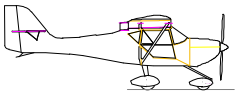

A E R O P R O *s.r.o.*, *Production of UL Planes*
Dlhá 126, 949 07 Nitra, Slovak Republic
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FLIGHT MANUAL

AEROPRO

EUROFOX

Aircraft Name - Type:

EuroFOX 912 in version:

AEROPRO	EuroFOX Pro
	EuroFOX Basic
	EuroFOX modell 99
	EuroFOX Space Bugrad

Serial Number:

Registration Mark: ……..

Date of Issue: ……..

Stamp, Signature

This ultralight has not been registered by state administration and is to be operated at operator's own responsibility.

This ultralight can be operated in compliance with information and limitations contained herein.

DATA OF THE AEROPLANES

	Type	Produktion	Serial Number:	Destination and year of production
Fuselage				
Engine				
PROPELLERs				

RECORD OF REVISIONS

Any revisions or amendments to the present manual shall be issued in the form of bulletins with attached new pages. It is in the interests of every user to enter such revision into the table of revisions and to replace the existing page by the new one. The revised or corrected text shall be indicated by a vertical line on left page margin and the page shall bear revision number and date of its issue.

Rev. No.	Chapters Affected	Pages Affected	Date of Issue	Bulletin Number	Bulletin Approved On	New Page Inserted On, Signature

0.1 LIST OF EFFECTIVE PAGES

Chap.	Page	Date	Chp.	Page	Date	Chap.	Page	Date
0	1			2-9			4-11	
	2						4-12	
	3		3	3-1				
	4			3-2				
	5			3-3		5	5-1	
	6			3-4			5-2	
1	1-1			3-5			5-3	
	1-2			3-6			5-4	
	1-3			3-7				
	1-4					6	6-1	
	1-5		4	4-1			6-2	
				4-2			6-3	
2	2-1			4-3				
	2-2			4-4		7	7-1	
	2-3			4-5			7-2	
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0.2 TABLE OF CONTENTS

Chapter

CHAPTER 1

1. GENERAL

TABLE OF CONTENTS

1.1 Introduction

This manual is designed to acquaint personnel with information towards increasing safe and efficient aircraft operation.

This manual contains instructions necessary for pilots. Further it contains additional data supplied by the aircraft manufacturer.

1.2 Certification Basis

This type of ultralight has been approved by Technical Board of LAA of the Czech Republic in compliance with UL-2 regulation and it has been issued Type Certificate No. ULL 03/96. Slovak Republic civile Aviation Authotity has inssued Typ Certificate N: V – 82/2004 and DAeC has issued Typ Certificate No: 61139.

1.3 Warning, Caution and Note

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

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

CAUTION	Means that the non-observation of the corresponding procedure leads to a minor or to a more or less long term degradation of the flight safety.

NOTE	*Draws the attention of any special item not directly related to safety but which is important or unusual.*

1.4 Brief Description

1.4.1 Aircraft Type

EuroFOX is an ultralight designed as a high-wing monoplane supported by struts. A two-spar wing is provided with flaperon. Fuselage is a lattice-work of steel tubes. Tail unit is formed of a lattice-work tube frame. Landing device is a type of trigear undercarriage with a controllable nose wheel

1.4.2 Power Unit

The EUROFOX ultralight is powered by ROTAX 912 UL engine. It is a four-cylinder, four-stroke, opposed-cylinder, centre-camshaft engine with over-head valves. Engine cooling is of a combined type, cylinder heads are water-cooled, while cylinders are air-cooled. Dry sump lubrication. The ignition system is of a dual, distributorless and capacitor flywheel magneto type. The engine is equipped with an electric starter, AC generator and a mechanical fuel delivery pump. The propeller is powered from an integrated reduction gear with mechanical damping.

WARNING	**This engine has not been certified as an aircraft one and its failure may occur at any time! The aircraft pilot is fully responsible for consequences of such failure.**

1.4.3 Propellers

The propeller made by Woodcomp/FITI/DUC company is a three-bladed, right-handed, tractor, composite.

