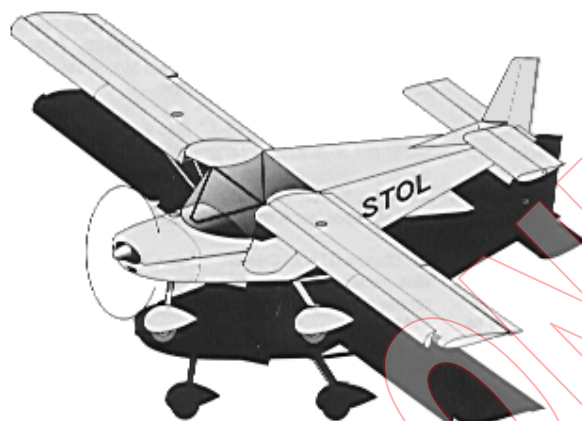


ZENAIR CH 701 SP



Flight Manual

Serial number: _____

Registration: _____

Czech Aircraft Works
Czech Republic
4th Edition
CZ - January 2003

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This document is based on STOL CH 701 Owner's manual issued by ZenairLtd, 2Jan93.

The structure of document was changed according to requirements of BCAR Section S and changes due to MTOW 500 kg with respect to JAR-VLA rules.

1. General

Introduction

The pilot's handbook has been prepared to provide pilots and instructors with information for the safe and efficient operation of this UL-aeroplane.

Certification basis

This type of aircraft has been approved by PFA according to British Civil Airworthiness Requirements CAP 482 Section S Small Light Aeroplanes, Issue 1 including BCAR Paper S901 proposed amendments.

Descriptive data

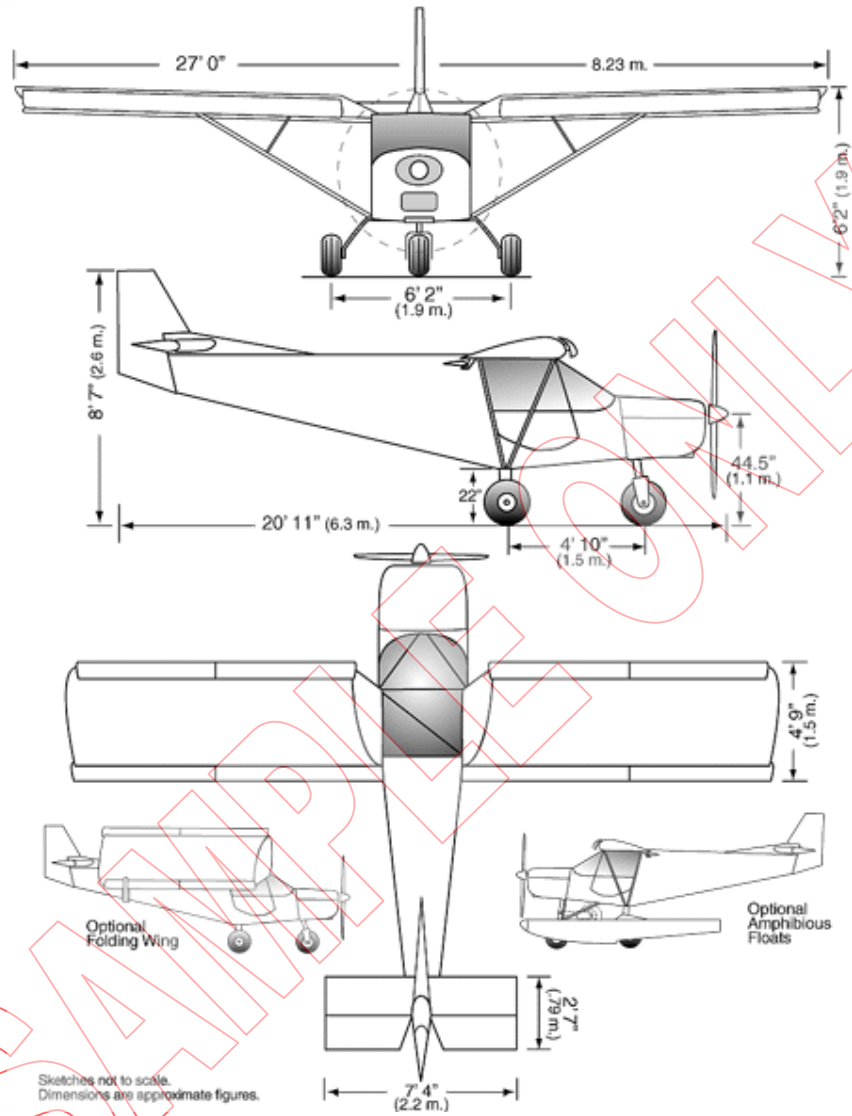
CH 701 is a side-by-side two place, strut-braced high wing monoplane with all-metal structure. CH 701 is a reliable two seat aircraft designed with pilot and passenger comfort in mind for short-field capability, excellent performance and good visibility.

The STOL CH701 is truly the aircraft which combines the advantages of a conventional aircraft with those of an advanced Ultralight.

Standard powerplant is Rotax 912, 4-cylinder, 4-stroke, opposed cylinders.

