TEXAN TOP CLASS 2

PILOT OPERATING HANDBOOK

(for Rotax 912 S/ULS version)

Num.	Date	Description	Issued	Verified	Approved
		REVISION			
04	27/05/16	Integration of Garmin G3X	C. Cosatto	M. Persello	R. Ciotti
04	08/04/16	Rotax 912iS engine	C. Cosatto	M. Meroi	R. Ciotti
03	13/10/14	Parachute and 912 S engine	C. Cosatto	R. Ciotti	C.Cosatto
02	21/01/14	Instruments layout	C. Cosatto	R. Ciotti	C.Cosatto
01	20/01/14	Optionals list , speed KTS	C. Cosatto	C.Cosatto	R. Ciotti
00	17/12/13	New manual issue	C. Cosatto	R. Ciotti	C.Cosatto

Identification: POH_TC2 Rev.5
Pages 82
Date: 04/09/2013
Provincial Road n.78 Km 12.150
33050 Mortegliano (UD) – Italy
Tel. +39.(0)432.992482 – +39.(0)432.993557
Fax +39.(0)432.931280
Sito web: www.flysynthesis.com
e-mail: info@flysynthesis.com

THIS DOCUMENT MUST BE CARRIED IN THE AIRCRAFT AT ALL TIMES

Airplane Identification:

Manufacturer	FLY SYNTHESIS SRL
Address	Strada provinciale 78 Km 12.150 Mortegliano 33050 (UD) ITALY
Model:	FLY SYNTHESIS TEXAN
Version:	TEXAN TOP CLASS 2
Airframe Serial No:	
Engine Model:	ROTAX 912
Engine Serial No:	
Registration:	
Date:	
Signature:	
Stamp:	

NOTE

This manual may be revised in the future and pages/or sections re-issued in part or whole. Revisions will also be available on the Fly Synthesis website www.flysynthesis.com. Any revisions and/or sections should be printed and replaced in the manual at the earliest possible time for flight safety.
The revisions added to the manual should be logged and recorded in the table under log of ammendments of this manual, by the owner/user.

DEFINITIONS

Definitions used in this handbook such as WARNING, CAUTION and NOTE are employed in the following context.

WARNING
Procedures or instructions that if not followed correctly may result in injury or death

CAUTION
Procedures or instructions that if not followed correctly may result in damage to the aircraft or its parts

NOTE: Procedures or instructions that affect safety of flight are highlighted

INTELLECTUAL PROPERTY

THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH BCAR Section S AIRWORTHINESS STANDARD AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHNESS REQUIREMENTS.

LOG OF REVISIONS

Revision No.	Revision	Date	Signature
00	New manual issue for Texan TOP CLASS 2 with Rotax 912ULS engine	17/12/13	Cosatto C.
01	Updated optional list, speeds in knots and manual formatting	20/01/14	Cosatto C.
02	Added instrument panel layout and installed optionals list	21/01/14	Cosatto C
03	Parachute GRS 6/600 B4 and 912 S engine optional installation	13/10/14	Cosatto C
04	Integration of Rotax 912 iS procedures	08/04/16	Cosatto C
05	Integration of Garmin G3X part	27/05/16	Cosatto C

LOG OF EFFECTIVE PAGES

Section	Page	Date	Revision	Section	Page	Date	Revision
-	01	08/04/16	4	5	45	20/01/14	1
-	02	13/10/14	3	5	46	17/12/13	0
-	03	08/04/16	4	5	47	17/12/13	0
-	04	08/04/16	4	5	48	17/12/13	0
-	05	27/05/16	5	6	49	17/12/13	0
-	06	13/10/14	3	6	50	17/12/13	0
1	07	08/04/16	4	6	51	17/12/13	0
1	08	08/04/16	4	7	52	08/04/16	4
1	09	21/01/14	2	7	53	08/04/16	4
1	10	21/01/14	2	7	54	08/04/16	4
1	11	17/12/13	0	7	55	08/04/16	4
2	12	20/01/14	1	7	56	08/04/16	4
2	13	08/04/16	4	7	57	08/04/16	4
2	14	17/12/13	0	7	58	08/04/16	4
2	15	17/12/13	0	7	59	27/05/16	5
2	16	13/10/14	3	7	60	27/05/16	5
2	17	17/12/13	0	7	61	27/05/16	5
2	18	17/12/13	0	7	62	27/05/16	5
2	19	08/04/16	4	7	63	27/05/16	5
3	20	08/04/16	4	7	64	27/05/16	5
3	21	17/12/13	0	8	65	08/04/16	4
3	22	20/01/14	1	8	66	08/04/16	4
3	23	13/10/14	3	8	67	08/04/16	4
3	24	17/12/13	0	9	68	08/04/16	4
3	25	17/12/13	0	9	69	08/04/16	4
3	26	20/01/14	1	9	70	08/04/16	4
3	27	17/12/13	0	9	71	08/04/16	4
3	28	20/01/14	1	App A	72	17/12/13	0
4	29	17/12/13	0	App A	73	17/12/13	0
4	30	17/12/13	0	App A	74	17/12/13	0
4	31	17/12/13	0	App A	75	17/12/13	0
4	32	17/12/13	0	App A	76	17/12/13	0
4	33	08/04/16	4	App A	77	17/12/13	0
4	34	08/04/16	4	App B	78	17/12/13	0
4	35	08/04/16	4	App B	79	17/12/13	0
4	36	17/12/13	0	App B	80	13/10/14	3
4	37	20/01/14	1	App B	81	13/10/14	3
4	38	20/01/14	1	App B	82	17/12/13	0
5	39	20/01/14	1				
5	40	17/12/13	0				
5	41	20/01/14	1				
5	42	20/01/14	1				
5	43	20/01/14	1				
5	44	20/01/14	1				

INDEX

SECTION 1

General information

1.1 INTRODUCTION

This Operating Handbook contains the necessary information for a sure and efficient employment of the aircraft **FLY SYNTHESIS TEXAN TOP CLASS 2 with ROTAX engine 912 ULS 100HP**. As optional the FAR 33 certified version Rotax 912 S and fuel injected 912 iS Sport could be installed. The POH has been prepared to comply with the requirements of **BCAR Section S** standard.

The Pilot Operating Handbook is **valid only for the particular aircraft** identified on page 2, the identification page.

Read this manual before your first flight!

1.2 WARNINGS, SUGGESTIONS AND NOTES

The observance of this manual is **compulsory** for the aircraft's use.
FLY SYNTHESIS S.r.l. declines every responsibility for any damage to person and property derived by a missed or partial observance of the prescriptions contained in this manual.
FLY SYNTHESIS S.r.l. reserves it, to terms of law, the exclusive ownership of this manual and also forbids the partial or integral reproduction of it and however to communicate it to competing firms without a preventive written authorization.

1.3 DESCRIPTIVE AIRCRAFT DATA

TYPE OF AIRCRAFT

Texan TOP CLASS 2 is a light sport aircraft with airframe; wings and control surfaces made of laminate and honeycomb sandwich composite materials. The rectangular shape low wing utilizes a laminar flow airfoil section. The ailerons are differential whilst the flaps are electrically operated plain type, the vertical tail control surface is composed by a fixed fin and by a mobile rudder, and the horizontal tail control surface is completely mobile, hinged in the central part with integrated trim. The tricycle type landing gear is fixed, with dampered nose wheel, with the main legs made in spring steel construction.

WARNING

The Texan aircraft is approved for Day VMC only. Flight into bad weather with IMC conditions by VMC pilots and aircraft is extremely dangerous. As the owner or operator of an aircraft you are responsible for the safety of your passenger and yourself.

DIMENSIONS

General

Wing span:	8.600	m
Length:	6.990	m
Height:	2.400	m

Wing

Surface:	11.80	m^2
Wing chord:	1.399	m
Wing load:	19.2	kg/m^2

Flap

Surface:	0.570 m^2
Span:	1.700 m
Chord:	0.340 m
Travel:	0° - 45° (continuosly as there no stages)

Aileron

Surface:	0.570 m^2
Span:	1.700 m
Chord:	0.340 m
Travel:	down 17° / up 22°

Stabilator

Surface:	1.950 m^2
Span:	3.000 m
Chord:	0.650 m
Travel:	down 11° / up 16°

Vertical fin (with rudder)

Surface:	1.150 m^2
Height:	1.350 m
Mean chord:	0.850 m

Rudder

Surface:	0.600 m^2
Height:	1.350 m
Mean chord:	0.440 m
Travel:	+/-18°

WEIGHTS

Empty weight	350	kg
Maximum allowed weight in baggage compartment	12	kg
Maximum take-off weight	580	kg
Minimum single pilot weight	70	kg
Max occupancy weight	180	kg

LANDING GEAR

Type:	Tricycle type landing gear with dampened nose wheel	
Main gear track:	2.130 m	
Wheelbase:	1.585 m	
Tire:	Main:	4.00x6"
	Nose wheel:	4.00x4"
Tire pressure:	Main:	2.2 - 2.4 bar
	Nose wheel:	1.8 bar
Brakes:	Hydraulic disc system on main wheels.	

FUEL SYSTEM

Type:	Two lines from tanks to tank selector valve, driven by mechanical and electric auxiliary fuel pump. Fuel system is equipped with draining system and fuel return system into the RH tank.
Tanks:	Two integrated tanks with 67 liters of capacity each, equipped with fuel level and fuel reservoir sensors, fuel tank caps and a venting line to the lower surface of the wing.
Non-usable fuel	2 liter for each tank
Fuel filter:	Gascolator on firewall, filtered electric fuel pump

Fuel specification

Premium Automotive Unleaded fuel min 95Ron.
For complete fuel specifications see engine manufacturer manual.

ELETRICAL SYSTEM

Type:	12 V CC electric wiring with starting battery Circuit breakers protected wiring Provision for gyroscopic instruments, autopilot, radio, trasponder, navigation lights, generic gps systems such as AvMap EKP IV and EKP V.

POWERPLANT

Engine:	**Rotax 912 ULS / S (certified FAR 33) and iS Sport**
Type:	4 stroke, 4 cylinder horizontally opposed, spark ignition engine, liquid cooled cylinder heads, ram air cooled cylinders, two constant depression carburetors (redundant fuel injection, main and backup fuel pumps, air box), mechanical fuel pump, air box, friction clutch geared reduction drive, radiator cooled oil, warm air at carburetor system.
Ignition:	Increased electric ignition system HD.
Battery:	Sealed Lead Acid Battery 12 Volts.
Standard propellers:	GT-Propellers GT2VEB two blades variable pitch propeller, made by wood and fiberglass, diameter 1740 mm, in flight variable pitch electrically controlled by automatic in- flight variable pitch with Custom Intelligent Propeller control box, manual operations have been removed. Alisport Idrovario two blades variable pitch propeller, diameter 1760 mm, automatic in- flight variable pitch with Custom Intelligent Propeller control box, manual operations have been removed.

INSTRUMENTS

Standard instruments: Airspeed indicator, altimeter, vertical speed indicator, magnetic compass, slip indicator, flap angle indicator, two fuel level tank indicators with two low fuel level amber warning lamps, CHT, EGT, RPM, oil temperature indicator, oil pressure indicator, fuel pressure indicator, engine run time indicator, 12 Volt aux socket.

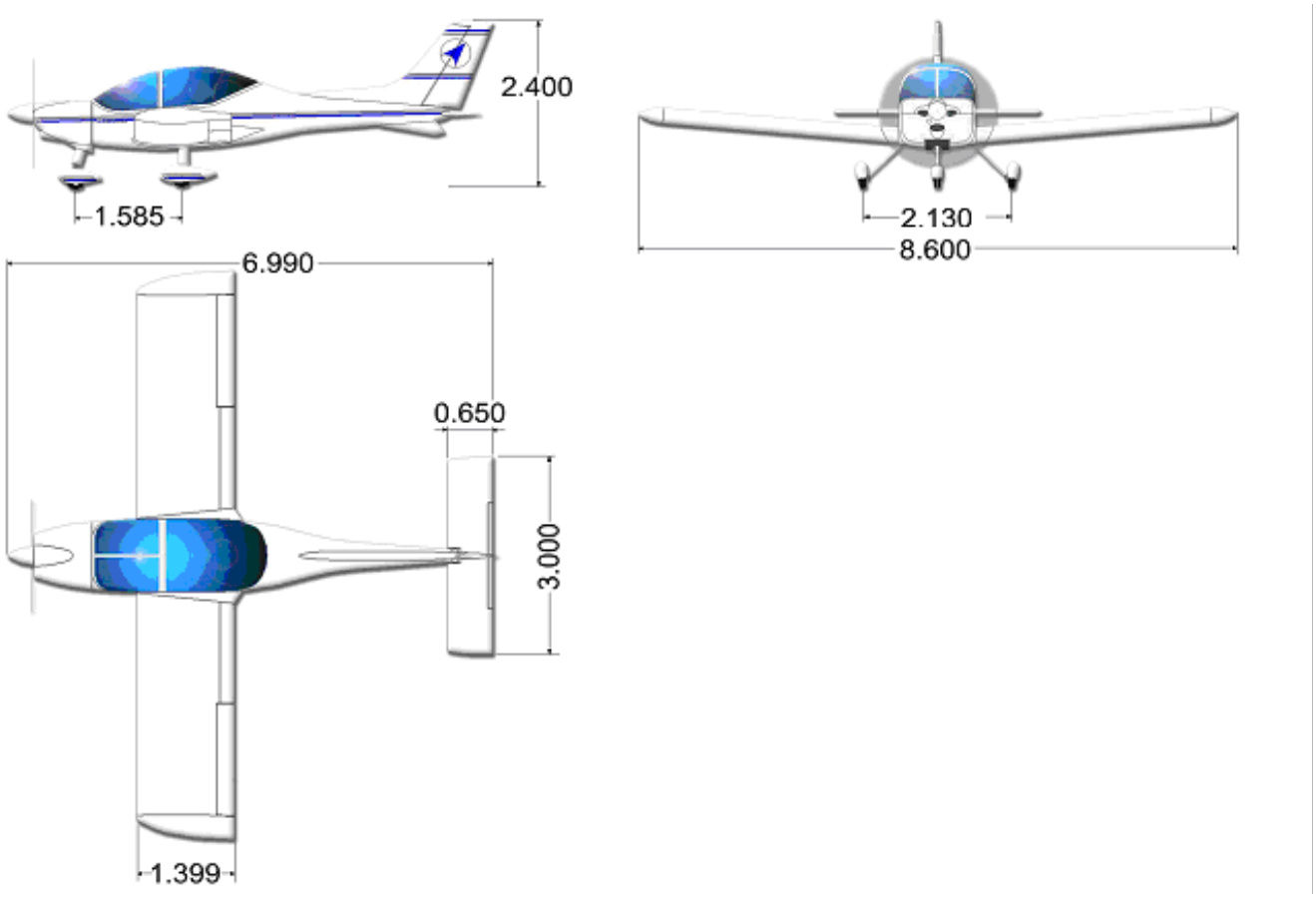
OPTIONAL EQUIPMENT

Main wheels and nose wheel fairings, main legs and nose leg aerodynamic fairing, depth adjustable seats, four points safety belts, electric flap system (travel: 0° - 45°), manual trim regulation system, fully upholstered cabin interior, canopy lock system with key, hooks for ground anchorage, landing lights, navigation lights.

OPTIONAL AVIONICS

- Fuel flow indicator: MGL AVIONICS FF - 3 FUEL FLOW MONITOR
- Fuel flow indicator: Flybox FC1
- Altimeter: MGL AVIONICS ALT-4 ALTIMETER
- EFIS: Dynon SkyView series
- Dynon D10A with AP74 autopilot interface

1.4 AIRCRAFT THREE VIEWS



1.5 INSTALLED AVIONICS AND PANEL LAYOUT

The aircraft indicated in page 2 is equipped with following optional instruments and equipment:

INSTALLED AVIONICS

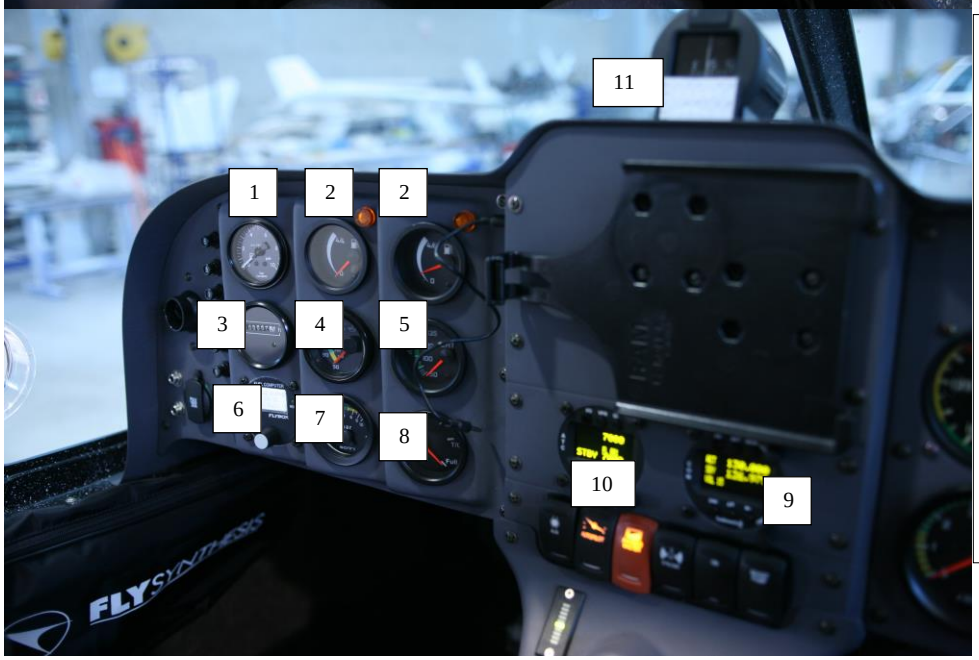
- Dynon D10 with autopilot interface AP74
- Flyzone Custom Intelligent Propeller, automatic pitch controller
- Flybox FC1 fuel computer
- Funkwerk ATR833 Radio
- Funkwerk TRT800 Transponder

INSTALLED EQUIPMENT

- GT-propeller GT2VEB propeller
- Galaxy GRS6/600 Parachute

PANEL CONFIGURATION

1) Dynon D10 EFIS
2) AP74 interface
3) Airspeed indicator
4) RPM indicator
5) Propeller pitch controller
6) Vertical speed indicator
7) Altitude indicator



8) Fuel pressure indicator
9) Fuel tank level indicators
10) Hourmeter
11) Oil temperature indicator
12) CHT indicator
13) Fuel computer FC1
14) Oil pressure indicator
15) Flap position indicator
16) Radio ATR833
17) Transponder TRT 800
18) Compass

SECTION 2

Limitations

2.1 INTRODUCTION

This section contains the operational limitations and instruments markings used for this aircraft, the engine, and the standard equipment. The limitations of speed have been calculated following the CS-VLA rules. The structure has been tested following the same rules.