1.4.4 Aircraft Dimensions

Wing span.....9,125 m

Length.....5,605 m

Height .....2,25 m

Wing area with flap .....11,4 m^2

Chord length without flap .....1,12 m
with flap.....1,3 m

Wing loading ..... 39,47 kgm^{-2}

Aspect-ratio.....7,3

Propeller clearance (in flight position).....0,22 m

1.4.5 Deflections of Control Surfaces

Elevator ..... up ..... 35° ± 2°
..... down ..... 27° ± 2°

Trim tab ..... up ..... 15° ± 3°
..... down ..... 50° ± 3°

Rudder ..... ±27° ± 3°

Ailerons ..... up ..... 18° ± 2°
..... down ..... 8.5° ± 1°

Wing flaps ..... 0 ÷ 20° ± 2°

1.4.6 Landing Gear

Track ..... 1.96 m

Wheel base ..... 1.3 m

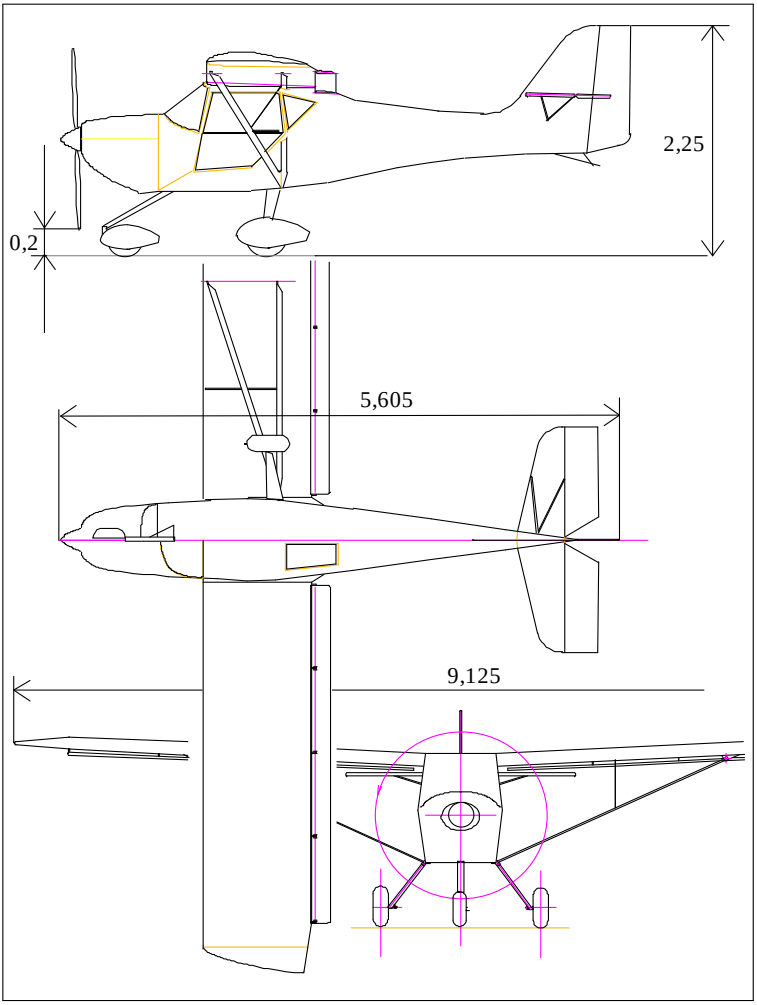
Main landing gear wheel tire 14x4
Tire pressure ..... 200 kPa

Nose wheel tire 12x4
Tire pressure ..... 200 kPa

1.4.7 Other equipment

This aircraft is equipped with a hang glider release which can be used for pulling of the advertisement flag.

1.5 Three-View Drawing



CHAPTER 2

2. OPERATING LIMITATIONS

TABLE OF CONTENTS

2.1 Introduction

Chapter 2 contains operating limitations, instrument markings and basic placards necessary for safe operation of the ultralight, its engine, standard systems and equipment.

2.2 Speed Limitations

Speed limits are given in the synoptical table below.

Speed		km/h IAS	Remarks
V_{NE}	Never exceed speed	185	Do not exceed this speed in any operation.
V_{NO}	Normal operating limit speed	160	This speed may be exceeded under smooth air only, do not apply deflections of control surfaces over one third.
V_A	Manoueuvring speed	140	Do not apply full or steep deflections of control surfaces above this speed. The aircraft might be overloaded!
V_{FE}	Maximum wing-flaps extended speed	120	Do not exceed this speed with wing flaps extended.
V_{S0}	Minimum steady flight speed	60	with extended wing flaps
V_{S1}	Minimum steady flight speed	70	wing flaps retracted

2.3 Airspeed Indicator Marking

Marking	km/h IAS	Signification
White arc	**60 ÷ 120**	**Range of wing-flaps use.**
Green arc	**90 ÷ 160**	**Normal range of operation.**
Yellow arc	**160 ÷ 185**	**Manoeuvres must be conducted with special caution and in smooth air**
Red line	**185**	**Never exceed speed**

2.4 Engine Instruments Marking

Instrument	Red line bottom limit	Green arc normal operation	Yellow arc caution range	Red line, upper limit
Tachometer [r.p.m.]	1400	1400 ÷ 5500	5500 ÷ 5800	5800
Oil temperature [°C]	50	90 ÷ 110	110 ÷ 140	140
Cooling liquid temperature [°C]	60	60 ÷ 95	95 ÷ 110	110
Oil pressure [kPa]	150	150 ÷ 400	400 ÷ 500	700 at cold start
Fuel pressure [Bar]	0,0÷0,2	0,2÷0,45	0,45÷1	1
Fuel quantity [l]	4 signal warning	sight check	sight check	55

2.5 Power Unit

Engine manufacturer ..... ROTAX GmbH., Austria

Engine model ..... ROTAX 912 UL

Max. power - take-off ..... 59,6 kW

- continuous ..... 58,0 kW

Max. engine speed (MSL) - take-off (max. 5 min) ..... 5800 r.p.m.

- continuous ..... 5500 r.p.m.

Max. cylinder head temperature ..... 150 °C

Max. oil temperature ..... 130 °C

Min. oil temperature ..... 50 °C

Oil pressure - min ..... 0,8 bar

- normal ..... 2,0 -5,0 bar

Oil consumption ..... max. 0.1 l/h

Fuel pressure - minimum ..... 0,15 bar

- maximum ..... 0,4 bar

Consumption at starting ..... 22.7 l/h

Consumtion at 75% of power rating ..... 16.2 l/h

Specific consumption ..... 285 g/kWh

WARNING	**This engine has not been certified as an aircraft one and its failure may occur at any time! The ultralight pilot is fully responsible for consequences of such failure.**

Propeller manufacturer ..... Woodcomp/FITI/DUC

Propeller diameter 1580-1620mm
Max. propeller speed ..... 3200 r.p.m.
Max. flight speed ..... 185 km/h
Blade angle at 75% ..... 15 °
Max. out-of-balance ..... 0.5 g/600 mm
Propeller purpose ..... tractor