<i>Wing span</i>	<i>8 220 mm</i>
<i>Length</i>	<i>6 100 mm</i>
<i>Height</i>	<i>2 350 mm</i>
<i>MAC</i>	<i>1.43 m</i>
<i>Wing area</i>	<i>11.4 m²</i>
<i>Wing loading</i>	<i>43,8 kg/m²</i>
<i>Engine</i>	<i>Rotax 912 ULS 100 HP</i>
<i>Propeller</i>	<i>two or three blade composite or wood</i>
<i>Diameter</i>	<i>1 700 mm</i>

Three-view drawing:



2. Limitations

This section 2 includes operating limitations, instrument markings and basic placards necessary for safe operation of the aeroplane, its engine, standard system and standard equipment.

Airspeed

Airspeed limitations and their operational significance are shown below:

	Speed	IAS mph	Remarks
V_{NE}	Never exceeded speed	110	Do not exceed this speed in any operation
V_{NO}	Maximum structural cruising speed	90	Do not exceed this speed except in smooth and then only with caution
V_A	Maneuvering speed	78	Do not make full or abrupt control movement above this speed, because under certain condition the aircraft may be overstressed by full control movement
V_{FE}	Maximum Flap extended speed	65	Do not exceed this speed with flaps extended.

Airspeed indicator markings:

Airspeed indicator markings and their color-code significance are shown below:

<i>Marking</i>	IAS value or range (kt)	Significance
White arc	34 – 63	Positive Flap Operating Range
Green arc	34 – 78	Normal Operating Range
Yellow arc	78– 110	Maneuvers must be Conducted with caution and only in smooth air
Red line	110	Maximum speed for all Operation

Powerplant:

Engine manufacturer.....	Rotax
Engine Model:	Rotax 912 ULS
Maximum Power, take-off	100 HP
continuous:	82 HP
Maximum Engine RPM, take-off..	5 800
continuous	5 500
Maximum Cylinder Head Temperature:	150 °C
Maximum Oil temperature.	140 °C
Oil Pressure, Minimum.	1.5 bar
Maximum	5 bar
Fuel Pressure	0.15 - 0.4 bar
Fuel grade..	Premium grade leaded gas, according to DIN1600, Q N O R M C1103 EURO SUPER ROZ 95 unleaded, according to DIN51603, QNORM C 1101
Oil grade	SAE 20 W50 or SAE 30 High performance automotive oil API, S6, Mobil 1, 15 W50, NO AVIATION OIL

Propeller manufacturer:

Propeller models: Warp Drive, Woodcomp, Kremen

Propeller Blade angle - see propeller manual:

Powerplant instrument markings

Powerplant instrument markings and their colour code are shown below:

<i>Instrument</i>	<i>Red line</i> Minimum limit	<i>Green Arc</i> Normal operating	<i>Yellow Arc</i> Caution range	<i>Red line</i> Maximum limit
<i>Tachometer</i>	-	2500 – 5500	5500 - 5800	5800
<i>Oil temperature °C</i>	50	90 – 110	110 - 140	140
<i>Cylinder Head temp.</i>				150
<i>Oil pressure (bar)</i>	1, 5	4 – 5		5
<i>Fuel pressure (bar)</i>	0,15			0,4

Weight:

Basic Empty weight..... 263 kg
 Maximum take-off weight 500 kg
 Maximum cockpit weight 273 kg
 Minimum cockpit weight 55 kg
 Maximum weight in Baggage compartment 18 kg

Centre of gravity:

Standard centre of gravity position for empty aircraft is 21.6 % MAC (310 mm from reference datum - leading edge of slats)
 Allowable Range: 20 - 35 % (286 mm to 500 mm)
 See section 6 Weight & Balance for details

Approved maneuvers:

No aerobatics maneuvers including intentional spinning are approved

Maneuvering load factors:

Limit load factor: positive 4 negative 2
 The ultimate load factors are the limit-load factors multiplied by the safety factor of 1.5

Flight crew:

Minimum number of crew members is 1 and maximum total number of occupants is 2

Kinds of operations:

The airplane may be operated in day VFR non-icing condition.

Fuel long range wing tank capacity:

Total capacity: 85 litres
 Usable fuel..... 82 litres
 Unusable fuel : 3 litres
 Approved fuel grades: Premium grade leaded gas, according to

DIN1600, ONORM C1103 EURO
 SUPER ROZ 95 unleaded, according
 to DIN1603, ONORM C 1101

3. Emergency procedures

This section provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by airplanes or engine malfunction are extremely rare if proper preflight inspections and maintenance are practiced.

However, should an emergency arise, the basic guidelines described in this section should be considered and applied to correct the problem.

Emergency landing:

1. Set airspeed for best rate of Descent 45 kt, flaps up
2. Shut off fuel
3. Shut off engine
4. Tighten seat belts and harness

Avoid tight turns. In some cases, the flaps may be extended before touchdown. Land as usual, straight ahead power-off approach. Do not try to do any turns - the loss of altitude while gliding is marginal.

