Super Petrel LS

(1430lb – 650 kg)
DAY-NIGHT-VFR

PILOT´S OPERATING HANDBOOK &

FLIGHT TRAINING SUPPLEMENT FOR LIGHT SPORT AIRCRAFT

AIRPLANE SERIAL NUMBER: S0387

AIRPLANE REGISTRATION NUMBER: N323WF

This handbook includes the material required by the Federal Aviation Regulations to be furnished to the pilot. It also includes and constitutes the FAA Approved Flight Manual. This airplane is approved as a special light-sport category aircraft (S-LSA) as defined by 14CFR§1.1 and meets the requirements of ASTM consensus standard F2245. This document must be carried in the airplane at all times.

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Scoda Aeronáutica Ltda

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WARNING

BEFORE OPERATING THE EQUIPMENT IT IS NECESSARY THAT THE OPERATOR READS CAREFULLY THIS MANUAL AND SUBMITS HIMSELF TO THE COMPLETE TRAINING PROGRAM. MOREOVER, THE OPERATOR SHOULD VERIFY IF THE MANUAL IS COMPLETE AND UPDATED. THE MANUAL SHOULD BE ON BOARD WITH OTHER DOCUMENTS REQUIRED BY LOCAL AVIATION AUTHORITY.

WARNING

THIS OPERATING MANUAL IS ONLY VALID FOR USE WITH THE AIRCRAFT IDENTIFIED ON THE FACE PAGE. ANY REVISIONS OF THIS MANUAL SHOULD BE INSERTED AS APPROPRIATE.

RECORD OF MANUAL REVISIONS PAGE

Revision Number	Date	Chapters	Pages
01	11/05/2019	0	IV – X
		9	9-15
02	06/26/2020	0	I, IV-X
		2	2-4, 2-5
		9	9-8, 9-12
03	02/10/2021	0	I, IV-X
		4	6
		7	7
		9	3, 4
04	12/05/2021	0	I, IV-XII
		3	7
		4	2, 5, 8, 9, 11, 12
		5	2, 3, 4
		7	3
		9	6
05	12/14/2021	0	I, IV, V-VII, VIII-XII
		8	8
		9	3
06	06/15/2022	0	I, IV, V-VII
		9	2
07	08/10/2022	0	I, IV, V-VII
		4	12, 15
		9	5

LIST OF EFFECTIVE PAGES

Revision Number	Chapter	Pages	Description of Revision	Date
0	All	All	Initial Issue	10/07/2019
1	0	IV	Updated Record of Manual Revisions Page	11/05/2019
		V	Updated List of Effective Pages	
		VI-X	Updated Table of Contents	
	9	15	Added 9.5 Listing of Owner/Operator Responsibilities for Continued Operational System	
2	0	I	Updated Revision Date	06/26/2020
		IV	Updated Record of Manual Revisions Page	
		V	Updated List of Effective Pages	
		VI-X	Updated Table of Contents	
	2	4	Updated 2.18 Engine • Revised Table - Coolant Temperatures Ranges • Added Note	
		5	• Added Caution	
	9	8	Updated 9.3 Placards and Markings • Added Engine Oil Placard	
		12	• Removed 12V Placard	
03	0	I	Updated Revision Date	02/10/2021
		IV	Updated Record of Manual Revisions Page	
		V	Updated List of Effective Pages	
		VI-X	Updated Table of Contents	
	4	6	Updated 4.3 Engine Starting • Revised Engine Start	
	7	7	Added 7.7.14 Aileron Electrical Trim	
	9	3	Updated 9.3 Placards and Markings • Revised Central Placard	
		4	• Revised Autopilot Disconnect, Elevator and Aileron Trim Control and VHF Placard	

04	0	I IV V-VI VII-XII	Updated Revision Date Updated Record of Manual Revisions Page Updated List of Effective Pages Updated Table of Contents	12/05/2021
	3	7	Revised 3.3.14 Loss of Flight Controls • Revised Loss of Elevator (Added Longitudinal)	
	4	2 5 8-9 11-12 	Revised 4.1 Preflight Check • Added Aileron Electrical Trim Inspection Revised 4.3 Engine Starting • Added Safety Belts Step Revised 4.5 Normal Takeoff • Removed Elevator Trim • Added Trim (Longitudinal and Lateral) • Revised Safety Belts • Revised Doors Revised 4.6 Climb • Removed Elevator Trim • Added Trim (Longitudinal and Lateral) Revised 4.9 Cruise • Added Trim (Longitudinal and Lateral)	
	5	2 3 4 	Revised 5.1 Takeoff Distance • Added NOTE (Water Takeoff) • Added WARNING (Water Takeoff) Updated 5.2 Takeoff Distance Chart • Added (1430 lbs – 650kg) on the tittle Added 5.3 Takeoff Distance Chart (1320 lbs – 600kg) • Added Chart for (1320lbs – 600kg)	

	7	3	Revised 7.5 Flight Controls • Added Electrical Trim	
	9	6	Revised 9.3 Supplement: Placards and Markings • Revised the Fuel Quantity Placard	
5	0	I IV V-VII VIII-XII	• Updated Revision Date • Updated Record of Manual Revisions Page • Updated List of Effective Pages • Updated Table of Contents	12/14/2021
	8	8	Revised 8.10.5 Salt Water Care • Add NOTE (Aircraft Maintenance Manual reference)	
	9	3	Updated 9.3 Supplement: Placards and Markings • Revised Central Placard (removed Warning Light DIM)	
6	0	I IV V-VII	• Updated Revision Date • Updated Record of Manual Revisions Page • Updated List of Effective Pages	06/15/2022
	9	2	Updated 9.3 Supplement: Placards and Markings • Revised Identification Plate	
7	0	I IV V-VII	• Updated Revision Date • Updated Record of Manual Revisions Page • Updated List of Effective Pages	08/10/2022
	4	12 15	Revised 4.8 Best Rate of Climb Speed (Vy) • Corrected RPM and Rate of Climb Data Revised 4.16.2 Engine Starting – Night Flights • Removed Warning Lights from “Before Starting”	
	9	5	Revised 9.3 Supplement: Placards and Markings • Revised Miscellaneous Placard • Removed AUX 12V • Added USB Charger • Updated Placard	

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INTRODUCTION

ASTM Standards

- F2245: Specification for Design and Performance of a Light Sport Airplane
- F2972: Practice for Quality Assurance in the Manufacture of Fixed Wing Light Sport Aircraft
- F2295: Practice for Continued Operational Safety Monitoring of a Light Sport Aircraft
- F2483: Practice for Maintenance and the Development of Maintenance Manuals for Light Sport Aircraft
- F2746: Specification for Pilot's Operating Handbook (POH) for Light Sport Airplane

About this Manual

All flight speeds are given in indicated airspeeds (IAS). All specifications and limitations were determined in order to meet the design and performance standard specification F2245.