2.2 AIRSPEED LIMITATIONS0

	Speed	IAS	Notes
Vne	Never Exceed speed	135 kts 155 mph	Never exceed this speed in every condition or configuration
Vmo	Maximum Structural Cruising Speed	108 kts 124 mph	Never exceed this speed in turbulent air condition
Va	Maneuvering speed	78 kts 90 mph	Do not use full stick and full rudder deflections above this speed
Vfe	Maximum speed with full flaps	65 kts 75 mph	Do not exceed this speed with flap extended
Vs	Stall speed without flap	40 kts 46 mph	Do not descend this speed without flap to avoid undesired stall conditions
Vs1	Stall speed in take-off position (15°)	38 kts 44 mph	Do not descend this speed with flap in take-off position to avoid undesired stall conditions
Vs0	Stall speed in landing position - full flap (45°)	35 kts 40 mph	Do not descend this speed with flap in landing position to avoid undesired stall conditions

2.3 AIRSPEED MARKING

Marking	Speed range (IAS) [kts]	Definitions
White arc	[Vs0 - Vfe] 35 - 65	Speed range where flap may be extended
Green arc	[Vs - Vmo] 40 - 108	Speed range of normal operation
Yellow arc	[Vmo- Vne] 108 - 135	Maneuver the aircraft with great caution
Red line	[[Vne] 135	Maximum speed allowed

2.4 POWERPLANT AND PROPELLER LIMITATIONS

Refer always to Rotax operator manual

Engine manufacturer:	**Rotax**	**Rotax**
Engine model:	**912 ULS**	**912 iS Sport**
Maximum takeoff power:	**73.5 kW**	**73.5 kW**
Maximum continuous power:	**69 kW**	**69 kW**
Maximum takeoff RPM (max. 5 min):	**5800 rpm**	**5800 rpm**
Maximum continuous RPM:	**5500 rpm**	**5500 rpm**
Idle RPM:	**1400 rpm**	**1400 rpm**
Minimum cylinder head temperature:	**135 °C**	**135 °C**
Maximum oil temperature:	**130 °C**	**130 °C**
Minimum oil pressure:	**0.8 bar**	**0.8 bar**
Maximum oil pressure:	**7 bar**	**7 bar**
Minimum fuel pressure:	**0.15 bar**	**2.8 bar**
Maximum fuel pressure:	**0.4 bar**	**3.2 bar**
Usable type of fuel:	**minimum 95 RON**	
Usable type of oil:	**See engine manual specifications**	

Propeller manufacturer:	**GT Propellers**	**Alisport Idrovario**
Propeller model:	**GT2VEB Wood 2-blade Auto-Variable pitch***	**Composite 2- blade Auto-Variable pitch***
Maximum diameter:	**1730 mm**	**1760 mm**

* manual operations have been removed.

2.5 POWERPLANT INSTRUMENTS MARKING

Rotax 912 ULS

Instrument	Units	Min Red line limit	Min Yellow arc Caution	Green arc- normal operations	Max Yellow arc Caution	Max Red line Limit
RPM indicator	RPM	Nd	Nd	1.400 - 5.500	5.500 - 5.800	5.800
Fuel pressure gauge	bar	0.15	Nd	0.15 - 0.4	Nd	0.4
Oil pressure gauge	bar	0.8	0.8 - 2	2 - 5	5 - 7	7
Oil temp. gauge	°C	50	50 - 90	90 - 100	110 - 130	130
CHT	°C	50	Nd	50 - 100	110 - 135	135
EGT (optional)	°C	Nd	Nd	0 - 880	Nd	880

Rotax 912 iS Sport

Instrument	Units	Min Red line limit	Min Yellow arc Caution	Green arc- normal operations	Max Yellow arc Caution	Max Red line Limit
RPM indicator	RPM	Nd	Nd	1.400 - 5.500	5.500 - 5.800	5.800
Fuel pressure gauge	bar	2.8	Nd	2.8-3.2	Nd	3.2
Oil pressure gauge	bar	0.8	0.8 - 2	2 - 5	5 - 7	7
Oil temp. gauge	°C	50	50 - 90	90 - 100	110 - 130	130
Coolant Temperature	°C	50	Nd	50° - 120 °C	nd	120°C
EGT (optional)	°C	Nd	Nd	0 - 880	Nd	880

2.6 WEIGHT LIMITATIONS

Maximum Take Off Weight	580 Kg
Empty weight	350 Kg
Max occupancy weight	180 kg
Maximum fuel weight	96 Kg if filled with gasoline 105 kg if filled with AVGAS
Maximum allowed weight in baggage compartment	12 Kg

2.7 CENTER OF GRAVITY LIMITATIONS

With the purpose to achieving the best performances of flight and operations in complete safety, according to the procedures described in this manual, the aircraft must have employed respecting all the schemes of load and balancing pointed out in the following pages.
Pilot must consider the limit of weighing and all correlated parameters.
Before the delivery of the airplane, center gravity position and weight of the airplane are verified.

NOTE: Empty weight & Center gravity position must be updated with new weighing, in the following case:
- Substitution and/or modify of one or plus accessories and equipment;
- After painting or reparations of fuselage.

Weight and Center Gravity position must be recorded after every change to the weighing report inside this manual only by authorized personnel. The weighing report must be recalculated and reissued if the empty weight changes by more than 0.5% of MTOW or 10 kg which is greater.

The location of the CG can be defined by reference to the % MAC.
Maximum anterior limit: 30% M.A.C. correspondent to 350 mms from wing leading edge
Maximum back limit: 36% M.A.C. correspondent to 504 mms from wing leading edge

For methodology and conditions for weight and balance procedure, see section 6.

2.8 MANOEUVRE LIMITATIONS

WARNING: All aerobatics maneuvers are **prohibited.**

The normal flight operations permitted are as follows:

- Every connected maneuver to the normal flight operation,
- Stalls, with exclusion of the accelerated stall (superior to 1 g)
- Low speed figure eight, chandelle, turns with bank angle below 60°

The use of the aircraft has to conform with the Rules of the State within it flies

WARNING:
Flight in known icing conditions, snow and heavy rain is prohibited.

WARNING:
The pilot is responsible for determining the airworthiness of the aircraft before each flight including on board fuel level verification.

WARNING:
All maneuvers at load factor less than - 0.5g must be performed for no longer than 5 seconds.

WARNING:
In single pilot operation, belt and shoulder harness of the vacant seat must be secured to avoid uncontrolled movement of seat back and belt.

2.9 LOAD FACTOR LIMITATIONS

The load factors limit used for the calculation of the structures are conforming to CS-VLA rules:

Flap retracted		**Flap extended**	
- Maximum positive load factor	**3.8 (+)**	- Maximum positive load factor	**2.0 (+)**
- Maximum negative load factor	**1.9 (-)**	- Maximum negative load factor	**0.0 (+)**

2.10 OPENING CANOPY LIMITATIONS

During flight, engine operation and taxi operation the canopy must remain closed and securely locked via the 4-point hook locking system. The only exception is if the optional "taxi open system", safety locking mechanism has been fitted, in this case it is possible to slightly maintain the canopy open only during taxi and ground operations.

WARNING:
during the flight is absolutely forbidden to hold the canopy in any position other than in the securely locked mode. Never try to open the canopy during the flight!

2.11 EMERGENCY PARACHUTE SYSTEM OPERATION LIMITATIONS

	Galaxy GRS6/600 B4
- Maximum speed:	161 kts (186mph)
- Minimum altitude:	90m (295ft AGL)
- Maximum Gross Weight:	580kg

2.12 CREW

The minimum crew for flight operations is one person.

The Texan is designed so it can be piloted indifferently by left or right side, the discriminant is the instrument panel. For this reason the Pilot positions is defined so it have in front the airspeed, altitude and rpm indicators and master key.

The maximum number of people permitted on board is two.

Maximum occupancy weight is 180kg.

2.13 PLACARDS

The following placards are to be located and visible to the pilot where an inspection or function is relevant and required in the designated area.

Located in baggage compartment

FLYSYNTHESIS

BAGGAGE COMPARTMENT
Maximum 12 KG
Evenly distributed

Located in baggage compartment

FLYSYNTHESIS

TEXAN TC 580 ISR

Speed:	mph	Weight:	Kg
Vne (Not Exceeded)	155	Maximum Take-off	580
Vmo (Max Operating)	124	Empty Weight	350
Va (Min Maneuvering)	90	Minimum Pilot	70
Vfe (Max Full Flap)	75	Maximum Pilot + passenger	180
Vs (Stall)	46		
Vso (Stall with flap)	40		

AEROBATIC MANOEUVRES AND SPINS ARE PROHIBITED

Located on the tail boom

FLYSYNTHESIS

TEXAN TC 580 ISR DATA PLATE

Fuselage s/n _____

Date of Manufacture _____

Engine Type _____

Engine s/n _____

Located on the Instrument panel (if custom Intelligent Propeller is installed)

Propeller Pitch Control
–
Only Automatic Mode is approved

Located adiacent to release control (if Parachute system is installed)

WARNING-EMERGENCY PARACHUTE PULL

Located in baggage compartment (only if parachute GRS 6/600 is installed)

WARNING
WHEN GRS 6/600 PARACHUTE IS INSTALLED
MAXIMUM TAKE-OFF MASS IS LIMITED TO 580kg
MINIMUM SAFE ALTITUDE FOR PARACHUTE DEPLOYMENT IS 90m (295ft AGL)

Located adiacent to skyview systems on instrument panel if installed

THE SKYVIEW NAVIGATION SYSTEM IS FOR REFERENCE ONLY

THE USE OF THE AUTOPILOT BELOW 500 FT AGL, IS PROHIBITED

THE DYNON NAVIGATION SYSTEM IS FOR REFERENCE ONLY

SECTION 3

Emergency procedures

3.1 INTRODUCTION

An emergency situation is extremely rare; even so, the pilot responsible for the aircraft should meticulously carry out daily pre-flight controls checks. A safe airworthy aircraft should be maintained according to the requirements of the accompanying maintenance manual. This section contains the recommended procedures should an emergency arise. It is strongly advised that Pilots become familiar with these procedures.

3.2 GROUND EMERGENCY PROCEDEDURES

ENGINE ON FIRE

1.	Fuel tank faucet	- Close
2.	Electric fuel pump	- OFF
	Electric fuel pumps (912 iS)	- Both OFF
3.	Cabin heating	- OFF
4.	Throttle	- All forward
5.	Master switch	- OFF
6.	Ignition magnets key	- OFF
	Lanes switches key (912 iS)	- Both OFF
7.	Get out of the aircraft immediately	
8.	If possible, use an extinguisher to extinguish the fire.	

WARNING: Not remove the engine cowling until the complete extinction of the fire.
Don't use water to extinguish the fire.

3.3 TAKE OFF EMERGENCY PROCEDURES

TAKE OFF INTERRUPTION (during take off run)

1.	Throttle	- All rearward (reduce to minimum RPM)
2.	Brakes	- Brake and avoiding skidding the wheels
3.	Flap	- Retract
4.	Ignition magnets key	- OFF
	Lanes switches key (912 iS)	- Both OFF
5.	Master switch	- OFF
6.	Fuel tank faucet	- OFF

ENGINE FAILURE DURING TAKE OFF (after rotation - below 50 mt)

1.	Fuel tank faucet	- Close
2.	Electric fuel pump(s).	- OFF
3.	Master switch & ignition magnets key	- OFF
4.	Safety belts	- Tighten well
5.	Maintain a linear line of flight, without turning if possible, and if the area allows it, get ready for a forced landing (see paragraph 3.6)	

ENGINE FAILURE DURING TAKE OFF (during climb)

If the height allows it, proceed in the following way:

1. Best glide speed - 59kts (68 mph)
2. Electric fuel pump(s). - Verify ON
3. Fuel tank faucet - Verify RH tank faucet open
4. Fuel tank level - check fuel quantity
5. Fuel pressure - Verify within limits
6. Ignition magnets key(Lanes A and B). - Verify ON
7. Throttle - Position warm engine starting
8. Engine start procedure

- If the engine immediately starts up climb to a safe height and land ASAP for a check.
- If the engine doesn't start up prepare for an emergency landing & proceed as follows:

9. Flap - As necessary (30° or 45°)
10. Fuel tank faucet - Close
11. Electric fuel pump(s). - OFF
12. Master switch & ignition magnets key - Both OFF

WARNING: Land AS SOON AS POSSIBLE in case of fire on board.
- Never perform a 180° turn from too low a height in an effort to return to the runway.

3.4 DURING FLIGHT EMERGENCY PROCEDURES

EMS LAMPS (912 iS)

If one or both lamps flashes or permanently ON

1. Reduce power to minimum setting that allows a safe flight and land for checking
2. After landing
3. Check ECU log file

EMS POWER SUPPLY FAILURE (912 iS)

If EMS power supply (alternator A) fails, the ECU automatically switches to alternator B.

1. Reduce power to minimum setting that allows a safe flight and land ASAP for an inspection.

ENGINE ROUGHNESS/ ENGINE SHUTDOWN

1. Throttle - Check position and friction
2. Check engine instruments - Check parameters
3. Choke lever - OFF / All rearward
4. Fuel tank faucet - Select tank with maximum fuel
5. Electric fuel pump(s).. - ON
6. Fuel pressure - Verify within limits
7. Warm air to carburetors - ON
8. Ignition magnets key(Lanes A and B). - Both / Verify
9. Master switch - Verify / ON
10. Throttle - Position warm engine starting
11. Start - Operate start procedure
12. Check all the engine parameters and land as soon as possible for a full check

WARNING: If the engine doesn't start up choose a proper zone for an emergency landing.

ENGINE ON FIRE

1. Fuel tank faucet - Close
2. Electric fuel pump(s). - OFF

3.	Throttle	- All forward
4.	Vent system	- All closed
5.	Cabin heating system	- OFF
6.	Master switch & ignition magnetos key	- OFF
7.	Best glide speed	- 59 kts (68 mph)
9.	Landing ASAP	

WARNING: Do **not** attempt to re-start the engine even if engine fire has ceased, but prepare for an emergency landing.

STALL RECOVERY PROCEDURE

1. Apply full power to reduce the loss of height.
2. Push softly forward the control stick to eliminate the stall conditions.

NON-INTENTIONAL SPIN RECOVERY PROCEDURE

WARNING: don't try to stop the rotation using the opposite ailerons

1.	Throttle	- At minimum RPM
2.	Rudder pedals	- All opposed to the sense of rotation
3.	Control stick	- Neutral, softly to dive
4.	When the rotation stops and the aircraft is under control, return to level flight,	

WARNING: do not exceed the Vne speed.

3.5 ELETRICAL WIRING FAILURE

GENERATOR WARNING LAMP LIGHTING

1.	Voltmeter	- Check voltage (if installed)
2.	Non-essential electric equipment	- OFF
3.	Land ASAP	

A fully charged and functional battery should permit the operation of trim, flap and aux electric fuel pump for about 20 minutes.

OVERVOLTAGE (Voltmeter indication [if installed] over 16 V)

1.	Master switch	- OFF
2.	Voltmeter	- Verify the decrease of voltage
3.	Master switch	- ON
4.	Voltmeter	- Verify the increase of voltage (within limits)

If the voltage does not return within limits, proceed as follows

5.	All non-essential electrical equipment must be switched OFF	
6.	Land ASAP	

A fully charged and functional battery should permit the operation of trim, flap and aux electric fuel pump for about 20 minutes.