Accidental spins:

To recover from a spin:

1. Pull throttle to idle position
2. push rudder opposite the spin's rotation
3. bring the pitch control slightly forward.

Fire:

On the ground, before engine is started.

1. Go on pushing starter
2. Shut off fuel
3. Open throttle full as soon as engine starts to blow the fire out

On the ground, engine running.

1. Cabin heat off
2. shut off fuel
3. throttle open to blow fire out

In the air.

1. Cabin heat off
2. Fuel off
3. Ignition off
4. Electrics off
5. Perform an emergency landing

Do Not attempt to restart engine after in-flight fire !!!!!

Fire in cockpit

1. Electrics off
2. Cabin heat off
3. Use fire extinguished

To restart engine in flight (after fuel starvation):

Pull choke before starting and choke in as soon as engine starts.

Note: Make sure that the aircraft is equipped with a functioning fire extinguisher which easily accessible to the pilot. It is recommended to equip the aircraft with an Emergency Locator Transmitter (ELT) and First Aid Kit.

4. Normal procedures

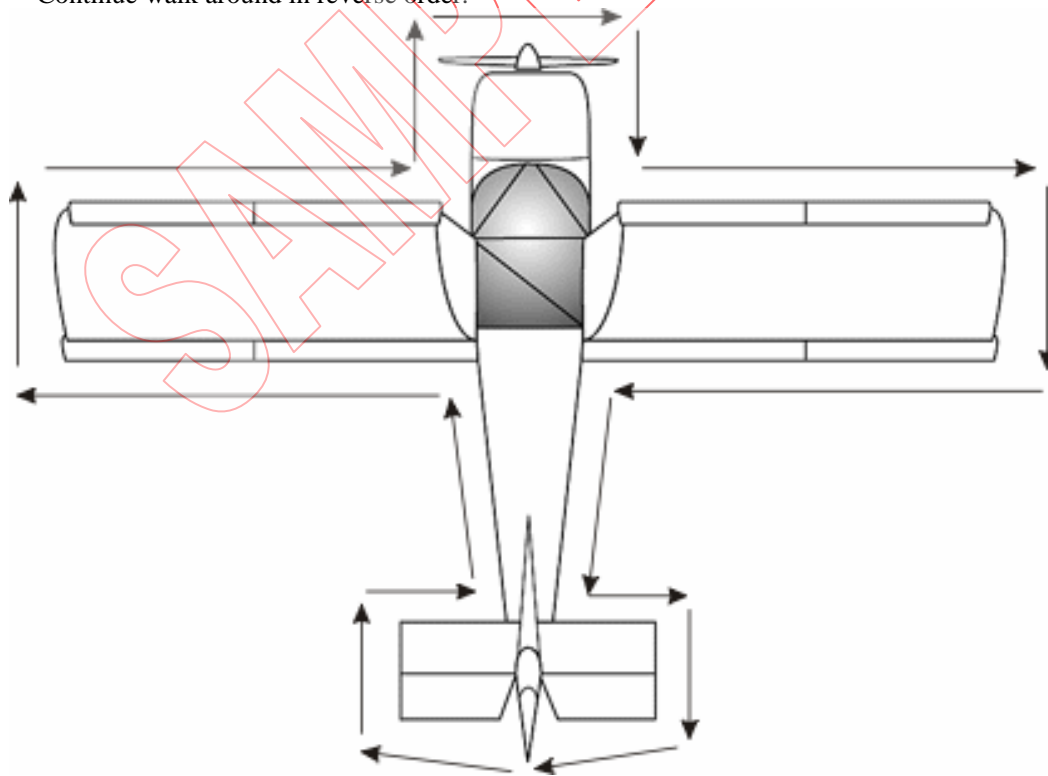
Section 4 provides checklist and amplified procedures for the conduct of normal operation.

Obtain adequate professional flight training on the STOL CH 701 and the required pilot license before attempting operation of the aircraft.

Pre-flight inspection: (“walk around” before each flight):

1. Ignition switch off, fuel open, controls free.
2. Drain gascolator and all drain valves to ensure that no water is in the fuel lines check cowl fasteners for looseness, check spinner and prop. You may want to remove the cowl to check the exhaust and general engine condition for safety. Check fuel quantity as well as coolant level and water pump.
3. Make a visual check of the front wing attachment points, pitot static, upper forward strut attachment (remove tie down), condition of slats and wing tip. Folding wings (option) confirm that the push-pull tubes’ quick release connections are secure.
4. Flaperon, check general condition, hinges, rear strut attachment, flaperon control and rear wing attachment points
5. Landing gear condition, attachments, tires
6. Stabilator attachments, elevator and rudder hinges, cables and attachments, controls stops (remove rear tie down).

Continue walk around in reverse order.



Walk around

Before starting the engine:

Operate controls and make a rapid visual check for proper operation. Make sure the windshield is clean for maximum visibility. Check brakes, and fasten and check safety belt.

Starting engine:

(Refer also to the engine Manual for detailed information)

1. fuel valve ON
2. cock - pull (only for cold engine)
3. throttle - idle
4. master switch -ON
5. ignition switch ON
6. turn starter key to start the engine

When the engine starts, set RPM to 2 500. Check oil pressure - it must raise during 10 sec. After the engine start **DO NOT** increase RPM before oil pressure of 2 bar is reached.

