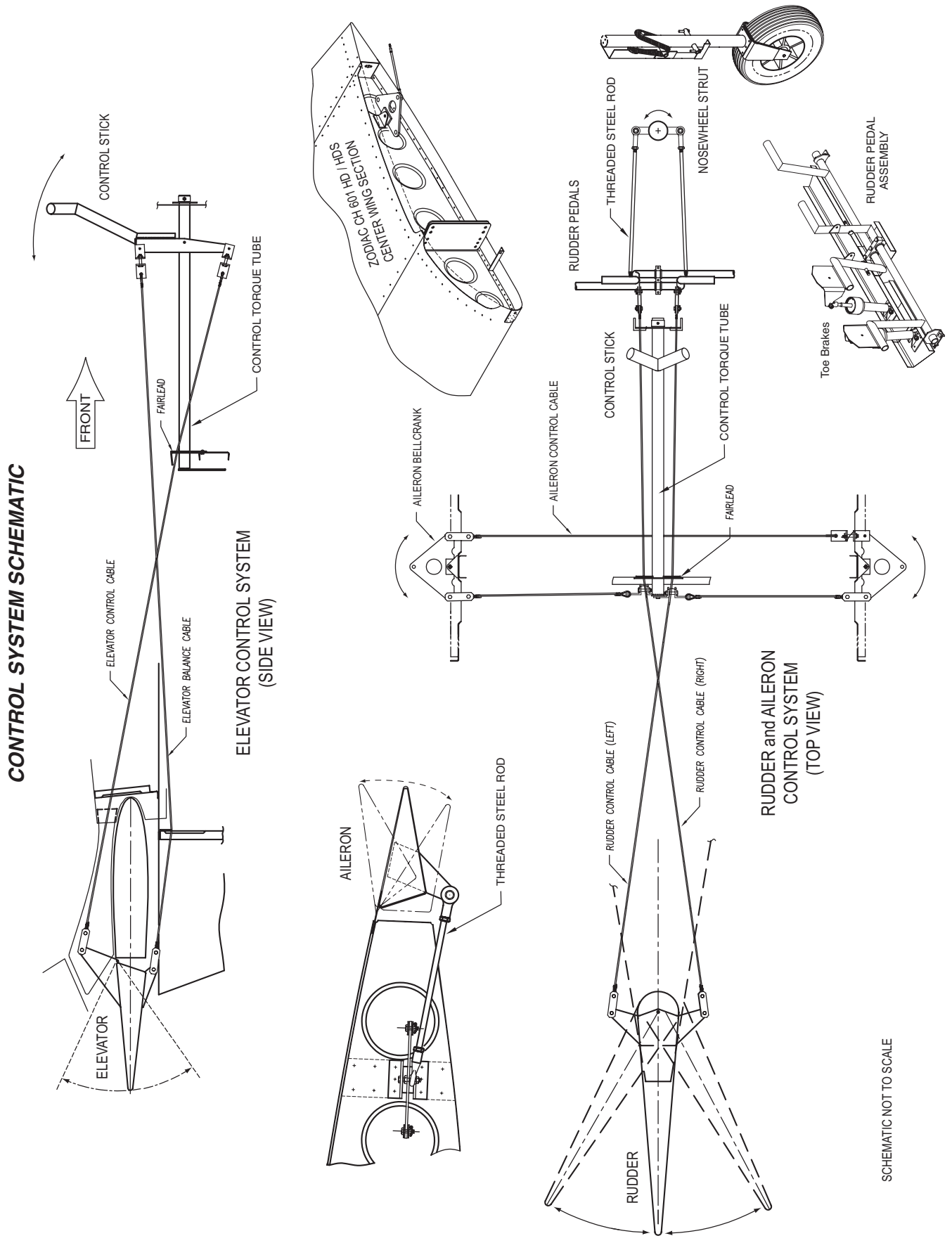
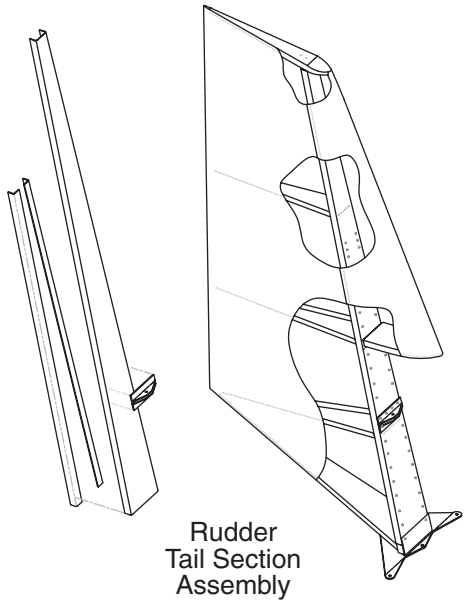


ZODIAC CH 601 HD / UL
WING ASSEMBLY

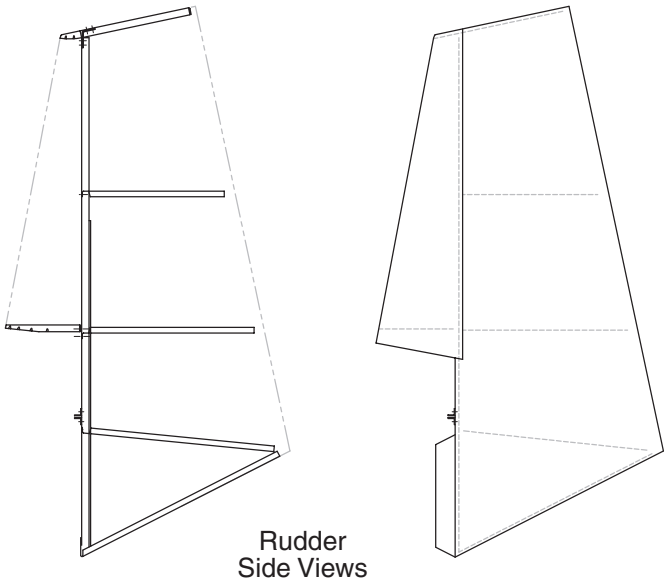
ZODIAC CH 601 HD / UL / HDS
FUSELAGE ASSEMBLY




CONTROL SYSTEM SCHEMATIC
CONTROL STICK
CONTROL TORQUE TUBE
FRONT
FAIRLEAD
ELEVATOR CONTROL CABLE
ELEVATOR BALANCE CABLE
ELEVATOR
ELEVATOR CONTROL SYSTEM
(SIDE VIEW)
ZODIAC CH 601 HD / HDS
CENTER WING SECTION
RUDDER PEDALS
THREADED STEEL ROD
NOSEWHEEL STRUT
RUDDER PEDAL
ASSEMBLY
Toe Brakes
CONTROL STICK
CONTROL TORQUE TUBE
AILERON BELLCRANK
AILERON CONTROL CABLE
FAIRLEAD
RUDDER CONTROL CABLE (LEFT)
RUDDER CONTROL CABLE (RIGHT)
RUDDER and AILERON
CONTROL SYSTEM
(TOP VIEW)
AILERON
THREADED STEEL ROD
RUDDER
SCHEMATIC NOT TO SCALE

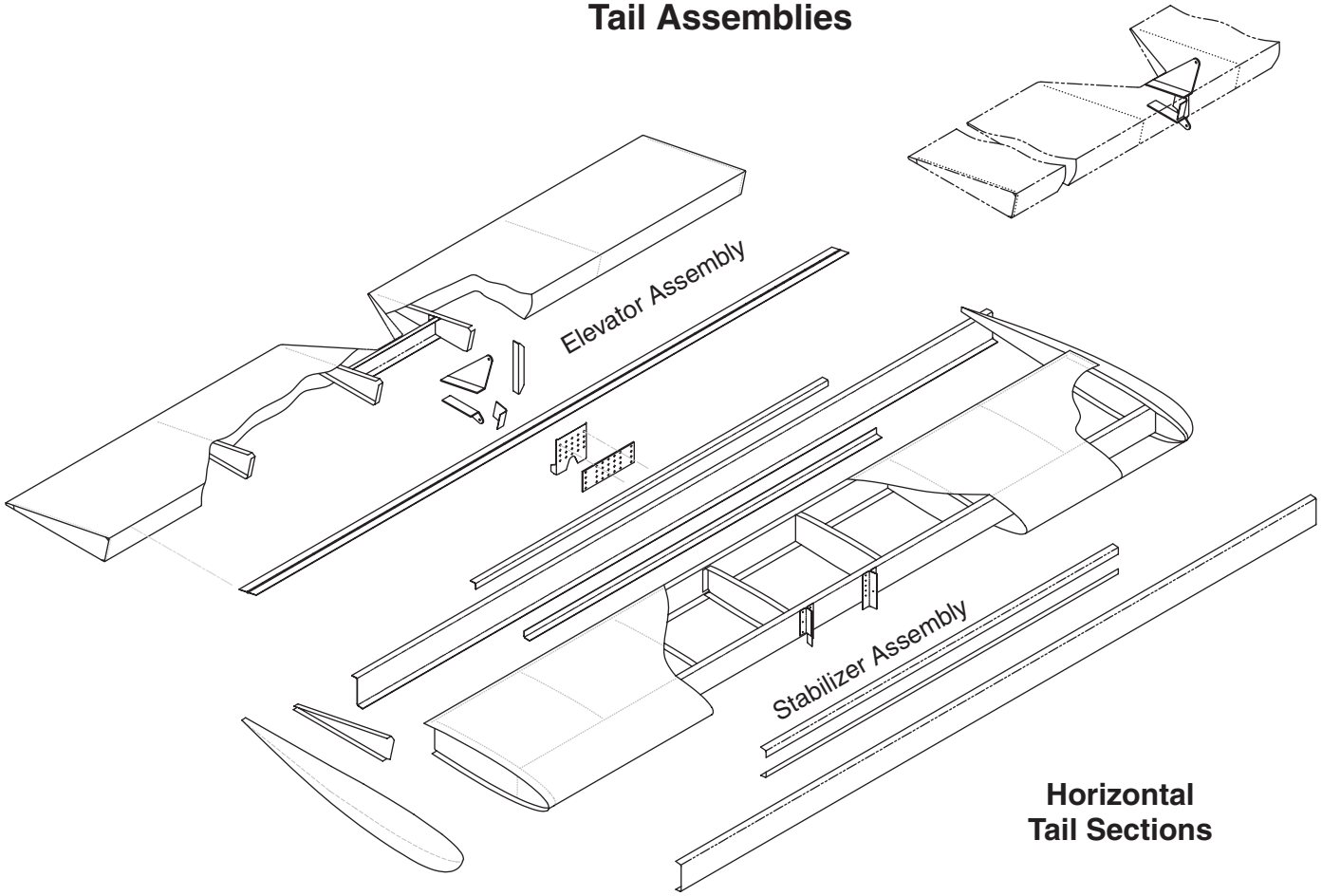


Rudder
Tail Section
Assembly



Rudder
Side Views

ZODIAC
Tail Assemblies



Horizontal
Tail Sections

All ZODIAC CH 601 models, including the new ZODIAC XL, share the same empennage (tail sections).
The elevator is equipped with an electric trim tab (standard equipment in the kit).
Each of the three sections that makes up the tail (rudder, elevator and stabilizer) are built separately, and then bolted to the fuselage assembly.

