Aircraft Operating Instructions

BRISTELL LSA

BRM AERO S.R.O.
VÁCLAVA KULÍŠKA 1224, 686 05 UHERSKÉ HRADIŠTĚ, CZECH REPUBLIC
phone.: +420 773 984 338
www.brmaero.com

Aircraft Operating Instructions

BRISTELL LSA

Registration: 27 FT WING 100 hp

Serial Number: ALL

This airplane must be operated in compliance with information and limitations contained in herein. This AOI must be available on board of the airplane.

SECTION 0

0. TECHNICAL INFORMATION

0.1 Record of revisions

0.2 List of effective pages

0.3 Table of contents

0.1 Record of revisions

Any revision of the present manual (except actual weighing data, cockpit description and list of instruments and avionics) must be recorded in the following table.

Revision No.	Affected Section	Affected Pages	Date of Issue	Approved by	Date of approval	Date inserted	Sign.
1	ALL	ALL, Initial	7/2011	Milan Bristela	7/2011	7/2011	

0.2 List of effective pages

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0.3 Table of contents

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1. GENERAL INFORMATION

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1.1 Introduction

BRISTELL LSA is an LSA Aircraft built in BRM AERO s.r.o., Uherske Hradiste, Czech Republic, based on czech LAA UL 2 Standards, CS-VLA Standards and FAA Light Sport Aircraft (LSA) category according to ASTM Standards F2245, F2279 and F 2295.

This Aircraft Operating Instruction has been prepared to provide pilots with information for the safe and efficient operation of BRISTELL LSA aircraft. It also contains supplemental data supplied by the Aircraft Flight Training Supplement.

1.2 Warnings, cautions and notes

The following definitions apply to warnings, cautions and notes in the Pilot Operating Handbook.

WARNING

Means that the non-observation of the corresponding procedure leads to an immediate or important degradation of the flight safety i.e. to injury or death of persons.

CAUTION

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

NOTE

Draws attention to any special item not directly related to safety, but which is important or unusual.

RUN AWAY TRIM MOTOR: If the trim motor should begin to run uncommanded in one or the other direction the following actions should be taken: • Pull the trim fuse as soon as runaway condition is

recognized • Autopilot Switch - OFF (G3X) • Stabilator - HOLD against out of trim condition • Airspeed may be reduced as a way to lessen the amount of stick force required to maintain level flight • Land as soon as possible 3

1.3 Descriptive data

1.3.1 Aircraft description

BRISTELL LSA is airplane intended especially for recreational and cross-country flying, non-aerobatics operation and basic training.

BRISTELL LSA is a single-engine, all metal, low-wing monoplane of semi-monocoque construction with two side-by-side seats. The airplane is equipped with a fixed tricycle undercarriage with steerable nose wheel.

1.3.2 Powerplant

The powerplant is composed of ROTAX 912 iS Sport 98.6 hp, 4-cylinder, 4-stroke engine and FITI ECO COMPETITION ground adjustable three blade propeller diameter 62,2".

1.3.3PW Performance Wing Aircraft dimensions

Wing span.....27 ft
Length.....21,10 ft
Height .....7.48 ft
Wing area .....113.94 sq ft
Wing loading.....11.58 lbs/sq ft
Cockpit width .....51,17 in

Deflection:

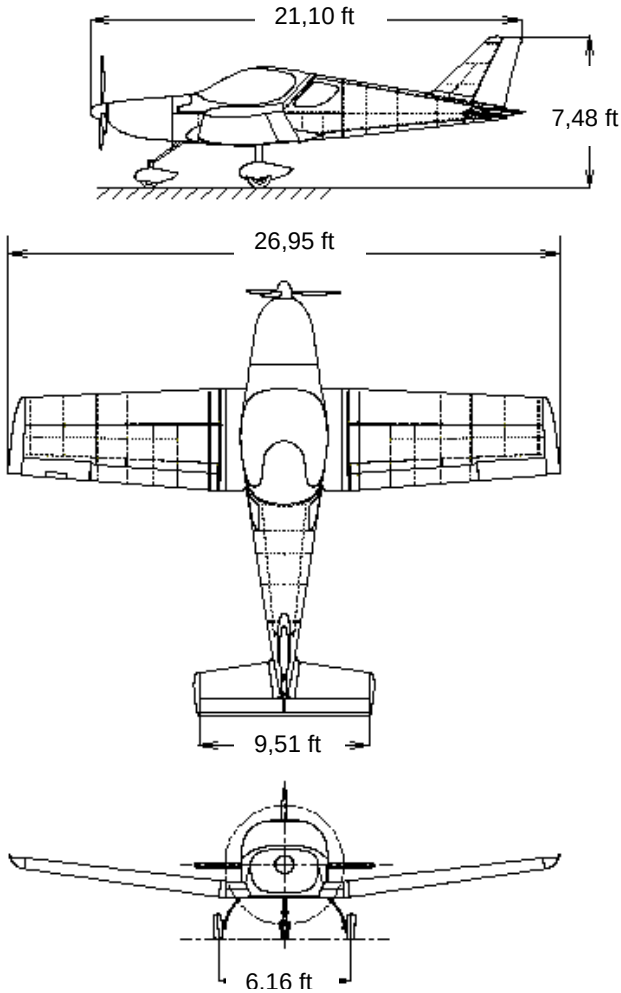
Rudder deflections.....30° to each side
Elevator deflections .....+ 30°/- 15°
Aileron deflections .....+ 24°/-16°

Flap deflections .....0°, 10°, 20°and 30°

Aileron trim deflections .....+ 15°/- 20°

Elevator trim deflections .....+ 10°/- 25°

1.3.4 Aircraft layout (The Performance wing is 27 feet)



1.4 Definitions and abbreviations

ATC	Air Traffic Control
ASI	Airspeed Indicator
BEACON	anti-collision beacon
CAS	Calibrated Airspeed
COMM	communication transmitter
EFIS	Electronic Flight Instrument System
ELT	Emergency Locator Transmitter
EMS	Engine Monitoring System
°F	temperature in degree of Fahrenheit
ft	foot / feet
ft/min	feet per minute
GPS	Global Positioning System
hp	power unit
IAS	Indicated Airspeed
IC	Intercom
IFR	Instrument Flight Rules
in	inch
ISA	International Standard Atmosphere
knot	NM per hour
lb	pound
MAC	Mean Aerodynamic Chord
max.	maximum
min.	minimum or minute
mph	statute miles per hour
NM	Nautical Mile

OFF	system is switched off or control element is in off-position
ON	system is switched on or control element is in on-position
OAT	Outside Air Temperature
POH	Pilot Operating Handbook
psi	pound per square inch - pressure unit
rpm	revolutions per minute
sec.	second
US gal	volume unit
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
V_A	maneuvering airspeed
V_{FE}	maximum flap extended speed
V_{NO}	maximum designed cruising speed
V_{NE}	never exceed speed
V_{SO}	stall speed with wing flaps in extended position
V_{S1}	stall speed with wing flaps in retracted position
V_X	best angle of climb speed
V_Y	best rate of climb speed

SECTION 2

2. OPERATING LIMITATION

2.1 Introduction

2.2 Airspeed

2.3 Airspeed Indicator Markings

2.4 Powerplant

2.4.1 Engine operating speeds and limits

2.4.2 Fuel

2.4.3 Oil

2.4.4 Coolant

2.5 Powerplant Instrument Markings

2.6 Miscellaneous Instrument Markings

2.7 Weight

2.8 Center of Gravity

2.9 Approved Maneuvers

2.10 Maneuvering Load Factors

2.11 Crew

2.12 Kinds of Operation

2.13 Other Limitations

2.1 Introduction

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

2.2 Airspeed

Airspeed limitations and their operational significance are shown below:

Speed		*KIAS*	Remarks
V_{NE}	Never exceed speed	***155***	Do not exceed this speed in any operation.
V_{NO}	Max. structural cruising speed	***115***	Do not exceed this speed except in smooth air, and then only with caution.
V_{A}	Maneuvering speed	***96***	Do not make full or abrupt control movement above this speed, because under certain conditions full control movement may overstress the aircraft.
V_{FE}	Maximum Flap Extended Speed	***75***	Do not exceed this speed with flaps extended.

2.3 Airspeed indicator markings

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

Marking	IAS value or range *Knots*	Significance
White arc	***39-75***	Flap Operating Range.
Green arc	***44-115***	Normal Operating Range.
Yellow arc	***115-155***	Maneuvers must be conducted with caution and only in smooth air.
Red line	***155***	Maximum speed for all operations.

2.4 Powerplant

2.4.1 Engine operating speeds and limits

Engine Model:		**ROTAX 912 S**
Engine Manufacturer:		**Bombardier-Rotax GMBH**
Power	***Max Take-off:***	**100 hp at 5800 rpm, max.5 min.**
	Max. Continuous:	**92.5 hp at 5500 rpm**
	Cruising:	**68.4 hp at 5000 rpm**
Engine RPM	***Max. Take-off:***	**5800 rpm, max. 5 min.**
	Max. Continuoust:	**5500 rpm**
	Cruising:	**5000 rpm**
	Idling:	**~1400 rpm**
Cylinder head temperature:	***Minimum:***	**-**
	Maximum:	**248 / 275° F ***
	Optimum:	**176 - 230° F**
Oil temperature	***Minimum:***	**122° F**
	Maximum:	**266° F**
	Optimum:	**176 - 230° F**
Oil pressure:	***Minimum:***	**12 psi *- below 3500 rpm***
	Maximum:	**102 psi - cold engine starting**
	Optimum:	**29.2 - 73 psi *- above 3500 rpm***

***** Max. CHT temperature depend on the type of coolant used in engine.
- see Section 2.4.4 and Section 10 Supplement No.2

2.4.2 Fuel

This fuel can be used:
(refer to engine Operator's Manual**)**

- min. RON 95, EN 228 Premium, EN 228 Premium plus, AVGAS100LL
- Fuel according to FAA - Standard Spec. for Automotive Spark-Ignition Engine Fuel, ASTM D 4814 or AVGAS 100 LL
- Fuel according to DOT - CAN/CGSB-3.5 Quality 3 min AKI 91 or AVGAS 100 LL, 93 Octane Automotive Fuel

Due to higher lead content in AVGAS, the wear of the valve seats and deposits in the combustion chamber will increase. Therefore, use AVGAS only if you encounter problems with vapor lock or if the other fuel types are not available.

