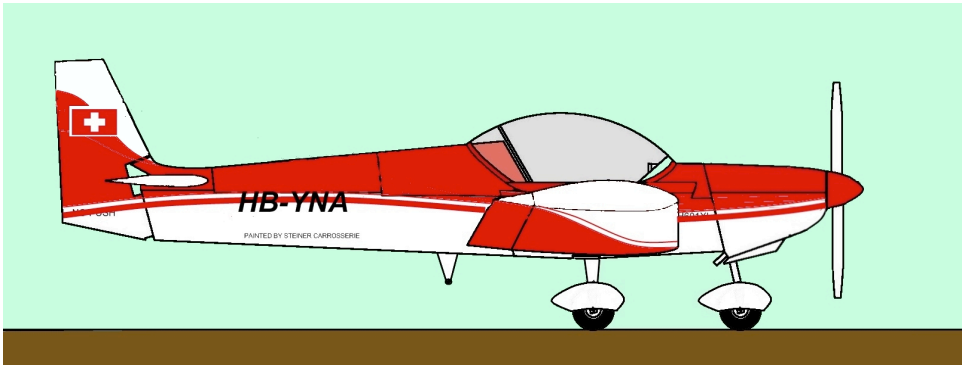
AFM

AIRPLANE FLIGHT MANUAL



HB-YNA

Section 1 – General

1.1 Introduction

The Airplane Flight Manual AFM has been prepared to provide pilots and instructors with information for the safe and efficient operation of this homebuilt airplane.

This manual includes the material required to be furnished to the pilot of homebuilt airplanes. It also contains supplemental data supplied by the equipment manufacturers.

1.2 Certification basis

This type of aircraft is not certified in accordance with published Standard Airworthiness Requirements.

It is authorized for flight in accordance with FOCA regulation MZ-275.001, issued by the Swiss Federal Office of Civil Aviation, in the special homebuilt category.

1.3 Warning, Caution und Note

The following definitions apply to warnings, cautions and notes used in the flight manual:

WARNING

WARNING: means that non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety.

CAUTION

CAUTION: means that non-observation of the corresponding procedure leads to a minor or possible long term degradation of the flight safety.

NOTE

NOTE: draws the attention to any special item not directly related to safety but which is important or unusual.

1.4 Descriptive data

Kind of airplane / Design details

The Zenith Aircraft CH601XL-B is a 2-seat side-by-side, single engine, tricycle gear light sport aircraft with a conventional low wing design. It is composed of a semi-monocoque aluminium structure combined with solid rivets (for structural components) and high-quality pop-rivets.

The ICAO type designator for the Zenith CH601XL-B is CH60.

Engine and propeller

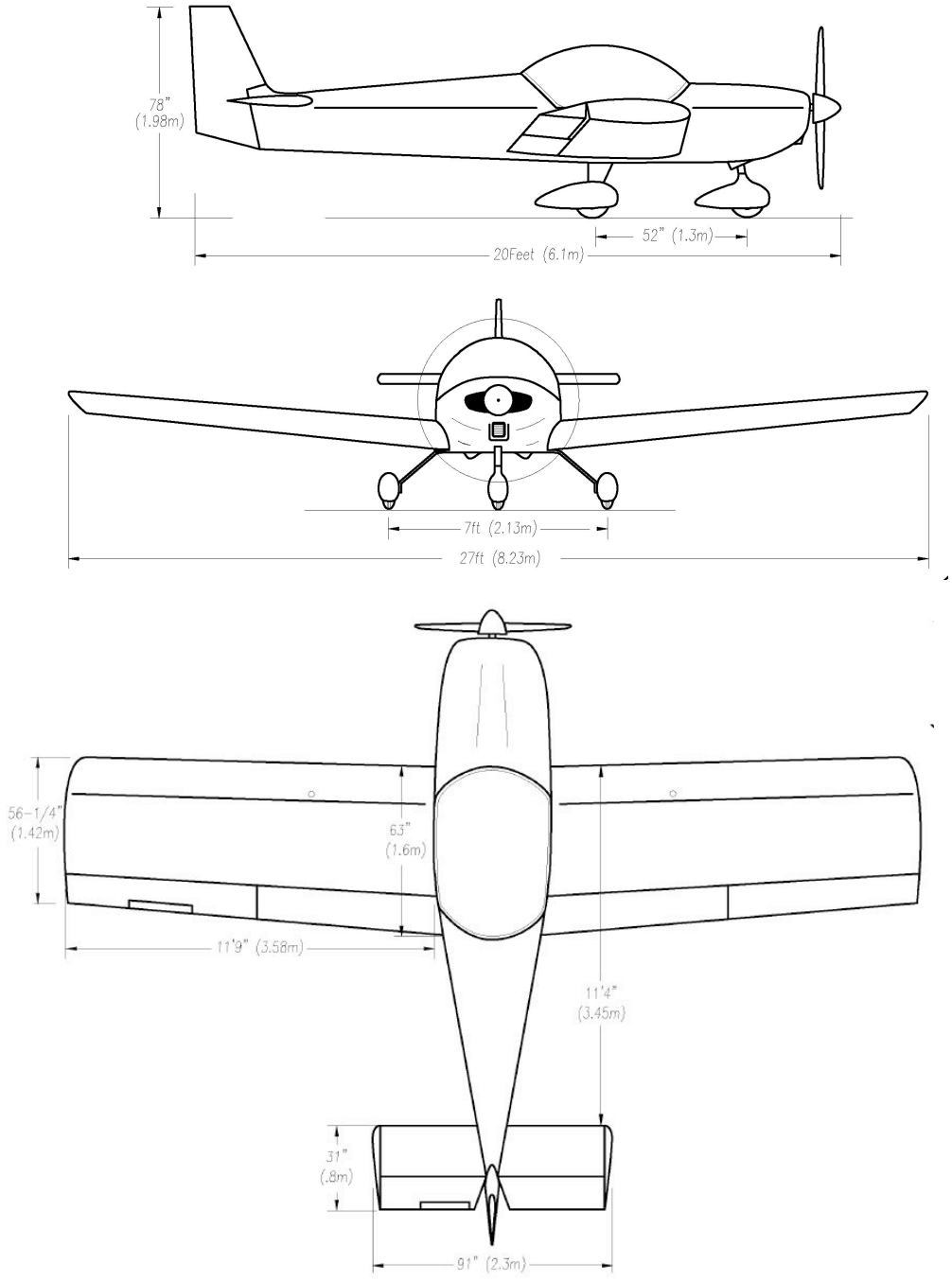
Rotax 912ULS “2“, air-liquid-cooled 4-cylinder, 4-stroke engine with dual carburetor and a propeller reduction gearbox.

Alisport Idrovario 2-blade HS, hydraulically controlled constant-speed propeller with carbon-fiber propeller blades.

Dimensions and weights

Wingspan:	8.23 m
Length:	6.10 m
Height:	1.98 m
Wing area:	12.3 m²
Wing loading at MTOW:	48.8 kg/m²
Mean aero dynamical chord (MAC):	1.52 m
Centre of gravity range:	18 – 30% MAC

1.5 Three-view drawing



Section 2 – Limitations

2.1 Introduction

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

The limitations included in this section (and in Section 9) have been approved by EAS (Experimental Aviation of Switzerland), on behalf of FOCA (Swiss Federal Office of Civil Aviation).

2.2 Airspeed

Airspeed limitations and their operational significance are shown below:

Airspeed		KIAS	Remarks
V_{NE}	Never exceed speed	**140 kts**	Do not exceed this speed in any operation.
V_{NO}	Maximum structural cruising speed	**107 kts**	Do not exceed this speed in smooth air, and then only with caution.
V_A	Manoeuvring speed	**95 kts**	Do not make full or abrupt control movement above this speed, because under certain conditions the aircraft may be overstressed by full control movement.
V_{FE}	Maximum flap extended speed	**70 kts**	Do not exceed this speed with flaps extended.

2.3 Airspeed indicator markings

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

Marking	KIAS range	Significance
White arc	**38 – 70 kts**	Positive Flap Operating Range
Green arc	**44 – 107 kts**	Normal Operating Range
Yellow arc	**107 – 140 kts**	Manoeuvres must be conducted with caution and only in smooth air
Red line	**140 kts**	Maximum speed for all operations

2.4 Powerplant

Engine

Manufacturer:	Bombardier Rotax, Austria	
Model:	912ULS S2	
Max. T/O power:	100 hp at 5'800 rpm (max. 5 min.)	
Max. continuous power:	95 hp at 5'500 U/min	
Idle power:	1'400 rpm	
Max. CHT:	135°C	
Max. EGT:	880° C	
Min. Oil temperature:	50°C	
Normal Oil temperature:	90 – 110°C	
Max. Oil temperature:	130°C	
Min. Oil pressure:	0,8 bar	(below 3'500 rpm)
Normal Oil pressure:	2,0 – 5,0 bar	(above 3'500 rpm)
Max. Oil pressure:	7,0 bar	

Max. oil pressure of 7,0 bar is admissible for a short period at cold start.

Engine start, operating temperature:	min. -25°C OAT / max. 50°C OAT
Min. Fuel pressure:	0,15 bar
Max. Fuel pressure:	0,4 bar
Fuel Grade (Specification):	AVGAS 100LL Unleaded Automotive Fuel 95 RON /91 AKI
Max. Oil consumption:	0,06 Liter/h
Oil Grade (Specification):	4 stroke motorcycle oil of a registered brand with gear additives that meets or exceeds API classification SF or SG (see Rotax SI-912-016).
Cooling Liquid:	Conventional coolant liquid (with about 50% water content, see Rotax SI-912-016).

Propeller

Manufacturer:	Alisport Srl, Italy
Model:	Idrovario 2-blade HS
Propeller diameter:	1'760 mm
Propeller blade angle:	min. ### / max ### (at 75% station)
Propeller speed limitations:	max. 2'450 rpm (equivalent to 5'950 engine rpm)

2.5 Powerplant instrument markings

Powerplant instrument markings and their colour code significance are shown below:

Instrument	Red arc	Yellow arc	Green arc	Yellow arc	Red arc
	Minimum limit	*Lower caution range*	*Normal range*	*Caution range*	*Maximum Limit*
Tachometer	0 – 1400 U/min	1400 – 1800 U/min	1800 – 5500 U/min	5500 – 5800 U/min	5800 – 6500 U/min
Oil temperature	0 – 50°C	50 – 90°C	90 – 110°C	110 – 130°C	130 – 150°C
CHT	-	50 – 75°C	75 – 110°C	110 – 135°C	135 – 150°C
EGT	-	750 – 800°C	800 – 850°C	850 – 880°C	880 – 900°C
Oil pressure	0 – 0,8 bar	0,8 - 2,0 bar	2,0 – 5,0 bar	5,0 – 7,0 bar	7,0 – 7,5 bar
Fuel pressure	0 – 0,15 bar		0,15 – 0,4 bar		0,4 – 0,5 bar

Engine Warning Lights

Oil pressure warning light: below 0,8 bar
Fuel pressure warning light: below 0,15 bar

2.6 Miscellaneous instrument markings

Instrument	Red arc	Yellow arc	Green arc	Red arc
	Minimum limit	Caution range	*Normal range*	*Maximum limit*
Voltmeter	11 V	11-12,5 V	12,5 – 16,0 V	16 V

2.7 Weight

Max. Take-off weight (MTOW):	600 kg
Max. Landing weight (MLW):	600 kg
Max. Zero Fuel weight (MZFW):	n/a
Max. Baggage weight:	10 kg
Max. Baggage weight wing lockers:	2 x 20 kg

2.8 Centre of gravity

Reference datum:	at 1‘790 mm wing leading edge station
Reference chord:	1‘520 mm
Most forward CG limit:	18% of chord (+ 270 mm aft reference datum)
Most aft CG limit:	30% of chord (+ 456 mm aft reference datum)

2.9 Approved manoeuvres

This airplane is approved for flight as per Normal Category.