ZODIAC CH 601 Series THE KIT

The underlying philosophy behind the ZODIAC kit is to provide the builder with everything needed to complete the airframe - with just basic skills or tools. The complete ZODIAC kit requires about one year (or about 500 hours) to construct.

A partially assembled Zodiac airframe

All you need to get started is a level workbench and basic hand tools. The detailed Drawings and Manual guide the builder through the kit assembly process. The drawings supplied with the complete kit are not just instructions (as with most kits) but are detailed blueprints of the complete aircraft.

Actually, a ZODIAC builder is really assembling the airplane from the quality parts and components supplied in the kit. All components, parts and hardware are supplied – labeled and numbered for easy identification. Every bolt, fastener, and rivet is supplied; from the propeller spinner right down to the rear fuselage tie-down bracket.

Importantly, virtually no jigs and fixtures are needed in the building process, as all sections are built up from the flat workbench. A bending brake, shear or other machinery is not needed, and assembly is easily done in a single car garage or basement workshop.

While previous aircraft building experience and sheet-metal skills are always an asset, the kits and assembly instructions have been developed specifically for the inexperienced novice builder. In fact, an overwhelming number of ZODIAC builders are building their very first aircraft*!* The simplicity of construction, quality of parts and components, and the completeness of the kit translates into low build-times and a very high kit completion ratio, even for novice builders.

Building the ZODIAC stabilizer

Assembly of the kit is divided into many small modular projects, allowing the builder to focus on one small section at the time before moving on to the next. For instance, each section of the tail is an individual project: the rudder, the stabilizer and the elevator. The modular construction minimizes required workspace, and also allows builders to buy the kit sections as they progress through the project.

The ZODIAC CH 601 kits meet the requirements for amateur-built (experimental) categories in the United States and Canada, as well as in most countries around the world. In the United States, the Federal Aviation Administration (FAA) has determined that ZODIAC kits meet FAR section 21.191(g), making them eligible for amateur-built registration.

Builders of the kit have found the quality to be first class and the manual and instructions perfect for first-time builders. Having flown a number of Zodiacs and interviewed their owners, I hear typical comments such as, "The plane is both cheap training and pleasant sport flying." Builder and aircraft mechanic Paul Muller claimed, "Most aircraft are unnecessarily complicated, expensive, and seldom achieve their design goal. I wanted but one thing – the nicest plane to fly!" He chose the Zodiac.

– Ken Armstrong, "*Choosing Your Homebuilt - The One You'll Finish and Fly!* "

ZENITH AIRCRAFT COMPANY, Mexico Airport, Mexico, Missouri 65265-0650 Tel: 573-581-9000 FAX: 573-581-0011
Call 573-581-9000 (Mon. - Fri. 8 - 5 Central) **www.zenithair.com**

In the kit, all the wing ribs and fuselage bulkheads are supplied pre-formed. The internal wing ribs are first press-formed, with lightening holes cut and flanged, and then hand finished at the factory for a perfect ready-to-install fit. The built-up wing spars comes complete with all solid (bucked) rivets already set by factory professionals.

Surface skins – wings, ailerons, elevator, rudder, and fuselage – are ready for fitting, and many flat skins are supplied pre-drilled to minimize construction time.

Pre-assembled parts (such as the wing spar) are factory-treated with zinc-chromate primer for maximum corrosion resistance. Welded parts, such as the engine mount, control assemblies, and fuel tank, come factory welded and ready to install.

Zenith Aircraft's kits are complete: landing gear, wheels, fiberglass wing tips, control systems, welded aluminum fuel tank, etc., are standard equipment in the complete airframe kit. Every part, component and sub-assembly is made only from quality materials, passed through a strict quality control program before being shipped to the customer. With the addition of a 'firewall-forward' powerplant and instruments package, the builder gets everything needed to build and fly the ZODIAC. The only items not included in the kit are the exterior paint, cabin upholstery, and battery.

A ZODIAC builder can start assembly right away after taking delivery of the kit. Working from a flat table, the builder can immediately begin to build the wings - simply by measuring, drilling and riveting, and thus progress through the whole airframe section by section, guided by the detailed drawings and manual supplied with the kit. Building an all-metal ZODIAC kit is straight forward, requiring no complex jigs, and no messy (and hazardous) doping or epoxy work is involved. With the proven and simple all-metal construction technique, the ZODIAC builder does not have to worry about having a temperature controlled dust-free workshop environment, and does not have to mix compounds and wait for parts to cure.

ZODIAC builders are buying more than a box full of aircraft kit parts: We take customer support seriously, and take pride in the reputation we've developed. Our relationship with the customer only begins when the kit is delivered. Direct factory support is always available - just a phone call, fax or email message away, which is promptly answered by the same professionals who build the kits. Whether building from plans-only, component kits, or from the complete kit, direct technical support is available to every ZODIAC builder. The exclusive online builder resources and the Zenair Newsletter are other forms of continuous builder support, providing ongoing updates, building tips and news from other builders. Also, there are already hundreds of active ZODIAC builders around the world, happy to help other local builders complete their projects.

Positioning the wingtip to the wing assembly

Compare the value and quality of the ZODIAC kit to the competition for completeness, pre-manufactured parts and components, standard equipment, low build time, building ease and required skills. The high kit completion ratio for the ZODIAC aircraft speaks for the quality of the kit and the level of available customer support.

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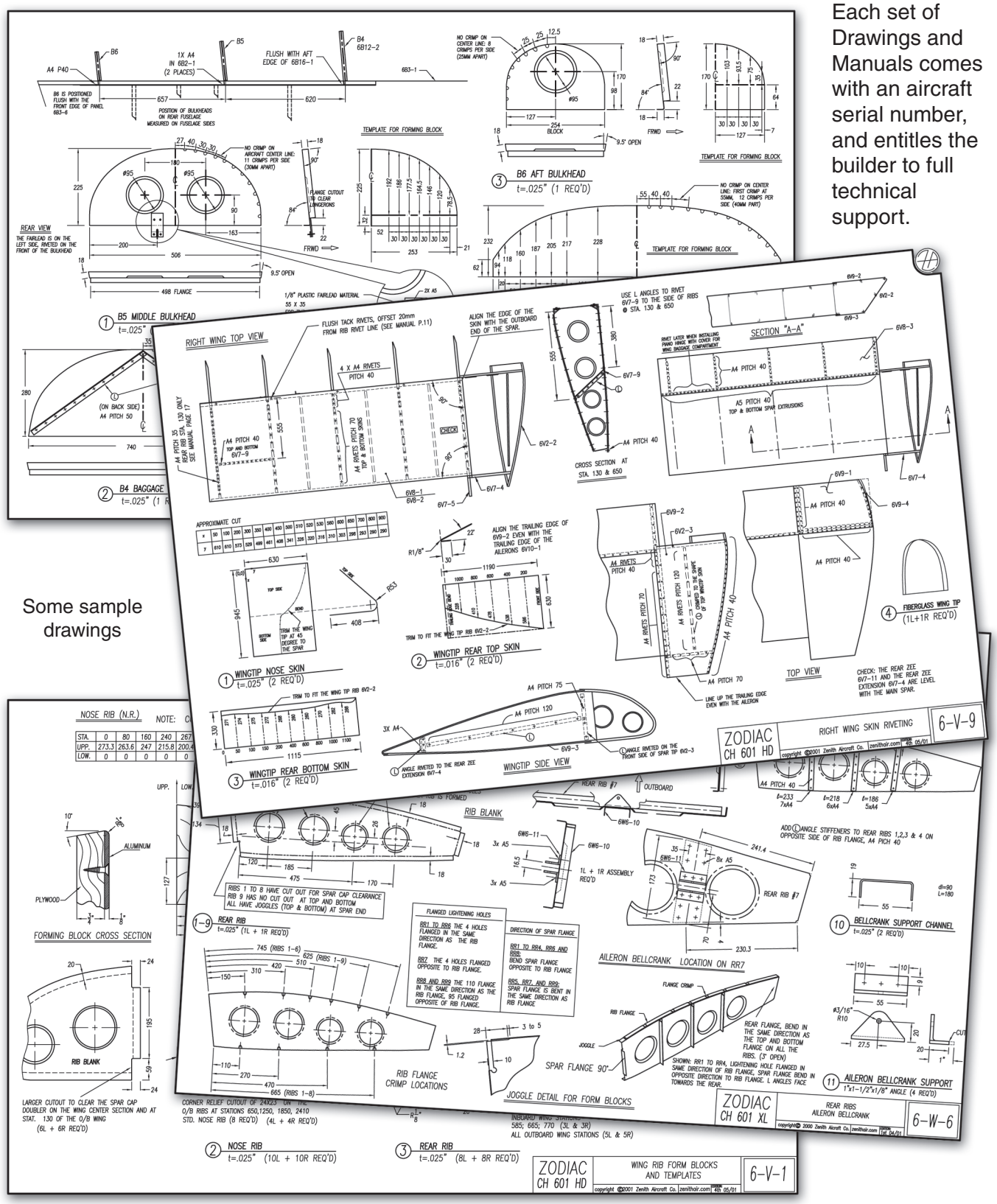
ZODIAC CH 601 Series **CONSTRUCTION**

The detailed Drawings and Manuals guide the builder through the entire kit building process. The drawings and manuals supplied with each ZODIAC CH 601 kit are not just assembly instructions as with most kits on the market but are detailed blueprints of the complete aircraft. In fact, the complete aircraft can be built just from the Drawings and Manuals. The 11"x17" CAD drawings illustrate every individual part and assembly, and provide detailed information for making all the parts that make up the kit.

Each set of Drawings and Manuals comes with an aircraft serial number, and entitles the builder to full technical support.



Some sample drawings

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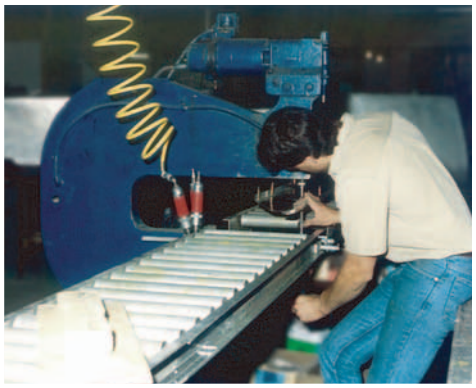
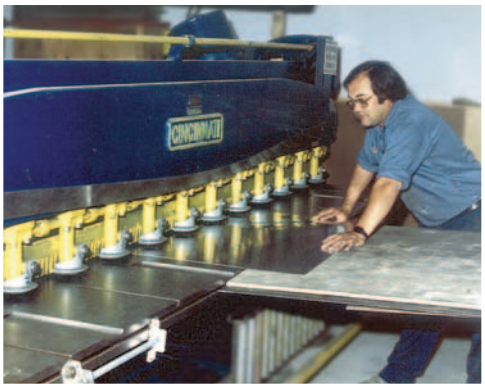
THE KIT

Zenith Aircraft Company's manufacturing philosophy is to produce all the parts and components that require any special skills, machinery or processes, so that the builder's kit can easily be assembled at home with only basic tools and skills. Every part that makes up the kit is passed through a custom quality control (QC) program before being delivered, ensuring that all components received by builders are only high quality and ready to be assembled. Materials used meet Zenith Aircraft's strict requirements, and are tested in-house. The kits and building instructions undergo continuous improvements, made possible by the experiences gained from the hundreds of aircraft currently under construction.