LOW VOLTAGE IN FLIGHT

1. Possible causes	- Excessive consumption (Too many appliances on)
	- Damage of the alternator
	- Interrupted fuse

2. Landing ASAP

LOW VOLTAGE ON GROUND

1. RPM - Reduce
2. Navigation and landing lights - OFF
3. Voltmeter - Verify within limits
4. If the check has negative result - Shutdown engine

ELECTRICAL WIRING or EQUIPMENT ON FIRE

An electrical fire is recognizable by the distinct odor of burning plastic and white smoke.

1. Master switch - OFF
2. Vent systems - All open
3. Cabin heating - OFF
4. Landing ASAP

WARNING: get ready to possibly land without the use of flaps and trim (if electric).

SMOKE ELIMINATION FROM CABIN

1. Vent systems - All open
2. Cabin heating - OFF
3. Master switch - OFF
4. If the smoke remains dense land immediately.

WARNING: absolutely **DO NOT** open the canopy.

3.6 LANDING EMERGENCY PROCEDURES

LANDING WITHOUT FLAPS

1. Verify flap/trim circuit breaker is in the **ON** position.
2. Verify the position of both the flaps visually
   With flaps in symmetrical position (both retracted or extracted at the same angle)
3. Try to retract the flaps
4. Verify that there is enough free space from obstacles for a safe landing
5. Land as normal but maintain a landing speed not less than 55 mph

LANDING WITH A DEFLATED TIRE

1. Landing as per normal condition
2. Before contacting the ground shutdown the engine and turn OFF electrical equipment.
3. When landing hold-off contact with the ground on the side of the deflated tire for as long as possible
4. Get ready for a tendency to yaw on the side of the deflate tire
5. Maintain the directionality with rudder and nose wheel steering
6. If nose wheel is deflated maintain backpressure on control stick and keep the nose wheel in a central position.

FORCED LANDING

1. Best glide speed - 59 kts (68 mph)
2. Safety belts - Tighten well
3. Throttle - All rearward (minimum position)
4. Fuel tank faucet - Closed
5. Electric fuel pump. - OFF
6. Master switch & ignition magnetos key - OFF

CAUTION: Choose a suitable area for an emergency landing.

7. Flap - As necessary
8. Trim - As necessary
9. Final - Check velocity

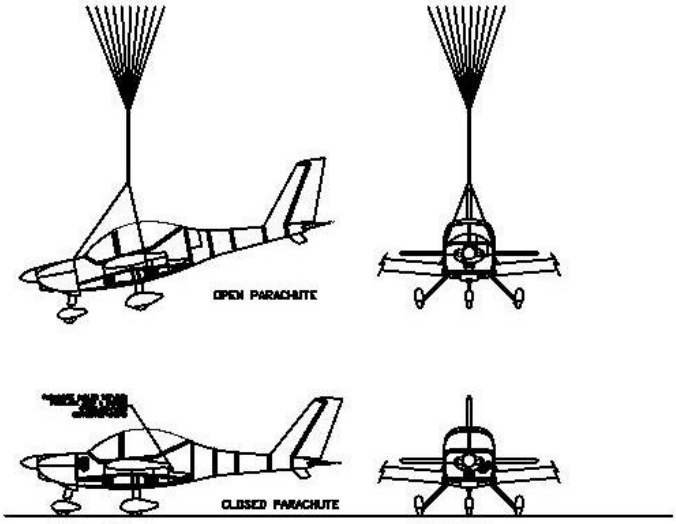
10. Landing - Check velocity (at least 38kts (44 mph), flap with 45°).

The contact with the ground should happen at the minimum possible speed, maintain lifted the nose wheel for the longest possible time.

3.7 OPENING PARACHUTE PROCEDURE (IF INSTALLED)

WARNING: The parachute recovery system installation has been approved by CAA on basis that, as far as is practicable to demonstrate, it will not hazard the aeroplane, its occupant(s) or ground personnel whilst not deployed; and that when properly maintained, the risk of malfunction, deterioration or inadvertent deployment is minimised.
CAA has not approved the system itself or considered in what circumstances, if any, it might be deployed. The effectiveness of the system for the safe recovering the aeroplane has not been demonstrated.

The emergency parachute is located in the left front part just behind the firewall, situated in a special carbon canister connected to the fuselage. The emergency parachute is fixed to the aircraft through four kevlar ropes, passing in dedicated channels on the fuselage sides, two of them are attached to antitorsion tube of the wing rear attachment points and the stabilizing front are wrapped on upper engine mount attachment points. The emergency parachute must be used only in case of complete loss of the control of the aircraft and above 230' AGL (70 m).



a. Shutdown the engine (magnetos OFF)
b. Tighten the safety belts, if time allowed
c. Pull Parachute red handle between the two seats, at least 20 centimeters
d. Close both fuel faucets
e. Shutdown the electric plant (Master OFF)
f. Do crouch and to protect the face with the hands

For further information and notes on function and maintenance, consult the parachute manual.

3.8 OTHER EMERGENCY

OIL TEMPERATURE & PRESSURE IN YELLOW ARC OR REL LINE

If the oil pressure is low (yellow arc) but the oil temperature is in normal operation range (green arc)

- Land ASAP as per normal procedure.

If the oil pressure indication is too low or too high (red arc)

- Land ASAP and get ready for a forced landing (see relative paragraph)

LOW FUEL PRESSURE

1. Electric fuel pump - ON
2. Fuel tank faucets - Open alternately the faucets to check the fuel circuit
3. Fuel pressure - Check within limits
4. If the fuel pressure does not reach the normal operating range, land **ASAP**

UNINTENTIONAL FLIGHT WITHIN ICING CONDITIONS

WARNING: Flight in known icing conditions, snow and heavy rain is prohibited.

If you meet unintentional icing condition during the flight, descend as soon as possible to a lower height. If the wing leading edge and the stabilator leading edge are covered by ice formations, remember that stall speed will increase, you will need more engine power to maintain the same velocity and the maneuverability of the airplane will decrease.

1. Carburetor heating system (if installed) - ON
2. Engine RPM - Maintain the maximum continuous engine power
3. Cabin heating (if installed) - ON
4. Move all control surfaces to break potential icing formations.

ICING FORMATIONS ON CARBURETTORS

You can recognize icing formations on carburetors if RPM decreases without moving the throttle. You can find this phenomenon during a descent with low RPM in a day with a lot of humidity.

1. Carburetor heating system (if installed) - ON
2. Throttle - All forward when RPM starts to increase
3. Carburetor heating system (if installed) - OFF
4. Reinstate normal flight conditions

ABNORMAL ENGINE VIBRATIONS

1. Verify the reduction of the vibrations with a reduction of the RPM's
2. Land as soon as possible
3. Be prepared for a possible engine failure and to commence a forced landing

LANDING WITH BRAKE SYSTEM FAILURE

1. Look for a long runway with absence of obstacles (consider that the grass has a light braking action)
2. Land with the flaps to the maximum extension and reduce speed to the minimum safe speed

(*After touching the ground)*

3. Master switch & ignition magnets key - OFF

3.9 PROPELLER PITCH CONTROL SYSTEM EMERGENCY

a) if equipped with Idrovario propeller and CIP control system

NOT POSSIBLE TO REACH MAXIMUM RPMs DURING TAKE-OFF (during take-off run)

If it is not possible to reach maximum rpms **during take-off run, ABORT the take-off.**

HYDRAULIC PITCH CONTROL SYSTEM FAILURE

In case of loss of hydraulic oil pressure of the control system, the system is designed to reduce the pitch to the minimum value. This means that the propeller will be set in take-off and climb position.

If this failure occurs, **land ASAP**!!

WARNING:
During the remaining part of flight, reduce the power to avoid overpassing the maximum value of engine rpms.

For further details, see the propeller manual.

For further details on possible failures of the CIP control system and propeller pitch control system see the respective manuals.

b) if equipped with GT2VEB propeller and CIP control system

NOT POSSIBLE TO REACH MAXIMUM RPMs DURING TAKE-OFF (during take-off run)

If it is not possible to reach maximum rpms **during take-off run, ABORT the take-off.**

ELECTRIC PITCH CONTROL SYSTEM FAILURE

In case of damage of the pitch control system, the system is designed to keep the last set pitch value. This means that the propeller could behave as a short or long pitch fixed propeller depending on when the damage occurs.

If this failure occurs, **land ASAP**!!

WARNING:
During the remaining part of flight, reduce the power to avoid overpassing the maximum value of engine rpms.
If a climb or balked landing is necessary take into account of the reduced airplane performances.

For further details, see the propeller manual.

For further details on possible failures of the CIP control system and propeller pitch control system see the respective manuals.

3.10 TAKE-OFF WITH CANOPY NOT CORRECTLY SECURED.

In case of take-off with canopy not properly secured act as follows:

Failure noticed during take-off run

1. Abort take-off procedure
2. Throttle - All rearward (reduce RPM)
3. Brakes - Brake avoiding skidding wheels
4. Control the plane to reach parking area
5. Secure the canopy
6. Check for sign of damage in the canopy frame or pivot mechanism.
7. Repeat take-off procedure

Failure notice during take-off (after rotation – below 50 mt.)

1. Flaps - Take-OFF
2. Reach a minimum safe height of 50 mt
3. Achieve a minimum speed of 56 kts (65 mph), not exceed 62kts (72 mph)

WARNING: Do not attempt to turn 180° to return to the runway. Because of low speed the risk of unintentional spin is very high. If you are the only crew of the plane, don't try to secure the canopy.

4. Maintaining speed and altitude reach landing path and prepare for landing as in standard procedure. Maintain speed 5mph higher than standard landing procedure.
5. Speed - 56kts (65 mph)
6. Flaps - as necessary
7. Final approach speed - 52kts (60 mph)

CAUTION: because the canopy is open, it generates turbulence behind it. In order to avoid control losses maintain approaching and touch down speeds 4kts (5 mph) higher than standard landing procedure)

These instructions are valid if only one lock is not secured, otherwise canopy will abruptly open during take-off run. If speed is too high the canopy could be damaged or could detach and hit the tail.

SECTION 4

Normal procedures

4.1 INTRODUCTION

This section contains the information for normal flight conditions and the checklist to follow before every flight.

4.2 SPEED FOR NORMAL EMPLOYMENT

Except otherwise suitable, the following speeds refer to the maximum take-off weight equal to 580 Kg and can be used for any inferior weight.

Take off (Flap 15°)

Rotation	40kts (46 mph)
Speed at 50 ft (15 m) obstacle	46kts (53 mph)

Climb

Best angle of climb speed Vx, (5° flap),	48kts (55 mph)
Best rate of climb speed Vy, (0° flap)	70kts (81 mph)

Cruise

Maneuvering speed (Va)	78kts (90 mph)
Max speed in turbulent air conditions (Vmo)	108kts (124 mph)
Never Exceeding Speed (Vne)	135kts (155 mph)
Landing approach	48kts (55 mph)
Landing (Flap 45°)	38kts (44 mph)
Touch & go (Maximum power, flap 20°)	48kts (55 mph)
Maximum demonstrated crosswind velocity	16kts (19 mph)

4.3 FUEL CIRCUIT DRAINING PROCEDURE AND REFUELLING OPERATIONS

The fuel circuit draining procedure must be done before the first flight of the day, 10 minutes after the refueling and if the aircraft has remained parked for more than three hours between consecutive flights.
The fuel circuit draining is performed through three specific point of the airplane: the two draining points below the wings and the Gascolator filter, situated in the right lower part of the firewall. Use a transparent and clean container, drain about 80 - 100 cc of fuel from each draining point. Verify the absence of water.

CAUTION: Perform the fuel circuit draining operation before moving the airplane from the parking area, to avoid any mixing of condensate water if present on the fuel tanks. If water is present repeat the fuel circuit draining operation until no water is evident.

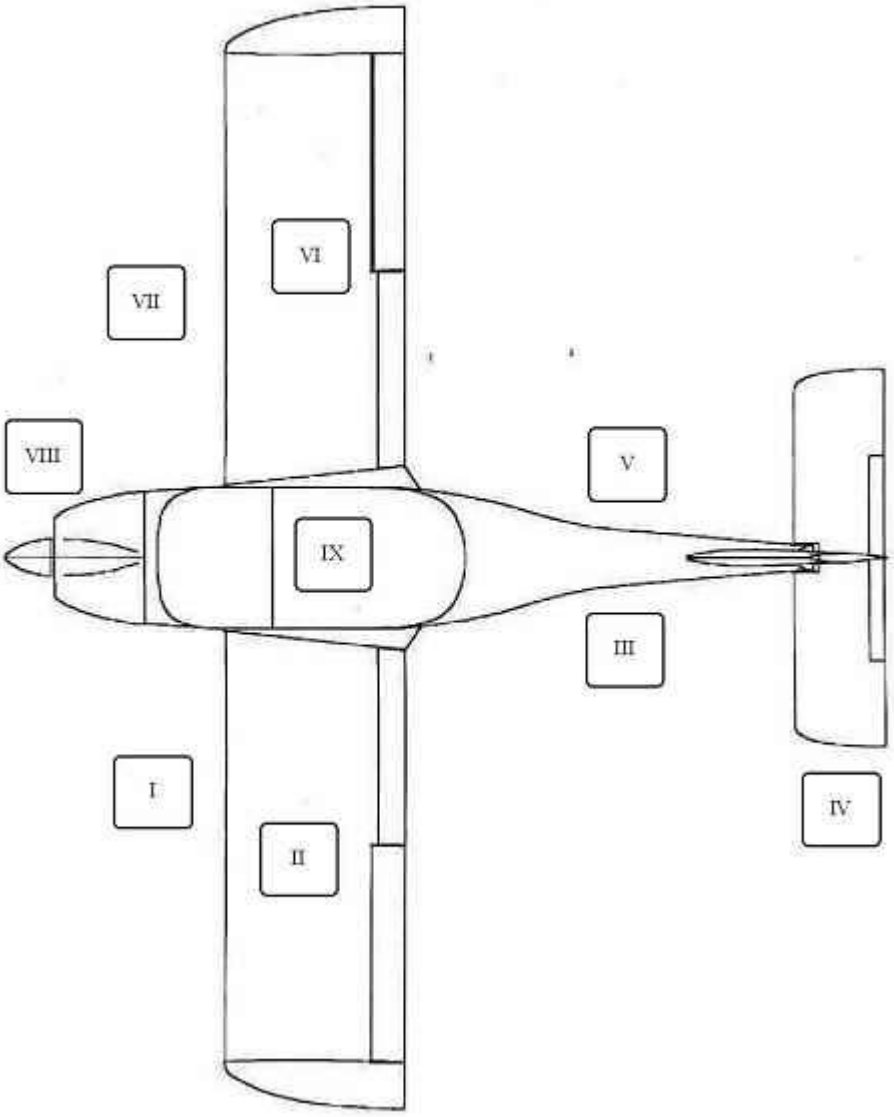
Refuel through the fuel filler located on the upper layer of the wings, either by jerry cans or directly with the gasoline pump.

WARNING: During refueling it is necessary to use filters to prevent fuel system obstructions. If refueled with jerry cans it is mandatory to use filtered funnels. Otherwise if refueled directly by gasoline pumps it is mandatory select filtered pumps.

CAUTION: As the Texan employs an overflow fuel system that returns excess fuel to the Right hand side tank, it is recommended to always use the right side fuel tank. When the right tank is near empty then use the left tank. To avoid the right tank being overfilled with excess fuel, frequently alternate the use of both fuel tanks during the cruise. **The drawing of fuel simultaneously from both tanks is not recommended.**

4.4 PRE-FLIGHT INSPECTION

WARNING: Before every flight the pilot must check completely the airplane with great attention and accuracy.
In this section there is a standard pre-flight checklist. (Valid for each version)



The Pre-flight inspections must be carried out **BEFORE EVERY FLIGHT**. The pilot in command is responsible for such inspections. The inspection does not require any special tooling, although a flashlight can be useful for inspecting dark areas. The purpose of the pre flight inspection is to verify that there's no evidence of defective parts or problems that can endanger the safety of flight.

Remove all the protections

1) Pitot-cover,
2) Wheel stops,
3) Mobile surfaces stops,
4) Canopy covering,
5) Propeller protection,
6) Fuel draining procedure.

Left main landing gear (I)

Leg	no distortion, bolts locked, no sign of cracks on weldings
Brake assembly	condition and tightness
Tire	general good condition, inflated correctly
Wheel fairing	(if installed) good condition and free space between the wheel & mounting bracket

Left wing (II)

Wing surface	absence of buckling, absence of delamination
Karman	absence of delamination, fixed correctly no fuel leaks from draining point
Leading edge	absence of delamination,
Wing tip	no defects, fixed correctly
Trailing edge	absence of delamination, no signs of cracks
Flap & aileron	absence of delamination, no signs of cracks, free movement, no excessive play on hinges, fixed correctly, balancing mass fixed correctly, no signs of lateral movement.

Fuselage left side (III)

Fuselage surface	absence of buckling, absence of delamination, inspection holes closed

Empennage (IV)

Vertical fin	absence of buckling, absence of delamination
Rudder	absence of delamination, hinges fixed correctly

CAUTION: Lower the tail of the aircraft to lift the nose wheel, check the free movement of the rudder, any problem on the hinge.

Bowden cables	fixed correctly.
Stabilator	free movement during all travel range, absence of buckling, absence of delamination
Stabilator hinge	absence of delamination, fixed correctly, no play
Balancing mass	fixed, no play
Hinge pins	fixed correctly
Trim tab	free movement, absence of defects, and no play.