Permissible Normal Category Manoeuvres:

- All normal flight manoeuvres
- Stalls (except whip stalls)
- Steep turn in which angle of bank does not exceed 60°.
- Lazy Eight’s (entry speed:100 KIAS)
- Chandelles (entry speed: 100 KIAS)

Aerobatics and intentional spins are prohibited.

2.10 Manoeuvring load factors

Max. positive load factor, clean:	+ 3.8 g
Max. negative load factor, clean:	- 1.9 g
Max. positive load factor, with flaps:	+ 2.0 g
Max. negative load factor, with flaps:	0.0 g

2.11 Flight crew

Minimum flight crew:	1 pilot, aircraft to be flown solo from left seat only

2.12 Kinds of operation

Flights are permissible in accordance with day visual flight rules (VFR day only).

2.13 Fuel

Total fuel quantity:	4 x 45 Liter = 180 Liter
Total usable fuel:	4 x 43 Liter = 172 Liter
Total unusable fuel:	4 x 2 Liter = 8 Liter
Approved fuel grades:	AVGAS 100LL Unleaded Automotive Fuel 95 RON /91 AKI

AVGAS 100LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system. It should only be used if unleaded automotive fuel 95 RON/91 AKI is unavailable.

2.14 Maximum seating

2 seats (1 pilot, 1 passenger)

2.15 Other limitations

n/a

2.16 Placards

	Placard	Remarks
0.01	TOTAL FUEL QTY: 45 Liter - AUTOMOTIVE GASOLINE UNLEADED, MIN 95 RON/91 AKI - AVGAS 100LL	At each fuel filler neck
0.02	CAUTION: DO NOT USE AVIATION GRADE OIL!	On inside of oil tank access door, in RED
0.03	SAE 15W-40 or according to AFM	On inside of oil tank access door
0.04	CONVENTIONAL COOLANT LIQUID (50% water)	On cap of liquid cooling expansion tank
0.05	UNLOCK / LOCK (including arrows indicating direction of movement)	On inside and outside of canopy near the canopy locking lever
0.06	IN CASE OF EMERGENCY: Destroy Canopy, Secondary Latch can NOT be opened from the outside!	On outside of canopy, near canopy locking lever
0.07	WING LOCKER BAGGAGE MAX 20 kg	On inside of each wing locker door
0.08	EXPLOSIVE EGRESS DANGER Rocket Deployed Parachute Egress Area STAY CLEAR	On top of ballistic recovery system opening coverage, behind canopy
1.01	No Aerobatics / No Spins VFR-Day only	On instrument panel
1.02	HB-YNA	On instrument panel
1.03	Manoeuvring Speed vA = 95 kts	On instrument panel, near airspeed indicator
1.04	Flap extended Speed vF = 70 kts	On instrument panel, near airspeed indicator
1.05	EXPERIMENTAL	In baggage compartment, in 30 mm high block letters, clearly visible from the outside
1.06	BAGGAGE MAX 10 kg	In aft baggage compartment
1.07	4 x 45 Liter	On center console, near fuel selector valve

Section 3 – Emergency Procedures

3.1 Introduction

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by aeroplanes or engine malfunction are extremely rare if proper preflight inspections and maintenance are practised.

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

3.2 Engine failure

Engine failure at take-off

1. Throttle ..... IDLE
2. Wheel brakes ..... AS REQUIRED
3. Parking brake ..... SET (after stopping)

If necessary (e.g. in case aircraft veers off runway)

4. Fuel selector..... OFF
5. Starter key..... OFF
6. Battery switch..... OFF

Engine failure during flight

1. Airspeed for best glide ..... IAS = 65 kts
2. Aux fuel pumps ..... BOTH
3. Fuel selector..... switch to full tank
4. Carburettor heat ..... PULL ON
5. Starter key..... CHECK ON “BOTH”
6. Starter key..... START

If no restart possible, shortly before touch-down:

7. Fuel selector..... OFF
8. Starter key..... OFF
9. Battery switch..... OFF

ENGINE FAILURE AFTER TAKEOFF:
DO NOT TURN BACK TO THE RUNWAY!!!

There is usually not enough height to achieve this 180° turn and coupled with the tailwind on landing it is not recommended. This is known as the “impossible turn”.

3.3 Air start

1. Aux fuel pumps ..... BOTH
2. Fuel selector..... switch to full tank
3. Throttle ..... set to middle position
4. Starter key..... START

The starter can be engaged even if the propeller is still wind milling.

If fuel is available in left inner tank: Switch the fuel selector to the left inner tank. With Fuel Pumps to BOTH, this will facilitate engine start in case of hot weather conditions (avoiding vapour lock).

3.4 Smoke and fire

Engine fire on ground, while starting the engine

1. Starter key..... hold START (crank engine)
2. Fuel selector..... OFF
3. Throttle ..... PUSH FULL POWER
4. Starter key..... OFF
5. Battery switch..... OFF

Engine fire on ground, with engine running

1. Fuel selector..... OFF
2. Throttle ..... PUSH FULL POWER
3. Cabin heat..... PUSH OFF
4. Seat belts ..... release
5. Canopy..... unlock

After engine stops (after approx. 30 seconds):

6. Starter key..... OFF
7. Battery switch..... OFF

Engine fire in flight

1. Fuel selector ..... OFF
2. Throttle ..... PUSH FULL POWER
3. Cabin heat ..... PUSH OFF

After engine stops (after approx. 30 seconds):

4. Starter key ..... OFF
5. Aircraft attitude ..... Side-slip to keep flames away from aircraft

Emergency landing, shortly before touch-down:

6. Battery switch ..... OFF

Do not restart the engine after an engine fire!

Cabin fire / smoke of unknown origin

1. Cabin heat ..... PUSH OFF
2. Fresh air vents ..... OPEN
3. Aircraft ..... land asap

After landing:

4. Starter key ..... OFF
5. Fuel selector ..... OFF
6. Battery switch ..... OFF

Cabin fire / smoke – electrical origin

An indication of an electrical (e.g. cable) fire is the smell of burning plastic.

1. Generator CB ..... PULL
2. Battery switch ..... OFF
3. Cabin heat ..... PUSH OFF
4. Fresh air vents ..... OPEN
5. Aircraft ..... land at nearest suitable airport

If fire is extinguished and/or smoke has disappeared and electrical power is essential for the safe continuation of flight:

6. All electrical switches ..... OFF
7. All CBs ..... PULL
8. Battery switch ..... ON
9. Electrical switches / CBs — switch ON required systems only, check ammeter for high current

3.5 Glide

1. Airspeed for best glide ..... IAS = 65 kts
2. Flap setting..... FLAPS UP (0°)

A glide ratio of 1:12 can be achieved, resulting in a rate of descent of 550 fpm.

If restart of the engine is not possible, increasing the propeller pitch can reduce the drag of the propeller. The propeller will possibly even stop its rotation:

3. Propeller Control ..... MANUAL
4. RPM Switch..... DEC, until MAX Pitch LED ON

3.6 Landing emergencies

Precautionary landing

1. Landing site / wind ..... evaluate
2. COM..... announce intentions (121.5 or active freq)
3. Landing field..... inspect by flying standard pattern and low pass
4. Traffic pattern ..... fly standard traffic pattern

Forced landing

1. Airspeed for best glide ..... IAS = 65 kts
2. Elevator trim ..... adjust
3. Seat belts ..... tighten
4. COM..... „MAYDAY MAYDAY“
5. Transponder..... 7700

Shortly before touch-down:

6. Flaps ..... AS REQUIRED
7. Fuel selector..... OFF
8. Starter key..... OFF
9. Battery switch..... OFF

3.7 Recovery from unintentional spin

1. Throttle ..... IDLE
2. Aileron ..... NEUTRAL
3. Rudder ..... FULL OPPOSITE RUDDER
4. Elevator ..... PUSH FORWARD, until rotation stops
5. Rudder pedals..... NEUTRAL
6. Elevator ..... RECOVER DIVE

3.8 Other emergencies

Activation of ballistic recovery system (GRS)

If a safe landing of the aircraft is questionable, the ballistic recovery system can be activated above a safety altitude of 90 m/300 ft above ground.

1. Seat belts ..... tighten
2. Starter key ..... OFF
3. GRS activation Handle ..... PULL (to its mechanical stop)

After opening of parachute canopy:

4. Fuel selector ..... OFF
5. COM ..... “MAYDAY MAYDAY”
6. Transponder 7700
7. Battery switch ..... OFF
8. Before ground impact ..... Protect face with arms

Activate ballistic recovery system at a minimum altitude of 90 m / 300 ft above ground only!

Engine vibrations

1. Engine rpm / airspeed ..... move throttle / change airspeed + propeller pitch

If engine vibrations persist:

2. Aircraft ..... perform precautionary landing

Failure of constant speed propeller controller

1. Controller mode switch ..... MANUAL
2. Propeller control ..... Use RPM Switch (INC / DEC)

If propeller rotation speed still uncontrollable:

3. Propeller CB ..... OFF
4. Aircraft ..... land at nearest suitable airport

Carburettor icing

Carburettor icing occurs at outside air temperatures between approx. –5°C and +20°C and high humidity. Carburettor icing may result in a rough engine, engine sputtering and/or performance (rpm) loss.

1. Carburettor heat ..... PULL ON
2. Icing area ..... LEAVE

Low / high voltage

1. Generator CB ..... CHECK ON
2. Generator CB ..... OFF, then ON again

If „Low Voltage“ persists, a generator failure is likely.
If „High Voltage“ persists, a rectifier failure is likely.

3. Generator CB ..... OFF
4. Non-essential systems ..... OFF
5. Aircraft ..... land at nearest suitable airport

Unintentional opening of canopy

1. **Fly the airplane first!!!**
2. Airspeed ..... 65 kts
3. Flaps ..... RETRACT / DO NOT USE
4. Canopy and wind noise ..... IGNORE
5. Approach and Landing ..... NORMAL, WITH FLAPS UP

Do not attempt to close the canopy in flight.

Do not use flaps for the remaining flight.

