Aircraft Operating Instructions

BRISTELL S-LSA

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Aircraft Operating Instructions

BRISTELL S-LSA

Registration: **CC-AUV**

Serial Number: **317/2018**

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

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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.
-	ALL	ALL Initial issue	01/2016	Petr Javorský	01/2016	01/2016	P.Javorský
1	0,2,3, 5,7,8,9	i,ii, 0-1 to 0-6, 2-10, 3-1,3-9,4-9,5-3 to 5-10, 7-6,7-9,7-10,8-2,8-3, 8-4,9-2 to 9-6.	09/2017	Petr Javorský	09/2017	09/2017	P.Javorský

0.2 List of effective pages

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	Title page	01/2016	3	3-1	09/2017
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	0-1	09/2017		3-4	01/2016
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0.3 Table of contents

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SECTION 1

1 General Information

1.1 Introduction

1.1.1 **Certification basis**

1.2 Warnings, cautions and notes

1.3 Descriptive data

1.3.1 **Aircraft description**

1.3.2 **Power plant**

1.3.3 **Aircraft dimensions**

1.3.4 **Aircraft layout**

1.4 Definitions and abbreviations

1.1 Introduction

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

1.1.1 Certification basis

BRISTELL S-LSA is a special light sport category aircraft made by BRM Aero, s.r.o., Uherske Hradiste, Czech Republic, based on the following airworthiness standards:

- ASTM F2245 Consensus standard for Light Sport Aircraft category plus other applicable ASTM Consensus Standards.
- Czech LAA UL-2
- EASA CS-VLA

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.

1.3 Descriptive data

1.3.1 Aircraft description

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

The standard power plant is composed of ROTAX 912 ULS (98.6 hp), 4-cylinder, 4-stroke engine and FITI three blade ground adjustable propeller.
BRISTELL S-LSA, S/N 317/2018 is fitted with:

- Rotax 912 ULS 2
- Fiti Eco Competition 3LR 158, on-ground adjustable, 3-bladed propeller with composite blades

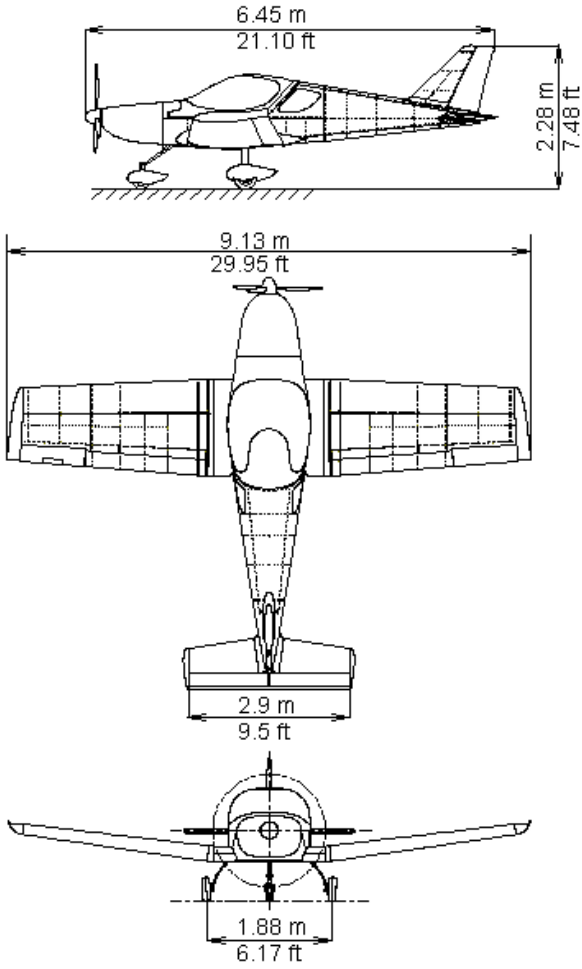
1.3.3 Aircraft dimensions

Wing span	9.13	m	29.95	ft
Length	6.45	m	21.10	ft
Height	2.28	m	7.48	ft
Wing area	11.5	m^2	123.79	sq ft
Wing loading	52.17	kg/m^2	10.66	lb/sq ft
Cockpit width	1.3	m	51.17	in

Deflections:

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



1.4 Definitions and abbreviations

°F	temperature in degree of Fahrenheit
AOI	Aircraft Operating Instructions
ASI	Airspeed Indicator
ATC	Air Traffic Control
BEACON	anti-collision beacon
CAS	Calibrated Airspeed
CG	Center of Gravity
COMM	communication transmitter
EFIS	Electronic Flight Instrument System
ELT	Emergency Locator Transmitter
EMS	Engine Monitoring System
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
LAA	Light Aircraft Association of the Czech Republic
lb	pound
MAC	Mean Aerodynamic Chord
max.	maximum
min.	minimum or minute
mph	statute miles per hour

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

SECTION 2

2 Operating Limitation

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		IAS (km/h)	KIAS	Remarks
V_{NE}	Never exceed speed	***290***	***157***	Do not exceed this speed in any operation.
V_{NO}	Max. structural cruising speed	***240***	***129***	Do not exceed this speed except in smooth air, and then only with caution.
V_{A}	Maneuvering speed	***180***	***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	***139***	***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		Significance
	km/h	*knots*	
White arc	***62-139***	***33-75***	Flap Operating Range.
Green arc	***80-240***	***43-129***	Normal Operating Range.
Yellow arc	***240-290***	***129-157***	Maneuvers must be conducted with caution and only in smooth air.
Red line	***290***	***157***	Maximum speed for all operations.

2.4 Power plant

2.4.1 Engine operating speeds and limits

Engine Model:		**ROTAX 912 ULS 2**
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. Continuous:	**5500 rpm**
	Cruising:	**5000 rpm**
	Idling:	**~1400 rpm**
Cylinder head temperature (CHT) Older engines S/N without Suffix -01	***Minimum:***	**50 °C (122 °F)**
	Maximum:	**135 °C (275 °F)** **conventional coolant** - permanent monitoring of coolant temperature and CHT is necessary **Waterless coolant** - permanent monitoring of CHT is necessary
	Optimum:	**80 – 110 °C (176-230 °F)**
Coolant temperature (CT) New engines S/N with Suffix -01	***Minimum:***	**50 °C (122 °F)**
	Maximum:	**120 °C (248 °F)** only conventional coolant allowed
	Optimum:	**80 – 110 °C (176-230 °F)**
Oil temperature	***Minimum:***	**50 °C (122 °F)**
	Maximum:	**130 °C (266 °F)**
	Optimum:	**90 – 110 °C (190-230 °F)**
Oil pressure:	***Minimum:***	**0.8 bar (12 psi) - *below 3500 rpm***
	Maximum:	**7 bar (102 psi) - cold engine start**
	Optimum:	**2 - 5 bar (29 – 73 psi) - *above 3500 rpm***
Exhaust gases temp.	***Maximum:***	***880 ° C* (1616 °F)**

2.4.2 Fuel

General note

NOTICE Obey the local codes and the latest edition of Service Instruction SI-912-016 for the selection of the correct fuel.

