

BRISTELL LSA



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BRISTELL LSA



Aircraft Operating Instructions



Registration: N915LM

Serial Number: 436/2019

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

Date of Issue: 06/2019 Document No.: SLSA-AOI-9-7-0-US

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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

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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	06/2019	Petr Javorský	06/2019	06/2019	P devorský

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0.2 List of effective pages

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SECTION 1

- 1 General Information
- 1.1 Introduction
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- 1.2 Warnings, cautions and notes
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- 1.3.4 Aircraft layout
- 1.4 Definitions and abbreviations
- 1.5 Summary of performance specifications

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1.1 Introduction

This Aircraft Operating Instructions have been prepared to provide the pilots, instructors, owners and operators with information for safe and efficient operation of BRISTELL aircraft. It also contains supplemental data supplied by the Aircraft Flight Training Supplement.

It is the pilot's responsibility to be familiar with this handbook, the special characteristics of this aircraft, and all other information and legal requirements relevant for the operation in his country. The pilot is responsible to determine the aircraft is safe for flight, and to operate the aircraft with respect to the procedures and limitations provided in this manual.

It is the owner's/operator's responsibility to have the aeroplane registered and insured, according to country-specific regulations. The aircraft owner/operator is also responsible for maintaining the aircraft in airworthy condition.

1.1.1 Certification

BRISTELL LSA is ultralight / light sport category aircraft designed and produced 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

BRISTELL LSA uses airframe of BRISTELL ELSA which has been certified by the Light Aircraft Association of the Czech Republic (Czech TC ULL-02/2012 issued on 14.12.2011) for MTOW 600 kg in accordance with the ASTM F2245 Consensus Standard.

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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.

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1.3 Descriptive data

1.3.1 Aircraft description

BRISTELL LSA is an airplane intended especially for recreational and crosscountry flying, basic flight training, with limitation to non-aerobatics operation.

BRISTELL LSA is a single-engine, all metal, low-wing monoplane of semimonocoque 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

BRISTELL LSA, S/N 436/2019 is fitted with:

- Rotax 915 iS 3 A engine

- DUC Inconel FLASH propeller, composite, 3-bladed, on-ground adjustable.

1.3.3 Aircraft dimensions

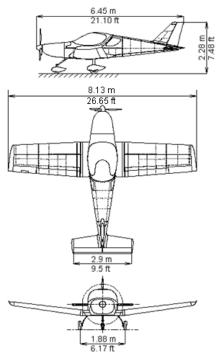
Wing span	m	26.65	ft
Length6.45	m	21.10	ft
Height 2.28	m	7.48	ft
Wing area 10.5	m ²	113.02	sq ft
Wing loading (MTOW 600 kg)57.14	kg/m ²	11.70	lb/sq ft
Wing loading (MTOW 472.5 kg) 45.00	kg/m ²	9.22	lb/sq ft
Wing loading (MTOW 450 kg) 42.86	kg/m ²	8.78	lb/sq ft
Cockpit width 1.3	m	51.17	in
Deflections:			
Rudder deflections 30° to each side			
Elevator deflections+ 30°/-15°			
Aileron deflections+ 24°/-17°			
Flap deflections 0°, 10°, 20° and 30°			
Aileron trim deflections+ 15°/- 20°			
Elevator trim deflections+ 10°/- 25°			

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1.3.4 Aircraft layout



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1.4 Definitions and abbreviations

°F	temperature in degree of Fahrenheit			
ASI	Airspeed Indicator			
ATC	Air Traffic Control			
BEACON	anti-collision beacon			
CAS	Calibrated Airspeed			
CG	Center of Gravity			
COMM	communication transmitter			
ECU	Engine Control Unit			
EFIS	Electronic Flight Instrument System			
ELT	Emergency Locator Transmitter			
E-LSA	Experimental Light Sport Aircraft			
EMS	Engine Monitoring System			
ft	foot / feet			
ft/min	feet per minute			
GPS	Global Positioning System			
HIC	Harness Interface Connector (Rotax 915 iS)			
hp	power unit			
IAS	Indicated Airspeed			
IC	Intercom			
IFR	Instrument Flight Rules			
in	inch			
ISA	International Standard Atmosphere			
knot	NM per hour			
lb	pound			
LAA	Light Aircraft Association of the Czech Republi			
MAC	Mean Aerodynamic Chord			
max.	maximum			

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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
rpm	revolutions per minute
sec.	second
US gal	volume unit
VA	maneuvering airspeed
VFE	maximum flap extended speed
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
V _{NE}	never exceed speed
V _{NO}	maximum designed cruising speed
Vs1	stall speed with wing flaps in retracted position
Vso	stall speed with wing flaps in extended position
Vx	best angle of climb speed
VY	best rate of climb speed

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1.5 Summary of performance specifications

Performance	US units	Metric units		
Gross weight (Maximum take-off weight)	1320 lb	600 kg		
Top speed at sea level MCP: 4700 rpm	120 KCAS			
Cruise speed at sea level 64%: 4700rpm	120 KCAS			
Cruise speed at sea level 64%: 4700 rpm	120 KCAS			
Full fuel range at 4000 ft pressure altitude, at 75 % MCP (5000 rpm), No fuel reserve	<mark>570 NM</mark>			
Rate of climb at sea levelVx	<mark>1170 fpm</mark> at 68 KIAS			
Rate of climb at sea levelVy	<mark>1490 fpm at</mark> 75 KIAS			
Stall speed Vs1 (flaps retracted)	45 KCAS	83 km/h CAS		
Stall speed V _{s0} (flaps fully extended)	38 KCAS	71 km/h CAS		
Total fuel capacity	31.7 US gal	120 liters		
Total usable fuel	31.4 US gal	119 liters		
Approved types of fuel	Min. RON 95 (min. AKI4 91)			
ATTENTION: Obey the latest edition of Service	Mogas: EN 228 super			
Instruction SI-912-016, for the selection of the correct fuel.	Mogas: EN 228	Mogas: EN 228 super plus		
conectituei.	AVGAS 100LL	AVGAS 100LL (ASTM D910)		
Engine Maximum takeoff power	104 kW (140 HP max.5 min.) at 5800 rpm,		
Engine Maximum continuous power		99 kW (127 HP) at 5500 rpm (without governor)		
		NOTE: Max.cont.power is available up to the critical altitude		

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SECTION 2

- 2 Operating Limitation
- 2.1 Introduction
- 2.2 Airspeed
- 2.3 Airspeed indicator markings
- 2.4 Power plant
- 2.4.1 Engine operating speeds and limits
- 2.4.2 Fuel
- 2.4.3 Oil 2.4.4 Coolant
- 2.5 Power plant instrument markings
- 2.6 Miscellaneous Instrument Marking
- 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

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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.

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2.3 Airspeed indicator markings

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

Marking	IAS value	e or range	Significance	
Warking	knots km/h		Significance	
White arc	37-75	70-139	Flap Operating Range.	
Green arc	44-129	82-240	Normal Operating Range.	
Yellow arc	129-157	240-290	Maneuvers must be conducted with caution and only in smooth air.	
Red line	157	290	Maximum speed for all operations.	

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2.4 Power plant

2.4.1 Engine operating speeds and limits

-					
Engine Model:		ROTAX 915 iS 3 Sport 4-cylinder horizontally opposed, turbocharged engine approved to ASTM F2339, propeller shaft with ltange for constant speed propeller and drive for hydraulic governor for constant speed propeller			
Engine Manut	facturer:	Bombardier-Rotax GMBH			
	Max Take-off:	104 kW (140 HP) at 5800 rpm, max.5 min.			
Power	Max. Continuous:	99 kW (133 HP) at 5500 rpm (without governor) NOTE: Max.cont.power is available up to the critical altitude			
_ .	Max. Take-off:	5800 rpm (max. 5 min)			
Engine	Max. Continuous:	5500 rpm			
speed	Idling:	min 1800 rpm			
Coolant	Minimum:	 - 20°C (-4 °F) at ground idle, start, and warm up 40 °C (104 °F) at normal operation 			
temperature	Maximum:	90°C (194 °F) at ground idle, start, and warm up 120 °C (248 °F) at normal operation			
	Minimum:	 - 20°C (-4 °F) at ground idle, start, and warm up 50 °C (120 °F) at normal operation 			
Oil	Maximum:	100 °C (212 °F) at ground idle, start, and warm up 130 °C (266 °F) at normal operation			
temperature	Optimum:	90 – 110 °C (194 – 230 °F) ATTENTION: Operating the enginese temperatures may lead to formation of condensation water in the lubrication system. To evaporate possibly accumulated water, at least once a day 100 °C (212 °F) oil temperature must be reached.			
	Minimum:	0.8 bar (11.6 psi) - below 3500 rpm 2.0 bar (29 psi) - above 3500 rpm			
Oil pressure:	Maximum:	5 bar (72.5 psi) 7 bar (102 psi) - For a short period at cold start			
	Normal:	2 - 5 bar (29-73 psi) - above 3500 rpm			
	Maximum:	950 °C (1742 °F)			
Exhaust gas temp.	EGT-split	EGT-split is the difference between the actual highest EGT value of the actual lowest EGT value 200 °C (392 °F) at fuel consumption higher than 3 lph 500 °C (932 °F) at fuel consumption less than 3 lph			
Fuel pressure	Minimum:	2.9 bar (42 psi) at fuel rail 2.5 bar (36 psi) acceptable fuel press exceedance (max.3 sec) NOTE: Fuel pressure exceedance only allowed after power setting change.			
	Maximum:	3.1 bar (45 psi) at fuel rail 3.5 bar (51 psi) Acceptable Fuel press.exceedance (max. 3 sec.)			
Ambient	Maximum in flight:	60 °C (140 °F) (manifold temperature)			
	Maximum at start:	50 °C (120 °F) (ambient temperature)			
temperature	Minimum at start:	-20 °C (-13 °F) (oil temperature)			
Critical altitude	Maximum:	15000 ft Manifold temperature max. 50°C (120 °F)			

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Operating altitude	Maximum	23000 ft
Acceleration	Maximum negative	-0.5 g (max. 5 seconds)
Manifold temperature	Maximum	50 °C <i>(120 °F)</i>
Manifold	Minimum	60 hPa (1.77inHg)
pressure	Maximum	1730 hPa (51 inHg)
Boost	Minimum	Ambient pressure
pressure	Maximum	1730 hPa <i>(51 inHg)</i>

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2.4.2 Fuel

	ATTENTION
	of Service Instruction SI-915 i-001, for tion of the correct fuel.
	ATTENTION
Use only fuel suitable	e for the respective climatic zone.
NOTE	
Risk of vapour formation i operation.	f using winter fuel for summer
Fuels with following specit	fication can be used:
	Usage/Description
Anti knock properties	915 iS
And knock properties	Min. RON 95
NOTE	
	TM D4814 specifications following lue has to be observed: min. AKI 9
	lue has to be observed: min. AKI 9

AVGAS

MOGAS

Antiknock properties

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

			Usage/Descr	iption	
	AVGAS		915 iS		-
	Aviation Standard	AVGAS 1	100 LL (ASTM	D910)	
Fuel volume:					
Wing fuel tenk volume		2260 1	2,16		

Wing fuel tank volume2x60	I	2x16	US gal
Unusable fuel quantity2x0.5	I	2x0.13	US gal

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2.4.3 Oil

	ATTENTION
	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-915 i-001, latest edition.
type	At the selection of suitable lubricants refer to the additional in- formation in the Service Information SI-915 i-001, latest edition.
l consumption	Max. 0.06 l/h (0.13 liq pt/h)
I specification	 Use only oil with RON 424 classification
	NOTE
	The ROTAX® Norm 424 (RON 424) is a BRP-Rotax internal standard, which is only available on special request via the ROTAX® authorized distributor and will not be disclosed to third parties without prior consent.
	 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 clutch slippage during normal operation.
	 Heavy duty 4-stroke motor cycle oils meet all the require- ments. These oils are normally not mineral oils but semi- or full synthetic oils.
	 Oils primarily for Diesel engines have insufficient high tem- perature 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 var- iations than single grade oils. They are suitable for use throughout the seasons, ensure rapid lubication of all engine components at cold start and get less fluid at higher temperatures.
	NOTE
Type of oil us Supplement N	ed by aircraft manufacturer is shown in Section 10 No.2.
l volume:	
nimum	

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2.4.4 Coolant

	ATTENTION	
	Obey the latest edition of Service Instruction SI-915 i-001, 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 v por bubble formation, freezing or thickening of the coolant wit in the operating limits. Use the coolant specified in the manufacturers documentatio	
Mixture		
	ATTENTION	
	Obey the operating media manufacturer's instructions!	
	NOTE	

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

Coolant liquid volume:

It is about 2.5 |

0.66 US gal

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2.5 Power plant instrument markings

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

Rotax 912 iS Sport	Minimum Limit (red line)	Normal Operating Range (green arc)	Caution Range (yellow arc)	Maximum Range (red line)
Engine speed [RPM]	1800	1800-5500	5500-5800	5800
Oil Temperature	50 °C (120 °F)	50 – 110 °C (120 – 230 °F) See ATTENTION below	110 – 130 °C (230 – 266 °F)	130 °C (266 °F)
Exhaust Gas Temp. (EGT)	-	800 – 850 °C (1472 – 1562 °F)	850 – 950 °C (1562 - 1742 °F)	950 °C (1742 °F)
Coolant Temperature (CT)	40 °C (122°F)	40-110°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

ATTENTION

Operating the engine below oil temperatures 90 - 110 °C (194 - 230 °F) may lead to formation of condensation water in the lubrication system. To evaporate possibly accumulated water, at least once a day 100 °C (212 °F) oil temperature must be reached.

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2.6 Miscellaneous Instrument Marking

There is not any miscellaneous instrument marking.

2.7 Weight

Empty weight (standard equipment) 325	kg	715	lb
NOTE			
Actual empty weight is show	vn in SE	CTION	6
Max. design take-off weight 600	kg	1320	lb
Max. design landing weight 600	kg	1320	lb
Max. weight of fuel (120 I) 87	kg	192	lb
Max. 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

2.8 Center of gravity

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

 MAC
 .53.819 in
 1367 mm

 Datum: Wing leading edge between ribs No. 4 and 5, 81.52 in (2071 mm) from plane of symmetry.
 .4 and 5, 81.52 in (2071 mm)

2.9 Approved maneuvers

Airplane Category: UL / LSA (Ultra-light / Light Sport Aircraft)

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!

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2.10 Maneuvering load factors

Maximum positive limit load factor+4	g
Maximum negative limit load factor 2	g
Maximum negative for the engine0.5	g (max. 5 seconds)

2.11 Crew

Number of seats2			
Minimum crew 1 pilot in the left seat			
Minimum crew weight 121	lb	55 k	g
Maximum crew weight see SECTION 6			

WARNING

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

2.12 Kinds of operation

There are permitted Day VFR flights.

Night VFR flights and IFR flights under VMC are permitted if the aeroplane is 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 (not required by ASTM F 2245)
- Fuel quantity indicator
- Tachometer (RPM)
- Oil temperature indicator
- Oil pressure indicator
- Cylinder head temperature indicator (Coolant temp indicator)

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2.13 Other limitations

WARNING No smoking on board of the aircraft!

CAUTION FAA Sport Pilot Rule limits Max. Speed in Level Flight (VH) to 120 knots CAS (222 km/h).

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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
- 3.5.1 Emergency descent
- 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 Autopilot malfunction
- 3.8.3 Inadvertent icing encounter
- 3.8.4 Loss of primary instruments
- 3.8.5 Loss of flight controls
- 3.8.6 Runaway pitch trim
- 3.9 Rotax 915 iS Failures in flight

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- 3.9.1 Failures indicated by the EMS
- 3.9.2 Failure of internal generators
- 3.9.2.1 Failure of Generator 1
- 3.9.2.2 Failure of Generator 2 3.9.2.3 Failure of both Generators
- 3.9.3 Engine not responding on throttle position commands
- 3.9.4 Engine on fire or fire in the engine compartment
- 3.9.5 Emergency Engine shut-off
- 3.9.6 Loss of Display CAN Information
- 3.9.7 Loss of power
- 3.9.8 Failures during engine start
- 3.9.8.1 Engine does not start
- 3.9.9 The sprag clutch fails to decouple from the starter
- 3.9.10 Exceedance of operational limits
- 3.9.11 Fuel pressure outside range
- 3.9.11.1 High fuel pressure
- 3.9.11.2 Low fuel pressure
- 3.9.12 Occurrence of uncharacteristic and severe engine vibrations
- 3.9.13 Exceeding max.admissible engine speed
- 3.9.14 Exceeding of max.coolant temperature
- 3.9.15 Exceeding of max.admissible oil temperature
- 3.9.16 Oil pressure below minimum during flight
- 3.9.17 Oil pressure below minimum on ground
- 3.9.18 Oil pressure above permitted range at low ambient temperatures
- 3.9.19 Maximum permissible exhaust temperatures exceeded

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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 (LANE A,B) switch off
 - 3. Apply brakes
- 3.2.2 Engine failure during take-off

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

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3.2.3 Engine failure in flight

- 1. Push control stick forward
- 2. Speed gliding at 65 KIAS (120 km/h)
 - below 150 ft: land in take-off direction
 - over 150 ft: choose a landing area
- Altitude
 Wind
- 4. Wind find direction and velocity
 5. Landing area choose free area without obstacles
- Landing are
 Flaps
- extend as needed
- 7. Fuel Selector shut off
- 8. Ignition (LANE A,B) switch off
- 9. Safety harness tighten
 - switch off before landing
- 11. Land

3.3 In-flight Engine Starting

10. Master switch

Engine Stop

- If the propeller continues to rotate during flight by windmilling, but the speed is not sufficient to start the engine, the electric starter can be used without problems. You must not wait until the propeller stands still.
- 2. Electric pumps ON
- 3. Fuel Selector switch to second fuel tank
- 4. Throttle lever to idling position
- 5. EMS main switch AUTO
- 6. LANE select switch A ON
- 7. LANE select switch B ON
- 8. Start power switch switch ON
- 9. Starter button press until the engine starts to run
- 10. Start power switch switch off after 15 sec.