7. Release choke gradually when engine starts.
8. Avionics and other switches ON

Warm-up and ground test:

(Refer also to the engine Manual for detailed information)

Warm-up the engine until the oil temperature is 50°C. Set RPM to 3850 and proceed with ignition check Drop must not be greater than 300. The difference between each circuit must be less than 115. After check of take-off setting let the engine cold.

On cold days, wait for the temperature gauge to register before taxing, allowing the engine to warm up.

Note: For winter operation, the radiator size may have to be reduced to keep engine within operating range. Wrap wide tape around the exposed surfaces of the radiator as required.

Taxing:

With the tricycle configuration taxiing is facilitated by **us** of a steerable nose wheel. Avoid steering the aircraft with the brakes. When winds exceed 20 to 25 mph, taxi very slowly to prevent inadvertent lift-off.

Before take-off:

1. set altimeter
2. set trim
3. check avionics and other switches - ON
4. flaps **up** (handle back)
5. check freedom and deflection of controls
6. check that doors are locked
7. fasten seat belts, not uncomfortably tight (can **you** reach fuel shut off valves ?)
8. check that choke is full in

Take off:

1. set throttle gradually to full
2. check RPM and gauges
3. release brakes

4. draw stick slightly back

Note: For short field take-off: same as above but use the middle flaps setting and climb at the best angle of climb.

Note: As you become more familiar with your STOL you can try various flaps settings and speeds. This may improve short field take-off performances depending on piloting techniques and skills.

Climb

Best rate of climb (Vy): approx. 55 mph, flaps up. This will provide the greatest altitude gain in shortest time.

Best angle of climb (Vx): approx. 60 – 70 mph, flaps in middle setting (if no middle setting flaps down). This will provide the greatest altitude gain in the shortest distance.

Make sure that limit values for temperatures and pressures are not exceeded.

Cruise:

75 % cruise is achieved at:

Sea level	5 300 RPM
5 000 ft	5 500 RPM
8 000 ft	5 800 RPM
Cruise	80 mph

Lower RPM means slower cruise speed, quieter flying, better fuel economy and increased endurance. Above figured are for standard adjusted propellers.

Descent:

Use some power to prevent engine from cooling too much (approx. 3 000 RPM when descending at 40 to 50 kt)

Best rate of descent – 70 mph, flaps up

Approach:

Throttle full back, 70 mph and flaps down (handle forward) will result in a steep approach for landing in tight spots. Use power to stretch the approach or no flaps - extent them only in short final.

Landing:

When over the runway, move the stick slowly back to prevent touch down until the main wheels make smooth contact. The nose will drop as soon as the stick pressure is released.

Cross wind landings and wind limitations:

Approach with one wing low, recommended.

Straighten the aircraft out just before touchdown. When winds are over 25 kt, simply takeoff and/or land into the wind as practically no ground run is required.

Missed landings:

Apply full power. Pull flaps up when speed is above 50 mph. Continue with circuit pattern

Shut down (engine):

After normal flight and taxing is engine cold enough to turn it off. When long taxing full full power were made, let the engine cold.

1. switches -OFF

2. ignition switch OFF
3. master switch -OFF
4. fuel valve OFF

Remove ignition key when aircraft is unattended

Note: The hourmeter counts “engine time” from the moment the master switch is turned on. Do not forget to turn the master switch off.

Tie down:

When the aircraft is not in use, tie it down at each forward strut at wing junction (loop rope through the hole to prevent it from slipping down and bending the strut) and at the rear fuselage tie down ring. Tie down the stick forward (use a bungee around Y stick secured at the wheels). Make sure the doors are properly latched. The optional cabin cover will minimize dust, or damage to the windshield and windows (and keep curious onlookers out).

Note: As the aircraft is not equipped with a “parking brake” it is important to tie down the plane when it is not attended.

SAMPLE ONLY

5. Performance

Section 5 provides data for airspeed calibration, stall speeds and take-off, landing and other data. The data in the charts has been computed from actual flight tests with the aeroplane and engine in good condition and using average piloting techniques.

The flight and operational characteristics of the STOL CH 701 are normal in all respects. There are no “unconventional” characteristics or operations that need to be mastered. All the controls respond in a usual way within the entire range of operations of the airplane.

Speeds provided are indicated airspeed (IAS), unless specified otherwise.

Pitot must be in correct position.

Static - cabin static pressure.

True airspeed = IAS +/- 5 kt in normal operations

Performances are given in standard atmosphere. Aircraft and the power-plant in new condition with standard equipment.

Stall speed (at gross weight 500 kg):

Flaps up	42 mph
Flaps down	39 mph

- the above speeds are with engine at idle, the aircraft simply “mushes in” at stall. The airplane has a relatively high sink rate with flaps fully lowered.

- With power, the indicated stall speed is below any accurate indication as nose attitude is very high. Stall occurs around a walking speed preceded by substantial buffet. The nose drops fast.