Section 4 – Normal Procedures

4.1 Introduction

Section 4 provides checklist and amplified procedures for the conduct of normal operation Normal procedures associated with optional systems can be found in Section 9.

4.2 Rigging and Derigging

n/a

4.3 Daily inspection

n/a

4.4 Preflight inspection

Carry out a preflight inspection every day prior to the first fight (Fig. 4- 1).

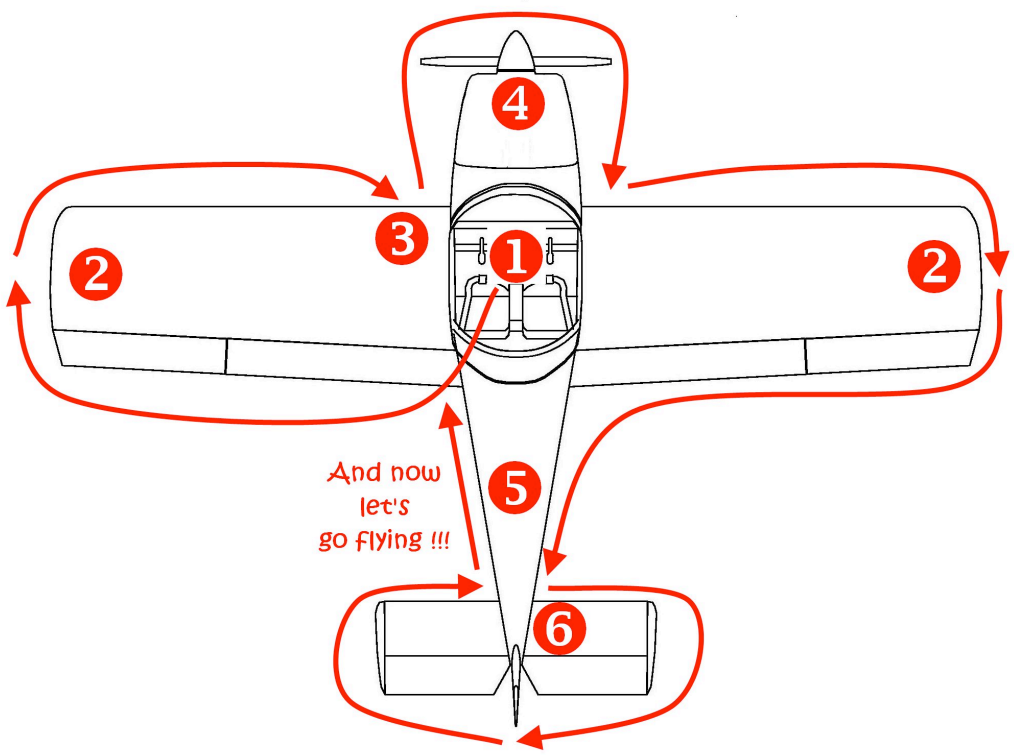


Fig. 4- 1: Preflight inspection

In particular check the following:

- Make sure that pitot and all inlet covers, control locks, tie downs and all chocks are removed.
- Perform a visual check of the entire airframe, check for dents, cracks and loose rivets/bolts, check for safe mounting of equipment (antennas, lights), check for any oil, fuel or cooling-liquid leaks.
- Perform a visual check of all control surface hinges and bolts and the corresponding control surface stops. Confirm that the retracted flaps are positively pushing against the flap stop.
- Check the oil level (cold engine: open oil tank, turn propeller in direction of rotation until “blurp” sound is audible, then check oil level), for long flights fill oil tank to MAX marking.
- Check the cooling liquid level.
- Drain all 4 fuel tanks and gascolator (total 5 drains). Always confirm fuel quantity visually.
- Check all three gear legs and tires for condition and tire pressure, check condition of wheel pants, confirm no brake leaks.
- Pitot, AOA and both static ports as well as fuel vent lines must be clear.
- Check the cable tension of all flight controls by hand (aileron + elevator: inside cabin behind seats, rudder = at rudder pedals). If in doubt recheck with cable tension meter and readjust if necessary (according maintenance manual).
- Check condition of ballistic recovery system and adjacent temperature indicator.
- Make sure that all required documents are on board.

In case of long-term parking it is recommended to turn the engine several times (Magnetos OFF!) by turning the propeller in direction of rotation.

This will facilitate engine starting.

4.5 Normal procedures and checklist

Before starting engine

1. Wing lockers ..... BOTH CLOSED + SECURED
2. Seat belts ..... SECURE
3. Parking brake ..... SET
4. Electrical switches ..... OFF
5. Circuit breakers ..... CHECK
6. Battery switch ..... ON
7. Engine display EMS ..... CHECK
8. Propeller control ..... CONSTANT SPEED / HIGH RPM
9. Fuel quantity ..... CHECK
10. Fuel selector ..... LEFT INNER
11. Flaps ..... FULL UP (0°)

The fuel vapor lock return line is connected to the left inner tank.

If the left inner tank is full and the fuel selector switched to another than “Left Inner”, the left inner tank will spill over through the tank vent line.

Use of external power

n/a

Engine starting

1. Strobe light ..... ON
2. Fuel pumps ..... BOTH FOR 2 SEC. (both pumps audible)
   ..... THEN OFF AGAIN
3. Carburettor heat ..... OFF
4. Throttle ..... IDLE
5. Choke ..... if cold engine: PULL ON
   . ..... gradually RELEASE after engine start
6. Propeller area ..... CLEAR
7. Starter key ..... ON/START (max. 10s)
8. Throttle ..... 2000 rpm for 2 minutes
   . ..... then 2500 rpm until oil temp is 50 °C
9. Oil pressure ..... CHECK
10. Warning lights ..... CHECK OFF

If oil pressure remains below 0.8 bar shut down engine immediately (max. 10 seconds delay) to prevent engine damage.

To avoid shock loading, start the engine with the throttle lever set for idling or 10% open at maximum, then wait 3 sec. to reach constant engine speed before new acceleration.

During extreme cold weather starts, hold the choke until the engine starts to warm up.

Activate starter for max. 10 sec., followed by a cooling period of 2 min.

Before taxiing

1. Avionics switch..... ON
2. COM/GPS/Avionics..... ON/SET
3. Flight instruments..... SET/CHECK

Taxiing

n/a

Engine run-up (when oil temperature > 50°C)

1. Parking brake ..... SET
2. Throttle ..... 4'000 rpm
3. Magnetos (Starter key)..... CHECK one by one
   → max drop..... 300 rpm
   → max difference: ..... 115 rpm
4. Carburettor heat ..... CHECK
   → Drop ..... noticeable
5. Throttle ..... 5'000 rpm
6. Propeller control ..... TEST *)
7. Throttle ..... FULL POWER
   → all engine parameters ..... CHECK
8. Ammeter/Voltmeter ..... CHECK
9. Warning lights ..... CHECK OFF
10. Throttle ..... IDLE / 2'500 rpm
    → Engine rpm ..... stabilized

**) Propeller Control Test:*
Press the *Propeller Control knob* for more than 1 second to display the menu functions. Select *"Prop Test"* and press the knob to start the propeller test. The controller will increase the propeller pitch until the propeller stabilizes at 4000 RPM and then returns to the previous RPM value.

Check before takeoff

1. Canopy..... CLOSED, secondary latch SECURED
2. Flight controls..... CHECK
3. Elevator + aileron trim ..... SET T/O
4. Flaps ..... FULL UP (0°)
5. Carburettor heat ..... OFF
6. Choke..... OFF
7. Fuel quantity..... CHECK
8. Fuel selector..... LEFT INNER
9. Aux fuel pump ..... ON
10. Propeller control ..... 5700 rpm SET
    → MIN PITCH LED ..... CHECK ON
11. Rescue system..... REMOVE PIN
12. Transponder..... ALT
13. Lights..... as required

Takeoff

1. Takeoff power ..... THROTTLE FULL FORWARD
2. Engine speed ..... CHECK 5'700 RPM
3. Instruments within limits ..... CHECK
4. Airplane lift-off ..... 50 kts

After lift-off:

5. Accelerate ..... 60 kts
6. Propeller control ..... SET 5'500 rpm (latest after 5 min.)
7. Transition to climb ..... at safe altitude
8. Aux fuel pump ..... OFF

Takeoff is prohibited if:

- **Engine is running unsteadily.**
- **Engine instrument values are beyond operational limits.**

Climb

1. Best rate of climb speed..... 70 kts
2. Propeller control ..... SET 5'500 rpm
3. Throttle ..... FULL FORWARD

If the cylinder head temperature or oil temperature approach their limits, reduce the climb angle to increase airspeed and thus fulfil the limits.

Cruise

Refer to Section 5, for recommended cruising figures.

Descent

1. Carburettor heat ..... PULL ON (if OAT<20°C and visible moisture)

Descend at increased idle (3000 rpm), speed 65-75 kts and check that engine instruments indicate values within permitted limits. Otherwise the engine becomes undercooled and a loss of power may occur.

Check before landing

1. Aux fuel pump ..... ON
2. Flaps ..... SET
3. Airspeed ..... 60 kts (on long final)

On final:

4. Propeller control ..... SET 5’700 RPM
5. Carburettor heat ..... OFF
6. Airspeed ..... 55 kts
7. Rudder pedals ..... OFF THE BRAKES

Balked landing

1. Throttle ..... smoothly PUSH TO FULL
2. Rotate ..... 55 kts
3. Flaps ..... RETRACT TO 1/2

At 150ft AGL:

4. Airspeed ..... 60 kts
5. Flaps ..... RETRACT TO FULL UP

After landing

1. Flaps ..... UP
2. Aux fuel pump ..... OFF
3. Transponder ..... STBY
4. Lights ..... as required

Engine shutdown

1. Parking brake ..... SET
2. Electrical equipment ..... OFF
3. Avionics switch ..... OFF
4. Throttle ..... IDLE
5. Starter key ..... (L)EFT for 2-3 seconds
   ..... then OFF
6. Flaps ..... FULL DOWN
7. Battery switch ..... OFF
8. Rescue system ..... INSTALL PIN

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, taxiing, low engine rpm or at engine shutdown immediately after landing. If necessary, cool the engine at 2500 – 2750 rpm to stabilize the temperatures prior to engine shut down.

In case of post ignition due to hot weather conditions, the ignition should be switched on again, choke pulled and after approximately 3 seconds, ignition should be turned off again.

Postflight

1. Hobbs & tach..... NOTE
2. Pitot cover ..... INSTALL
3. Chocks / Tie down..... INSTALL
4. Starter key..... CHECK REMOVED
5. Battery switch..... CHECK OFF

Section 5 – Performance
(partly approved)

5.1 Introduction

Section 5 provides approved data for airspeed calibration, stall speeds and take-off performance and non-approved additional information.

The following has been computed from actual flight tests with the aeroplane and engine in good condition and using average piloting techniques.