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3.4 Smoke and Fire

1. Starter

- 3.4.1 Fire on ground at engine starting
 - keep in starting position

- close

- 2. Fuel Selector
- 3. Throttle - full power
- 4. Ignition (LANE A,B) switch off
- 5. Leave the airplane
- 6. Extinguish fire by a fire extinguisher (if available) or call for a firebrigade if you cannot do it.
- 7. Locate the cause of fire and resolve the error before next flight by qualified staff (authorized by the Aviation Authorities).
- 8. An entry in the logbook must be made.
- 9. A maintenance inspection should be carried out.
- 3.4.2 Fire on ground with engine running
 - 1. Heating - close
 - 2. Fuel selector - close - full power
 - 3. Throttle
 - 4. Ignition (LANE A,B) switch off
 - 5. Leave the airplane
 - 6. Extinguish fire by a fire extinguisher (if available) or call for a firebrigade if you cannot do it.
 - 7. Locate the cause of fire and resolve the error before next flight by qualified staff (authorized by the Aviation Authorities).
 - 8. An entry in the logbook must be made.
 - 9. A maintenance inspection should be carried out.
- 3.4.3 Fire during take-off
 - 1. Speed - 65 KIAS (120 km/h)
 - 2. Heating - close
 - 3. Fuel Selector - close
 - 4. Throttle - full power
 - 5. Ignition (LANE A,B) switch off
 - 6. Land and stop the airplane

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- 7. Leave the airplane
- Extinguish fire by a fire extinguisher (if available) or call for a firebrigade if you cannot do it.
- Locate the cause of fire and resolve the error before next flight by qualified staff (authorized by the Aviation Authorities).
- 10. An entry in the logbook must be made.
- 11. A maintenance inspection should be carried out.

3.4.4 Fire in flight

- 1. Heating close
- 2. Fuel Selector close
- 3. Throttle full power
- 4. Master switch switch off
- 5. Ignition (LANE A,B) switch off
- 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 a fire extinguisher (if available) or call for a firebrigade if you cannot do it.
- 10. Locate the cause of fire and resolve the error before next flight by qualified staff (authorized by the Aviation Authorities).
- 11. An entry in the logbook must be made.
- 12. A maintenance inspection should be carried out

NOTE

Engine will stop immediately after master switch switched off.

WARNING Do not attempt to re-start the engine!

3.4.5 Fire in the cockpit

- 1. Master switch
- switch offclose
- 2. Heating ·

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- 3. Use a fire extinguisher (if available).
- 4. If not land a leave the airplane as soon as possible

3.5 Glide

- An example of the use of gliding is in the case of engine failure
 - 1. Speed recommended gliding speed 65 KIAS

120 km/h

3.5.1 Emergency descent

Emergency descent means to get on the ground as quickly as possible. It is used in case of a big problem encountered in flight like engine fire, smoke in the cockpit, or any other serious problem.

- 1. Throttle lever fully pulled to set idle
- 2. Flaps retracted
- 3. Control stick push forwa
- 4. Speed
- push forward to bring airplane into descent $V_{\rm NO}~129$ KIAS (240 km/h) Do not exceed this speed except in smooth air, and then only with caution. VNE 157 KIAS (290 km/h)

Do not exceed this speed in any operation.

Steep spiral dive with max. 60° bank may be used however be careful to not exceed limit load factor during spiral. You can monitor area below you during a spiral.

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 120 km/h
- 2. Trim adjust 3. Safety harness - tighten 4. Flaps - extend as needed 5. COMM - report your location if possible 6. Fuel Selector - close 7. Ignition (LANE A,B) - switch off

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- 8. Master switch switch off
- 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.
- 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.
- 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.
 - If the main landing gear is damaged, perform touch-down at the lowest practicable speed and if possible, maintain direction during landing run.
 - 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.

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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. If an unintentional spin fully develops then the following recovery technique is advised:

1.	Throttle	-	idle
2.	Lateral control	-	ailerons neutralized
3.	Rudder pedals		full opposite rudder (to the mechanical stop)
4.	Following		
	a short pause		Elevator control – push forward until rotation stops
5.	Rudder pedals		neutralize rudder immediately when rotation stops
6.	Recover from the dive.		

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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

A maintenance inspection should be carried out.

3.8.2 Autopilot malfunction

In the case, that autopilot 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.

3.8.3 Inadvertent icing encounter

WARNING

Intentional flights under icing conditions are PROHIBITED!

If icing is inadvertently encountered then:

- 1. Pitot heat (if installed) ON
- 2. Exit icing conditions change altitude or turn back.
- 3. Cockpit heating pull knob to ON
 - pushed forward (UP) to defrost windshield

4. Up/Down knob - p 3.8.4 Loss of primary instruments

If primary instruments are lost and the aircraft is fitted with the backup instruments then use these to safely complete the flight.

If no backup instruments are installed then visually check the aircraft altitude and attitude and land as soon as practicable.

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3.8.5 Loss of flight controls

Loss of control may have several reasons like a failure of the control system, jamming, disconnection, strong turbulence, unrecoverable spin, pilot disorientation, etc.

If loss of a control appears e.g. due to jamming or disconnection, then some control might be still possible:

Lost control	Action
Ailerons	Some degree of roll control is available by using the secondary effect of rudder. Effectiveness of rudder may be increased by rapid bursts of power. Aircraft with a jammed aileron can be landed in a slip, preferably against a crosswind.
Elevator	Try to use elevator trim to control airplane longitudinally. Keep in mind that trim control works considerably slower than elevator control. Engine power may be used to pitch up. Before landing, when the airplane will enter ground effect, will be needed to apply a slight nose-up pitch as the airplane enters ground effect. Small shot of power in addition to the trim up may be needed. Wing flap control may be used to pitch down.
Rudder	Some degree of yaw control is available by using the secondary effect of ailerons.
Wing flaps	The flaps are mechanically interconnected and have the electrical control. If the electrical control would fail or if the flaps would jam in any position, then adjust elevator trim to trim flaps pitching moment. If (in spite of flaps mechanical interconnection) one flap would extend and the aircraft rolls then immediately use the opposite ailerons and rudder to eliminate pitching and rolling moment.

WARNING

If the control cannot be regained and the aircraft is fitted with a ballistic rescue system, then activate the system according to Error! Reference source not found.

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3.8.6 Runaway pitch trim

Runaway pitch trim is a condition in which the elevator trim control is lost from some reasons (trim servo stuck, trim control failure, etc.). In event of trim runaway, act as follows:

- 1. Speed
 - reduce to 65 KIAS (120 km/h IAS) or speed at which you can control aircraft without excessive stick force
- 2. Land as soon as possible

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3.9 Rotax 915 iS Failures in flight

WARNING

Non-compliance can result in serious injuries or death! Unless otherwise in this chapter stated, operating an engine with limited airworthiness is not permitted. Unscheduled maintenance action is required. At unusual engine behavior conduct checks as per Maintenance Manual Line Chapter 05-50-00 before the next flight.

ATTENTION

Identifies an instruction which, if not followed, may severely damage the engine or could void any warranty.

3.9.1 Failures indicated by the EMS EMS Health Status

The warning indicators provide basic information on the engine health.

HIC A: Voltage be- tween Terminal 2 and Terminal 8 (Warning Indi- cator A)	HIC B: Voltage be- tween Terminal 2 and Terminal 10 (Warning Indi- cator B)	Action on ground	Action during flight
0 V	Oscillating 0–12 V	One way flight to maintenance hangar permissible	Flight is possible to your destination at your own discretion.
Oscillating 0–12 V	0 V	One way flight to maintenance hangar permissible	Flight is possible to your destination at your own discretion.
0 V	12 V	Flight not permissible	Land the aircraft*
Oscillating 0–12 V	Oscillating 0–12 V	Flight not permissible	Land the aircraft*
Oscillating 0–12 V	12 V	Flight not permissible	Land the aircraft*
12 V	0 V	Flight not permissible	Land the aircraft*
12 V	Oscillating 0–12 V	Flight not permissible	Land the aircraft*
12 V	12 V	Flight not permissible	Land the aircraft*

* Take the next landing opportunity (airfield, airport) at your own discretion.

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NOTE

If a warning indicator flashes, it indicates an error with lower se-verity (Fault) that has been detected by the internal testing procedures of the ECU. In this case the ECU will continue to operate normally. There will be no transfer of control of the ignition and injection to the error-free Lane.

If a warning indicator remains on permanently, it indicates that a fatal error with higher severity (Failure) has been detected by the internal testing procedures of the ECU. In this case, the CU will continue to operate in an alternative control mode, which will transfer the control of ignition and injection to the error- free Lane.

Regular operation as well as alternative control modes of the ECU are able to represent the full engine power. Differences arise only in the efficiency of the engine.

3.9.2 Failure of internal generators

3.9.2.1 Failure of Generator 1

If during normal operation (Generator 1 is supplying the EMS) Generator 1 fails, the ECU automatically switches over to sup- ply the EMS by using Generator 2.

If the engine is supplied by Generator 2 the engine is able to de-liver full performance. No performance drop can be recognized while the engine switches the supply from Generator 1 to Generator 2.

ATTENTION

If Generator 2 is used for supplying the EMS, the airframe will not be supplied with electrical power by an internal generator.

This failure condition will be detected by the EMS. Therefore see section "Failures detected by the EMS" for appropriate action.

3.9.2.2 Failure of Generator 2

If during normal operation (Generator 1 is supplying the EMS) Generator 2 fails, the ECU is not able to detect this condition.

AT

If Generator 2 fails the Airframe will not be supplied with electrical power by an internal generator

Land as soon as practicable.

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3.9.2.3 Failure of both Generators

A failure of both Generators (Generator 1/Generator 2) will result in engine stoppage unless the EMS is not powered by an external power source (12 V voltage drop between X3 Terminal 1 and Aircraft ground). Land as soon as practicable.

3.9.3 Engine not responding on throttle position commands

Possible breakage/blockage of throttle valve actuation/linkage. In case of a breakage of the throttle valve actuation the valve will jump to wide open position.

WARNING

Non-compliance can result in serious injuries or death! Never attempt starting the engine with a disconnected, broken or blocked throttle valve actuation. This may lead to excessive engine speeds.

For shutting off the engine proceed according to Engine shut- OFF procedure. As part of an abnormal operation, it might be required to shut down the engine at higher engine speeds.

3.9.4 Engine on fire or fire in the engine compartment

ATTENTION Shut off fuel supply and carry out emergency procedures as prescribed in 3.4

Event has to be entered by the pilot into engine logbook.

3.9.5 Emergency Engine shut-off

Step	Step Description	Procedure
1	Deactivate ECU	HIC A: DisconnectTerminal 1 and Terminal 7 to turn OFF ECU Lane A HIC B: DisconnectTerminal 1 and Terminal 9 to turn OFF ECU Lane B Display CAN A/B: Check and ensure compliance with operational limits.
	Example (Symbolic)	Lane select Switch A: OFF Lane select Switch B: OFF

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3.9.6 Loss of Display CAN Information If Display CAN Bus A or B fail, all information's are still available on the working CAN Bus. In case Display CAN A and B fail and no engine parameters are available land the aircraft. 3.9.7 Loss of power Perform Emergency landing according to 3.6.1 if engine power is fully lost

and cannot be recovered. If engine power is lost partially then land as soon as possible.

If engine power is lost partially then land as soon as

- 3.9.8 Failures during engine start
- 3.9.8.1 Engine does not start

Insufficient supply from electrical power source.

Ensure that Engine starter and EMS system is supplied by an external power source until engine reached idle speed

Insufficient fuel supply.

Ensure that Engine is supplied with fuel in appropriate quality

Starting at low oil temperature.

Use high quality oil without friction modifier.

3.9.9 The sprag clutch fails to decouple from the starter

ATTENTION	
Shut down engine!	
Risk of fire and danger of the electric starter overheating	

Follow engine shut OFF procedure according to 4.5.18.

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3.9.10 Exceedance of operational limits

ATTENTION

When exceeding an operating limit, adapt engine power setting and land as soon as possible.

Any exceeding of an operating limit has to be entered by the pilot into engine logbook, stating duration and duration of this condition. Unscheduled maintenance action may be required (see Maintenance Manual Line).

3.9.11 Fuel pressure outside range

Reduce engine power setting to the minimum necessary and carry out precautionary landing according to 3.6.2.

3.9.11.1 High fuel pressure

If the pressure is too high, switch the AUX- pump OFF.

If this has no effect then limited flight operation with reduced power is possible.

3.9.11.2 Low fuel pressure

If the pressure is too low, switch the AUX-pump ON. If this has no effect then limited flight operation with reduced power is possible. A maintenance inspection should be carried out.

- 3.9.12 Occurrence of uncharacteristic and severe engine vibrations
 - If the vibrations occur in conjuction with a loss of power then the engine may only be firing on 3 cylinders.
 - Limited flight operation.
 - A maintenance inspection should be carried out.
- 3.9.13 Exceeding maximum admissible engine speed

Exceeding engine speed

 Reduce the engine speed. Any exceeding of the max admissible engine speedhas to be entered by the pilot into logbook, stating duration and extent of over engine speed.

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3.9.14 Exceeding of max.coolant temperature

Exceeding coolant temperature

CAUTION Reduce engine power setting to the minimum necessary and carry out precautionary landing.

- Any exceeding of the max.admissible coolant temperature has to be entered by the pilot into logbook, stating duration and extent of overtemperature condition.
- A maintenance inspection should be carried out.
- Check the ECU error log file.
- 3.9.15 Exceeding of maximum admissible oil temperature

Exceeding oil temperature

CAUTION Reduce engine power setting to the minimum necessary and carry out precautionary landing.

- Any exceeding of the max.admissible oil temperature has to be entered by the pilot into logbook, stating duration and extent of overtemperature condition.
- A maintenance inspection should be carried out.
- Check the ECU error log file.
- 3.9.16 Oil pressure below minimum during flight

Oil pressure too low

CAUTION

Reduce engine power setting to the minimum necessary and carry out precautionary landing.

- Check oil system.
- A maintenance inspection should be carried out.
- Check the ECU error log file.

3.9.17 Oil pressure below minimum - on ground

Oil pressure too low

CAUTION

Immediately stop the engine and check for reason. Check oil system.

Check oil quantity in oil tank.

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- Check oil quality. See also Chapter 2.4 of the Engine Manual.
- A maintenance inspection should be carried out.
- 3.9.18 Oil pressure above permitted range at low ambient temperatures
 - Oil pressure too high
 - Reduce engine speed and check the oil pressure again once it has reached a higher oil temperature.
 - A maintenance inspection should be carried out.
 - Check the ECU error log file.
- 3.9.19 Maximum permissible exhaust temperatures exceeded
 - Exceeded exhaust temperatures

CAUTION

Reduce engine power setting to the minimum necessary and carry out precautionary landing.

- Check the exhaust temperature
- Oil and coolant limits must not be exceeded.
- A maintenance inspection should be carried out.

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BRISTELL LSA



Aircraft Operating Instructions

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SECTION 4

- 4 NORMAL PROCEDURES
- 4.1 Introduction
- 4.2 Assembly and Disassembly
- 4.3 Rotax 915 iS Daily Checks:
- 4.3.1 Coolant level
- 4.3.2 Check of mechanical/electronic components
- 4.4 Pre-flight Inspection
- 4.4.1 Inspection Check List
- 4.4.2 Rotax 915 iS Pre-flight checks
- 4.5 Normal procedures
- 4.5.1 Before engine starting
- 4.5.2 Engine starting
- 4.5.3 After engine start
- 4.5.3.1 Warming up period
- 4.5.3.2 Engine run-up
- 4.5.3.3 Ground test
- 4.5.3.4 Lane and Ignition check
- 4.5.3.5 Wastegate and PCV check 4.5.3.6 Fuel pump check
- 4.5.3.6 Fuerpum 4.5.4 Taxiing
- 4.5.4 Taxing 4.5.5 Before take-off
- 4.5.6 Take-off
- 4.5.7 Short field take-off
- 4.5.8 Soft field take-off
- 4.5.9 Climb
- 4.5.10 Cruise
- 4.5.11 Descent
- 4.5.12 Before landing
- 4.5.13 Balked Landing (Go around)
- 4.5.14 Landing
- 4.5.15 Short field landing

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4.5.16 Soft field landing

4.5.17 After landing

4.5.18 Engine shut-off

4.5.19 Aircraft parking and tie-down

4.5.20 Flight in rain

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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 Rotax 915 iS Daily Checks:

WARNING Risk of burnings and scalds! Hot engine parts! Conduct checks on the cold engine only!

WARNING

Non-compliance can result in serious injuries or death!

When performing checks which do not require ignition make sure that the ECU is turned off and the aircraft is secured to prevent form unwanted engine starts.

ATTENTIO

If established abnormalities (e.g. excessive resistance of the engine, noise etc.) inspection in accordance with the relevant Maintenance Manual is necessary. Do not release the engine into service before rectification.

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4.3.1 Coolant level

ATTENTION Operating media must be observed. Inappropriate coolant quantity can lead to serious engine damage

The specifications given in 2.4.4 must be adhered to when refilling coolant.

Step	Procedure
1	Verify coolant level in the expansion tank , replenish as required up to top. The max. coolant level must be flush with the bottom of the filler neck.
2	Verify coolant level in the overflow bottle , replenish as required. The coolant level must be between max. and min. mark.

4.3.2 Check of mechanical/electronic components

Step	Procedure	
1	Turn propeller slowly by hand in direction of engine rota- tion several times and observe engine for odd noises or excessive resistance and normal compression.	
2	Verify free movement of throttle valve and the complete range.	
3	Inspect for damages, leakage and general condition of exhaust system and turbocharger.	
4	Visual inspection for mechanical and thermal damages of sensor, actuators and the wiring harness.	
5	Visual inspection for mechanical and thermal damages of pressure control valve, fuse box and ECU.	

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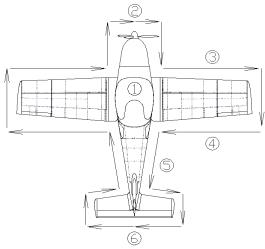
4.4 Pre-flight Inspection

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:



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4.4.1 Inspection Check List

4.4.1		rispection check List	
1	-	Ignition (LANE A,B)	- 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	-	Rotax 915 iS Pre-flight check	s according to 4.4.2
	-	Engine cowling condition	
	-	Propeller DUC FLASH:	
			de of the propeller, shake it firmly to feel if a too much
		clearance appears in the setting of the	
		 Degradation of material: Check visu Inconel leading edge, surface of the b 	ally the entire propeller without dismantling (blade root,
			lly the fixation screws of the spinner. A marking paint
			d spinner to have a means of visual inspection of
		proper tightening the screws	
		Engine mount and exhaust m	
	-	Oil and coolant quantity chec	k
	-	Visual inspection of the fuel a	and electrical system
	-	Fuel system draining	
	-	Other actions according to th	e engine manual
3	-	Wing surface condition	
	_	Leading edge condition	
		Pitot tube condition	
(4)	-	Wing tip	- surface condition, attachment
4	-	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	
6	-	Vertical tail unit - condition of su	
Ŭ			movement, rudder stops
	-	Horizontal tail unit	 condition of surface, attachment, free
	<u> </u>		movement, elevator stops
	-		fuselage and wing is the same as on right
		side	

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4.4.2 Rotax 915 iS Pre-flight checks

	WARNING			
Risk of burnings and scalds! Hot engine parts! Conduct checks on the cold engine only!				
oratin	g media			
Step	Procedure			
1	Check for any oil-, coolant- and fuel leaks. If leaks are evident, rectify and repair them before next flight.			
l level				
	ATTENTION			
	Operating media must be observed.			
	ppropriate coolant quantity can lead to serious engine damage.			
e spe	cifications given in 2.4.3 must be adhered to when refilling oil.			
Step	Procedure			
1	NOTE Propeller shouldn't be turned excessively reverse the normal direction of engine rotation.			
	Remove bayonet cap from the oil tank, turn the propeller slowly by hand in direction of engine rotation several times to pump oil from the engine into the oil tank.			
2	It is essential to build up compression in the combustion chamber. Maintain the pressure for a few seconds to let the gas flow via the piston rings into the crankcase. The speed of rotation is not important but the pressure and the amount of gas which is transferred into the crankcase.			
3	This process is finished when air is returning back to the oil tank and can be noticed by a gurgle from the open oil tank.			
4	Check oil level and add oil if necessary. The oil level should be in the upper half (between the "50%" and the "max" mark) and should never falls below the "min." mark of the oil dipstick. Prior to long flights oil should be added so that the oil level reaches the "max" mark. Avoid oil levels exceeding the "max" mark, since excess oil could be poured out through the venting system.			
	Difference between max and min mark = 0.45 litre (0.95 liq pt). Oil consumption max 0.06 l/h (0.13 liq pt/h).			
5	Re-install bayonet cap.			