Fuselage right side (V)

Fuselage surface	absence of buckling, absence of delamination, inspection holes closed

Right wing (VI)

Wing surface	absence of buckling absence of delamination
Karman	absence of delamination, fixed correctly no fuel leaks from draining point
Leading edge	absence of delamination,
Wing tip	no defects, fixed correctly
Trailing edge	absence of delamination, no signs of cracks
Flap & aileron	absence of delamination, no signs of cracks, free movement, no excessive play on hinges, fixed correctly, balancing mass fixed correctly, no signs of lateral movement.
Pitot tube	no defects, no blockage and fixed correctly

Right main landing gear (VII)

Leg	no distortion, bolts locked, no sign of cracks on weldings
Brake assembly	condition and tightness
Tire	general good condition, inflated correctly
Wheel fairing	(if installed) good condition and free space between the wheel and mounting bracket.

Nose wheel (VIII)

Fixing axle bolts	check correct tightness
Wheel fairing	(if installed) good conditions and free space between the wheel and mounting bracket.
Tire	general good condition, inflated correctly
Damper	no signs of cracks or distortion, free movement
Nose wheel support struc.	no signs of cracks or distortion.

Propeller (VIII)

Hub & blades	no signs of cracks and is clean.
Spinner	no signs of cracks, fixed correctly

Engine (VIII)

Upper cowling	remove
Oil tank	check level
Coolant tank	check level
Radiator and air inlet	no signs of cracks, free from obstructions
Engine	clean, no oil or coolant leakage
Muffler & silencer manifold	no signs of cracks and muffler springs hooked.
Oil and coolant tube system	correct functionality, no leakage
Ignition & electrical wiring	correct functionality.
Throttle & choke cables	free movement
Upper cowling	reinstall and check tightness.

Check inside cabin (IX)

Instruments panel	fixed correctly, all placards present
Master switch ON	all instruments ON
Master switch OFF	all instruments OFF
Control stick	full free movement, fixed correctly in its support
Rudder pedals	no distortion or signs of cracking, correct operation of centering system and support fixed correctly.
Throttle & choke levers	free movement, fixed correctly in the support
Brake lever & parking brake	remove parking brake lock and check lever functionality. - Insert parking brake.
Trim lever	check correct functionality
Safety belts	check correct functionality
Seats,	fixed correctly.
Canopy	clean, no signs of cracks, correct functionality of locking system.
Windshield	clean, fixed correctly on fuselage
Luggage	secured.
Weight & balance	calculated.
Flight logbook	record the airtime.

4.5 NORMAL PROCEDURES

4.5.1 BEFORE STARTING ENGINE

Pre-flight check	- completed
Seats	- adjusted
Safety belts	- adjusted and fastened
Canopy	- closed and locked
Parking brake	- ON
Flight controls	- free
Fuel faucets	- RH RH (912ULS) select the fullest (912iS)
Trim	- Neutral

FUEL PUMPS CHECK (only 912iS)

Master switch	- ON
Backup Battery switch	- ON

WARNING: NEVER select fuel tank OFF with fuel pumps ON, or fuel pressure will increase over limits and damages to fuel system could occur.

Electric fuel pumps	- ON Fuel pump1
Fuel Pressure	- Check within limits
Electric fuel pumps	- ON Fuel pump2
Fuel Pressure	- Check within limits
Electric fuel pumps	- OFF Fuel pump1
Fuel Pressure	- Check within limits
Electric fuel pumps	- OFF Fuel pump2
Fuel Pressure	- Pressure drop to 0

4.5.2 ENGINE START

Engine cold	- ON Choke lever (all rearward)
Engine warm	- OFF Choke lever (all forward)
Electric fuel pump	- ON for 10 sec. then OFF
Electric fuel pump (912iS)	- both ON
Throttle	- At minimum + 1 cm.
Master switch	- ON
Generator warning lamp	- ON
Ignition magnets key	- each magnetos ON
Lane A and B (912iS)	- both ON

WARNING: Ensure that the propeller area is clear of any person or object "**CLEAR PROP**"

Start procedure (912ULS)	- Max 20 sec of starting, rest one minute before retrying
Start procedure (912iS)	- lift up the Temporary switch and press start button for Max 20 sec of starting, rest one minute before retrying
Throttle	- 2500 RPM
Oil pressure	- Green arc in 5 sec.
Generator warning lamp	- OFF

4.5.3 BEFORE TAXIING

Electrical system	- ON and checked
Navigation instruments	- checked
Flaps	- Position to take off (15°)
Parking brake	- OFF

4.5.4 TAXIING

Brakes	- check both operate equally
Flight control	- free full movement, stick and pedals
Flight instruments	- Check magnetic compass and set altimeter QNH and set gyro's if fitted.
Throttle	- As necessary

4.5.5 ENGINE CHECK

Parking brake		- ON
Fuel tank selector	(912ULS)	- RH or LH, the fullest
Fuel tank selector	(912iS)	- RH or LH, the fullest

WARNING: NEVER select fuel tank OFF with fuel pumps ON, or fuel pressure will increase over limits and damages to fuel system could occur.

Temperature & pressure	- Within limits, in green arc
Trim	- Neutral
Flight controls	- Free
Check magnetos	- 4000 RPM maximum decrease 300 RPM for each magnet
Throttle	- All forward, check minimum 5500 RPM min +/- 150 for 5 sec. (variable pitch propeller installed)
Check minimum RPM	- 1400 RPM

CAUTION: Don't apply full power before 60° C of CHT.

During taxing don't allow the engine CHT to exceed 135° C

4.5.6 BEFORE TAKE-OFF

Flight controls	- Full and free
Trim	- Neutral
Electric fuel pump	- ON
Flaps	- Set for take-off (15º)
Fuel tank faucets	- RH Open, LH Closed
Engine instruments	- Within limits
Flight instruments	- Check and regulated
Safety belts	- adjusted and fastened
Canopy	- check 4 locks are engaged and locked - Check canopy open lamp OFF
Parking brake	- OFF
Emergency Parachute safety pin	- Remove (if installed)

4.5.7 TAKE-OFF

Aircraft	- Align with runway
Throttle lever	- Full open smoothly
Engine RPM	- 5500rpm min
At (40KTS)	- Rotation

WARNING: for a takeoff from short runway with an obstacle of 15 m, use flap with 20°.
- Rotation - 40kts (46 mph)
- Climb speed - (Vx) 48kts (55 mph)

At an altitude of 100 m (300 ft), if a steep climb is necessary to clear obstacles

Flaps	- Up
Trim	- As necessary
Speed	- Vx or Vy
Throttle	- As necessary
Electric fuel pump	- OFF

CAUTION: Don't maintain the flaps extended with speed higher than 59kts (68 mph) (Vfe).

4.5.8 CLIMB

Engine RPM	- 5500 RPM.	(variable pitch propeller installed)
Engine instruments	- Within limits	
Trim	- As necessary	

4.5.9 CRUISE

Throttle	- As necessary
Engine RPM	- Max cont power 5500 RPM
Engine instruments	- Within limits

CAUTION: Check frequently engine instruments and do not exceed limits.

4.5.10 DESCENT

Altimeter	- Setting
Warm air to carburetor system	- As necessary
Throttle	- As necessary
Trim	- As necessary
Engine instruments	- Within limits

4.5.11 LANDING

Speed	- 57kts (66 mph)
Flap	- As necessary
Trim	- As necessary
Throttle	- As necessary
Electric fuel pump	- ON
Parking brake check (see note b pg.35)	- Check, should be OFF
Final Approach speed	- 48kts (55 mph)
Touch down speed	- 40kts (46 mph)

CAUTION: a) in conditions of strong cross wind or in presence of wind shear, increase the landing speed by at least 4kts (5 mph)
b) Before landing check brake system pressure by operating the brake lever a couple of times if the braking system is serviceable you should feel the resistance when pressure is applied.

4.5.12 TOUCH & GO

Throttle	- All forward
Trim	- As necessary
Flap	- 15°
Speed	- Vx or Vy

If you touch the ground repeat take-off procedure.

4.5.13 AFTER LANDING

Throttle	- Idle
Flaps	- UP
Electric fuel pump	- OFF
Brakes	- Check functionality with “warm brakes”
Emergency Parachute safety pin	- install (if installed)

4.5.14 ENGINE SHUTDOWN

Throttle	- Idle
Parking brakes	- ON
Electrical consumers	- OFF
Magnetos	- OFF (one by one) check RPM drop
Master switch	- OFF
Fuel tank faucets	- closed

4.6 FLIGHT INSIDE OF HEAVY RAIN

WARNING: Flying inside heavy rain is prohibited

Flying inside heavy rain is forbidden as visibility and performance of the flight is reduced, however if unavoidable reduce speed to 80kts (92 mph) and remember to increase the landing speed by at least 4kts (5 mph) with wet wing**. The activity of flight inside intense heavy rain is forbidden.**

4.7 AUTOPILOT SYSTEM OPERATION (only if installed)

Engaging the AP below 500ft AGL is prohibited. For all information regarding operation and procedures related to autopilot system, refer to Dynon Sky View operating manual.

SECTION 5 - Performances

5.1 GENERAL INFORMATION

The performance described in this Section is based on an airplane loaded to the MTOW of 580 kg. Lower weights are indicated where necessary.

The Take-Off and Landing performance are for grass runways. On hard surface (concrete) runways the Take-Off distances may be a little shorter.

The performance is presented for a standard ISA day, for a warm day of ISA+10ºC and a hot day of ISA+20ºC.

All airspeeds referred to in this flight manual are Indicated Air Speeds (IAS) unless noted otherwise. This is the speed the instrument reads from the total dynamic pressure on the pitot tube and the static pressure from the static holes connection on the tube. As the airplane climbs higher to a lower atmospheric pressure, the airplane must move faster to have the same total pressure read on the pitot tube. Hence, the higher we fly the True Air Speed (TAS) will be higher than the speed shown on the indicator (IAS).
Corrections from IAS to TAS, and back, according to the flight altitude and OAT, are computed by special flight calculators, or refer to correction tables in appendix A.

The Ground Speed, is the actual speed we travel in relation to the ground. In flight, winds will affect this speed. A head wind will lower our ground speed while tail wind will increase the ground speed. If the wind comes partially from the side, only the wind component parallel to the flight heading will affect the ground speed. The ground speed is the sum of the TAS and the wind component, head wind is minus while tail wind is plus. Figure A.1 “Wind Component versus Reported Wind” will help to find the effective wind component from the reported wind.

5.2 AIR SPEEDS RELATED TO PERFORMANCE

Some of the Air Speeds presented below are repeated from the Limitations stated in Section II, others appear in this Section of Performance and some are for general knowledge.

V_A	Maneuvering speed	78 kts (90 mph)
V_{FE}	Maximum speed with flaps full extended	65 kts (75 mph)
V_{MO}	Maximum Operating Speed	108 kts (124 mph)
V_{NE}	Never Exceed Speed	135 kts (155 mph)
V_S	Stall speed with retracted flaps	40 kts (46 mph)
V_{SI}	Stall speed with flaps extended 15º	38 kts (44 mph)
V_{SO}	Stall speed with fully extended flaps	35 kts (40 mph)
V_X	Speed for best angle of climb	48 kts (55 mph)
V_Y	Speed for best rate of climb	70 kts (81 mph)

Maneuvering Speed is the maximum speed at which full control may be applied. If full control shall be applied at this speed or above, it may cause structural damage.

Maximum Operating Speed is the limit speed for ultra-light airplanes operation in Israel.

Never Exceed Speed is the maximum speed the airplane was designed and tested for. Exceeding this speed may lead to disaster due flutter or other structural damage.

Load factor above +3.8g can be developed aerodynamically at speeds above V_A. Exceeding these limits will cause structural damage.

5.3 TAKE-OFF

Take-Off should always be carried out into the wind – head wind. This will reduce the minimum roll and distance.

Take-off distance, it is the distance to reach 15 meter (50 feet) height of the runway heading. The ground roll is the distance we travel on the runway before lift off.
Required runway length is calculate as at least 1.7 times the ground roll distance indicated into the table in figure V-1.

At higher altitudes, longer distances are required, due to the higher TAS and longer accelerations, and lower engine power due lower static pressure.

The recommended technique for take-off is: Line up the beginning of the runway into the wind, hold brakes, open up engine to 4000 RPM, check all instruments in the green range, release brakes and open full throttle. Hold the stick one third back, maintain direction with the rudder pedals. At an IAS of 30 to 35kts (35 to 40 mph) hold slight back pressure on the stick, the nose wheel shall rise, at a speed of 38 to 43kts (45 to 50 mph) the airplane will leave the ground. Allow to accelerate to reach 49kts (56 mph) at 50 feet altitude.

In crosswind conditions, apply same technique, maintain accurate runway heading. Once airborne, correct heading a few degrees into the wind in order to maintain track of runway heading.

Following **Figure V-1** presents the required runway length – take-off distance and the ground roll distance at following conditions.

CONDITIONS:

- Maximum take-off mass of 580 kg, on Level, dry grass with no slope runway
- Flaps 15º, Engine Power full Throttle
- MSL (airport altitude = 0) and higher Airport Altitudes. No wind
- At ISA, ISA+10ºC and ISA+20ºC outside air temperatures. For OAT below ISA, use ISA data
- Take-Off Speed IAS of 49 kts (56 mph) (1.3 VSI) at 50 feet (15 meters)

	ISA		ISA+10ºC		ISA+20ºC	
Field Altitude [feet]	Ground Roll [m]	Take-Off Distance [m]	Ground Roll [m]	Take-Off Distance [m]	Ground Roll [m]	Take-Off Distance [m]
	meters					
MSL	155	265	168	297	178	328
1,000	164	281	177	314	189	348
2,000	173	297	184	327	201	370
3,000	183	314	198	351	211	392

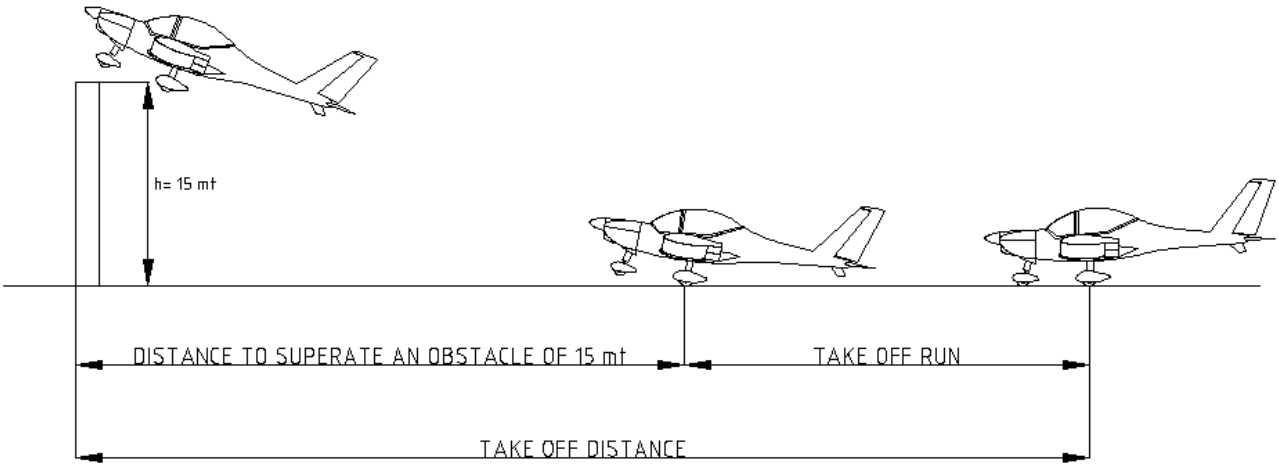


FIGURE V-1: REQUIRED RUNWAY LENGTH – TAKE-OFF DISTANCE

5.4 CLIMB

The Rate of Climb depends on the airplane weight, IAS and the engine power.

In order to achieve a steep climb to clear obstacles, for a fully loaded airplane, the IAS V_X should be: 49kts (56 mph), and the flaps extended 5º.

In order to achieve the best rate of climb, to gain maximum altitude for a given time, the IAS V_Y for a fully loaded airplane is 70kts (81 mph) at MSL. This speed will decrease with altitude. Flaps should be fully retracted (0º).

The maximum recommended engine power for climb is 5500 RPM.

The following **Figure V-2** presents the maximum rate of climb in feet per minute (ft/min) for:

CONDITIONS:
- Maximum take-off mass of 580 kg
- Engine power 5800 RPM
- Flaps UP
- ISA, ISA+10ºC and ISA +20ºC outside air temperature

Pressure altitude feet	Climb Speed [kts] IAS	Rate of climb ft/min		
		ISA	ISA+10ºC	ISA+20ºC
MSL	70	883	855	831
1,000	69	864	836	813
2,000	69	839	812	790
3,000	68	812	786	764
4,000	67	786	761	739
5,000	66	768	743	699

FIGURE V-2: MAXIMUM RATE OF CLIMB

5.5 CRUISE

Figure V-3 presents the cruise performance, the corrected air speed (CAS) and the fuel flow at different engine power, at different flight altitudes.