Zenith Aircraft Company brings forward more than two decades of kit manufacturing experience; and has modern production facilities to professionally manufacture all kit parts, using only quality materials, modern production technology and skilled labor.

Further ongoing investments in production technology and employee training allow for the continuous improvement of Zenith Aircraft's high-quality kits – to make them easier and quicker to build than ever.

Visitors are welcome to tour the kit production facilities by appointment. Demonstration flights in the ZODIAC kit aircraft may also be arranged.

Zenith Aircraft Company holds an annual 'Open Hangar' day for visitors and customers, and hosts periodic hands-on building workshops at the factory.

"***A tour of the factory demonstrates the work which goes into producing a kit. Using state of the art fabrication techniques, the skilled staff produces all kit parts with special attention to detail. All parts supplied in the kit are ready to assemble.***"

- Canadian Flight magazine

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BUILDING YOUR ZODIAC KIT AIRCRAFT

If you've dreamed of building and flying your own personal sport aircraft, the ZODIAC design may very well be the answer to your dreams – offering you outstanding performance, features and capabilities:

Choose the ZODIAC model with the performance and features that ***you*** want. Built of sturdy all-metal construction, the ZODIAC is an aircraft you'll be proud to own for many years, while being simple and quick to build.

Building your own aircraft is going to be one of the most challenging and rewarding undertakings you'll ever accomplish: Imagine, you'll be enjoying the thrills of flying an aircraft that you've built yourself! Few people get to experience the sensation and freedom of being at the controls of an aircraft. Even fewer are also rewarded by flying an airplane that they've built themselves. The ZODIAC kit aircraft will help you realize your dreams like no other kit aircraft!

Zenith Aircraft Company is a leader in the kit aircraft manufacturing industry, with extensive experience designing and building quality aircraft kits for both first-time builders and demanding sport pilots. With this invaluable experience, Zenith Aircraft Company provides builders with award-winning designs and kits, and ongoing direct factory service and support to every builder.

In 1997 the editors at Popular Mechanics magazine decided to build a ZODIAC kit plane. They featured the construction of their kit aircraft in two cover stories:

"A key factor in choosing a Zodiac kit was the excellent reputation of the company and its planes, as verified by independent reports and discussions with other builders and the folks at the Experimental Aircraft Association.

"The decision-clincher was a trip out to the factory for a firsthand test flight. The Zodiac, turned out to be a delight to fly and land. Call it a BMW Z3 with wings. Cessna and Piper trainers are downright stodgy in comparison.

"Building a kitplane is a great experience. The process encourages thinking and creativity – it's more than just inserting tab A into slot B. What we ended up with was a truly personal airplane, so simple in nature that it might coax a condescending smile from the lips of seasoned pilots who fly highly sophisticated aircraft. Still, we can't help but step back and be in awe of this marvelous little machine that soars with eagles and promises us volumes of adventure."

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BUILDING YOUR ZODIAC KIT AIRCRAFT

The ZODIAC series kit aircraft is designed for sport pilots seeking performance and maximum versatility in a kit that's simple and affordable to build and own.

While building your own airplane is both a challenge and a commitment, complete kits from Zenith Aircraft Company make it quicker and easier than ever for you to get in the air in your own personal kit airplane.

Zenith Aircraft Company has made it easy for you to start building your own ZODIAC kit aircraft:

- **Rudder Starter Kit / Factory Workshops**
- **Complete Kit or Component 'buy-as-you-build' Kits**
- **Drawings & Manuals**

Now that you know all about the ZODIAC kit aircraft from Zenith Aircraft Company, the next step is yours: to undertake the unique opportunity of building your own personal sport airplane. Remember, the sooner you start building, the sooner you'll be enjoying the thrills of flying your own personal aircraft!

To get started, see the enclosed ORDER FORMS for complete ordering information. When we receive your order, a company representative will contact you to confirm your order and to arrange shipping and any other details. The complete kit can be crated and shipped right to your door, or you can arrange to pick up the kit at the factory. Kit order lead-times vary – contact us for the next available ship date.

The high quality of the ZODIAC design and kit assures you that this is a project you'll be proud to own and fly for many years...

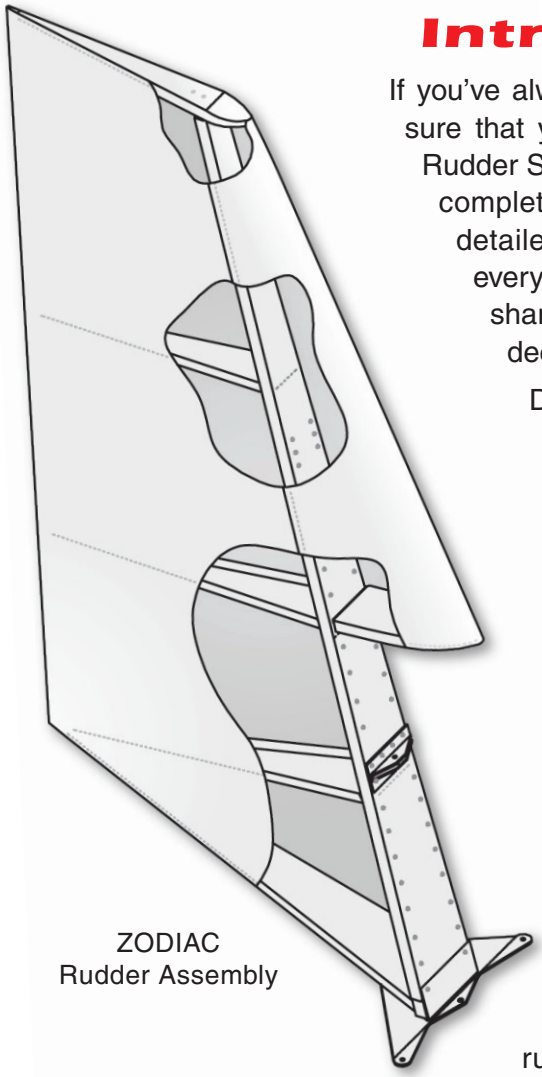
Zenith Aircraft Company is committed to working with every builder with ongoing customer service and support. Feel free to contact us should you have any questions about building and flying the ZODIAC kit aircraft, or if you require help or additional information before placing your order.

Mailing Address:	P.O. Box 650, Mexico, MO 65265-0650 USA
Physical Address:	Mexico Airport, Mexico, MO 65265 USA
Telephone:	**573-581-9000** – Monday - Friday, 8:00 AM - 5:00 PM Central
Fax:	**573-581-0011**
Internet:	E-mail: **info@zenithair.com** World Wide Web: http://www.**zenithair.com**

Compare the value and quality of the ZODIAC kit to the competition for completeness, pre-manufactured parts and components, standard equipment, low build time, building ease and required construction skills and tools!

START BUILDING

FOR JUST A FEW HUNDRED DOLLARS!



ZODIAC
Rudder Assembly

Introductory Starter Kit

If you've always dreamed of building your own airplane, but aren't sure that you have the required skills, Zenith Aircraft's exclusive Rudder Starter Kit is for you. The ZODIAC Starter Kit includes the complete kit for the rudder tail section and comes with a detailed and illustrated step-by-step assembly manual – everything you need to get started! Since all ZODIAC models share the same rudder tail section, you don't even need to decide which ZODIAC model to build.

Developed specifically for the first-time builder, the starter kit costs just a few hundred dollars, and includes everything you need to start building your own ZODIAC kit aircraft, including:

Complete Rudder Tail Kit:

– Pre-Formed Ribs, Spar, etc.

– Rivets & Hardware Needed To Assemble The Rudder.

– Detailed Rudder Assembly Manual

– Step-By-Step Assembly Instructions

– Building Tips And Hints...

Putting together the rudder Starter Kit is just a weekend project, and will provide you with an excellent 'hands-on' introduction to building your own ZODIAC aircraft. Once you've completed the rudder kit, you'll have the skills and tools to continue with the rest of the ZODIAC kit – and you'll also have part of your aircraft completed. We'll even deduct the cost of the rudder kit off the price of the complete kit when you're ready to continue with the project.

You'll need the following to assemble the rudder kit:

– Workshop: a sturdy 4' x 8' flat table.

– Tools: Basic hand sheet-metal tools: electric hand drill, metric tape measure, 'Cleco' pliers and fasteners, sheet-metal snips, hand 'pop'-type riveter with custom heads, and a few files. You won't need a bending brake or shear, or other power tools.

The complete rudder Starter Kit can easily be shipped by UPS right to your door (in the United States). Many of the basic required hand tools can also be purchased from Zenith Aircraft Company.

Zenith Aircraft Company also holds workshops at the factory - where workshop participants build the rudder kit with the help and guidance of factory staff. The factory workshops also allow participants to tour the factory and see the company's demo aircraft.

See **www.zenithair.com** for more information about attending a factory workshop.

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ZODIAC CH 601 Series **REVIEWS**

An **excellent choice** for an **economical** two-seat **cross-country cruiser.** – Custom Planes magazine

The ZODIAC is a very sweet flyer... ideal combination of economy, speed and mild handling – even in the taildragger configuration. Very highly recommended – we want one!
– SportPlane Resource Guide.

This outstanding cross-country plane is fast, yet docile.

Chris Heintz, chief designer of all the aircraft in Zenith's extensive line of homebuilt aircraft, has all the necessary qualifications to design a superb aircraft. – Sport Pilot Magazine

If you are looking for a two-seater that is cheap to operate, great fun to fly, and can be assembled in a remarkably short time, the new Zodiac could be just what you have been waiting for. – Flyer magazine (UK)

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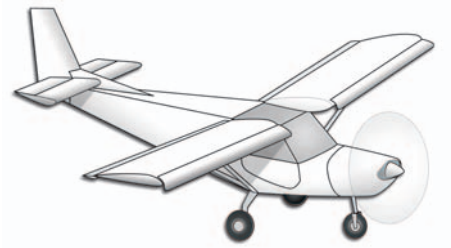
COMPANY

Zenith Aircraft Company is in the exclusive business of developing, manufacturing and marketing kit aircraft. The independent, privately-owned company was formed in 1992 in Mexico, Missouri. Centrally located in the United States, the company is based in 20,000+ sq.ft. production facilities at Mexico Memorial Airport. Zenith Aircraft Company manufactures and markets Zenair™ kit aircraft designs under license from Zenair Ltd.

Zenith Aircraft Company serves more than 2,000 customers around the world in more than 42 different countries. Zenith Aircraft Company is a proud member and supporter of the Experimental Aircraft Assoc. (EAA), the Small Aircraft Manufacturers Assoc. (SAMA), and other organizations dedicated to the advancement of sport aviation. Zenith Aircraft Company is continuously involved in projects devoted to aviation education and the advancement of sport aviation around the world. Zenith Aircraft Company was named the winner of the first-ever Missouri **Industry of the Year Award** (small business), presented by Associated Industries of Missouri, the Missouri Department of Economic Development, and the Missouri Department of Elementary and Secondary Education.



Zenith Aircraft Company also manufactures the STOL series kit aircraft – a line of high-wing Short Take-Off and Landing (STOL) sport utility kit aircraft designed by Chris Heintz. The two-seat STOL CH 701 has been popular with sport pilots since 1986, and the new four-seat STOL CH 801 offers unmatched utility and durability. Visit **www.zenithair.com** for more information about the STOL sport utility designs.