NOTICE Use only fuel suitable for the respective climatic zone.

NOTE: Risk of vapour formation if using winter fuel for summer operation.

Knock resistance

The fuels with following specifications can be used:

Fuel specifikationen		
	Usage/Description	
Knock resistance	**912 A/F/UL**	**912 S/ULS**
	Min. RON 90 (min. AKI* 87)	Min. RON 95 (min. AKI* 91)

* Anti Knock Index (RON+MON)/2

MOGAS

	Usage/Description	
Mogas	**912 A/F/UL**	**912 S/ULS**
European standard	EN 228 Normal	
	EN 228 Super	EN 228 Super
	EN 228 Super plus	EN 228 Super plus

AVGAS

AVGAS 100LL places greater stress on the valve seats due to its high lead content and forms increased deposits in the combustion chamber and lead sediments in the oil system.

	Usage/Description	
AVGAS	**912 A/F/UL**	**912 S/ULS**
Aviation Standard	AVGAS 100 LL (ASTM D910)	AVGAS 100 LL (ASTM D910)

Fuel volume:

Wing fuel tank volume .....2x60 l 2x16 US gal

Unusable fuel quantity .....2x0.5 l 2x0.13 US gal

2.4.3 Oil

General note	**NOTICE** Obey the manufacturers instructions about the lubricants. If the engine is mainly run on AVGAS more frequent oil changes will be required. See Service Information SI-912-016, latest edition.
Oil type	For the selection of suitable lubricants refer to the Service Information SI-912-016, latest edition.
Oil consumption	Max. 0.06 l/h (0.13 liq pt/h).
Oil specification	- Use only oil with API classification **"SG"** or higher! - Due to the high stresses in the reduction gears, oils with gear additives such as high performance motor cycle oils are required. - Because of the incorporated overload clutch, oils with friction modifier additives are unsuitable as this could result in a slipping clutch during normal operation. - Heavy duty 4-stroke motor cycle oils meet all the requirements. These oils are normally not mineral oils but semi- or full synthetic oils. - Oils primarity for Diesel engines have **insufficient high temperature properties and additives which favour clutch slipping, and are generally unsuitable.**
Oil viscosity	Use of multi-grade oils is recommended. NOTE: Multi-viscosity grade oils are less sensitive to temperature variations than single grade oils. They are suitable for use throughout the seasons, ensure rapid lubrication of all engine components at cold start and get less fluid at higher temperatures.

NOTE

Type of oil used by aircraft manufacturer is shown in Section 10 Supplement No.2.

Oil volume:

Minimum	3.2 l	0.856	US gal
Maximum	3.6 l	0.951	US gal

2.4.4 Coolant

General note

NOTICE Obey the latest edition of Service Instruction SI-912-016 for the selection of the correct coolant.

Conventional coolant

Conventional coolant mixed with water has the advantage of a higher specific thermal capacity than water-less coolant.

Application

When correctly applied, there is sufficient protection against vapor bubble formation, freezing or thickening of the coolant within the operating limits.

Use the coolant specified in the manufacturers documentation.

Mixture

NOTICE Obey the manufacturers instructions about the coolant.

Applicable for engine S/N without Suffix -01.

	mixture ratio %	
designation	**concentrate**	**water**
conventional e.g. BASF Glysantine anticorrosion	50*	50
waterless e.g. Aero Cool 180°	100	0

* coolant component can be increased up to max. 65%.

Applicable for engine S/N with Suffix -01.

	mixture ratio %	
designation	**concentrate**	**water**
conventional e.g. BASF Glysantine anticorrosion	50*	50

* coolant component can be increased up to max. 65%.

NOTE

Type of coolant used by aircraft manufacturer is shown in Section 10 Supplement No.2.

Coolant liquid volume:

It is about ..... 2.5 l 0.66 US gal

2.5 Power plant instrument markings

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

Rotax 912 ULS *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 Gases Temp. (EGT)	-	*800-850 °C (1472-1562 °F)*	*850-880 °C (1562-1616 °F)*	*880°C (1616 °F)*
Older engines S/N without Suffix -01 **Cylinder Head Temperature (CHT)** Conventional and waterless coolant allowed	50 °C *(122 °F)*	50-110 °C *(12-230 °F)*	110-135 °C *(230-275 °F)*	135 °C *(275 °F)*
New engines S/N with Suffix -01 **Coolant Temperature (CT)** Only conventional coolant allowed	50°C *(122°F)*	50-110°C *(122-230°F)*	110-120 °C *(230-248 °F)*	120 °C *(248 °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*

CAUTION

Older engines (S/N without Suffix -01) require permanent monitoring of both CHT and CT when conventional coolant is used. Permanent CHT monitoring is necessary when waterless coolant is used.

New engines (S/N with Suffix -01) require permanent monitoring of CT. Only conventional coolant is allowed for them.

2.6 Miscellaneous Instrument Marking

There is not any miscellaneous instrument marking.

2.7 Weight

Empty weight (standard equipment) . 325	kg	715	lb	
Max. take-off weight..... 600	kg	1320	lb	
Max landing weight 600	kg	1320	lb	
Weight of fuel (120 l, 16 US gal) 87	kg	209	lb	
Maximum baggage weight:				
Baggage compartment behind seats…15	kg	33	lb	
Wing lockers (optional) 20	kg	44	lb each	
Front locker (optional)..... 10	kg	22	lb	

NOTE

Actual empty weight is shown in SECTION 6

2.8 Center of gravity

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

2.9 Approved maneuvers

Airplane Category: LSA

The BRISTELL S-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!

2.10 Maneuvering load factors

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

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

2.11 Crew

Number of seats 2

Minimum crew..... 1 pilot in the left seat

Minimum crew weight ..... 55 kg 121 lb

Maximum crew weight ..... see SECTION 6

WARNING

Do not exceed maximum take-off weight 600 kg (1320 lb)!

2.12 Kinds of operation

There are permitted Day VFR flights.

Night VFR flights and IFR flights under VMC are permitted if the aeroplaneis appropriately equipped (e.g. FAR 91.205) and when the pilot has appropriate rating.

WARNING

IFR flights under IMC 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 (Coolant temp indicator)

2.13 Other limitations

WARNING

No smoking on board of the aircraft!

SECTION 3

3 EMERGENCY PROCEDURES

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

3.4.1 **Fire on ground at engine starting**
3.4.2 **Fire on ground with engine running**
3.4.3 **Fire during take-off**
3.4.4 **Fire in flight**
3.4.5 **Fire in the cockpit**

3.5 Glide

3.6 Landing Emergencies

3.6.1 **Emergency landing**
3.6.2 **Precautionary landing**
3.6.3 **Landing with a flat tire**
3.6.4 **Landing with a defective landing gear.**

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 120 km/h (65 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 120 km/h (65 KIAS)
3. Altitude - below 150 ft: land in take-off direction
   - over 150 ft: choose a landing area
4. Wind - find direction and velocity
5. Landing area - choose free area without obstacles
6. Flaps - extend as needed
7. Fuel Selector - shut off
8. Ignition - switch off
9. Safety harness - tighten
10. Master switch - switch off before landing
11. Land

3.3 In-flight Engine Starting

1. Electric pump - ON
2. Fuel Selector - switch to second fuel tank
3. 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 a fire extinguisher (if available) 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 a fire extinguisher (if available) or call for a fire-brigade if you cannot do it.