CONDITIONS:
- Maximum take-off mass of 580 kg
- Flaps UP
- ISA

RPM	MAP [mmHg]	CAS [kts]	Fuel comsumption [l/h]
4300	24	95	15.6
4800	26	102	19.2
5000	26	112	20.9
5500	28	127	26.2

FIGURE V-3: CRUISE SPEED (TAS)

These values are only for reference, may change due to outside air and aircraft loading conditions.
If the airplane weight is lower than 580 kg, the true speed will be higher and the fuel flow lower for the same altitude and engine setting.

5.6 GLIDE – DESCENT

Gliding is normally done with engine idling, at an IAS of 59kts (68 mph), in order to achieve the best rate of glide. Remember to open engine power every few minutes, for five seconds, in order to clear the spark plugs and the combustion chamber.

In case of engine failure during flight, with unsuccessful restart attempt, maintain the IAS for best glide 59kts (68 mph), this will give the longest distance per altitude lose, ratio of E=13. For every 100 meters (330 ft) altitude loss the airplane will advance 1300 meters.

NOTE

If an engine failure will happen during Climb or slow flight, from the moment of engine failure until best glide speed is established, height loss may be up to 280 feet (85 meters).

Descent can be done at any speed up to V_{MO}, 107 kts (124 mph). Use engine power as needed to maintain desired rate of descent.

5.7 LANDING

The Landing Run is the distance the airplane will travel on the runway after touch down, while slowing for a full stop.

The required runway length – Landing Distance, is the distance the airplane will cover from 50 feet (15 meters) at the beginning of the runway, to the position of full stop on the runway. It includes the flare out, touch down on main wheels, lowering the nose wheel and apply brakes to decelerate to a full stop.
Figure V-4 presents the required runway length for landing – Landing Distance, and the Landing Run, for different airport conditions.

CONDITIONS:

- Maximum take-off mass of 580 kg
- Flaps fully extended 45º
- Engine Power reduced to IDLE below 50 feet
- MSL (Airport Altitude = 0) and higher Airport Altitudes
- At ISA, ISA+10ºC and at ISA+20ºC outside air temperatures
- Zero wind
- Speed at 50 feet: 48 kts (55 mph)
- Full brakes applied after nose wheel is on the ground

	ISA		ISA+10ºC		ISA+20ºC	
Field Altitude feet	Ground Roll [m]	Landing Distance [m]	Ground Roll [m]	Landing Distance [m]	Ground Roll [m]	Landing Distance [m]
	meters					
MSL	95	360	103	393	110	427
1000	101	389	108	425	116	461
2000	106	418	115	456	123	495
3000	112	446	121	488	130	529

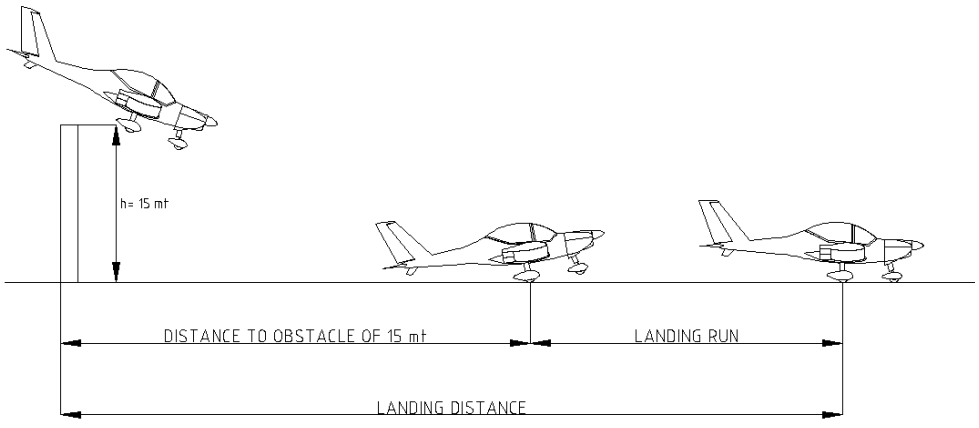


FIGURE V-4: REQUIRED LANDING RUNWAY – LANDING DISTANCE

5.8 STALL SPEEDS

Stall speeds will vary according to the flap setting. Stall speeds will increase with higher bank angle.

Altitude loss from the beginning of a straight stall until regaining level flight may be as much as 150 feet. Maximum pitch angle below the horizon may reach 35º.

Altitude loss from the beginning of a turning stall until regaining level flight may be as much as 115 feet.

Figure V-5 presents the stall speeds (IAS) with different flap settings and bank angle. Stall speeds indicated for straight flight are actually about 2 mph higher than real figures, this is to maintain a safety margin and due inaccuracies in speed indication at high angles of attack.

CONDITIONS:

- Maximum take-off mass of 580 kg
- Power IDLE

Flap Setting	Angle of bank							
	0º		30º		45º		60º	
	mph	kts	mph	kts	mph	kts	Mph	kts
UP	44	38	47	41	53	46	63	55
15º	43	37	46	40	51	44	60	52
45º	37	32	39	34	43	37	52	45

FIGURE V-5: STALL SPEEDS

NOTE

IAS values are approximate, as air speed
Indicator not accurate at high angle of attack.

NOTE

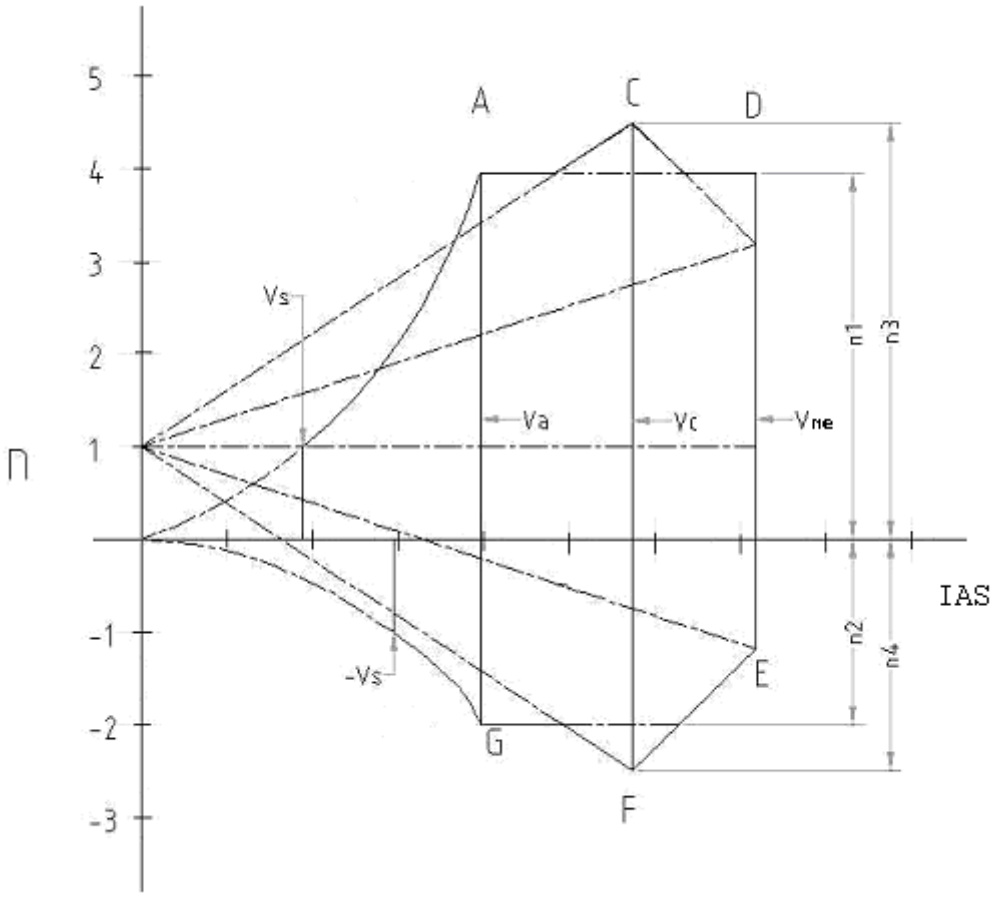
Altitude loss during conventional stall recovery as demonstrated during test flights is approximately 200ft (61 m) with banking under 30°.

5.9 WIND COMPONENT

The Maximum demonstrated crosswind velocity for Texan aircraft **is 16kts (19 mph**.)
By use of the **Figure A-1** into appendix A the head wind or tail wind component can be found, knowing the reported wind speed and direction relative to the airplane heading or runway heading for take-off or landing. The cross-wind component can also be found.

If airplane airspeeds are in mph or km/h, use conversion charts into **APPENDIX-A** to correct reported wind to the correct value in use in the airplane.

5.10 ENVELOPE DIAGRAM



		mph
Vso	Stall Speed with flap 45°	40
Vs	Stall Speed without flap	46
Vfe	Maximum speed with extended flap	75
Va	Maneuvering speed	90
Vc/Vmo	Max cruise speed in turbulent air	124
Vne	Never exceed speed	155

SECTION 6

Weight & balance

6.1 INTRODUCTION

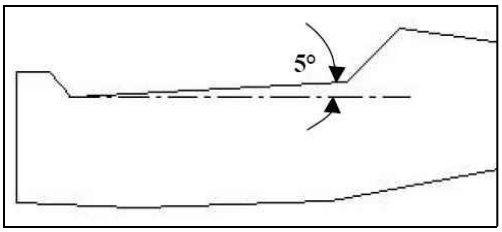
This section contains the information to affect a correct procedure of weight and balance of the aircraft.

WARNING: exceeding the Centre of Gravity limits can provoke serious problems of stability and govern-ability of the aircraft.

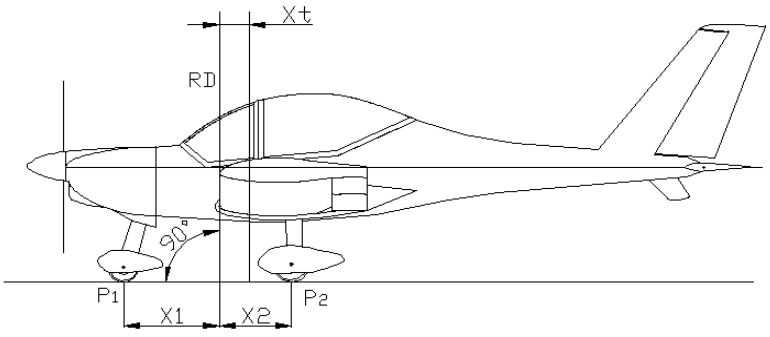
6.2 WEIGHING CONDITIONS

For the weighing of the aircraft, the followings conditions apply:

- The equipment installed must be approved by the factory for the aircraft in question.
- Must be included the brake fluid, engine oil, water coolant and the non-usable fuel.
- Must use three independent scales for each tire horizontal plan and of a thread to lead.
- To determinate the empty weight and the position of the Center of Gravity, the aircraft must be positioned on three autonomous scales, one for each wheel. It is fundamental that the longitudinal and lateral axes of the aircraft are both in the same horizontal plane. You can verify the horizontal datum position when the fuselage side reaches 5° with reference to ground level, as shown in the figure below.



Using a plum bob mark a line on the ground directly beneath the leading edge of the wing. This point is your reference datum **RD**. Measurements are to be taken from this point.



X1 is the distance from nose wheel axle centerline to projection of RD.
X2 is the distance from main wheel axle centerline to projection of RD.
The standard distance is:

X1 = 925mm (±0.5%)
X2 = 655mm (±0.5%).

The formula for CG calculation is as follows:

Xt = ML / PT . [CofG position in mm on the wing chord]

Where:

ML = (P2DX + P2SX) x X2 - P1 x X1
Xt% = (Xt / MAC) x 100 [CG position in percentage to the wing chord]

ML = Empty weight moment
P2DX , P2SX = Weight measured on main wheel
P1 = Weight measured on nose wheel

NOTE: DX = RHS SX = LHS

For greater W&B detail refer to the maintenance manual.

6.3 WEIGHT & BALANCE REPORT

The first recording of the Weighing Report & the Center of Gravity Position of the aircraft is taken at the factory before delivery.
Every variation due to the installation of new components or repairs and painting, implicate a new calculation of the empty weight and the relative positioning of the center of gravity.
Any weight and Balance changes should be recorded into the aircraft log book.

SECTION 7
Aircraft and systems description

7.1 INTRODUCTION

This section provides a basic description and operation of the standard airplane and its systems. Optional equipment described within this section is identified as optional.

NOTE:

Some optional equipment, primarily avionics, may not be described in this section. For description and operation of optional equipment not described in this section, refer to *Section 9, Supplements*

7.2 AIRFRAME

Texan TOP CLASS 2 is a ultralight aircraft with airframe wings and control surfaces made of laminate and honeycomb sandwich composite materials.
The semi-monocoque fuselage is constructed primarily of composite materials and is designed to be aerodynamically efficient. The cabin area is bounded on the forward side by the firewall and on the rear by the aft baggage compartment bulkhead
Comfortable seating is provided for two adults. A composite roll cage within the fuselage structure provides roll protection for the cabin occupants. The cabin and baggage
compartment floors are constructed of a honeycomb core composite with access to under-floor components.
All flight and static loads are transferred to the fuselage structure from the wings and control surfaces through four wing attach points in two locations under the front seats and two locations on the sidewall just aft of the rear seats.
The rectangular shape low wing utilizes a laminar flow airfoil section. The ailerons are differential whilst the flaps are electrically operated plain type, the vertical tail control surface is composed by a fixed fin and by a mobile rudder, and the horizontal tail control surface is completely mobile, hinged in the central part with integrated trim. The tricycle type landing gear is fixed, with dampened nose and spring bar main wheels.

7.3 FLIGHT CONTROLS

The Texan TOP CLASS 2 uses conventional flight controls for ailerons, stabilator and rudder. The control surfaces are pilot controlled through either of two single-handed side control sticks mounted between seats and the instrument panel. The location and design of the control sticks allow easy, natural use by the pilot. The control system uses a combination of push rods and bell cranks for ailerons and stabilator control lines, while the rudder is connected to the pedals by a steel cables system.
All three control surfaces are made in composite material and have static balance weights to prevent flutter.
Pitch control is by a stabilator, so there is no fixed stabilizer. A negative tab (anti-balance tab) is used to stabilize the stabilator. The tab is also used as a trim tab.
Elevator trim is achieved by varying the zero position of the tab. The trim control is by a switch located on the instrument panel. Pushing the button on top will trim the aircraft nose down and pushing the button bottom it trims the aircraft nose up.
The flap surfaces are constructed of composite materials.
Each flap is attached to the wing by 2 hinges. Both flaps are mechanically interconnected. **This is asymmetry protection.**

Flap operation is achieved by a 3-position switch mounted on the central console. The switch operates an electric motor through a reduction gearbox, located below the baggage compartment.

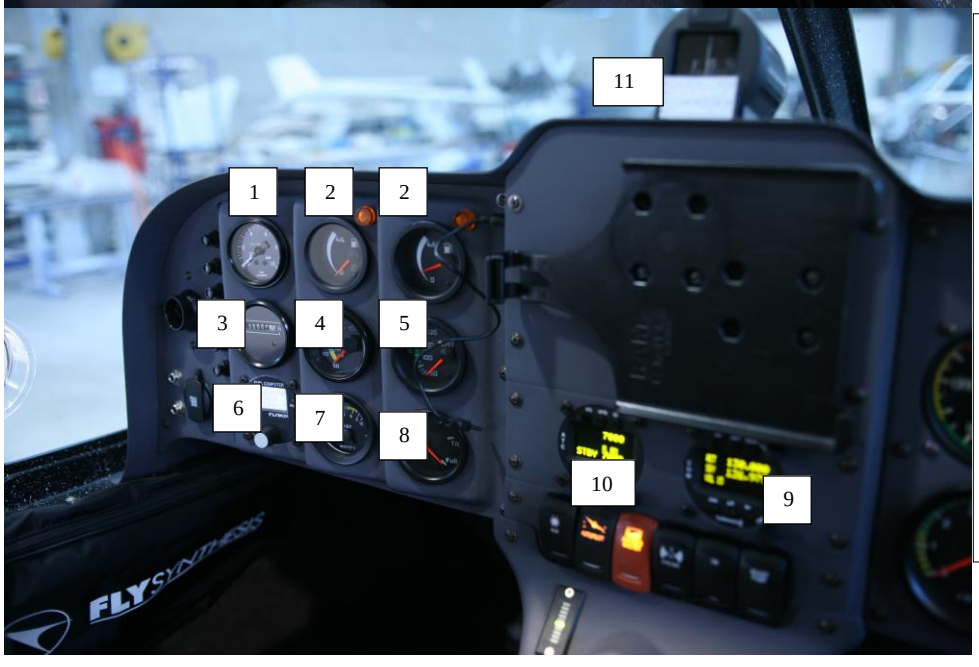
The motor, through the reduction gearbox and a screw jack transmits the motion into the flaps interconnecting torque shafts. An angular position transducer installed near the gearbox transmits the flap position to the flap indicator on the instrument panel.

7.4 INSTRUMENT PANEL

The instrument panel is designed for glare-free use in all flight conditions. The instrument panel is arranged primarily for use by the pilot in the right seat; however, it can be viewed from either seat. Flight instruments and annunciators are located on the left side of the panel and engine instruments are located on the right side of the instrument panel.
Backup ASI, rpm and compass instruments are located into the central upper area of the instrument panel. A large color multifunction display is located between the flight instruments and the engine instruments. The central part of the instrument panel is dedicated for avionics, in particular radio, transponder and gps system.
Throttle and mixture controls, the flap control switch, fuel tank selector and brake control lever are installed on central console.