Fuel volume:

Wing fuel tank volume ..... *2x 16 U.S. gallons*
Unusable fuel quantity ..... *2x 0.13 U.S.gallons*

2.4.3 Oil

Oil type:

(refer to engine Operator's Manual)

Use motorcycle a 4 stroke engine oil of registered brand with gear additives, but not aircraft oil. Use only oil with API classification „SG" or higher! Use of multi-grade no mineral oils is recommended.

NOTE: *Type of oil used by aircrafts manufacturer is shown in Section 10 Supplement No.2.*

Oil volume:

Minimum ..... 0,856 U.S. gallons
Maximum ..... o,951 U.S. gallons

2.4.4 Coolant

Coolant type:

(refer to engine Operator's and Installation Manuals)

The water-free coolant concentrate can be used based on *propylene glycol.* The conventional glycol/water coolant mixture can also be

used. The conventional glycol/water coolant mixture reduce to apply the max.permissible cylinder head temperature.

NOTE: *Type of coolant used by aircrafts manufacturer is shown in Section 10 Supplement No.2.*

Coolant liquid volume:

It is about..... 0,66 U.S. gallons

2.4.5 Powerplant instrument markings

Analogue engine instruments markings and their color-code significance are shown below.

Rotax 912S ***98.6 hp***	**Minimum Limit (red line)**	**Normal Operating Range (green arc)**	**Caution Range (yellow arc)**	**Maximum Range (red line)**
Engine speed [RPM]	1400	1400-5500	5500-5800	5800
Oil Temperature	*50°C (122°F)*	*50-110°C (122-230°F)*	*110-130°C (230-266°F)*	*130°C (266°F)*
Exhaust Gas Temp. (EGT)	-	*800-850°C (1472-1562°F)*	*850-880°C (1562-1616°F)*	*880°C (1616°F)*
Cylinder Head Temperature (CHT)	50°C *(122°F)*	50-110°C *(122-230°F)*	110-120 / 135°C * *(230-248 / 275°F)*	120 / 135°C * *(248 / 275°F)*
Oil Pressure	*0,8 bar (12 psi)*	*0,8-5 bar (12-73 psi)*	*5-7 bar (73-102 psi)*	*7 bar (102 psi) cold engine starting*

***** Max. CHT temperature depend on the type of coolant used in engine.
- see Section 2.4.4 and Section 10 Supplement No.2

2.5 Miscellaneous Instrument Marking

Note: *There are not any miscellaneous instrument marking*

2.6 Weight

Empty weight (standard equipment) ..... 715 lbs

NOTE

Actual empty weight is shown in SECTION 6 777 pounds

Max. take-off weight..... 1320 lbs

Max landing weight ..... 1320 lbs

Max. weight of fuel ....192 lbs

Max. baggage weight in rear fuselage ..... … 33 lbs

Max. baggage weight in wing lockers ……..44 lbs each

2.7 Center of gravity

Operating C.G. range..... *25 to 35 % of* MAC

2.8 Approved maneuvers

Airplane Category: ELA, LSA

The BRISTELL LSA is approved for normal and below listed maneuvers:

- Steep turns not exceeding 60° bank
- Lazy eights
- Chandelles
- Stalls (except whip stalls)

WARNING

Aerobatics and intentional spins are prohibited !

2.9 Maneuvering load factors

Maximum positive limit load factor..... +4 g

Maximum negative limit load factor..... - 2 g

2.10 Crew

Number of seats 2
Minimum crew..... 1 pilot in the left seat
Minimum crew weight ..... 121 lbs
Maximum crew weight ..... see SECTION 6

WARNING
Do not exceed maximum take-off weight 1320 lbs !

2.11 Kinds of operation

There are permitted Day VFR flights, Night VFR flights are permitted with installation of optional Night Lighting Package and operation by an appropriate rated pilot.

WARNING
IFR flights and intentional flights under icing conditions are PROHIBITED!

Minimum instruments and equipment list for VFR flights:

- Airspeed indicator
- Altimeter
- Compass (is not required by ASTM F 2245)
- Fuel quantity indicator
- Tachometer (RPM)
- Oil temperature indicator
- Oil pressure indicator
- Cylinder head temperature indicator

2.12 Other limitations

- ***No smoking on board of the aircraft!***

- FLIGHT INTO IMC IS PROHIBITED

  The Bristell ELSA can fly on an IFR flight plan and in IMC if equipped with certified avionics and the pilot properly rated.

SECTION 3

3. EMERGENCY PROCEDURES

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3.2 Engine Failure

3.2.1 Engine failure during take-off run
3.2.2 Engine failure during take-off
3.2.3 Engine failure in flight

3.3 In-flight Engine Starting

3.4 Smoke and Fire

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3.6 Landing Emergencies

3.6.1 Emergency landing
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3.7 Recovery from Unintentional Spin

3.8 Other emergencies

3.8.1 Vibration
3.8.2 Carburetor icing
3.8.3. Autopilot malfunction

3.1 Introduction

Section 3 provides checklists and amplified procedures for coping with various emergencies that may occur. Emergencies caused by aircraft or engine malfunction are extremely rare if proper pre-flight inspections and maintenance are practiced.

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

3.2 Engine Failure

3.2.1 Engine failure during take-off run

1. Throttle - reduce to idle
2. Ignition - switch off
3. Apply brakes

3.2.2 Engine failure during take-off

1. Speed - gliding at 67 KIAS
2. Altitude - below 150 ft: land in take-off direction
   - over 150 ft: choose a landing area
3. Wind - find direction and velocity
4. Landing area - choose free area without obstacles
5. Flaps - extend as needed
6. Fuel Selector - shut off
7. Ignition - switch off
8. Safety harness - tighten
9. Master switch - switch off before landing
10. Land

3.2.3 Engine failure in flight

1. Push control stick forward
2. Speed - gliding at 67 KIAS
3. Switch fuel tanks
4. FUEL PUMP ON
5. Altitude - below 150 ft: land in take-off direction
   - over 150 ft: choose a landing area
6. Wind - find direction and velocity
7. Landing area - choose free area without obstacles
8. Flaps - extend as needed
9. Fuel Selector - shut off
10. Ignition - switch off
11. Safety harness - tighten
12. Master switch - switch off before landing
13. Land

3.3 In-flight Engine Starting

1. Electric pump - ON
2. Back up start power- ON
3. Fuel Selector - switch to second fuel tank
4. Starter - switch on

3.4 Smoke and Fire

3.4.1 Fire on ground at engine starting

1. Starter - keep in starting position
2. Fuel Selector - close
3. Throttle - full power
4. Ignition - switch off
5. Leave the airplane
6. Extinguish fire by fire extinguisher or call for a fire-brigade if you cannot do it.

3.4.2 Fire on ground with engine running

1. Heating - close
2. Fuel selector - close
3. Throttle - full power
4. Ignition - switch off
5. Leave the airplane
6. Extinguish fire by fire extinguisher or call for a fire-brigade if you cannot do it.

3.4.3 Fire during take-off

1. Speed - 65 KIAS 10 degrees of flap
2. Heating - close
3. Fuel Selector - close
4. Throttle - full power
5. Ignition - switch off
6. Land and stop the airplane
7. Leave the airplane
8. Extinguish fire by fire extinguisher or call for a fire-brigade if you cannot do it.

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ELECTRICAL FIRE

An electrical fire is usually indicated by an odor of hot or burning insulation.

- Electrical Switches – ALL OFF (leave ignition switches ON)
- Air Vent – OPEN if necessary for smoke removal and ventilation
- Use hand fire extinguisher if available
- Land immediately (or as soon as practical if location for safe landing is not available)

3.4.4 Fire in flight

1. Heating - close
2. Fuel Selector - OFF
3. Throttle - full power
4. Master switch - switch off
5. Ignition - switch off after the fuel in carburetors is consumed and engine shut down
6. Choose of area - heading to the nearest airport or choose emergency landing area
7. Emergency landing - perform according to 3.6
8. Leave the airplane
9. Extinguish fire by yourself or call for a fire-brigade if you cannot do it.

NOTE

Estimated time to pump fuel out of carburetors is 30 seconds.

WARNING

Do not attempt to re-start the engine!

3.4.5 Fire in the cockpit

1. Master switch - switch off
2. Heating - close
3. Use the fire extinguisher

3.5 Glide

An example of the use of gliding is in the case of engine failure

1. Speed - recommended gliding speed 67 KIAS
   With 10 degrees of flap

3.6 Landing Emergencies

3.6.1 Emergency landing

Emergency landings are generally carried out in the case of engine failure and the engine cannot be re-started.