3.4.3 Fire during take-off

1. Speed - 120 km/h (65 KIAS)
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 a fire extinguisher (if available) or call for a fire-brigade if you cannot do it.

3.4.4 Fire in flight

1. Heating - close
2. Fuel Selector - close
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
7. emergency landing area
8. Emergency landing - perform according to 3.6
9. Leave the airplane
10. Extinguish fire by a fire extinguisher (if available) 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 a fire extinguisher (if available)

3.5 Glide

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

1. Speed - recommended gliding speed 120 km/h (65 KIAS)

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 120 km/h (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.
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 circuit 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 recover 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 - 130 km/h (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 (if installed) starts to not work 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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SECTION 4

4 NORMAL PROCEDURES

4.2 Assembly and Disassembly

4.3 Pre-flight Inspection

4.4 Normal procedures

4.4.1 Before engine starting
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
4.4.7 Climb
4.4.8 Cruise
4.4.9 Descent
4.4.10 Before landing
4.4.11 Balked Landing (Go around)
4.4.12 Landing
4.4.13 After landing
4.4.14 Engine shutdown
4.4.15 Aircraft parking and tie-down
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 S-LSA Maintenance and inspection procedures manual.

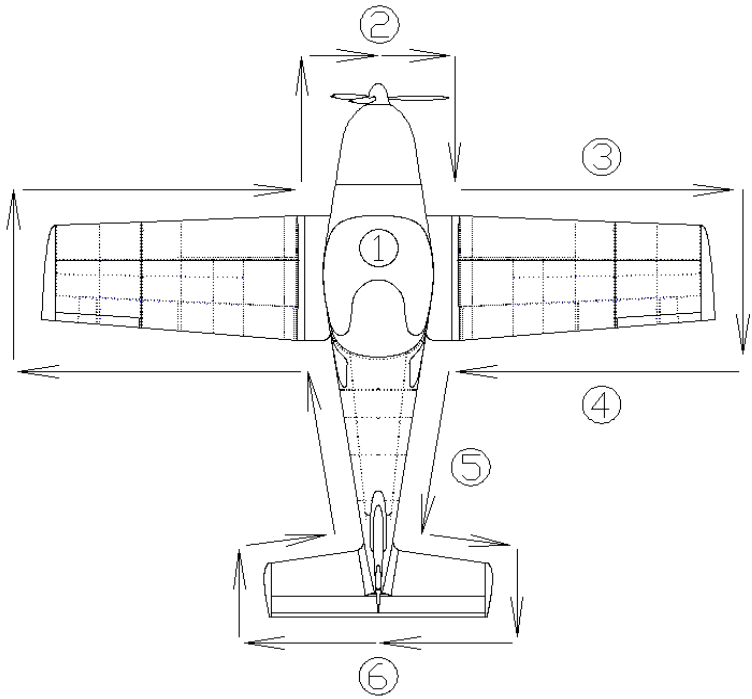
4.3 Pre-flight Inspection

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	- 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 tube 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

Visually check fuel level in each fuel tank before each take-off to be sure that 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.

4.4 Normal procedures

4.4.1 Before engine starting

1. Control system - free & correct movement
2. Canopy - clean
3. Brakes - fully applied
4. Safety harness - tighten
5. Rudder pedal position - set

WARNING

Adjusting of rudder pedals position during flight is PROHIBITED.

4.4.2 Engine starting

1. Start the engine according to its manual procedure
2. Master switch - ON
3. Fuel Selector - ON - LEFT FUEL TANK !!!
4. Electric fuel pump - ON – only for cold engine
5. Choke (cold engine) - pull to open and gradually release after engine start
6. Starter - hold activated to start the engine
7. Electric fuel pump - ON – only for hot engine after it starts.

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. 2000 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 ignition should be switched on (off) during ignition circuit check.

4.4.3 Engine warm up, Engine check

4.4.3.1 Engine warm up

Prior to engine check block the main wheels using chocks. Initially warm up the engine to 2000 rpm for approx. 2 minutes, then continue to 2500 rpm till oil temperature reaches 50° (122°F). The warm up period depends on ambient air temperature.

Switch “ON” propeller control and check propeller adjustment in all adjustment range.

Check both ignition circuits at 4000 rpm for Rotax 912 ULS. The engine speed drop during the time either magneto switched off should not over 300 rpm. The Max. engine speed drop difference between circuits A and B should be 115 rpm.

NOTE

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

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 (10 m/s). Hold the control stick in neutral position, or in a position that properly deflects a crosswind

4.4.5 Before take-off

1. Altimeter - set
2. Trim - set neutral position
3. Control system - check free movement
4. Cockpit canopy - closed
5. Safety harness - tighten
6. Fuel Selector - ON (LEFT or RIGHT tank)
7. Ignition A,B - ON
8. Electric fuel pump(s) - ON
9. Wing flaps - extend as needed
10. Autopilot (if installed) - OFF

4.4.6 Take-off

1. Brakes - apply to stop wheel rotation
2. Take-off power - throttle fully forward
3. Engine speed - check rpm
4. Instruments - check within limits
5. Nose wheel unstick - 55 km/h (30 KIAS)
6. Airplane lift-off - 75 km/h (40 KIAS)
7. Wing flaps - retract when speed of 120 km/h (65 KIAS) is reached, at altitude of 150 ft
8. Make transition to climb

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 (if installed)is “ON”

4.4.7 Climb

1.	Best ROC speed	- 130 km/h (70 KIAS)
2.	Throttle	- Max. take-off power (max. 5800 rpm for 5 minutes) - Max. cont.power 5500 rpm
3.	Trim	- trim the airplane
3.1	Instruments	- oil temperature and pressure, cylinder head/coolant temperature within limits

CAUTION

If coolant or oil temperature approach their limits, reduce the climb angle to increase airspeed and thus fulfill the limits.

4.4.8 Cruise

1. Electric fuel pump(s) - OFF

Refer to Section 5, for recommended cruising regimes.

4.4.9 Descent

1. Optimum glide speed - 120 km/h (65 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 120-130 km/h IAS (65-70 KIAS) and check that the engine instruments indicate values within permitted limits.