Every pilot has to be aware to the limitations and specifications of this light sport aircraft. The Pilot Operating Handbook must be read thoroughly.

Please pay attention to the preflight and daily checks. Maintenance instructions for the aircraft are provided in a separated Super Petrel LS Maintenance Manual.

A list of original equipment manufacturer manuals for maintenance and operation is referred on the Original Equipment Manufacturers Manuals Supplement.

Scoda Aeronáutica Ltda

The Super Petrel LS aircraft is manufactured by Scoda Aeronáutica Ltda, which is located at:

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Data Location and Contact Information

Should SCODA AERONAUTICA LTDA becomes unable to support the Super Petrel LS, a NOTIFICATION shall be issued including the new location for data and the contact information for recovery of certification documentation and for further continued operational support.

Application of Notes, Cautions and Warnings

NOTES, CAUTIONS and **WARNINGS** are used in this document to emphasize instructions and information considered to be unusual or critical. A **NOTE**, **CAUTIONS** and **WARNINGS** may appear in the text either before or after the instruction(s) to which it applies, depending on the relative significance of the information. The conditions that warrant the use of **NOTES**, **CAUTIONS** and **WARNINGS** are defined below:

NOTE

An operating procedure, practice or a condition, which is essential to highlight or explain.

CAUTION

Operating procedures, practices or conditions, which, if not strictly observed or corrected, could result in damage or destruction of equipment.

WARNING

OPERATING PROCEDURES, PRACTICES OR CONDITIONS, WHICH, IF NOT STRICTLY OBSERVED OR REMEDIED, COULD RESULT IN SERIOUS PERSONAL INJURY OR OSS OF LIFE.

1 GENERAL INFORMATION

1.1. Introduction to Airplane

The SUPER PETREL LS is a resistant, light and safe amphibian aircraft, which demonstrates docile and precise pilotage in all, speed ranges as well as turns.

In water, the SUPER PETREL LS operates safely, easily absorbing wave impacts. The lower wings also work as water spray deflectors preserving the propeller integrity.

The SUPER PETREL LS is a versatile and well-finished amphibious aircraft. Its ability to take off and land short distances is unbeatable whether on land or water. With an excellent endurance and a comprehensive range of options and extras, it is perfect for any kind of operation.

The SUPER PETREL LS has a spacious cockpit able to carry two people comfortably. The aircraft also has a baggage compartment that can carry up to a maximum load of 66 lbs (30 kg). Equipped with a safe fuel system with a total capacity of 25 US gallons (95 liters), the aircraft can fly up to 600 miles (960 km) range with no fuel reserves.

With an excellent cruise speed, the SUPER PETREL LS exceeds the expectations of the category. It has streamlined control surfaces, which will bring safe and efficient handling characteristics throughout the aircraft operating envelope.

1.2. Summary of the Performance Specifications

Gross Weight (MTOW)	1430 lbs (650 kg)	
(V_{NE}) Never Exceed Speed	130 mph (113 kts)	
(V_H) Maximum Cruise Speed at 5500 RPM at Sea Level	112 mph (97 kts)	
Full Fuel Range with 30 minutes Day VFR reserves (as required by FAA)	75 % Power	4.2 US gal/h (16 liters/h) at 107 mph (93 kts) with 30 minute reserve yields 555 miles at Sea Level
	60 % Power	3.4 US gal/h (13 liters/h) at 93 mph (80 kts) with 30 minute reserve yields 605 miles at Sea Level
Full Fuel Range with 45 minutes Night VFR reserves (as required by FAA)	75 % Power	4.2 US gal/h (16 liters/h) at 107 mph (93 kts) with 45 minute reserve yields 528 miles at Sea Level
	60 % Power	3.4 US gal/h (13 liters/h) at 93 mph (80 kts) with 45 minute reserve yields 581 miles at Sea Level
(Vx) Speed for best angle of climb	65 mph (56 kts)	
(Vy) Speed for best rate of climb	70 mph (61 kts)	
Stalling Speed	42 mph (37 kts)	
Total Fuel Capacity	25 US gal (95 Liters)	
Total Fuel Usable	24 US gal (91 Liters)	Left Wing 10 US gal (38 Liters) Right Wing 10 US gal (38 Liters)
		Header Tank 4 US gal (15 Liters)
Approved Fuel Types	Premium 91 Octane Minimum (R+N)/2 method or 100 LL AVGAS – No more than 10% Ethanol by volume (no ethanol in fuel preferable)	
Maximum Engine Power Output (Rotax 912 iS Sport)	Max Continuous Power: 97 hp (72 kW) at 5500 RPM	

2 LIMITATIONS

2.1. Airspeed Indicator Markings

Speed indicator markings and their color coding meanings are shown below:

Markings	IAS value or range		Meaning
	MPH	Kts	
Green Arc	42-113	37-98	Normal operating range. Lower limit is maximum weight V_S at most forward C.G. Upper limit is maximum structural cruising speed.
Yellow Arc	113-130	98-113	Caution range. Maneuverings should be conducted with caution and smooth air only.
Red Line	130	113	Never Exceed Speed.

2.2. Speeds Limitations

Speed limitations and their operating meanings are shown below:

Speed		IAS		Meaning
		MPH	Kts	
V_{NE}	Never Exceed Speed	130	113	Do not exceed this speed in any operation
V_{NO}	Normal Operation Limit Speed	112	97	Do not exceed this speed except in Smooth Air and then only caution
V_H	Maximum Cruise Speed	112	97	Such speed should never be exceeded in horizontal flight, when the engine is at maximum continuous RPM
V_A	Maneuvering Speed at Gross Weight	84	73	Total or abrupt control movements should not be made above this speed because under certain circumstances the aircraft can be tensioned over its limit
	Maneuvering Speed at Minimum Weight	70	61	
V_{LO}	Maximum Landing Gear Operating Speed	80	70	Do not exceed such speed for extending or retracting the landing gear

2.3. Weight Limitations

Ground Operation: Maximum Takeoff Weight 1430 lbs (650 kg)

Water Operation: Maximum Takeoff Weight 1320 lbs (600 kg)

2.4. Stalling Speed at Maximum Takeoff Weight (Vs)

V_S: 42 mph (37 kts) IAS

2.5. Operating Maneuvering Speed (V_O) at Gross and Minimum Weight

V_O at Gross Weight: 84 mph (73 kts)

V_O at Minimum Weight: 70 mph (70 kts)

2.6. Never Exceed Speed (V_{NE})

V_{NE}: 130 mph (113 kts)

2.7. Service Ceiling

Service Ceiling: 3660 m (12000 ft)

2.8. Load Factors

Maximum load factors: +4G, -2G

2.9. Approved Maneuvers

All aerobatic maneuvers, including spins, are prohibited

2.10. Maximum Water Wave Height

Maximum water wave height: 10 in (25 cm)

2.11. Minimum Depth

Minimum depth for secure operation in water: 30 in (76 cm)

2.12. Baggage compartment load

66 lbs (30 kg)

2.13. Total Fuel Capacity

25 US gallons (95 liters)

2.14. Total Usable Fuel

24 US gallons (91 liters):

- Left Wing 10 US gal (38 Liters)
- Right Wing 10 US gal (38 Liters)
- Header Tank 4 US gal (15 Liters)

2.15. Approved Fuel Types

In accordance with engine Operator's Manual, the following fuels can be used.