1. Speed - adjust for optimum gliding 65 KIAS
2. Trim - adjust
3. Safety harness - tighten
4. Flaps - extend as needed
5. COMM - if installed then report your location if possible
6. Fuel Selector - close
7. Ignition - switch off
8. Master switch - switch off
9. Perform approach without steep turns and land on chosen landing area.

3.6.2 Precautionary landing

A precautionary landing is generally carried out in the cases where the pilot may be disorientated, the aircraft has no fuel reserve or possibly in bad weather conditions.

1. Choose landing area, determine wind direction
2. Report your intention to land and land area location if a COMM is installed in the airplane.
3. Perform low-altitude passage into wind over the right-hand side of the chosen area with flaps extended as needed and thoroughly inspect the landing area.
4. Perform circle pattern.

5. Perform approach at increased idling with flaps fully extended.
6. Reduce power to idle when flying over the runway threshold and touch-down at the very beginning of the chosen area.
7. After stopping the airplane switch off all switches, shut off the fuel selector, lock the airplane and seek for assistance.

NOTE

Watch the chosen area steadily during precautionary landing.

3.6.3 Landing with a flat tire

1. During landing keep the damaged wheel above ground as long as possible using the ailerons control
2. Maintain the direction on the landing roll out, applying rudder control.

3.6.4 Landing with a defective landing gear.

1. If the main landing gear is damaged, perform touch-down at the lowest practicable speed and if possible, maintain direction during landing run.
2. If the nose wheel is damaged perform touch-down at the lowest practicable speed and hold the nose wheel above the ground by means of the elevator control as long as possible.

3.7 Recovery from Unintentional Spin

WARNING
Intentional spins are prohibited!

There is no an uncontrollable tendency of the airplane to enter into a spin provided the normal piloting techniques are used.

Unintentional spin recovery technique:

1. Throttle - idle
2. Lateral control - ailerons neutralized
3. Rudder pedals - full opposite rudder
4. Rudder pedals - neutralize rudder immediately when rotation stops
5. Longitudinal control - neutralize or push forward and recovery dive.

3.8 Other Emergencies

3.8.1 Vibration

If any forced aircraft vibrations appear, it is necessary:

1. To set engine speed to such power rating where the vibrations are lowest.
2. To land on the nearest airfield or to perform a precautionary landing according to 3.6

3.8.2 Carburetor icing

The carburetor icing shows itself through a decrease in engine power and an increase of engine temperatures.

To recover the engine power, the following procedure is recommended:

1. Speed - 70 KIAS
2. Throttle - set to 1/3 of power
3. If possible, leave the icing area
4. Increase the engine power gradually up to cruise conditions after 1-2 minutes

If you fail to recover the engine power, land on the nearest airfield (if possible) or depending on the circumstances, perform a precautionary landing according to 3.6

NOTE

If your engine is equipped with carburetor heating, use it for extended period descent and in area of possible carburetor icing.

***Remember:** Aircraft is approved to operate in VMC condition only!*

3.8.3 Autopilot malfunction

In the case, that autopilot starts work not properly, press immediately red button “AP OFF” on the instrument panel.

WARNING

Take-Off, climb, Approach and landing with AP “ON” or with malfunction AP are PROHIBITED.

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REVISED 5/3/2016

GENERATOR/ELECTRICAL FAILURE WARNING ELECTRICAL FUEL PUMP OPERATION DEPENDS UPON SUFFICIENT BATTERY POWER. MONITOR THE FUEL PRESSURE PROVIDED BY THE ELECTRIC PUMP IF THE ELECTRICAL PUMP HAS BEEN SHUT OFF USING THE MASTER SWITCH OR FUEL PUMP FUSE. A GENERATOR FAILURE IS INDICATED BY A STEADY DISCHARGE ON THE AMMETER AND VOLTAGE INDICATION LESS THAN 12.0 VOLTS. • TURN OFF ALL NON-ESSENTIAL ELECTRICAL EQUIPMENT TO CONSERVE BATTERY POWER. THE AVIONICS SWITCH SHOULD BE SWITCHED OFF AND THE EFIS AND GPS WILL CONTINUE TO OPERATE ON THEIR INTERNAL BATTERIES. • LAND AS SOON AS POSSIBLE AS THE BATTERY WILL FURNISH ELECTRICAL POWER FOR A LIMITED TIME ONLY. A VOLTAGE IN EXCESS OF 15 VOLTS INDICATES A RUNAWAY GENERATOR. • TURN MASTER OFF • PULL THE MAIN BUS FUSE IMMEDIATELY. • TURN OFF ALL NON-ESSENTIAL ELECTRICAL EQUIPMENT TO CONSERVE BATTERY POWER. THE AVIONICS SWITCH SHOULD BE SWITCHED OFF AND THE EFIS AND GPS WILL CONTINUE TO OPERATE ON THEIR INTERNAL BATTERIES. • LAND AS SOON AS POSSIBLE AS THE BATTERY WILL FURNISH ELECTRICAL POWER FOR A LIMITED TIME ONLY. D

SECTION 4

4. NORMAL PROCEDURES

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4.2 Assembly and Disassembly

4.3 Pre-flight Inspection

4.4 Normal Procedures

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4.4.2 Engine starting
4.4.3 Engine warm up, Engine check
4.4.4 Taxiing
4.4.5 Before take-off
4.4.6 Take-off
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4.4.8 Cruise
4.4.9 Descent
4.4.10 Before landing
4.4.11 Balked landing
4.4.12 Landing
4.4.13 After landing
4.4.14 Engine shutdown
4.4.15 Aircraft parking
4.4.16 Flight in rain

4.1 Introduction

Section 4 provides checklists and recommended procedures for normal operation of the aircraft.

4.2 Assembly and Disassembly

Refer to the BRISTELL LSA Maintenance and inspection procedures manual.

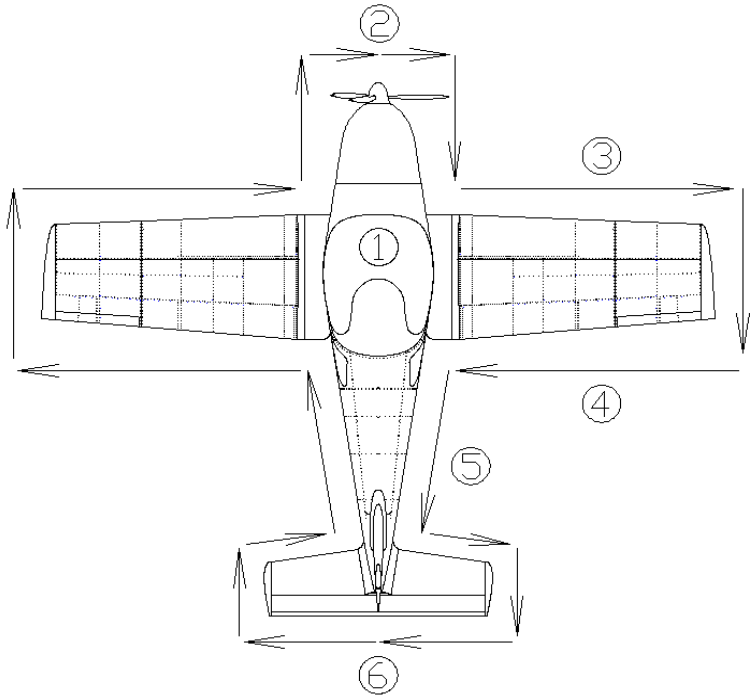
4.3 Pre-flight Inspection-FACE AC INTO THE WIND

Carry out the pre-flight inspection every day prior to the first flight or after airplane assembly. Incomplete or careless inspection can cause an accident. Carry out the inspection following the instructions in the Inspection Check List.

NOTE

The word "condition" in the instructions means a visual inspection of surface for damage deformations, scratching, chafing, corrosion or other damages, which may lead to flight safety degradation.

The manufacturer recommends carrying out the pre-flight inspection as follows:



Inspection Check List

①	– Ignition & Strobes	- OFF
	– Master switch	- ON
	– Fuel gauge ind.	- check fuel quantity
	– Master switch	- OFF
	– Avionics	- check condition
	– Control system	- visual inspection, function, clearance, free movement up to stops - check wing flaps operation
	– Canopy	- condition of attachment, cleanness
	– Check cockpit for loose objects	
②	– Engine cowling condition	
	– Propeller and spinner condition	
	– Engine mount and exhaust manifold condition	
	– Oil and coolant quantity check	
	– Visual inspection of the fuel and electrical system	
	– Fuel system draining	
	– Other actions according to the engine manual	
③	– Wing surface condition	
	– Leading edge condition	
	– Pitot head condition	
④	– Wing tip	- surface condition, attachment
	– Aileron	- surface condition, attachment, clearance, free movement
	– Flap	- surface condition, attachment, clearance
⑤	– Landing gear	- wheel attachment, brakes, condition and pressure of tires
	– Wing lower surface and fuselage bottom surface condition	
⑥	– Vertical tail unit	- condition of surface, attachment, free movement, rudder stops
	– Horizontal tail unit	- condition of surface, attachment, free movement, elevator stops
	– The check on left side of the fuselage and wing is the same as on right side	

WARNING

Physically check the fuel level before each take-off to make sure you have sufficient fuel for the planned flight.

CAUTION

In case of long-term parking it is recommended to turn the engine several times (Ignition OFF!) by turning the propeller. Always handle the blade area by the palm i.e. do not grasp only the blade edge. It will facilitate engine starting.