2.6 Weights

Empty weight (standard version) ..... 265 kg
Max. take-off weight ..... 450 kg
Max. landing weight ..... 450 kg
Max. fuel weight ..... 45 kg
Max. baggage weight in baggage compartment ..... 10 kg

2.7 Centre of Gravity Position

Prescribed range of C.G. position ..... 18 ÷ 32 % MAC

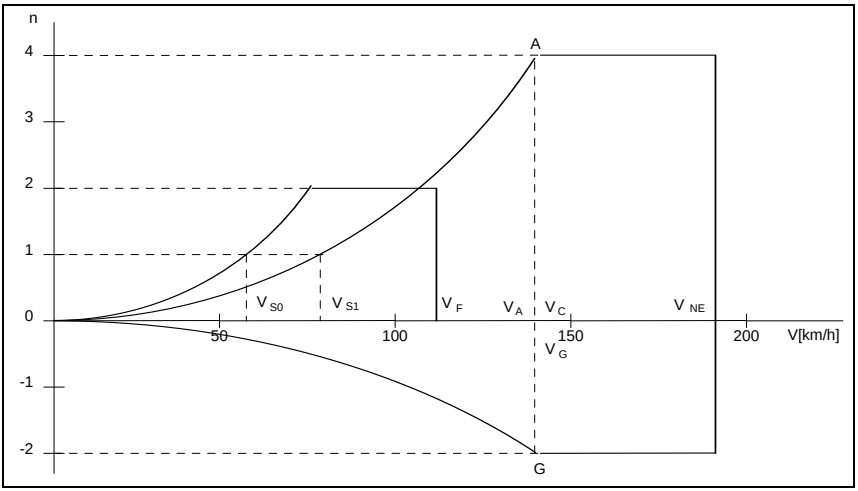
2.8 Operating Load Factors

At take-off weight of 450 kg

Maximum positive centre of gravity load factor..... + 4 g

Maximum negative centre of gravity load factor ..... - 2 g

Load envelope for maximum take-off weight of 450 kg



2.9 Manoeuvres

This aircraft has been certified in normal category.

Permissible manoeuvres and manoeuvre entry speeds are given below.

Turn, bank of 60° .....140 km/h

Side slip .....120 km/h

WARNING **Aerobatics, intentional stalls and spins are prohibited.**

2.10 Crew

Number of seats 2

Minimum crew weight .....55 kg

Max. crew weight .....160 kg

Max. crew weight at 28 l of fuel and zero baggage.....145 kg

Max. crew weight at 55 l of fuel and zero baggage.....123 kg

Maximum permissible cockpit load .....160 kg

2.11 Kinds of Operation

Only VFR day flights (under condition of ground contact) at ambient temperature over 0° C are permitted.

Flights at ambient temperature over -10° C are permitted in case only when is the aeroplane EUROFOX equipped with carburator heating **under no icing conditions.**

WARNING	**IFR flights and flying in clouds are prohibited.**

2.12 Fuel

Fuel tank capacity - wing tanks.....2 x 40 l

- link tank .....5 l

Max. fuel quantity.....85 l

Usable fuel quantity .....84 l

Unusable fuel quantity .....1 l

Fuel specification .....unleaded EUROSUPER ROZ 95

in accordance with DIN 51607

Type recommended in the Slovak Republic .....BA 95 Natural

The fuel system includes two wing tanks of 40 l fuel capacity each, a link tank of 5 l capacity , drain cock, fuel cocks, a fuel filter, an engine fuel pump and connecting line.

The fuel is gravity fed from the right-hand or left-hand wing tank into the link tank depending which wing tank fuel cock is open. The fuel is then further directed from the link tank via the main fuel cock and fuel filter into the mechanical fuel pump on the engine which delivers the fuel to carburettors.

The amount of fuel in tank is indicated by a fuel gauge which is a part of every tank. Minimum fuel quantity in the link tank is indicated visually by lighting up a warning light on the instrument panel. The remaining fuel, i.e.4 l, is in that case enough for 15 minutes of flight.

The drain cock outlet is behind the left seat on the outside bottom side of the fuselage; to drain off water and dirt, the drain pipe is to be pressed into fuselage and subsequently a fuel sample is to be taken.

It is not advisable to change the used type of gasoline during engine operation.Since fuel will be in most cases refuelled from a barrel or a fuel can and not from the filling pump, it is necessary to pay a due attention to this activity. Refuelling should be carried out in places not endagering either the aircraft, its attendance or environment. Prior to refuelling it is always necessary to check gasoline for absence of water. Sampling should be done both from the transportation containers and from tanks and aircraft fuel system through drain sump. When refuelling, a funnel must be used provided with a strainer to trap impurities, or, even better, with a buckskin leather which can trap also eventual fuel moisture content. Fuel dumping is performed similarly as sampling by means of a drain cock. When filling fuel into tanks, be careful to avoid staining of cockpit window panels and glass with fuel as it contains corrosive components that will cause a fast deterioration and damage to cockpit glazing.

2.13 Oil

Oil tank capacity .....3.0 l

Oil quantity.....2.5 l

Minimum oil quantity.....2.0 l

Oil specification..... API SF, SG

for 4-stroke motorcycle engines

First charge.....Shell Advance VSX 4 10W-40

2.14 Other Limitations

No Smoking aboard the aircraft.