What better way to learn more about Zenith Aircraft's kit planes than by actually visiting the factory where the kits are made? Personal factory tours can be arranged, and factory demonstrator kit aircraft are available for demonstration flights to potential builders. Demo flights are available, by appointment, to demonstrate the normal operating envelope and characteristics of the aircraft.

The Zenith Aircraft factory is located on Mexico Memorial Airport, making it easy to drive or fly-in to visit the factory.

BY AIR: See Kansas City Sectional. Mexico Memorial Airport (MYJ). **BY ROAD**: Mexico Memorial Airport is located on Hwy. 54, three miles east of the City of Mexico. From I-70, Exit 148 northbound on Hwy. 54, and follow Hwy. 54 right to the airport (approximately 15 miles from I-70). Please make an appointment before making travel arrangements to visit the factory, and schedule appointments during our regular business operating hours.

Zenith Aircraft Company also hosts an annual OPEN HANGAR DAY at the end of August every year. The Open Hangar day is popular with builders, potential customers and the general public.

Factory workshops are held periodically at the factory to allow potential builders to gain hands-on aircraft building experience right at the factory. Participants also get the chance to tour the factory and go up for a demo flight in a factory demonstrator kit plane.

Visit **www.zenithair.com** for the next workshop date.

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CHRIS HEINTZ
Designer

Designer Chris Heintz seated in a ZODIAC

An accomplished aeronautical engineer, Chris Heintz is a graduate of the E.T.H Institute in Switzerland. After serving in the Air Force, Heintz worked for Aerospatiale and later became chief engineer at Avions Robin (France) where he designed several fully-certified two and four seat production aircraft.

In his spare time, Heintz began to design and build his own aircraft, which he named the ZENITH, anagram of Heintz. Being an engineer and not a craftsman, his all-metal homebuilt aircraft incorporated simple construction methods throughout. After a little more than a year's work, the two-place low-wing Zenith was rolled out and successfully flown in 1969. Soon after, detailed blueprints and construction manuals of the aircraft were drawn up and offered to the growing number of interested builders and flyers.

In 1973, Chris Heintz, his family and the Zenith moved to Canada, where Heintz worked for de Havilland (in Toronto) as a stress engineer on the Dash 7 commuter. Chris decided to form his own aircraft company in 1974, and under the name of Zenair Ltd. started to manufacture Zenith kits himself from his two-car garage. Through the company, Heintz has introduced more than twelve successful kit aircraft designs over the years. In 1992, Heintz licensed the kit manufacturing and marketing rights to Zenith Aircraft Company for the STOL CH 701 and the ZODIAC CH 601 designs, and has developed the new STOL CH 801 and the new ZODIAC XL for Zenith Aircraft Company.

Chris Heintz discusses the ZODIAC design with ex-NASA adminstrator Daniel Goldin.

As founder, president and chief engineer of Zenair Ltd. since 1974, Mr. Heintz has designed and developed more than 12 new aircraft models, which have been marketed as kit aircraft around the world. More than 800 aircraft are presently flying around the world in 48 different countries. Heintz designs have earned an excellent reputation among pilots, builders, the press, and aviation authorities for their durable all-metal construction, normal flight characteristics, reliability, and low maintenance requirements.

With a career-long dedication to aviation, Chris Heintz is a past recipient of the EAA's coveted Dr. August Raspet Memorial Award "for outstanding contribution to the advancement of the design of light aircraft," and his designs have been honored with numerous awards around the world. In 1995 the Federation Aéronautique Internationale (FAI) awarded Zenair Ltd. the prestigious Honorary Group Diploma for "greatly contributing to the progress of aviation" and Chris Heintz was inducted into the **EAA *"Hall of Fame"*** in 1999. In July 2001, Chris Heintz was recognized with the ***"2001 President's Award for Outstanding Individual"*** awarded by Kitplanes magazine and the Light Aircraft Manufacturer's Association.

"Chris Heintz, designer extraordinaire, not only provides fine safe designs... he is also a tremendous source of philosophical information and forecasts of recreational aircraft market direction."

— "Choosing Your Homebuilt" by Kenneth Armstrong (Butterfield Press)

CHRIS HEINTZ: LIGHT AIRCRAFT DESIGN HISTORY

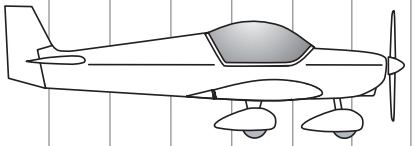
1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003

Chris Heintz: Aircraft design and certification experience from Avions Robin (France). Engineering experience from Aerospatiale & de Havilland.

1970

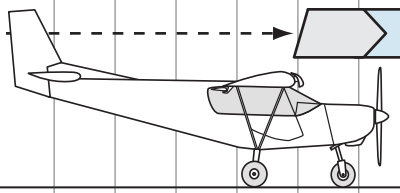
- ZODIAC CH 600
- CH 50 MINI-Z
- ZODIAC CH 601 HD
- ZODIAC CH 601 UL
- MC-12 'Cricket' Kit (Columban)
- Super ZODIAC CH 601 HDS
- CH 100 MONO-Z
- ZODIAC XL
- CH 150 Acro-Z
- GEMINI CH 620
- CH 180 Super Acro-Z
- CH 640
- ZENITH CH 200
- CH 2000
- ZENITH CH 2000
- ZENITH CH 250
- CH 300 TRI-Z
- ALL-METAL AIRCRAFT FLOATS
- CH 400 - 4 SEAT
- STOL CH 701
- STOL CH 801
- ZIPPER Ultralight
- ZIPPER II

FAA Type-Certificated Design



Floats manufactured and marketed by Czech Aircraft Works

7/01: Gross Weight Increase



Design & Development
Production
Design Relationship
Continuing Development

1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003

Zenith Aircraft Company produces the STOL and ZODIAC CH 601 series kit aircraft under license from designer Chris Heintz.

DESIGNER CHRIS HEINTZ

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COMPANY

Designer Chris Heintz and the companies that manufacture and market his kit aircraft designs are dedicated to the advancement of sport aviation and recreational flying, and have been recognized on numerous occasions for their contributions to the industry, including:

1974 ***'Best New Design'*** (EAAC) for the prototype Zenith CH 200, Chris Heintz' first kit aircraft design.

1975 Winner of the Pazmany efficiency contest (two seat category).

1975 NASAD (National Assoc. of Sport Aircraft Designers) Seal of Quality (Drawings).

1976 ***'The Eight Day Wonder'*** – a Zenith was constructed and flown in just eight days during the 1976 EAA Oshkosh convention. EAA president Paul Poberezny presented Zenair Ltd. with certificate for *"service and dedication."*

1978 ***FAI World Record***: A Tri-Z CH 300, piloted by Red Morris, was flown non-stop from the Pacific Ocean to the Atlantic Ocean (2,800 miles in 22.75 hours).

1978 The Dr. A. Raspet Memorial Award was presented to Chris Heintz ***"for outstanding contribution to the advancement of the design of light aircraft"*** by then EAA president Paul Poberezny.

1979 NASAD Seal of Quality awarded to all Zenair kits.

1984 'Best New Design' (EAA Sun'n Fun) for the ZIPPER ultralight.

1984 'Best New Design' (EAAC) for the prototype ZODIAC CH 600.

1985 NASAD Seal of Quality awarded to ZODIAC drawings and kits.

1986 A ZODIAC kit was completely assembled in only ten days at the World EXPO'86 in Vancouver.

1987 A STOL CH 701 kit was completely assembled and flown in just seven days at the EAA Sun'n Fun fly-in by volunteers, supervised by Zenair staff. This feat was repeated at the 1990 and 1991 EAA Sun'n Fun fly-ins, and honored *'Best Workshop'* by *Sport Pilot* magazine.

1991 EAA Sun'n Fun Convention presented Zenair Ltd. and Chris Heintz with award for ***"dedication and generous support"*** of light aviation.

1992 Zenith Aircraft Company begins manufacturing Heintz designs under license in Mexico, Missouri, centrally located in the US.

1993 ***'The Seven Day Challenge'*** – a ZODIAC kit was completely assembled and flown within seven days at the Sun'n Fun fly-in convention by volunteers, supervised by company staff.

1994 Heintz' ZENITH CH 2000 design receives FAA and Transport Canada type-certification. Not a kit aircraft, the new design is marketed only factory-assembled as an affordable all-purpose two-seat trainer.

1995 Federation Aéronautique Internationale (FAI) awarded Zenair Ltd. the prestigious 1995 Honorary Group Diploma for "***greatly contributing to the progress of aviation."***

1996 Zenith Aircraft Company introduced the GEMINI CH 620 twin-engine concept kit aircraft, the first "personal twin-engine" kit design in the industry.

1988 Introduction of the new 4-seat STOL CH 801 and the ZODIAC XL prototypes. *US Aviator* magazine awarded the ZODIAC XL its "Best Aircraft of Show" award following the introduction of the new design at EAA AirVenture (Oshkosh).

1999 Zenair Ltd. celebrated its 25th anniversary as a kit aircraft manufacturer: A quarter century of excellence and leadership in the kit aircraft industry.

1999 Zenith Aircraft Company was presented with a silver anniversary plaque *"in appreciation of 25 years support"* to the EAA Sun'n Fun fly-in convention.

1999 Zenith Aircraft Company was named the winner of the first-ever ***Missouri Industry of the Year Award*** (small business), presented by Associated Industries of Missouri, the Missouri Department of Economic Development, and the Missouri Department of Education.

2001 Designer Chris Heintz awarded the ***"2001 President's Award for Outstanding Individual"*** by LAMA and Kitplanes magazine.

2001 For the third consecutive year, Zenith Aircraft Company was named to Deloitte & Touche's prestigious *"Technology FAST 50"* Program for Kansas/Missouri, a ranking of the 50 fastest growing technology companies in the area.

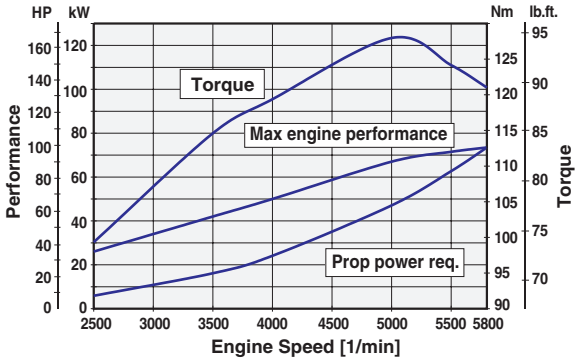
Chris Heintz designs have been featured in numerous aviation publications around the world, with reports consistently praising the performance of the aircraft, their ease and simplicity of construction, and high level of customer satisfaction and support.