Normal procedures

CAUTION

The starter should be activated for a maximum of 10 sec., followed by 2 min. pause for engine cooling.

As soon as engine runs, adjust throttle to achieve smooth running at approx. 2500 rpm. Check the oil pressure, which should increase within 10 sec. Increase the engine speed after the oil pressure has reached 29 psi and is steady.

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

Only one magneto should be switched on (off) during ignition magneto check.

STARTING ENGINE-Rotax 912iS Sport

1. THROTTLE – 25%, OPEN ½ INCH
2. PARKING BRAKE - SET
3. PRE-HEATING REQUIRED BELOW 30 DEGREES F
4. FUEL SELECTOR - LEFT TANK
5. ANTI-COLLISION LIGHTS – ON JUST BEFORE START
6. PROPELLER AREA - CLEAR
7. IGNITION Lane A on…wait for light to go out
8. Lane B on….wait for light to go out
9. Stand by FUEL PUMP – on and verify operating-OFF
10. Primary FUEL PUMP-on (44-45psi) Leave ON
11. Stand by pump on until reaching cruise altitude
12. THROTTLE – Open ½ inch
13. STARTER-ENGAGE
14. AFTER START - 2200RPM
15. AFTER 2 MINUTES - 2500-3000RPM

4.4.3 Engine warm up, Engine check

Prior to engine check block the main wheels using chocks. Initially warm up the engine to 2200 rpm for approx. 2 minutes, then continue to 2500 rpm till oil temperature reaches 122°F. The warm up period depends on ambient air temperature.

NOTE

Only one lane should be switched off during ignition check

Set max. power for verification of max. speed with given propeller and engine parameters (temperatures and pressures).

Check acceleration from idling to max. power. If necessary, cool the engine at 3000 rpm before shutdown.

CAUTION

The engine check should be performed with the aircraft heading upwind and not on a loose terrain (the propeller may suck grit which can damage the leading edges of blades).

912iS Sport Engine needs lanes to be turned off one at a time to verify other lane is operational. This may be done prior to start.

4.4.4 Taxiing

Apply power and brakes as needed. Apply brakes to control movement on ground. Taxi carefully when wind velocity exceeds 20 knots. Hold the control stick in neutral position, or in a position that properly deflects a crosswind.

BEFORE TAXI CHECKLIST

1. **SEATBELS - ON AND SECURE**
2. **TAXI – 1800 RPM**

3. ATIS INFORMATION - CHECK
4. GPS - ON AND SET
5. CONTROL SURFACES FOR WIND CORRECTION - CORRECT POSITION
6. BRAKES - CHECK
7. DO NOT RIDE THE BRAKES - USE WHEN NECESSARY

ENGINE RUN-UP

1. PARKING BRAKE - SET
2. OIL TEMPERATURE - ABOVE 120 DEGREES F
3. FUEL SELECTOR VALVE – ON LEFT TANK OR FULLEST TANK
4. ENGINE INSTRUMENTS - CHECK
5. ENGINE - 3500-4000RPM
6. IGNITION A - OFF
7. CHECK INDICATOR LIGHT - ON (NOT MORE THAN 300 RPM DROP)
8. IGNITION A - ON
9. IGNITION B – REPEAT CHECK

BEFORE TAKEOFF

1. FLIGHT CONTROLS - FREE AND CORRECT
2. FLAPS – 10 (FOR SHORTFIELD)

3. FUEL QUANTITY- CHECK (BOTH TANKS)
4. FUEL VALVE POSITION – LEFT IF FULL
5. FUEL PUMP – ON for entire flight

SECONDARY BACK UP FUEL PUMP-ON

Stand by pump off after reaching cruise altitude

6. LANDING LIGHT - OFF
7. TRIM TAB - NEUTRAL POSITION
8. TRANSPONDER - ALT
9. RADIOS - SET
10. AHRS - ALIGNED (ATTITUDE INDICATOR)
11. AUTO-PILOT - OFF
12. CANOPY - CLOSED AND LOCKED
13. SEATBELTS - ON AND SECURE
13. ENGINE PAGE - EFIS-2 DISPLAY
14. RADIOS – ANNOUNCE

TAKEOFF CHECKLIST

1. FULL POWER - 5100RPM
2. ROTATE – 40-45 KNOTS
3. Vx = 65 KTS, Vy = 72 KTS
4. CHT - SHOULD NOT EXCEED 275F
5. OIL - SHOULD NOT EXCEED 266F
6. 600 AGL - FLAPS RETRACTED
7. BACK UP SECOND FUEL PUMP - OFF (DEPARTING PATTERN)

WARNING

The Take-off is prohibited if:

- The engine is running unsteadily

- The engine instruments values are beyond operational limits
- The crosswind velocity exceeds permitted limits (see 5.2.8)
- Autopilot is “ON”

4.4.7 Climb

1. Best rate-of-climb speed - 72 KIAS
2. Throttle- Max. take-off power
   (max. 5800 rpm for 5 minutes)
   - Max. cont.power 5500 rpm
3. Trim- trim the airplane
4. Instruments- oil temperature and pressure,
5. cylinder temperature within limits
6. Do not turn before 300 feet below pattern altitude and speed Vy + 10 knots (82 KIAS)

CAUTION

If the cylinder head temperature or oil temperature approach their limits, reduce the climb angle to increase airspeed to reduce temperatures. If temperatures are still not within limits, reduce power slightly.

CRUISE CHECKLIST

1. ENGINE - 5100 RPM (MAX 5500RPM MINUTES)
2. ROUGH AIR Va = 93KTS
3. ENGINE INSTRUMENTS - CHECK
4. (WITH FUEL PUMP ON) SWITCH FUEL TANKS - EVERY 30 MINUTES
5. FUEL PRESSURE-decreasing fuel pressure is an indication of blockage in the fuel filter.

6.4.8 Cruise

Electric fuel pump -always on / back up pump off
Refer to Section 5, for recommended cruising figures.

DESCENT CHECKLIST

1. REDUCE POWER - 3500-4000RPM
2. DO NOT EXCEED 100 KTS
3. OIL TEMP. - 122F OR GREATER
4. LANDING LIGHT - ON
5. FUEL PUMP – ALWAYS ON

4.4.9 Descent

Optimum glide speed 67 KIAS

CAUTION

It is not advisable to reduce the engine throttle control lever to minimum on final approach and when descending from very high altitude. In such cases the engine becomes under-cooled and a loss of power may occur. Descent at increased idle (approx. 3000 rpm), speed between 65-70 KIAS and check that the engine instruments indicate values within permitted limits.

ARRIVAL TO THE LINE

1. **POWER – 4000 RPM**
2. **SLOW TO 75KTS**
3. **FLAPS - 10**
4. **ABEAM RUNWAY NUMBERS ON DOWNWIND - POWER 3600 RPM**
5. **FLAPS - 20 DEGREES**
6. **BASE LEG - SLOW TO 60KTS 3400 RPM**

4.4.10 Before landing

1. Approach speed - 65 KIAS
2. Throttle - as needed
3. El. pump - ON
4. Wing flaps - extend as needed
5. Trim - as needed
6. Propeller control - ON
7. Autopilot - OFF

4.4.11 Balked Landing

1. Throttle - full power (max.5800 rpm)
2. Wing flaps - extend as needed
3. Trim - adjust as needed
4. Wing flaps - retract at height of 150 ft after reaching 65 KIAS
5. Trim - adjust
6. Repeat circle pattern

4.4.12 Landing

1. Touch-down on main wheels
2. Slow down,gently fly nose wheel to runway
3. Apply brakes as needed

FINAL APPROACH

1. **60 KNOTS +5 -0**
2. **FLAPS - 20 DEGREES FOR NORMAL LANDING**
3. **ENGINE – 3300-3400 RPM**
4. **200 AGL - MUST BE LINED UP WITH CENTERLINE**
5. **AIRPSEED 60-65 KTS**
6. **VASI INDICATION (IF APPLICABLE)**
7. **STABILIZED AT 200 AGL OR GO AROUND**
8. **Once over the runway at 1 foot in slight nose high attitude, reduce throttle and fly on to the runway**
9. **Hold nose slight off the runway until the plane slows down.**
10. **If the nose wheel touches the runway do a full stop landing.**

AFTER LANDING

1. CLEAR OF RUNWAY
2. FLAPS – 10 degrees
3. FUEL PUMP – Remains ON
4. Secondary Fuel Pump-OFF
5. LANDING LIGHT - OFF
6. TRANSPONDER - STANDBY
7. TRIM - NEUTRAL RADIOS - ANNOUNCE

ENGINE SHUTDOWN & SECURING

1. ENGINE - LOW IDLE
2. FUEL PUMP - OFF
3. IF TAXI TO RAMP IS SHORT- IDLE AT 2500RPM FOR 2 MINUTES FOR ENGINE COOLING
4. AVIONICS - OFF
5. EFIS 1&2 - OFF
6. IGNITION A – OFF for 3 seconds
7. IGNITION B – OFF
8. Main fuel pump - OFF
9. MASTER SWITCH - OFF
10. ANTI-COLLISION - ON
11. PARKING BRAKE – SET IF NOT ON LEVEL GROUND

12. TIE DOWNS - SECURE

.

4.4.13 After landing

1. Engine speed - set as required for taxiing
2. Wing flaps - 10 degrees

4.4.14 Engine shutdown

1. Engine speed - idle
2. Instruments - engine instruments within limits
3. Avionics - switch off
4. Ignition - switch off
5. Propeller control - swtch off
6. Circuit breakers - switch off
7. Master switch - switch off
8. Switch box - turn key to switch off
9. El. pump - off
10. Fuel Selector - off

CAUTION

Rapid engine cooling should be avoided during operation. This happens above all during aircraft descent, taxiing, low engine rpm or at engine shutdown immediately after landing.