-It is not allowed to fly without back cockpit covering

2.15 Limitation Placards

Manufacturer:	**AEROPRO s.r.o. Nitra, SR**	
Max. take-off weight:		**450 kg**
Empty weight:		**265 kg**
Never exceed speed	**V_{NE}**	**185 km/h**
Max. Flap Extended speed	**V_{FE}**	**110 km/h**
Stalling speed	**V_{S0}**	**65 km/h**

AEROBATICS, INTENTIONAL STALLS AND SPINS ARE PROHIBITED

CHAPTER 3

3. EMERGENCY PROCEDURES

TABLE OF CONTENTS

3.1 Introduction

Chapter 3 contains procedures for various emergencies which may occur. A thorough performance of maintenance system should prevent occurence of such extreme cases.

The chapter describes basic emergencies and procedures for their solving. Not all emergencies that may occur can be listed here in full, therefore their solution depends on experience of the crew controlling course of such events.

3.2 Engine Failure

3.2.1 Engine Failure at Take-Off Run

- throttle — reduce to idle
- ignition — switch off
- apply brakes

3.2.2 Engine Failure at Take-Off

- speed — 110 km/h IAS
- choice of landing area — after take-off and up to 50 meter land in straight direction ahead, if possible
  over 50 m: choose landing area

The landing area is to be preferably chosen in direction of free runway or a free clear area, upwind, if possible.

- master switch — switch off
- ignition — switch off
- main fuel cock — shut
- tank fuel cocks — change over to shut position
- wing flaps — extend as needed
- safety belts — tighten

3.2.3 In-Flight Engine Failure

- airspeed		110 km/h IAS
- area selection		depending on flight altitude
check	- master switch	switched on
	- ignition	switched on
	- main fuel cock	open
	- wing tank fuel cocks	open to fuel tank
	- throttle	set to 1/3 of travel
	- starter	start the engine

if the engine cannot be started up, proceed in accordance with 3.2.2. procedure.

3.2.4 Carburettor Icing

Carburettor icing mostly occurs when getting into an area 5℃ to 15℃. The carburettor icing shows itself through a decrease in engine power, RPM and an increase of engine temperatures. To recover the engine power, the following procedure is recommended:

- airspeed	80 - 90 km/h IAS
- throttle	max. at 1/3 of power ≈ (3500 r.p.m.)

- if possible, descend
- increase gradually the engine power to cruise conditions after 1-2 minutes
- if you fail to recover the engine power, land on the nearest airfield (if feasible), or, depending on circumstance, off-airfield, following the procedure given under 3.2.2.

3.3 In-Flight Engine Starting

- airspeed	110 km/h IAS
- area selection	depending on flight altitude
- master switch	switch on
- main fuel cock	open
- wing tank fuel cocks	open to fuel tank
- choke	pull on (cold engine only)
- throttle	adjust to 1/3 of travel
- ignition	on
- starter	Operate up

- if the engine cannot be started up, increase the flight speed to 140-160 km/h so that air flow can rotate the propeller, thus enabling engine starting.

CAUTION	Loss of height needed for in-flight engine starting is about 150 - 200 m.

3.4 Engine Fire, Fumes in the Cockpit

Recommended procedures to follow, when fire or fumes in engine compartment and cockpit are detected.

3.4.1 Ground Fire

- main fuel cock	shut
- tank fuel cocks	shut
- throttle	open
- ignition	switch off after using up fuel in carburettors and engine stopping
- master switch	off

- abandon the aircraft and extinguish fire (if possible)

3.4.2 Fire during Take-Off

- throttle	idle
- main fuel cock	shut
- tank fuel cocks	shut
- airspeed	110 - 120 km/h and land
- brakes	apply and stop
- throttle	full open
- ignition	switch off after using up fuel in carburettors and engine stopping

- abandon the aircraft and extinguish fire (if possible)

3.4.3 In-Flight Fire

- main fuel cock	shut
- tank fuel cocks	shut
- throttle	full travel
- landing area selection	guide the aircraft to an airfield, or choose an area for emergency landing
- ignition	switch off after using up fuel in carburettors and engine stopping
- master switch	switch off
- airspeed	110 - 120 km/h
- wings flaps	extend as needed
- safety belts	tighten

- perform emergency landing
- abandon the aircraft and extinguish fire (if possible)

NOTE	Time needed to consume fuel out of carburettors is around 30 sec.

3.5 Descent, Gliding

- airspeed	110 km/h
- throttle	increased idle
- wing flaps	retracted
- engine instruments	values within permitted limits

CAUTION	At long final and when descending from a considerable height, it is not advisable to reduce the engine throttle control to minimum. In such case the engine becomes undercooled and a loss of power occurs. When descending, apply increased idle so that engine instrument readings range within the limits for normal use.

gliding ratio .....1 : 11

optimum gliding speed.....95 km/h IAS

sink .....2.3 m/s

3.6 Emergency Landings

Recommended procedures for various types of emergency landing.

3.6.1 Precautionary Landing

- choose landing area, evaluate wind direction and speed, area surface, surrounding obstacles and total safety of the manoeuvre under consideration
- perform approach and fly-over at a speed of 95 km/h along the chosen area at a height of 50 m to estimate the area condition, obstacles and to determine magnetic course of landing
- make orbiting approach to land
- perform landing from the very beginning of the chosen area

3.6.2 Blown-Out Tire Landing

- carry out normal approach-to-land
- when floating at landing, keep the damaged wheel above ground as long as possible using ailerons
- maintain the direction at landing run, applying foot control

3.6.3 Damaged Landing Gear Landing

- carry out a normal approach-to-land
- if the tail wheel is damaged, perform a touch-down on wheels and hold the aircraft on wheels as long as possible till the speed is lost
- if the main landing gear is damaged, perform touch-down at the lowest speed possible and maintain direction at landing run, if possible

3.7 Vibrations

If any forced vibrations appear in the aircraft, it is necessary:

- to set engine speed to such power rating where the speed is lowest
- to land on the nearest airfield, or to perform a precautionary landing off-airfield
- if the vibrations are increasing, carry out an emergency landing off-airfield, following procedures given under 3.2.2.