4.4.10 Before landing

1.	Approach speed	- 120 km/h (65 KIAS)
2.	Throttle	- as needed
3.	Electric fuel pump(s)	- ON
4.	Wing flaps	- extend as needed
5.	Trim	- as needed
6.	Autopilot (if installed)	- OFF

4.4.11 Balked Landing (Go around)

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 120 km/h (65 KIAS)
5. Trim - adjust
6. Repeat circuit pattern and landing

4.4.12 Landing

1. Touch-down on main wheels
2. Apply brakes as needed after the nose wheel touch-down

4.4.13 After landing

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

4.4.14 Engine shutdown

1. Engine speed - idle
2. Instruments - engine instruments within limits
3. Avionics - switch off
4. El. fuel pumps - switch off
5. Circuit breakers - switch off
6. Master switch - switch 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. Ignition check - OFF
2. Master switch check - OFF
3. Fuel selector - OFF
4. Parking brake - use it as necessary (if installed)
5. Canopy - close, lock as necessary
6. 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 Visual Meteorological Condition (VMC) must be maintained.

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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 and propeller.

5.2 Performance

5.2.1 Airspeed indicator system calibration

	IAS (km/h)	CAS (km/h)
VS0	62	63
	70	71
VS1	80	81
	82	83
	90	91
	100	101
	110	111
	120	120
	130	130
VFE	139	139
	150	150
	160	160
	170	170
VA	180	179
	190	189
	200	199
	210	209
	220	219
	230	229
VN0	240	238
	250	248
	260	258
	270	268
	280	278
VNE	290	287

	KIAS	KCAS
VS0	33	34
	38	39
	40	41
VS1	43	44
	50	51
	55	55
	60	60
	65	65
	70	70
VFE	75	75
	80	80
	85	85
	90	90
VA	96	96
	100	100
	105	105
	110	109
	115	114
	120	119
	125	124
VN0	129	128
	135	134
	140	139
	145	144
	150	149
VNE	157	156

5.2.2 Stall speeds

Conditions: Max.takeoff-off weight Engine idle run	Wing flaps pos.	IAS [km/h]	CAS [km/h]	*KIAS*	*KCAS*	Altitude loss at recovery [ft]
Wing level stall	**0°**	80	81	*43*	*44*	100
	20°	75	76	*40*	*41*	120
	30°	62	63	*33*	*34*	160
Co-ordinated turn 30° bank	**0°**	86	87	*46*	*47*	120
	20°	81	82	*43*	*44*	160
	30°	67	68	*35*	*36*	200

5.2.3 Take-off performance

ISA Conditions				CONCRETE		GRASS	
Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	Takeoff Run [m]	Distance over 50 ft obstacle [m]	Takeoff Run [m]	Distance over 50 ft obstacle [m]
0 ft ISA	15,0	101324,7	1,0000	200	460	280	540
2000 ft ISA	11,0	94209,8	0,9428	230	520	320	610
4000 ft ISA	7,1	87505,0	0,8880	250	580	360	680
6000 ft ISA	3,1	81191,9	0,8358	290	660	400	770
8000 ft ISA	-0,8	75252,8	0,7859	320	740	450	870
10000 ft ISA	-4,8	69670,4	0,7384	370	840	510	990

ISA + 10 °C				CONCRETE		GRASS	
Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	Takeoff Run [m]	Distance over 50 ft obstacle [m]	Takeoff Run [m]	Distance over 50 ft obstacle [m]
0 ft ISA	25,0	101324,7	0,9664	210	490	300	580
2000 ft ISA	21,0	94209,8	0,9107	240	550	340	650
4000 ft ISA	17,1	87505,0	0,8574	270	630	380	730
6000 ft ISA	13,1	81191,9	0,8066	310	710	430	830
8000 ft ISA	9,2	75252,8	0,7581	350	800	490	940
10000 ft ISA	5,2	69670,4	0,7118	390	910	550	1070

ISA + 20 °C				CONCRETE		GRASS	
Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	Takeoff Run [m]	Distance over 50 ft obstacle [m]	Takeoff Run [m]	Distance over 50 ft obstacle [m]
0 ft ISA	35,0	101324,7	0,9351	230	530	320	620
2000 ft ISA	31,0	94209,8	0,8807	260	590	360	700
4000 ft ISA	27,1	87505,0	0,8289	290	670	410	790
6000 ft ISA	23,1	81191,9	0,7794	330	760	460	890
8000 ft ISA	19,2	75252,8	0,7321	370	860	520	1010
10000 ft ISA	15,2	69670,4	0,6871	420	970	590	1140

ISA -10 °C				CONCRETE		GRASS	
Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	Takeoff Run [m]	Distance over 50 ft obstacle [m]	Takeoff Run [m]	Distance over 50 ft obstacle [m]
0 ft ISA	5,0	101324,7	1,0360	190	430	260	500
2000 ft ISA	1,0	94209,8	0,9772	210	480	290	570
4000 ft ISA	-2,9	87505,0	0,9209	240	540	330	640
6000 ft ISA	-6,9	81191,9	0,8672	270	610	370	720
8000 ft ISA	-10,8	75252,8	0,8159	300	690	420	810
10000 ft ISA	-14,8	69670,4	0,7670	340	780	480	920

ISA -20 °C				CONCRETE		GRASS	
Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	Takeoff Run [m]	Distance over 50 ft obstacle [m]	Takeoff Run [m]	Distance over 50 ft obstacle [m]
0 ft ISA	-5,0	101324,7	1,0746	170	400	240	470
2000 ft ISA	-9,0	94209,8	1,0142	190	450	270	530
4000 ft ISA	-12,9	87505,0	0,9563	220	500	310	590
6000 ft ISA	-16,9	81191,9	0,9011	250	570	340	670
8000 ft ISA	-20,8	75252,8	0,8483	280	640	390	750
10000 ft ISA	-24,8	69670,4	0,7979	310	720	440	850

5.2.4 Landing distances

ISA Conditions

Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	CONCRETE Landing Run [m]	CONCRETE Distance over 50 ft obstacle [m]	GRASS Landing Run [m]	GRASS Distance over 50 ft obstacle [m]
0 ft ISA	15,0	101324,7	1,0000	90	290	110	310
2000 ft ISA	11,0	94209,8	0,9428	100	310	120	330
4000 ft ISA	7,1	87505,0	0,8880	100	330	120	350
6000 ft ISA	3,1	81191,9	0,8358	110	350	130	370
8000 ft ISA	-0,8	75252,8	0,7859	110	370	140	390
10000 ft ISA	-4,8	69670,4	0,7384	120	390	150	420

ISA + 10 °C

Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	CONCRETE Landing Run [m]	CONCRETE Distance over 50 ft obstacle [m]	GRASS Landing Run [m]	GRASS Distance over 50 ft obstacle [m]
0 ft ISA	25,0	101324,7	0,9664	90	300	110	320
2000 ft ISA	21,0	94209,8	0,9107	100	320	120	340
4000 ft ISA	17,1	87505,0	0,8574	100	340	130	360
6000 ft ISA	13,1	81191,9	0,8066	110	360	140	380
8000 ft ISA	9,2	75252,8	0,7581	120	380	150	410
10000 ft ISA	5,2	69670,4	0,7118	130	410	150	440