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4.5 Normal procedures

4.5.1 Before engine starting

- 1. Control system - free & correct movement - clean
- 2. Canopy
- fully applied
- 3. Brakes Safety harness tighten

5. Rudder pedals - set to required position

WARNING

Adjusting of rudder pedals position during flight is PROHIBITED.

4.5.2 Engine starting

WARNING Non-compliance can result in serious injuries or death! Do not start the engine if any person is near the engine.

Maintenance CAN Bus (A/B) must not be used during flight. B.U.D.S. aircraft USB-to-CAN converter must be disconnected.

1. Fuel Selector

- ON - LEFT or RIGHT FUEL TANK ON

	2. Master switch	- ON
Step	Step Description	Procedure
1	Engine	-
	Pre-heating (if necessary)	
	Example (Symbolic)	-
2	Activate Fuel pumps	HIC A: A connection between Terminal 3 and Terminal
		9 will power Fuel pump 1.
		HIC B: A connection between Terminal 3 and Terminal 11
		will power Fuel pump 2.
	Example (Symbolic)	Fuel pump 1: ON
		Fuel pump 2: ON
	ATTENTION	
	Only switch on one	fuel pump when starting the engine. Switching on
	both fuel pumps can lead to a bad start behavior.	
3	Activate ECU	HIC A: A connection between Terminal 1 and Terminal
		7 will power ECU Lane A.
		HIC B: A connection between Terminal 1 and Terminal

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		9 will power ECU Lane B.
	Example (Symbolic)	Lane select Switch A: ON
		Lane select Switch B: ON
4	Temporary supply engine	X3: A connection between Terminal 2 and Terminal 3,
	with external power supply	and between airframe ground and EMS ground will
		activate Start Power.
		The temporary power supply must be maintained during
		steps 4, 5, 6.
	Example (Symbolic)	Start Power Switch: HOLD
5	Check if Warning	HIC A: 12 V voltage drop between Terminal 2 and
	Indicators illuminate and	Terminal 8 for 3 seconds.
	extinguish after around 3	HIC B: 12 V voltage drop between Terminal 2 and
	seconds.	Terminal 10 for 3 seconds.
	Example (Symbolic)	Warning Lamp A: Check
		Warning Lamp B: Check
6	Set Throttle Valve	Set linearized throttle position according to diagram
		Figure 3. Throttle position below.
	Example (Symbolic)	Set Throttle.

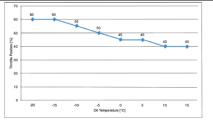


	Figure 3: Throttle posiiton		
7	Start Engine	HIC B: A connection between Terminal 4 and Terminal	
		12 actuates the starter. The connec- tion must persist	
		until the engine speed exceeds 1500 rpm.	
	Example (Symbolic)	Start Button: HOLD	
	ATTENTION		
	Activate starter for maximum of 10 seconds only (without interruption), followed by a cooling period of 2 minutes		
8	Reduce Throttle Valve as	Set linearized throttle position so that the engine runs on	
1	required	idle.	
	Example (Symbolic)	Reduce Throttle.	

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		ATTENTION		
	Increasing engine speed is only permitted at steady oil pressure readings above 3 bar.			
9 Check engine instruments (Warning Indicators and Operational Limits) and ensure compliance with the operating limits.		HIC A: If a 12 V voltage drop between Terminal 2 and Termi- nal 8 (permanent or oscillating) is detected perform Lane and Ignition Check. See abnormal operation if the voltage drop still persists. HIC B: If a 12 V voltage drop between Terminal 2 and Terminal 10 (permanent or oscillating) is detected perform a Lane and Ignition Check. See abnormal operation if the voltage drop still persists. Display CAN A/B: Check if oil pressure has risen within 10 seconds after engine start and monitor oil pressure. Warning Lamp A: Check		
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check Pilot Display: Check		
10	Generator Switching	Increase engine speed above 2400 rpm and hold for 8 seconds.		
	Example (Symbolic)	Increase Throttle Position		
11	Check engine instru- ments (Warning Indi- cators and Dperational Limits) HIC A: If a 12 V voltage drop between Terminal Terminal 8 (permanent or oscillating) is detected OFF engine and perform troubleshooting. nad ensure compli- ance with the operat- ng limits. HIC B: If a 12 V voltage drop between Terminal Terminal 10 (permanent or oscillating) is detect OFF engine and perform troubleshooting. Display CAN A/B: Check and ensure compliance operational limits. Display CAN A/B: Check and ensure compliance			
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check Pilot Display: Check		

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4.5.3 After engine start

WARNING

Non-compliance can result in serious injuries or death! Do not start the engine if any person is near the engine.

4.5.3.1 Warming up period

	warning up period	
Step	Step Description	Procedure
1	Check engine instruments (Warning Indicators and Operational Limits) and ensure compliance with the operating limits while step 2 to 4.	HIC A: If a 12 V voltage drop between Terminal 2 and Terminal 8 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting. HIC B: If a 12 V voltage drop between Terminal 2 and Terminal 10 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting. Display CAN A/B: Check and ensure compliance with operational limits.
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check Pilot Display: Check
2	Set Throttle Valve as required.	Set linearized throttle position in a way that the engine runs on approx. 2000 rpm for approx. 2 minutes.
	Example (Symbolic)	Set Throttle
3	Set Throttle Valve as required.	Set linearized throttle position in a way that the engine runs on approx. 2500 rpm until oil temperature reaches 50 °C (120 ° F).
	Example (Symbolic)	Set Throttle
4	Reduce Throttle Valve as required.	Set linearized throttle position so that the engine runs on idle.
1	Example (Symbolic)	Reduce Throttle

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4.5.3.2 Engine run-up

4.5.3.3 Ground test

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).

ATTENTION

After a full-load ground test allow a short cooling run at idle speed to prevent vapor formation in the cylinder head.

Step	Step Description	Procedure	
1	Check engine instruments (Warning Indicators and Operational Limits) and ensure compliance with the operating limits while step 2 to 3.	HIC A: If a 12 V voltage drop between Terminal 2 and Terminal 8 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting. HIC B: If a 12 V voltage drop between Terminal 2 and Terminal 10 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting	
		Display CAN A/B: Check and ensure compliance with operational limits.	
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check Pilot Display: Check	
2	Set Full Throttle	Set linearized throttle position to WOT and check if maximum performance can be reached.	
	Example (Symbolic)	Set Throttle.	
3	Set Throttle Valve as required	Set linearized throttle position to reach an engine speed of 2500 rpm and continue with Lane check 2500 rpm and Ignition check.	
	Example (Symbolic)	Set Throttle.	

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4.5.3.4 Lane and Ignition check

During the Lane and Ignition check Engine Speed must always show plausible values no matter if one ore both lanes are ac- tive. Otherwise maintenance is required.

Step	Step Description	Procedure	
1	Check engine instruments	HIC A: If a 12 V voltage drop between Terminal 2 and	
	(Warning Indicators and	Terminal 8 (permanent or oscillating) is detected, shut	
	Operational Limits) and	OFF engine and perform troubleshooting.	
	ensure compliance with	HIC B: If a 12 V voltage drop between Terminal 2 and	
	the operating limits while	Terminal 10 (permanent or oscillating) is detected, shut	
	step 2 to 11.	OFF engine and perform troubleshooting	
		Display CAN A/B: Check and ensure compliance with	
		operational limits.	
	Example (Symbolic)	Warning Lamp A: Check	
		Warning Lamp B: Check	
		Pilot Display: Check	
2	Set Throttle Valve as	Set linearized throttle position so that engine speed is	
	required.	approximately 2500 rpm.	
	Example (Symbolic)	Set Throttle	
3	Deactivate ECU Lane A	HIC A: Disconnect Terminal 1 and Terminal 7 to turn	
		OFF ECU Lane A.	
	Example (Symbolic)	Lane select Switch A: OFF	
4	Observe engine speed	Display CAN A/B; Check engine speed.	
	Example (Symbolic)	Pilot Display: Check	
ATTENTION		ATTENTION	
	Engine speed may r	not drop/increase more than 250 rpm. If the fuel	
	pressure is not withi	n the limits, the cause must be determined. The	
	engine must not b	e put into service until the problem is rectified.	
Step	Step Description	Procedure	
5	Activate ECU Lane A	HIC A: Connect Terminal 1 and Terminal 7 to power ECU	
		Lane A.	
	Example (Symbolic)	Lane select Switch A: ON	
		HIC A: 12 V voltage drop between Terminal 2 and	
	to extinguish and consider	Terminal 8 for 3 seconds.	
1	slack time.		
	NOTE		
After the voltage drop between Terr		tween Terminal 2 and Terminal 8 changes back	
1			

 After the voltage drop between 1erminal 2 and 1erminal 8 changes back

 to 0 V wait approx. 3 seconds until continuing with the next step.

 Example (Symbolic)
 Warning Lamp A: Check

 7
 Deactivate ECU Lane B

 HIC B: Disconnect Terminal 1 and Terminal 9 to turn OFF ECU Lane B.

 Example (Symbolic)
 Lane select Switch B: OFF

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8	Observe engine speed	Display CAN A/B: Check engine speed.		
	Example (Symbolic)	Pilot Display: Check		
		ATTENTION		
Engine speed may not drop/increase more than 250 rpm. If the fuel pressure is not within the limits, the cause must be determined. The engine must not be put into service until the problem is rectified.				
Step	ep Step Description Procedure			
9	Activate ECU Lane B	HIC B: Connect Terminal 1 and Terminal 9 to power		
		ECU Lane B.		
	Example (Symbolic) Lane select Switch B: ON			
10	Await Warning Indicator B	HIC A: 12 V voltage drop between Terminal 2 and		
	to extinguish and consider Terminal 10 for 3 seconds.			
	slack time.			
	NOTE			
	After the voltage drop be	After the voltage drop between Terminal 2 and Terminal 10 changes back		
	to 0 V wait approx. 3 sec	to 0 V wait approx. 3 seconds until continuing with the next step.		
	Example (Symbolic)	Warning Lamp B: Check		
11	Reduce Throttle Valve as			
		of 2000 rpm and continue with fuel pump check.		
	Example (Symbolic) Set Throttle			

NOTE

Lane A and Lane B have different sensor inputs. During Lane and Ignition check, some sensor values are not displayed, de- pending on the activation of the Lanes

Following sensor values are not available if Lane A is turned OFF and Lane B is activated:

- Coolant temperature
- Exhaust gas temperatures from cyl. 1-4
- Ambient temperature
- Throttle lever position

Following sensor values are not available if Lane B is turned OFF and Lane A is activated:

- Oil temperature
- Oil pressure

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4.5.3.5 Wastegate and PCV check

Manifold Air Temperature (MAT) must be <65 °C during the check procedure. Otherwise the ECU (Engine Control Unit) internal check of the Pressure Control Valve (PCV) and Wastegate will not be executed.

NOTE

If possible the PCV Check and the Lane and Ignition Check might be combined in one check.

Step	Step Description	Procedure			
1	Check engine instruments	HIC A: If a 12 V voltage drop between Terminal 2 and			
	(Warning Indicators and	Terminal 8 (permanent or oscillating) is detected, shut			
	Operational Limits) and	OFF engine and perform troubleshooting. HIC B: If a 12			
	ensure compliance with the	V voltage drop between Terminal 2 and Terminal 10			
	operating limits while	(permanent or oscillating) is detected, shut OFF engine			
	step 2 –13.	and perform troubleshooting.			
		Display CAN A/B: Check and ensure compliance with			
		operational limits.			
	Example (Symbolic)	Warning Lamp A: Check			
		Warning Lamp B: Check			
		Pilot Display: Check			
2	Set Throttle valve to WOT	Set linearized throttle position to 100%. Governor must			
		be set in a way that engine speed >4700 rpm.			
_	Example (Symbolic)	Set Throttle			
3	Deactivate ECU Lane A	HIC A: Disconnect Terminal 1 and Terminal 7 to turn			
	Evenue la (Ormali alla)	OFF ECU Lane A Lane Select Switch A: OFF			
4	Example (Symbolic) Wait > 15 seconds	Lane Select Switch A: OFF			
4	Example (Symbolic)	– Wait			
5	Check engine instruments	HIC A: If a 12 V voltage drop between Terminal 2 and			
5	(Warning Indicators and	Terminal 8 (permanent or oscillating) is detected, shut			
	Operational Limits) and	OFF engine and perform troubleshooting. HIC B: If a 12			
	ensure compliance with the	V voltage drop between Terminal 2 and Terminal 10			
	operating limits.	(permanent or oscillating) is detected, shut OFF			
		engine and perform troubleshooting.			
		Display CAN A/B: Check and ensure compliance with			
		operational limits.			
	Example (Symbolic)	Warning Lamp A: Check			
		Warning Lamp B: Check			
		Pilot Display: Check			
6	Activate ECU Lane A	HIC A: Connect Terminal 1 and Terminal 7 to power ECU			
		Lane A			
	Example (Symbolic)	Lane Select Switch A: ON			
7	Await Warning Indicator A	HIC A: If a 12 V voltage drop between Terminal 2 and			

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Step	Step Description	Procedure		
	to extinguish and consider	Terminal 8 for 3 second.		
	slack time.			
	NOTE			
	After the voltage drop be	tween Terminal 2 and Terminal 8 changes back		
	to 0 V wait approx 3 seco	onds until continuing with the next step.		
	Example (Symbolic)	Warning Lamp A: Check		
8	Deactivate ECU Lane B	HIC B: Disconnect Terminal 1 and Terminal 9 to turn OFF ECU Lane B		
	Example (Symbolic)	Lane Select Switch B: OFF		
9	Wait > 15 seconds	-		
	Example (Symbolic)	Wait		
10	Check engine instruments	HIC A: If a 12 V voltage drop between Terminal 2 and		
	(Warning Indicators and	Terminal 8 (permanent or oscillating) is detected, shut off		
	Operational Limits) and	engine and perform troubleshooting.		
	ensure compliance with the	HIC B: If a 12 V voltage drop between Terminal 2 and		
	operating limits.	Terminal 10 (permanent or oscillating) is detected, shut		
		off engine and perform troubleshooting.		
		Display CAN A/B: Check and ensure compliance with		
		operational limits.		
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check		
		Pilot Display: Check		
11	Activate ECU Lane B	HIC B: Connect Terminal 1 and Terminal 9 to power ECU		
		Lane B.		
	Example (Symbolic)	Lane select Switch B: ON		
12	Await Warning Indicator B	HIC A: 12 V voltage drop between Terminal 2 and		
	to extinguish and consider	Terminal 10 for 3 seconds.		
	slack time.			
	NOTE			
After the voltage drop between Terminal 2 and terminal 10 ch V wait approx 3 seconds until continuing with the next step.		tween Terminal 2 and terminal 10 changes back to 0		
		until continuing with the next step.		
	Example (Symbolic)	Warning Lamp B: Check		
13	Reduce Throttle Valve as	Set linearized throttle position to reach an engine speed		
	required	of 2000 rpm and continue with Fuel pump check		
	Example (Symbolic)	Set Throttle		

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4.5.3.6 Fuel pump check

It must be ensured, that both fuel pumps are working and no loss of power or irregular running by deactivation of one fuel pump occurs. The limits for fuel pressure must not be exceeded.

Step	Step Description	Procedure	
1	Check engine instruments (Warning Indicators and Operational Limits) and ensure compliance with the operating limits while step 2–8.	HIC A: If a 12 V voltage drop between Terminal 2 and Terminal 8 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting. HIC B: If a 12 V voltage drop between Terminal 2 and Terminal 10 (permanent or oscillating) is detected, shut OFF engine and perform troubleshooting. Display CAN A/B: Check and ensure compliance with operational limits.	
	Example (Symbolic)	Warning Lamp A: Check Warning Lamp B: Check Pilot Display: Check	
2	required is approx 2000 rpm.		
3	Example (Symbolic) Set Throttle 0 Deactivate Fuel pump 1 HIC A: Disconnect Terminal 3 and Terminal 9 to deactivate Fuel pump 1		
	Example (Symbolic) Fuel pump 1: OFF		
4	4 Observe Fuel pressure		
	Example (Symbolic) Pilot Display: Check		
	ATTENTION		
If the fuel pressure is not within the limits, the cause must determined. The engine must not be put into service until the proble rectified.		ine must not be put into service until the problem is	
5	5 Activate Fuel pump 1 HIC A: Disconnect Terminal 3 and Terminal 9 to deactivate Fuel pump 1		
Example (Symbolic) Fuel pump 1: OFF			
6	 Deactivate Fuel pump 2 HIC A: Disconnect Terminal 3 and Terminal 11 t deactivate Fuel pump 2 		
	Example (Symbolic) Fuel pump 2: OFF		
7	Observe Fuel pressure		

Example (Symbolic) Pilot Display: Check ATTENTION If the fuel pressure is not within the limits, the cause must be deter-

	mined. The engine	mined. The engine must not be put into service until the problem is rectified.		
8	Activate Fuel pump 2	HIC A: Disconnect Terminal 3 and Terminal 11 to deactivate Fuel pump 2.		

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NOTE

Cycling the propeller governor puts a relatively high load on the engine. Unnecessary cycling should be avoided.

4.5.4 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.