STANDARD PANEL CONFIGURATION

19) Dynon D10 EFIS
20) AP74 interface
21) Airspeed indicator
22) RPM indicator
23) Propeller pitch controller
24) Vertical speed indicator
25) Altitude indicator



26) Fuel pressure indicator
27) Fuel tank level indicators
28) Hourmeter
29) Oil temperature indicator
30) CHT indicator
31) Fuel computer FC1
32) Oil pressure indicator
33) Flap position indicator
34) Radio ATR833
35) Transponder TRT 800
36) Compass

7.5 LANDING GEAR SYSTEM

Type:	Tricycle type landing gear with dampened nose wheel	
Main gear track:	2.130 m	
Wheelbase:	1.585 m	
Tire:	Main:	4.00x6"
	Nose wheel:	4.00x4"
Tire pressure:	Main:	2.2 - 2.4 bar
	Nose wheel:	1.8 bar
Brakes:	Hydraulic disc system on main wheels.	

Brakes are operated by pulling the dedicated lever located into the central console between the seats. A parking valve is located between the seats. To operate parking brake system, close the parking valve and then pull the brakes operating lever 2 or 3 times.

7.6 SEATS AND SAFETY HARNESS

Pilot and passenger seats are made from composite materials and installed on the cockpit floor. The seat bottom can be removed to enable inspection of the controls below the seat. Each seat vertical back is adjustable on the ground before flight in 1 of 5 positions, to suit pilot and passenger's size. Seat covers are fastened via Velcro strips and easily removed for cleaning and inspection.

WARNING: Never try to change seat adjustment in flight!

Each seat is equipped with safety belts, which are locked together with a bayonet quick release latching system. The safety belts are attached to the main structure and each can be adjusted for occupant comfort. Belts should be replaced if frayed, cut, stitching is broken or latching defective.

7.7 BAGGAGE COMPARTMENT

The baggage compartment is located on the dedicated basin located into the rearward part of the cabin. The Maximum allowed weight in baggage compartment is limited to 20 kg.

WARNING:
DO NOT leave baggage unsecured during flight!
In case of flight in turbulent air, the unsecured baggage may cause airframe or canopy damage or dangerously hit and harm passengers.

7.8 CANOPY SYSTEM

The Texan canopy is made from composite material and perspex. The canopy is hinged at three points and opens rearward in a pantographic motion. The weight during the lifting process is supported by two gas struts located behind the seats.

During flight, engine operation and taxi operation the canopy must remain closed and securely locked via the 4-point hook locking system. The only exception is if the optional "taxi open system", safety locking mechanism has been fitted, in this case it is possible to slightly maintain the canopy open only during taxi and ground operations. See pic 1 below.

WARNING: during the flight is absolutely forbidden to hold the canopy in any position other than in the securely locked mode. Never try to open the canopy during the flight!

Pic 1 Canopy in taxi locking position

Pic 2 Canopy in taxi position external view

7.9 POWERPLANT SYSTEM

Engine:	**Rotax 912 ULS and iS Sport**
Type:	4 stroke, 4 cylinder horizontally opposed, spark ignition engine, liquid cooled cylinder heads, ram air cooled cylinders, redundant fuel injection, main and backup fuel pumps, air box, friction clutch geared reduction drive, radiator cooled oil.
Ignition:	Increased electric ignition system HD.
Battery:	Sealed Lead Acid Battery 12 Volts.
Standard propellers:	GT-Propellers GT2VEB two blades variable pitch propeller, made by wood and fiberglass, diameter 1740 mm, in flight variable pitch electrically controlled by automatic in- flight variable pitch with Custom Intelligent Propeller control box, manual operations have been removed. Alisport Idrovario two blades variable pitch propeller, diameter 1760 mm, automatic in- flight variable pitch with Custom Intelligent Propeller control box, manual operations have been removed.

7.10 FUEL SYSTEM

Type:	Two lines from tanks to tank selector valve, driven by electric fuel pumps. Fuel system is equipped with draining system and fuel return system into both tanks.
Tanks:	Two integrated tanks with 67 liters of capacity each, equipped with fuel level and fuel reservoir sensors, fuel tank caps and a venting line to the lower surface of the wing.
Non-usable fuel	2 liter for each tank
Fuel filter:	Gascolator on firewall, filtered electric fuel pump

Fuel specification

Premium Automotive Unleaded fuel min 95Ron.
For complete fuel specifications see engine manufacturer manual.

7.11 ELECTRICAL SYSTEM

The electrical system is a 12-14 volt DC system.

1. Power is generated by the engine integrated alternator/generator.
2. Rectified to DC by the rectifier/alternator that controls the output voltage.
3. The electrical system is protected by fuses located near the regulator rectifier above the battery.

Under normal conditions, when the engine RPM is high and the generator is charging the battery, the system voltage will be 13.75 to 14 volts.

4. A12 volt, 18 Ah is installed in the engine compartment on the front left side of the firewall and is constantly being charged as long as the engine is running.
5. The battery will supply electrical power for alternator short period overload (like landing lights) and for system consumers while the engine is stopped.
6. The engine starter operates from the battery.
7. The flaps operate from the battery.

The voltmeter indicates the electrical system voltage.

When the battery is on only, it should indicate 12 volts.

When the engine is running and the alternator is operating it should be around 14 volts.

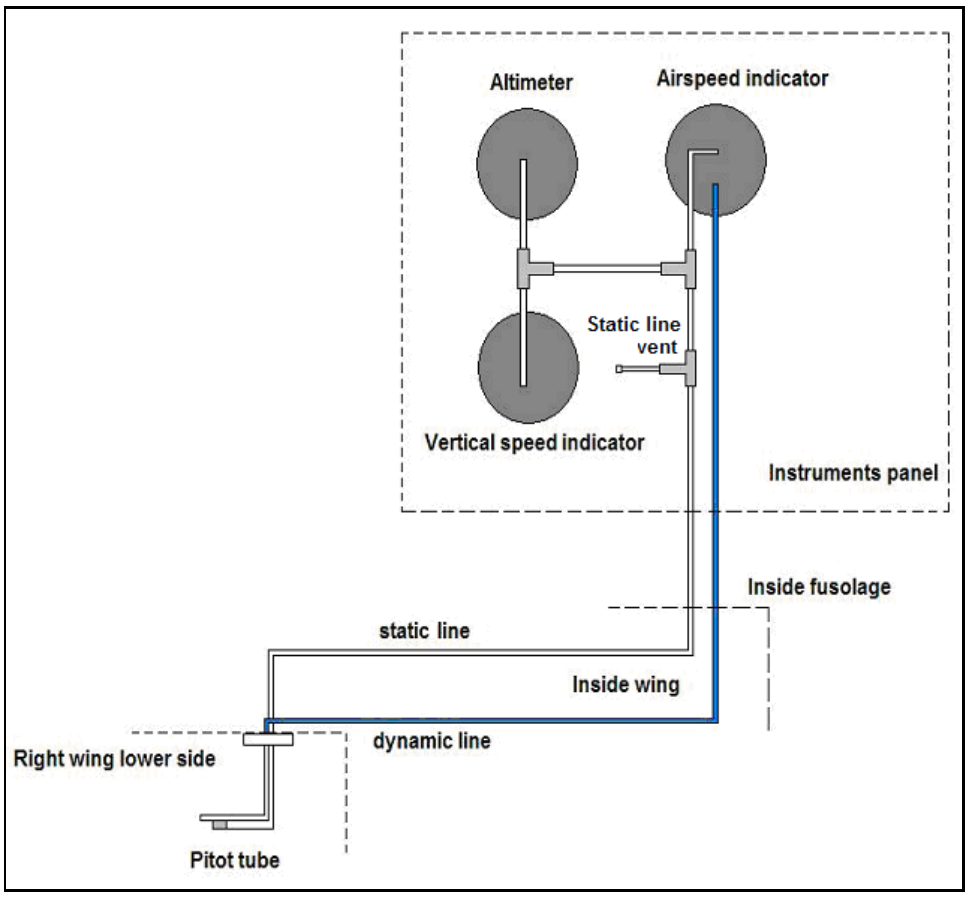
7.12 PITOT AND STATIC PRESSURE SYSTEM

The pitot-static mast is made from tubular aluminium. The pitot port is recognisable by the large hole (usually similar in size of the tube). The static vent is recognisable by the small hole that permits venting of atmospheric pressures.
Air pressure from the Pitot-Static mast is transmitted to the cockpit instruments via PVC tubing. The total pressure tube is coloured blue; the static pressure tube is coloured white.

Pre flight inspection is required to ensure that no obvious blockages have ingressed into the pitot-static head such as insects or dirt. The pitot-static mast should be secured to the wing with no obvious signs of damage.

NOTE: It is advisable to keep the pitot-static mast covered with the (pitot mast cover) supplied with the aircraft whenever the aircraft is parked for prolonged periods.

Pitot-Static Diagram.



7.13 MISCELLANEOUS EQUIPMENT

INSTALLED EQUIPMENT

- GT-propeller GT2VEB propeller
- Galaxy GRS6/600 Parachute

7.14 AVIONICS

The Texan TOP CLASS 2 aircraft could be equipped with standard and optional avionics. In this section are described only installed avionics, further details on optional installed avionics are described into section 9 of this manual.

INSTALLED AVIONICS

Configuration 1

- Dynon D10 with autopilot interface AP74
- Flyzone Custom Intelligent Propeller, automatic pitch controller
- Funkwerk ATR833 Radio
- Funkwerk TRT800 Transponder
- Flybox Mini EIS

Configuration 2

- Garmin G3X glass cockpit suite with autopilot panel and integrated transponder
- Flyzone Custom Intelligent Propeller, automatic pitch controller
- Garmin GTR225 Radio

The configuration described above is represented in following picture.

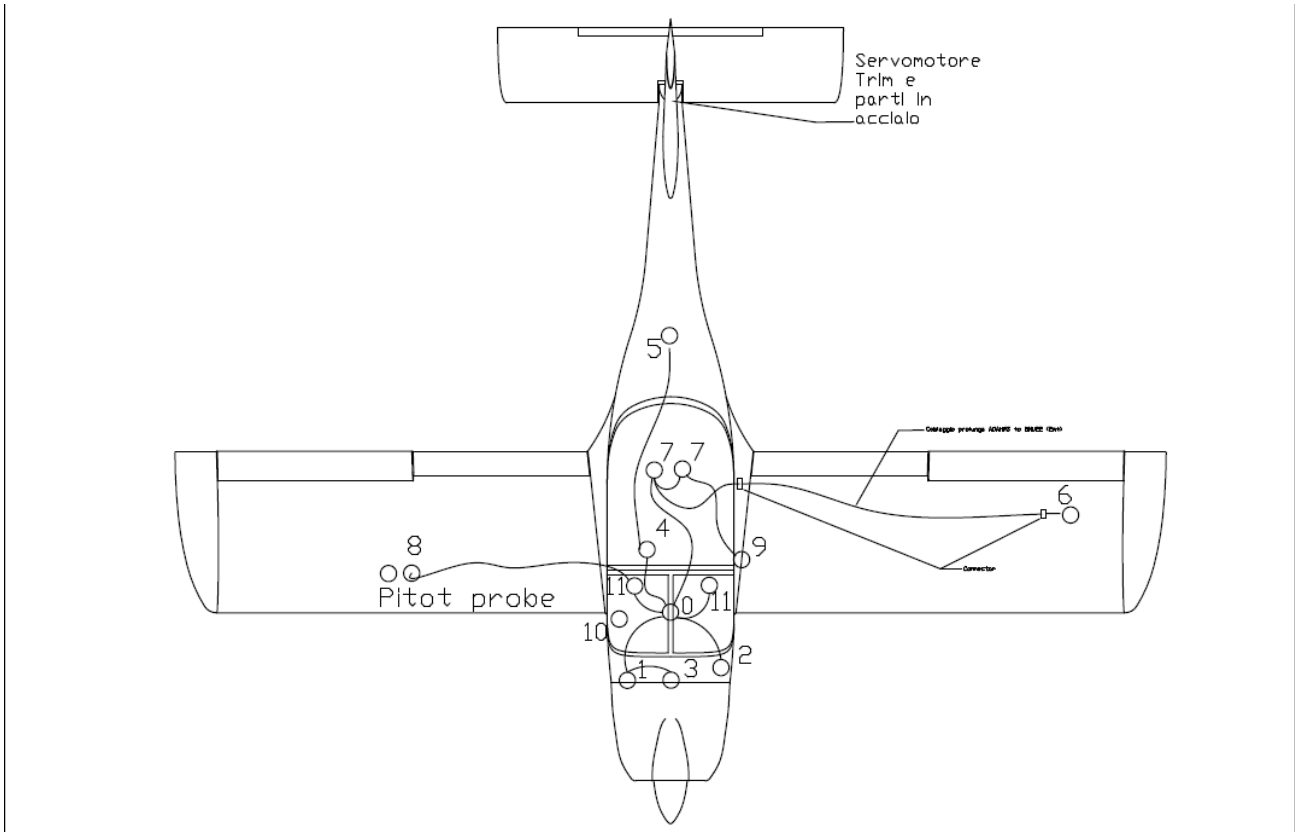
7.14.1GARMIN G3X SUITE

7.14.1.1 System description

Garmin G3X suite is composed by one or two GDU 46X 10" touchscreen displays on which are represented all flight and engine data figures and GPS cartographic map with navigation and autopilot system data.

The complete suite is equipped with several subsystems and modules which are reported below and illustrated into the following conceptual drawing.

1. GEA24 module, engine information system interface
2. GTX 23 module, transponder module
3. Engine ECU
4. GSA28 Roll axis servo
5. GSA28 Pitch axis servo
6. GMU22 Magnetometer module
7. GSU25 ADAHRS module
8. Landing gear camera (on pitot probe support)
9. GTP59 OAT probe
10. Free (optional backup battery)
11. GDU46X Display and GMC305 Autopilot control panel



7.14.1.2 System basic operation

In following paragraph the dysplays and system basic operations are briefly described. For more details and not indicated functions refer to Garmin G3X touch Pilot's guide, ref. 190-01754-00. Illustrative pictures in this manual are sourced by manual indicated above.

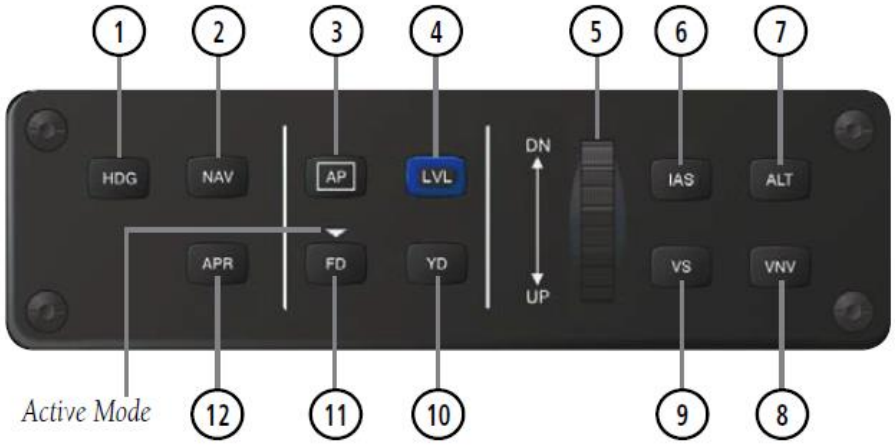
To switch ON the G3X suite it is necessary to switch ON the *master switch*, and to switch ON the *Avionics* switch.

Each display could be controlled by the touch screen system or using the 4 buttons and 2 knobs, located on the lower part of the display frame, which allow the pilot to move between pages and menus. An image illustrating the display in split mode is reported below.

It is possible to switch between split mode or full mode pressing the menu key on the right-upper corner of the screen.
In order to access to engine parameters page touch the vertical bar on the left, and to access to other dedicated pages touch the menu keys on the lower horizontal bar. See picture below. It is also possible to switch from one page to the other (MAP,CHT,WPT, FPL, etc.) using the right knob.

For the complete description of menus and display functions, see Garmin G3X Pilots Manual 190-01754-00.

Autopilot system could be operated by a dedicated by the dedicated display menu section or by the dedicated GMC305 control panel unit, illustrated below, which ease the pilot in autopilot system operations.
In case of necessity, the autopilot system could be engaged / disengaged by using the *CWS/AP-DISC* button located onto the pilots' control stick.
For detailed autopilot operation instructions see Garmin G3X Pilots Manual 190-01754-00, section 9.