5.2 Approved data

5.2.1 Airspeed indicator system calibration

Flaps UP				Flaps FULL DOWN		
KIAS	***KCAS***	***Error***		***KIAS***	***KCAS***	***Error***
				40		
50				50		
60				60		
80				70		
100						
120				-	-	
140						

5.2.2 Stall speed

All stall speeds are based on MTOW and are IAS:

Flaps UP		Flaps FULL DOWN	
Power Setting	**Stall Speed V_S *KIAS***	**Power Setting**	**Stall Speed V_{S0} *KIAS***
MAX		MAX	
IDLE		IDLE	

The stall speeds increase with increasing bank angle:

- Bank angle 30°: +8%
- Bank angle 45°: +19%

- Bank angle 60°: +42%

5.2.3 Take-off performance

Take-off distances shown in the table below are valid for MTOW:

[TABLE]

The take-off ground roll and distance over 50ft must be corrected under the following conditions:

- Per 10°C above ISA: + 10%
- Per 1'000ft increase in pressure altitude: + 10% (PA > 3‘000ft: +20%)
- Per 1kts tailwind: + 10%
- Per 1% runway slope: + 10%
- On dry grass runway: + 15%
- On wet/soft grass runway: + 50%

At lower take-off weights the distances can be multiplied by the factor (TOW / 600kg).

5.2.4 Landing distances

Landing distances shown in the table below are valid for MTOW:

[TABLE]

The landing distances must be corrected similar to the take-off distance corrections (see above).

5.2.5 Climb performance

(The data should be presented as rate-of-climb, versus outside air temperature and altitude at maximum take-off weight and maximum continuous power (MCP).

Climb with Max Continuous Power (MCP)

1. Propeller Control ..... SET 5’500 rpm
2. Throttle. ..... PUSH FULL FORWARD

Climb speeds should be either the best rate-of-climb speeds or an average best rate-of-climb speed and scheduled in indicated airspeed (IAS).)

Pressure Altitude	Power Setting	Airspeed for best rate of climb (V_Y)	Climb rate at best rate of climb (V_Y)
2’000 ft			
4’000 ft			
6’000 ft			
8’000 ft			
10’000 ft			
12’000 ft			

14’000 ft			
16'000 ft			

5.3 Additional information

5.3.1 Cruise

(The data should be presented as engine power settings and true air speed (TAS) versus altitude and temperature.)

Cruise

1. Throttle ..... set desired MAP (manifold pressure)
2. Propeller Control ..... set desired RPM

Use the following power settings for best economical cruise:

Power Setting	Propeller Control	Manifold Pressure	Engine Power
MCP	5’500 rpm	27 in. Hg	95 hp
75%	5’000 rpm	26 in. Hg	70 hp
65%	4’800 rpm	26 in. Hg	61 hp
55%	4’300 rpm	24 in. Hg	52 hp

Avoid propeller speeds below 5’200 rpm with throttle wide-open.

Pressure Altitude	Power Setting		Airspeed		Fuel Flow
ISA	RPM	MP (inHg)	IAS (kts)	TAS (kts)	FF (L/h)
0 ft	4500				
	5000				
	5500				
3000 ft	4500				

	5000				
	5500				
6000 ft	4500				
	5000				
	5500				
9000 ft	4500				
	5000				
	5500				

5.3.2 Endurance

(The data should be presented as endurance time of aeroplane versus altitude for various power settings and at least a full fuel loading.)

5.3.3 Balked landing climb

The balked landing climb performance is equal to the normal climb performance (5.2.5).

5.3.4 Grass runway performance

The take-off performance on dry or wet grass runways can be calculated according to the normal take-off performance by using the listed correction factors (5.2.3).

5.3.5 Effect from rain or insects

There is no measurable performance degradation caused by rain or insects on the airplane surfaces.

5.3.6 Demonstrated crosswind performance

Demonstrated crosswind component: 15 kts.

5.3.7 Noise data

Noise measurement Zenith CH601XL-B “HB-YNA” according to ICAO Annex 16, Volume 1, Chapter 10 and Swiss requirement for noise emission 1.4.96 (VEL 748.215.3).

Cat. ***

Section 6 – Weight and Balance

6.1 Introduction

This section contains the payload range within which the aeroplane may be safely operated and the procedures for weighing the aircraft, the calculation method for establishing the permitted payload range and a comprehensive list of all the installed equipment during the weighing of the aircraft.

6.2 Weighing procedure

Level longitudinal axis (→open canopy, edge of cabin longeron = level) and level lateral axis (→open canopy, left to right edge of cabin longeron = level).

Reference DATUM is at the plumb line from the wing leading edge at station 1’790 mm (Fig. 6- 1).

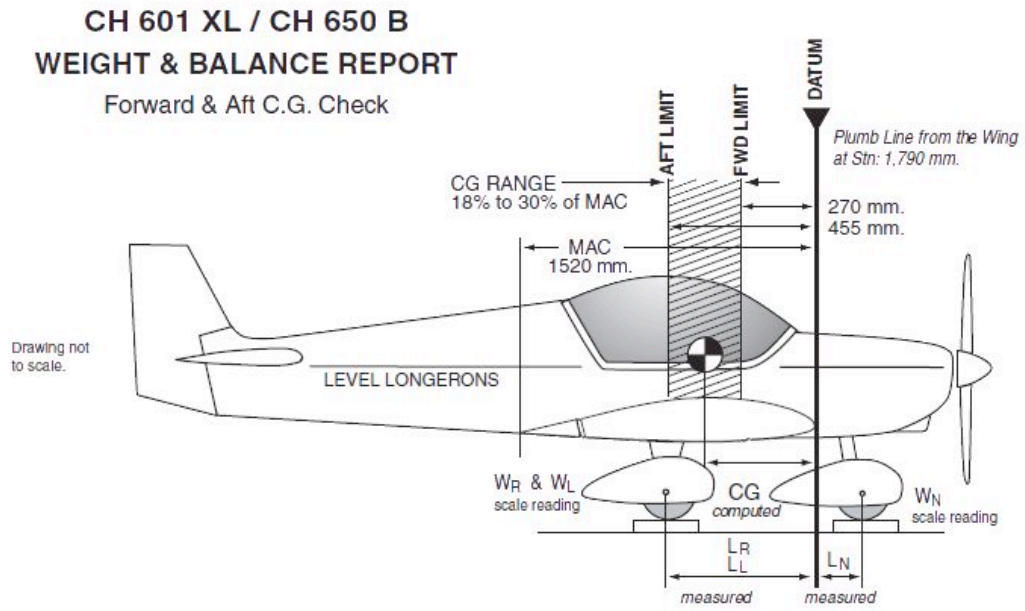


Fig. 6- 1: Center of gravity

6.3 Weight and balance record

Date	IN	OUT	Description of modification	Weight Change						Running Basic Empty Weight	
				Added (+)			*Removed (-)*				
				Weight kg	*Arm mm*	*Mom. kg mm*	*Weight kg*	*Arm mm*	*Mom. kg mm.*	*Weight kg*	*Mom. kg mm*
31.12.15			As weighed							350	115'500

6.4 Permitted payload range / Calculation samples

Permitted payload range

Reference datum: at 1‘790 mm wing leading edge station
Reference chord: 1‘520 mm

Most forward CG limit: 18% of chord (+ 274 mm aft reference datum)
Most aft CG limit: 30% of chord (+ 456 mm aft reference datum)

Weights

Max. take-off weight: 600 kg
Max. baggage compartment weight: 10 kg
Max. wing locker weight: 2 x 20 kg

Arms

Pilot / Co-pilot: 650 mm
Aft baggage compartment: 1300 mm
Baggage wing lockers: 550 mm
Wing tanks (4 x 45 Liter): 180 mm

Loading calculation (sample)

	Weight *[kg]*	**Arm [mm]**	**Moment *[kg mm]***
Airplane empty weight			
Pilot	86 kg	650 mm	55‘900
Co-pilot	86 kg	650 mm	55‘900
Aft baggage compartment	10 kg	1300 mm	13‘000
Baggage wing lockers	-	550 mm	-
ZFW (Zero fuel weight)			
Fuel (Inner = FULL, Outer = 0 L)	90 L = 67 kg	180 mm	24’300
TOW (Takeoff weight)			

Most forward C.G. (sample)

	Weight *[kg]*	**Arm [mm]**	**Moment *[kg mm]***
Airplane empty weight			
Pilot	50 kg	650 mm	
Co-pilot	-	650 mm	
Aft baggage compartment	-	1300 mm	

Baggage wing lockers	-	550 mm	
ZFW (Zero fuel weight)			
Fuel (Inner + Outer = FULL)	180 L	180 mm	
TOW (Takeoff weight)			

Most rearward C.G. (sample)

	Weight ***[kg]***	**Arm** **[mm]**	**Moment** ***[kg mm]***
Airplane empty weight			
Pilot	86 kg	650 mm	
Co-pilot	86 kg	650 mm	
Aft baggage compartment	10 kg	1300 mm	
Baggage wing lockers	-	550 mm	
ZFW (Zero fuel weight)			
Fuel (4 x 45 L)		180 mm	
TOW (Takeoff weight)			

Full fuel C.G. (sample)

	Weight ***[kg]***	**Arm** **[mm]**	**Moment** ***[kg mm]***
Airplane empty weight			
Pilot	86 kg	650 mm	55‘900
Co-pilot	86 kg	650 mm	55‘900
Aft baggage compartment	10 kg	1300 mm	13‘000
Baggage wing lockers	-	550 mm	-
ZFW (Zero fuel weight)			
Fuel (4 x 45 L)	180 L = 135 kg	180 mm	24’300
TOW (Takeoff weight)			

6.5 Equipment list

The following list shows all installed equipment (Main parts like wings or flight controls which are parts of the basic design and cannot be changed by other make must not be listed).