4.5.5 Before take-off

1. A	ltimeter -	set	
2. T	rim -	set neutral position	
3. C	ontrol system -	check free movement	
4. C	ockpit canopy -	closed	
5. S	afety harness -	tighten	
6. F	uel Selector -	ON (LEFT or RIGHT tank)	
NOTE AIRCRAFT IS EQUIPPED WITH RETURN LINES IN BOTH FUEL TANKS.			
7. lg	nition (LANE A,B) -	ON	
0 5			
8. E	I. pumps -	ON	
		ON extend as needed	
9. W	/ing flaps -	••••	

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4.5.6 Take-off

- 1. Brakes
- apply to stop wheel rotation
- 2. Take-off power - throttle fully forward - check rpm
- Engine speed 4. Instruments
 - check if within limits
- 5. Nose wheel unstick 30 KIAS (55 km/h)
 - 40 KIAS (75 km/h)
- 6. Airplane lift-off 7. Wing flaps
- retract when speed of 65 KIAS (120 km/h) is reached, at altitude of 300 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 is "ON"

4.5.7 Short field take-off

- 1. Use all available runway
- 2. Heading set
- 3. Flaps - 30° - as required
- 4. Trim
- 5. Hold brakes 6. Throttle
- fully forward (5800 rpm, max. 5min.)
- 7. Engine instruments check within limits
- 8. Release brakes after rpm increase
- 9. Accelerate and pull control stick aft to lift off the nose wheel as soon as possible.
- 10. As aircraft becomes airborne, level off in ground effect to accelerate to:

No obstacle:	Vy (best rate of climb)	76 KIAS (123 km/h)
Obstacle:	Vx (best angle of climb)	68 KIAS (109 km/h)
11. Flaps	- set to 10°	
12. Climb at:		
No obstacle:	Vy (best rate of climb)	76 KIAS (123 km/h)
Obstacle:	Vx (best angle of climb)	68 KIAS (109 km/h)

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13. Trim

- 14. Flaps
- adjust - retract at Vy 76 KIAS (123 km/h) or at 150 ft

4.5.8 Soft field take-off

- 1. Inspect field condition checking for grass height, bumps, holes, debris, wetness.
- 1. Taxiing
- control stick fully aft
- 2. Heading - set
- 30° 3. Flaps 4. Trim
 - as required
- 5. Throttle
- fully forward (5800 rpm, max. 5min.) 6. Control stick - full aft pressure during T/O run to lift off
 - nose wheel as soon as possible.
- 7. As aircraft becomes airborne, level off in ground effect to accelerate to.

	10.			
	No obstacle:	Vy (best rate of climb)	76 KIAS (123 km/h)	
	Obstacle:	Vx (best angle of climb)	68 KIAS (109 km/h)	
8.	Flaps	- set to 10°		
9.	Climb			
	No obstacle:	Vy (best rate of climb)	76 KIAS (123 km/h)	
	Obstacle:	Vx (best angle of climb)	68 KIAS (109 km/h)	
10). Trim	- adjust		
		- retract at Vy 76 KIAS	ract at Vy 76 KIAS (123 km/h)	

or at 150 ft

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4.5.9 Climb

- 1. Best ROC speed Best rate of climb speed (Vy): 76 KIAS (123 km/h)
 - Best angle of climb speed (Vx):
 68 KIAS (109 km/h)
 - Max. take-off power

- trim the airplane

- (max. 5800 rpm for 5 minutes)
 Max. cont. power 5500 rpm
- 3. Trim
- 4. Instruments

2. Throttle

- oil temperature and pressure, 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.

4.5.10 Cruise

1. El. pump	- OFF			
2. Fuel selector	- LEFT or RIGHT.			
NOTE				
It is recommended to switch between tanks from time to time during flight				
to consume fuel equally from both tanks.				

Refer to Section 5, for recommended cruising regimes.

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4.5.11 Descent

1. Optimum glide speed - 65 KIAS (120 km/h)

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 120-1300 km/h (65-70 KIAS) and check that the engine instruments indicate values within permitted limits.

4.5.12 Before landing

- 1. Approach speed 60 KIAS (110 km/h)
- 2. Throttle as needed
- 3. Wing flaps extend as needed
- 4. Trim

1. Throttle

5. Trim

- as needed
- 5. Autopilot OFF

4.5.13 Balked Landing (Go around)

- full power (max.5800 rpm)
- 2. Wing flaps extend as needed
- 3. Trim
 - adjust as needed
- Wing flaps
- retract at height of 150 ft after reaching 65 KIAS (120 km/h)
- adjust
- 6. Repeat circuit pattern and landing

4.5.14 Landing

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

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4.5.15 Short field landing

- 1. Fuel selector - select proper tank
- 2. Safety harness 2. Safety harness- check that tightened3. Approach speed- 55 KIAS (100 km/h)
- 4. Glide path just enough to clear obstacle at approach end of runway
- 5. Throttle
 - as required - 30°
- 6. Flaps 7. Trim
- as required - ON
- 8. Landing light(s)
- 9. Flare - minimum float
- stick forward 10. After touchdown
 - Retract flaps
 - Maximum braking

4.5.16 Soft field landing

	nora lanang	
1.	Fuel selector	 select proper tank
2.	Safety harness	 check that tightened
3.	Approach speed	 59 KIAS (110 km/h)
4.	Throttle	- as required
5.	Flaps	- 20 °
6.	Trim	- as required
7.	Landing light(s)	- on
8.	Flare	- add power before touchdown to keep elevator effective to help keep weight off nose wheel
9.	After touchdown	 throttle to idle gradually increase back elevator to keep weight of nosewheel No braking during roll out
\fte	r landing	

4.5.17 Af

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

2. Wing flaps

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4.5.18 Engine shut-off

-						
Step		Procedure				
1	Check the engine	HIC A: If a 12 V voltage drop between Terminal 2				
	instruments (Warning	and Terminal 8 (permanent or oscillating) is				
	Indicators and Operational	detected, shut OFF engine and perform				
	Limits) and ensure	troubleshooting.				
	compliance with the	HIC B: If a 12 V voltage drop between Terminal 2				
	operating limits while step	and Termi- nal 10 (permanent or oscillat- ing) is				
	2 to 5.	detected, shut OFF engine and perform				
		troubleshooting.				
		Display CAN A/B: Check and ensure compliance				
		with operational limits				
	Example (Symbolic)	Warning Lamp A: Check				
	1	Warning Lamp B: Check				
		Pilot Display: Check				
2	Reduce Throttle valve as	Set linearized throttle position so that the engine				
	required.	runs on idle.				
	Example (Symbolic)	Reduce Throttle				
3	Await cooling down phase.	Wait > 2 minutes				
4	Deactivate ECU	HIC A: DisconnectTerminal 1 and Terminal 7 to				
		turn OFF ECU Lane A				
		HIC B: DisconnectTerminal 1 and Terminal 9 to				
		turn OFF ECU Lane B				
	Example (Symbolic)	Lane select Switch A: OFF				
		Lane select Switch B: OFF				
		NOTE				
	The ECU needs to de	activated first. Shutting of the engine by				
	deactivating the fuel s	supply may result in fault and failure en- tries in the				
	ECU. Shutting down t	the engine by shutting of the fuel pumps is only				
	allowed in emergency					
5	Deactivate Fuel pumps	HIC A: Disconnect Terminal 3 and terminal 9 to turn				
5	Deacavate i dei pumps	OFF Fuel pump 1				
	1	HIC B: Disconnect Terminal 3 and terminal 11 to				
		turn OFF Fuel pump 2				
	Example (Symbolic)	Fuel pump 1: OFF				
		Fuel pump 2: OFF				
6	Circuit breakers	switch off				
7	Master switch	switch off				

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4.5.19 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.

4.5.20 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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BRISTELL LSA



Aircraft Operating Instructions

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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

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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 power plant.

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5.2 Performance

5.2.1 Airspeed indicator system calibration

	KIAS	KCAS			IAS	CAS
					(km/h)	(km/h)
	35	36	1		65	66
VS0	37	38		VS0	70	71
	40	41			80	81
VS1	44	45		VS1	82	83
-	50	51			90	91
	55	55			100	101
	60	60			110	111
	65	65			120	120
	70	70			130	130
VFE,	75	75		VFE	139	139
	80	80			150	150
	85	85			160	160
	90	90			170	170
VA	96	96		VA	180	179
	100	100			190	189
	105	105			200	199
	110	109			210	209
	115	114			220	203
	120	119			230	213
	125	124		VN0	230	229
VN0	130	129		VINU	240	238
	135	134				
	140	139			260	258
	145	144			270	268
	150	149			280	278
VNE	157	156]	VNE	290	287

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5.2.2 Stall speeds

Conditions:	Wing	KIAS	KCAS	IAS	CAS	Altitude loss
Max.takeoff-off weight 1320 Ib	flaps pos.			[km/h]	[km/h]	at recovery
Engine idle run						[ft]
	0°	44	45	82	83	100
Wing level stall	20°	42	43	78	79	120
5	30°	37	38	70	71	160
Co-ordinated	0°	47	48	88	89	120
turn	20°	45	46	84	85	160
30° bank	30°	40	41	75	76	200

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Aircraft Operating Instructions

5.2.3 Take-off performance

ISA Con	ditions	CON	ICRETE	GRASS		
Airport	Temperature	Temperature	Takeoff Run	Distance	Takeoff Run	Distance
altitude	tH [°C]	tH [°F]	[ft]	over 50 ft	[ft]	over 50 ft
H [ft]			• • •	obstacle	• • •	obstacle
				[ft]		[ft]
0 ft ISA	15.0	59	660	1500	920	1760
2000 ft ISA	11.0	52	740	1690	1040	1980
4000 ft ISA	71	45	840	1900	1170	2230
6000 ft ISA	3.1	38	940	2150	1320	2230
6000 ft ISA 8000 ft ISA						
	-0,8	30	1070	2430	1490	2850
10000 ft ISA	-4,8	23	1210	2750	1690	3230
ISA +	40.00		00	CRETE	GR	ASS
			Takeoff Run	Distance	Takeoff Run	Distance
Airport	Temperature	Temperature				
altitude	tH [°C]	tH [°F]	[ft]	over 50 ft	[ft]	over 50 ft
H [ft]				obstacle		obstacle
				[ft]		[ft]
0 ft ISA	25,0	77	710	1610	980	1880
2000 ft ISA	21,0	70	800	1810	1110	2120
4000 ft ISA	17,1	63	900	2040	1250	2390
6000 ft ISA	13,1	56	1010	2310	1410	2710
8000 ft ISA	9.2	48	1150	2610	1600	3060
10000 ft ISA	5.2	40	1300	2960	1820	3470
			1000	2000	1020	0470
ISA +	20 °C		CON	CRETE	GR	ASS
Airport	Temperature	Temperature	Takeoff Run	Distance	Takeoff Run	Distance
altitude	tH [°C]	tH [°F]	[ft]	over 50 ft	[ft]	over 50 ft
H [ft]	in [0]	u1[1]	Lid.	obstacle	[FG	obstacle
n [n]				fft]		Ift]
0 ft ISA	35.0	95				
			750	1720	1050	2010
2000 ft ISA	31.0				1190	2270
		88	850			
4000 ft ISA	27,1	81	960	2180	1340	2560
4000 ft ISA 6000 ft ISA	27,1 23,1	81 74	960 1090	2180 2470	1340 1510	2560 2900
4000 ft ISA 6000 ft ISA 8000 ft ISA	27,1 23,1 19,2	81 74 66	960	2180	1340	2560
4000 ft ISA 6000 ft ISA	27,1 23,1	81 74	960 1090	2180 2470	1340 1510	2560 2900
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA	27,1 23,1 19,2 15,2	81 74 66	960 1090 1230 1400	2180 2470 2800 3180	1340 1510 1720 1950	2560 2900 3280 3730
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA	27,1 23,1 19,2 15,2	81 74 66 59	960 1090 1230 1400	2180 2470 2800 3180	1340 1510 1720 1950 GR.	2560 2900 3280 3730 ASS
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport	27,1 23,1 19,2 15,2 -10 °C Temperature	81 74 66 59 Temperature	960 1090 1230 1400 COM Takeoff Run	2180 2470 2800 3180 ICRETE Distance	1340 1510 1720 1950 GR. Takeoff Run	2560 2900 3280 3730 ASS Distance
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport altitude	27,1 23,1 19,2 15,2	81 74 66 59	960 1090 1230 1400	2180 2470 2800 3180 ICRETE Distance over 50 ft	1340 1510 1720 1950 GR.	2560 2900 3280 3730 ASS Distance over 50 ft
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport	27,1 23,1 19,2 15,2 -10 °C Temperature	81 74 66 59 Temperature	960 1090 1230 1400 COM Takeoff Run	2180 2470 2800 3180 ICRETE Distance	1340 1510 1720 1950 GR. Takeoff Run	2560 2900 3280 3730 ASS Distance
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport altitude	27,1 23,1 19,2 15,2 -10 °C Temperature	81 74 66 59 Temperature	960 1090 1230 1400 COM Takeoff Run	2180 2470 2800 3180 ICRETE Distance over 50 ft	1340 1510 1720 1950 GR. Takeoff Run	2560 2900 3280 3730 ASS Distance over 50 ft
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport altitude	27,1 23,1 19,2 15,2 -10 °C Temperature	81 74 66 59 Temperature	960 1090 1230 1400 COM Takeoff Run	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle	1340 1510 1720 1950 GR. Takeoff Run	2560 2900 3280 3730 ASS Distance over 50 ft obstacle
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA ISA Airport altitude H [ft]	27,1 23,1 19,2 15,2 -10 °C Temperature tH [*C]	81 74 66 59 Temperature tH [*F]	960 1090 1230 1400 COM Takeoff Run [ft]	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft]	1340 1510 1720 1950 GR. Takeoff Run [ft]	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft]
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA	27,1 23,1 19,2 15,2 -10 °C Temperature tH [°C] 5,0 1,0	81 74 66 59 Temperature tH ["F] 41	960 1090 1230 1400 Con Takeoff Run [ft] 610 690	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570	1340 1510 1720 1950 GR. Takeoff Run [ft] 860 960	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA	27.1 23,1 19,2 15,2 -10 °C Temperature tH [°C] 5,0 1,0 -2,9	81 74 66 59 Temperature tH [*F] 41 34 27	960 1090 1230 1400 CON Takeoff Run [ft] 610 690 780	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1770	1340 1510 1720 1950 GR Takeoff Run [ft] 860 960 1080	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 2080
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 4000 ft ISA 6000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH (°C) 5.0 1.0 -2.9 -6.9	81 74 66 59 Temperature tH [rF] 41 34 27 20	960 1090 1230 1400 CON Takeoff Run [ft] 610 690 780 880	2180 2470 2800 3180 iCRETE Distance over 50 ft obstacle [ft] 1400 1570 1770 1990	1340 1510 1720 1950 GR. Takeoff Run [ft] 860 960 1080 1080	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 1840 2080 2340
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 6000 ft ISA 6000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH [°C] 5.0 1.0 -2.9 -6.9 -10.8	81 74 66 59 Temperature tH [*F] 41 34 27 20 12	960 1090 1230 1400 CON Takeoff Run [ft] 610 690 780 880 990	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1570 1770 1990 2250	1340 1510 1720 1950 GR. Takeoff Run [tt] 860 960 1080 1220 1380	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 2080 2340 2640
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 4000 ft ISA 6000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH (°C) 5.0 1.0 -2.9 -6.9	81 74 66 59 Temperature tH [rF] 41 34 27 20	960 1090 1230 1400 CON Takeoff Run [ft] 610 690 780 880	2180 2470 2800 3180 iCRETE Distance over 50 ft obstacle [ft] 1400 1570 1770 1990	1340 1510 1720 1950 GR. Takeoff Run [ft] 860 960 1080 1080	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 1840 2080 2340
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 6000 ft ISA 6000 ft ISA	27.1 23.1 19.2 15.2 -10 ℃ Temperature tH [℃] 5.0 1.0 1.0 -2.9 -6.9 -10.8 -14.8	81 74 66 59 Temperature tH [*F] 41 34 27 20 12 5	960 1090 1230 1400 Con Takeoff Run [ft] 610 690 690 780 880 880 990 1120	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1570 1770 1990 2250	1340 1510 1720 1950 GR Takeoff Run [tt] 860 960 1080 1220 1380 1560	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 2080 2340 2640
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 6000 ft ISA 8000 ft ISA	27.1 23.1 19.2 15.2 -10 ℃ Temperature tH [℃] 5.0 1.0 1.0 -2.9 -6.9 -10.8 -14.8	81 74 66 59 Temperature tH [*F] 41 34 27 20 12	960 1090 1230 1400 CON Takeoff Run [ft] 610 690 780 780 780 990 1120	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1570 1770 1990 2250 2550	1340 1510 1720 1950 GR. Takeoff Run [[1] 860 960 1080 1220 1380	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 2080 2340 2640 2990
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH [°C] 5.0 1.0 -2.9 -6.9 -10.8 -14.8 Temperature Temperature	61 74 66 59 temperature eth [TF] 41 34 20 12 20 12 5 5	960 1090 1230 1400 Takeoff Run [ft] 610 690 780 880 990 1120 Takeoff Run	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1570 1570 2250 2250 2250 2250 ICRETE Distance	1340 1510 1720 1950 GR. Takeoff Run [t1] 860 960 1080 1220 1380 1220 1380 1260 7akeoff Run	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1640 1840 2080 2340 2640 2990 ASS Distance
4000 ft ISA 6000 ft ISA 8000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 10000 ft ISA	27,1 23,1 19,2 15,2 15,2 16,0 Temperature tH (°C) 5,0 1,0 -2,9 -6,9 -10,8 -14,8 -20 °C	81 74 66 59 Temperature tH [*F] 41 34 27 20 12 5	960 1090 1230 1400 Con Takeoff Run [ft] 610 690 690 780 880 880 990 1120	2180 2470 2800 3160 ICRETE Distance over 50 ft 1400 1570 1990 2250 2250 2250 ICRETE Distance over 50 ft	1340 1510 1720 1950 GR Takeoff Run [tt] 860 960 1080 1220 1380 1560	2560 2900 3280 3730 ASS Distance over 50 ft 0bstacle [ft] 1640 1840 2080 2340 2640 2990 ASS Distance over 50 ft
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH [°C] 5.0 1.0 -2.9 -6.9 -10.8 -14.8 Temperature Temperature	61 74 66 59 temperature eth [TF] 41 34 20 12 20 12 5 5	960 1090 1230 1400 Takeoff Run [ft] 610 690 780 880 990 1120 Takeoff Run	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1570 1770 1990 2250 2250 VICRETE Distance over 50 ft obstacle	1340 1510 1720 1950 GR. Takeoff Run [t1] 860 960 1080 1220 1380 1220 1380 1260 7akeoff Run	2560 2900 3280 3730 Distance over 50 ft 2800 2340 2540 2900 2340 2540 2590 2590
4000 ft ISA 6000 ft ISA 8000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA	27.1 23.1 19.2 15.2 -10 °C Temperature tH[C] 5.0 1.0 -2.9 -6.9 -10.6 -14.8 -14.8 -20 °C Temperature tH[C]	61 74 66 59 41 41 34 27 20 12 5 5 Temperature H [F]	960 1090 1230 1400 Takeoff Run [ft] 610 690 780 880 990 91120 Takeoff Run [ft]	2180 2470 2800 3160 1CRETE Distance over 50 ft obstacle [ft] 1400 1570 1570 1990 2550 2550 ICRETE Distance over 50 ft obstacle [ft]	1340 1510 1720 1950 GR. Takeoff Run [tt] 860 960 1080 1220 1380 1560 GR. Takeoff Run [tt]	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] Distance over 50 ft obstacle 2990 2540 2990
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA 10000 ft ISA 8000 ft ISA 10000 ft ISA 81000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA	27.1 23.1 19.2 19.5	81 74 65 59 Temperature th [F] 41 41 34 34 20 5 5 Temperature th [F] 23	960 1090 1230 1230 12400 CON Takeoff Run [ft] 6510 6690 780 980 980 Takeoff Run [ft] 570	2180 2470 2800 3180 ICRETE Distance over 50 ft obstacle [ft] 1400 1770 1990 2250 2250 2250 2250 2250 Distance over 50 ft Distance over 50 ft Distance ft] J300	1340 1510 1720 1950 1950 GR Takeoff Run [R] 960 1080 1220 1380 1560 GR Takeoff Run [R] 800	2560 2900 3280 3730 ASS Distance over 50 ft obstacle [ft] 1540 2540 2540 2540 2540 2540 2540 2540 2
4000 ft ISA 600 ft ISA 6000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA	27.1 23.1 19.2 15.2 15.2 10.°C Temperature tH[°C] 5.0 1.0 -2.9 -6.9 -10.8 -14.8 -14.8 Temperature tH[°C] Temperature -6.9 -10.8 -14.8 -14.8 -14.8 -2.9 -5.0	61 74 66 59 temperature th [TF] 41 34 27 20 12 5 Temperature th [TF] 23 16	960 1090 1230 1230 COP Takeoff Run [ft] 990 1120 COP 780 880 990 1120 COP 780 640	2180 2470 2800 3180 ICRETE Distance over 50 ft 0550 1570 1570 1570 1570 1570 1570 1570	1340 1510 1720 1950 GR. Takeoff Run [ft] 1860 1220 1380 1220 1380 1260 CR. Takeoff Run [ft] 800 830	2560 2900 3220 3730 ASS Distance over 50 ft 1640 2080 2340 2540 2640 2640 2990 ASS Distance over 50 ft obstacle [ft] 1520 1710
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport atitlude H (ft) 0 ft ISA 2000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA 2000	27.1 23.1 19.2 15.2 15 .2 16 .2 16 .2 16 .2 16 .2 16 .2 17 .0 10	61 74 66 59 тепретаture ин [F] 41 34 27 12 12 5 5 5 7 соростите н [F] 23 7 9 9	960 1090 1230 1230 Takeoff Run [ft] 610 680 788 980 990 1120 CON Takeoff Run [ft] 570 640 720	2180 2470 2800 3180 CRETE Distance over 50 ft obstacle [ft] 1400 1570 1770 2250 2550 2550 2550 2550 2550 2550 2	1340 1510 1720 1950 GR. Takeoff Run [tt] 860 960 1020 1350 1350 GR. Takeoff Run [tt] 800 800 890 1010	2560 2900 3280 3730 ASS Distance over 50 ft obstacle 1640 1840 2860 2840 2840 2840 2840 2850 Distance over 50 ft obstacle 1611 1840 1850 1840 1850 1
4000 ft ISA 6000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA Airport altitude H [ft] 0 ft ISA 2000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 10000 ft ISA 2000 ft ISA 10000 ft ISA 2000 ft ISA 2000 ft ISA 2000 ft ISA	27,1 23,1 19,2 19,2 19,2 19,2 19,2 19,2 Temperature н(°с) 5,0 1,0 - - - - - - - - - - - - -	81 74 66 59 Тепрегаture 41 27 20 12 5 Temperature H[F] 20 5 Temperature H[F] 23 23 9 2 2	960 1000 1230 1230 1230 1230 1230 1230 1230 1230 1260 1380 1390 1320 1	2180 2470 2470 3180 3180 CCRETE Distance over 50 ft 1570 1570 1570 1570 2259 2259 2259 2259 2259 2259 2259 225	1340 1510 1720 1720 Tzkeoff Run (H) 860 960 1080 1220 1380 1220 1380 1220 1380 1220 1380 1220 1380 0 800 800 800 800 800	2560 2900 3220 3730 ASS Distance over 50 ft 0bstacle [ft] 1640 2990 Distance over 50 ft 2990 Distance over 50 ft 1540 2990 Distance (tt] 1520 1710 1710 1770 1770 2170
4000 ft ISA 6000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA Airport atitlude H (ft) 0 ft ISA 2000 ft ISA 8000 ft ISA 10000 ft ISA 10000 ft ISA 2000	27.1 23.1 19.2 15.2 15 .2 16 .2 16 .2 16 .2 16 .2 16 .2 17 .0 10	61 74 66 59 тепретаture ин [F] 41 34 27 12 12 5 5 5 7 соростите н [F] 23 7 9 9	960 1090 1230 1230 Takeoff Run [ft] 610 680 788 980 990 1120 CON Takeoff Run [ft] 570 640 720	2180 2470 2800 3180 CRETE Distance over 50 ft obstacle 1140 1570 1770 1990 2550 2550 2550 2550 2550 2550 2550 2	1340 1510 1720 1950 GR. Takeoff Run [tt] 860 960 1020 1350 1350 GR. Takeoff Run [tt] 800 800 890 1010	2560 2900 3280 3730 ASS Distance over 50 ft obstacle 1640 1840 2860 2840 2840 2840 2840 2850 Distance over 50 ft obstacle 1611 1840 1850 1840 1850 1