		Usage / Description
MOGAS	European Standard	EN 228 Super (min. ROZ 95)
		EN 228 Super Plus (min. ROZ 95)
	Canadian Standard	CAN/CGSB3.5 Quality 3 (min. AKI 91)
	US Standard	ASTM D4814
AVGAS	US Standard	AVGAS 100 LL (ASTM D910)

For more details about the fuel's correct selection, refer to the engine manufacturer's original manuals.

NOTE

The aircraft is able to use fuel which contains up to 10% of ethanol. In case this type of fuel is needed, use high-octane fuel.

2.16. Maximum Zero Wing Fuel Weight

Not Applicable

2.17. Maximum Engine Power Output at a Stated RPM

Maximum Power (5 minutes): 100 HP at 5800 RPM
Maximum Continuous Power: 93 HP at 5500 RPM

2.18. Engine

Instrument	Unit	Red Line Minimum Limit	Green Arch Normal Operation	Yellow Arch Variation with Caution	Red Line Maximum Limit
Tachometer	RPM	1400	1800–5500	1400–1800 5500–5800	5800
Oil temperature indicator	°C (°F)	50 (122)	90-110 (194-230)	50-90 (122-194) 110-130 (230-266)	130 (266)
Coolant Temperature	°C (°F)	---	50-105 (122-221)	105-120 (221-248)	120 (248)
Oil pressure indicator	Bar (Psi)	0.8 (12)	2-5 (29-73)	0.8-2 (12-29) 5 – 7(73 – 102)	7 (102)
Fuel pressure indicator	Bar (Psi)	2.4 (35)	2.8-3.2 (40.5-46.5)	2.4-2.8 (35-40.5) 3.2-3.4 (46.5-50)	3.4 (50)
Fuel Quantity	Liters	---	---	---	---
EGT	°C (°F)	---	600-900 (1112-1650)	900-950 (1650-1742)	950 (1742)
Amperemeter	A	(–) 6	(+) 0 – 18	(–) 0 – 6 (+) 18 – 29	(+) 30
Voltmeter A	V	12	12-16	---	---
Voltmeter B	V	12	12-16	---	---

NOTE

The ventilation electrical system installed in the cooling radiator is automatically activated when the temperature reaches the yellow arch.

CAUTION

The engine instruments indications are set during the manufacturing of the aircraft according to the parameters specified in the table above. The alteration of the indications and limits previously established can compromise the engine operation and aircraft systems.

2.19. Environmental Limitations

- Maximum crosswind component for takeoff and landing operation on land: 12 knots

WARNING

WATER TAKEOFF AND LANDINGS SHOULD BE DONE INTO THE WIND AS MUCH AS POSSIBLE. SIGNIFICANT CROSSWIND COMPONENT CAN CAUSE ACCIDENTS IN WATER TAKEOFF AND LANDINGS.

- The Super Petrel LS is authorized to fly according to the VFR rule only (Visual Flight Rules) in VMC conditions (Visual Meteorological Conditions).
- Flight operations in IMC (Instrument Meteorological Conditions) are prohibited.
- Flight operations in known icing conditions are prohibited.
- Smoking is prohibited at all times.

2.20. VFR Night or IFR Use Limitations

The Super Petrel LS aircraft is not intended for IFR rule (Instrument Flight Rules). Night VFR is allowed on land operation only and on clear nights with required operating lights. The landing lights should only be used while takeoff or landing and not continuously.

WARNING

WATER OPERATION AT NIGHT IS PROHIBITED.

The minimum equipment for approved operations required under the Operating Rules are defined by 14 CFR 91 and ASTM standard F2245, as applicable.

NOTE
Carrying out Night VFR operations without a valid Airworthiness Certificate and properly equipment is illegal. Pilots must ensure the aircraft is appropriate for the intended operations.

3 EMERGENCY PROCEDURES

3.1. General Information

Emergency situations are liable to happen with any type of aircraft. Always fly at a distance and height that will allow you to land if necessary and always think what you would do if you face an emergency situation.

We will present the main potential problems that may occur and what procedures have assisted previously from practical experiences. Due to the variables in each emergency situation, the pilot in command has the responsibility to implement the best solution he is able at the time of the emergency.

However, be aware that 90% of what you can do to get yourself out of an emergency situation can be done even before it actually happens.

WARNING

WHEN FLYING, ALWAYS LOOK FOR PLACES WHERE YOU CAN LAND IF NECESSARY AND MAINTAIN AN ALTITUDE THAT ALLOWS YOU TO REACH THEM.

3.2. Airspeeds for Emergency Procedures

	mph	knots
Stall Speed (V_S)	42	37
Engine Failure after Takeoff	68	60
Best Glide Speed (V_G)	68	60
Emergency Descent	68	60
Precautionary Landing with Engine Power	68	60
Emergency Landing without Engine Power	68	60

3.3. Emergency Checklists

3.3.1 Engine Fire during Start

Throttle	IDLE
Fuel Pumps (Main and Auxiliary)	OFF
LANE B	OFF
LANE A	OFF
Master Switch	OFF
Shut Off Valve	CLOSE
Leave the aircraft immediately	USE THE EXTINGUISHER

3.3.2 Engine Failure during Takeoff

During takeoff, keep the landing gear down (land operation) until the point where, in case of any failure, you may still land and stop on the runway. Beyond this point, retracting the landing gear will result in a better glide ratio and if the surface where you will land is not smooth and compact enough, it will be better to land with the landing gear retracted.

Never forget that in case of a power loss during takeoff, you must immediately lower the nose to maintain speed, due to the high thrust line inherent to pusher configuration, a sudden loss of power will make the aircraft pitch up, tendency aggravated by the “high nose” attitude on takeoff.

WARNING

NEVER TRY TO GO BACK TO THE RUNWAY BY TURNING AT A LOW ALTITUDE.

WARNING

IN CASE OF POWER LOSS DURING WATER TAKEOFF, ALWAYS KEEP THE LANDING GEAR IN THE WATER POSITION.

3.3.3 Loss of Engine Power in Flight

Search for	SAFE PLACE FOR LANDING
Selector Valve	FULLEST TANK
Backup Battery Switch	ON
LANE B	ON
LANE A	ON
Main Fuel Pump	ON
Auxiliary Fuel Pump	OFF
Attempt	STARTING ENGINE
If engine no starting	LAND AS SOON AS POSSIBLE

3.3.4 Emergency Landing without Engine Power

When choosing a place for landing, the following checklist can be completed. The choice of landing gear extended or retracted is a function of the airfield available. The use of the landing gear extended must be done in the case of certainty that the surface is compacted and without obstacles.