Under normal conditions the engine temperatures stabilize during descent, taxiing and at values suitable to stop engine by switching the ignition off. If necessary, cool the engine at 2500 - 2750 rpm to stabilize the temperatures prior to engine shut down.

4.4.15 Aircraft parking and tie-down

1. Face Bristell into the wind to protect the canopy
2. Ignition check - OFF
3. Master switch check - OFF
4. Fuel selector - OFF
5. Parking brake - use it as necessary
6. Canopy - close, lock as necessary
7. Secure the airplane

NOTE

It is recommended to use parking brake (if installed) for short-time parking only, between flights during a flight day. After ending the flight day or at low temperatures of ambient air, do not use parking brake, but use the wheel chocks instead.

NOTE

Use anchor eyes on the wings and fuselage rear section to fix the airplane. Move control stick forward and fix it together with the rudder pedals. Make sure that the cockpit canopy is properly closed and locked. The anchoring before leaving the airplane is important if the airplane is not equipped with a parking brake.

4.4.16 Flight in rain

When flying in the rain, no additional steps are required. Aircraft qualities and performance are not substantially changed. However VMC must be maintained.

BRISTELL LSA

BRM aero

Aircraft Operating Instructions

SECTION 5

5. PERFORMANCE

5.1 Introduction

5.2 Performance

5.2.1 Airspeed indicator system calibration
5.2.2 Stall speeds
5.2.3 Take-off performance
5.2.4 Landing distances
5.2.5 Climb performance
5.2.6 Cruise
5.2.7 Endurance and Range
5.2.8 Demonstrated crosswind performance
5.2.9 Optimum glide speed
5.2.10 Ceiling

5.1 Introduction

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

The presented data has been computed from actual flight tests with the aircraft and engine in good conditions and using average piloting techniques.

If not stated otherwise, the performance stated in this section is valid for maximum take-off weight and under ISA conditions.

The performance shown in this section is valid for aircraft fitted with given engine ROTAX 912 ULS 98.6 hp and FITI ECO COMPETITION on ground adjustable three blade propeller setted for static RPM on the ground 5250rpm.

5.2 Performance

5.2.1 Airspeed indicator system calibration

KIAS	*KCAS*
27	*27*
32	*32*
37	*37*
43	*43*
48	*48*
54	*54*
59	*59*
64	*64*
70	*71*
75	*75*
80	*80*
86	*85*
91	*90*
97	*96*
102	*100*
107	*104*
113	*110*
118	*114*
123	*119*
129	*124*
134	*129*
140	*134*
145	*138*

5.2.2 Stall speeds

Conditions: Max.take-off weight Engine idle run	Wing flaps pos.	KIAS	KCAS	Altitude loss at recovery [ft]
Wing level stall	0°	39	39	50
	20°	37	37	40
	30°	32	32	26
Co-ordinated turn 30° bank	0°	42	42	60
	20°	39	39	48
	30°	33	33	36

DEPARTRURE STALLS

ONLY TO BE PERFORMED WITH CFI ON BOARD

4000 FEET AGL

TRIM NUETRAL

CLEARING TURNS AND CLOSE THROTTLE

FLAPS AT TAKE OFF SETTING OF 10 DEGREES

AT LIFT OFF SPEED OF 45 KIAS add THROTTLE to 4000 RPM (65%)

Center ball

GRADUAL BACK PRESSURE UNTIL FIRST SIGN OF STALL THEN LOWER NOSE AND ADD FULL POWER.

ARRIVAL STALLS

3000 FEET AGL

TRIM NUETRAL

CLEARING TURNS AND CLOSE THROTTLE

FLAPS AT landing SETTING OF 20 DEGREES

Center ball

GRADUAL BACK PRESSURE UNTIL FIRST SIGN OF STALL THEN LOWER NOSE AND ADD FULL POWER.

5.2.2PW Performance wing aircraft Stall speeds

Conditions: Max.take-off weight Engine idle run	Wing flaps pos.	KIAS	KCAS	Altitude loss at recovery [ft]
Wing level stall	0°	44	44	50
	20°	42	42	40
	30°	39	39	26
Co-ordinated turn 30° bank	0°	48	48	60
	20°	44	44	48
	30°	43	43	36

5.2.3 Take-off performance

RUNWAY SURFACE	Take-off run distance *[m]*	Take-off distance over 50 ft obstacle *[m]*
PAVED	210	330
GRASS	235	325

5.2.3 Take-off performance with performance wing

RUNWAY SURFACE	Take-off run distance *[m]*	Take-off distance over 50 ft obstacle *[m]*
PAVED	260	390
GRASS	285	425

5.2.4 Landing distances

RUNWAY SURFACE	Landing distance over 50 ft obstacle *[m]*	Landing run distance (braked) *[m]*
PAVED	220	150
GRASS	180	125

5.2.4PW Landing distances for performance wing aircraft are increased by fifty feet.

5.2.5 Climb performance

Conditions: ***Max.Continuous Power – 5500 rpm Weight – 1320 lbs***	**Best rate-of-climb speed**	
	KIAS	***[fpm]***
0 ft ISA	*67*	*700*
3000 ft ISA	*64*	*660*
6000 ft ISA	*62*	*580*
9000 ft ISA	*59*	*415*

5.2.6 Cruise

Altitude [ft ISA]	Engine speed [rpm]	Airspeed	
		KIAS	KCAS
0	4500	85	84
	4800	89	88
	5000	92	91
	5300	98	97
	5500	118	1117
	5800	NA	NA
3000	4500	82	82
	4800	86	85
	5000	89	88
	5300	93	92
	5500	98	97
	5800	99	98
6000	4500	79	79
	4800	83	83
	5000	85	85
	5300	91	90
	5500	94	93
	5800	98	97
9000	4500	77	77
	4800	80	80
	5000	82	82
	5300	88	87
	5500	90	89

5.26PW Performance wing aircraft will cruise 6 knots faster than the longer wing aircraft.

0.2.1.1

Endurance and Range

The table below shows fuel consumption, endurance and range

Altitude	[ft ISA]	3000 ft				
Fuel quantity	[U.S.gall]]	31				
Engine speed	[rpm]	**4500**	**4800**	**5000**	**5300**	**5500**
Fuel consumption	[U.S.gallons/hr]	4,3	5,02	5,49	5,94	6,74
Airspeed	KIAS	82	86	89	93	98
	KCAS	82	85	88	92	97
Endurance	[hh:mm]	7:40	6:23	5:54	5:29	4:54
Range	[N.miles]	628	542	519	504	475
	[S.miles]	726	627	600	583	549

Demonstrated crosswind performance

Max. permitted head wind velocity
for take-off and landing.....40 KIAS

Max. permitted cross wind velocity
for take-off and landing.....15 KIAS

Performance wing demonstrated crosswind component is 16 KIAS.

5.2.9 Optimum glide speed

Optimum glide speed.....67 *KIAS WITH 10 DEGREES OF FALP*

5.2.10 Ceiling

Service ceiling *14.000ft*

BRISTELL LSA

BRM aero

Aircraft Operating Instructions

SECTION 6

6. WEIGHT AND BALANCE

6.1 Introduction

6.2 Weight and Balance Records

6.3 Permitted payload range

Introduction

This section contains the payload range within which the BRISTELL LSA may be safely operated.

Procedures for weighing the aircraft and the calculation method for establishing the permitted payload range are contained in last revision of FAA Aviation Advisory Circular AC.43.13 – 1B

Weight and Balance Record

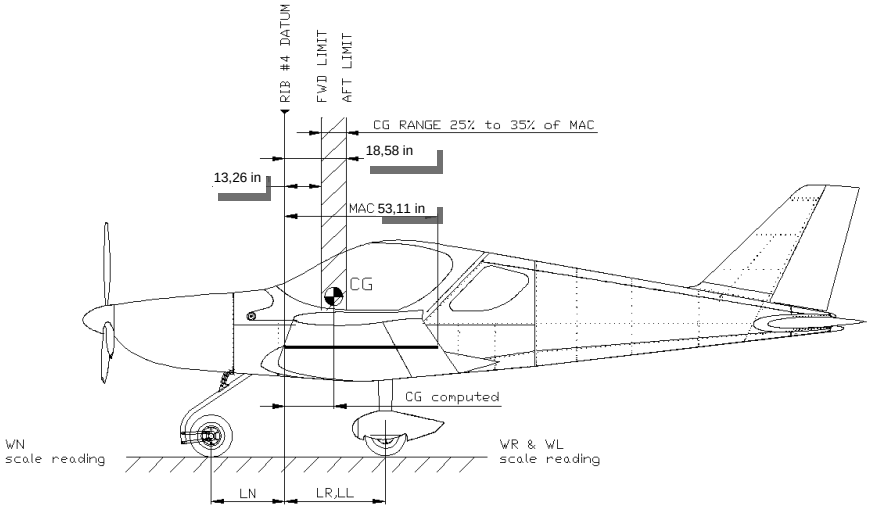
Equipment list:

- Garmin G3X Touch
- Radio Garmin GTR 20
- Transponder GTX23 ES Mode S
- Intercom is built into the G3X
- Garmin 796 GPS
- FITI ECO COMPETITION propeller
- Aileron and elevator trim tabs
- Adjustable rudder pedals
- Dual brakes
- ELT KANAD Integra