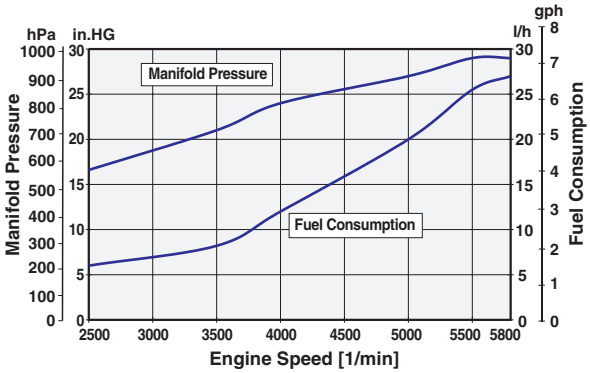
100-HP ROTAX 912S AIRCRAFT ENGINE

ENGINE DESCRIPTION: Rotax 912 ULS
4-cylinder, 4-stroke liquid / air cooled engine with opposed cylinders, dry sump forced lubrication with seperate oil tank, automatic adjustment by hydraulic valve tappet, dual CD carburetors, mechanical diaphragm pump, electronic dual ignition, electric starter, integrated reduction gear 1 : 2.43

BORE / STROKE	3.31 in (84 mm.) 2.40 in. (61 mm.)
DISPLACEMENT	82.6 cu. in. (1352 cc)
POWER OUTPUT	Approx. 95 HP (69 kW) @ 5500 RPM 100 HP (73.5 kW) @ 5800 RPM* * with Rotax airbox and exhaust system
TORQUE MAX.	Approx. 94 ft.lbs. (128 Nm) @ 5100 RPM
WEIGHT	136 lbs. (62 kg) with electric starter, carburetors, fuel pump, air filters and oil system
MAX RPM	5,800 RPM (1/min.)
CYLINDER	light alloy cylinders, NIKASIL plated
PISTON	aluminum cast; three piston rings
VALVE TRAIN	OHV, hyd. lifters, pushrods, rocker arms
CYLINDER HEAD	4 separate cylinder heads
COMPRESSION	10.5 : 1
VALVE GAP	auto adjustment by hydraulic valve
CAM SHAFT	steel, heat treated, nitrated
CRANKSHAFT	case hardened with 5 bearings
COOLING	liquid cooled cyl. heads, air cooled cyl.
LUBRICATION	dry sump with trochoid pump, camshaft driven
OIL	.08 US Gal. (3 litres); high performance auto (SAE 15W40)
FUEL	premium unleaded: 90 oct. or higher leaded or unleaded or AVGAS 100 LL
GENERATOR	13.5 V, 250 W DC @ 5500 RPM

Rotax 912 ULS
Shown with options





Source: **Bombardier-Rotax**.
For information only.
The Rotax 912 ULS does not comply with federal safety regulations for standard aircraft. This engine is for use in experimental uncertified aircraft only and only in circumstances in which an engine failure will not compromise safety.

For more info:

www.kodiakbs.com

www.rotax-owner.com

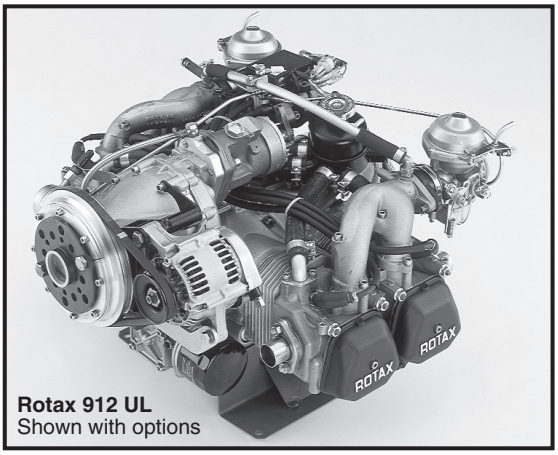
80-HP ROTAX 912 AIRCRAFT ENGINE

ENGINE DESCRIPTION: ROTAX 912 UL
4-cylinder, 4-stroke liquid / air cooled engine with opposed cylinders, dry sump forced lubrication with separate oil tank, automatic adjustment by hydraulic valve tappet, dual CD carburetors, mechanical diaphragm pump, electronic dual ignition, electric starter, integrated reduction gear 1 : 2.273

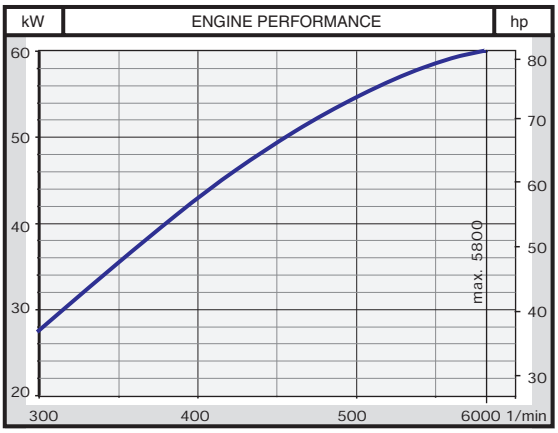
BORE / STROKE	3.13 in (79.5 mm.) 2.40 in. (61 mm.)
DISPLACEMENT	73.91 cu. in. (1211.2 cc)
POWER OUTPUT	Approx. 80 HP (59 kW) @ 5500 RPM
TORQUE MAX.	Approx. 76 ft.lbs. (103 Nm) @ 4800 RPM
WEIGHT	132 lbs. (60 kg) with electric starter, carburetors, fuel pump, air filters and oil system
MAX RPM	5,800 RPM (1/min.)
CYLINDER	light alloy cylinders, NIKASIL plated
PISTON	aluminum cast; three piston rings
VALVE TRAIN	OHV, hyd. lifters, pushrods, rocker arms
CYLINDER HEAD	4 separate cylinder heads
COMPRESSION	9 : 1
VALVE GAP	auto adjustment by hydraulic valve
CAM SHAFT	steel, heat treated, nitrated
CRANKSHAFT	case hardened with 5 bearings
COOLING	liquid cooled cyl. heads, air cooled cyl.
LUBRICATION	dry sump with trochoid pump, camshaft driven
OIL	.08 US Gal. (3 liters); high performance auto (SAE 15W40)
FUEL	premium unleaded: 90 oct. or higher leaded or unleaded or AVGAS 100 LL
GENERATOR	13.5 V, 250 W DC @ 5500 RPM

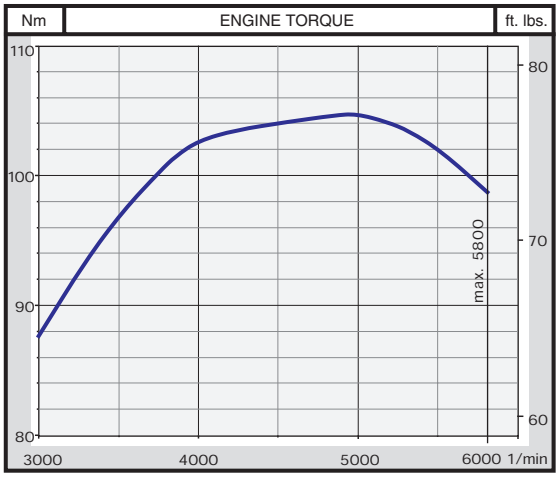
Source: **Bombardier-Rotax**. For information only.
The Rotax 912 UL does not comply with federal safety regulations for standard aircraft. This engine is for use in experimental uncertified aircraft only and only in circumstances in which an engine failure will not compromise safety.

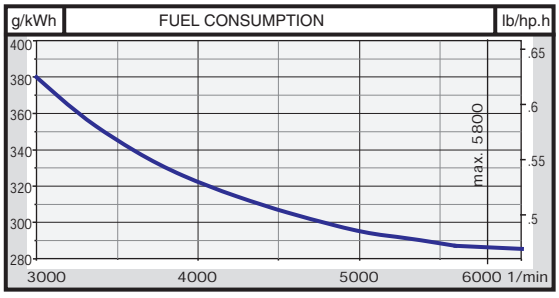
For more info: **www.kodiakbs.com** and **www.rotax-owner.com**



Rotax 912 UL
Shown with options



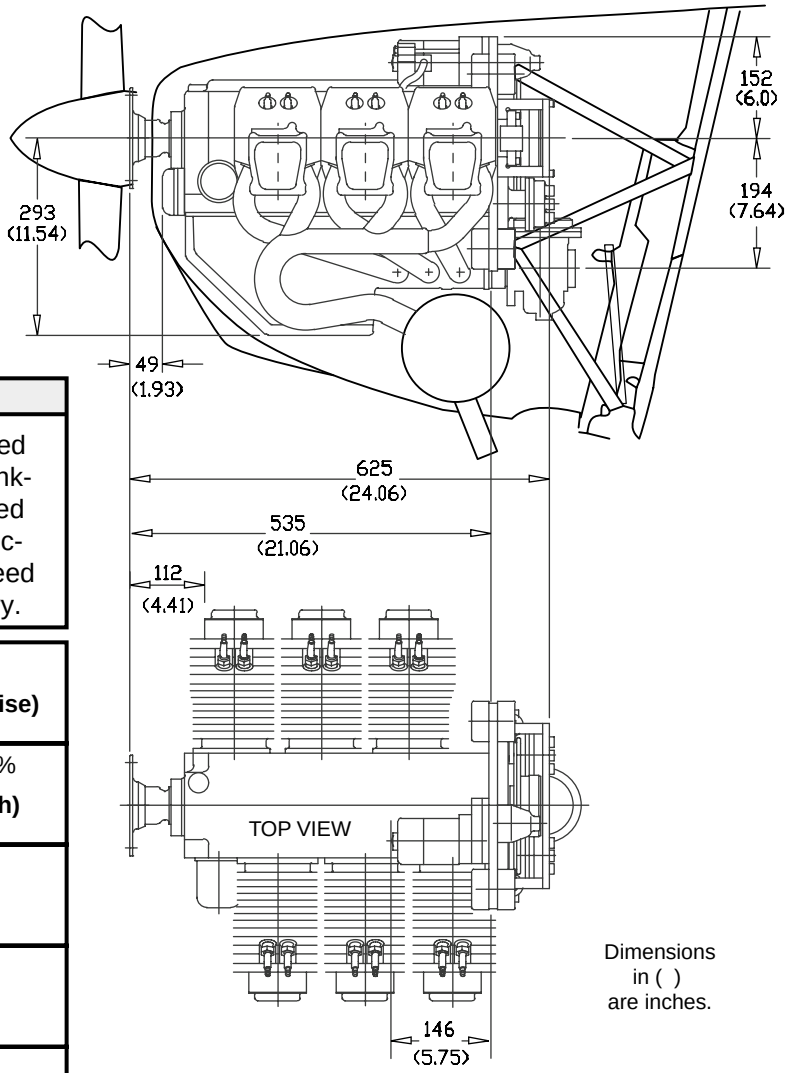




ZENITH AIRCRAFT COMPANY, Mexico Airport, Mexico, Missouri 65265-0650 Tel: 573-581-9000 FAX: 573-581-0011
Call 573-581-9000 (Mon. - Fri. 8 - 5 Central) **www.zenithair.com**

ZODIAC Series JABIRU 3300

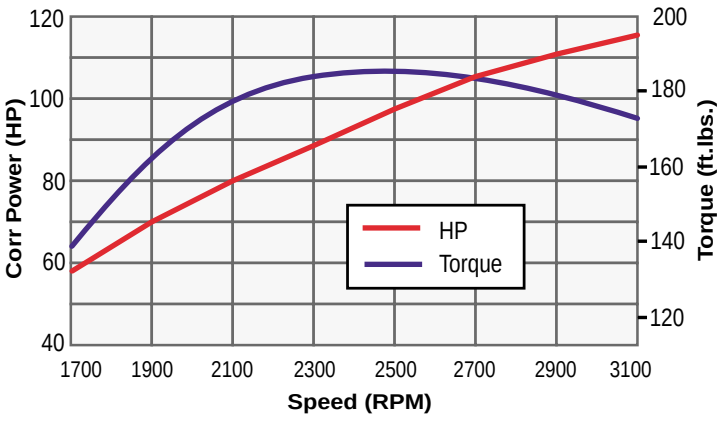
AIRCRAFT ENGINE

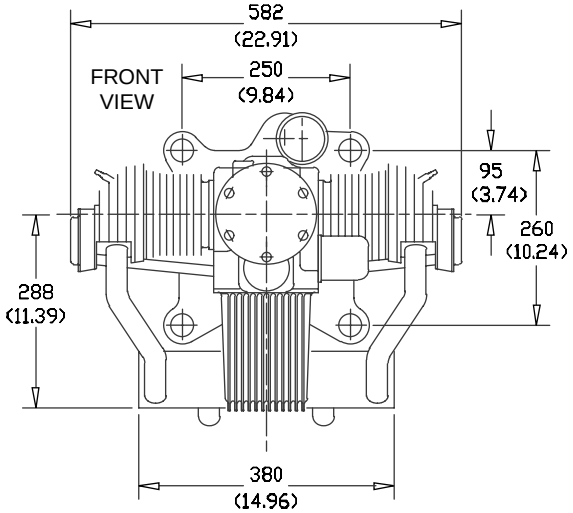


Dimensions in ( ) are inches.