CAUTION

If it is possible to land with the landing gear extended, touch with the main wheels before the nose wheel, use brakes if necessary.

WARNING

IN CASE OF EMERGENCY LANDING ON THE WATER, MAKE SURE THAT THE LANDING GEAR IS IN THE WATER POSITION AND THE ELECTRICAL BILGE PUMP IS ON.

Safety Belts	FASTEN
Canopy	UNLOCKED
Landing Gear	AS NECESSARY
LANE B	OFF
LANE A	OFF

Fuel Pumps (Main and Auxiliary)	OFF
Master Switch	OFF
Shut Off Valve	CLOSE

CAUTION

Remember that an excess of altitude can be lost by side slipping. So, prefer to approach a little higher than usual for security.

WARNING

AFTER LANDING LEAVE THE AIRCRAFT AND STAY AWAY UNTIL THERE IS NO CHANCES OF FIRE.

3.3.5 Precautionary Landing with Engine Power

A precautionary landing must be performed at the nearest airfield when the situation does not require an immediate emergency landing.

3.3.6 Fire in Flight

Fuel Pumps (Main and Auxiliary)	OFF
LANE B	OFF
LANE A	OFF
Master Switch	OFF
Throttle	IDLE
Shut Off Valve	CLOSE
Landing	LAND AS SOON AS POSSIBLE

3.3.7 Loss of Oil Pressure

Throttle	MINIMUM POWER FOR LEVELED FLIGHT
Landing	LANDING AS SOON AS POSSIBLE
After landing inspect the source of trouble	

WARNING

IF A LOSS OF OIL PRESSURE IS NOT AN ERROR INSTRUMENT INDICATION, A TOTAL ENGINE STOP IS POSSIBLE.

3.3.8 High Oil Pressure

Throttle	REDUCE POWER
If a reduction in power does not help	LAND AS SOON AS PRACTICAL

3.3.9 Emergency Descent

Throttle	IDLE
Landing Gear	AS NECESSARY

3.3.10 Overvoltage

Circuit breakers are used in order to avoid any damage or overvoltage on the SUPER PETREL LS electrical system.

3.3.11 Inadvertent Spin

Throttle	IDLE
Aileron and Elevator	NEUTRAL
Rudder	OPPOSITE TO SPIN

Control stick	NEUTRAL, UNTIL SPIN HAS STOPPED AND THEN APPLY ELEVATOR PITCH FOR LEVELED FLIGHT
Throttle	SET FOR LEVELED FLIGHT

3.3.12 Inadvertent Icing Encounter

WARNING

THIS AIRCRAFT IS NOT APPROVED FOR FLIGHT INTO KNOWING ICING.
THIS CONDITION IS PROHIBITED AND EXTREMELY DANGEROUS.

At first indication of encountering icing conditions:

Course	180 DEGREE HEADING CHANGE AND CONSIDER CHANGING ALTITUDE
Cabin Heating	OPEN
Throttle	INCREASE
Controls	MOVE TO MAINTAIN THEIR MOVABILITY
Flight	LAND AS SOON AS POSSIBLE
Approach	HIGHER SPEED THAN NORMAL

NOTE

Be prepared for increased stall margins due to airframe icing during approach and landing.

3.3.13 Loss of Primary Instruments

Landing	LAND AS SOON AS PRACTICAL

3.3.14 Loss of Flight Controls

Loss of Rudder:

Aircraft Control	AILERON

Loss of Aileron:

Aircraft Control	RUDDER

Loss of Elevator:

Aircraft Control	TRIM (Longitudinal)

Loss of Power Throttle:

If it is possible to keep flight altitude proceed:	LAND AS SOON AS PRACTICAL
If it is NOT possible to keep flight altitude proceed:	LAND AS SOON AS POSSIBLE

3.3.15 Landing Gear Failure

As the landing gear system is manually operated, a failure is very unlikely to happen. If it occurs, it may affect the main landing gear or the nose landing gear together or separately.

Joint failure of the main and nose landing system:

Main and Nose retracted (WATER)	LAND IN WATER
Main and Nose extended (LAND)	LAND IN GRASS LAND OR PAVEMENT

Partial failure:

Main landing gear extended and nose retracted	LAND IN GRASS KEEPING THE AIRCRAFT NOSE UP AS LONG AS POSSIBLE

CAUTION

A hard landing may affect the hull's structure; therefore a comprehensive inspection is necessary before commencing flight operations.

3.3.16 Water Infiltration

Bilge Pump	ON
Landing gear	WATER
Engine	IDLE
Monitor	WATER DRAINING

CAUTION

If water infiltration persists, approach up to the shoreline in order to stabilize floating.

3.3.17 Stall Recovery

The Super Petrel LS has a design feature that allows the lower wing of the aircraft to stall completely while the upper wing remains flying. Indication of a stall is apparent when lift is lost on the lower wing, and the nose of the aircraft drops. This allows for recovery from the stall while the upper wing, containing the ailerons, continues to provide positive flight and control. Aircraft with an Angle of Attack (AOA) indicator installed will also be notified of a stall when the AOA is absent of green bars and/or the stall warning audio tone is heard through the audio system.

At any of these indications, the following recovery procedure must be followed.

Pitch Altitude and Angle of Attack	DECREASE POSITIVELY AND IMMEDIATELY
Throttle	INCREASE POWER SMOOTHLY
Straight and Level Flight	COORDINATED USE OF ALL CONTROLS

3.3.18 Fault Indicated by the Warning Lamps

LANE A	LANE B	ACTION ON GROUND	ACTION DURING FLIGHT
OFF	Flashing	One way flight to maintenance hangar permissible	FLIGHT IS POSSIBLE TO YOUR DESTINATION AT YOUR OWN DISCRETION
Flashing	OFF	One way flight to maintenance hangar permissible	FLIGHT IS POSSIBLE TO YOUR DESTINATION AT YOUR OWN DISCRETION
OFF	ON	Flight not permissible	LAND THE AIRCRAFT
Flashing	Flashing	Flight not permissible	LAND THE AIRCRAFT
Flashing	ON	Flight not permissible	LAND THE AIRCRAFT
ON	OFF	Flight not permissible	LAND THE AIRCRAFT
ON	Flashing	Flight not permissible	LAND THE AIRCRAFT
ON	ON	Flight not permissible	LAND THE AIRCRAFT

3.3.19 Failure of the EMS Power Supply

SYMPTOM	PROCEDURE
Failure of the EMS	• If the EMS power supplies (alternator A) fails then the ECU automatically switches one-time over to the second EMS power supply (alternator B)
No charging of battery	• While alternator B runs, no power drop is recognizable
Failure of both EMS power supplies (alternator A/B) result in engine stoppage	• Switch ON the **BACKUP BATTERY SWITCH**. In this case the power supply is provided by the aircraft battery • IF POSSIBLE TO USE ONLY ONE FUEL PUMP • LAND AS SOON AS POSSIBLE • A maintenance inspection should be carried out