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5.2.4 Landing distances

Airport altitude Temperature H(F) Unding Run (F) Distance over 50 (F) Landing Run (F) Distance over 50 (F) 2000 F15A 15.0 50 30.0 100.0 16.0 10.0 2000 F15A 11.0 52 30.0 100.0 260 110.0 2000 F15A 0.8 30 360 110.0 400 1320 8000 F15A 0.8 30 360 1210 460 1320 10000 F15A -0.8 23 410 1220 460 1330 10000 F15A 2.0 77 310 1200 400 1320 2000 F15A 2.0 77 310 960 370 1100 2000 F15A 15.1 65 370 1100 400 1120 4000 F15A 15.1 66 370 1100 400 1120 4000 F15A 5.2 41 420 1120 470 1150 10000 F15A 5.2 41	ISA Con	ditions		CON	ICRETE	GP	ASS	
H (t) C1 (t) (t) (t) (t) 0 ft (SA 15.0 50 300 f50 300 1000 2000 ft (SA 11.0 52 320 1010 380 1080 4000 ft (SA 7.1 45 340 1070 440 1150 9000 ft (SA 3.3 35 380 1140 450 1200 9000 ft (SA 4.8 23 440 1220 450 1380 10000 ft (SA 4.6 23 440 1220 450 1380 1100 ft (SA 210 77 310 400 370 1160 400 1390 1100 ft (SA 210 77 310 400 370 1160 400 130 1100 400 130 1100 400 130 1100 400 130 1100 1400 1430 1400 1430 1400 1430 1400 1400 1400 1			Temperature	Landing Run	Distance over 50	Landing Run	Distance over 50	
0 0 50 300 850 300 100 2000 11.0 52 320 110 380 1020 2000 11.0 52 320 110 380 1080 2000 11.0 52 320 1010 380 1100	altitude	tH [°C]	tH [°F]	[ft]	ft obstacle	[ft]	ft obstacle	
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	8000 ft ISA	-20,8	-6	350	1120	420	1200	

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5.2.5 Climb performance

	BEST RA	ST RATE OF CLIMB					BEST ANGLE OF CLIMB			
MCP MTOW	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	76	123	66	7,6	1490	68	109	59	5,9	1170
2000 ft ISA	76	123	66	7,3	1440	67	108,6	59	6,1	1190
4000 ft ISA	76	122	66	7,1	1390	67	108,2	58	6,2	1220
6000 ft ISA	76	122	66	6,9	1350	67	107,8	58	6,4	1260
8000 ft ISA	75	121	66	6,7	1310	67	107,4	58	6,6	1300
10000 ft ISA	75	121	65	6,5	1270	66	107	58	6,9	1350

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5.2.6 Cruise

CAUTION
FAA Sport Pilot Rule limits Max. Speed in Level Flight (VH)
to 120 knots CAS (222 km).

		55%	65%	75%	MCP	T/O
		4300 rpm	4800 rpm	5000 rpm	5500 rpm	5800 rpm
	KIAS	98 knots	122 knots	129 knots	143 knots	147 knots
0 ft	KCAS	99 knots	122 knots	129 knots	142 knots	146 knots
	KTAS	99 knots	122 knots	129 knots	142 knots	146 knots
	KIAS	91 knots	119 knots	127 knots	141 knots	143 knots
2000 ft	KCAS	92 knots	119 knots	127 knots	140 knots	142 knots
	KTAS	95 knots	123 knots	131 knots	144 knots	146 knots
4000 ft	KIAS	84 knots	116 knots	125 knots	138 knots	139 knots
	KCAS	85 knots	117 knots	125 knots	138 knots	139 knots
	KTAS	91 knots	124 knots	133 knots	146 knots	147 knots
	KIAS	77 knots	113 knots	123 knots	136 knots	136 knots
6000 ft	KCAS	78 knots	114 knots	123 knots	135 knots	135 knots
	KTAS	86 knots	124 knots	135 knots	148 knots	148 knots
	KIAS	70 knots	110 knots	121 knots	134 knots	132 knots
8000 ft	KCAS	71 knots	111 knots	121 knots	133 knots	131 knots
	KTAS	81 knots	125 knots	137 knots	150 knots	148 knots
	KIAS	63 knots	107 knots	119 knots	132 knots	128 knots
10000 ft	KCAS	64 knots	108 knots	119 knots	131 knots	128 knots
	KTAS	75 knots	126 knots	139 knots	153 knots	149 knots

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5.2.7 Endurance and Range

The table below shows fuel consumption, endurance and range

Fuerquy	1201	
Unusable fuel =	11	NO FUEL RESERVE CONSIDERED !