ENGINE DESCRIPTION: JABIRU 3300A
6-cylinder 4-stroke horizontally opposed air cooled engine, 3300 cc. Machined aluminium-alloy crank-case, direct drive, wet sump lubrication, integrated AC generator, naturally aspirated carburetor. Rec-ommended TBO is 1,000 hours, and a "guaranteed fixed price overhaul" plan is offered by the factory.

Displacement **3,314 cc**	Power **105 HP @ 2800 (Cruise)**
Bore **97.5 mm (3.84 in.)**	Fuel Consumption - 75% **5.0 US Gal/Hour (gph)**
Stroke **74 mm (2.91 in.)**	Fuel **AVGAS 100/130LL** **92+ octane Mogas**
Compression Ratio **8.3:1**	Oil **AeroShell W100** **or equivalent**
Rotation of Prop Shaft **Clockwise - Pilot's View**	Oil Capacity **3.5 Quarts (3.75 l.)**
Ramp Weight **81 kg. (180 lbs.) installed**	Spark Plugs **NGK D9EA - Automotive**
DC Output **20 amps continuous**	Ignition System **Dual Transistorised** **Magneto Ignition**

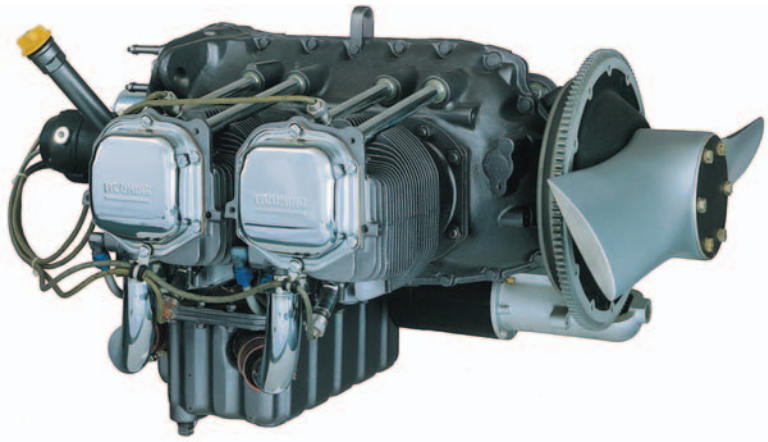




Source: **Jabiru Aircraft Pty. Ltd.** (Australia)
For more info:
www.jabiru.net.au (manufacturer)
www.usjabiru.com (US distributor)
1-800-JABIRU1

ZODIAC XL LYCOMING O-235

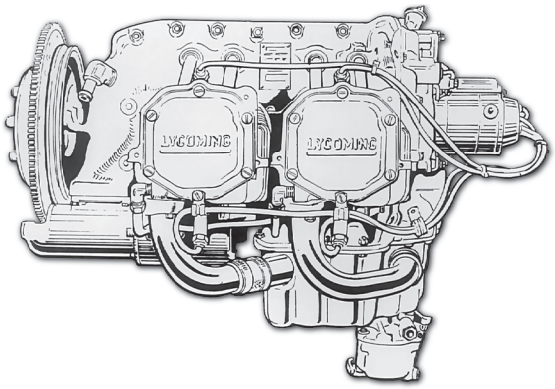
TEXTRON Lycoming



Lycoming O-235 Aircraft Engine

Over the past 65 years, Lycoming has produced more than 260,000 piston aircraft engines. With a reputation for performance and reliability, Lycoming piston engines power more than 85% of the new general aviation aircraft produced worldwide.
Whether you buy a factory-new, remanufactured or overhauled engine, Lycoming engines provide a history of performance and reliability, with worldwide parts and support from Textron Lycoming.

PERFORMANCE: O-235-N2C Model	
Max Continuous HP	116
Max RPM @ full power	2,800
Max Recommended TBO (hours)	2,400
CYLINDERS	
Number of cylinders	4
Bore (inches)	4.375
Stroke (inches)	3.875
Displacement (cubic inches)	233
Compression ratio	8.1 : 1
FUEL	
Aviation Grade (Octane)	100 or 100 LL
gph consumption @ 75% power	6.5
gph consumption @ 65% power	5.7
WEIGHT	
Dry weight (pounds, no access.)	218



The Lycoming O-235 engine is a four cylinder, direct-drive, air-cooled engine with an industry-leading 2,400 hour TBO. Installation of the engine uses a dynafocal engine mount.

STANDARD EQUIPMENT

- Impulse Magneto system
- Shielded ignition harness
- Tachometer drive
- Exhaust gaskets and attach. hardware
- Spark plugs
- Intercylinder baffles
- Oil screen
- Oil cooler thermostatic bypass valve
- Operator's Manual
- Carburetor

Zenith Aircraft Company offers firewall-forward accessories for installing the Lycoming O-235 engine in the ZODIAC XL, including the engine mount, fiberglass cowl, and propeller.

Source: Textron-Lycoming. For more information on engines: **lycoming.textron.com**

ZENITH AIRCRAFT COMPANY, Mexico Airport, Mexico, Missouri 65265-0650 Tel: 573-581-9000 FAX: 573-581-0011
Call 573-581-9000 (Mon. - Fri. 8 - 5 Central) **www.zenithair.com**

ARTICLE REPRINT

The Zenith Zodiac Goes One Size Larger

Flying the new Zodiac CH 601 XL

"...an **excellent choice** for an **economical** two-seat **cross-country cruiser**."

By LeRoy Cook. Article reprinted from **CustomPlanes** magazine, February 2001 issue, pages 26-31.

When a kit aircraft design grows into a larger, more capable vehicle, it generally means the concept was right in the first place. A good engineer keeps expansion in mind when laying out a basic structure, knowing full well that someday it will have to be stretched, strengthened and enlarged. This was the route take by Chris Heintz of Zenair Ltd. in Midland, Ontario, who has been involved with the aerospace industry for many years when he designed the Zodiac CH 600 homebuilt in 1984. Over time, the basic kit evolved into the CH 601, with several derivatives.

The Zodiac CH 601 was sold as a finished product in Canada, where it is flown as an advanced ultralight, but under U.S. rules it had to be certified as a homebuilt with at least 51 percent of the aircraft built by the kit purchaser. Given homebuilders' penchant for adding ever greater power and weight, a larger and heavier kit version was called for – something beyond the advanced ultralight category. To meet this need, a new XL version of the CH 601 has been introduced, offering more of everything Zodiac builders wanted in their all-metal two-seat low-wings. Zodiac kits are produced in Mexico, Missouri, in the Zenith Aircraft plant, which was recently doubled in size to accommodate burgeoning demand. We dropped in to visit with two of Heintz's sons, Sebastien and Nicholas, who operate the Zenith facility, and took the opportunity to test-fly one of the new CH 601 XL prototypes.

Development of the ZODIAC XL

In the beginning, the Zodiac was a basic sportplane, powered by a Volkswagen car engine or, eventually, the two-stroke, 65-hp Rotax 582. As engine development progressed, most CH 601s were flown with Rotax 912 four-stroke powerplants. The wing was a deep, high-lift airfoil, and the characteristic Heintz tail featured an all-flying rudder, giving maximum control with minimum size. As time went on, an HD heavy-duty version was developed, stressed for + /-6 Gs.

The lust for speed resulted in an S-series speedwing option, featuring a 4-foot-shorter span and a thinner, tapered airfoil in the outboard section, with a scarfed tip for enhanced dihedral effect. Other evolutionary improvements included wing fuel tanks as an option to the fuselage tank and baggage bays that could be built into the inboard wing panels. The CH 601 HD and HDS were good airplanes, but there was still more room for growth in the design.

A certain segment of the kit airplane market wanted to use 'real' aircraft engines, a.k.a. the Continental 0-200 or the Lycoming 0-235. Grossing 100 pounds heavier than the CH 601, the CH 601 XL was designed to accommodate these engines. Other engine choices for the XL include the six cylinder Jabiru 3300, Subaru EA-81 conversions, JPX or even the Rotax 912S, all in the 100-hp range.

The CH 601 XL has an entirely new wing that restores the span to a full 27 feet and eliminates the no-dihedral stub wing to which the main gear was attached. The new wing has the same dihedral from the root to the tip because the aluminum spring main gear legs are attached to fuselage structure rather than stub wings like the bungee-cord-cushioned main gear of the earlier Zodiacs.

The new wing also features electrically actuated flaps, which reduce the span of the hingeless ailerons Heintz favors; the wing's top skin serves as the hinge and

gap seal, flexing a few degrees to achieve roll control. The 12-gallon fuel tanks are located forward of the spar. The new heavy-duty spring main gear on the prototype carried 5.00x5 wheels and tires, but it retained the 16-inch nose tire from the CH 601; we rather liked the jaunty nose-high angle this created.

The earlier Zodiacs had a neat tip-over canopy design that could be opened from either side for a choice of boarding access, but the occupants could still only board one at a time. The new XL canopy features a forward-tipping design with gas-spring assist, so both people can enter the cockpit simultaneously. Behind the seats, a 40-pound baggage area can handle routine cross-country gear. Most importantly, the XL's cabin is 3 inches longer than the 601's, providing some extra legroom.The flight controls are cable-operated. There is a vestigial fixed vertical fin atop the tailcone, but most of the tail is an all-moving surface that provides powerful yaw control. The 91-inch-wide horizontal tail, on the other hand, has large elevators attached to fixed stabilizers; Nicholas Heintz says no increase in tail area was needed when scaling up to the XL. The battery remains on the firewall, easily reached under the removable composite cowling.

Construction of the Zodiac CH 601 XL primarily employs 6061-T6 aluminum, stitched together by a gazillion heavy-duty pulled rivets, rather than bucked rivets. In keeping with the Chris Heintz philosophy that his airplanes be constructed with only normal hand tools like a file, snips, drill and blind rivet gun, the CH 601 XL kit requires no welding and no complex driven riveting (the engine mount and wing spar come already assembled). However, for the purist and scrounger, plans are available, as well as full and sectionalized kits.