ISA + 20 °C

Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	CONCRETE Landing Run [m]	CONCRETE Distance over 50 ft obstacle [m]	GRASS Landing Run [m]	GRASS Distance over 50 ft obstacle [m]
0 ft ISA	35,0	101324,7	0,9351	100	310	120	330
2000 ft ISA	31,0	94209,8	0,8807	100	330	120	350
4000 ft ISA	27,1	87505,0	0,8289	110	350	130	370
6000 ft ISA	23,1	81191,9	0,7794	120	370	140	400
8000 ft ISA	19,2	75252,8	0,7321	120	400	150	420
10000 ft ISA	15,2	69670,4	0,6871	130	420	160	450

ISA -10 °C

Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	CONCRETE Landing Run [m]	CONCRETE Distance over 50 ft obstacle [m]	GRASS Landing Run [m]	GRASS Distance over 50 ft obstacle [m]
0 ft ISA	5,0	101324,7	1,0360	90	280	110	300
2000 ft ISA	1,0	94209,8	0,9772	90	300	110	320
4000 ft ISA	-2,9	87505,0	0,9209	100	310	120	340
6000 ft ISA	-6,9	81191,9	0,8672	100	330	130	360
8000 ft ISA	-10,8	75252,8	0,8159	110	360	130	380
10000 ft ISA	-14,8	69670,4	0,7670	120	380	140	400

ISA -20 °C

Airport altitude H [ft]	Temperature tH [°C]	ISA pressure pH [Pa]	Relative density Δ [-]	CONCRETE Landing Run [m]	CONCRETE Distance over 50 ft obstacle [m]	GRASS Landing Run [m]	GRASS Distance over 50 ft obstacle [m]
0 ft ISA	-5,0	101324,7	1,0746	80	270	100	290
2000 ft ISA	-9,0	94209,8	1,0142	90	290	110	310
4000 ft ISA	-12,9	87505,0	0,9563	90	300	120	320
6000 ft ISA	-16,9	81191,9	0,9011	100	320	120	340
8000 ft ISA	-20,8	75252,8	0,8483	110	340	130	370
10000 ft ISA	-24,8	69670,4	0,7979	110	360	140	390

5.2.5 Climb performance

CONDITIONS: MCP MTOW	BEST RATE OF CLIMB					BEST ANGLE OF CLIMB				
	IAS	IAS	KIAS	RATE OF CLIMB	RATE OF CLIMB	IAS	IAS	KIAS	RATE OF CLIMB	RATE OF CLIMB
ALTITUDE	[mph]	[km/h]	[knots]	[m/s]	[fpm]	[mph]	[km/h]	[knots]	[m/s]	[fpm]
0 ft ISA	83	133	72	4,7	910	67	108	58	4,2	820
2000 ft ISA	81	131	71	4,2	810	66	106	57	3,7	730
4000 ft ISA	80	129	70	3,6	710	65	104	56	3,2	630
6000 ft ISA	79	127	69	3,1	610	63	102	55	2,7	540
8000 ft ISA	78	125	67	2,6	510	62	100	54	2,3	450
10000 ft ISA	76	123	66	2,1	420	61	98	53	1,9	370

5.2.6 Cruise

		55%	65%	75%	MCP	T/O
		4300 rpm	4800 rpm	5000 rpm	5500 rpm	5800 rpm
0 ft	KIAS	87 knots	101 knots	106 knots	119 knots	127 knots
	KCAS	89 knots	102 knots	107 knots	120 knots	127 knots
	KTAS	89 knots	102 knots	107 knots	120 knots	127 knots
2000 ft	KIAS	85 knots	99 knots	104 knots	117 knots	125 knots
	KCAS	87 knots	100 knots	105 knots	118 knots	125 knots
	KTAS	89 knots	103 knots	108 knots	121 knots	129 knots
4000 ft	KIAS	83 knots	97 knots	102 knots	115 knots	123 knots
	KCAS	85 knots	98 knots	103 knots	116 knots	123 knots
	KTAS	90 knots	104 knots	109 knots	123 knots	131 knots
6000 ft	KIAS	81 knots	95 knots	100 knots	113 knots	121 knots
	KCAS	83 knots	96 knots	101 knots	114 knots	121 knots
	KTAS	90 knots	105 knots	111 knots	125 knots	133 knots
8000 ft	KIAS	79 knots	93 knots	98 knots	111 knots	119 knots
	KCAS	81 knots	94 knots	99 knots	112 knots	120 knots
	KTAS	91 knots	106 knots	112 knots	126 knots	135 knots
10000 ft	KIAS	77 knots	91 knots	96 knots	109 knots	117 knots
	KCAS	78 knots	92 knots	97 knots	110 knots	118 knots
	KTAS	91 knots	107 knots	113 knots	128 knots	137 knots

5.2.7 Endurance and Range

The table below shows fuel consumption, endurance and range

Fuel qty. =	120 l
Unusable fuel =	1 l

NO FUEL RESERVE CONSIDERED !

		55%	65%	75%	MCP	T/O
		4300 rpm	4800 rpm	5000 rpm	5500 rpm	5800 rpm
0 ft	KIAS	87 knots	101 knots	106 knots	119 knots	127 knots
	KCAS	89 knots	102 knots	107 knots	120 knots	127 knots
	KTAS	89 knots	102 knots	107 knots	120 knots	127 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	750 NM	650 NM	620 NM	570 NM	560 NM
		1390 km	1200 km	1150 km	1050 km	1030 km
2000 ft	KIAS	88 knots	102 knots	107 knots	122 knots	130 knots
	KCAS	87 knots	100 knots	105 knots	118 knots	125 knots
	KTAS	89 knots	103 knots	108 knots	121 knots	129 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	760 NM	660 NM	630 NM	580 NM	570 NM
		1400 km	1220 km	1160 km	1070 km	1050 km
4000 ft	KIAS	85 knots	100 knots	105 knots	119 knots	128 knots
	KCAS	85 knots	98 knots	103 knots	116 knots	123 knots
	KTAS	90 knots	104 knots	109 knots	123 knots	131 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	760 NM	660 NM	630 NM	580 NM	580 NM
		1410 km	1230 km	1170 km	1080 km	1070 km
6000 ft	KIAS	83 knots	97 knots	103 knots	117 knots	126 knots
	KCAS	83 knots	96 knots	101 knots	114 knots	121 knots
	KTAS	90 knots	105 knots	111 knots	125 knots	133 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	770 NM	670 NM	640 NM	590 NM	580 NM
		1420 km	1240 km	1190 km	1100 km	1080 km
8000 ft	KIAS	81 knots	95 knots	101 knots	115 knots	124 knots
	KCAS	81 knots	94 knots	99 knots	112 knots	120 knots
	KTAS	91 knots	106 knots	112 knots	126 knots	135 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	770 NM	680 NM	650 NM	600 NM	590 NM
		1430 km	1250 km	1200 km	1110 km	1100 km
10000 ft	KIAS	79 knots	93 knots	99 knots	113 knots	121 knots
	KCAS	78 knots	92 knots	97 knots	110 knots	118 knots
	KTAS	91 knots	107 knots	113 knots	128 knots	137 knots
	Fuel consumption	14,0 l/h	18,6 l/h	20,6 l/h	25,0 l/h	27,1 l/h
	Endurance	8:28	6:23	5:47	4:45	4:23
	Range	770 NM	680 NM	650 NM	610 NM	600 NM
		1430 km	1260 km	1210 km	1130 km	1110 km