4300 rpm 4300 rpm 5000 rpm 5500 rpm 0 ft 500 rpm 5500 rpm 122 knots 123 knots 0 ft Fuel consumption 103 knots 122 knots 123 knots 142 knots 0 ft Fuel consumption 21 knots 122 knots 123 knots 142 knots 10 ft Fuel consumption 2.7 (LSgalth 6.3 (LSgalth 7.7 (L			55%	65%	75%	MCP
KIAS 98 knots 122 knots 129 knots 143 knots KCAS 99 knots 122 knots 129 knots 142 knots 0 ft Fuel consumption 123 knots 122 knots 129 knots 142 knots 0 ft Fuel consumption 2.03 lfn 2.20 lfn 4.04 kln 142 knots 27.05 gal/h 6.3 USgal/h 6.3 USgal/h 7.7 USgal/h 16.7 USgal/h 17.0 USgal/h						
400 ft Field Consumption Fuel consumption 27 USgalm 6.2 USgalm 7.2 Usgalm 7.0 27 USgalm 6.2 USgalm 7.0 27 USgalm 6.2 USgalm 7.0 27 USgalm 6.2 USgalm 7.0 27 USgalm 6.2 USgalm 7.0 27 USgalm 6.0 27 USgalm 6.0 280 km Endurance 11.3 U 4.58 4.00 2.2 USgalm 6.0 USgalm 7.0 2 USgalm 7.		1/11.0				
0 ft First S 99 knots 122 knots 129 knots 142 knots 0 ft Fuel consumption 27.0 Sga/h 6.3 US ga/h 7.7 US ga/h 10.3 lh 2.9 ln 40.4 kh Endurance 11.30 kh 5.0 US ga/h 6.3 US ga/h 7.7 US ga/h 10.7 US ga/h Endurance 11.30 kh 980 km 7.7 US ga/h 10.7 US ga/h Range 1120 km 1130 km 980 km 770 km KCAS 92 knots 119 knots 127 knots 141 knots KCAS 92 knots 123 knots 131 knots 144 knots Fuel consumption 8.8 lh 6.7 US ga/h 7.6 US ga/h 10.7 US ga/h Endurance 13.3 C 5.0 B 4.10 2.5 knots 133 knots 4000 ft Fuel consumption 7.20 M 630 MM 550 NM 420 NM KCAS 85 knots 117 knots 122 knots 133 knots 123 knots 138 knots 4000 ft Fuel consumption 7.20 M 5.0 US ga/h 7.4 US ga/h </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>						
0 ft Fuel consumption 27 USgahr 23.9 lm 29.0 lm 40.4 lm Endurance 11.3 lb 23.9 lm 20.0 lm 40.4 lm Endurance 11.3 lb 6.9 USgahr 7.7 USgahr 7.7 USgahr 7.7 USgahr Range 2120 km 1130 km 900 km 7.70 km 500 km 7.70 km KIAS 91 knots 119 knots 127 knots 141 knots 420 km KKAS 92 knots 119 knots 127 knots 141 knots KKAS 92 knots 119 knots 127 knots 141 knots KKAS 92 knots 119 knots 127 knots 144 knots 2000 ft Fuel consumption 2.3 USgahr 7.0 USgahr 7.0 USgahr Endurance 13.2 5.08 4.10 2.25 knots 138 knots 4000 ft KKAS 91 knots 117 knots 125 knots 138 knots KKAS 91 knots 117 knots 125 knots 138 knots 138 knots 4000 ft Fuel consumption						
Bits Public Onsidingholo 27.USga/n 6.3.USga/n 7.1.USga/n 10.7.USga/n 10.7.USga/n Endurance 11.30 4.58 4.00 2.256 Range 2120 km 1130 km 980 km 770 km 1150 LM 610 NM 530 NM 420 NM KCAS 92 knots 119 knots 127 knots 141 knots KCAS 92 knots 119 knots 127 knots 144 knots KCAS 92 knots 123 knots 131 knots 144 knots Fuel consumption 8.8 lm 6.1 USga/n 7.5 USga/n 10.7 USga/n Fuel consumption 7.3 UN 123 knots 131 knots 144 knots KCAS 85 knots 117 knots 102 knots 128 knots KCAS 85 knots 117 knots 128 knots 138 knots 4000 ft Fuel consumption 7.2 UN 102 knots 128 knots 138 knots 4000 ft Fuel consumption 7.2 UN 122 knots 138 knots 148 knots <tr< td=""><th></th><th>KTAS</th><td></td><td></td><td></td><td></td></tr<>		KTAS				
2000 ft 27/05ga/n 6.3 05ga/n 7.7 05ga/n 10.7 05ga/n Endurance 11:30 4.58 4.06 2.266 Range 7150 MM 510 MM 530 NM 420 NM KKAS 91 knots 119 knots 127 knots 141 knots KCAS 92 knots 119 knots 127 knots 141 knots KCAS 92 knots 123 knots 131 knots 141 knots Endurance 8.8 lm 6.7 U5ga/n 7.7 knots 140 knots Endurance 13.3 knots 123 knots 131 knots 142 knots Endurance 13.2 knots 5.06 4.10 2.56 Range 2300 km 117 knots 125 knots 138 knots KIAS 84 knots 116 knots 125 knots 138 knots KCAS 85 knots 114 knots 125 knots 138 knots KIAS 84 knots 116 knots 125 knots 138 knots KCAS 77 knots 114 knots 125 knots 138 kno	0.ft	Fuel consumption				
Range 2120 km 1130 km 990 km 770 km 1750 MM 670 MM 530 MM 420 MM KGAS 92 knots 119 knots 127 knots 141 knots KGAS 92 knots 119 knots 127 knots 141 knots KGAS 92 knots 123 knots 131 knots 141 knots KGAS 95 knots 123 knots 131 knots 144 knots B&B M 67.05 kmots 123 knots 131 knots 144 knots Bodo M 67.05 kmots 5.06 4.10 2.50 km Brade M 720 Km 100 km 100 km 780 km KKAS 85 knots 117 knots 125 knots 138 knots KKAS 95 knots 117 knots 125 knots 138 knots KKAS 95 knots 117 knots 123 knots 138 knots KKAS 95 knots 124 knots 133 knots 144 knots KKAS 95 knots 124 knots 135 knots 125 knots 138 knots </td <th>•</th> <th></th> <td></td> <td></td> <td></td> <td></td>	•					
KiAs 1150 MM 610 NM 530 NM 420 MM KiAs 91 knots 119 knots 127 knots 141 knots KTAS 92 knots 119 knots 127 knots 140 knots KTAS 95 knots 123 knots 131 knots 144 knots 2000 ft Fuel consumption 2.3 USgalm 7.0 USgalm 7.0 USgalm Fuel consumption 2.3 USgalm 7.0 USgalm 7.0 USgalm Range 2390 km 1170 km 1010 km 7.80 km KIAS 84 knots 1174 kmots 125 knots 138 knots KKAS 84 knots 1174 kmots 125 knots 138 knots KKAS 91 knots 124 knots 138 knots 148 knots Fuel consumption 7.2 Um 22.0 Mm 650 NM 560 NM 530 kmd Fuel consumption 7.7 Um 2.7 km 2.3 knots 138 knots 138 knots KKAS 77 knots 114 knots 123 knots 138 knots 138 knots Fuel consumption		Endurance				
KiAS 91 knois 91 knois 91 knois 91 knois 91 knois 91 knois 119 knois 127 knois 141 knois 2000 ft KrAS 92 knois 119 knois 127 knois 141 knois 2000 ft Fuel consumption 28 kin 23 knois 130 knois 144 knois Range 230 kn 23 knois 130 knois 144 knois Range 230 kn 100 knois 124 knois 125 knois 144 knois KKAS 93 knois 140 knois 125 knois 130 knois 124 knois 130 knois 124 knois 132 knois 132 knois 132 knois 132 knois 132 knois 132 knois 124 knois 133 knois 142 knois 133 knois 123 knois 124 knois 133 knois 123 knois 123 knois 124 knois 133 knois 123 knois		Range				
4000 ft Fuel consumption Fuel consumption 2.3 USgalm for USgalm 7.2 USgalm 7.0 TUSgalm Fuel consumption Endurance 119 knots 114 knots 2.0 USgalm for USgalm 7.0 TUSgalm Fuel consumption Endurance 2.3 USgalm for USgalm 7.0 TUSgalm For USgalm For USgalm 7.0 TUSgalm For USgalm 7.0 TUSgalm For USgalm 7.0 TUSgalm For USgalm For USgalm		-	1150 NM			420 NM
2000 ft Fiel consumption 28 /b fn 123 knots 121 knots 114 knots 2000 ft B.8 /b fn 6.7 USgal/h 7.5 USgal/h 10.7 USgal/h 2000 ft Endurance 2.3 knots 5.3 knots 10.7 USgal/h 2000 ft Endurance 13.3 cz 5.0 ft 4.10 2.25 knots 2000 ft Findurance 1730 km 1010 km 780 km 780 km KCAS 85 knots 117 knots 125 knots 138 knots KCAS 85 knots 117 knots 125 knots 138 knots KCAS 85 knots 124 knots 133 knots 144 knots Fuel consumption 7.2 lb knots 133 knots 123 knots 138 knots Fuel consumption 7.2 lb knots 132 knots 133 knots 133 knots 144 knots 6000 ft Endurance 126 knots 123 knots 138 knots 144 knots 135 knots 123 knots 138 knots 6000 ft Endurance 126 knots 123 knots 138 knots			91 knots	119 knots	127 knots	141 knots
2000 ft Fuel consumption 2.3 USgalm / 6.1 USgalm / 7.2 USgalm / 7.2 USgalm Fuel consumption 2.3 USgalm / 6.1 USgalm / 7.2 USgalm / 7.2 USgalm Range 40.5 If N 2.3 USgalm / 6.1 USgalm / 7.2 USgalm / 7.2 USgalm / 7.20 MM 4000 ft KIAS 84 knots 1170 km 1010 km 7.80 km 4000 ft KIAS 84 knots 1170 km 1010 km 7.80 km 4000 ft Fuel consumption 7.2 Ufn 7.2 Ufn 2.2 km 1.2 kmots 1.3 kmots 4000 ft Fuel consumption 7.2 Ufn 7.2 Ufn 2.2 km 2.8 0 lm 40.5 lm 4000 ft Fuel consumption 7.2 Ufn 2.2 km 1.3 kmots 1.3 kmots 1.3 kmots 4000 ft Fuel consumption 7.2 Ufn 2.2 km 2.8 0 lm 40.5 lm 6000 ft Fuel consumption 7.3 Ufn 7.7 kmots 1.3 kmots 1.3 kmots 1.3 kmots 6000 ft KIAS 77 kmots 1.3 kmots 1.3 kmots 1.3 kmots 1.3 kmots 6000 ft Fuel consumption 7.1 kmots 7.2 kmots 1.1 kmots 1.2 kmots 1.3 kmots 6000 ft KIAS 7.1 kmots 1.1 kmots<		KCAS	92 knots	119 knots	127 knots	140 knots
2000 ft Fuel consumption Endurance 2.3 USga/h 7.5 USga/h 7.7 USga/h 7.7 USga/h Endurance 13.3 C 5.98 4.10 2.25 6 Range 2300 km 1170 km 1010 km 780 km 1720 KM 630 NM 550 MM 420 NM KCAS 85 knots 116 knots 125 knots 138 knots KCAS 85 knots 117 knots 125 knots 138 knots KCAS 85 knots 117 knots 125 knots 138 knots Fuel consumption 7.2 UM 2.2 4 4 h 2.80 Uh 4.05 kh Fuel consumption 7.2 UM 5.9 USga/h 7.4 USga/h 7.0 knots 18 KNDS 77 knots 113 knots 123 knots 138 knots 6000 ft Fuel consumption 5.7 UM 122 knots 138 knots 6000 ft Fuel consumption 5.7 UM stath 7.2 km 4.05 kh Fuel consumption 5.7 UM stath 7.2 km 4.05 kh Fuel consumption 7.1 USga/h 1.27 km		KTAS	95 knots	123 knots	131 knots	144 knots
Endurance 2.3 Usgain 7.5 Usgain 7.5 Usgain 7.7 Usgain Endurance 13.32 5.08 4.10 2.266 Range 2300 km 1170 km 1010 km 780 km KIAS 84 knots 1170 km 1010 km 780 km KCAS 85 knots 116 knots 125 knots 138 knots KCAS 85 knots 117 knots 125 knots 138 knots KCAS 91 knots 124 knots 133 knots 146 knots Endurance 16.27 5.19 4.14 2.26 Range 270 km 123 knots 138 knots 136 knots KKAS 77 knots 113 knots 123 knots 136 knots KKAS 77 knots 132 knots 138 knots 136 knots KKAS 77 knots 132 knots 138 knots 136 knots Fuel consumption 7,5 USgain 73 knots 138 knots 136 knots Range 270 km 123 knots 138 knots 138 knots	0000 6	First second and	8,8 l/h	23,1 l/h	28,5 l/h	40,5 l/h
Range 2390 km 1170 km 1010 km 780 km 1290 NM 630 NM 5420 NM 420 NM KCAS 854 knots 116 knots 125 knots 138 knots KCAS 855 knots 117 knots 125 knots 138 knots KCAS 855 knots 117 knots 125 knots 138 knots KCAS 91 knots 124 knots 130 knots 124 knots 133 knots Fuel consumption 7.2 Uh 2.2 4 Uh 2.80 Uh 4.05 Uh 17.0 Uk Fordurance 16.27 5.19 4.14 2.56 18.27 17.40 NM 1020 km 1040 km 790 km KCAS 78 knots 113 knots 123 knots 135 knots 123 knots 135 knots 123 knots 135 knots 123 knots 135 knots 124 knots 135 knots 123 knots 135 knots 124 knots 130 knots<	2000 ft	Fuel consumption	2,3 USgal/h	6,1 USgal/h	7,5 USgal/h	10,7 USgal/h
KiAS 7200 MM 630 NM 550 NM 420 MM KiAS 84 knots 116 knots 125 knots 138 knots KTAS 91 knots 117 knots 125 knots 138 knots KTAS 91 knots 117 knots 125 knots 138 knots Fuel consumption 7.2 Uh 22.4 Uh 28.0 Uh 40.5 Uh Fuel consumption 7.2 Uh 22.4 Uh 28.0 Uh 40.5 Uh Rango 2760 km 1220 km 10.04 km 730 knnt KIAS 77 knots 113 knots 123 knots 138 knots KKAS 78 knots 114 knots 123 knots 138 knots KKAS 78 knots 114 knots 123 knots 135 knots KTAS 86 knots 114 knots 123 knots 130 knots Fuel consumption 5.7 Uh 2.7 Sin 40.5 Vh 2.7 Sin Rango 330 km 110 knots 121 knots 131 knots 8000 ft KiAS 71 knots 111 knots 12		Endurance	13:32	5:08		2:56
KiAS B4 knois Odd //m B2 //m G0 //m B2 //m B2 //m KiAS B4 knois 116 knois 125 knois 138 knois KTAS 91 knois 117 knois 125 knois 138 knois 4000 ft Fuel consumption 7.2 l/m 22.4 l/m 28.0 l/m 405 kl/m 17 Jug Uggalt 50 Uggalt 7.7 Uggalt 17.7 Uggalt 17.7 Uggalt Endurance 16 2.7 5-19 4.14 2.26 17.90 km Range 2760 km 120 km 10.04 km 7.90 km 120 km 10.04 km 7.90 km KKAS 77 knots 113 knots 123 knots 135 knots 135 knots 6000 ft Fuel consumption 5.7 l/m 2.16 kl/m 2.75 km 40.5 kl/m 6000 ft Fuel consumption 5.7 l/m 2.16 kl/m 2.75 km 40.5 kl/m 6000 ft Fuel consumption 5.7 l/m 2.16 km 2.75 km 40.5 kl/m 6000 ft Fuel consumption 5.7 l/m 2.16 km		Bongo				
4000 ft RCAS 85 knots. 117 knots. 135 knots. 138 knots. 4000 ft Fuel consumption 7.2 Uh 22.4 knots. 133 knots. 146 knots. 7.9 USgalf. 75.5 USgalf. 77.2 Ubgalf. 70.7 USgalf. 7.9 USgalf. 70.7 USgalf. 40.5 knots. 14.5 knots. 8000 ft Fuel consumption 7.2 Uhg. 22.4 knots. 12.0 km. 10.0 km. 7.0 USgalf. 70.7 USgalf. Range 2760 km. 12.0 km. 10.00 km. 7.90 km. 7.90 km. Range 7400 MM. 660 NM. 560 NM. 530 knots. 133 knots. 135 knots. KKAS 77 knots. 114 knots. 123 knots. 135 knots. 135 knots. KKAS 78 knots. 114 knots. 123 knots. 135 knots. 135 knots. 6000 ft Fuel consumption 5.7 Uh. 2.16 Uh. 2.7 S Uh. 2.3 knots. 134 knots. 8000 ft KiAS 70 knots. 112 knots. 121 knots. 134 knots. 8000 ft KiAS 70 knots. 111 knots. 121 knots. 133 knot		Range	1290 NM	630 NM	550 NM	420 NM
4000 ft Fuel consumption 7.2 (m) 7.2 (m) 7.2 (m) 7.4 (Sigal/h) 7.4 (Sigal/h) <t< td=""><th></th><th>KIAS</th><td>84 knots</td><td>116 knots</td><td>125 knots</td><td>138 knots</td></t<>		KIAS	84 knots	116 knots	125 knots	138 knots
4000 ft Fuel consumption 7.2 U/s and 7.5 U/s and 7.5 U/s U/s and 7.7 U/s		KCAS	85 knots	117 knots	125 knots	138 knots
4000 ft Fuel Consumption 7,80 (Sigal/h 5,90 (Sigal/h 7,40 (Sigal/h 17,70 (Sigal/h 17,80 (Sigal/h 12,80 (Sigal/h 12,8		KTAS	91 knots	124 knots	133 knots	146 knots
Endurance 1:9.0 Usgain 7.4 Us	1000 0	First service stars	7,2 l/h	22,4 l/h	28,0 l/h	40,5 l/h
Range 2700 km 1220 km 1040 km 790 km 1490 NM 660 NM 540 NM 430 NM 430 NM KGAS 78 knots 113 knots 123 knots 135 knots KGAS 78 knots 114 knots 123 knots 135 knots Fuel consumption 5.71 knots 124 knots 135 knots 146 knots Fuel consumption 7.5 Ligsaln 5.72 km 40.5 km 40.5 km Range 3200 km 122 km 40.5 km 80 km Range 3300 km 122 km 108 km 80 km KIAS 70 knots 110 knots 121 kmots 134 knots KIAS 70 knots 110 knots 121 kmots 133 knots KIAS 70 knots 110 knots 121 kmots 134 knots KIAS 70 knots 110 knots 121 kmots 134 knots KIAS 70 knots 110 knots 121 knots 133 knots KIAS 63 knots 128 knots 132 knots 132 knot	4000 ft	Fuel consumption	1,9 USgal/h	5,9 USgal/h	7,4 USgal/h	10,7 USgal/h
Range 74 p0 MM 680 NM 680 NM 430 NM KIAS 77 knots 113 knots 123 knots 136 knots KIAS 77 knots 113 knots 123 knots 136 knots KTAS 86 knots 114 knots 123 knots 135 knots Fuel consumption 57 Uh 27 km 135 knots 148 knots Fuel consumption 57 Uh 27 km 40 S km 40 S km Range 3330 km 170 km 1000 km 810 km KIAS 70 knots 111 knots 121 knots 133 knots KKAS 71 knots 111 knots 121 knots 133 knots KKAS 71 knots 111 knots 121 knots 133 knots KTAS 81 knots 51 knots 121 knots 133 knots KTAS 81 knots 128 knots 132 knots 111 knots 121 kno		Endurance	16:27	5:19	4:14	2:56
KIAS T7 knicis T1 knicis T3		_	2760 km	1220 km	1040 km	790 km
KrAS 78 knots 114 knots 123 knots 135 knots 6000 ft KrAS 86 knots 124 knots 135 knots 148 knots 57 Uh 27 kl 124 knots 135 knots 148 knots 57 Uh 27 kl 174 knots 135 knots 148 knots 57 Uh 27 kl 174 knots 127 kl 100 knots 6000 ft Fuel consumption 57 Uh 27 kl 100 knots 127 kl Range 3330 km 127 kl 100 knots 121 knots 131 knots 8000 ft KIAS 70 knots 111 knots 121 knots 133 knots KTAS 81 knots 125 knots 133 knots 133 knots 133 knots 8000 ft Fuel consumption 4,1 knots 128 knots 133 knots 133 knots 8000 ft KKAS 63 knots 119 knots 121 knots 121 knots 8000 ft Fuel consumption 4,1 knots 50 kgaln 27.0 kn 40 kl Range 230 km		Range	1490 NM	660 NM	560 NM	430 NM
KTAS 86 knots 124 knots 135 knots 148 knots 5000 ft 57 Uh 27.6 bh 20.5 Ch 27.6 bh 40.0 shn Endurance 20.56 5.30 4.19 22.56 Range 330 km 122 knots 108 knots 108 knots KGAS 70 knots 110 knots 800 km 800 km KCAS 70 knots 110 knots 121 knots 134 knots KCAS 70 knots 110 knots 121 knots 134 knots KCAS 70 knots 110 knots 121 knots 134 knots KTAS 54 knots 125 knots 137 knots 136 knots 11 knots 111 knots 127 knots 134 knots 135 knots KTAS 54 knots 132 knots 137 knots 132 knots Endurance 430 km 132 knots 132 knots 132 knots KTAS 63 knots 107 knots 134 knots 232 knots KAS 63 knots 107 knots 134 knots		KIAS	77 knots	113 knots	123 knots	136 knots
6000 ft Fuel consumption 7.5 USgalt/ 7.5 USgalt/ 7.2 USgalt/ 7.2 USgalt/ 7.5 USgalt/ 7.2 USgalt/ 7.2 USgalt/ 7.5 USgalt/ 7.2 USgalt/ 8.330 km 40.5 th 7.2 USgalt/ 8.330 km Range 330 km 1270 km 1008 km 810 km Range 330 km 1270 km 1008 km 810 km KIAS 70 knots 110 knots 121 knots 131 knots 8000 ft Fuel consumption 7.1 USgalt/ 7.5 USgalt/ 7.2 USgalt/ 7.0 LSgalt/ 7.1 USgalt/ 7.5 USgalt/ 7.2 USgalt/ 7.0 LSgalt/ 7.1 USgalt/ 7.0 USgalt/ 7.0 LSgalt/ 7.1 USgalt/ 7.0 USgalt/ 8.000 ft 4.0 km Range 4300 km 52 USgalt/ 7.1 USgalt/ 1.0 USgalt/ 7.0 USgalt/ 8.0 km 22.0 LSgalt/ 8.0 km Range 4300 km 102 km 110 kmots 121 kmots KIAS 63 knots 109 knots 131 knots KIAS 63 knots 109 knots 131 knots 10000 ft Fuel consumption 0.7 USgalt/ 7.2 USgalt/ 7.2 USgalt/ 0.7 USgalt/ 7.2 USgalt/ 0.7 USgalt/ 0.7 USgalt/ 7.2 USgalt/ 7.7 USgalt/ 7.		KCAS	78 knots	114 knots	123 knots	135 knots
Buol th Fuel consumption F. J. Usgahn 7. Usga		KTAS	86 knots	124 knots	135 knots	148 knots
Form To Usgain 7.3 Usgain <th></th> <th></th> <td>5.7 l/h</td> <td>21.6 l/h</td> <td>27.5 l/h</td> <td>40.5 l/h</td>			5.7 l/h	21.6 l/h	27.5 l/h	40.5 l/h
Range 3330 km 1270 km 1080 km 810 km 7800 MM 690 NM 540 NM 430 NM KGAS 71 knots 110 knots 121 knots 134 knots KGAS 71 knots 111 knots 121 knots 133 knots Fuel consumption 4,1 l/h 20.8 l/h 27,0 l/h 40.6 kh Endurance 4,4 l/h 5,2 L/Sgauh 7,7 L/Sgauh 20.8 km 27,0 l/h 40.6 kh Range 4300 km 1320 km 110 knots 123 knots 132 knots KKAS 63 knots 1320 km 110 knots 127 knots 132 knots KKAS 63 knots 107 knots 132 knots 132 knots 132 knots KKAS 63 knots 108 knots 119 knots 132 knots 132 knots 10000 ft Fuel consumption 2,2 U/h 20 km 20 km 4,0 km 0,000 ft Fuel consumption 2,0 km 2,0 km 2,0 km 4,0 km 10000 ft Fuel consumption 2,0 km <t< td=""><th>6000 ft</th><th>Fuel consumption</th><td></td><td></td><td></td><td></td></t<>	6000 ft	Fuel consumption				
Range 780 0 MM 590 NM 580 NM 430 NMC KIAS 70 knots 110 knots 121 knots 133 knots KTAS 81 knots 111 knots 121 knots 133 knots KTAS 81 knots 125 knots 137 knots 133 knots Fuel consumption 4,1 lth 20,8 lth 27,0 lth 40,6 lth Endurance 4,49 5,42 4,24 256 Range 4300 km 1320 km 1110 km 820 km KIAS 63 knots 103 knots 111 knots 122 km KIAS 63 knots 109 knots 131 knots 122 km 10000 ft Fuel consumption -7 knots 100 knots 139 knots 131 knots 10000 ft Fuel consumption -2 knots 100 knots 139 knots 139 knots 131 knots 10000 ft Fuel consumption -2 knots 100 knots 139 knots 131 knots 131 knots 10000 ft Fuel consumption -2 knots 20 km <		Endurance	20:56	5:30	4:19	2:56
KIAS Tol knois Odd / Nm God / Nm Sol / Nm <t< td=""><th></th><th>_</th><td>3330 km</td><td>1270 km</td><td>1080 km</td><td>810 km</td></t<>		_	3330 km	1270 km	1080 km	810 km
KCAS 71 knots 111 knots 121 knots 133 knots KTAS 81 knots 125 knots 137 knots 150 knots 8000 ft Fuel consumption 4,1 lb 20,8 lb 27,0 lb 40,6 lb Fuel consumption 4,1 lb 20,8 lb 27,0 lb 40,6 lb Endurance 4,49 5,42 4,24 2,56 Range 4300 km 1320 km 111 lb km 820 km 1320 km 1110 km 820 km 630 knots 109 knots 119 knots 131 knots KIAS 63 knots 109 knots 119 knots 131 knots 131 knots 10000 ft Fuel consumption 2,0 lb 2,0 lb 20,0 lb 139 knots 139 knots 139 knots 139 knots 131 knots 10000 ft Fuel consumption 2,0 lb 2,0 lb 20,0 lb 2,0 lb 4,0 kb 4,0 kb 0,7 USgath 7,7 USgath 6,3 lb 3,0 USgath 7,0 USgath 6,1 lb 4,0 kb 2,0 lb 2,0 lb 2,		Range	1800 NM	690 NM	580 NM	430 NM
KCAS 71 knots 111 knots 121 knots 133 knots KTAS 81 knots 125 knots 137 knots 150 knots 8000 ft Fuel consumption 4,1 lb 20,8 lb 27,0 lb 40,6 lb Fuel consumption 4,1 lb 20,8 lb 27,0 lb 40,6 lb Endurance 4,49 5,42 4,24 2,56 Range 4300 km 1320 km 111 lb km 820 km 1320 km 1110 km 820 km 630 knots 109 knots 119 knots 131 knots KIAS 63 knots 109 knots 119 knots 131 knots 131 knots 10000 ft Fuel consumption 2,0 lb 2,0 lb 20,0 lb 139 knots 139 knots 139 knots 139 knots 131 knots 10000 ft Fuel consumption 2,0 lb 2,0 lb 20,0 lb 2,0 lb 4,0 kb 4,0 kb 0,7 USgath 7,7 USgath 6,3 lb 3,0 USgath 7,0 USgath 6,1 lb 4,0 kb 2,0 lb 2,0 lb 2,		KIAS	70 knots	110 knots	121 knots	134 knots
KTAS 81 knots 125 knots 137 knots 150 knots 8000 ft 4.1 klh 20.8 klh 2.2 0 klh 4.6 klh Fuel consumption 17, 17 klgsalh 5.5 USgalh 7.1 USgalh 10.7 USgalh Endurance 4.40 kls 5.5 USgalh 7.1 USgalh 10.7 USgalh 10.7 USgalh Range 4.300 km 1320 km 1110 km 820 km 720 km 4.20 km KIAS 63 knots 107 knots 1132 knots 132 knots 132 knots 132 knots 132 knots 133 knots 133 knots 133 knots 133 knots 131 knots 132 knots <t< td=""><th></th><th></th><td></td><td></td><td></td><td></td></t<>						
Stood ft Fuel consumption 4.1 l/h 20.8 l/h 27.0 l/h 40.6 l/h Fuel consumption 7.1 USgal/h 7.0 USgal						
B000 ft Fuel consumption Endurance 15,10 (Sga/h) 5,20 (Sga/h) 7,10 (Sga/h) 7,20 (Sga/h) Endurance 4.49 5.42 4.24 2.56 Range 2300 km 1320 km 1110 km 820 km KIAS 6.3 knots 107 knots 119 knots 132 knots KIAS 6.3 knots 107 knots 119 knots 132 knots KTAS 75 knots 108 knots 119 knots 133 knots 10000 ft Fuel consumption 2.0 kh 2.0 km 2.0 Sga/h 7.0 USga/h 6410 km 2.3 USga/h 7.0 USga/h 7.0 USga/h 7.0 USga/h 7.0 USga/h 10000 ft Fuel consumption 2.0 kh 2.0 km 2.0 Sga/h 7.0 USga/h 7.0 USga/h 7.0 USga/h Endurance 22.09 5.55 4.28 2.55 2.55 4.28 km 2.55						
Endurance 4.49 5.42 4.24 2.56 Range 4300 km 1320 km 1110 km 820 km KIAS 63 knots 1320 km 1110 km 820 km KIAS 63 knots 107 knots 119 knots 132 knots KTAS 75 knots 108 knots 119 knots 131 knots 10000 ft Fuel consumption 2.6 l/h 2.0 l/h 2.6 s/h 4.0 g/h 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.0 S/s 4.2 g/k 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.0 S/s 4.2 g/k 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.0 S/s 4.2 g/k 4.0 g/k 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.0 S/s 4.2 g/k 4.2 g/k 10000 ft G/line 6.0 l/h 2.0 l/h 2.0 s/s 4.2 g/k 4.0 g/k	8000 ft	Fuel consumption				
Range 4300 km 1320 km 1110 km 820 km 2320 MM 710 NM 600 NM 440 NM KLAS 63 knots 107 knots 000 NM 440 NM KCAS 64 knots 108 knots 119 knots 132 knots KCAS 64 knots 108 knots 119 knots 131 knots 10000 ft Fuel consumption 2,6 kh 20,1 lh 26,6 kh 40,6 kh C/7 USgalh 5,2 USgalh 7,7 USgalh 50 USgalh 7,7 USgalh 42,8 USgalh 2,5 S Rener 22,0 9 5.55 4.28 2,5 S 4.28 koks 2,8 S knots		Endurance				
Range 2220 MM 710 NM 600 MM 440 MM KIAS 63 knots 107 knots 119 knots 132 knots KCAS 64 knots 100 knots 119 knots 131 knots 10000 ft Fuel consumption 2.6 l/h 2.0 l/h 2.6 l/h 4.0 S/M 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.6 l/h 4.0 S/M 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.6 l/h 4.0 S/M 10000 ft Fuel consumption 2.0 l/h 2.0 l/h 2.0 S/M 4.2 S/M 101000 ft G/USgaM 7.0 USgaM 7.0 USgaM 7.0 USgaM 4.0 S/M 101000 ft G/USgaM 6.0 USgaM 7.0 USgaM 4.0 S/M 4.0 S/M 101000 ft G/USgaM 7.0 USgaM 7.0 USgaM 4.0 S/M 4.0 S/M						
KIAS 63 knots 107 knots 119 knots 132 knots KCAS 64 knots 106 knots 119 knots 131 knots KTAS 75 knots 126 knots 139 knots 131 knots 10000 ft Fuel consumption 2.0 km 2.0 km/s 1.0 Km/s 1.5 km/s 6 km 2.0 km/s 2.0 km/s 2.0 Km/s 1.0 Km/s 1.0 Km/s 10000 ft Fuel consumption 2.0 km/s 2.0 Km/s 2.0 Km/s 1.0 Km/s 10000 ft Fuel consumption 2.0 km/s 2.0 Km/s 2.0 Km/s 1.0 Km/s 10 km/s 5.5 Km/s 2.0 Km/s 2.0 Km/s 2.0 Km/s 1.0 Km/s 10 km/s 5.5 Km/s 2.0 Km/s 2.0 Km/s 2.5 Km/s 2.5 Km/s 10 km/s 5.0 km/s 5.0 km/s 5.0 km/s 3.0 km/s 1.0 Km/s		Range				
KCAS 64 knots 109 knots 119 knots 131 knots 10000 ft 75 knots 126 knots 139 knots 153 knots 10000 ft Fuel consumption 2.6 l/h 2.0 l/h 2.6 l/h 40.6 l/h 07.USgath 7.2 USgath 7.3 USgath 7.0 USgath 7.0 USgath 7.0 USgath Endurance 22.09 5.55 4.28 2.55 2.80 km 2.80 km Dama 6410 km 1380 km 130 knots 130 knots 130 knots		KIAS		107 knots	119 knots	132 knots
KTAS 75 krots 126 krots 139 krots 153 krots 10000 ft 2.6 klh 2.0 k lh 2.6 k lh 40.6 k lh 10000 ft Fuel consumption 2.7 USgalh 5.3 USgalh 7.0 USgalh 7.0 USgalh Endurance 22.09 5.55 4.28 2.55 Panae 6410 km 1330 km 1150 km 830 km						
Fuel consumption 2,6 l/h 20,1 l/h 26,6 l/h 40,6 l/h Endurance 22.09 5.55 4.28 2.55 Bases 6410 km 1390 km 1150 km 830 km						
Πυθυ π Fuel consumption 0.7 Usgal/h 5.3 Usgal/h 7.0 Usgal/h 10.7 Usgal/h Endurance 22.09 5.55 4.28 2.55 Brance 6410 km 1380 km 1150 km 830 km						
Endurance 22:09 5:55 4:28 2:55 Base 6410 km 1380 km 1150 km 830 km	10000 ft	Fuel consumption				
6410 km 1380 km 1150 km 830 km		Endurance				
		Lindialice				
		Range	3460 NM	750 NM	620 NM	450 NM