CAUTION: *Maximum flaps extended speed $V_F = 55$ kt*

Take-off distances:

- in feet, off hard surface, flaps up

	Ground roll	Take-off distance over 15 m obstacle
Sea level (ISA)	169	283
3 000 ft density altitude	233	389
6 000 ft density altitude	321	536

- take off distances from grass fields are longer and depend on the actual surface.

Landing distances:

Landing distance over 15 m. obstacle is 283 ft (ground roll 180 ft)

Climb performance chart: (IAS)

rate of climb (FPM, full throttle):

Sea level (ISA) at IAS	1000 60	fpm mph
3 000 ft density alt. at IAS	800 55	fpm mph
6 000 ft density alt. at IAS	650 50	fpm mph
9 000 ft density alt. at IAS	300 40	fpm mph

Service ceiling

with standard original carburetor jet setting: 14 000 feet density altitude at gross weight.

Best rate of climb and best angle of climb - see section 4

Fuel consumption:

(Rotax 912)

take-off power 22 litres/hour
75 % 16.2 litres/hour

Range and endurance:

engine settings	cruise speed (mph) IAS	range (NM)
max. continuous	90	150
75 %	80	180

Above values are valid for aircraft in good condition and are without reserve. Ensure that you are not exceeding MTOW limit 500 kg while loading your aircraft.

Before attempting cross-country flights, proper knowledge of the fuel consumption and capacity is required.

Best angle of glide - (gross weight) 65 – 70 mph, with flaps up

6. Weight and balance/equipment list

A wide center of gravity range makes loading your Zenair STOL CH 701 easy. Use the following graph & table and actual weights to calculate and check that marginal points fall within the permissible range.

	Weight (kg)	Distance (m)	Moment (kg.m)
Actual empty weight date of weighing.....			
Pilot + passenger		0,60	
Fuel – standard fuselage tank	30 kg	-0,20	
Fuel – “D” fuselage tank	16 kg	-0,25	
Fuel – wing tanks Long Range	42,5 kg	0,50	
Baggage	18 kg	1,45	
Total :			

These figures must be within the limits for all flying configurations. Limits for C.G. position: 20 - 35 % (286 mm to 500 mm).

	Allowable fuel in litres		
	baggage weight (kg)		
Crew weight (kg)	0	9	18

When c.g of empty aeroplane in standard, the baggage capacity is not critical for position

Aircraft centre of gravity determination

Measuring the aircraft

- inflate the tires
- level the upper fuselage longeron with a spirit level
- measure the length LF and LR: plumb line on the slat leading edge at rib #1 and through the wheel axes.
- weighting the aircraft: Place the empty, but entirely equipped aircraft on 3 scales and level as above - lay the wheel fairings on the appropriate scales.
- fill weighing report - follow the example on the next page.

Sample Weight & Balance Report

Scale reading:

Left main wheel W_L 92 kg
Right main wheel W_R 91 kg
Nose wheel W_N 75 kg

Distances:

Main wheels L_M 0.725 m
Nose wheel L_N 0.700 m

$$X_C = \frac{(W_L + W_R) * L_M - L_N * W_N}{W_L + W_R + W_N} = \frac{(92 + 91) * 0.725 - 75 * 0.7}{92 + 91 + 75} = 0.311 \text{ m}$$

$$\% = \frac{0.311}{1.43} = 0.217 = 21,7 \%$$

Sample of the first row of c.g. table:

	Weight (kg)	Distance (m)	Moment (kg.m)
Actual empty weight	258	0.311	80.2
Date of weighing...13/03/99.....			

Date:

Name:

Signature:

7. Aircraft and systems description

This section provides description and operation of the aeroplane and its system.

The STOL CH 701 aircraft design conforms to TP 10141 Design Standards for advanced Ultra-light Aeroplanes (AULA) (Canada) and BCAR Section S (UK).

Construction:

All-metal construction, stressed skin, single curvature metal skins riveted to stiffeners.

Airframe:

Construction is of 6061-T6 aluminum sheet metal riveted to aluminum angles with Avex rivets. This high strength aluminum alloy construction provides long life and low maintenance costs thanks to its durability and corrosion resistance characteristics.

Wings:

The wing has a high lift airfoil with full-span fixed leading edge slats (bolted to the wing's leading edge) "Junker" type (separate airfoil) full-span trailing edge flaperons (combination flaps & ailerons) and Hoerner wing tips to maximize the STOL CH 701's effective wingspan.

Flight Controls:

The STOL CH 701 is equipped with a dual flight control stick between the pilot and passenger which branches in the form of a convenient Y handle. The classic rudder pedals, connected to a large-diameter steerable nose wheel for easy of ground handling, are equipped with toe-brake hydraulic pedals on the pilot side (on both sides on option) for effective ground steering. The vertical tail is all moving to provide maximum crosswind capabilities. The trim-control on the elevator is electrically operated from the switch on control stick).

The Flap control operates the full span flaperons, it is located on the floor, pilot's side. To extend flaps, lift handle and move forward to the provided notch. Maximum permissible flaps extended speed is 65 mph.

Instrument panel:

Instrument panel is situated in front of pilot and includes instruments for control of the flight and engine.