CHAPTER 4

4. NORMAL PROCEDURES

TABLE OF CONTENTS

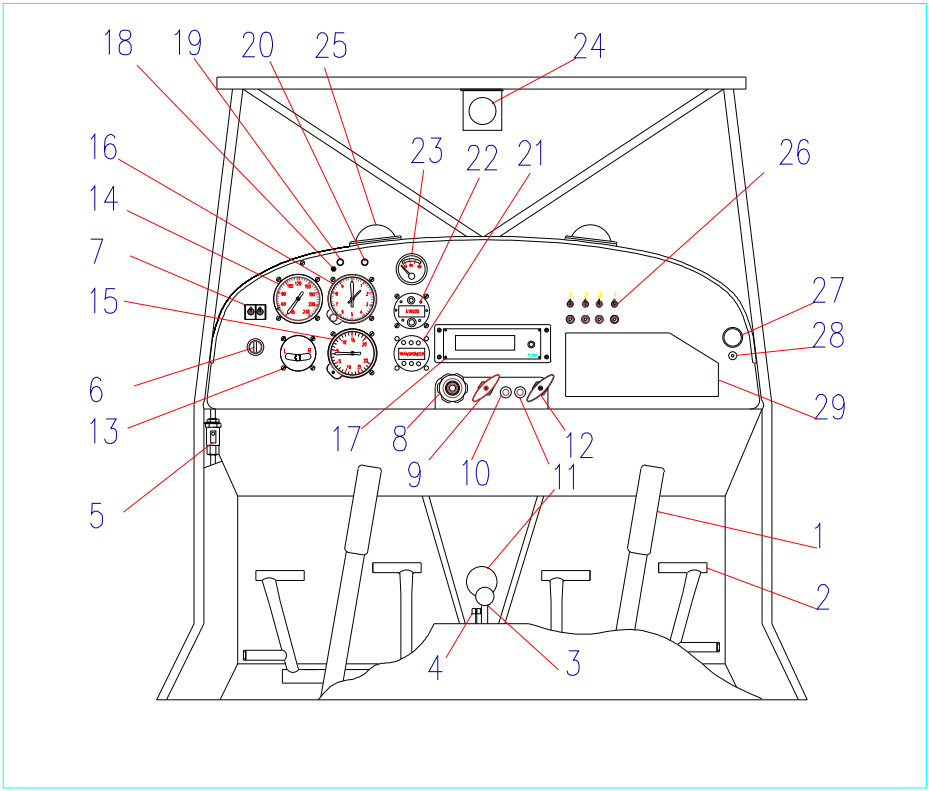
4.1 Introduction

Chapter 4 contains procedures for normal aircraft operation.

4.2 Outfit and Equipment

It includes a basic set of instruments to monitor flight and power unit parameters. Further equipment is offered as optional.

It holds the following as minimum: airspeed indicator, altimeter, vertical speed indicator, bank indicator, magnetic compass and engine instruments.



I. LAYOUT OF CONTROLS AND INSTRUMENTS

1.	Control stick	21.	Transponder
2.	Pedals	22.	Radio
3.	Control stick for flap	23.	Presure Fuel
4.	Trim elevator	24.	Compass
5.	Fuel cock	25.	Ventilation
6.	Master switch +Starter	26.1	Switch - Strobe
7.	Magnetos	26.2	Switch - Free
8.	Throttle	26.3	Switch - Avionic
9.	Brake and parking brake	26.4	Circuit Breaker - Avionic
10.	Preheating carburetors	27.	12 V - Plug
11.	Heating in cockpit	28.	Circuit Breaker - Plug
12.	Chock	29.	Compartment for maps
13.	Turn indicator		
14.	Airspeed indicator (ASI)		
15.	Vario (VSI)		
16.	Altimeter		
17.	FlyDAT -ROTAX		
18.	Control knob		
19.	Min. Fuel warning light (4lit)		
20.	Control of charged		

II. INSTRUMENTS

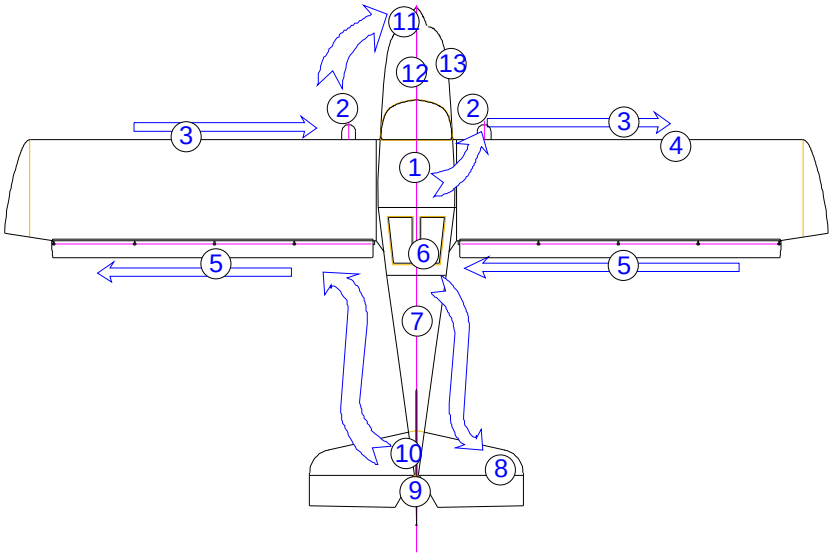
	Type	Serial No.
Airspeed indicator	BK 240	
Altimeter	WINTER	
Vertical speed indicator	VSI 10m	
Bank indicator	SI – 2Q	
Fuel pressure	BDT1/31/B	
Magnetic compass	CM - 13	
Radio	ATR 600	
Transponder	TRT 800	
Transponder AC	TRT AC Address	
FlyDAT	Rotax	