3.3.20 EMS Voltage Supply below the Minimum Required Level

SYMPTOM	PROCEDURE
Voltage supply below level	• Limited flight operation is possible if the voltage (alternator A or B) is OK here • Proceed according to section Failure of the EMS power supply, if this shows no effect • Reduce engine power setting to the minimum necessary and carry out precautionary landing • A maintenance inspection should be carried out

NOTE
Please see the operator's manual for Rotax 912 i engine type series reference OM-912 i

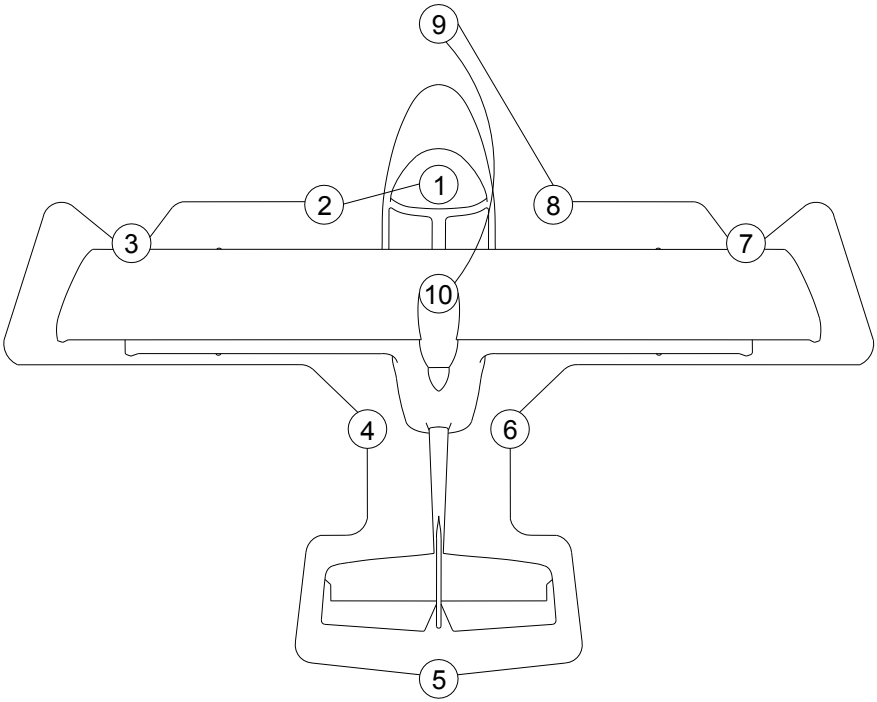
4 NORMAL PROCEDURES

4.1. Preflight Check

A Preflight inspection is of vital importance for your safety and for the aircraft's integrity. Follow the inspection list in the correct sequence using the Figure below as reference and correct any failure detected that may jeopardize the safety of flight.

WARNING

BEFORE ANY AIRCRAFT MOVEMENT, MAKE SURE THAT THE AIRCRAFT IS AIRWORTHY. MAKE A VERY CAREFUL PRE-FLIGHT INSPECTION. ALWAYS PAY ATTENTION TO THE OPERATING LIMITS AND EMERGENCY PROCEDURES. CHECK IF ALL THE AIRCRAFT AND PILOT DOCUMENTATION ARE IN ORDER.



1.	Cabin

- Doors' hinges
- Backup Battery Switch OFF
- LANE A and LANE B OFF
- Shut-off fuel valve open
- Bilge Pump on and off
- Electric Trim Switch operation (it´s necessary Master Switch On)
- Master off
- Tachometer and Airspeed Indicator indicating zero
- Altimeter adjusted to field elevation
- Elevator and Aileron Controls (function, looseness and friction)
- Landing Gear Internal Retraction Mechanism
- Throttle Idle Position
- Seats (adjusted and fixed)
- Seat Belts (adjusted and fixed)
- Header Fuel Tank (attachment, level and hoses)
- Drain Header Tank and Check fuel sample

2.	Left Landing Gear

- Attachment
- Tire pressure / Condition
- Brake Fluid Lines
- Leg's general condition
- Shock Absorber
- Condition of rubber foam in the housing of main landing gear leg.

3.	Left Wings

- Wing-Fuselage attachment
- Struts and Attachments
- Pitot Tube (remove cover)
- Wing Rigidity
- Wing Covering
- Aileron (movement, looseness and attachment)
- Electric Trim Plug's attachment
- Fuel Tank Cap (closed)

4.	Left Back Side

- Hull's general condition
- Tail boom fit
- Engine's left side (with the top cowling removed):
  - ➢ Oil and Water Radiator attachment
  - ➢ Fuel Hoses and Connections
  - ➢ Hoses of Lubrication and Cooling Systems
  - ➢ Exhaust Tubes attachment
  - ➢ Engine attachment
  - ➢ Spark Plug Cables
  - ➢ Electrical Fans attachment (Cooling System)

NOTE
It is recommended to remove engine's cowling before the first flight of the day.

5.	Tail

- Rudder Cables
- Elevator-Actuator connection
- Electric Trim Plug's attachment
- Rudder and Elevators hinges and attachment

6. *Right Back Side*

- ➢ Hull's general condition
- ➢ Propeller's general condition
- ➢ Propeller's leading edge protection tape general condition
- ➢ Engine's right side (with the top cowling removed):
- ➢ Oil and Water Radiators attachment
- ➢ Safety Wires of Reduction Gear Box Bolts
- ➢ Hoses of Lubrication and Cooling Systems
- ➢ Exhaust Tubes attachment
- ➢ Engine attachment
- ➢ Spark Plugs Cables
- ➢ Water level in the Expansion Tank
- ➢ Electrical Fans attachment (Cooling System)

NOTE

It is recommended to remove engine's cowling before the first flight of the day.

7. *Right Wings*

- Wing-Fuselage attachment
- Struts and Attachments
- Wing Rigidity
- Wing Covering
- Aileron (movement, looseness and attachment)
- Fuel Tank Cap (closed)

8. *Right Landing Gear*

- Attachment
- Tire pressure / Condition
- Brake Fluid Line
- Leg's general condition
- Shock Absorber
- Condition of rubber foam in the housing of main landing gear leg.

9. *Nose*

- Ballast
- PVC plates for wearing, looseness and general condition.
- Nose Wheel Leg and External Retraction Mechanism
- Nose Wheel Compartment Sealing
- Hull´s general condition
- Tire pressure / Condition
- Check the nose gear rotation (friction)

10. *Upper Fuselage*

- Electrical wiring (condition and attachment)
- Aileron Controls
- Throttle Mechanism (condition and attachment)
- Oil level
- Water level in the Overflow Tank
- Fuel Vent Lines

4.1.1. Header Tank Draining

To drain the header tank, the aircraft must be in static condition.