Where:

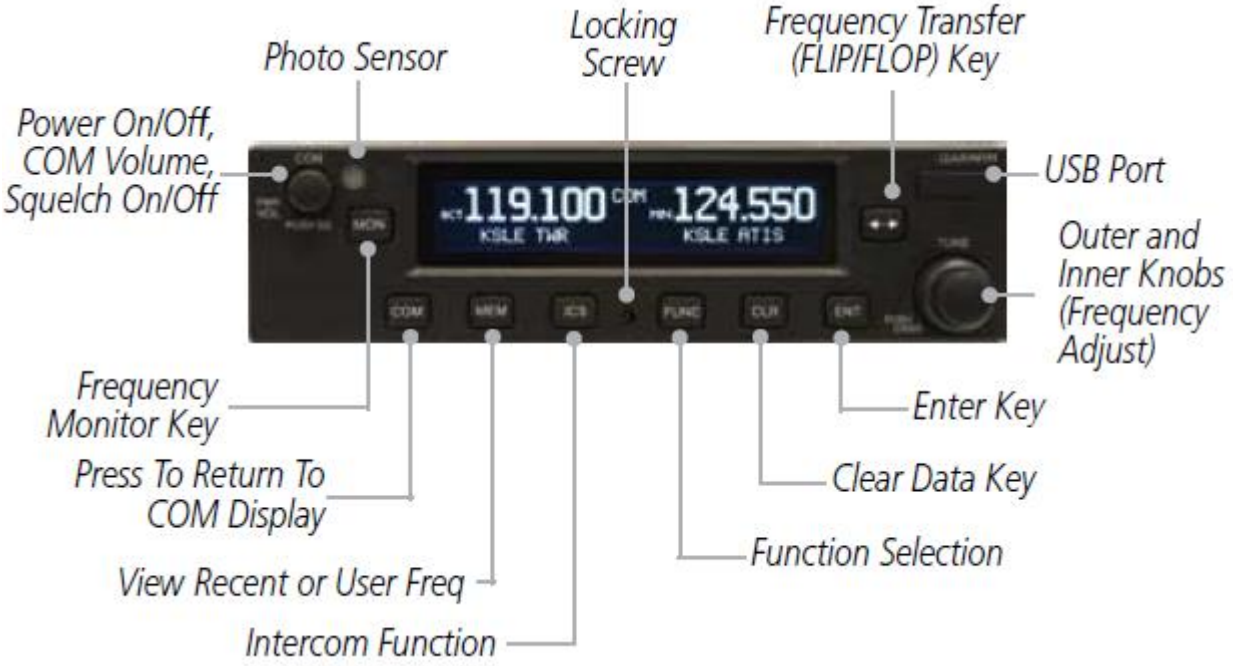
1	**HDG Key**	Selects/deselects Heading Select Mode
2	**NAV Key**	Selects/deselects Navigation Mode. Cancels GS Mode if LOC Mode is either active or armed. Cancels GP Mode if GPS Mode is either active or armed. Cancels LOC Mode if GPS Mode is active and LOC Mode is armed.
3	**AP Key**	Engages/disengages the autopilot
4	**LVL Key**	Engages the autopilot (if the autopilot is disengaged) in level vertical and lateral modes
5	**NOSE UP/DN Wheel**	Adjusts the vertical mode reference in Pitch Hold, Vertical Speed, Indicated Airspeed, and Altitude Hold modes
6	**IAS Key**	Selects/deselects Indicated Airspeed Mode
7	**ALT Key**	Selects/deselects Altitude Hold Mode
8	**VNV Key**	Selects/deselects Vertical Path Tracking Mode for Vertical Navigation flight control
9	**VS Key**	Selects/deselects Vertical Speed Mode
10	**YD Key** (if installed)	Engages/disengages the yaw damper
11	**FD Key**	Activates/deactivates the flight director only Pressing once turns on the director in the default vertical and lateral modes. Pressing again deactivates the flight director and removes the Command Bars. If the autopilot is engaged, the key is disabled.
12	**APR Key**	Selects/deselects Approach Mode
13	**HDG Knob**	Selects the desired Heading*
14	**ALT SEL Knob**	Selects the desired Altitude setting*

*GMC 307 only

7.14.2 GARMIN GTR225 radio

7.14.2.1 System description

The GTR 225 COM Radio series provides a powerful VHF communications Transceiver and is installed on the central part of the instrument panel. In addition to the traditional COM features, the GTR 225 series incorporates workload-reducing functions.
The GTR 225A COM radio operates in the aviation voice band, from 118.000 to 136.975 MHz, in 8.33 kHz steps for European operations.
The COM radio could be switched ON/OFF by the dedicated switch on the panel and is protected by a dedicated fuse. The radio aerial is installed on lower part of the fuselage just behind the cabin.
In following picture the radio front panel is described with brief description of buttons and knob.

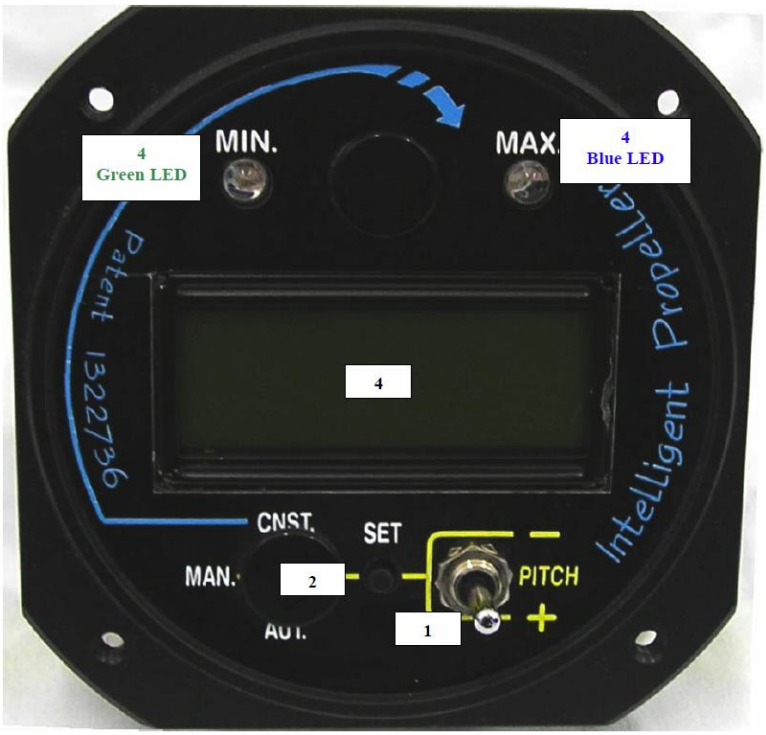


For further details and instructions see Garmin GTR225/225A/225B Pilot's Guide, ref.: 190-01182-00.

7.14.3 Flyzone Custom Intelligent Propeller, automatic pitch controller

7.14.3.1 System description

The Flyzone Custom Intelligent Propeller is a fully automatic electronic system which could act on the propeller pitch setting in relation to the flight and engine parameters. The propeller pitch setting is determined from airspeed, altitude, RPM and MAP values. To obtain these values the instrument inputs are Total and Static pressure, MAP pressure and RPM. The two outputs are the two wires which power the electric motor which modify the propeller pitch value. The Custom Intelligent Propeller system is suitable only for fully electric of electro-hydraulic variable pitch propeller systems.
In case of Rotax 912 iS engine installed on the airplane, there is no direct RPM signal form the engine. For this reason a CANbus-RPM converter is used to supply to CIP controller the RPM signal. The converter used is the Microel/Flybox CAN-RPM converter which is located behind the instruments' panel.
As agreed with CAAI, the Custom Intelligent Propeller can be operated only in automatic mode and all manual operations are removed. Only if the engine is not running, operating on the small switch [1], it is possible to modify the propeller pitch to verify the correct system operation during the pre-flight inspections.



The green and blue led light on the panel will indicates if minimum or maximum pitch values are set, while in the LCD display are shows MAP (P), current RPM (5800), ASI (S) and flight phase and target RPM. More detailed information is indicated into CIP Custom Intelligent Propeller User Manual.

The following picture represents the CAN-RPM converter used to give RPM signal to the CIP controller. The CAN-RPM converter does not require setting or calibration.

7.14.3.1 Pre-flight inspections

Before starting the engine it is necessary to check the correct operation of the system. To do this check, follow following instructions:

- Master ON
- Apply "+" on the small "pitch" switch to set the pitch value to MAX until blue led lights ON
- Check propeller pitch is displaced accordingly
- Apply "-" to reduce the pitch until the MIN Green led lights ON
- Check propeller pitch is displaced accordingly
- Apply "+" to set the pitch value between MIN and MAX
- Master OFF

SECTION 8

Aircraft Ground Handling and Servicing

8.1 AIRCRAFT GROUND MOVEMENT

Aircraft ground movement with engine running is as follows:

- Get on board
- Either lock or secure the canopy in taxi mode
- Start engine
- Verify the absence of obstacles or people/animals in the aircraft vicinity
- Remove the parking brake
- Use throttle to regulate the advancement speed and use the rudder pedals for steering the aircraft
- When the aircraft has reached the destination, shut OFF the engine, operate the parking brake and leave the aircraft.

WARNING: never leave the aircraft with engine running, this can be fatal both for you and for other people/animals in the aircraft vicinity.

Aircraft ground movement with engine OFF is as follows:

- Remove the parking brake
- Take the aircraft for the tail beam and pressing downward to lift the dumper
- Verify the absence of obstacles or people/animals in the aircraft range
- Push or pull the aircraft and direct it using only the principal wheels
- Operate the parking brake

An optional front wheel tow bar is available for aircraft movement.

8.2 AIRCRAFT GROUND ANCHORAGE

The aircraft ground anchorage system is available as an option. Anchorage of the aircraft can be performed by first setting ON the park brake then secure the ropes to each eyelet, located on the underside surface of each wing near the wing tip. When tightening the rope to ground mooring **DO NOT** apply too much tension force, a small amount of tension will suffice to secure the aircraft without risking the potential to stress surfaces inadvertently during heavy wind conditions.

CAUTION: It is a good practice to secure the control stick from inadvertent movement by latching to the seatbelts when the aircraft is left unattended or in windy conditions.

8.3 AIRCRAFT CLEANING

The aircraft is supplied with a kit for complete cleaning.

The following procedure is suggested for cleaning the aircraft.

- Do not use a pressure cleaner directly on the aircraft, as the gel-coat is hygroscopic.
- Use a micro-fiber cloth and neutral soap to clean the aircraft.
- Avoid water bathing of metallic parts.
- Rinse with a damp and clean micro-fiber cloth.
- Dry excess moisture using a deerskin, natural or synthetic chamois.
- The cockpit can be cleaned with a dry micro-fiber cloth and a vacuum cleaner.

CAUTION: to avoid corrosion problems make sure that the metallic parts are not left damp. The use of a water dispersant spray and or approved lubricant is advised.

8.4 AIRCRAFT SERVICING

Servicing Fuel

- Make sure the plane is set on the parking brake.
- Open the fuel cap.
- Pour in fuel as per specification.
- Check that the amount poured equates to the reading from the dipstick.
- Close the cap and make sure the fuel cap vent is directed to the front.
- Make sure no spilled fuel is left on the plane. Remove if necessary.

WARNING: During refueling it is necessary to use filters to prevent fuel system obstructions. If refueled with jerry cans it is mandatory to use filtered funnels. Otherwise if refueled directly by gasoline pumps it is mandatory select filtered pumps.

Servicing Oil

- Remove top cowling.
- Make sure the ignition and both magnetos are OFF.
- Turn propeller 5-6 times in the normal direction for flight.
- Open the oil tank cap and check the level of the oil by the dipstick.
- Oil should read within marked limits.
- Add oil if necessary.
- Close the cap.

Servicing Coolant

- Remove the top cowling.
- Open the cap of the coolant tank and add coolant to fill up the tank.
- Make sure the ignition and both magnetos are OFF.
- Turn propeller 5-6 times in the normal direction for flight
- Make sure that no air is inside the cooling system.
- Close the coolant tank cap and if necessary add coolant to the expansion tank.

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

Date	Doc. No.	Title of the inserted supplement

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 Agency 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.)Aircraft ground movement with engine running is as follows:

NOTES:

APPENDIX A

UTILITY AND CONVERSION TABLES

A.1 WIND COMPONENT DIAGRAM

By use of the following **Figure V-6** the head wind or tail wind component can be found, knowing the reported wind speed and direction relative to the airplane heading or runway heading for take-off or landing. The cross-wind component can also be found.

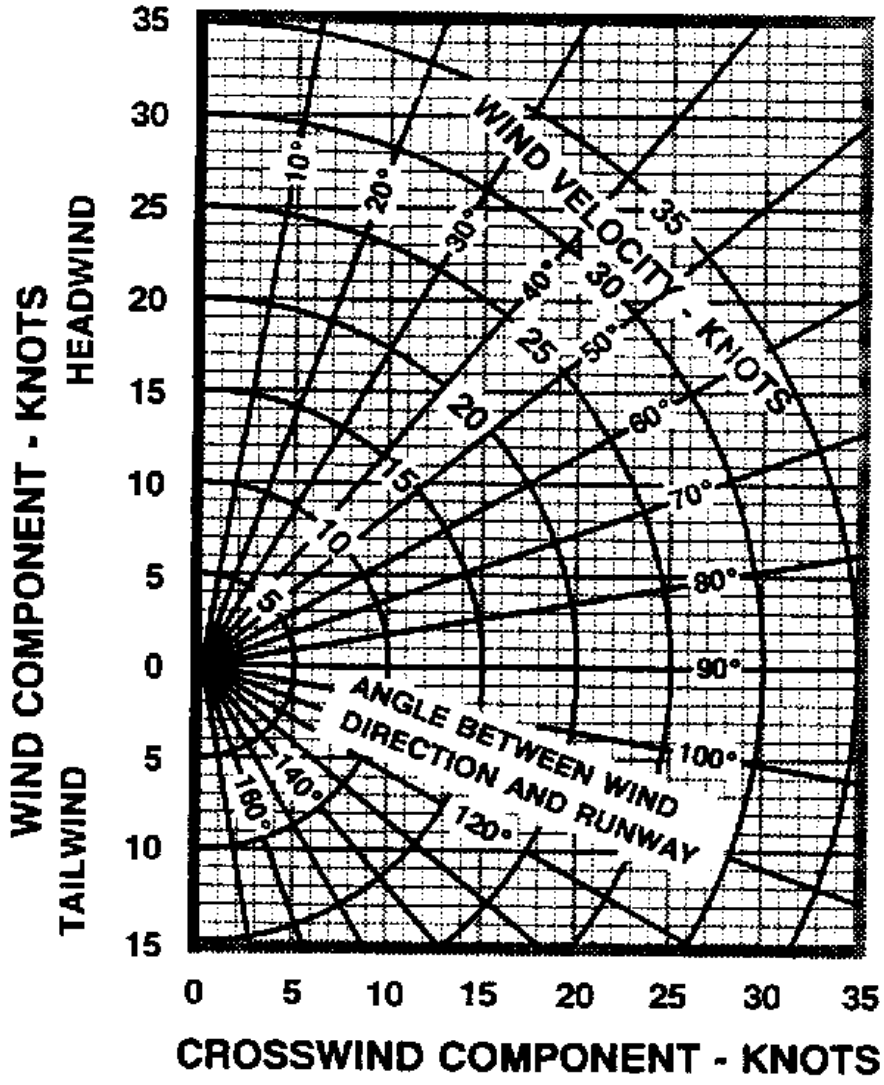


FIGURE A-1: WIND COMPONENT VESUS REPORTED WIND

In aviation it is customary to report the wind by two numbers, first three digits are the direction from which the wind is coming, then the wind speed in knots.

If airplane airspeeds are in mph or km/h, use conversion chart **tables A-3** and **A-4** to correct reported wind to the correct value in use in the airplane.