5.2.8 Demonstrated crosswind performance

Max. permitted head wind velocity for take-off and landing	20	m/s	40	knots
Max. permitted cross wind velocity for take-off and landing				
Average pilots	8	m/s	15	knots
Skilled pilots	11	m/s	22	knots

5.2.9 Optimum glide speed

Optimum glide speed	120	km/h	65	KIAS

5.2.10 Ceiling

Service ceiling	4300	m	14.000	ft

SECTION 6

6 WEIGHT AND BALANCE

6.1 Introduction

6.2 Weight and Balance Record

6.2.1 Weight and Balance Report

6.2.1.1 Empty Aircraft Weight and CG

6.2.1.2 Loaded Aircraft Weight and CG

6.2.1.3 Weight and CG Blank Form

6.3 Permitted payload range

6.1 Introduction

This section contains the payload range within which the BRISTELL S-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

6.2 Weight and Balance Record

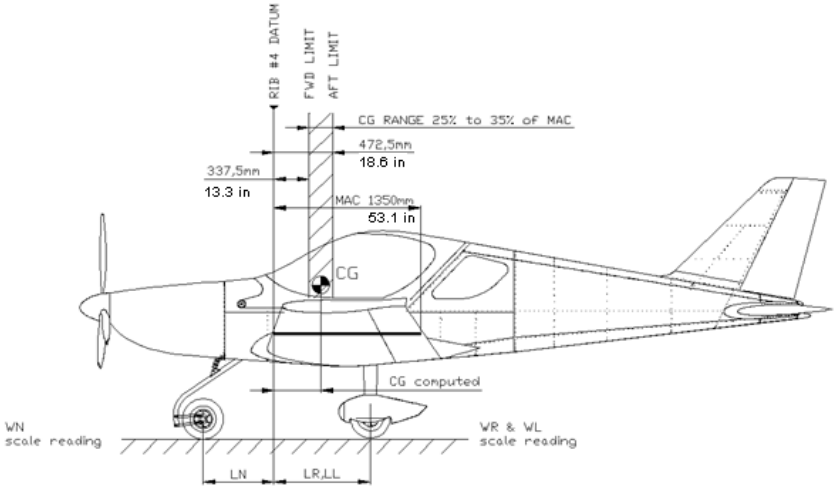
List of equipment installed in Bristell S-LSA, S/N 317/2018:

1. 12V/5V socket behind seats and on instrument panel
2. 2 map pockets
3. 3-pos.adjustable rudder pedals on both sides
4. 4-point safety belts
5. Airpath C2400 L4P Compass
6. Arm rest box
7. Aveo Silver Max air vents
8. AVEO wing strobes/nav lights
9. Back-up ALT Winter 4 FGH 40
10. Back-up ASI Winter 7FMS 513 (0-160 kts)
11. Baggage compartment behind seats
12. Dual brakes
13. ELT Kannad AF Integra 406 MHz
14. Fiti 3LR 158, 3-bladed, ground adjustable propeller
15. Garmin G3X flight display system
16. Garmin GA 26C GPS antenna for G3X
17. Garmin GAP 26 angle of attack unheated probe
18. Garmin GDU 460 dual
19. Garmin GEA 24 Engine Interface Module
20. Garmin GMA 240 digital audio panel
21. Garmin GMU 22 Magnetometer
22. Garmin GNC 255A NAV/COM
23. Garmin GSU 25 ADHRS (1x)
24. Garmin GTP 59 Temperature Probe

25. Garmin GTR 20 remote-mount comm radio
26. Garmin GTX 23 ES mode S transponder
27. Grey interior
28. Key switch box
29. Lambert+LINAK electric flaps actuator
30. Leather glareshield, Leather upholstery
31. Lockable canopy, Lockable fuel tank caps
32. Long HTU (2.9 m) with long trim and horn balance
33. MATCO 5,00-5 wheels
34. Middle size instrument panel for G3X
35. Paint scheme: #3
36. Parking brake
37. Pierburg auxiliary fuel pump
38. RAMI AV-10 comm antenna
39. RAMI AV-200 ELT antenna
40. RAMI AV-525 VOR, LOC & GS „V“ Dipole Antenna
41. RAMI AV-74 transponder DME antenna
42. Ray Allen G205 grips
43. RC 200 control for ELT Kannad
44. Rear console with cut out for fuel selector
45. Rotax 912 ULS engine, clutch, airbox
46. Steerable nose wheel
47. TCW IBBS-12V-3AH backup battery for Garmin G3X
48. Tinted canopy - dark grey
49. USB port(s) on the instrument panel
50. Variometer BC-6 ft/min
51. Wheel fairings (pants) for wheels 5,00"-5"
52. Whelen MB 1 tail mounted LED strobe
53. Wing landing lights

6.2.1 Weight and Balance Report

6.2.1.1 Empty Aircraft Weight and CG



MAC (mm): 1350,0

	ITEM	WEIGHT (kg)	ARM (mm)	MOMENT = WEIGHT x ARM (kg.mm)
EMPTY AIRCRAFT WEIGHT AND CG	RIGHT MAIN WHEEL	WR= 140,2	LR= 720	MR= 100916,3
	LEFT MAIN WHEEL	WL= 142,4	LL= 720	ML= 102549,2
	NOSE WHEEL	WN= 71,2	LN= -750	MN= -53411,0
	EMPTY AIRCRAFT	**EMPTY WEIGHT** (kg) **WE= 353,8**	**CG (mm) = 424,12** **CG (%MAC) = 31,4**	**EMPTY ACFT TOTAL MOMENT** (kg.mm) **MT= 150054,43**

$$CG(mm) = \frac{\text{Total Moment}}{\text{Total Weight}}$$

$$CG(\%MAC) = CG(mm) \times \frac{100}{MAC}$$

Serial No.: 317/218
Date: 14.12.2017
By: BRM Aero

6.2.1.2 Loaded Aircraft Weight and CG

	ITEM	WEIGHT (kg)	ARM (mm)	MOMENT = WEIGHT x ARM (kg.mm)
	EMPTY AIRCRAFT	353,8	424,12	150054,4
LOADED AIRCRAFT WEIGHT AND CG	PILOT		600,0	
	PASSENGER		600,0	
	BAGGAGE - BEHIND SEATS		1400,0	
	BAGGAGE - FRONT optional)		-300,0	
	BAGGAGE - WING LOCKERS		630,0	
	FUEL TANKS		200,0	
	LOADED AIRCRAFT	TAKEOFF WEIGHT (kg) TOW=	CENTER OF GRAVITY CG (mm)= CG (%MAC) =	LOADED ACFT TOTAL MOMENT (kg.mm) MT=

