2.0 OPERATING LIMITATIONS

2.1. INTRODUCTION

Chapter 2 of this Flight Manual addresses the operating limitations, instrument markings, airspeed indicator markings, and the limitation placards which are necessary for the safe operation of the airplane, its engine, and standard systems and equipment.

WARNING:

These limitations must be complied with for all operations.

2.2. AIRSPEED LIMITATIONS

	IAS			
IAS	kts	mph	km/h	Remarks
V_A Maneuvering Speed	104	120	193	Do not make full or abrupt control movement above this speed, because under certain conditions the airplane may be overstressed by full control movement.
V_{FE} Maximum Flap Extended Speed	81	93	150	Do not exceed this speed with flaps extended.
V_{NO} Maximum Structural Cruising Speed	118	135	218	Do not exceed this speed except in smooth air, and then only with caution,
V_{NE} Never Exceed Speed	161	185	298	Do not exceed this speed in any operation.

2.3. AIRSPEED INDICATOR MARKINGS

	IAS			
Marking	kts	mph	km/h	Explanation
White Arc	37-81	43-93	69-150	Operating range with extended flaps.
Green Arc	41-118	47-135	76-218	Normal operating range.
Yellow Arc	118-161	135-185	218-298	Maneuvers must be conducted with caution and only in smooth air.
Red Line	161	185	298	Maximum permissible speed for all operating modes.

2.4. POWER PLANT LIMITATIONS

2.4.1 ENGINE

a) Engine Manufacturer : Bombardier Rotax,Gunskirchen/Austria

b) Engine Type Designation : 912S3

NOTE:
The propeller is driven by the engine via a reduction gear with a ratio of 2.43:1. The RPM indicator indicates the propeller speed. For that reason, all speed references within this manual - contrary to the engine manual - are propeller speeds.

(c) Engine Operating Limitations

Max. T/O Power (5 min.)	: 59.6 kW / 80 hp
Max. Permissible T/O RPM	: 2550 RPM
Max. Continuous Power	: 58 kW / 78 hp
MaMax. Permissible Continuous RPM	: 2420 RPM

(d) Oil Pressure

Minimum	: 22 psi (1.5 bar)
Maximum	: 73 psi (5.0 bar)
Max. in case of Cold-start (short-term)	: 102 psi bar (7.0)

(e) Fuel Pressure

Minimum	: 2 psi (0.15 bar)
Maximum	: 6 psi (0.40 bar)

(f) Oil Temperature

Minimum	: 122°F (50°C)
Maximum	: 284°F (140°C)

(g) Cylinder Head Temperature

Maximum	: 275°F (135°C)

(h) Fuel Specifications

Approved Fuel Grades	: AVGAS 100LL Unleaded Automotive Fuel 95 RON /91 AKI
(i) Oil Grades	: 4 stroke motorcycle oil of a registered brand with gear additives that meets or exceedes API classification SF or SG are highly recommended.

2.4.2 **PROPELLER**

(a) Propeller Manufacturer	: Hoffmann Propeller, Rosenheim/Germany
(b) Propeller Type	: HO-V352F/170FQ OR
(c) Propeller Diameter	: 1.70 m (5 ft 6.9 in)
(d) Propeller Pitch (at 3/4 radius)	: 10° - 35°

(e) Propeller Speed Limitations

Max. T/O RPM (max. 5 min.)	: 2385 RPM
Max. Continuous RPM	: 2260 RPM

2.5. POWERPLANT INSTRUMENT MARKINGS

Powerplant instrument markings and their color code significance are shown below:

Instrument	**Red Line** Lower Limit	**Green Arc** Normal Operat. Range	**Yellow Arc** Caution Range	**Red Line** Upper Limit
Tachometer	-	600-2260 RPM	2260-2385 RPM	2385 RPM
Oil Temperat. Indicator	122°F 50°C	122-266°F 50-130°C	-	266°F 130°C
Cylinder Head Temperature Indicator	-	-	-	275°F 135°C
Oil Pressure Indicator	12 psi 0.8 bar	29-73 psi 2 - 5 bar above 1440 RPM	12 - 29 psi 0.8 . 2 bar below 1440 RPM 73 - 102 psi 5 - 7 bar	102 psi 7 bar