III. STORAGE BATTERY

Type		
Voltage	12 V	
Capacity	7 Ah	

The storage battery is located behind the right-hand pilot's seat..

4.3 Daily Preparation, Pre-Flight Preparation



1. Cockpit
   - master switch switched off
   - ignition off
   - fuel cocks - shut, fuel quantity check
   - instruments, check of condition
   - safety belts, condition, no damage
   - check of flaperon tie rods connection
   - control stik, condition and free running
   - pedals, condition and free running
   - brakes, condition and function
   - trim, free running
   - throttle, free running
   - loose articles
   - cleanness of window panels
   - door, shut and locked.

2. Main landing gear - landing gear legs, condition, attachment, undamaged state
   - wheels, condition, tire pressure 200 kPa
   - brake condition

3. Wings
   - check of wing and struts suspensions and clamping bolts
   - condition of wing surface and skin

4. Pitot tube - condition and direction, remove cover

5. Flaperons - condition of attachment, hinges, flaperon surface

   - free motion of flaperon
   - check of counterweights attachment.

6. Rear cockpit cover - condition and attachment

7. Fuselage - condition, undamaged condition of lattice members and skin.

8. Stabilizer and elevator - condition of hinges, attachment of stabilizer struts

   - free motion of elevator and trim tab.

9. Fin and rudder - condition and attachment, free motion
   - condition and attachment of rudder balance tab.

10. Nose wheel - condition and function
    - pressure tire of 200 kPa

11. Propeller locking - condition of blades, propeller shaft, check of propeller nuts (if propeller spinner is not installed).

12. Engine looking wive - condition and attachment of engine mount, check

    - condition and attachment of suction piping, carburettors and controls

    - condition and attachment of exhaust manifold
    - cooling, liquid condition and quantity
    - check of fuel system, filter and carburettors
    - draining off water and dirt from the link tank
    - check of electrical system, ignition, cable connections,

13. Fuels - replenish as needed, avoid contact of fuel with glass

4.3.1 Engine Warm-Up, Power Check

- wheels chocked, brakes on.

- warming-up to operating temperature

- first at 2000 r.p.m. for 2 minutes,

- then at 2500 r.p.m. worming oil to temperature of 50 °C

- temperature and pressure values - within operating limits

- set maximum power - speed of about 5000 r.p.m. (3 ÷ 5 sec.)

- check of ignition - speed of 3850 r.p.m., r.p.m. drop at cutting off one circuit must not exceed 300 r.p.m.

speed difference between the circuits 115 r.p.m. maximum

- check of idling speed - 1400 r.p.m.

- temperature and pressure values must not exceed operating limits under any rating

CAUTION	Perfom the engine check heading upwind! Do not carry it out on loose terrain! Nobody is allowed to stand within dangerour proximity and, in particular, within propeller area!
NOTE	*After check of engine power, cool down the engine for a short time to avoid evaporation of the cooling liquid in cylinder heads.*

4.4 Pre-Flight Check

cockpit, check	- cockpit interior equipment.
	- safety belts, their undamaged condition.
	- control system, free running.
	- controls, free running and undamaged condition.
wings, check	- wing surfaces for undamaged condition.
	- wing and struts
	- flaperons, undamaged condition.
fuselage, check	- undamaged condition of fuselage and skin.
tail unit	- check of its condition, surface and attachment.
landing gear	- check of its condition and attachment.
engine and propeller	- check of their condition and attachment.

4.5 Normal Procedures and Checklists

4.5.1 Prior to Engine Starting (After Entering Cockpit)

- pedals	free motion
- brakes	check function
- stick control	free motion
- trim	free running and functional check
- wing flaps	free motion, retracted

- engine control + choke	free running
- master switch	off
- ignition	off
- switches	off
- main fuel cock	shut
- wing tank fuel cocks	shut, fuel quantity check
- instruments	check values, settings
- safety belts	fasten,tighten
- door	shut, locked
- transceiver and intercom	check condition

4.5.2 Use of External Power Supply

The aircraft is not provided with connection for external power supply. In case of emergency, the external power supply may be connected to battery contacts.

4.5.3 Engine Starting

- master switch	on
- main fuel cock	open
- wing tank fuel cocks	open to fuel tank
- choke	pull on (cold engine only)
- throttle	set to idle
- stick	pulled backwards, clamped between legs
- brakes	on
- engine and propeller	check clearance
- ignition	on
- starter	operate switch (10 sec as max)

- after starting the engine, adjust speed to idle.

- instruments	check values
	oil pressure in 10 sec 20 kPa minimum
- choke	push in
- switches	on (transceiver, IC, turn-and-slip indicator .....)