Max.Takeoff Weight:	600	kg
CG Range:	25	35
Forward limit:	337,5	mm
Rearward limit:	472,5	mm

$$CG(mm) = \frac{\text{Total Moment}}{\text{Total Weight}}$$

$$CG(\%MAC) = CG(mm) \times \frac{100}{MAC}$$

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By:

6.2.1.3 Weight and CG Blank Form

	ITEM	WEIGHT (kg)	ARM (mm)	MOMENT = WEIGHT x ARM (kg.mm)
EMPTY AIRCRAFT WEIGHT AND CG	RIGHT MAIN WHEEL	WR=	LR= 720,0	MR=
	LEFT MAIN WHEEL	WL=	LL= 720,0	ML=
	NOSE WHEEL	WN=	LN= -750,0	MN=
	EMPTY AIRCRAFT	EMPTY WEIGHT (kg) WE=	CG (mm) = CG (%MAC) =	EMPTY ACFT TOTAL MOMENT (kg.mm) MT=

	ITEM	WEIGHT (kg)	ARM (mm)	MOMENT = WEIGHT x ARM (kg.mm)
	EMPTY AIRCRAFT			
LOADED AIRCRAFT WEIGHT AND CG	PILOT		600,0	
	PASSENGER		600,0	
	BAGGAGE - BEHIND SEATS		1400,0	
	BAGGAGE - FRONT optional)		-300,0	
	BAGGAGE - WING LOCKERS		630,0	
	FUEL TANKS		200,0	
	LOADED AIRCRAFT	TAKEOFF WEIGHT (kg) TOW=	CENTER OF GRAVITY CG (mm)= CG (%MAC) =	LOADED ACFT TOTAL MOMENT (kg.mm) MT=

Max.Takeoff Weight:	600	kg
CG Range:	25	35
Forward limit:	337,5	mm
Rearward limit:	472,5	mm

$$CG(mm) = \frac{\text{Total Moment}}{\text{Total Weight}}$$

$$CG(\%MAC) = CG(mm) \times \frac{100}{MAC}$$

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Date:	
By:	

Max.useful load:

WU (kg) =	MTOW	-	WE
WU (kg) =	600	-	
WU (kg) =			

WARNING
DO NOT EXCEED MAXIMUM TAKEOFF WEIGHT 600 kg!

6.3 Permitted payload range

PERMITTED PAYLOAD RANGE OF BRISTELL (kg)								
S/N:	317/2018				Empty weight (kg):	354	MTOW (kg):	600,0
FUEL								
	VOLUME	(litres)	20	40	60	80	100	120
	WEIGHT	(kg)	14,5	29,0	43,5	58,0	72,5	87,0
			PERMITTED CREW WEIGHT (kg)					
BAGGAGE (kg)	NO BAGGAGE	0	**165** *35,0 %MAC*	**196** *35,0 %MAC*	**203** *34,6 %MAC*	**188** *33,9 %MAC*	**174** *33,2 %MAC*	**159** *32,5 %MAC*
	1/2 REAR	8	**111** *35,0 %MAC*	**142** *35,0 %MAC*	**173** *35,0 %MAC*	**181** *34,6 %MAC*	**166** *33,9 %MAC*	**152** *33,2 %MAC*
	MAX REAR	15	**56** *35,0 %MAC*	**87** *35,0 %MAC*	**118** *35,0 %MAC*	**149** *35,0 %MAC*	**159** *34,7 %MAC*	**144** *33,9 %MAC*
	1/2 WING LOCKERS	20	**141** *35,0 %MAC*	**172** *35,0 %MAC*	**183** *34,7 %MAC*	**168** *34,0 %MAC*	**154** *33,3 %MAC*	**139** *32,5 %MAC*
	1/2 REAR + 1/2 WING	28	**86** *35,0 %MAC*	**117** *35,0 %MAC*	**148** *35,0 %MAC*	**161** *34,7 %MAC*	**146** *34,0 %MAC*	**132** *33,3 %MAC*
	MAX REAR + 1/2 WING	35	**X**	**62** *35,0 %MAC*	**93** *35,0 %MAC*	**124** *35,0 %MAC*	**139** *34,7 %MAC*	**124** *34,0 %MAC*
	MAX WING LOCKERS	40	**116** *35,0 %MAC*	**147** *35,0 %MAC*	**163** *34,8 %MAC*	**148** *34,0 %MAC*	**134** *33,3 %MAC*	**119** *32,6 %MAC*
	1/2 REAR + MAX WING	48	**61** *35,0 %MAC*	**92** *35,0 %MAC*	**123** *35,0 %MAC*	**141** *34,8 %MAC*	**126** *34,1 %MAC*	**112** *33,4 %MAC*
	MAX REAR + WING	55	**X**	**X**	**69** *35,0 %MAC*	**100** *35,0 %MAC*	**119** *34,8 %MAC*	**104** *34,1 %MAC*

Permitted crew weight with regard to CG limits.
"X" (if present) means computed crew weight less than minimum crew weight

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SECTION 7

7 AIRPLANE AND SYSTEMS DESCRIPTION

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 aluminium sheet metal riveted to aluminium angles with Avex rivets. This high strength aluminium alloy construction provides long life and low maintenance costs thanks to its durability and corrosion resistance characteristics.

The wing has a high lift aerofoil 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.

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 steerable 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 centred on the body.

7.6 Baggage compartment

The rear baggage compartment is located behind the seats. It may accommodate up to 15 kg (33 lb). 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 (optional equipment) up to 20 kg (44 lb), in each wing locker.

Optionally also a front locker in a space between the instrument panel and firewall may be installed. Maximum baggage is 10 kg (22 lb).

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 Power plant

Engine:

ROTAX 912 ULS S engine 98.6 hp is installed. 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 ECO COMPETITION 3LR 158, on-grouns adjustable, 3-bladed, composite propeller.

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. Lever is mechanically connected (by cables) to the flaps on the carburettors. Spring is added to the throttle push rod to ensure that the engine will go to full power if the linkages fail.

7.8.2 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: ..... 2x60 l 2x16 US gallons

Each tank is equipped with a vent outlet and screen filter.

Drain valve located in the lowest point of the each tank and on the bottom edge of the firewall, on the gascolator.

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.

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

Pitot tube (optionally heated) is located below the left wing. Pressure distribution to the instruments is through flexible plastic hoses.

Static ports are located on both sides of the fuselage at the tail.