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5.2.8	Demonstrated crosswind performance			
	Max. permitted head wind velocity			
	for take-off and landing	knots	15	m/s
	Max. permitted cross wind velocity			
	for take-off and landing16	knots	8	m/s
5.2.9	Optimum glide speed			
	Optimum glide speed 60-65	KIAS	110-120	m/s
5.2.10	Ceiling			
	Service ceiling20.000	ft	6.000	m

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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

6.4 Operational Weight and Balance Computation

- 6.4.1 Airplane Loading Schedule Chart
- 6.4.2 Table of static moments
- 6.4.3 Airplane loading graph
- 6.4.4 CG Moment envelope
- 6.4.5 CG limits
- 6.5 Equipment list

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6.1 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.

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6.2 Weight and Balance Record

The table is intended to record continuous history of changes of equipment affecting weight and balance.

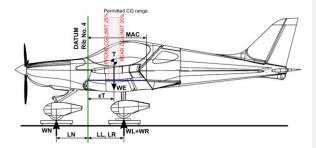
	ght	> -	Moment (lb.in)	12483 1 1430									
	c wei	of empty airplane	Mo (It									Fc	ormatted: Highlight
	Basi	ai	Weight (Ib)	777 <u>8</u> 5 2								_	
			>	н								Fc	ormatted: Highlight
			Moment (Ib.in)										
		Removed (-)	Am (in)										
			+										
237/2017387/2019	Weight change		Weight (Ib)										
7/20173	Weight		Moment (Ib.in)										
33			м Б										
		(+) pappy	Arm (in)										
Serial. No.:			Weight (Ib)										
		te		ane									
4		on of pa		red airp									
BRISTELL S-LSALSA		Description of part		Manufactured airplane									
STEL													
BRI	ltem	No	+										
Type		Date		21.6. 2019								_	
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- 6.2.1 Weight and Balance Report
- 6.2.1.1 Empty Aircraft Weight and CG



						MAC (in):	53,8
	ITEM	WEIG	iht	ARM		MOMENT = WE	IGHT x ARM
		(lb)	(in)		(lb.ir	1)
	RIGHT MAIN WHEEL	WR=	323	LR=	27,6	MR=	8900,9
AIRCRAFT T AND CG	LEFT MAIN WHEEL	WL=	319	LL=	27,6	ML=	8779,3
EMPTY AIF WEIGHT A	NOSE WHEEL	WN=	211	LN=	-29,7	MN=	-6249,9
EMPTY WEIGH		EMPTY W	VEIGHT	CG (ii	n) = 13,41	EMPTY ACFT TO	TAL MOMENT
	EMPTY AIRCRAFT	(lbs	5)			(lbs.i	n)
		WE=	852,1	CG (%MAC	:) = 24,9	MT=	11430,33
				Total Mor	mont		
				CG(in) = Total We		Serial No.: 43	86/2019
					<i>.</i>		

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

Ser	ial No.: 436/2019	
	Date: 21.6.2019	
	By: BRM Aero	

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6.2.1.2 Loaded Aircraft Weight and CG

	ITEM	WEIGHT (lb)	ARM (in)	MOMENT = WEIGHT x ARM (lb.in)
	EMPTY AIRCRAFT	852,1	13,41	11430,3
	PILOT		23,6	
	PASSENGER		23,6	
CRAFT D CG	BAGGAGE - BEHIND SEATS		55,1	
LOADED AIRCRAFT WEIGHT AND CG	BAGGAGE - WING LOCKERS		24,8	
LOADED /	FUEL TANKS		7,9	
	LOADED AIRCRAFT	TAKEOFF WEIGHT (lbs)	CENTER OF GRAVITY CG (in)=	LOADED ACFT TOTAL MOMENT (lb.in)
		TOW=	CG (%MAC) =	MT=
	Max.Takeoff Weight:	1320,0 lb	CG(in) = Total Moment Total Weight	Serial No.: 436/2019
	CG Range: Forward limit: Rearward limit:	25 35 13,5 in 18,8 in	$CG(\%MAC) = CG(in) x \frac{100}{MAC}$	Date: By:

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6.2.1.3 Weight and CG Blank Form

	ITEM	WEIGHT (Ib)	ARM (in)	MOMENT = WEIGHT x ARM (Ib.in)
	RIGHT MAIN WHEEL	WR=	LR= 27,6	MR=
RAFT D CG	LEFT MAIN WHEEL	WL=	LL= 27,6	ML=
EMPTY AIRCRAFT WEIGHT AND CG	NOSE WHEEL	WN=	LN= -29,7	MN=
EMPT WEIG	EMPTY AIRCRAFT	EMPTY WEIGHT (lbs)	CG (in) =	EMPTY ACFT TOTAL MOMENT (lbs.in)
		WE=	CG (%MAC) =	MT=
	ITEM	WEIGHT (lb)	ARM (in)	MOMENT = WEIGHT x ARM (lb.in)
	EMPTY AIRCRAFT			
	PILOT		23,6	
_	PASSENGER		23,6	
RCRAFI	BAGGAGE - BEHIND SEATS		55,1	
OADED AIRCRAFT WEIGHT AND CG	BAGGAGE - WING LOCKERS		24,8	
LOAE	FUEL TANKS		7,9	
	LOADED AIRCRAFT	TAKEOFF WEIGHT (lbs) TOW=	CENTER OF GRAVITY CG (in)= CG (%MAC) =	LOADED ACFT TOTAL MOMENT (lb.in) MT=
	Max.Takeoff Weight:	1320 lb	CG(in) = Total Moment Total Weight	Serial No.: 436/2019
	CG Range: Forward limit:	25 35 13,5 in	$CG(\%MAC) = CG(in) x \frac{100}{MAC}$	Date: By:
	Rearward limit: Max.useful load:	18,8 in		

 WU (b) =
 MTOW
 ·
 WE

 WU (b) =
 1320
 ·
 ·

 WU (b) =
 DO NOT EXCEED MAXIMUM TAKEOFF WEIGHT!
 ·
 ·

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BRISTELL LSA



Aircraft Operating Instructions

Permitted payload range 6.3

	PERMIT	TED PA	YLOAD	RANGE	OF BRIST	ELL (Ib))	
S/N:	436/2019			Empty	weight (lb):	852	MTOW (Ib):	1320,0
F								
U	VOLUME	(US gal)	5,0	10,0	15,0	20,0	25,0	31,7
L	WEIGHT	(lb)	30,3	60,5	90,8	121,0	151,3	191,8
				PERN	IITTED CR	EW WEI	GHT (lb)	
	NO BAGGAGE	0	438 31.0 %MAC	407 30.3 %MAC	377 29.6 %MAC	347 29.0 %MAC	317 28.3 %MAC	276
	1/2 REAR	17	421 31,7 %MAC	391 31,0 %MAC	361 30,4 %MAC	330 29,7 %MAC	300 29,0 %MAC	260 28,1 %MAC
B	MAX REAR	33	405 32,4 %MAC	374 31,8 %MAC	344 31,1 %MAC	314 30,4 %MAC	284 29,8 %MAC	243 28,9 %MAC
G G	1/2 WING LOCKERS	44	394 31,1 %MAC	363 30,4 %MAC	333 29,7 %MAC	303 29,0 %MAC	273 28,4 %MAC	232 27,5 %MAC
A G	1/2 REAR + 1/2 WING	61	377 31,8 %MAC	347 31,1 %MAC	317 30,4 %MAC	286 29,8 %MAC	256 29,1 %MAC	215 28,2 %MAC
E	MAX REAR + 1/2 WING	77	361 32,5 %MAC	330 31,8 %MAC	300 31,2 %MAC	270 30,5 %MAC	240 29,8 %MAC	199 28,9 %MAC
	MAX WING LOCKERS	88	349 31,1 %MAC	319 30,5 %MAC	289 29,8 %MAC	259 29,1 %MAC	228 28,4 %MAC	188 27,5 %MAC
	1/2 REAR + MAX WING	105	333 31,9 %MAC	303 31,2 %MAC	272 30,5 %MAC	242 29,8 %MAC	212 29,2 %MAC	171 28,3 %MAC
(lb)	MAX REAR + WING	121	316 32,6 %MAC	286 31,9 %MAC	256 31,2 %MAC	226 30,6 %MAC	195 29,9 %МАС	155 29,0 %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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6.4 Operational Weight and Balance Computation

An important part of preflight planning is to determine that the aircraft is loaded so its weight and CG location are within the allowable limits. This is possible by using hereafter explained Loading graph method, using weights, arms, and moment indexes.

Procedure:

- Record into the 6.4.1 Airplane Loading Schedule Chart current empty weight and static moment of the airplane, which you read from 6.2 Weight and Balance Record.
- 2. Record the weight of crew, fuel, and baggage into 6.4.1 Airplane Loading Schedule Chart.
- See the 6.4.2 Table of static moments or 6.4.3 Airplane loading graph to read static moments for given weights of crew, fuel, and baggage.
- 4. Record found moments into the 6.4.1 Airplane Loading Schedule Chart.
- Determine Take-off weight of the airplane add together the airplane empty weight, crew, fuel, and baggage and record the result into the 6.4.1 Airplane Loading Schedule Chart.
- Check, whether the calculated Take-off weight does not exceed Airplane Maximum Take-off Weight 1320 lb, 600 kg. If yes, then it is necessary to reduce weight of some of the useful load items (fuel, baggage).

WARNING EXCEEDING MTOW MAY LEAD TO DETERIORATION OF SAFETY OF FLIGHT!

- Determine Total Static Moment of loaded airplane add together the static moment of empty airplane, crew, fuel, and baggage and record the result into the 6.4.1 Airplane Loading Schedule Chart.
- Plot Takeoff Weight and Total Static Moment into the 6.4.4 CG Moment envelope.
- Check, whether the intersection of Take-off weight horizontal line and Total Static Moment vertical line is inside the envelope.
 If YES, then the flight may be safely performed as regards weight and

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balance.

If **NOT**, then it is necessary to change weight of some of the useful load items (crew, fuel, baggage) so that after a repeated computation the intersection of Take-off Weight and Total Static Moment will be inside the CG Moment envelope.

WARNING

SAFETY OF FLIGHT PERFORMED WITH THE AIRPLANE LOADED OUTSIDE PERMITTED LIMITS OF WEIGHT AND STATIC MOMENTS MAY BE DETERIORATED!