The aeroplane is fitted at least with those instruments:

Control of flight an airspeed indicator
an altimeter
a magnetic direction indicator
slip indicator (ball)

Control of engine rpm indicator
a fuel quantity indicator
a fuel pressure indicator for each tank
an oil pressure indicator
an oil temperature indicator
a cylinder head temperature
a coolant temperature
an oil quantity indicator - dipstick - located in the engine compartment

The equipment listed above is based on JAR-VLA and exceeds the requirements of BCAR Section S. Additional instruments may be installed.

Engine controls:

Dual throttles of the push/pull type with adjustable friction clamp. Springs are added to the throttle push rods to ensure that the engine will go to full power if the linkages fail. If the friction clamp is loose, this tends to result in self-application of power unless the pilot keeps constant aft pressure on the throttle. The friction clamp, located forward of the firewall, may be tightened or loosened.

Choke: The choke is located near the pilot's throttle (push/pull) control.

Carb heat is automatic (supplied by the exhaust manifold under the cowl) for the Rotax 912 when equipped with the Zenair exhaust and fiberglass cowl. See engine manual or consult engine manufacturer for details.

Master switch connects the electrical system to the 12 Volt battery and charger/coil, controlled by the regulator and a 15 amp reset breaker for safety. See Engine manual for electrical system details.

Note: Engine will run with master off and/or breaker out, (the lighting and ignition coils are two separate circuits) but no electric equipment will operate

Ignition key (or switch) must be ON to operate the engine. For safety remove key when engine is not running.

Starter button (or key) is also located near pilot's throttle control.

Note: All switches and or engine controls are "up" or "push forward" for operation, except the choke which is "pull" for "on".

Optional equipment, switches and/or fuses are subject to change or installed as requested. See Equipment list.

The battery is mounted in the rear fuselage with Rotax 912 powerplant installation.

Powerplant:

Standard powerplant is Rotax 912, 4-cylinder, 4-stroke, w/opposed cylinders. Refer to engine manual for detailed description of the engine.

Fuel system:

The fuel tank(s) are welded aluminum. The standard fuel system consist of one fuel tank situated between the fire wall and instrument panel. There is also possibility of installing a wing tanks.

Wing tanks

Standard 42 liters

Long Range 85 litres (used mostly for SPs)

Optional - "D" tank 22 liter - "D" tank is approx. half size and allows to more space between fuel tank and instrument panel (e.g for installing deeper avionics)

The fuel tank filler caps have vent holes. The drain valve is situated on the gascolator, forward bottom of firewall. The tanks have a finger screen filter. The main fuel shut-off valve is located at the center of aircraft above the rudder pedals.

Note: Fuel shut-off valves are open when valve handles are in line with the fuel lines.

The main tank (std or “D”) has a visual fuel gauge located on the passenger’s side of the instrument panel. Caution fuel management requires a visual check of the fuel quantity using a graduated dip stick. Electrical fuel gauge may be used.

The fuel pump is mechanically operated on Rotax 912 powerplant. See engine manual for details. An electric fuel pump and/or fuel pressure gauge is optional.

Rotax engines are equipped with dual carburetors. Each carburetor has a sediment bowl with an additional fuel strainer (fine mesh filter). See engine manual.

Caution: Consult the engine manual for the types of fuel and oil to use. Use only types approved by the engine manufacturer.

The engine is mounted within the sleek cowlings and provides easy access via **Dzus** fasteners for pre-flight inspection. The Radiator is mounted bellow the firewall in the direct airflow to maximize cooling in hot operating environments.

Propeller:

Ground adjustable two or three blade wood (or composite) propeller (diam. 1700 mm with standard spinner. Your propeller has been set to provide optimum performances, but you can change the pitch to achieve better climbing or cruising performances.

Always refer to propeller manual for instructions!

To prevent vibration, it very important that all the blades are set at exactly the same angle and that the blades are properly secured in the hub. For a take-off and climb propeller setting angle be reduced by 1/4 to 1/2 degree and for a cruise propeller setting increase angle approximately by 1/4 degree. Note that when cruising setting is used, the take-off and climb performance deteriorate.

Landing Gear:

The main gear consists of a solid monoleaf heat-treated aluminum alloy spring suspension that eliminates all moving parts and is virtually maintenance free. The nose gear uses a heavy-duty bungee shock absorber to provide rough field capabilities. Heavy-duty wheel forks are available as an option. They consist of a double over the standard wheel forks to add additional lateral stiffness.

Cabin doors:

Access to the comfortable cabin is via large hinged doors on each side to provide easy individual entrance. They are secured by two forward folding hinges and a rear upper locking mechanism. For flight, doors may be removed if desired. Doors with an opening window are optional.

Seats:

Side-by-side seating. Seat cushions are removable for cleaning and drying. Seatbelts are secured to the airframe by a 4-point system.

Note: Prior to each flight, ensure that the seat belts are firmly secured to the airframe and that the belts are not damaged. Adjust the buckle so that it is centered on the body.

Ventilation is provided by the standard gap at the top of each door frame. This may be sealed in cold weather. Optional vents may be added. Exhaust type cabin heater is an option where fresh air is heated by an exhaust shroud and ducted to the pilot’s feet (pull “choke type” control for heat).