A.2 SPEED CONVERSION (DENSITY ALTITUDE)

This table helps you to calculate the TAS (true airspeed) from the IAS (indicated airspeed) using the simplified formula:

TAS = IAS*Cor. factor

ICAN (international commitee for air navigation) temperatures, relative pressure, relative density and IAS to TAS correction factors as related to altitude

Altitude		Temperature		Relative	Relative	Cor. factors
feet	metres	°C	°F	pressure	density	
-2.000	-610	18,96	66,13	1,074	1,059	0,971
-1	-305	16,98	62,56	1,036	1,029	0,985
0	0	15	59	1	1	1
1.000	305	13,01	55,43	0,964	0,971	1,014
2.000	610	11,03	51,86	0,929	0,942	1,029
3.000	914	9,056	48,30	0,896	0,915	1,045
4.000	1219	7,075	44,73	0,863	0,888	1,061
5.000	1524	5,094	41,16	0,832	0,861	1,077
6.000	1829	3,113	37,60	0,801	0,835	1,090
1.000	2134	1,132	34,03	0,771	0,810	1,110
8.000	2438	-0,850	30,47	0,742	0,785	1,128
9.000	2743	-2,831	26,90	0,714	0,761	1,145
10.000	3090	-4,812	23,33	0,687	0,738	1,163
11.000	3353	-6,793	19,77	0,661	0,715	1,182
12.000	3658	-8,774	16,20	0,635	0,693	1,201
13.000	3916	-10,75	12,64	0,611	0,671	1,220
14.000	4267	-12,73	9,074	0,587	0,649	1,240
15.000	4572	-14,71	5,507	0,564	0,629	1,260
16.000	4877	-16,69	1,941	0,541	0,608	1,281
17.000	5182	-18,68	-1,625	0,520	0,589	1,302

Figure A-2

A.3 UNIT CONVERSIONS

kilometers per hour (km/h) - knots (kts) - metres per sec. (m/s)

km/h	kts	m/s	km/h	kts	m/s	km/h	kts	m/s
1,853	1	0,37	63,00	34	18,34	124,16	67	36,15
3,706	2	1,07	64,86	35	18,88	126,01	68	36,69
5,560	3	1,61	66,71	36	19,42	127,87	69	37,23
7,413	4	2,15	68,56	37	19,96	129,72	70	37,77
9,266	5	2,69	70,42	38	20,50	131,57	71	38,31
11,11	6	3,23	72,27	39	21,04	133,43	72	38,86
12,97	7	3,77	74,12	40	21,58	135,28	73	39,39
14,82	8	4,31	75,98	41	22,12	137,13	74	39,93
16,67	9	4,85	77,83	42	22,66	198,99	75	40,47
18,53	10	5,39	79,68	43	23,20	140,84	76	41,01
20,38	11	5,93	81,54	44	23,74	142,69	77	41,54
22,23	12	6,47	83,39	45	24,28	144,55	78	42,08
24,09	13	7,01	85,24	46	24,82	146,40	79	42,62
25,94	14	7,55	87,10	47	25,36	148,25	80	43,16
27,79	15	8,09	88,95	48	25,90	150,10	51	43,70
29,65	16	8,63	90,80	49	26,44	151,96	82	44,24
31,50	17	9,17	92,66	50	26,98	153,81	83	44,78
33,35	18	9,71	94,51	51	27,52	155,66	84	45,32
35,21	19	10,25	96,36	52	28,05	157,52	85	45,86
37,06	20	10,79	98,22	53	28,59	159,37	86	46,40
38,91	21	11,33	100,07	54	29,13	161,22	87	46,94
40,77	22	11,81	101,92	55	29,67	163.08	88	47,48
42,62	23	12,41	103,77	56	30,21	164,93	89	48,02
44,47	24	12,95	105,63	57	30,75	166,78	90	48,56
46,33	25	13,49	107,48	58	31,29	168,64	91	49,10
48,18	26	14,03	109,33	59	31,83	170,49	92	49,64
50,03	27	14,56	111,19	60	32,37	172,34	93	50,18
51,80	28	15,10	113,04	61	32,91	174,20	94	50,12
53,74	29	15,64	114,89	62	33,45	176,05	95	51,26
55,59	30	16,18	116,75	63	33,99	177,90	96	51,80
57,44	31	16,72	118,60	64	34,53	179,76	97	52,34
59,30	32	17,26	120,45	65	35,07	181,61	98	52,88
61,15	33	17,80	122,31	66	35,61	183,46	99	53,42

Figure A-3

metres per second (m/s) - feet per minute (100 ft/min)

m/sec.		100 ft/min	m/sec.		100 ft/min	m/sec.		100 ft/min
0,50	1	1,96	10,66	21	41,33	20,82	41	80,70
1,01	2	3,93	11,17	22	43,30	21,33	42	82,67
1,52	3	5,90	11,68	23	45,27	21,84	43	84,64
2,03	4	7,87	12,19	24	47,24	22,35	44	86,61
2,54	5	9,84	12,75	25	49,21	22,86	45	88,58
3,04	6	11,81	13,20	26	51,18	23,36	46	90,53
3,55	7	13,78	13,71	27	53,15	23,87	47	92,52
4,06	8	15,74	14,22	28	55,11	24,38	48	94,48
4,57	9	17,71	14,73	29	57,08	24,89	49	96,45
5,08	10	19,68	15,24	30	59,05	25,45	50	98,42
5,58	11	21,65	15,74	31	61,02	25,90	51	100,4
6.09	12	23,62	16,25	32	62,92	26,41	52	102,3
6,60	13	25,51	16.76	33	64,96	26,92	53	104,3
7,11	14	27,55	17,27	34	66,92	27,43	54	106,2
7,62	15	29,52	17,78	35	68,89	27,94	55	108,2
8,12	16	31,49	18,28	36	70,86	28,44	56	110,2
8,63	17	33,46	18,79	37	72,83	28,95	57	112,2
9,14	18	35,43	19,30	38	74,80	29,46	58	114,1
9,65	19	37,40	19,81	39	76,77	29,97	59	116,1
10,16	20	39,37	20,32	40	78,74	30,48	60	118,1

knots (kts) - metres per second (m/s)

	0	1	2	3	4	5	6	7	8	9
0	0	0,51	1,02	1,54	2,05	2,57	3.08	3,60	4,11	4,63
10	0,51	5,65	6,17	6,66	7,20	7,71	8,23	8,74	9,26	9,77
20	10,28	10,80	11,31	11,83	12,34	12,86	13,37	13,89	14,40	14,91
30	25,43	15,94	16,46	16,97	17,49	18,00	18,52	19,03	19,54	20,06
40	20,57	21,09	21,60	22,12	22,63	23,15	23,66	24,17	24,69	25,20
50	25,72	26,23	26,75	27,26	27,76	28,29	28,80	29,32	29,83	30,35
60	30,86	31,38	31,89	32,41	32,92	33,43	33,95	34,46	34,98	35,49
70	36,00	36,52	37,04	37,55	38,06	38,58	39,09	39,61	40,12	40,64
80	41,15	41,67	42,18	42,69	43,21	43,72	44,24	44,75	45,27	45,78
90	46,30	46,81	47,32	47,84	48,35	48,87	49,38	49,90	50,41	50,90

Figure A-4

metres (m) to feet (ft) conversion table

metres (m)		feet (ft)	metres (m)		feet (ft)	metres (m)		feet (ft)
0,304	1	3,280	10,36	34	111,5	20,42	67	219,81
0,609	2	6,562	10,66	35	114,8	20,72	68	223,09
0,914	3	9,843	10,97	36	118,1	21,03	69	226,37
1,219	4	13,12	11,27	37	121,3	21,33	70	229,65
1,524	5	16,40	11,58	38	124,6	21,64	71	232,94
1,828	6	19,68	11,88	39	127,9	21,91	72	236,22
2,133	7	22,96	12,19	40	131,2	22,25	73	239,50
2,438	8	26,24	12,49	41	134,5	22,55	74	242,78
2,743	9	29,52	12,80	42	137,7	22,86	75	246,06
3,048	10	32,80	13,10	43	141,1	23,16	76	249,34
3,352	11	36,08	13,41	44	144,3	23,46	77	252,62
3,657	12	39,37	13,71	45	147,6	23,77	78	255,90
3,962	13	42,65	14,02	46	150,9	24,07	79	259,18
4,267	14	45,93	14,32	47	154,1	24,38	80	262,46
4,572	15	49,21	14,63	48	157,4	24,68	81	265,74
4,876	16	52,49	14,93	49	160,7	24,99	82	269,02
5,181	17	55,77	15,24	50	164,1	25,29	83	272,31
5,48	18	59,05	15,54	51	167,3	25,60	84	275,59
5,791	19	62,33	15,84	52	170,6	25,90	85	278,87
6,096	20	65,61	16,15	53	173,8	26,21	86	282,15
6,400	21	68,89	16,45	54	177,1	26,51	87	285,43
6,705	22	72,17	16,76	55	180,4	26,82	88	288,71
7,010	23	75,45	17,06	56	183,7	27,12	89	291,99
7,310	24	78,74	17,37	57	187,0	27,43	90	295,27
7,620	25	82,02	17,67	58	190,2	27,73	91	298,55
7,948	26	85,30	17,98	59	193,5	28,04	92	301,83
8,220	27	88,58	18,28	60	196,8	28,34	93	305,11
8,530	28	91,86	18,59	61	200,1	28,65	94	308,39
8,830	29	95,14	18,89	62	203,4	28,90	95	311,68
9,144	30	98,42	19,20	63	206,6	29,26	96	314,96
9,448	31	101,7	19,50	64	209,9	29,56	97	318,24
9,750	32	104,9	19,81	65	213,2	29,87	98	321,52
10,05	33	108,2	20,12	66	216,5	30,17	99	324,80

Figure A-5

APPENDIX B

Aircraft Check Lists

Title **Page**

(NOTE: these pages can be cut out and laminated)

B.1 Aircraft on board check lists

Texan Rotax 912 ULS / S – Check list (page 1)

1) PRE-FLIGHT CHECK - completed

Seats	- adjusted
Safety belts	- adjusted and fastened
Canopy	- closed and locked
Parking brake	- ON
Flight controls	- full and free movement
Fuel faucets	- RH open, LH closed
Trim	- Neutral

2) ENGINE START

Choke lever:	engine cold	- ON	(all rearward)
	Engine warm	- OFF	(all forward)
Electric fuel pump	- ON for 10 sec. then OFF		
Throttle	- At minimum + 1 cm		
Master switch	- ON		
Generator warning lamp	- ON		
Ignition magnets key	- each magnets ON		

Ensure the propeller area is clear of any person or object "CLEAR PROP"

Start procedure	- Max 20 sec., pause one minute before retrying
Throttle	- 2500 RPM
Oil pressure	- Green arc in 5 sec
Generator warning lamp	- OFF

3) BEFORE TAXIING

Electrical system	- ON and checked
Navigation instruments	- checked
Flaps	- Position for takeoff (15°)
Parking brake	- OFF

Texan Rotax 912 ULS / S – Check list (page 1)

4) TAXIING

Brakes	- check both operate equally
Flight control	- free full movement, stick and pedals
Flight instruments	- Check magnetic compass, gyro's and set altimeter QNH
Throttle	- As necessary

5) ENGINE CHECK

Parking brake	- ON
Fuel tank faucets	- RH Open, LH Closed
Oil Temp & pressure	- Within limits, in green arc
Trim	- Neutral
Flight controls	- Free and full movement
Check magnetos	- 4000 RPM maximum decrease 300 RPM for each magneto
Throttle	- All forward, check minimum 5500 min RPM +/- 150 for 5 sec
Check minimum RPM	- 1400 RPM

***6)* BEFORE TAKE-OFF**

Flight controls	- Free and full movement
Trim	- Neutral
Electric fuel pump	- ON
Flaps	- Set for take-off (15º)
Fuel tank faucets	- RH Open, LH Closed
Engine instruments	- Within limits
Flight instruments	- Check and regulate
Safety belts	- adjusted and fastened
Canopy	- check 4 locks are engaged & locked
Canopy open warning lamp	- OFF
Parking brake	- OFF
Emergency Parachute safety pin	- remove (if installed)

Texan Rotax 912 ULS / S – Check list (page 3)

7) TAKE OFF

Aircraft	- Align with runway
Throttle lever	- Full open smoothly
RPM	- MAXIMUM
At (40KTS)	- Rotation

For a take off from short runway with an obstable of 15 m, use flap with 20°.

- Rotation	*- 40 kts (46 mph)*
- Climb speed	*- (Vx) 48 kts (55 mph)*
Flaps	- Up
Speed	- Vx or Vy
Throttle	- As necessary
Electric fuel pump	- OFF

8) CLIMB

Engine RPM	- 5500 RPM min
Engine instruments	- Within limits
Trim	- As necessary

9) CRUISE

Throttle	- As necessary
Engine RPM	- Max continuous power 5500 RPM
Engine instruments	- Within limits

Warning: Check frequently engine instruments, do not exceed limits.

The speeds are only indicative

Speed 95 kts (109 mph) - 4000 rpm
Speed 102 kts (118mph) - 4800 rpm
Speed 112 kts (129 mph) - 5000 rpm
Speed 127 kts (146 mph) - 5500 rpm

10) DESCENDING

Altimeter	- Setting
Carburetor heat	- As necessary
Throttle	- As necessary
Trim	- As necessary
Engine instruments	- Within limits

Texan Rotax 912 ULS/ S – Check list (page 4)

11) LANDING

Speed	- 105 km/h (66 mph)
Flap	- As necessary
Trim	- As necessary
Throttle	- As necessary
Electric fuel pump	- ON
Parking brake check	- Check OFF
Final Approach speed	- 48 kts (55 mph)
Touch down speed	- 40 kts (46 mph)
Trim	- As necessary

12) TOUCH & GO

Throttle	- All forward Max power
Trim	- As necessary
Flap	- 15°
Speed	- Vx o Vy

if you touch the ground repeat take off procedure.

13) AFTER LANDING

Throttle	- Idle
Flaps	- UP
Electric fuel pump	- OFF
Brakes	- Check functionality with "warm brakes"
Emergency Parachute safety pin	- install (if installed)

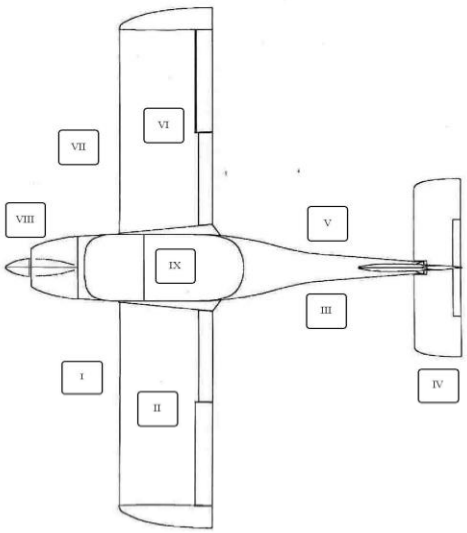
14) ENGINE SHUTDOWN

Throttle	- Idle
Parking brakes	- ON
Electrical equipment, radio etc	- OFF
Magnetos	- OFF (one by one)
Master switch	- OFF
Fuel tank faucets	- closed

8.2 AIRCRAFT ON GROUND CHECK LIST

Remove all the protections **PRE-FLIGHT CHECK LIST** Page 1

1. pitot-cover,
2. wheels stops,
3. mobile surfaces stops,
4. canopy covering,
5. propeller protection,
6. fuel draining procedure.



Left main landing gear (I)

Leg	no distortion, bolts locked, no sign of cracks on the welding
Brake assembly	condition and tightness
Tire	general good condition, inflated correctly
Wheel fairing	good conditions and free space between the wheel and fairing.

Left wing (II)

Wing surface	absence of buckling, absence of delamination
Karman wing root	absence of delamination, fixed correctly no fuel leaks from draining point
Leading edge	absence of delamination
Wing tip	no defects, fixed correctly
Trailing edge	absence of delamination, no signs of cracks
Flap & aileron	absence of delamination, no signs of cracks, free movement, no excessive play on hinges, fixed correctly, balancing mass fixed correctly, no signs of lateral movement.

Fuselage left side (III)

Fuselage surface	absence of buckling, absence of delamination, inspection holes closed

Empennage (IV)

Vertical fin	absence of buckling, absence of delamination
Rudder	absence of delamination, hinges fixed correctly

Lower the tail of the aircraft to lift the nose wheel, check the free movement of the rudder, check for possible hinge problem.

Bowden cables	fixed correctly.
Stabilator	free movement during all travel range, absence of buckling, absence of delamination
Stabilator hinge	absence of delamination, fixed correctly, no play
Balancing mass	fixed, no play
Hinge pins	fixed correctly
Trim tab	free movement, absence of defects, and no play.

Fuselage right side (V)

Fuselage surface	absence of buckling, absence of delamination, inspection holes closed

Right wing (VI)

Wing surface	absence of buckling absence of delamination
Karman wing root	absence of delamination, fixed correctly no fuel leaks from draining point
Leading edge	absence of delamination,
Wing tip	no defects, fixed correctly
Trailing edge	absence of delamination, no signs of cracks
Flap & aileron	absence of delamination, no signs of cracks, free movement, no excessive play on hinges, fixed correctly, balancing mass fixed correctly, no signs of lateral movement.
Pitot tube	no defects, fixed correctly

Right main landing gear (VII)	
Leg	no distortion, bolts locked, no sign of cracks on the welding
Brake assembly	condition and tightness
Tire	general good condition, inflated correctly
Wheel fairing	good conditions and free space between the wheel and fairing.
Nose wheel (VIII)	
Fixing axle bolts	check correct tightness
Wheel fairing	good conditions and free space between the wheel and fairing.
Tire	general good condition, inflated correctly
Damper	no signs of cracks or distortion, free movement
Nose wheel support structure	no signs of cracks or distortion.
Propeller (VIII)	
Hub & blades	no signs of cracks & clean.
Spinner	no signs of cracks, fixed correctly
Engine (VIII)	
Upper cowling	remove
Oil tank	check level
Coolant tank	check level
Radiator and air inlet	no signs of cracks, free from obstructions
Engine	clean, no oil or coolant leakage
Muffler & silencer manifold	no signs of cracks, muffler hooked.
Oil and refrigerant tube system	correct functionality, no leakage
Ignition & electric plant	correct functionality.
Throttle & choke cables	free movement
Upper cowling	reinstall and check tightness.
Check inside cabin (IX)	
Instruments panel	fixed correctly, all placards
Master switch ON	all instruments ON
Master switch OFF	all instruments OFF
Control stick	free movement, fixed correctly in its support
Rudder pedals .	no distortion, no signs of cracks, correct functionality, fixed correctly in its support, correct functionality of centering system.
Throttle & choke levers	free movement, fixed correctly in their support
Brake lever and parking brake	remove parking brake lock, check lever functionality. Insert parking brake.
Trim lever	check correct functionality
Safety belts	check correct functionality
Seats,	fixed correctly.
Canopy	clean, no signs of cracks, correct functionality of locking system.
Windshield	clean, fixed correctly on fuselage
Luggage	secured.
Weight & balance	calculated.