Weight and Balance report lists:

1. Empty CG check
2. Blank form

WEIGHT & BALANCE REPORT
Empty Weight C.G. Check



	ITEM	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
AIRCRAFT EMPTY CG	RIGHT MAIN WHEEL	W_R= 301	L_R= 28,3	8150,4
	LEFT MAIN WHEEL	W_L= 301	L_L= 28,3	8192,8
	NOSE WHEEL	W_N= 175	L_N = - 29,5 (negative arm)	-5165,4
	COMPUTED CG EMPTY	Empty Weight: **W_E= 777 lbs**	**CG= 14,9 in** 28,0 % MAC	Aircraft moment: 11200,2

	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
PILOT		23,6	
PASSENGER		23,6	
BAGGAGE COMPARTMENT		78,7	
FUEL TANKS		7,87	
TOTAL	W=		M=
Take-Off Weight:			CG= in % MAC

Max.Take-off Weight: 1320 lbs

Serial No: 032/2013
Date: 27.12.2012
By: Milan Bristela

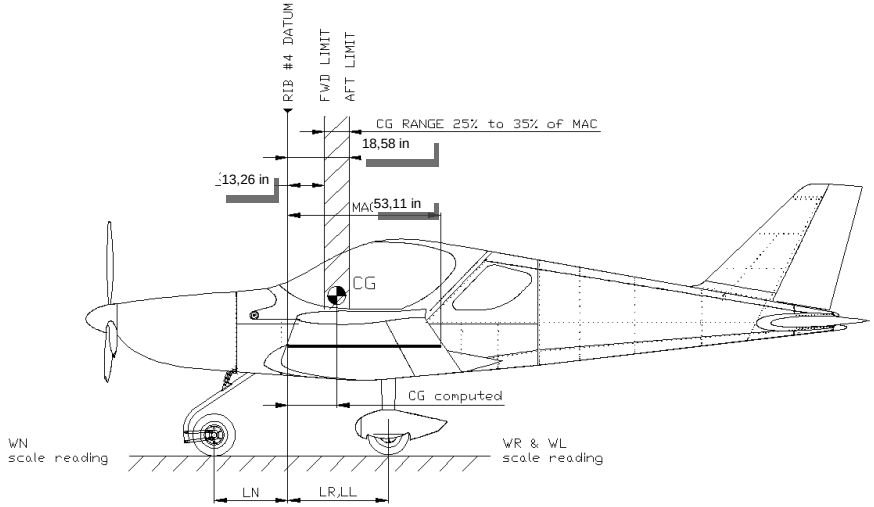
CG Range: 25 – 35 %

Forward limit: 13,3 in

Rearward limit: 18,6 in

$$\text{Center of Gravity (CG)} = \frac{\text{Total Moment}}{\text{Total Weight}}\ [m] \times \frac{100}{MAC}\ [\%]$$

WEIGHT & BALANCE REPORT
Forward C.G. Check



	ITEM	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
C&G OF EMPTY WEIGHT AIRCRAFT	RIGHT MAIN WHEEL	W_R= 301	L_R= 28,3	8150,4
	LEFT MAIN WHEEL	W_L= 301	L_L= 28,3	8192,8
	FRONT WHEEL	W_N= 175	L_N = - 29,5 (negative arm)	-5165,4
	CALCULATED EMPTY C&G	Empty weight: W_E= 777 LBS	CG= 14,9 in 28,0 % SAT	Aircraft moment: 11200,2

	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
PILOT	121,3	23,6	2864,8
PASENGER		23,6	
LUGGAGE -FUSELAGE		78,7	
WING LOCKERS		24,8	
FUEL TANKS	211,7	7,87	1666,8
TOTAL	**W= 1085,6**		**M= 15731,7**
TAKE OFF WEIGHT:	**1085,6**		**CG= 27,3** v **%** SAT

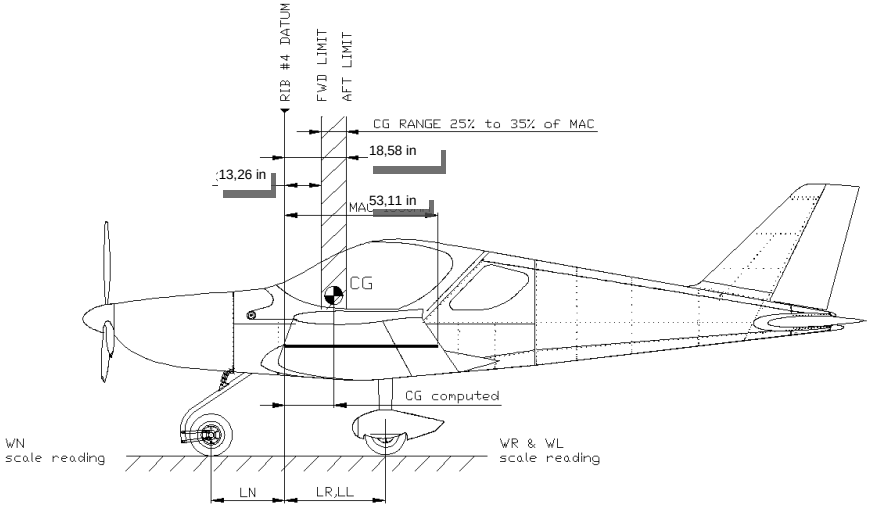
Max. take off weight: 1320 lbs

C&G RANGE: 25– 35 %

Serial No.: 122/2015
Date: 27.12.2015
By: Milan Bristela

$$\text{Center of gravity(C\&G)} = \frac{\text{Total moment}}{\text{Total weight}} [\text{ in }] \times \frac{100}{\text{SAT}} [\text{ \% }]$$

WEIGHT & BALANCE REPORT
Rearward C.G. Check



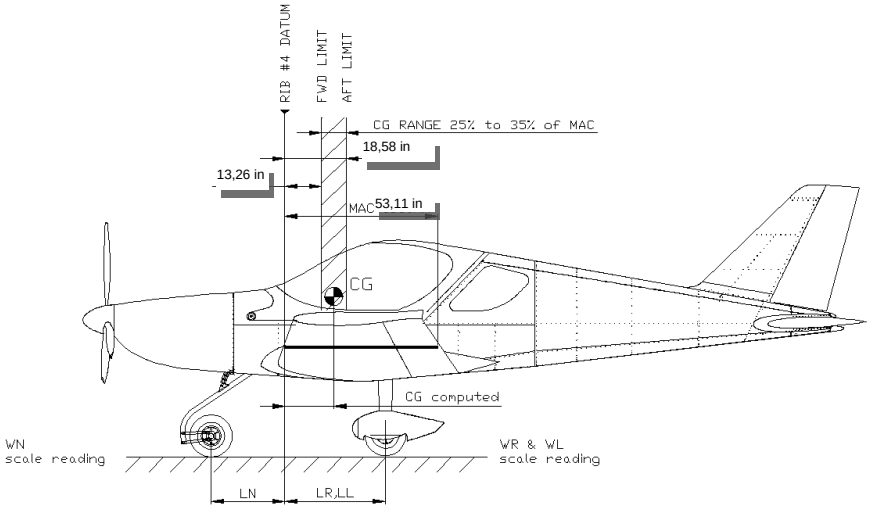
	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
PILOT	209,5	23,6	4948,2
PASENGER	209,5	23,6	4948,2
LUGGAGE - FUSELAGE	8,8	78,7	694,5
WING LOCKERS	66,2	24,8	1640,7
FUEL TANKS	33,1	7,87	260,4
TOTAL	**W= 1279,6**		**M= 23692,2**
Take off weight:	**1279,6 lbs**		**CG= 34,8 % SAT**

Max. take off weight: 1320 lbs

C&G range: 25 - 35 %

$$\text{Center of gravity (CG)} = \frac{\text{Total moment}}{\text{Total weight}}\ [\text{in}] \times \frac{100}{\text{SAT}}\ [\%]$$

WEIGHT & BALANCE REPORT
Empty form



	ITEM	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
C&G OF EMPTY AIRCRAFT	RIGHT MAIN WHEEL	W_R=	L_R=	
	LEFT MAIN WHEEL	W_L=	L_L=	
	FRONT WHEEL	W_N=	L_N = - (negative arm)	-
	CALCULATED EMPTY C&G	Empty weight: W_E=	CG= v % SAT	Aircraft moment:

	WEIGHT (lbs)	ARM (in)	MOMENT (WEIGHTxARM)
PILOT		23,6	
PASSENGER		23,6	
LUGGAGE - FUSELAGE		78,7	
WING LOCKERS		24,8	
FUEL TANKS		7,87	
TOTAL	W=		M=
Take off weight:	lbs		CG= v % SAT

Max. take off weight: 1320 lbs

Rozpětí těžiště: 25 – 35 %

Registr. Nr:
Serial No.: 032/2013
Date:
By:

Max. useful load :

$W_{U.}$ = 1320 lbs – W_{EMPTY}

$W_{U.}$ = 1320 lbs – =_____ lbs

Do not exceed maximum take-off weight 1320 lbs !

$$\text{Center of gravity (CG)} = \frac{\text{Total moment}}{\text{Total weight}} \text{ [in]} \times \frac{100}{SA} \text{ [\%]}$$