Caution: Incidents involving exhaust gases entering the heating or ventilation system may result in fatal accidents due to carbon monoxide poisoning of the aircraft occupants.

Pitot and static pressure systems:

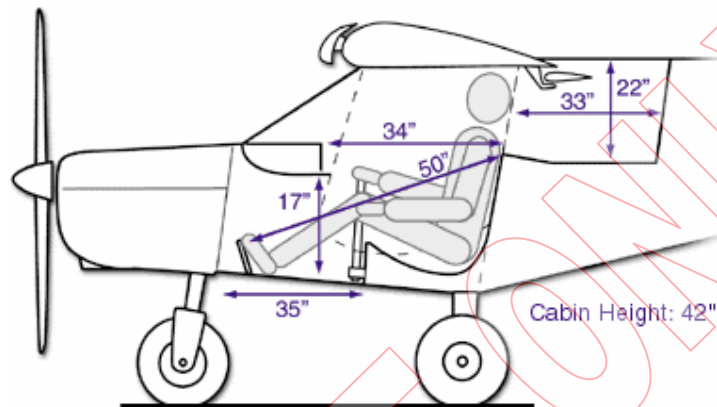
The Pitot (dynamic) pressure is provided by the pitot tube on the right hand forward strut.

Note: blowing into the tube may damage the airspeed indicator.

The static pressure is provided by the cabin pressure.

The Baggage Compartment

Is the inner space provided behind the seat. It may accommodate up to 18 kg of evenly distributed and properly secured cargo. When loading baggage, make sure that weight and balance is correct - always refer to section 6 – Weight & balance



Cabin dimensions

Optional equipment

Utility Options such as skis, floats, amphibious floats, etc. are available from Zenair for a variety of uses.

Caution: The installation of skis floats, amphibious floats, or other equipment will change the performance and characteristics of the STOL CH 701. The pilot must obtain proper instruction (or endorsements) prior to flying to flying the aircraft with such equipment and assure that such equipment is properly installed to the aircraft.

Note: According to regulation, the airplane must have a fireproof identification plate fixed to the airframe and have the proper registration markings. Make sure that all required documents are carried on board the aircraft, including this manual, the engine manual, and the Statement of conformity issued by the manufacturer.

8. Aircraft handling, servicing and maintenance

This section contains factory-recommended procedures for proper ground handling and servicing of the aeroplane. It also identifies certain inspection and maintenance requirements that must be followed if the aeroplane is to retain that new-plane performance and dependability. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered.

Always handle the aircraft with care. Do not push on any control surface (this includes the stabilizer). To push the tail down, lift the prop hub or push down on the rear fuselage. To move the aircraft, do not push or pull at the center of the struts, as bent struts are inappropriate for safe flying. Pushing or pulling is acceptable on the gear and at the bottom and top of the struts (close to their attachment points). In all circumstances, follow all safety precautions pertaining to aircraft, especially around the propeller area. As the STOL CH 701 is an all-metal aircraft built from high strength aviation grade aluminum alloys that have good corrosion resistant characteristics, little care to the airframe is required, especially when stored outside. Polyurethane paint will keep its high gloss for many years when sponged with water. A cup of dishwasher liquid in a pail of water will help remove unwanted dirt. Always rinse thoroughly with fresh water after washing.

Maintenance program

The following maintenance program outlines the minimal maintenance that must be followed to keep the aircraft in good flying condition. The suggested time interval of 25 hour does not in any sense eliminate the need for routine maintenance before and after each flight.

Maintenance is part of the pilot's responsibility: the pilot should be assured that the aircraft is airworthy at all times. The recommended 25 and 100 hour maintenance checks are designed to cover areas frequently neglected in the quicker preflight inspection and serve only as a useful indication of the required maintenance. Record all maintenance and repairs in the Aircraft Log Book.

A qualified individual should perform the aircraft servicing and the maintenance. For spare or replacement airframe parts, use genuine Zenair parts to guarantee long life and durability. Use only genuine engine manufacturer parts on the engine.

Contact your Zenair dealer or manufacturer for all your service, maintenance and parts requirements.

Every 25 hours

Check the general condition of the STOL CH 701 and in particular the following:

General: Verify that no cables are chafed, check for proper anchorage and attachment of all items (fuel, coolant, and oil lines, electrics etc). Verify that all fasteners and pins have the required safety.

Controls: Check for rust on steel parts (clean and repaint as required). Lubricate all moving parts (hinges, control attachments, bearings, etc). Verify that all controls operate smoothly and that they are firmly attached.

Landing gear: inspect nose gear, stops, bungee, control and inspect the main spring, wheel forks and axles.

Wheels: for correct tire pressure see picture. Check the tire wear, rims, and braking system and lines.

Cabin interior: Clean with household cleaners according to the materials. Soap or detergent and water is not recommended for cleaning the upholstery since they could remove some of fire retardant with which the seats may have been treated.

Windshield and windows: The windshield is a single piece of polycarbonate plastic, highly resistant to impact. Clean with "Windex" as the polycarbonate will craze with most chemicals. Do not use gasoline, alcohol, oil, lacquer, benzene, paint thinner, etc..... The optional protective windshield cover will protect it from dust, sand and curious onlookers.