4.5.4 Prior to Taxiing

- check area clear in direction of contemplated taxiing

- brakes	functional check
- stop watch	switch on, record time

4.5.5 Taxiing

- taxiing speed is15 km/h maximum. Steering is performed by foot control and braking of main wheels.
- at crosswind hold ailerons „into wind“, using the control stick.
- at strong crosswind perform the taxiing with an assistant holding the wing by its windward side.

4.5.6 Prior to Take-Off

- brakes	on
- speed	3500 r.p.m.
- trim	take off position
- wing flaps	take-off position
- master switch	on
- ignition	on
- main fuel cock	open
- tank fuel cocks	fuel quantity check, open to fuel tank
- instruments	check readings
- door	shut, locked
- safety belts	fastened, tightened
- control	check full free and convect movment
- check of runway	clear

4.5.7 Take-Off

Continuously increasing engine power to maximum (max. 5800 r.p.m.), bring the aircraft into motion. At a speed of 70 km/h, slightly pulling the control stick backward, unstick the main landing gear. Hold acceleration after unsticking till increase of speed to 90-100 km/h. Slowlly pulling the control stick backwards, get the aircraft to climbing at a speed of 100 - 110 km/h.

- airspeed	100 - 110 km/h IAS
- speed	max. cont. power, max. 5500 r.p.m.
- engine instruments	within limits
- wing flaps	retract adjust at a height of 50 m (150ft)

WARNING	**Take-off is forbidden - if engine running is not smooth. - if runway is not clear.**

4.5.8 Climbing

- speed	max. cont. power, max. 5500 r.p.m.
- airspeed	100 - 110 km/h IAS
- engine instruments	within limits

4.5.9 Cruise

- bring the aircraft into horizontal flight

- speed	4000 - 5000 r.p.m.
- airspeed	110 - 160 km/h IAS
- engine instruments	within limits

4.5.10 Descent

- speed	increased idle
- airspeed	110 km/h IAS
- engine instruments	within limits

CAUTION	At long final and when descending from a considerable height, it is not advisable to reduce the engine throttle control to minimum. In such case the engine becomes undercooled and a loss of power occurs. When descending, apply increased idle so that engine instrument readings range within the limits for normal use.

4.5.11 Downwind

- speed	4000 - 5000 r.p.m.
- airspeed	110 - 160 km/h IAS
- engine instruments	within limits
- fuel	fuel quantity check, switch to fuel tank with more fuel
- brakes	check their function by depressing brake pedals
-safety belts	tighten
- base leg and before finals	check for traffic
- at base leg and before finals	check for traffic and clean funway

4.5.12 After Base Leg

- RPM	3000 r.p.m.
- airspeed	110 km/h IAS
- engine instruments	within limits
- wing flaps	take-off
- trimming	adjust
- finals	check all clear

4.5.13 Before Finals

- airspeed	110 km/h IAS
- RPM	adjust as needed
- engine linstruments	within limits
- wing flaps	set to landing position
- trimming	adjust
- engine instruments	within limits

- check clear landing strip (people, obstacles).

4.5.14 Balked Landing

- RPM	max.take-off power, max. 5800 r.p.m.
- airspeed	100 - 110 km/h IAS
- engine instruments	within limits
- wing flaps	take-off
- trimming	trim
- wing flaps	retract at a height of 50 m
- trimming	adjust
- RPM	max. cont. power, max. 5500 r.p.m.
- climb	100 - 110 km/h IAS

4.5.15 Landing

At a height of about 10 m reduce the engine speed to idle. Maintain speed of 90-100 km/h till rounding -out. When floating at a height of 0.5 -1 m above ground, decelerate gradually by pulling the control stick backward. At a speed of about 55-60 km/h the aircraft touches-down. At landing run it is necessary to hold the elevator up and to apply brakes At wind speed over 7 m/sec it is advisable to land with increased idle and on the main landing gear.

4.5.16 After landing

- brakes	finish braking slowly, may also be applied for control of direction of move
-wing flaps	retract
- balancing	balanced tail heavy

4.5.17 Engine Stopping

- RPM	cool down the engine at 2000 r.p.m.
- engine instruments	within limits
- transceiver	switch off
- ignition	switch off
- master switch	switch off
- switches	switch off
- main fuel cock	shut
- tank fuel cocks	switch to shut position

4.5.18 Post-Flight Check

- check of drive for
  - damage of fuel system. fuel leakage
  - damage of oil system, oil leakage
  - damage of cooling circuit, liquid leakage
  - damage of electrical system, ignition
- check of aircraft exterior for damage
  - fuselage
  - wings, flaperons
  - tail unit
  - landing gear
  - fiberglass covers
- wash down the aircraft, clean it of dirt
- cover the cockpit with a protective cover

4.5.19 Rain

When flying in the rain, no additional steps are required. Aircraft qualities and performance are not substantially changed.

CHAPTER 5

5. PERFORMANCE

TABLE OF CONTENTS

5.1 Introduction

Chapter 5 contains data on airspeed calibration (position error of airspeed indicator), on minimum flying speeds and data on take-off characteristics.