Date of issue: 07/2011 *Revision: 1.0*

6.3 Permitted payload range

Permitted payload range of BRISTELL SN: 032/2013								
FUEL	GAUGE			60 min	1/4	1/2	3/4	1
	VOLUME		USgal	**3,17**	**7,91**	**15,83**	**23,74**	**31,66**
			(litres)	*12*	*30*	*60*	*90*	*120*
	WEIGHT		lbs	18,9	48,4	96,8	145,2	193,6
			(kg)	*8,6*	*22*	*44*	*66*	*88*
				Permitted crew weight				
BAGGAGE	**NO BAGGAGE**		lbs	**557**	**528**	**480**	**431**	**383**
	0 lb	*(0 kg)*	*(kg)*	*253*	*239*	*217*	*196*	*174*
	1/2 REAR		lbs	**541**	**511**	**463**	**415**	**366**
	16,5 lbs	*(7,5 kg)*	*(kg)*	*245*	*232*	*210*	*188*	*166*
	REAR		lbs	**506**	**491**	**446**	**401**	**356**
	33 lbs	*(15 kg)*	*(kg)*	*230*	*223*	*202*	*182*	*162*
	1/2 WING LOCK		lbs	**502**	**487**	**442**	**397**	**352**
	44 lbs	*(20 kg)*	*(kg)*	*228*	*221*	*201*	*180*	*160*
	1/2 REAR+1/2 WING		lbs	**482**	**467**	**422**	**377**	**332**
	60,5 lbs	*(27,5 kg)*	*(kg)*	*219*	*212*	*192*	*171*	*151*
	REAR+1/2 WING		lbs	**462**	**447**	**402**	**357**	**312**
	55 lbs	*(35 kg)*	*(kg)*	*210*	*203*	*182*	*162*	*142*
	WING LOCK		lbs	**458**	**443**	**398**	**353**	**308**
	88 lbs	*(40 kg)*	*(kg)*	*208*	*201*	*181*	*160*	*140*
	1/2 REAR+WING		lbs	**438**	**423**	**378**	**333**	**288**
	104,5 lbs	*(49 kg)*	*(kg)*	*199*	*192*	*172*	*151*	*131*
	REAR+WING		lbs	**418**	**402**	**358**	**313**	**268**

	121 lbs	*(58 kg)*	*(kg)*	*190*	*182*	*162*	*142*	*122*
***Crew weight**=Max.Take-offweight - Empty weight - Baggage weight - Fuel weight*								

* This weight values are determined with regard on rear CG range.

SECTION 7

7. AIRPLANE AND SYSTEMS DESCRIPTION

7.1 Introduction

7.2 Airframe

7.3 Control System

7.4 Landing Gear

7.5 Seats and Safety harness

7.6 Baggage Compartment

7.7 Canopy

7.8 Powerplant

7.9.1 Throttle and Choke

7.9.2 Carburetor pre-heating

7.9.3 Heating

7.9 Fuel system

7.10 Electrical system

7.11.1 Battery

7.11.2 Master switch

7.11.3 Ignition

7.11.4 Starter button

7.11 Pitot and Static Pressure System

7.12 Miscellaneous Equipment

7.13 Instruments and Avionics

7.14 Cockpit

7.4.1 Photo of the cockpit

7.4.2 Description of equipment and controls in the cockpit

7.1 Introduction

This section provides description and operation of the aircraft and its systems.

7.2 Airframe

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

The wing has a high lift airfoil equipped by fowler flaps controlled by the electric servo operated by the pilot.

7.3 Control system

The plane is equipped with a dual stick control and classic rudder pedals, with pedal hydraulic brakes for easy ground control of the castering nose wheel.

The elevator and aileron trim control, as well as wing flaps are electrically operated from the rocker switches located on the instrument panel or on the control stick.

7.4 Landing gear

Tricycle landing gear with the castering nose wheel. Main landing gear uses two fiberglass spring elements.

7.5 Seats and safety harness

Side-by-side seating. Seat cushions are removable to make easier cleaning and drying. Four point safety belts provided to each seat.. Optional, is additional seat upholstery to raise the small pilot or move him forward.

NOTE

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

7.6 Baggage compartment

The rear baggage compartment is located behind the seats. It may accommodate up to 33 lbs. This space is divide on two sections – baggage compartment A and B. Is not recommended give too heavy things into baggage compartment B.

The baggage may also be loaded into the baggage compartment inside each wing up to 44 lbs, in each wing locker.

Make sure that baggage does not exceed maximum allowable weight, and that the aircraft CG is within limits with loaded baggage.

All baggage must be properly secured.

7.7 Canopy

Access to the cabin is from both sides. Make sure that the canopy is latched and mechanism is securely locked into position on both sides before operating the aircraft.

7.8 Powerplant

Engine:

ROTAX 912 S engine 98.6 hp is installed on BRISTELL LSA. Rotax 912 ULS is 4-stroke, 4 cylinder, horizontally opposed, spark ignition

engine with one central camshaft-push-rod-OHV. Liquid cooled cylinder heads, ram air cooled cylinders.

Dry sump forced lubrication. Dual contactless capacitor discharge ignition. The engine is fitted with an electric starter, AC generator and mechanical fuel pump. Prop drive via reduction gear with integrated shock absorber.

Propeller:

- FITI Competition 1580/3R on ground adjustable.

NOTE

For technical data refer to documentation supplied by the propeller manufacturer

7.8.1 Throttle

Engine power is controlled by means of the THROTTLE lever. THROTTLE lever IS positioned in the middle channel between the seats side by side. Both levers are mechanically connected (by cable) to the flap on the ENGINE. Springs are added to the throttle push rods to ensure that the engine will go to full power if the linkages fail.

7.8.2 pre-heating

Advised below 30 degress f.

7.8.3 Heating

Heating consists of a heat exchanger on the exhaust manifold and control mechanism located on the right hand side of instrument panel.

CAUTION

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

7.9 Fuel system

Wing tanks volume 2 x 16 U.S. gallons
Each tank is equipped with a vent outlet and screen filter.
Drain valve located in the lowest point of the each tank.
Main fuel selector valve is on the central console in the cockpit.
The electric fuel pump is located on firewall.

CAUTION

Do not overfill the tanks to avoid fuel overflow through venting tubes. ADD ONE HALF 100LL TO WINTER AUTO GAS DURING MARCH AND APRIL TO PREVENT VAPOR LOCK

7.10 Electrical system

7.10.1 Battery

The battery is mounted on the forward side of the firewall.

7.10.2 Master switch

Master switch connects the electrical system to the 12 Volt battery and charger/coils, controlled by the regulator. See Engine Manual for electrical system details.

NOTE

Ignition system is independent on the power source and will operate even with Master switch and/or breaker off.

7.10.3 Ignition Switch

Ignition must be on BOTH to operate the engine: For safety, remove key when engine is not running.

NOTE

All switches and or engine controls are "up" or "push forward" for operation, except the choke, cabin heat and carburetor pre-heat,

which is "Pull" for "on". Optional equipment, switches and/or fuses are subject to change or installed as requested. See Aircraft Equipment List and Photo and Description of equipment and controls in the cockpit.

7.11 Pitot and static pressure system

Heated Pitot Tube is located below the left wing. Pressure distribution to the instruments is through flexible plastic hoses. Static port is located in fuselage under the luggage compartment.

Keep the pitot head clean to ensure proper function of the system.

7.12 Miscellaneous equipment

- Adjustable pedals
- Heating
- Wheel pants
- Airplane cover
- Tow bar

7.13 Instruments and Avionics

- Dual Garmin G3X Touch ten inch screens
- Garmin GT20R remote mounted COM + antenna AV 10
- Compass
- Garmin GTX 23 ES MODE S transponder
- ELT KANAD Integra
- 12 V Socket

NOTE

For operating instructions refer to the documentation supplied with the instruments.

7.14 Cockpit

SECTION 8

8. AIRPLANE HANDLING, SERVICING AND MAINTENANCE

8.1 Introduction

8.2 Aircraft Inspection Periods

8.3 Aircraft Alterations or Repairs

8.4 Ground Handling

8.4.1 Towing

8.4.2 Parking

8.4.3 Mooring

8.4.4 Jacking

8.4.5 Road transport

8.5 Cleaning and Care

8.1 Introduction

This section contains factory-recommended procedures for proper ground handling and servicing of the airplane. It also identifies certain inspection and maintenance requirements, which must be followed if the airplane is to retain that new-plane performance and dependability.

8.2 Aircraft inspection periods

Periods of overall checks and contingent maintenance depends on the condition of the operation and on overall condition of the airplane.

Inspections and revisions should be carried out in the following periods, at least:

a) after the first 25 flight hours
b) after every 50 flight hours
c) after every 100 flight hours or at least annual inspection

Refer to the Engine Operator's Manual for engine maintenance.

Maintain the prop according to its manual.

All repairs and maintenance should be made in accordance with AC 43.13-1B.

8.3 Aircraft alterations or repairs

It is recommended to contact the airplane manufacturer prior to any alternations to the aircraft to ensure that the airworthiness of the aircraft is not violated. Always use only the original spare parts produced by the airplane (engine, prop) manufacturer.

If the aircraft weight is affected by that alternation, a new weighing is necessary, then record the new empty weight into the Weight and Balance record / Permitted payload range in SECTION 6 and up-date the placard showing weights in the cockpit.

8.4 Ground handling

8.4.1 Towing

To handle the airplane on the ground, use the Tow Bar, or the fuselage rear pushed down in the place of a bulkhead.

CAUTION

Avoid excessive pressure at the airplane airframe-especially at control surfaces. Keep all safety precautions, especially in the propeller area.