The build time is said to be as little as 400 hours, and, indeed, Zodiacs have been built in a week during airshows as demonstration projects but one can easily double that figure if painstaking finish work is desired. The space required is fairly modest, thanks to the still-diminutive size of the airplane, particularly before the wings are attached.

Going Flying

Our friend Nicholas Heintz didn't have to ask twice when we started hanging around his new bright-red CH 601 XL demonstrator, built in Canada as a proof-of-concept machine. Charlie X-ray Alpha was still warm from its previous showing, so we leapt onto the wing-walk (there is no boarding step behind the wing) and slipped into the seat.

We found a 44-inch-wide cabin with only the middle few inches taken up by a central tunnel for the control linkages. This early prototype wasn't optimized as a full-dress demo airplane, but it wasn't a barebones airplane either. Avionics consisted of a PS Engineering PM-1000II intercom/audio panel and a Bendix/ King KLX 135 GPS/com radio.

The roomy panel had space for gyro instruments, although they were not installed. The pitch trim switch was near the throttle. Heintz said he would prefer the smaller Mitchell engine gauge cluster that would open up a spot on the panel for a center-mounted radio. The wing tanks did, however, allow for unlimited panel options because there's no header tank behind the panel. The fuel selector is mounted on the floor between the pilots.

The center-mounted control column is another special Chris Heintz feature, with a Y-shaped handle branching to either seat. This unique system clears up floor space and allows either pilot equal access. We did, however, have toe brakes only on the left side. No matter; once underway, we found the XL was easy to handle with a low taxi speed. The nosegear steering was quick and

As you might expect from a designer who has several certificated airplanes to his credit, it flies with no surprises, just as it should. Check it out for **fun on a budget**.

positive and the ride was well cushioned, even on rough pavement. The canopy can be left ajar for added ventilation on the ground.

A quick run-up yielded no surprises. A real magneto test at 1700 rpm replaced the Rotax 912's 3000-rpm check of CDI modules. There was no vacuum system installed on the VFR panel of C-GCXA. Electric pitch and rudder trim were set to neutral, and the boost pump was flipped on. No flaps are used for takeoff.

After the canopy was snugged shut and the latching was verified, we headed down the Mexico runway under the full cry of 116 Lycoming horsepower. Liftoff at 65 knots was accomplished in about 800 feet of runway – a bit late in the execution due to our preoccupation with adjusting the attitude with the central stick. The tendency to PIO from light pitch forces was handled by simply freezing the stick in place and letting the airplane settle down. A climbout at 90 knots yielded 600 to 700 fpm in the summer turbulence (about double what a Cessna 150 would do under similar conditions).

Nicholas Heintz lowered the flaps slightly to stay next to the Cessna 150 photo plane.

Leveling out at 3000 feet, we enjoyed the fighter-like view through the bronze-tint fishbowl canopy. Wrapping the XL into steep turns and hauling back on the yoke seems natural from the left seat, with the lockable throttle in the left hand. The pitch and yaw controls were lighter than the roll mode, but not overly sensitive.

We set up 2500 rpm to see 117 knots [134 mph] indicated, or about 126 knots TAS [145 mph]. At a more leisurely 2400 rpm, we achieved 110 knots, or roughly 118 knots TAS. It's a quick little airplane, but when we slowed it down with flaps up, we were able to maneuver at 60 knots with no hint of a stall. Working the angle of attack higher, the airplane broke with plenty of notice at 50 knots; lowering the flaps makes only a slight difference in stall speed, but it does lower the nose attitude for a more comfortable approach. The top of the white arc for flaps is at 100 knots, while the yellow arc starts at 140 knots.

Returning to the airport, there wasn't much to discover about the airplane's traffic-pattern habits; it was docile at a time when the pilot's attention can easily be diverted elsewhere. We felt comfortable with 80 knots in the pattern, running about 75 knots on final with flaps extended. Touchdown at 60 knots had us turning off in 1000 feet with negligible braking.

The CH 601 XL is an excellent choice for an economical two-seat cross-country cruiser, particularly if you like metal airplanes. **It runs fast, carries a decent load and offers a comfortable cabin. As you might expect from a designer who has several certificated airplanes to his credit, it flies with no surprises, just as it should. Check it out for fun on a budget.**

Article reprinted from **CustomPlanes** magazine, February 2001 issue, pages 26-31. Text and photos by LeRoy Cook. Subscriptions: Call 800-999-9718

ZODIAC XL Design Features

- ✪ BASED ON PROVEN DESIGN (since 1984)
- ✪ ALL-METAL AIRFRAME (6061-T6 aluminum alloy)
- ✪ LARGE AILERONS & NEW FLAPS (electric)
- ✪ CONVENTIONAL 3-AXIS CONTROLS
- ✪ STEERABLE NOSEWHEEL (direct linkage)
- ✪ ***NEW*** SPRING MAIN LANDING GEAR
- ✪ HYDRAULIC DISK BRAKES
- ✪ SHOCK ABSORBING 'BUNGEE' NOSE GEAR
- ✪ ***NEW*** FORWARD-HINGING CANOPY DESIGN
- ✪ EASY CABIN ACCESS FROM BOTH SIDES
- ✪ REMOVABLE WINGS
- ✪ ALL-FLYING RUDDER
- ✪ OPTIONAL STROBE / NAV / LANDING LIGHTS*
- ✪ SUITABLE FOR DIFFERENT ENGINE TYPES
- ✪ PROVISION FOR FLOATS*
- ✪ DETAILED BLUEPRINTS & CONSTRUCTION ASSEMBLY MANUALS.

CABIN AREA

- ✪ ROOMY SIDE-BY-SIDE SEATING
- ✪ 44-INCH WIDE CABIN
- ✪ LARGE INSTRUMENT PANEL
- ✪ ***NEW*** LARGER BAGGAGE COMPARTMENT (rear of seats)
- ✪ EXCELLENT VISIBILITY: 360-degrees
- ✪ EASY CABIN ACCESS FROM EITHER SIDE
- ✪ DUAL THROTTLE CONTROLS
- ✪ DUAL RUDDER PEDALS (RUDDER & NOSE WHEEL)
- ✪ ELECTRIC ELEVATOR TRIM TAB / ELECTRIC FLAPS
- ✪ TOE BRAKES (LEFT SIDE)
- ✪ CABIN HEATER (WITH ROTAX ENGINES)*
- ✪ INSTRUMENTS PACKAGE (FOR ROTAX ENGINE)*

Kit Features & Equipment Summary

- ✪ LOW BUILD TIME: 500 Hours
- ✪ SIMPLE BUILDING TECHNIQUE: Just basic skill and tools.
- ✪ MODULAR CONSTRUCTION MINIMIZES WORKSHOP SPACE REQUIREMENTS
- ✪ QUALITY PARTS & COMPONENTS
- ✪ YOUR CHOICE: COMPLETE KIT, COMPONENT KITS OR PLANS-ONLY
- ✪ ***NEW*** DETAILED CAD DRAWINGS (complete blueprints) – NOT JUST INSTRUCTIONS.
- ✪ ***NEW*** DETAILED PHOTO ASSEMBLY MANUALS.
- ✪ LIFETIME TECHNICAL SUPPORT FROM THE FACTORY (including online support resources).
- ✪ SUITABLE FOR DIFFERENT ENGINE TYPES
- ✪ NO MESSY & HAZARDOUS DOPING OR COMPOSITE WORK

STANDARD KIT EQUIPMENT

- ✪ AIRFRAME KIT IS COMPLETE. All airframe parts and hardware are included - ready for assembly.

WHAT'S INCLUDED: Factory riveted wing spars, pre-formed sheet-metal parts (ribs, bulkheads, skins, etc.), factory-welded parts, landing gear system (tricycle), standard fuel system, canopy, flight controls, instrument panel (blank) and all hardware required for assembly.

WHAT'S NOT INCLUDED: Engine and firewall-forward components (engine mount, cowl, prop, engine controls), Instruments (flight & engine), Electrical System, Upholstery, and Paint. Full firewall-forward engine packages are available for select engines.

- ✪ MANY PRE-DRILLED SKINS! Most flat fuselage and wing skins are supplied pre-drilled from the factory.
- ✪ WELDED ALUMINUM FUEL TANKS: Kit includes all basic fuel system plumbing, including gascolator and fuel level senders and gauges.
- ✪ FACTORY-RIVETED WING SPARS
- ✪ FULL LANDING GEAR SYSTEM: Kit includes Grove wheels, tires, and hydraulic brakes.
- ✪ SEAT BELTS WITH SHOULDER HARNESSES.

* Optional equipment. Equipment, features and availability subject to change without notice.

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Building my Zodiac CH 601 HD - A Builders Story, By Brent Battles (Arden, North Carolina)

From my perspective at age 57, there's a tendency to think about life in terms of accomplishments. In a few short years, I may well be thinking in terms of lost opportunities. For me, building an airplane was destined to make one or the other of those lists.

First exposed to small planes at age five in my dad's Navion, I later got my pilot's license fresh out of high school. Years later, I became aware of amateur-built aircraft, visited two under construction, and was hooked. But like most everyone else on the planet, I had plenty of "reasons" why I couldn't take the plunge: lack of time, money, skill, dedication ... and the nerve actually to fly the thing! (I settled for building a balsa model.)

So what might it take to move airplane building from the "I wish I had" to the "By gosh, I did it" column? In the hopes of inspiring just one reader to make that move, I'm going to describe how it came to pass for me.

In the spring of 1998 I turned 55. That once dormant urge to build an airplane had returned. Semi-retired and living in a relatively low-cost region of the country, time and money were a bit more available. Yet, once again, I diffused the urge, allowing myself a more modest luxury of buying a Mazda Miata in exchange for never again entertaining "that building idea." That resolve lasted five months, and I was off researching the 400 some-odd kit airplanes on the market. I limited my shopping to a group of rather basic airplanes which fit budget and my tastes for flying as well.

Following visits to my two "finalists," I came away from a demo flight at Zenith Aircraft convinced I had a perfect match for my interests and skills. Following the 750-mile drive home, I waited a discrete day or two before actually placing my order, so as not to appear impulsive!

Several features drew me to the Zodiac. First, it's made of durable aluminum like conventional aircraft. What it may lack in speed, it more than makes up for in climb performance (important here in the mountains of Western North Carolina) and incredible visibility through its bubble canopy.

And it could be built in a very reasonable time – as illustrated by one-week completions by inexperienced volunteers at a number of airshows. The build time all too often makes the difference between languishing for years in a sea of parts and dust and actually taking your first flight... an event which for the majority of amateur builders never comes. You'll also inevitably hear stories of how an airplane project got between a builder and his (or her) mate, but I avoided this too-costly outcome by virtue of her patience and the fact that the project did not drag on for years, as many such endeavors commonly do. So what does it take to undertake building with justified confidence? Well, I'd suggest that you ought to have had at least some experience in building something. I'd built radio kits as a kid and a couple of houses as an adult. These aren't prerequisites, of course, but having an interest in how things fit together and a taste of assembling something are good indicators that you can get right into building an airplane.