Master Switch	ON
Fuel Drain (right lateral)	OPEN
Draining Button	PRESS
Draining Fuel Sample	COLLECT FUEL SAMPLE WITH A CLEAR CONTAINER
Fuel Drain (right lateral)	CLOSE
Master Switch	TURN OFF

4.1.2. Ballast Draining

1. Open the drain Cap located in the bottom of the passenger seat
2. The water will begin entering into the hull; therefore the bilge pump is activated automatically to drain it.

NOTE
The bilge pump can be activated manually as well.

3. After completing the draining process, activate manually the bilge pump and lift the aircraft nose up about 6 in (15 cm) to remove all water into the hull.

4.2. Airspeeds for Normal Procedures

	mph	**knots**
Rotation Speed (V_R)	45 – 50	39 – 43
Speed for best angle of Climb (Vx)	65	56
Speed for best rate of Climb (Vy)	70	61
Cruise Speed (V_C)	112	97
Approach	68	60
Landing	45 – 50	39 – 43
Short Field Takeoff	40	35
Balked Landing	70	61

4.3. Engine Starting

- ***Before starting:***

Preflight Inspection	COMPLETE
Documentation	CHECK (AIRCRAFT AND PILOT)
Cooling System	CHECK
Lubrication System	CHECK
Shut Off Valve	OPEN
Fuel Selector Valve	SELECT TANK
Fuel Quantity and Quality	CHECK
Circuit Breakers	CHECK
Safety Belts	FASTEN
Propeller Area	CLEAR

NOTE

Before the first engine start of the day and before checking the oil level, manually turn the propeller (counter-clockwise – back view). This procedure makes the oil runs inside the engine and eliminates any air bubble, allowing a correct measurement of the oil level and helps to detect strange sounds and normal compression inside the cylinders. For more details check the Rotax 912 iS Sport operator's manual.

CAUTION

Do not rotate the propeller more than one revolution in reverse direction.

CAUTION

Backup Battery Switch is only used for Emergency Procedures; therefore, it must be always in OFF position for Normal Procedures

WARNING

WHEN HANDLING THE PROPELLER, ALWAYS MAKE SURE THAT THE IGNITION AND MASTER ARE OFF.

- ***Engine Start***

Master	ON
Avionics	ON
Main Fuel Pump Switch	ON
NOTE: Only switch the main fuel pump when starting the engine. Switching on the auxiliary fuel pump at the same time can lead to a bad start behavior.	
LANE A and LANE B	SELECT BOTH SWITCHES ON
Start Power Switch (Momentary)	ACTIVATE
Warning Lamps	CHECK IF WARNING LAMPS ILLUMINATE AND EXTINGUISH AFTER AROUND 3 SECONDS
Engine Instruments	CHECK IF FUEL PRESSURE REACHED ITS PRESSURE OF 3 BAR (43.5 PSI)
Throttle	SET THROTTLE LEVER APPROX.1/2'' (1-2 CM)
Start Button	PRESS UNTIL ENGINE RUNS
Start Power Switch (Momentary)	RELEASE AFTER ENGINE HAS REACHED 1500 RPM OR MORE
Throttle	SET THROTTLE LEVER AS REQUIRED (2000 RPM)
Engine instruments	CHECK FOR ERROR MESSAGES AND CHECK OIL PRESSURE
NOTE: Increasing engine speed is only permitted at **steady oil pressure readings above 3 BAR (43.5 PSI)**	
Throttle valve	INCREASE ENGINE SPEED ABOVE 2500 RPM AND HOLD SPEED AT LEAST 5 SECONDS (AWAIT GENERATOR SHIFT FROM GEN B TO GEN A)
NOTE: If, after the engine start, a warning lamp flashes or lights up, perform a LANE and IGNITION check. After the LANE and IGNITION check both warning lamps must be deactivated, otherwise there is an error. If one of the lamps illuminates or flashes: **See Section 3.3.18 of this manual**	
Engine Instruments	CHECK STATUS OF WARNING LAMPS AND OPERATING LIMITS

CAUTION

It must be ensured that both fuel pumps are working and no loss of power or uneven running by turning off a fuel pump occurs. The limits for fuel pressure must not be exceeded.

Engine	2000 RPM
Fuel Pumps (Main and Auxiliary)	ON
Auxiliary Fuel Pump	OFF FOR 5 SECONDS
Fuel Pressure	CHECK
Auxiliary Fuel Pump	ON
Main Fuel Pump	OFF FOR 5 SECONDS
Fuel Pressure	CHECK
Main Fuel Pump	ON

CAUTION

Always flying with both Fuel Pumps ON

- ***Cold Engine Starting***

PLEASE SEE **ENGINE START PERFORMANCE SECTION** OF THE OPERATORS MANUAL FOR ROTAX ENGINE TYPE 912 i SERIES REFERENCE OM-912i

4.4. Taxiing

Ground

Speed	LOW
Normal Turns	RUDDER
Accentuated Turns	RUDDER / BRAKES
Landing Lights	AS NECESSARY

Water

Throttle	AS REQUIRED TO CONTROL HEADING
Maneuvers	RUDDER
Water Temperature	MONITOR
Landing Lights	AS NECESSARY

NOTE

The aircraft will always turn against the wind.

CAUTION

The bilge pump is located in central part of the hull, below the luggage rack. Therefore, it will just remove water when the aircraft is in level position. In the takeoff attitude or over 2500 rpm, the water will most likely be displaced to the back of the hull and it will not be discharged by the bilge pump.

CAUTION

During taxiing with landing gear down or at high speed, the watertightness of the hull may be compromised. In this case the pilot should set the engine at idle, turn the bilge pump on and verify water drainage.

CAUTION

During water operation, the aircraft starts moving at the time the engine is activated.

4.5. Normal Takeoff

Before Takeoff (Holding Position Point):

Safety Belts	CHECK
Fuel Quantity	CHECK LEVEL
Brakes	ON
LANE A and LANE B	CHECK @ 4000 RPM MAXIMUM DROP OF **180 RPM**
Idle Throttle	READ 1400 ~ 1600 RPM
Instruments	CHECK
Controls	CHECK
Trim (Longitudinal and Lateral)	SET FOR TAKEOFF

Autopilot	OFF
Fuel Pumps (Main and Auxiliary)	ON
Landing Lights	ON
Runway and Pattern	CLEAR
Doors	CLOSED AND LOCKED

LANE and Ignition check:

Engine	4000 RPM
LANE selector switch **A**	OFF (MAXIMUM DROP OF **180 RPM**)
LANE selector switch **A**	ON
LANE selector switch **B**	OFF (MAXIMUM DROP OF **180 RPM**)
LANE selector switch **B**	ON
RPM	IDLE

NOTE

LANE A and LANE B have different sensor inputs. During LANE and IGNITION check, some sensor values are not displayed depending on the position of the LANE select switches.