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	Aircraft Type/Model:	BRISTELL LSA	Airplane S/N:	436/2019	Registration:	N915LM		
	LOADING SCHEDULE C	HART		SAMPLE AIRCRAFT		YO	JR AIRCRAFT	436/2019
a	ITEM	WEIGHT LIMIT [Ib]	WEIGHT [Ib]	ARM [in]	MOMENT/100 [lb.in]	WEIGHT [Ib]	ARM [in]	MOMENT/100 [lb.in]
ι.	Einpty aeroplane		771,6	15,1	116,3	852,1	13,41	114,303
	Crew		198,4	23,6	46,9		23,6	
	Fuel	190,5	111,1	7,9	8,7		7,9	
	Bagagge behind seats	33,1	33,1	55,1	18,2		55,1	
	Baggage wing lockers	88,2	88,2	24,8	21,9		24,8	
	Baggage front locker	22,0	22,0	-9,8	-2,2		-9,8	
		мтоw [Ib] 1320	TAKEOFF WEIGHT [Ib] - sum of weights 1 to 6 1224,4		TOTAL MOMENT/100 [Ib.in] = sum of moments 1 to 6 209,8	TAKEOFF WEIGHT [Ib] * sum of weights 1 to 6		TOTAL MOMENT/100 [Ib.in] = sum of moments 1 to 6
		FRONT CG LIMIT 13,5 AFT CG LIMIT 18,8		1224,4	<u>x</u> 100		TOTAL MOMENT/100 TAKEOFF WEIGHT	<u>×</u> 100
		FRONT CG LIMIT 25,0 %MAC AFT CG LIMIT 35,0 %MAC	CG POSITION [%MAC] = = =	CG POS. [in] x 100 MAC 1713,6 53,8 31,8	-	CG POSITION [%MAC] = = =	CG POS. [in] x 100 MAC	-

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6.4.2 Table of static moments

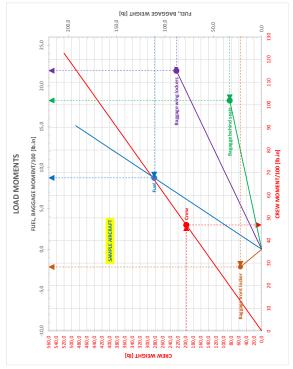
<u> </u>	0	IC.	1-2	~		-	10	10	~	Loc I	Let 1	0	-	~	Lee.	Let 1	10	10	~	Loo /	-	0	-	0.1
GAGE FRONT LOCKER	Mament/100 [Ib.in]	У0	-0,1	-0,2	£'0·	7′0-	5'0·	•′0•	<u>(</u> '0-	3'0-	5'0·	-1'C	1,1-	27-	÷.	-1,4	5'1-	9'î-	L/1-	-1,5	5'T-	-2'(-2,1	-2.2
BAGGA	Weight [Ib]	0	н Н	2	3	4	5	9	4	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22
LOCKERS	Moment/100 [lb.in]	0'0	1,2	2,5	3,7	5,0	6,2	7,4	8,7	6'6	11,2	12,4	13,6	14,9	16,1	17,4	18,6	19,8	21,12	22,3				
BAGGAGE WING LOCKERS BAGGAGE FRONT	Weight [Ib]	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	96				
BAGGAGE BEHIND SEATS	MomenV100 [fb.in]	0'0	1/1	2,2	3,3	4,4	5,5	6,6	L' L	8,8	6'6	11,0	12,1	13,2	14,3	15,4	16,5	17,6	18,2					
BAGGAGE	Weight [Ib]	0	2	4	9	8	10	12	14	16	18	20	22	24	26	28	30	32	33					
	MamenV100 [Ib.in]	0'0	6'0	1,9	2,8	3,8	4,7	5,7	9'9	7,6	8,5	9,5	10,4	11,4	12,3	13,2	14,2	15,1						
FUEL	Weight [lb]	0,0	12,0	24,0	36,1	48,1	60,1	72,1	84,1	96,1	108,2	120,2	132,2	144,2	156,2	168,2	180,3	192,3						
	Quantity [USgal]	0'0	2,0	4,0	6,0	8,0	10,0	12,0	14,0	16,0	18,0	20'02	22,0	24,0	26,0	28,0	0'06	32,0						
*	Moment/100 [Ib.in]	0'0	28,6	33,1	37,8	42,5	47,2	52,0	56,7	61,4	66,1	70,9	75,6	80,3	85,0	8,9,8	94,5	566	103,9	108,7	113,4	118,1	122,8	
CREW	Weight [Ib]	0'0	121,0	140,0	160,0	180,0	200'0	220,0	240,0	260,0	280,0	300'0	320,0	340,0	360,0	380,0	400'0	420,0	440,0	460,0	480,0	0'005	520,0	
<u> </u>		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	_	-	-	-	_	۰.

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6.4.3 Airplane loading graph

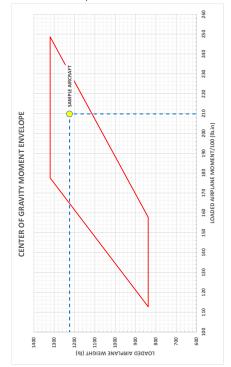


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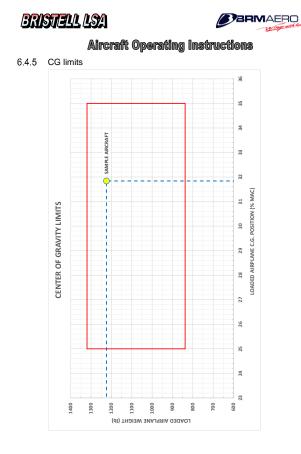


6.4.4 CG Moment envelope

BRISTELL LSA



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6.5 Equipment list

List of equipment installed in BRISTELL LSA, S/N 436/2019:

- 1. 12V/5V socket between seats, and on instrument panel
- 2. 3-pos.adjustable rudder pedals on both sides
- 3. Aileron + elevator electric trim control on both control sticks
- 4. AMSAFE 4-point safety belts
- 5. Anderson plug-External connection to power for jump start
- 6. Arm rest box
- 7. Automotive net in baggage compartment (P/N 42084)
- 8. Beringer 5,00-5 wheels
- 9. Beringer hand brake on central console, ABS
- 10. BOSCH M6 023 12V 18 AH YTX20L-4 battery
- 11. Bracket for EARTH X battery installation
- 12. Cabin heat
- 13. Canopy glass grey
- 14. Carpets in the cockpit
- 15. Coolant thermostat not installed
- 16. DUC INCONEL FLASH propeller
- 17. ELT Kannad AF Integra 406 MHz + RC 200 control unit
- 18. Fixed landing gear, steerable nose wheel
- 19. Fuel selector on console between seats
- 20. Garmin G3X flight display system
- 21. Garmin G5 EFIS
- 22. Garmin GA 26C GPS antenna for G3X
- 23. Garmin GA 35 External active GPS antenna
- 24. Garmin GA 57X combo GPS / XM antenna for G3X
- 25. Garmin GAD 29 ARINC 429 Interface
- 26. Garmin GAP 26 angle of attack heated probe
- 27. Garmin GDL 51R Remote-mount SiriusXM® Receiver
- 28. Garmin GDU 460, 10,6" dual displays
- 29. Garmin GEA 24 Engine Interface Module
- 30. Garmin GMA 345 digital audio panel
- 31. Garmin GMC 507 Autopilot Control Module without Yaw damper
- 32. Garmin GMU 22 Magnetometer
- 33. Garmin GSA 28 autopilot servos installation (roll+pitch)
- 34. Garmin GSU 25 ADHRS (2x)

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- 35. GARMIN GTN 650 GPS/NAV/COM
- 36. Garmin GTP 59 Temperature Probe
- 37. Garmin GTX 45R mode S transponder with ADS-B out
- 38. Governor P-110-030/A for hydraulic prop
- 39. Grey interior RAL 7016
- 40. LAMBERT ARROW FLASH wingtip lights
- 41. Lambert Flaps V4_0 LED light +LINAK electric flaps actuator
- 42. Landing lights in both wings, WIG-WAG
- 43. Large square eye-ball vents 3275
- 44. Leather glareshield, middle size
- 45. Leather grips of the control sticks
- 46. LED strip on glareshield + dimmer
- 47. LEMO Connector with power supply
- 48. Lockable canopy
- 49. Long HTU (2.9 m) with long trim and horn balance
- 50. Middle size instrument panel for G3X CARBON
- 51. Noise insulation on firewall
- 52. Nose gear doubled flexible rod (Teleflex)
- 53. Paint scheme: #00, own design
- 54. RAMI AV-10 comm antenna
- 55. RAMI AV-17 COM antenna
- 56. RAMI AV-525 VOR, LOC & GS "V" Dipole Antenna
- 57. RAMI AV-74 transponder DME antenna
- 58. Red Loctite to seal exhaust system spring connection
- 59. Rotax 915 iS 3 A engine
- 60. Seats padded textile
- 61. SHILTEK LG fire sleeves on the oil hoses
- 62. Short control sticks for Tosten grips
- 63. Swith with fuse for fuel pump
- 64. TCW IBBS-12V-3AH 2 backup batteries (2x) for Garmin G3X
- 65. Tosten CS-6 grips
- 66. USB port(s) on the instrument panel
- 67. Wheel fairings (pants) for wheels 5,00"-5"
- 68. Wing lockers
- 69. Winter QM 2 Art. 1120 bank indicator

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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 Power plant
- 7.8.1 Throttle
- 7.8.2 Heating
- 7.9 Fuel system
- 7.10 Electrical system
- 7.10.1 Battery
- 7.10.2 Master switch
- 7.10.3 Lane Switches
- 7.10.4 Start Power Switch
- 7.10.5 Battery Backup Switch
- 7.10.6 Start Button
- 7.11 Pitot and static pressure system
- 7.12 Miscellaneous equipment
- 7.13 Instruments and Avionics
- 7.14 Cockpit
- 7.14.1 Cockpit layout
- 7.14.2 Instrument panel

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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.

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.

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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 centered on the body.

7.6 Baggage compartment

The rear baggage compartment is located behind the seats. It may accommodate up to 33 lb (15 kg). 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 lb (20 kg), 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.

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7.8 Power plant

Engine:

ROTAX 915 iS 3 A is 4-cylinder horizontally opposed, turbo- charged engine having propeller shaft with flange for constant speed propeller and drive for hydraulic governor for constant speed propeller.

Rotax 915 iS is 4-cylinder, 4-stroke liquid/air-cooled engine with horizontally opposed cylinders, Dry sump forced lubrication with separate oil tank,

automatic adjustment by hydraulic valve tappet, Redundant electronic fuel injection and ignition, Engine management system (EMS), Electric starter (12 or 24 voll), Propeller speed reduction gearbox, Air intake system with intercooler, Turbocharger with stainless steel exhaust, TBO (Time between overhauls) 1,200 hours.

Propeller:

DUC Inconel FLASH, composite, 3-bladed, on-ground adjustable 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 carburetors. 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.

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7.9 Fuel system

Wing tanks volume: 2x16 US gallons (2x60 I)

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 fuel pumps are located under cockpit floor accessible from outside after demounting cover on fuselage bottom.

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 Lane Switches

There are instaled two independent LANE select switches A and B on the instrument panel to connect the engine control unit ECU for the relevant LANE to the EMS power supply. The switches are used for LANE and ignition check after engine starting. LANE A and LANE B have different sensor inputs. During LANE and Ignition Check, some sensors values are not displayed, depending on activation of the LANES. Refer to Engine Operator's Manual for more details.

NOTE

All switches and or engine controls are "up" or "push forward" for operation, except the cabin 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.

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7.10.4 Start Power Switch

By pressing the Start Power Switch, the EMS system of the engine is powered externally by the onboard battery for a short time during start-up.

7.10.5 Battery Backup Switch

If necessary (e.g. in case of supply failure by the internal generator) the EMS system can by powered by the onboard battery by activating the Battery Backup Switch.

7.10.6 Start Button

The Red Start Button on the instrument panel activates the starter motor.

7.11 Pitot and static pressure system

Pitot tube (optionally heated) is located below the 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 tube and static ports clean to ensure proper function of the system.

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7.12 Miscellaneous equipment

BRISTELL LSA, S/N 436/2019 is fitted with:

- 1. 12V/5V sockets, USB port between seats, and on instrument panel
- 2. 3-pos.adjustable rudder pedals on both sides
- 3. Aileron + elevator electric trim control on both control sticks
- 4. AMSAFE 4-point safety belts
- 5. Anderson plug-External connection to power for jump start
- 6. Arm rest box
- 7. Automotive net in baggage compartment (P/N 42084)
- 8. Beringer 5,00-5 wheels + wheel pants
- 9. Beringer hand brake on central console, ABS
- 10. BOSCH M6 023 12V 18 AH YTX20L-4 battery
- 11. Bracket for EARTH X battery installation
- 12. Cabin heat
- 13. Canopy glass grey
- 14. Carpets in the cockpit
- 15. Fuel selector on console between seats
- 16. Governor P-110-030/A for hydraulic prop
- 17. LAMBERT ARROW FLASH wingtip lights
- 18. Lambert Flaps V4_0 LED light +LINAK electric flaps actuator
- 19. Landing lights in both wings, WIG-WAG
- 20. Large square eye-ball vents 3275
- 21. Leather glareshield, middle size
- 22. Leather grips of the control sticks
- 23. LED strip on glareshield + dimmer
- 24. LEMO Connector with power supply
- 25. Noise insulation on firewall
- 26. Nose gear doubled flexible rod (Teleflex)
- 27. Red Loctite to seal exhaust system spring connection
- 28. Seats padded textile
- 29. SHILTEK LG fire sleeves on the oil hoses
- 30. Tosten CS-6 grips
- 31. Wing lockers

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7.13 Instruments and Avionics

BRISTELL LSA, S/N 436/2019 is fitted with:

- Flight instruments:
 - 1. Garmin G5 EFIS
 - 2. Winter QM 2 Art. 1120 bank indicator
 - 3. Garmin G3X flight display system including:
 - 4. Garmin GDU 460, 10,6" dual displays
 - 5. Garmin GEA 24 Engine Interface Module
 - 6. Garmin GA 26C GPS antenna for G3X
 - 7. Garmin GA 35 External active GPS antenna
 - 8. Garmin GA 57X combo GPS / XM antenna for G3X
 - 9. Garmin GAD 29 ARINC 429 Interface
 - 10. Garmin GAP 26 angle of attack heated probe
 - 11. Garmin GDL 51R Remote-mount SiriusXM® Receiver
 - 12. Garmin GMA 345 digital audio panel
 - 13. Garmin GMC 507 Autopilot Control Module without Yaw damper
 - 14. Garmin GMU 22 Magnetometer
 - 15. Garmin GSA 28 autopilot servos installation (roll+pitch)
 - . 16. Garmin GSU 25 ADHRS (2x)
 - 17. Garmin GTP 59 Temperature Probe
 - 18. TCW IBBS-12V-3AH 2 backup batteries (2x) for Garmin G3X

Engine instruments:

1. Garmin GEA 24 Engine Interface Module

COM/NAV, and Other instruments:

- 1. GARMIN GTN 650 GPS/NAV/COM RAMI + RAMI AV-10 comm antenna+ AV-17 COM antenna + AV-525 VOR antenna
- 2. Garmin GTX 45R mode S transponder with ADS-B out + RAMI AV-74 transponder DME antenna
- 3. ELT Kannad AF Integra 406 MHz + RC 200 control unit

NOTE

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

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7.14 Cockpit

7.14.1 Cockpit layout

BRISTELL LSA, S/N 436/2019 has the following cockpit layout:



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7.14.2 Instrument panel

BRISTELL LSA, S/N 436/2019 has the following instrument panel:



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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

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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.

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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:

- 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
- 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.

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- 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 <u>only</u> 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 dismantile the wings before road transport. The aircraft and dismantied 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 <u>never</u> 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.

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SECTION 9

9 REQUIRED PLACARDS AND MARKINGS

- 9.1 Limitation placards
- 9.2 Miscellaneous placards and markings

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9.1 Limitation placards

The airplane must be placarded with:

- All fuses
- Ignition switches (LANE A,B)
- 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
- Instruments
- Canopy: Open Close
- Fuel capacity: 60 litres, 15.87 US gallons / min. 95 Octane at filler neck
- Fireproof Identification plate attached to the fuselage port side, in front of the horizontal tail unit

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PASSENGER WARNING! THIS AIRCRAFT WA'S MANUFACTURED IN ACCORDANCE WITH LIGHT SPORT AIRCRAFT AIRWORTHINESS STANDARD SAND DOES NOT CONFORM TO STANDARD CATEGORY AIRWORTHINESS REQUIREMENTS.	Passenger warning for LSA category aeroplanes. Located on the instrument panel.		
PASSENGER NOTICE THIS AIRCRAFT COMFORMS TO ASTM CONSENSUS STANDARDS OF AIRWORTHINESS DEVELOPED AND MAINTAINED BY THE AWATION 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.		
NO OPS ABOVE 120 KTS	No operations above 120 knots. (Sticker based on Sport Pilot Rule)		

Date of Issue 06/2010 Date of Issue: <u>12/201607/2017</u> S 9-3

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Revision -Revision: 1





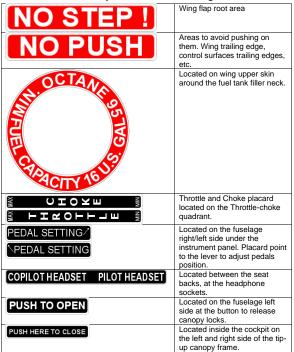
ENGINE RPM: Max. take-off (max. 5 min.) 5800 rpm Max. continuous 5500 rpm Idle 1400 rpm	Engine speed limitations. Located on the instrument panel or fuselage side.	
WARNING DO NOT EXCEED MAXIMUM TAKE-OFF WEIGHT 1320 LBS	Maximum Takeoff Weight Limitation. 1320 lb limit for Light sport aeroplanes. Located on the instrument panel or fuselage side.	

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9.2 Miscellaneous placards and markings



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CAUTION

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

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SECTION 10

10 SUPPLEMENTS

- 10.1 Introduction
- 10.2 List of inserted supplements
- 10.3 Inserted Supplements

Date of Issue: 06/2019 Document No.: SLSA-AOI-9-7-0-US 10-1





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.

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10.2 List of inserted supplements

Date	Suppl. No.	Title of inserted supplement			
07/2011	01	Aircraft Flight Training Supplement			
06/2019	02	Description of the aircraft S/N 436/2019			

Date of Issue: 06/2019 Document No.: SLSA-AOI-9-7-0-US 10-3





10.3 Inserted Supplements

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BRM aero

SUPPLEMENT No. 01

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

Date of Issue: 07/2011

Revision: 1.0



BRM aero

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

Date of Issue: 07/2011

Revision: 1.0





Flight Training Procedure - description

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

Date of Issue: 07/2011

Revision: 1.0





SUPPLEMENT No. 02

AIRCRAFT DESCRIPTION

Registration: N915LM

Serial Number: 436/2019

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.

Date of Issue: 06/2019

Revision: -





0 TECHNICAL INFORMATION

This Supplement adds information necessary for airplane operation with equipment installed in the airplane BRISTELL LSA, S/N 436/2019.

0.1 Record of revisions

No changes.

1 GENERAL INFORMATION

No changes.

2 OPERATING LIMITATION

2.4 Power plant

2.4.3 Oil

Type of oil used by aircraft manufacturer : Aeroshell OIL SPORT PLUS 4

2.4.4 Coolant

Type of used coolant: 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.

Date of Issue: 06/2019

Revision: -





WEIGHT AND BALANCE 6

No changes.

- 7 AIRPLANE AND SYSTEMS DESCRIPTION No changes.
- AIRPLANE HANDLING, SERVICING AND 8 MAINTENANCE

No changes.

9 **REQUIRED PLACARDS AND MARKINGS** NO OPS ABOVE 120 KTS

Date of Issue: 06/2019

Revision: -