So what was it like building my Zodiac? My first step was to unpack and inventory all the sheetmetal, formed parts, and plans I had brought home in my compact pick-up truck. The 12-foot by 4-foot work table I had built to fit into a basement storeroom left just enough room to walk around three of its sides. On it, I built the three components of the tail assembly, the wings, the center fuselage section, and most of the rear fuselage – all over a period of six months. When I needed more room, I moved to one-half of our garage for the remaining six months of construction. (Yes, the Miata was left outside, not my wife's car.) Within nine hours, I had the most wonderful structure I had ever seen – an extremely strong airfoil that only weighed a couple of pounds. This was just a hint of the elegance and integrity of stressed aluminum skin construction that characterizes the entire airplane. As I would continue to do throughout the building process, I paid great attention to detail – far more than necessary, but as a matter of pride in whatever level of craftsmanship I was able to bring to the project. I don't claim that all my work was flawless! By the time I had completed the tail, I had experienced most of the processes required to build the entire airplane – drilling, cutting aluminum with tin snips; laying out, cutting, and bending heavier aluminum stock; priming with corrosion preventative; and finally riveting ... in my case, by hand. Directions for kit planes can vary dramatically between manufacturers. I found Zenith's traditional plans to be more than adequate, although they've recently added CAD drawings that provide pictorial views of details as they become pertinent in the building process. I found myself working primarily with the plans, even though a "sequence manual" consisting of written instructions was provided covering most of the airplane's assemblies.

From sharing experiences with others, I have concluded that if one is lost without step-by-step "cook book" instructions building with confidence and real understanding is difficult at best. Since building an "experimental" airplane is specifically intended to be an educational process, understanding how and why parts are formed and fit together as they do is an important part of the experience.

As you can imagine, it takes some time before all the pieces start to look like an airplane. I won't bore you with construction details, but will say that I often went to bed well after midnight, maybe a bit tired but always excited about what I had been able to accomplish that day. My project was built over a one-year period – some days I'd work six to seven hours, others maybe two hours, and sometimes I'd be away from my workshop for several days at a time (not by choice, mind you). Having started in mid-January of 1999, I had the airframe assembled and ready to roll on its own wheels by the end of September. I was determined to do everything on this airplane entirely by myself, unless physically impossible by virtue of simply not having enough hands. I had help fitting the canopy and lifting the engine into place. Probably the most challenging work involved designing, wiring and plumbing the instrument panel and radios.

This project has been the single most satisfying personal accomplishment I have ever experienced. I could so easily have deemed myself unfit, inadequately prepared, unworthy, or otherwise disqualified from undertaking this project. I could have made more "sensible" use of the money devoted to my airplane. On the other hand, I could have spent a lot of time – when time is short – regretting the passing of such an opportunity. And I could have missed out on the dozen or more great friendships I have made among fellow builders, to say nothing of the 200-odd Internet-linked Zenith builders with whom I continue to share ideas and inspiration. And, oh yes, the little airplane is a joy to fly! People can't believe how quickly it climbs, how quiet it is, how little fuel it burns, and most of all, what an exhilarating view you get from that bubble canopy. Sure it's not the fastest plane around, but just like the building of the plane, the world goes by much too fast as it is.

This story was first published in InFlight USA magazine (12/2000). It has been edited for length.

Additional Information About Kit Aircraft

Building an aircraft has become popular with many pilots. In 1999 there were more than 16,000 experimental aircraft registered in the U.S. (about 12% of the general aviation aircraft fleet), representing one of the few growth sectors in aviation. For many pilots, building and flying their own aircraft is a rewarding and challenging hobby, and offers them the opportunity to learn and develop new skills. A kit aircraft usually costs significanty less than a "factory-built" design, and often offers better performance and efficiency.

In the US, kit aircraft are registered as “Experimental” amateur-built aircraft. FAR Part 21 Section 21.191(g) states that an amateur-built aircraft is an aircraft where the major portion *“has been fabricated and assembled by persons who undertook the construction project solely for their own education or recreation”.* That means that the builder is required to construct more than 50% of the aircraft. Once the assigned test-flight program is completed, the main operating limitation for experimental aircraft is that they cannot be used for commercial purposes. Builders of a kit aircraft can apply for a Repairman Certificate to perform all maintenance of their aircraft.

It is important that aircraft builders understand that experimental aircraft designs, parts and manuals are not approved or certificated by the FAA, and that the amateur builder is the manufacturer of the aircraft (Zenith Aircraft Company is not a manufacturer of aircraft but is a supplier of aircraft kits and parts). As such, Zenith Aircraft Company cannot guarantee that the aircraft, as constructed by the builder, will be eligible for certification or will meet the builder’s expectations or requirements.

FAA Kit Evaluation: The Federal Aviation Administration (FAA) has completed evaluation of the ZODIAC CH 601 series aircraft kits and has determined that the kits, as evaluated, meet the intent of FAR Part 21, Section 21.191(g). The FAA does not certify aircraft kits or approve kit manufacturers. However, the FAA does perform evaluations of kits for the purpose of determining if an aircraft built from the kit will meet the major portion requirement of Part 21.191(g). This evaluation must not be construed as meaning the kit is FAA “certified,” “certificated,” or “approved.”

Experimental Aircraft Association (EAA): EAA has excellent programs and resources available to kit aircraft builders and pilots. Builders gain access to many valuable resources by joining EAA:

> ***Technical Counselors***: Experienced volunteer advisors who will share their knowledge and expertise with you as you build your kit.
>
> ***Flight Advisors***: Volunteer advisors who will help you prepare for the test flights of your aircraft.
>
> ***EAA Chapter***: Join a local EAA Chapter to meet fellow builders in your area (and borrow their tools and expertise!). Chapters are a great resource for local knowledge and information that helps make recreational aviation fun, enjoyable, and attainable!
>
> ***Join EAA!*** To join EAA call 1-800-564-6322

Additional resources about kit / experimental aircraft:

Federal Aviation Administration (FAA):

> ***http://av-info.faa.gov/dst/amateur/*** – this website contains links to many FAA resources regarding kit / experimental aircraft, including FAA forms.
>
> *AC20-27D, “Certification and Operation of Amateur-Built Aircraft.”* This Advisory Circular provides information and guidance in the building, certification and operation of amateur-built aircraft.

Experimental Aircraft Association (EAA):

> ***http://www.eaa.org*** – News and information about EAA and its many programs and resources. Locate a local EAA chapter or join online.

FAA's Proposed Sport Pilot License and Light-Sport Aircraft

We've been receiving many inquiries about the FAA's proposed Sport Pilot license. Activation of a Sport Pilot rule could revolutionize recreational aviation by making it truly affordable once again to own and operate a light aircraft.

At issue is a new kind of airman certificate (license) called a Sport Pilot certificate that would be established with new eligibility requirements. This new Sport Pilot certificate would be intended for persons who wish to fly aircraft of simple design for recreational and sport flying. The sport pilot certificate is necessary to provide a reasonable and appropriate means of certification for pilots that wish to operate certificated, lightweight, uncomplicated, slow speed, and very diverse types of aircraft.

In February 2002, the FAA published a Notice of Proposed Rulemaking (NPRM) titled "Certification of Aircraft and Airmen for the Operation of Light Sport Aircraft."

Some of the highlights of the NPRM:

Pilots:

1. Creates new Sport Pilot license.
2. Training and FAA tests will be required.
3. Ultralight training and experience can be credited toward Sport Pilot License.
4. Training period is substantially less than Private Pilot, about 20 hours.
5. Time will be loggable for further ratings.
6. 3rd-class medical or **state driver's license**.
7. Not for hire.
8. Day VFR only.

Aircraft (Light-Sport Aircraft):

1. Maximum Gross Weight: 1,232 lbs.
2. Stall - Landing Configuration: 39 knots (45 mph) or less
3. Stall - cruise configuration: 45 knots or less (52 mph)
4. Maximum continuous airspeed: 115 knots (132 mph)
5. Two-place maximum (pilot and one passenger)
6. Owner can maintain.
7. Fixed landing gear, or repositionable gear for seaplanes

A sport pilot may fly any aircraft that meets the definition of a light-sport aircraft, but the aircraft does not need to be certificated as a light-sport aircraft: A sport pilot may fly an aircraft certificated as an Experimental amateur-built aircraft. A pilot who holds a private pilot certificate, or higher, may elect to fly a "light-sport aircraft" while exercising the privileges of his/her private pilot certificate.

The NPRM establishes two new aircraft airworthiness certificates in the "Special" category: a "Special light-sport" aircraft and an "experimental light-sport aircraft." The Special light-sport airworthiness certificate will apply only to new factory-built, ready-to-fly aircraft, and not to kit-built aircraft. This category of light-sport aircraft may be used for sport and recreation, flight training, or rental.

The Experimental light-sport aircraft category will encompass a new category of kit-built light-sport aircraft. The maintenance requirements for these aircraft will be similar to the maintenance procedures required of many amateur-built aircraft. Experimental light-sport aircraft may be used for sport, recreation, and for non-compensated flight training.

Zenith Aircraft Company cannot guarantee that kit aircraft, as constructed by the builder, will be eligible for operation under the new category. Based on the market demand, plans may be made to offer assembled aircraft as allowed under the new rules.

For up-to-date information, visit the EAA (Experimental Aircraft Assoc.) website: ***www.sportpilot.org***

ORDERING PROCEDURE

ORDERING PROCEDURE

To order your ZODIAC kit, fill-in the enclosed ORDER FORM, and return to Zenith Aircraft Company with your deposit. On kit orders, a 50% deposit is required with the order. For orders totaling less than $1,000.00, send full payment with the order. When we receive your order, a Zenith Aircraft representative will then contact you to provide you with a scheduled shipping date, and to arrange shipping or pick-up details. The balance for the order will be due prior to shipping or upon pick-up.
Kit orders can be either crated and shipped to you, or picked up at the factory.

Completing the ORDER FORM:

1. **INFORMATION ABOUT YOU**: Clearly print or type your name, mailing address and telephone numbers. If the shipping address is different than the mailing address, make sure to include both addresses.
2. **YOUR ORDER**: Clearly itemize the kit, options and items of your order, with current pricing information.
3. **DETAILS**: Specify any special shipping or pick-up information we need to know.
4. **PAYMENT**: Enclose 50% deposit. Make check payable to Zenith Aircraft Company. Contact us for details on bank wire transfers or other forms of payment.
5. **CONDITIONS of SALE and WARNING NOTICE**: Sign and validate conditions of sale and warning notice on reverse side of WHITE COPY.
6. Send completed WHITE copy of the Order Form with payment to Zenith Aircraft Company. Keep the YELLOW copy for your records.

When we receive your order, we will contact you to confirm receipt of your order, provide you with a scheduled delivery date, and make any required shipping / pick-up arrangements.

FACTORY PICK-UPS: Save on crating and shipping charges

When picking up a complete or component kit at the factory, the kit is not crated so that the aircraft parts can be efficiently loaded and packed on the vehicle (pick-up, van, or enclosed trailer). We recommend you bring moving blankets, corrugated cardboard, and tarps to protect the parts as you load them. Loading the kit will be your responsibility, although factory staff will be happy to lend you a hand in loading the kit. Contact Zenith Aircraft Company for more details on customer pick-ups at the factory.

NEED ADDITIONAL INFORMATION OR HELP WITH YOUR ORDER?

Contact Zenith Aircraft Company if you have any questions regarding placing your order, shipping, or other information:

Telephone: 573-581-9000 FAX: (573) 581-0011

Office Hours: Monday - Friday; 8:00 AM - 5:00 PM Central Time.

Email: info@zenithair.com