	Description	Manufacturer	Typ
A	**Engine, propeller and accessories**		
	Engine	Rotax	912ULS
	Starter	Rotax	
	Airbox / carburettor heat	CZAW	
	Air filter	Rotax	
	Oil tank	Rotax	
	Oil cooler	Rotax	
	Oil filter	Rotax	
	Cooling liquid cooler	Rotax	
	Exhaust baffles	CZAW	
	2 electric auxiliary fuel pumps	Facet	40106 / 40105
	Fuel selector	Andair	FS20x8
	Gascolator	Andair	GAS375
	Fuel check valves	Andair	
	Propeller	Idrovario	2-blade HS
	Spinner	Idrovario	
B	**Gear and accessories**		
	Nose gear	CZAW	Stahlrohrkonstruktion
	Nose gear wheel	Sava	B11 4,00-6“
	Nose gear wheel fairing	CZAW	
	Main gear	CZAW	Verbundwerkstoff
	Main gear wheel	Sava	B11 4,00-6“
	Main gear wheel fairings	CZAW	
	Main gear wheel brakes	Marc Ingegno	6“x80 Alu. Calipers
	Hydraulic brake cylinders (pilot pedals)	Matco	MC-5
C	**Electrical system**		
	Generator	Rotax	
	Rectifier	Schicke	GR6

	Battery	Exide Sonnenschein	Dryfit A512 (16Ah)
	Battery master relay	Panasonic	
	Flap motor	CZAW	
	Elevator trim servo	Ray Allen	T2
	Aileron trim servo	Ray Allen	T2
	Circuit breakers	Klixon	7277 Series
	Circuit breaker switches	Tyco	W31 Series
	Strobe lights	Aeroflash	Nr. 156-0039
	LED Nav lights		
	LED Landing light		
D	**Flight instruments**		
	Airspeed indicator	UMA Inc.	0 – 160 kts
	EFIS	Dynon Avionics	D10A
	EFIS external magnetic compass	Dynon Avionics	EDC-D10A
	Altimeter	Falcon	ALT20MBF-3
	Propeller controller	Flybox	pr1-p
	Ball-indicator	Winter	QM I
	Vertical speed indicator	Winter	± 2000 fpm (log.)
	Magnetic compass	Precision	PAI-700
	Clock / stopwatch	Thommen	B13
	EMS	Dynon Avionics	D120
	LED Warning lights		
	Trim indicator	Ray Allen	RP3
E	**Avionics**		
	COM Transceiver	Funkwerk	ATR833
	COM Antenna	Comant	CI-121
	Transponder	Garrecht	VT-01 UC
	Transponder Antenna	Comant	CI-101
	GPS	Navilock	NL-422mp
	Intercom	Flightcom	403s
	Music system	Harman Kardon	Drive + play
	ELT + ELT Antenna	Ameri King	AK-450
F	**Cabin**		
	2 seats (seat + backrest cushion)	CZAW	

	2 4-point seat belts	CZAW	
	Cabin heating	CZAW	
	2 fresh air vents	ACS	
G	**Ballistic recovery system**		
	GRS	Galaxy	GRS6-600

Section 7 – Aeroplane and System Description

7.1 Introduction

This section provides description and operation of the aeroplane and its systems. Refer to Section 9, Supplements, for details of optional systems and equipment.

7.2 Airframe

The CH601XL-B is an all-metal construction with single curvature stressed aluminium skins (6061-T6) riveted to aluminium-stiffeners by high quality Avex blind rivets and aircraft solid rivets.

Wing tip, rudder tip, engine cowling and the main gear legs are made of fiberglass.

Nose gear, parts of the main gear attachment, firewall and engine mount are made of stainless steel.

7.3 Flight controls

The CH601XL-B is equipped with dual controls. Aileron and elevator are controlled by a central control stick. Rudder and nose gear are controlled by rudder pedals on both pilots and co-pilots side.

Flaps

One inboard flap on each wing is attached to a single flap actuation mechanism, rendering an asymmetric flap condition impossible. The mechanism is operated by an electric motor. The flaps are controlled by a momentary up/down-switch in the centre console and can be moved to any position between 0 – 30°.

Elevator trim

The elevator (pitch) trim consists of an electrical servo operating a trim tab on the left elevator. It is controlled by up/down buttons on the centre control stick. An LED-indicator on the main instrument panel displays the elevator trim position.

The elevator trim is sensitive and must be used with care (only short trim inputs).

Aileron trim

The aileron trim consists of an electrical servo operating a trim tab on the right aileron. It is controlled by left/right buttons on the centre control stick. An LED-indicator on the main instrument panel displays the aileron trim position.

Rudder trim

n/a

7.4 Instrument panel

The instrument panel with all control levers and instruments is shown below (Fig. 7- 1):

Fig. 7- 1: Instrument panel

7.5 Landing gear system

Landing gear

The main landing gear consists of two carbon-fibre gear legs with separately controllable hydraulic wheel brakes.

The nose gear is controlled by the rudder pedals and is made of steel/aluminium.

Wheel pants can be installed optionally on all 3 wheels.

Wheel brakes / Parking brake

Toe pedals on the rudder pedals of the pilot (left seat) control the wheel disk brakes of the main gear. The co-pilot (right seat) has no wheel brake controls.

The parking brake lever is located on the centre pedestal. The parking brake is set by first pulling the park brake lever and then pushing both brake pedals. To release the parking brake push the lever back in.

7.6 Seats and safety harness

Both seats have standard adjustable 4-point aviation harnesses.

Seating positions may be adjusted by adding cushions below the main seat cushions.

7.7 Baggage compartment

Rear baggage compartment

Baggage may be loaded behind the seats in the rear baggage compartment. The compartment is separated from the ballistic recovery system by a fabric coverage.

Max. loading of the rear baggage compartment is 10 kg.

Wing lockers

The wing lockers (1 in each wing) can be accessed from the trailing edge of the wing. The wing lockers are closed and secured by DZUS fasteners.

Max. loading of each wing locker is 20 kg.

To avoid an aft CG condition it is recommended to always load heavier baggage in the wing lockers.

7.8 Doors, windows and exits

Canopy

The canopy primary locking mechanism can be operated by a turning handle on the left canopy frame both from the inside and the outside.

There is a secondary canopy fastener, which can be attached from the inside only. It is a simple tension belt that attaches the canopy to the rear cabin fuselage frame.

If the canopy opens unintentionally in flight do not attempt to close it! Continue flight (IAS 60 kts, do not use flaps) and land at nearest suitable airport/perform precautionary landing.

Pilot and co-pilot shall not board the aircraft at the same time, as the aircraft may tip to its tail.

7.9 Powerplant

Engine

The Rotax 912ULS is a 4-stroke, horizontally opposed 4 cylinder, spark ignition, carbureted engine with 100 hp. It features liquid cooled cylinder heads with ram air-cooled cylinders. The engine uses a dry sump forced lubrication and has a dual contactless capacitor discharge magneto type ignition system. This magneto system will continue to operate in the event of a battery or generator failure. The engine is fitted with an electric starter, AC generator and mechanical fuel pump. A backup electrical fuel pump is fitted. The propeller is driven via a reduction gear with integrated shock absorber.

Propeller

The Alisport Idrovario 2-blade HS is a constant speed propeller controlled by an electric-hydraulic changing mechanism.

Engine controls and instrumentation

Engine control is achieved by:

- Throttle levers (on both sides, friction lock on pilots throttle lever). Springs are added to the throttle to ensure that the engine will go to full power if the linkage fails.
- Propeller controller FlyBox pr1-p on the pilots instrument panel / toggle switch on the co-pilots instrument panel (operational in CONSTANT SPEED Mode only).
- Choke lever on the left instrument panel.
- Carb heat lever on the left instrument panel.

Full engine instrumentation is available through the Dynon EMS-120 engine monitoring system. The following engine parameters are displayed:

- RPM
- Manifold pressure
- Cylinder head temperature for 2 cylinders
- Exhaust gas temperature for 2 cylinders
- Oil temperature
- Oil pressure
- Fuel pressure
- Fuel flow

LED engine warning lights with independent sensors for oil and fuel pressure are located on the left instrument panel.

Further information about engine handling is available in the Rotax Engine Manual.

Constant Speed Controller pr1-p

The constant speed propeller is controlled by the Flybox controller on the pilot's instrument panel (Fig. 7- 2). In addition a momentary INC/DEC switch on the co-pilots instrument panel allows adjustment of the target RPM (CONSTANT SPEED Mode only).

Fig. 7- 2: Constant Speed Controller Flybox

The constant speed controller can be operated in CONSTANT SPEED or MANUAL mode. Mode selection is achieved by the *Operating Mode Switch* (to unlock, pull switch first).

In CONSTANT SPEED Mode the *INTENDED TARGET RPM* (large value in display, Fig. 7- 3) is controlled by either the center *Knob with pushbutton* or the INC/DEC toggle switch on the copilots instrument panel. The *ACTUAL RPM* is displayed in the top right corner of the display (smaller value).

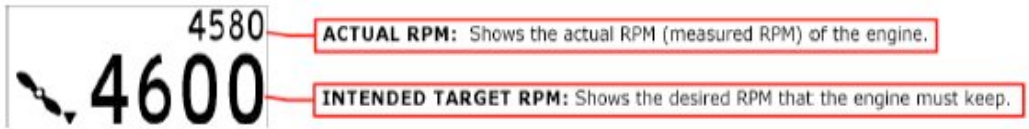


Fig. 7- 3: Display propeller controller

In MANUAL Mode, the propeller pitch can only be controlled by the toggle switch on the pr1-p instrument (*INC/DEC Switch*).

Two LED indicate when the variable pitch propeller reaches its end stops:

- *Min pitch LED*: propeller at low pitch stop (high rpm, for takeoff and landing).
- *Max pitch LED*: propeller at high pitch stop (low rpm, for cruise flight).

Further information about the propeller handling is available in the propeller manual and the pr1-p propeller controller manual.

7.10 Fuel system

Fuel tanks

There are 4 fuel tanks (2 in each wing) with a fuel capacity of 45 Liters each, giving a total fuel capacity of 4 x 45 L = 180 Liters. The usable fuel of each tank is 43 Liters (i.e. 172 Liters total). All fuel tanks have a separate drain valve and tank vent at the wing bottom side. The fuel tanks can be refuelled from the wing leading edge through separate filler necks.

Each tank has a mechanical “float type” fuel sender installed. Although carefully calibrated, a visual check of fuel quantity is required before each flight.

All tanks have fixed-low-lying pickups, meaning fuel can only be fed at zero to positive load factors.

Fuel selector

Aluminium fuel lines connect each wing tank to the fuel selector valve on the centre instrument console. The fuel selector valve has 5 positions: OFF – LEFT OUTER – LEFT INNER – RIGHT INNER – RIGHT OUTER. To move the selector in/out of the OFF position, a safety latch has to be lifted.

Gascolator, fuel pumps, return line

An aluminium fuel line passes from the fuel selector through the firewall to the gascolator (drain valve/fuel filter) and then connects by rubber hoses to the mechanical fuel pump and – in parallel – to the electrical backup fuel pump (aux fuel pump). A restriction valve directs excessive fuel via a (vapour lock) return line to the left inner wing tank.

In addition an electrical boost pump with bypass is installed between the left inner tank pickup and the fuel selector valve (inside the fuselage) thus facilitating engine start in hot weather conditions.

The electrical fuel pumps are controlled by a toggle switch in the centre instrument panel: OFF – AUX (aux fuel pump ON) – BOTH (aux fuel pump and left inner fuel pump ON).