8.4.2 Parking

It is advisable to park the airplane inside a hangar or alternatively inside any other suitable space (garage) with stable temperature, good ventilation, low humidity and dust-free environment.

It is necessary to moor the airplane when it is parked outside a hangar. Also when parking for a long time, cover the cockpit canopy, possibly the whole airplane by means of a suitable tarpaulin.

8.4.3 Mooring

The airplane should be moored when parked outside a hangar after the flight day. The mooring is necessary to protect the airplane against possible damage caused by wind and gusts.

For this reason the aircraft is equipped with mooring eyes located on the lower surfaces of the wings.

Mooring procedure:

1. Check: Fuel Selector shut off, Circuit breakers and Master switch switched off, Switch box switched off.
2. Fix the hand control using e.g. safety harness
3. Close air vent
4. Close and lock canopy
5. Moor the aircraft to the ground by means of a mooring rope passed through the mooring eyes located on the lower surfaces of the wings and below rear fuselage

NOTE

In the case of long term parking, especially during winter, it is recommended to cover the cockpit canopy or possibly the whole aircraft by means of a suitable tarpaulin attached to the airframe. ASSURE THAT 100LL IS IN THE TANKS FOR STORAGE IN EXCESS OF TWO MONTHS.

8.4.4 Jacking

Since the empty weight of this aircraft is relatively low, two people can lift the aircraft easily.

First of all prepare two suitable supports to support the aircraft.

It is possible to lift the aircraft by handling the following parts:

- By pushing the fuselage rear section down in the place of a bulkhead the fuselage front section may be raised and then supported under the firewall.
- By holding the fuselage rear section under a bulkhead the fuselage rear may be raised and then supported under that bulkhead.
- To lift up a wing, push from underneath that wing only at the main spar area. Do not lift up a wing by handling the wing tip.

10.4.5 Road transport

The aircraft may be transported after loading on a suitable car trailer. It is necessary to dismantle the wings before road transport. The aircraft and dismantled wings should be attached securely to protect these parts against possible damage.

8.5 Cleaning and care

Use efficient cleaning detergents to clean the aircraft surface. Oil spots on the aircraft surface (except the canopy!) may be cleaned with gasoline.

The canopy may only be cleaned by washing it with a sufficient quantity of lukewarm water and an adequate quantity of detergents. Use either a soft, clean cloth sponge or deerskin. Then use suitable polishers to clean the canopy.

CAUTION

Never clean the canopy under “dry“conditions and never use gas or chemical solvents!

Upholstery and covers may be removed from the cockpit, brushed and eventually washed in lukewarm water with an adequate quantity of detergents. Dry the upholstery thoroughly before insertion into the cockpit.

CAUTION

In the case of long term parking, cover the canopy to protect the cockpit interior from direct sunshine.

SECTION 9

9. REQUIRED PLACARDS AND MARKINGS

9.1 Limitation placards
9.2 Miscellaneous placards and markings

9.1 Limitation placards

The airplane must be placarded with:

- All fuses
- Ignition switches
- Starter
- Trim: Nose UP and Tail DOWN
- Flaps: 0°, 10°, 20°, 30°
- Maximum rear baggage weight 33 lbs
- Maximum weight in each wing locker 44 lbs, if installed
- Instruments
- Canopy: Open - Close
- Fuel capacity: 32 U.S. gallons / min. 93 Octane - at filler neck
- Fireproof Identification plate to be affixed to the aircraft in a prominent position near the main point of entrance to the aircraft (plate must show required information)

9.2 Miscellaneous placards and markings

PASSENGER WARNING!

THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.

NO INTENTIONAL SPINS!

AEROBATICS PROHIBITED!

MAX. BAGGAGE WEIGHT: 33 lbs

MAX.WEIGHT IN WING LOCKER: 44 lbs

Unusable fuel quantity 0,13 U.S. gallons

AIRSPEED IAS	
Never exceed	*145 kts*
Manoeuvering	*93 kts*
Max. flap extended	*75 kts*
Stall w/o flaps	*39 kts*

ENGINE RPM	
Max. take-off(max. 5 min.)	5800 rpm
Max. continous	5500 rpm
Iddle	1400 rpm

WARNING

DO NOT EXCEED MAXIMUM TAKE-OFF WEIGHT: 1320 LB

WARNING

IFR FLIGHTS AND INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED!

PASSENGER NOTICE
THIS AIRCRAFT CONFORMS TO ASTM CONSENSUS STANDARDS OF AIRWORTHINESS DEVELOPED AND MAINTAINED BY THE AVIATION COMMUNITY UNDER ASTM TECHNICAL COMMITTEE F37.

NO STEP

NO PUSH

FUEL CAPACITY:
16 US gallons / 93 OCTANE

OILSAE 5W-40
or Equivalent

FUEL CAPACITY:
16 US gallons / 93 OCTANE

PILOT HEADSET

COPILOT HEADSET

FUEL DRAIN ↘

CANOPY OPENED

CANOPY CLOSED

↙ PEDAL SETTING

PEDAL SETTING ↘

↑ OPEN CANOPY CLOSE ↓

LOW VOLTAGE

FUEL PUMP

ALARM EMS

MUSIC IN

THROTTLE

12V

BAGGAGE COMPARTMENT - A

BAGGAGE COMPARTMENT - B

If BRS rescue system is installed:

- located on the both sides of fuselage between canopy and rear window

- located in place rocket egress

CAUTION

The owner (operator) of this airplane is responsible for the readability of placards during the aircraft service life.

SECTION 10

10. SUPPLEMENTS

10.1 Introduction

10.2 List of Inserted Supplements

10.3 Inserted Supplemets

10.1 Introduction

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

10.2 List of inserted supplements

Date	Suppl. No.	Title of inserted supplement
08/2011	01/2011	Aircraft Flight Training Supplement
08/2011	02/2011	Description of the aircraft S/N 032/2013

Date	Suppl. No.	Title of inserted supplement

10.3 Inserted Supplemets:

SUPPLEMENT No. 01/2012

Aircraft Flight Training Supplement

The BRISTELL LSA flying characteristics and behavior are similar to single engine aircraft.
Following training procedure is applicable if the pilot is holder of UL, PPL or LSA Pilot License. The training flight hours are recommended minimum and depends on the Flight Instructor if student pilot is ready to continue on in next training step. Training can be performed by Flight Instructor or by the experienced pilot who has minimum 20 hours on the BRISTELL LSA.

Type Rating Training Procedure:

Ground Training - *before practical Flight Training the pilot has to get familiar with following procedures and documentation*

- *Aircraft Operating Instructions (AOI)*
- *Aircraft Maintenance and Inspection Procedures*
- *Aircraft preflight inspection procedure*
- *Control Checklists*
- *Radio, avionics, aircraft and engine controls procedures*
- *Differences in control and aircraft handling*
- *Emergency procedures*

Flight training program - *recommended*

Flight Training Procedure		*Dual*		*Solo*	
		Flights	*hr/min*	*Flights*	*hr/min*
1.	*Check flight*	1	30’		
2.	*Pattern training flights up to 1000 ft AGL*	4	20’	3	15’
3.	*Pattern training flights up to 500 ft AGL*	4	20’	3	15’
4.	*Stall speed, 45°turns, side slips*	1	30’	1	20’
5.	*Emergency landing training*	4	20’	3	10’
Total		***14***	***2 hr***	***10***	***1 hr***

Flight Training Procedure - *description*

1. ***Check flight –*** *Student Pilot will fly the airplane in local flight, instructor is giving advice as necessary.*

2. ***Pattern training flights up to 1000 feet AGL -*** *high pattern procedures, instructor is giving advice as necessary.*

3. ***Pattern training flights up to 500 feet AGL -*** *high pattern procedures, instructor is giving advice as necessary.*

4. ***Stall speed, 45°turns, sideslips –*** *stall speed flaps retracted and extended (landing configuration), sideslips at landing configuration.*

5. ***Emergency landing training –*** *emergency procedures and landing to 1/3 of runway.*

Note:

During solo flights instructor is observing the student pilot on pattern and can advise by radio as necessary.

Endorsement:

Instructor will endorse the Type Rating to the Pilots Logbook, if required.

SUPPLEMENT No. 02/2012

AIRCRAFT DESCRIPTION

Registration : N122ZB

Serial number: 122/2015

This Supplement must be contained in the Aircraft Operating Instructions during operation of the airplane.

Information contained in this Supplement add or replace information from the basic Aircraft Operating Instructions in the further mentioned parts only. Limitations, procedures and information not mentioned in this Supplement are contained in the basic Aircraft Operating Instructions.

0. TECHNICAL INFORMATION

This Supplement adds information necessary for airplane operation with equipment installed in the airplane BRISTELL LSA of S/N 032/2013.

0.1 Record of revisions

No changes.

1. GENERAL INFORMATION

No changes.

2. OPERATING LIMITATION

2.4.3 Oil

NOTE: **Type of oil used by aircrafts manufacturer :**

Aeroshell OIL SPORT PLUS 4

2.4.4 Coolant

NOTE: **Type of coolantl used by aircrafts manufacturer :**

DEX-COOL 50/50
Mixture ratio coolant / water 50/50 [%]

Max. CHT temperature : 275°F

3. EMERGENCY PROCEDURES

No changes.

4. NORMAL PROCEDURES

No changes.

5. PERFORMANCE

No changes.

6. WEIGHT AND BALANCE

No changes.

7. AIRPLANE AND SYSTEMS DESCRIPTION

No changes.

8. AIRPLANE HANDLING, SERVICING AND MAINTENANCE

No changes.