Battery: Check fluid level, especially in hot water. Maintain the level at the top-level mark by adding distilled water as required (read instructions located on battery). Do not overfill as spillage may corrode the airframe.

Propeller: Wood propellers are inexpensive and dampen vibrations efficiently, but maintenance is required to keep the propeller in proper condition. The prop may need periodic re-varnishing. Check the tips and leading edges for damage. Look for nicks and cracks. Inspect spinner, bolts (tight and secured). Wiping the propeller with an oily cloth will result in cleaning off grass and bug, stains. Do not operate airplane in rain since the wood propeller will get damaged.

Engine compartment: Thoroughly check and inspect the engine compartment, including the reduction gear unit, exhaust system, fuel system, oil system and coolant system. Remove and clean the carburetor bowls. Clean (replace if required) the carburetor air filter. The engine and compartment should be kept free of any accumulation of oil, grass and dirt to prevent a fire hazard. See Engine manual for more information.

Engine: Refer to engine manual - follow the recommended procedure by engine manufacturer.

Engine cowling: Check for looseness, Dzus fasteners, front pins and any damage or cracks. Make sure it is properly secured.

Fuel: Remove, clean, and re-install gascolator. Inspect for any leaks and loose fittings in the lines and tank(s), and assure the smooth operation of shut-off valves. Clean (or replace) any installed filters.

Every 100 hour or six months (whichever comes first)

Clean the aircraft: exterior and interior and remove the rear fuselage bottom access door. Make a thorough inspection of the whole aircraft, inspecting for any damage, wear or corrosion.

Front of aircraft: Check and inspect the following: Engine (see engine manual), controls and hoses, engine mount, propeller, battery, exhaust, radiator, firewall, nose gear and wheel. Check that all bolts and nuts are tight and safetied.

Fuel system: Check for leaks, check condition and safety of lines and valve operation. Clean, re-install (or replace) and secure all filters, gascollator and tank finger screen.

Fuselage: Check skins and internal structure for loose rivets, bolts, corrosion and buckling due to miss-handling or over-stressing. Check that the drain holes in the bottom of the fuselage are not plugged up.

Controls: Inspect for looseness, wear, fair-leads and terminals.

Wing & Struts: Check skins, replace loose rivets, check for corrosion and buckles (from mishandling), inspect leading edges and trailing edges. Check bolts and safety (struts, jury struts, wing root attachments, slats and flaperons). Check control surface stops and flaperon interconnection.

Tail: Inspect skins and rivets and look for and correct corrosion etc. Check attachment of tail sections to fuselage, cable ends, trim tab, etc. Check control surface stops.

Landing gear: Refer to 25 hour check list

After the thorough inspection of the aircraft, and after having done the required maintenance and/or repairs, re-install the rear fuselage access door and run the engine for smooth operation. Check all control hinges and moving parts for wear. Replace when clearance exceeds maximum wear of 0.6 mm.

Oil the following (standard "motor" oil):

- all bearings
- all flaperon hinge points
- all flaperon control rods *
- roll control torque tube
- elevator and trim (trim + control)
- all rudder hinge points
- all elevator bellcranks *
- flaperon mixer *
- all pitch control rod ends *
- all control stick bearings (in cabin)
- pedals (3 bearings, cable ends, brake pedals)
- flaperon and trim controls
- all cable ends (also *)
- all throttle bearings
- choke control (if applicable)
- all door hinges and latch

* inside fuselage - access through fuselage door.

Grease (with ball bearing grease): the nose gear strut (top and bottom bearing) and nose wheel axle, and grease all cable fairleads.

Main gear spring attachment. Check that the rubber pads are undamaged and properly secured in place (check top and bottom, right and left sides).

After having made a hard landing: Check the wheel forks (especially if landing was in crosswind), they may be bent sideways. Check the main gear spring, forks, wheels, nose gear strut attachments top and bottom.

Note: If an unusual fact is discovered at any time, during pre-flight or at scheduled inspections, contact a Zenair dealer or the manufacturer for the proper maintenance procedure. DO NOT attempt to maintain or repair the aircraft without proper qualifications. ALWAYS refer to the STOL CH 701 Plans and Manuals, and Engine manual(s) before effecting repairs or replacing parts. ALWAYS use approved replacement parts.

Rivet replacement: Drill out loose or corroded blind rivets and replace using Avex rivets. If required, replace with a rivet the next size up. and/or add another rivet at approximately 12 mm center distance.

Caution: do not damage internal structure when drilling.

Cracked sheet metal: If a small crack appears, stop the crack by drilling a small (3.2 mm) hole at the end of crack. If crack grown again add a patch of the same thickness material and rivet all around with AVEX A4 rivets at a maximum pitch of 40 mm. Do not damage internal structure when drilling.

Buckled trailing edges (due to mishandling): They are usually not detrimental to the strength of the aircraft. as long as the buckle does not exceed 15 mm over 1 m. They may slightly offset the correct trimming in flight. Check for cracks that may develop.