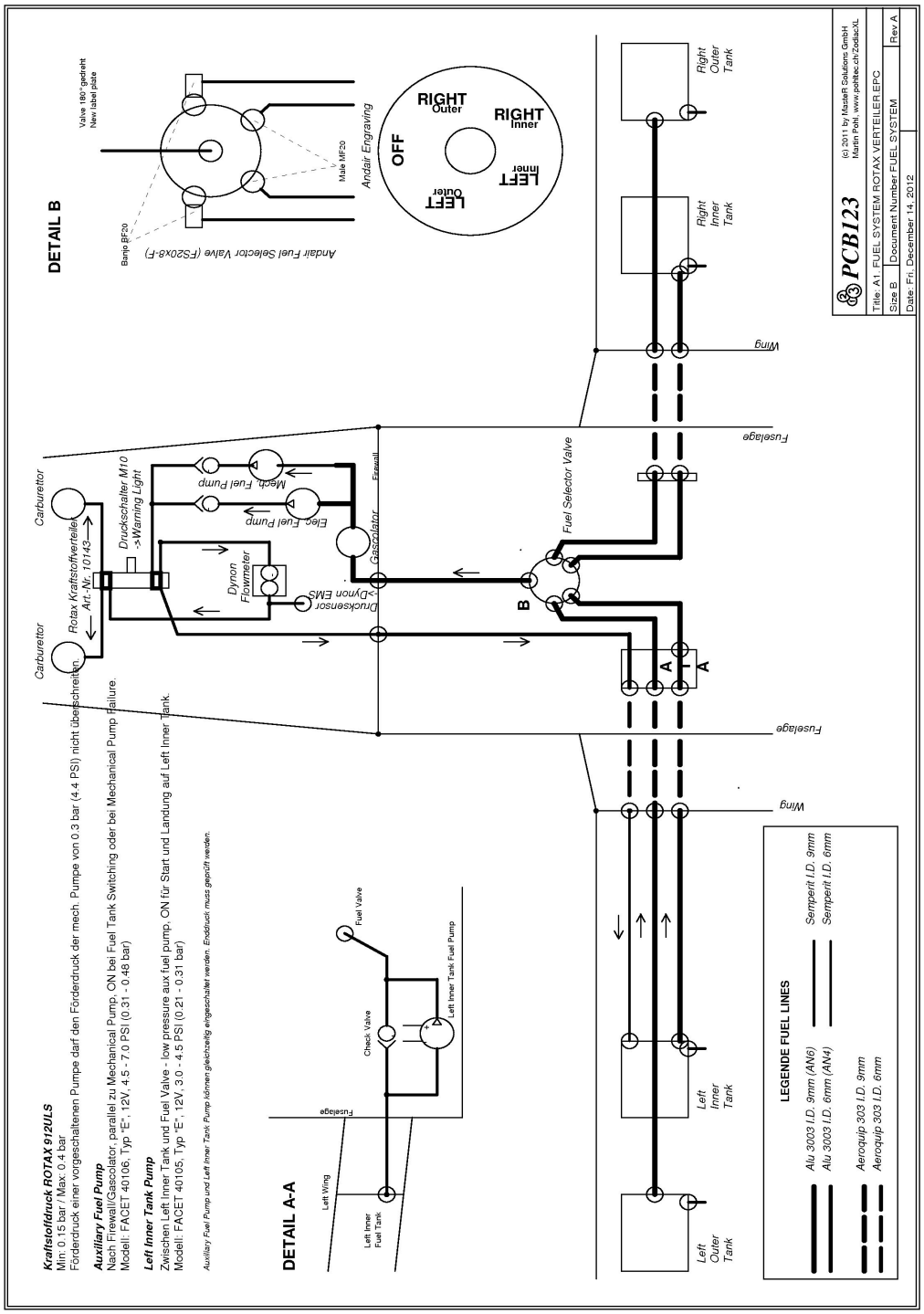


Fig. 7- 4: Fuel system

Fuel gauges

The quantity of all 4 fuel tanks and the actual fuel flow to the carburettors are displayed on the engine monitoring system (Fig. 7- 5):

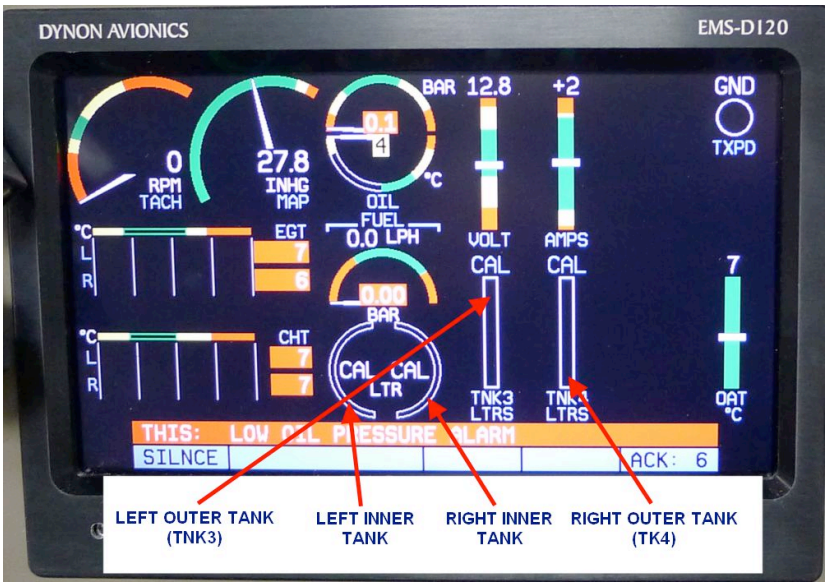


Fig. 7- 5: Fuel gauges

7.11 Electrical system

Battery

A 14V/16Ah battery provides power for engine start. The battery can be used as an electrical backup power source in case of a failed generator or rectifier. The battery is installed in the engine compartment, at the right side of the firewall.

Battery switch

The battery switch controls a relay, which connects the battery to the master bus.

Generator / Rectifier

The generator has an output of 250 W at 5‘500 rpm. A rectifier controls the voltage to 14.3 V DC. The rectifier supplies the master bus through a 30A circuit breaker switch.

Generator warning light

The „GENERATOR“ warning light illuminates if the generator is not supplying the master bus.

Avionics Bus

The avionics bus can be connected to the master bus by switching the avionics switch to ON. Sensitive avionics equipment is connected to the avionics bus.

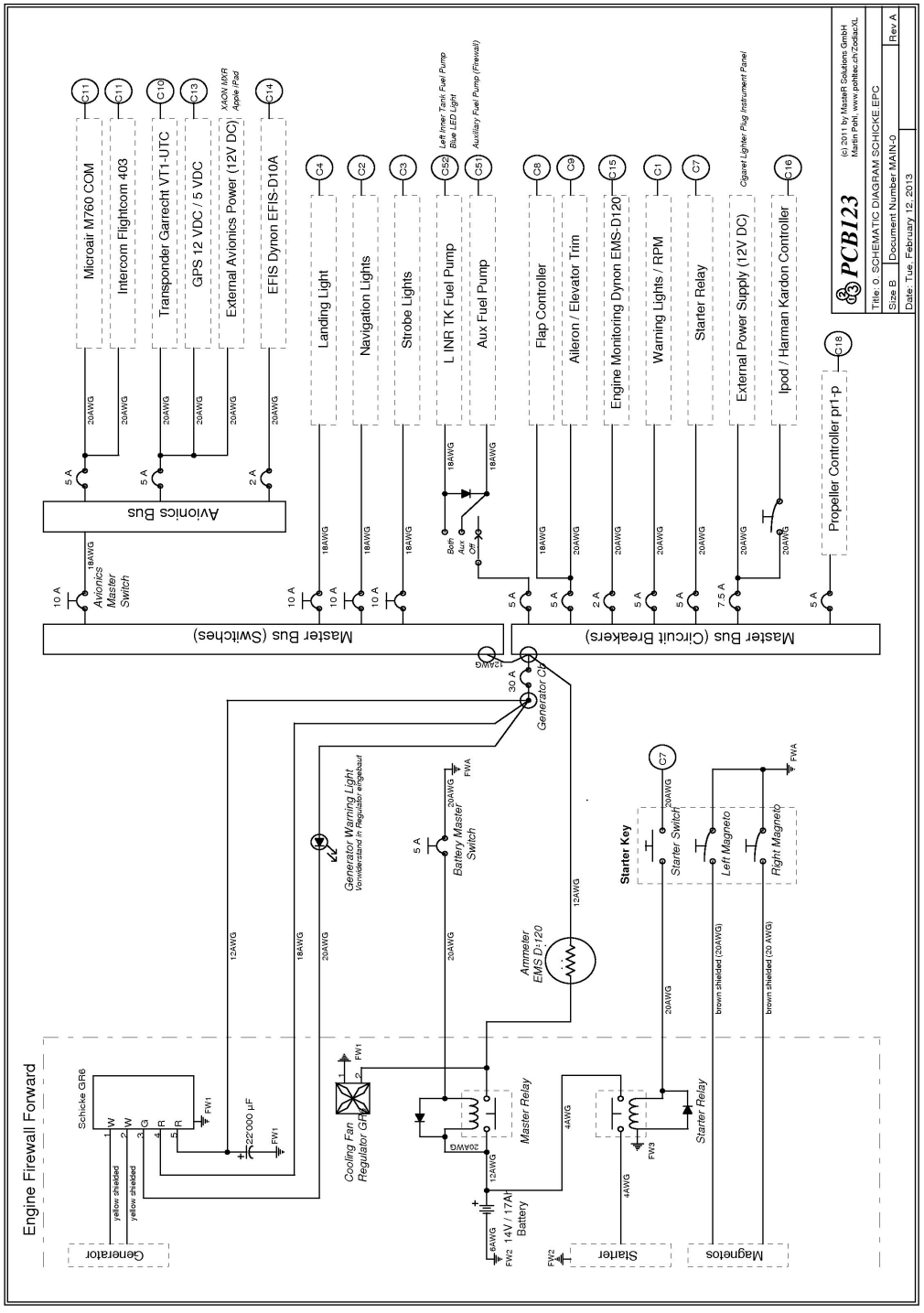


Fig. 7- 6: Electric diagram

Electric load analysis

Generator Voltage [V]	14.3		
Max. Generator Current [A]	18.0		
Max. Continuous Generator Current [A]	14.0		
Load	**Min**	**Avg *)**	**Max**
	[A]	**[A]**	**[A]**
Relative load [%]	***37 %***	***59 %***	***95 %***
Total Current	**6.6**	**10.7**	**17.1**
Aileron / Elevator Trim	0.1	0.1	0.2
Flaps	0.1	0.1	1.0
Aux Fuel Pump (Facet)	0.0	0.0	1.0
Aux Fuel Pump Left Inner Tank (Facet)	0.0	0.0	1.0
Landing Light (LED)	0.0	1.6	1.6
Nav Lights (LED)	0.0	1.0	1.0
Strobe Lights (Aeroflash 156-0039)	3.0	3.0	3.0
Propeller Controller (Flybox pr1-p)	0.1	0.5	1.0
EFIS (Dynon EFIS-D10A)	0.7	1.0	1.7
EMS (Dynon EMS-D120)	1.2	1.2	1.2
Warning Lights + Hobbs Meter	0.2	0.2	0.2
COM (Funkwerk ATR833-LCD)	0.2	0.5	2.5
Transponder (Garrecht VT-01 UC)	0.3	0.3	0.5
Intercom (Flightcom 403)	0.2	0.2	0.2
Harman Kardon iPod Controller	0.0	0.5	0.5
iPad Mini (USB 5VDC)	0.2	0.2	0.2
GPS Navilock	0.1	0.1	0.1
Battery Master Relay Panasonic	0.2	0.2	0.2
Cooling Fan Rectifier	0.1	0.1	0.1

*) Average electrical load is determined when all external lights on.