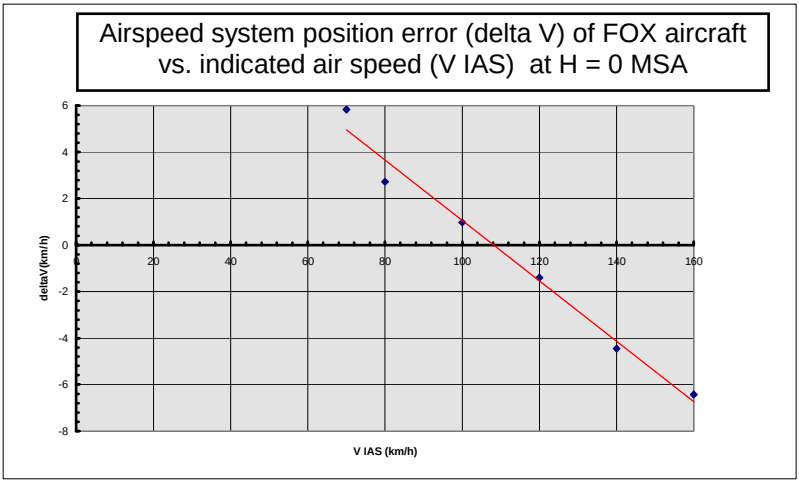
The data are based on particular flight measurements undertaken with the aircraft of this type under normal conditions and with application of average piloting technique.

5.2 Performance

5.2.1 Position Error

The table below gives data on calibrated airspeed CAS and indicated airspeed IAS. Delta V indicates an airspeed system position error.

V CAS	V IAS	delta V
km/h	km/h	km/h
75.83481	70	5.834813
82.72482	80	2.724817
100.9777	100	0.977747
118.6061	120	-1.39388
135.5541	140	-4.44588
153.5682	160	-6.43182



5.2.2 Minimum Speed

Minimum speed ..... solo .....70 km/h IAS
..... double .....75 km/h IAS

5.2.3 Take-Off Characteristics

Take-off distance over a 15 m obstacle..... solo .....190 m
..... double .....210 m

5.2.4 Landing

Landing distance over a 15 m obstacle ..... solo .....280 m
..... double .....330 m

5.2.5 Climbing

Rate of climb..... solo .....7.0 m/s
..... double .....4.5 m/s

Gliding ratio at stopped engine ....1 : 11

Optimum gliding speed..... .....95 km/h

Sinking at stopped engine ....2.3 m/s

5.3 Further Information

5.3.1 Cruise Flight

Cruising speed..... ..... 110 - 160 km/h

Optimum V_{opt}..... .....120 km/h

Economic flying speed V_{ek}..... .....110 km/h

Never exceed speed V_{NE} ....185 km/h

5.3.2 Endurance

Endurance ....4.5 hod

Ceiling..... .....4500 m

Flying range..... .....540 km

5.3.3 Take-off from Grass Surface

Take-off distance over a 15 m obstacle ..... solo .....210 m

..... double .....250 m

5.3.4 Rain Effect on Flight Characteristics

Flying qualities and characteristics are not substantially changed.

5.3.5 Crosswind Effect

Maximum permitted wind speed components for take-off and landing:

aligned with runway axis .....12 m/s

perpendicular to runway .....5 m/s

tail wind .....2 m/s

5.3.6 Other Data

Intentionally left blank.

CHAPTER 6

6. WEIGHT AND C.G. POSITION

TABLE OF CONTENTS

6.1 Introduction

This chapter contains values of payload at which the aircraft can be safely operated.

Aircraft weighing procedures and computations to detemine range of safe payload are included under item 6.4.

6.2 Table of Weights

Max. Take-Off Weight									
Weight Baggage (kg)	Crew Weight (kg)								
	55	125	130	135	140	145	150	155	160
0	61		50	45	40	35	30	25	20
5	61	50	45	40	35	30	25	20	15
10	50	45	40	35	30	25	20	15	

6.3 Weight and C.G. Position

Minimum crew weight .....55 kg

Max. crew weight 162kg

Maximum weight of baggage behind pilot's seat .....10 kg

The weight and C.G. position found:

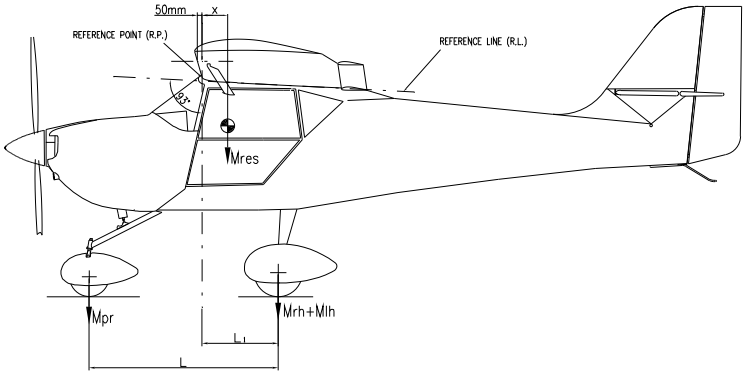
Weight: **450 kg** C.G. Position: **% B_{MAC}**

Date: Performed by:

6.4 Weight and C.G. Position Record (specimen)

Serial Number		**Registr. Mark:**	

Aircraft Levelling:



Values Weighed:

Main wheels	right-hand	MRH =	kg	L=	mm
	left-hand	MLH =	kg	L_1=	mm
Tail skid		Mpr =	kg		
Resulting weight		Mres =	kg		

C.G. position

$B = (M_{pr} \times L\ ) / M_{res} =$ [mm]

$X = L_1 - B + 50 =$ [mm]

$\bar{X} = (X \times 100) / 1300 =$ [%MAC]

Date: Performed by:

CHAPTER 7

7. SUPPLEMENTS

TABLE OF CONTENTS

7.1 Introduction

This chapter contains supplements necessary for safe and efficient operation of the aircraft fitted with equipment other than the standard one.

7.2 List of Inserted Supplements

Date	Supplement No.	Supplement Title