CAUTION

Before applying power to LANE and ignition check, the nose gear should be aligned. The lack of this care may result in damage to the nose gear.

Not available sensor values if LANE A = OFF and LANE B = ON

- Coolant temperature
- Exhaust gas temperatures from cylinder 1-4
- Ambient temperature
- Ambient pressure
- Throttle lever position

Not available sensor values if LANE B = OFF and LANE A = ON

- Oil temperature
- Oil pressure

Before takeoff:

CAUTION

Before starting takeoff, make sure you have sufficient runway.

Fuel Pumps (Main and Auxiliary)	BOTH ON
LANE A and LANE B	BOTH ON
Landing Lights and Strobe Lights	BOTH ON

Normal Ground Takeoff:

Control stick	AFT ELEVATOR POSITION
Throttle	FULL
Control stick	RELIEVE TO INCREASE SPEED
Landing Gear	RETRACTED AND LOCKED

NOTE

After a crosswind takeoff, when directed against the wind the nose gear door closure can result in a loud bang.

WARNING

DURING TAKEOFF, IT IS EXPECTED THAT THE ENGINE ACHIEVES AT LEAST 5000 RPM. IF THE ENGINE DOES NOT ACHIEVE THIS VALUE, THEN THE TAKE OFF SHOULD BE ABORTED AND THE CONDITION OF THE ENGINE AND PROPELLER VERIFIED BEFORE NEXT FLIGHT.

Normal Water Takeoff:

Landing Gear	RETRACTED AND LOCKED
Bilge Pump	ON
Fuel Pumps (Main and Auxiliary)	ON
LANE A and LANE B	BOTH ON
Control stick	FULL AFT ELEVATOR POSITION
Throttle	FULL
Heading	KEEP HEADING USING RUDDER

Wings	LEVELED
On the step	CONTROL STICK NEUTRAL ELEVATOR POSITION

CAUTION

The takeoff in water happens in approximately 15 to 30 sec, since beginning until the unfolding. If during takeoff the aircraft presents difficulty to go into step, do not unfold until 35 sec, then the takeoff should be aborted. Check the parameters that affect the aircraft performance like wind direction, load, fuel quantity, temperature. Before starting a new Take Off ensure the hull is drained.

CAUTION

Special care must be taken with wind direction. Taking off with a cross wind may be very critical because the aircraft tends to head the wind. Observe if there are no immersed trees or any other obstacles that could endanger the Take Off.

WARNING

ANY KIND OF PORPOISING MUST BE CANCELLED PULLING THE CONTROL STICK BACKWARD UNTIL PORPOISING STOPS.

WARNING

MAXIMUM TAKEOFF WEIGHT FOR WATER OPERATION MUST BE 1320 LBS (600 KG)

4.6. Climb

Trim (Longitudinal and Lateral)	AS NECESSARY
Landing Gear	RETRACTED AND LOCKED
Bilge Pump	OFF (WATER TAKEOFF)
Landing Lights	OFF
Engine Instruments	MONITOR

4.7. Best Angle of Climb Speed (Vx)

For Rotax 912 iS Sport engine and ground adjustable propeller.	
Best Angle of Climb Speed (Vx)	65 mph (56 kts)

4.8. Best Rate of Climb Speed (Vy)

For Rotax 912 iS Sport engine and ground adjustable propeller.	
Best Rate of Climb Speed (Vy)	70 mph (61 kts) at 5300 RPM
Rate of Climb	305 m/min (1000 ft / min)

4.9. Cruise

Trim (Longitudinal and Lateral)	AS NECESSARY
Engine	4600 ~ 5500 RPM
Fuel Consumption	MONITOR
Fuel Selector Valve	SWITCH TANK EACH 30 MIN
Engine Instruments	MONITOR

4.10. Approach

Ground

Landing Gear	EXTENDED AND LOCKED
Fuel Pumps (Main and Auxiliary)	ON
Landing Lights	ON
Throttle	AS REQUIRED

Water

Landing Gear	RETRACTED AND LOCKED
Fuel Pumps (Main and Auxiliary)	ON
Landing Lights	ON
Bilge Pump	ON
Throttle	AS REQUIRED

WARNING

FOR WATER OPERATION CHECK IF THE LANDING GEAR IS RETRACTED AND LOCKED. CHECK WIND DIRECTION. CHECK THE SURFACE AND LOOK FOR ANY IMMERSED TREES AND OBSTACLES. CHECK LATERAL BALANCE.

WARNING

WATER TAKEOFF AND LANDINGS SHOULD BE DONE INTO THE WIND AS MUCH AS POSSIBLE. SIGNIFICANT CROSSWIND COMPONENT CAN CAUSE ACCIDENTS IN WATER TAKEOFF AND LANDINGS.

4.11. Normal Landing

Ground

Landing Gear – DOUBLE CHECK	EXTENDED AND LOCKED
Brakes	APPLY SMOOTHLY
Control stick	AFT ELEVATOR PRESSURE

Water

Landing Gear – DOUBLE CHECK	RETRACTED AND LOCKED
Bilge Pump	ON
Rounding Flaring	NEXT TO WATER
Engine	REDUCE TO IDLE AS SOON AS THE AIRCRAFT MAKES CONTACT WITH WATER SURFACE.
Aircraft Floating	AFT ELEVATOR PRESSURE

4.12. Engine Shut – off

NOTE

Normally the cooling down of the engine during the descending and taxiing will be sufficient to allow the engine to be shut off as soon as the aircraft is stopped. At increasing operating temperatures, make an engine cooling run of at least minimum 2 minutes.

Brakes	ON (GROUND)
Bilge Pump	OFF (WATER)
Instruments	CHECK
Engine	IDLE
LANE B	OFF
LANE A	OFF
Fuel Pumps (Main and Auxiliary)	OFF
Strobe Lights	OFF
NAV Lights	OFF
Avionics	OFF
Master	OFF

4.13. Short Field Takeoff and Landing Procedures

In addition to normal Approach, Takeoff and Landing procedures, it is necessary to perform undermentioned “Short Field Takeoff and Landing Procedures” procedures.

Ground Takeoff:

Brakes	TOTAL
Throttle	FULL
Brakes	Released

Water Takeoff:

NOT APPLICABLE

Ground Landing:

Brakes	APPLY AS NECESSARY
Control stick	AFT ELEVATOR PRESSURE

Water Landing:

Engine	REDUCE TO IDLE AS SOON AS THE AIRCRAFT MAKES CONTACT WITH WATER SURFACE.
Control stick	FULL AFT BACK ELEVATOR PRESSURE

4.14. Soft Field Takeoff and Landing Procedures

Soft ground and / or wet grass will increase land takeoff roll distance by approximately 15% from ground roll distance.