* Recommended nominal idle speed = 950 RPM

2.6. MISCELLANEOUS INSTRUMENT MARKINGS

Instrument	**Red Line** Lower Limit	**Green Arc** Normal Operat. Range	**Yellow Arc** Caution Range	**Red Line** Upper Limit
Voltmeter	8 - 11 Volts	12.5 - 16 Volts	11 - 12.5 Volts	16.1 Volts

2.7. WEIGHT

Maximum permissible weight	: 750 kg (1653 lbs)
Maximum permissible weight in the baggage compartment	: 20 kg (44 lbs) only permissible with baggage harness

WARNING:

Exceeding the weight limitations may lead to overloading of the airplane, as well as degrading of the handling characteristics and flight performance.

2.8. CENTER OF GRAVITY

The reference datum (RD) for the center of gravity (CG) calculation is tangent to the leading edge of the wing at the root rib. This plane is vertical when the fuselage is horizontal.

Most forward CG (all weights)	: 250 mm (9.84 in) aft of RD
Most rearward CG (all weights)	: 390 mm(15.35 in) aft of RD

WARNING:

Exceeding the center of gravity limitations reduces the maneuverability and stability of the airplane.

The procedure used to determine the center of gravity is described in Chapter 6.

2.9. APPROVED MANEUVERS

This airplane is certified in the NORMAL Category in accordance with JAR-VLA.
Permissible Normal Category Maneuvers:

a) All normal flight maneuvers

b) Stalls (except WHIP stalls)

c) Lazy Eight's Entry speed: 116 kts (215 km/h)

Chandelles: Entry speed: 116 kts (215 km/h)

Steep turns in which the angle of bank does not exceed 60°

d) Spinning (with Wing Flaps UP)

NOTE:
Aerobatics are prohibited.

2.10. MANEUVERING LOAD FACTORS

Table of structural maximum permissible load factors:

	at V_A	at V_{NE}	with fully ext. flaps
Positive	+4.4	+4.4	+ 2.0
Negative	-2.2	-2.2	0

WARNING:
Exceeding the maximum load factors will result in overstressing of the airplane. Simultaneous full deflection of more than one control surface can result in overstressing of the structure, even at speeds below the maneuvering speed.

2.11. MAXIMUM PASSENGER SEATING

Maximum Passenger Seating: one passenger.

2.12. FLIGHT CREW

Minimum Flight Crew: one pilot, aircraft to be flown solo from left seat only.

2.13. KINDS OF OPERATION

Flights are permissible in accordance with day visual flight rules.

Minimum Equipment, Flight and Navigation Instruments:

Airspeed Indicator	
Altimeter	
Magnetic Compass	
Turn and Bank Indicator	(not mandatory for Day-VFR only)
Instrument Panel and Map Lighting	(not mandatory for Day-VFR only)

Minimum Equipment, Powerplant Instruments:

Fuel Quantity Indicator
Oil Pressure Indicator
Oil Temperature Indicator
Manifold Pressure Indicator
Cylinder Head Temperature Indicator
Tachometer
Fuel Pressure Warning Light
Voltmeter
Ammeter
Generator Warning Light

NOTE:
Note: Additional equipment may be required for compliance with specific operational or specific national requirements. It is the operators responsibility to ensure compliance with any such specific equipment requirements.

2.14. FUEL

Fuel Capacity

Total Fuel Quantity:	20.1 US gal. (76 litres)
Usable Fuel:	19.5 US gal. (74 litres)
Unusable Fuel:	0.6 US gal. (2 litres)

2.15. PLACARDS

Intentionally left out.

2.16. DEMONSTRATED CROSSWIND COMPONENT

The maximum demonstrated crosswind component is 15 kts (27 km/h).

2.15. TEMPERATURE LIMITS

Limits for outside air temperature and temperature of the structure for the operation of the airplane:

Maximum T/O Temperature :	: 131°F (55°C) Structural Temperature Limit