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

7.12 Miscellaneous equipment

BRISTELL S-LSA S/N 317/2018 is fitted with:

1. 12V/5V socket behind seats and on instrument panel
2. 2 map pockets
3. 3-pos.adjustable rudder pedals on both sides
4. 4-point safety belts
5. Arm rest box
6. Aveo Silver Max air vents
7. AVEO wing strobes/nav lights
8. Dual brakes, Parking brake
9. Grey interior
10. Key switch box
11. Lambert+LINAK electric flaps actuator
12. Leather glareshield, Leather upholstery
13. Lockable canopy, Lockable fuel tank caps
14. MATCO 5,00-5 wheels
15. Middle size instrument panel for G3X
16. Pierburg auxiliary fuel pump
17. RAMI AV-10 comm antenna
18. RAMI AV-200 ELT antenna
19. RAMI AV-525 VOR, LOC & GS „V“ Dipole Antenna
20. RAMI AV-74 transponder DME antenna
21. Ray Allen G205 grips
22. Rear console with cut out for fuel selector
23. Steerable nose wheel
24. Tinted canopy - dark grey
25. USB port(s) on the instrument panel
26. Wheel fairings (pants) for wheels 5,00"-5"
27. Whelen MB 1 tail mounted LED strobe
28. Wing landing lights

7.13 Instruments and Avionics

BRISTELL S-LSA S/N 317/2018 is fitted with:

1. Back-up ALT Winter 4 FGH 40
2. Back-up ASI Winter 7FMS 513 (0-160 kts)
3. Back-up variometer BC6 (+/- 2000 f)
4. Airpath C2400 L4P Compass
5. Garmin G3X flight display system including:
6. Garmin GDU 460 dual displays
7. Garmin GEA 24 Engine Interface Module
8. Garmin GMA 240 digital audio panel
9. Garmin GMU 22 Magnetometer
10. Garmin GNC 255A NAV/COM
11. Garmin GSU 25 ADHRS (1x)
12. Garmin GTP 59 Temperature Probe
13. Garmin GA 26C GPS antenna for G3X
14. Garmin GAP 26 angle of attack unheated probe
15. TCW IBBS-12V-3AH backup battery for Garmin G3X
16. Garmin GTR 20 remote-mount comm radio
17. Garmin GTX 23 ES mode S transponder
18. ELT Kannad AF Integra 406 MHz + RC 200 control unit

NOTE

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

7.14 Cockpit

7.14.1 Cockpit layout

7.14.2 Instrument panel

SECTION 8

8 Airplane handling, servicing and maintenance

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

For BRISTELL S-LSA aircraft maintenance refer to the Maintenance and Inspection Procedures, Section 2.

For Rotax 912 ULS engine maintenance refer to the Maintenance Manual (Line Maintenance) for Rotax Engine Type 912 Series.

For Fiti Eco Competition 3LR 158 propeller maintenance refer to the Operating Instructions and Technical Description, and also to the Fiti Letter of Authorization, dated May 10th, 2016, as well as to the Description of mandatory regular service operations to be carried out for BRM Aero after the first 50 and 100 hours, and thereafter at one-year intervals

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.

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.

8.4.5 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
- Choke
- Starter
- Trim: Nose heavy and Tail heavy
- Flaps: 0°, 10°, 20°, 30°
- Maximum rear baggage weight 15 kg (33 lb)
- Maximum weight in each wing locker 20 kg (44 lb), if installed
- Maximum weight in front locker 10 kg (22 lb), if installed
- Instruments
- Canopy opening/closing instructions
- Fuel capacity: 15.87 U.S. gallons / min. 95 Octane - at filler neck
- Fireproof Identification plate attached to the fuselage left side, in front of the horizontal tail unit

Aircraft Operating Instructions

PASSENGER WARNING! THIS AIRCRAFT WAS MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARDS AND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.	Passenger warning for LSA category aeroplanes. Located on the instrument panel.
PASSENGER NOTICE THIS AIRCRAFT CONFORMS TO ASTM CONSENSUS STANDARDS OF AIRWORTHINESS DEVELOPED AND MAINTAINED BY THE AVIATION COMMUNITY UNDER ASTM TECHNICAL COMMITTEE F 37.	Passenger notice for LSA category aeroplanes. Located on the instrument panel.
ALL AEROBATIC MANEUVERS, INCLUDING SPINS ARE PROHIBITED	Operation limitation. Located on the instrument panel.
WARNING IFR FLIGHTS AND INTENTIONAL FLIGHTS UNDER ICING CONDITIONS ARE PROHIBITED!	Operation limitation. Located on the instrument panel.
BAGGAGE COMPARTMENT - A	Main baggage compartment behind the seats.
BAGGAGE COMPARTMENT - B	Additional baggage compartment behind the Baggage compartment A. NOT TO BE USED FOR HEAVY ITEMS!
MAX. 33 LB	Maximum weight of baggage in the Baggage compartment – A, behind the seats.
MAX. 44 LB	Maximum weight of baggage in each wing locker, if installed.
MAX. 22 LB	Maximum weight of baggage in fuselage front locker, if installed.
UNUSABLE FUEL QUANTITY 0.13 US GAL	Unusable quantity of fuel in each tank
V_{FE} 75 kt V_A 96 kt V_{NE} 157 kt	Airspeed limitations. Located on the instrument panel or fuselage side.
ENGINE RPM: Max. take-off (max. 5 min.) 5800 rpm Max. continuous 5500 rpm Idle 1400 rpm	Engine speed limitations. Located on the instrument panel or fuselage side.

WARNING **DO NOT EXCEED MAXIMUM** **TAKE-OFF WEIGHT 1320 LBS**	Maximum Takeoff Weight Limitation. 1320 lb limit for Light sport aeroplanes. Located on the instrument panel or fuselage side.

9.2 Miscellaneous placards and markings

	Wing flap root area
	Areas to avoid pushing on them. Wing trailing edge, control surfaces trailing edges, etc.
	Located on wing upper skin around the fuel tank filler neck.
	Throttle and Choke placard located on the Throttle-choke quadrant.
	Located on the fuselage right/left side under the instrument panel. Placard point to the lever to adjust pedals position.
	Located between the seat backs, at the headphone sockets.
	Located on the fuselage left side at the button to release canopy locks.
	Located inside the cockpit on the left and right side of the tip-up canopy frame.

	Located on the top of the canopy inside.
	Located on the lever between seats.
	**If BRS rescue system is installed:** Placard located on the both sides of fuselage between canopy and rear window
	Placard located in place rocket egress
	Located on both sides of the fuselage tail where are located static ports.

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 Supplements

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
07/2011	01/2011	Aircraft Flight Training Supplement
12/2017	02	Description of the aircraft S/N 317/2018

10.3 Inserted Supplements

Aircraft Operating Instructions

SUPPLEMENT No. 01/2011

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***

Aircraft Operating Instructions

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.

Aircraft Operating Instructions

SUPPLEMENT No. 02

AIRCRAFT DESCRIPTION

Registration: **CC-AUV**

Serial number: **317/2018**

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 S-LSA of S/N 317/2018.

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 aircraft manufacturer :**

Aeroshell OIL SPORT PLUS 4

2.4.4 Coolant

NOTE: **Type of coolant used by aircraft manufacturer:**

Castrol Radicool NF
Mixture ratio coolant / water 1:1.5 litres (40%) (-25 °C)

Max. Coolant temperature : 120 °C (248 °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.