7.12 Pitot and static pressure systems

An unheated pitot tube is installed at the left wing bottom side. It has 2 pickups: one straightforward for dynamic pressure and one angular down for measurement of the angle of attack (Fig. 7- 7).

The static pressure pickups are on the left and right side of the fuselage behind the engine cowling.

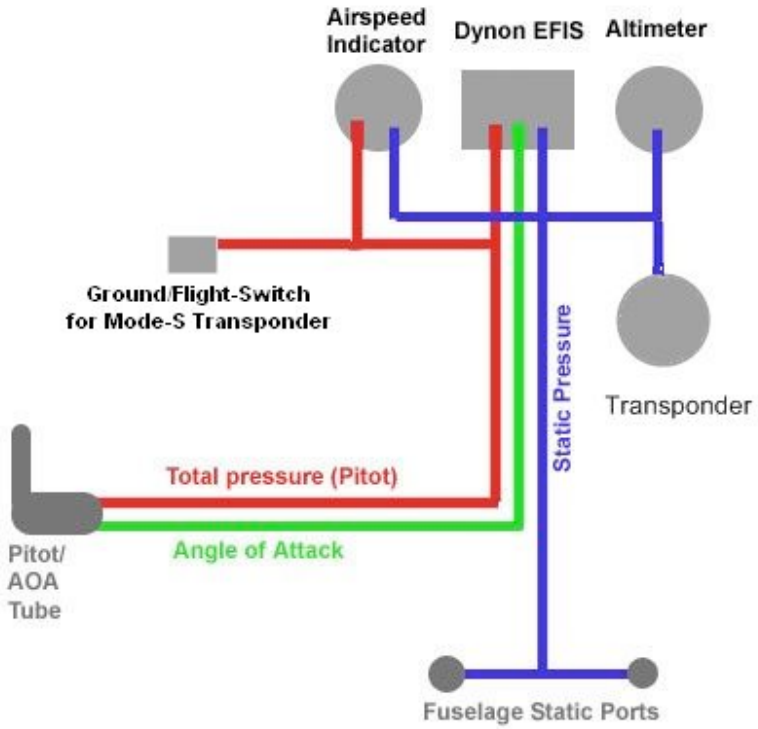


Fig. 7- 7: Pitot and static pressure system

7.13 Miscellaneous equipment

Ballistic recovery system

The aircraft is equipped with a ballistic recovery system Galaxy GRS6-600 (Fig. 7- 8). Parachute and launching rocket are installed in the rear of the aft baggage compartment. Kevlar-belts connect the system to the aircraft structure at 6 attachments points. The activation handle is installed on the left side of the center instrument console.

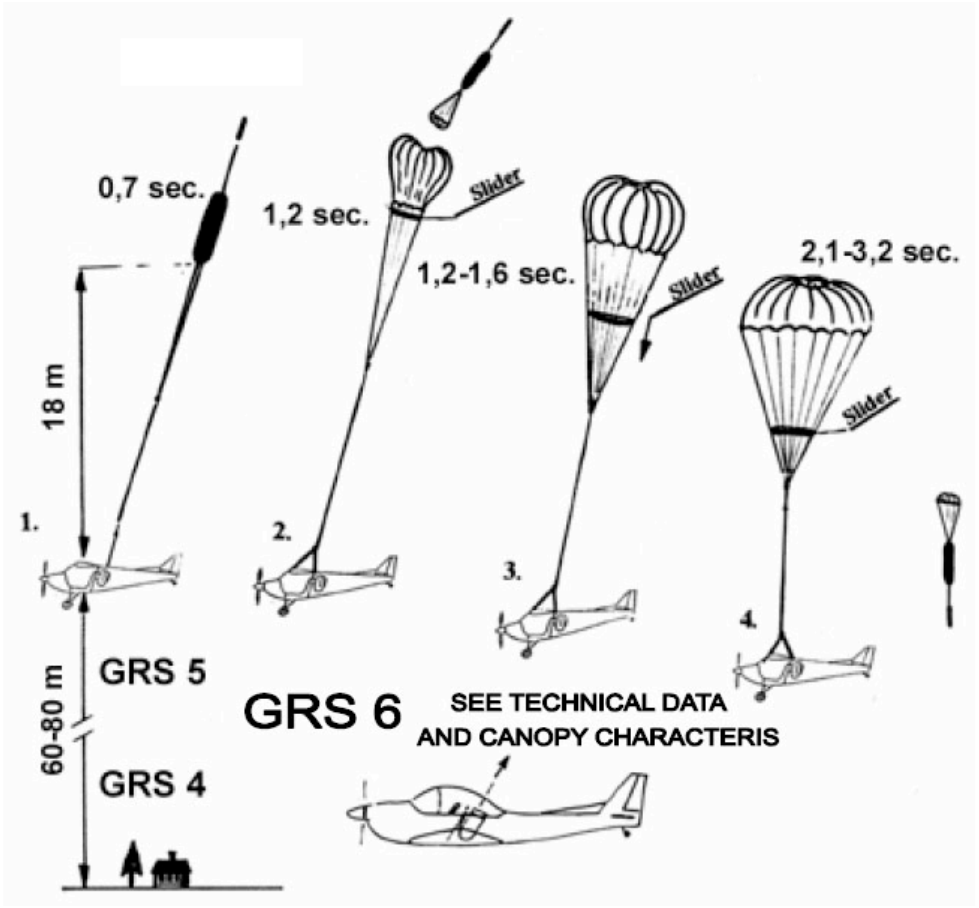


Fig. 7- 8: Ballistic recovery system GRS6-600

7.14 Avionics

Electronic Flight Instrument System EFIS

The main flight instrument is a Dynon EFIS D-10A (Fig. 7- 9). It displays artificial horizon, magnetic heading, airspeed, altitude, ball-bank, angle of attack, wind speed and direction and outside air temperature.

Fig. 7- 9: Dynon EFIS D-10A

The EFIS is supplied by the avionics bus and starts up automatically when switching on the avionics switch. Alternatively the device can be switched on/off by pushing the left button [1] for more than 3 sec. If not supplied by the avionics bus, the EFIS continues operation on an internal battery for approx. 2 hours.

The push buttons [1] and [6] allow rotating through different display modes (EFIS ↔ EMS).

To adjust barometric pressure/altimeter, push one of the centre push buttons [2] – [5] and select EFIS►Baro.

Check the Dynon EFIS manual for more detailed instructions.

Engine Monitoring System EMS

The main engine instrumentation is a Dynon EMS D-120 (Fig. 7- 10). The EMS displays RPM, manifold pressure, oil pressure and temperature, EGT, CHT, fuel pressure and flow, fuel tank quantities, battery voltage and electrical current.

Fig. 7- 10: Dynon EMS D-120

The EMS is supplied by the master bus and starts up automatically when switching on the battery switch. Alternatively the device can be switched on/off by pushing the left button [1] for more than 3 sec.

The push buttons [1] and [6] allow rotating through different display modes (EFIS ↔ EMS). Other functions are available by pushing the centre push buttons [2] – [5].

If an engine parameter is exceeding its limitation, an alarm is triggered:

- EMS warning light (LED) is flashing
- Engine parameter on EMS is flashing in red
- A red alarm message is displayed at the bottom of the EFIS and EMS screen.
- The alarm can be acknowledged by pushing the ACKNOWLEDGE button at the bottom EMS screen.

Check the Dynon EMS manual for more detailed instructions.

Radio transceiver VHF

The Funkwerk ATR833 radio transceiver (Fig. 7- 11) is supplied by the avionics bus and powers up automatically when switching on the avionics switch. The COM antenna is installed on the upper fuselage behind the canopy. Two push-to-talk buttons on the centre control stick activate transmission for each separate headset-microphone.

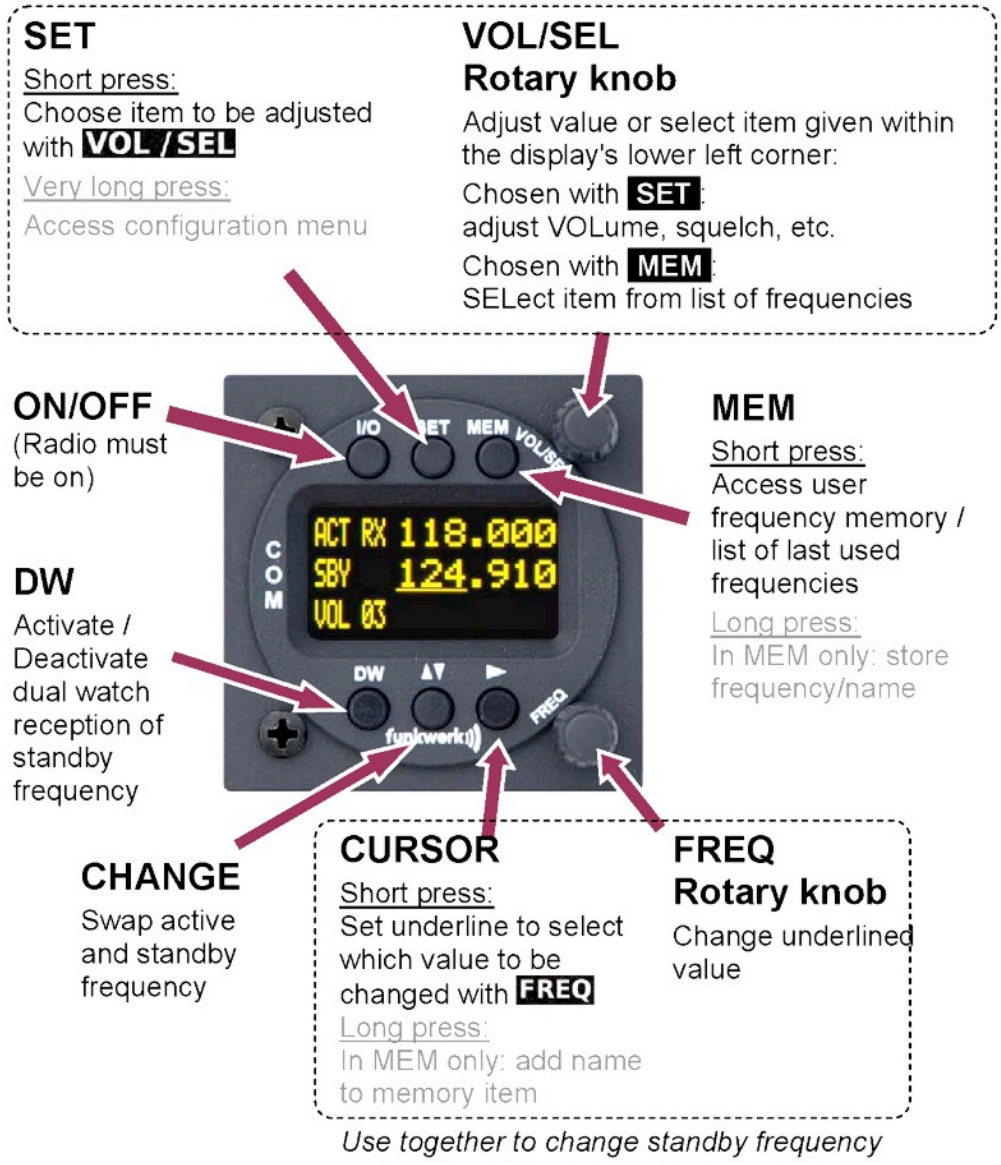


Fig. 7- 11: Funkwerk ATR833 COM

Check the Funkwerk manual for more detailed instructions.

Transponder Mode-S

A Garrecht VT-01 UT mode-S transponder is installed (Fig. 7- 12). It is supplied by the avionics bus and powers up automatically when switching on the avionics switch.

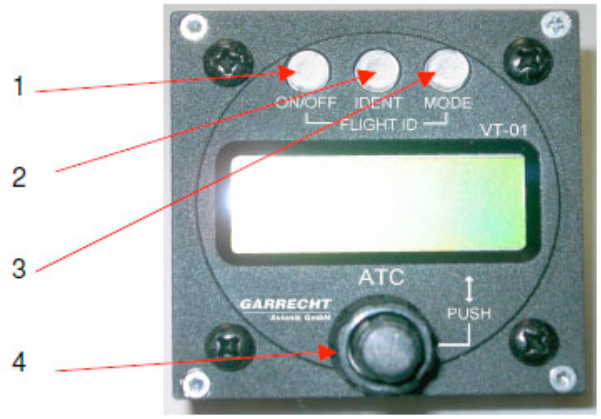


Fig. 7- 12: Transponder Garrecht VT-01 UT

1	**ON/OFF**	ON = brief push / OFF = push more than 3 sec. Automatic start-up with avionics switch to ON.
2	**IDENT**	Brief push = ident for 18 sec.
3	**MODE**	Change mode: SBY -> ON -> ALT
4	**Turning knob**	• Turn outer ring to move curser of *Standby-Replycode* • Turn inner ring to change displayed value • Push knob to enter value and to quit edit-mode

Display in normal mode (Fig. 7- 13):

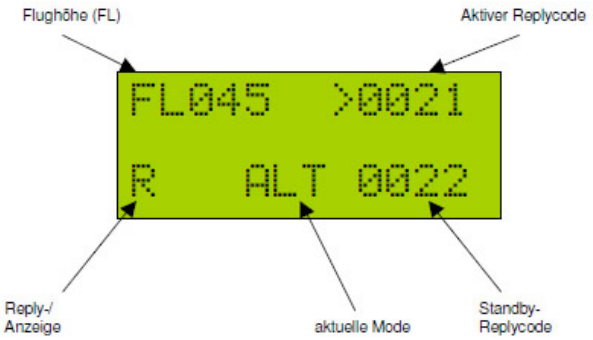


Fig. 7- 13: Normal mode Garrecht VT-01 UT

Check the Garrecht manual for more detailed instructions.

Intercom

The intercom Flightcom 403 (Fig. 7- 14) is supplied by the avionics bus and is controlled by:

- Upper knob (Sq) for squelch control
- Lower knob (Vol) for volume control
- Toggle switch: ICS = normal / Isolate = Mutes intercom and music in pilots headset

Fig. 7- 14: Flightcom 403

Check the Flightcom manual for more detailed instructions.

ELT – Emergency Locator Transmitter

An AmeriKing ELT AK-450 is installed in front of the center pedestal. The ELT control panel in the right instrument panel can control the ELT.

Hobbs-Meter

The hobbs-meter is counting when the engine is running (engine oil pressure > 0.8 bar).

iPod Controller

A Harman Kardon „Drive+Play“ iPod controller is connected to the intercom. It can be switched on by the *Music* switch and controlled by the iPod wheel on the lower center instrument console. The connector for the iPod is located in the right map-case.

Volume control headset / intercom / COM / iPod controller

To adjust the different volume controls (headset, intercom, COM, iPod Controller), the following procedure is recommended:

1. Headset volume ..... MAX
2. Headset amplifier (if available) ..... ON
3. Intercom volume (Vol) ..... adjust for comfortable intercom volume while speaking (initial setting: volume at 11-o-clock / squelch at 3-o-clock position)
4. Intercom squelch (Sq) ..... turn clockwise to just suppress ambient noise
5. COM volume ..... adjust volume of radio voice signal
6. iPod volume..... adjust volume of iPod music

Section 8 – Aeroplane Handling, Servicing and Maintenance

8.1 Introduction

This section contains 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.

8.2 Aeroplane inspection period

Regular airplane inspection intervals are:

- after completion of construction/before first flight a 100 h inspection
- after 50 h (and one-time after the first 25 h) a 50 h inspection
- after 100 h / at least once a year a 100 h inspection
- after 1500 h / at least once every 15 years a 1500 h inspection

The airplane inspection / maintenance is performed according to the maintenance manual “Wartungsanweisung Zenith CH601XL-B HB-YNA“.

Engine maintenance

Engine maintenance is performed according to the BRP-Rotax maintenance manual.

Engine maintenance intervals are: 25h, 50h, 100h, 200h and 600h / at least once a year / 25h after first engine commissioning or after a major overhaul. Engine TBO is 1’500h / 12 years.

Propeller maintenance

Propeller maintenance is performed every 50h according to the Alisport propeller maintenance manual. Propeller TBO is 300h.

Maintenance of other systems with limited TBO

- Ballistic recovery system: Overhaul every 6 years / Exchange after 30 years
- ELT: Change batteries every 2 years
- Magnetic compass: Compensation every 2 years

Maintenance schedule

The maintenance schedule for aircraft (W), engine (E) and propeller (P) is illustrated in the following table:

Inspection	Flight time	Dev.	Max. period	Dev.	Remarks
W/E 25	25 h	± 5 h	-		one-time: aircraft + engine after the first 25h
W/E/P	50 h	± 5 h	-	-	50h aircraft + engine + propeller
W/E/P 100	100 h	± 10 h	1 year	± 1 month	100h aircraft + engine + propeller
E 200	200 h	± 10 h	-	-	200h engine
P 300	300 h	± 10 h	-	-	300h overhaul propeller
E 600	600 h	± 10 h	-	-	600h engine
W/E 1500	1500 h	± 50 h	15 years	± 6 months	1500h overhaul aircraft + engine

8.3 Aeroplane alterations and repairs

It is essential that the EAS be contacted prior to any alterations on the aeroplane to ensure that airworthiness of the airplane is not violated.

Major repairs, which may impair the airworthiness of the aeroplane when improperly done, must be proposed to the EAS for comment and / or approval.

8.4 Ground handling / Road transport (if applicable)

Towing

The aircraft can be pushed back on the wing leading edge and the propeller inner blades. Pulling on the propeller inner blades and/or pushing on the footsteps from behind works best for forward motion. Turning the aircraft is achieved by “embracing” / pushing down the fuselage with one arm in front of the rudder fairing (and thus lifting the nose wheel).

Do not push/pull the aircraft at horizontal stabilizer, rudder, aileron and flaps.

Do not push/pull at propeller outer blades.

Parking

In addition to setting the parking brake always place a chock at least on the nose wheel to secure the aircraft. Also, consider installing the lightweight canopy cover, pitot tube protection and air inlet covers.

Mooring

There are 3 tie-down rings: One below each wing tip and one below the tail bulkhead. Tie-down the aircraft when parking for an extended period.

Jacking

n/a

Leveling

n/a

Road transport

The aircraft can be disassembled for road transport. Instructions for disassembly / re-assembly are given in the document “Czech Aircraft Works, Final Assembly”.

8.5 Cleaning and care

Polished and painted exterior surfaces

After every flying day, clean surface with water and sponge, then dry with buckskin. Polish the airplane according to Nuvite polishing procedures when the shine/clear coat starts to wear out (at least once a year).

Propeller

Clean propeller with water and cleaning cloth.

Canopy

Clean canopy with water or (if necessary) with special canopy-detergent only. After cleaning rub the canopy with a standard wax and a flannel cloth.

For canopy cleaning do not use fuel, benzoyl, alcohol, acetone, glass-detergent or the like.

Interior surfaces, seats and carpets

n/a

Section 9 – Supplements

9.1 Introduction

This section contains the appropriate supplements necessary to safely and efficiently operate the aeroplane when equipped with various optional systems and equipment not provided with the standard aeroplane.

9.2 List of inserted supplements

n/a

9.3 Supplements inserted

Each supplement should normally cover only a single system, device or piece of equipment such as an autopilot, ski or navigation system. The supplement may be issued by the aeroplane manufacturer or by any other manufacturer of the applicable item.

The supplement must be approved by the EAS and must contain all deviations and changes relative to the basic Flight Manual. Each supplement should be a self-contained, miniature Flight Manual with at least the following:

Section 1 General

The purpose of the supplement and the system or equipment to which it specifically applies should be stated.

Section 2 Limitations

Any change to the limitations, markings or placards of the basic Flight Manual should be stated. If there is no change, a statement to that effect should be made.

Section 3 Emergency procedures

Any addition or change to the basic emergency procedures of the Flight Manual should be stated. If there is no change, a statement to that effect should be made.

Section 4 Normal procedures

Any addition or change to the basic normal procedures of the Flight Manual should be stated. If there is no change, a statement to that effect should be made.

Section 5 Performance

Any effect of the subject installation upon aeroplane performance as shown in the basic Flight Manual should be indicated. If there is no change, a statement to that effect should be made.

Section 6 Weight and balance

Any effect of the subject installation upon weight and balance of the aeroplane should be indicated. If there is no change, a statement to that effect should be made.)

AIRPLANE

Designer / design organization:.....Zenith Aircraft Company
Type: .....CH601XL-B “Zodiac”
Builder: .....Martin Pohl
Serial No.: 6-9790
Registration: .....HB-YNA

AIRPLANE FLIGHT MANUAL (AFM)

The builder / owner is responsible for the appropriate correctness of the content of this manual.

Date of Issue:

The Builder (Name and Signature):

Approval of Section 2 and Agreement of Sections 1, 6, 7 and 8 by EAS (Experimental Aviation of Switzerland) on behalf of FOCA (Swiss Federal Office of Civil Aviation):

Date:

Name:

Stamp and Signature:

Partial approval of Section 5 and agreement of sections 3, 4 by EAS on behalf of FOCA:

Date:

Name:

Stamp and Signature:

This aeroplane is to be operated in compliance with information and limitations contained herein.

0.1 Record of revisions

Any revision of the present manual, except actual weighing data, must be recorded in the following table and in case of approved Sections endorsed by the EAS.

The new or amended text in the revised pages will be indicated by a black vertical line in the left hand margin, and the Revision No. and the date will be shown on the bottom left hand side of the page.

Rev. No	Affected Section	Affected Pages	Date	Approval	Date	Date Inserted	Signature

0.2 Table of Contents