4.15. Balked Landing Procedures

Throttle	FULL
Control stick	NOSE UP

4.16. Night Flights

In addition to normal “Day Flights” procedures, it is necessary to perform undermentioned “Night Flights” procedures.

4.16.1. Preflight Check

Perform careful preflight Check of whole Lighting System and Battery condition before night flights.

4.16.2. Engine Starting

Before Starting:

Dome Light	ON (DIM AS NECESSARY)
Panel Lights	ON (DIM AS NECESSARY)
NAV Lights	ON

After Starting:

Dome Light	OFF
Avionics	DIM AS NECESSARY
Instruments	CHECK
Strobe Lights	ON

4.16.3. Taxiing

Strobe	ON
Landing Lights (as necessary)	ON

4.16.4. Takeoff

Before Takeoff:

Strobe Lights	ON
Landing Lights	ON

After Takeoff:

Landing Lights	OFF

4.16.5. Approach

Landing Lights	ON

4.17. Other Useful Pilot Information

Stalls

Refer to section 2 “Operating Limitations” for stalling speeds. The stall is noted through light buffeting. Though the recovery actions must be taken in a coordinated manner, they are broken down into three actions for explanation purposes:

First, at the indication of a stall, the pitch attitude and angle of attack must be decreased positively and immediately. Since the basic cause of a stall is always an excessive angle of attack, the cause must first be eliminated by releasing the back-elevator pressure that was necessary to attain that angle of attack or by moving the elevator control forward. This lowers the nose and returns the wing to an effective angle of attack.

Second, the maximum allowable power should be applied to increase the airplane´s airspeed and assist in reducing the wing´s angle of attack. The throttle should be promptly, but smoothly, advanced to the maximum allowable power.

Third, straight-and-level flight should be regained with coordinated use of all controls.

The airplane loses about 60 m (197 ft) in altitude during a stall.

WARNING

CLOSE TO THE GROUND, DO NOT FLY SLOWER THAN A MINIMUM SPEED OF 68 MPH (59 KTS).

Spins

Refer to section 3 “Emergency Procedures” for Inadvertent Spins.

Intentional spins are prohibited.

Bilge Pump Use

Whenever water is suspected in the hull, turn on the bilge pump to drain it.

Banked Turn

All turns should be made with the coordinated use of aileron and rudder.

WARNING

STEEP TURNS IN EXCESS OF 60° ARE PROHIBITED.

Anchoring / Coming Out of the Water

When floating for a long time on water, the aircraft should be anchored or moored. If the intention is to get the aircraft out of the water, lower the landing gear (always at low speed) and look for ramp or an area that is flat and firm to taxi the aircraft.

CAUTION

Due to the pressure applied by the water to the tires, lower the landing gear gently in order to avoid overstressing in the retraction system mechanism.

5 PERFORMANCE

Performance data charts on the following pages are presented for normal takeoff and landing procedures. The data in the takeoff and landing tables has been computed from actual flight tests with the aircraft and engine in good condition and using average piloting techniques.

WARNING

BEYOND PARAMETERS, THE TAKEOFF AND LANDING DISTANCES DEPENDS ON PILOTS PERSONAL SKILLS.

5.1. Takeoff Distance

The takeoff distance chart should be consulted, keeping in mind that the distances shown are based on the normal takeoff procedures. Conservative distances can be established by reading the chart.

For example, the takeoff distance information presented for a pressure altitude of 2000 feet and a temperature of 20 °C should be used and results in the following:

Ground roll	553 Feet (169 m)
Total distance to clear a 50-foot obstacle	1269 Feet (387 m)

TAKEOFF DISTANCE CHART

CONDITIONS:

- MTOW = 1430 lbs (650 kg)
- Ground Adjustable Propeller **(Static RPM = 5100 RPM)**
- Paved, Level, Dry Runway
- Zero Wind
- Distances in Feet. **(For distance in meters, use the conversion 1 m = 3.28 feet)**

NOTES:

1. Normal takeoff procedures as specified in Section 4.
2. A headwind of 10% of takeoff speed can decrease the takeoff roll by 19% and a tailwind that is 10% of takeoff speed can increase the distance for takeoff by 21%.
3. Where distance value has been deleted, climb performance after lift-off is less than 140 fpm at takeoff speed.
4. For operation on a dry, grass runway, increase distances by 15% of the “ground roll” figure.

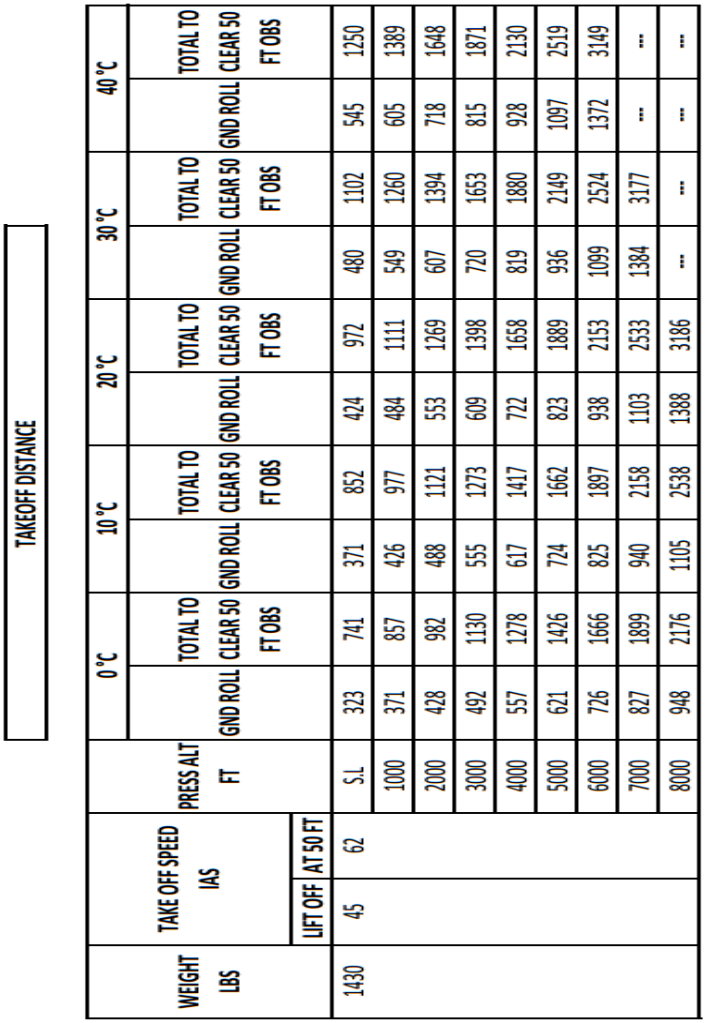
NOTE

For water operation, use as reference the Takeoff Distance Chart (1320 lbs – 600 kg).
Increase distance by 65% of the “ground roll” figure.

WARNING

MAXIMUM TAKEOFF WEIGHT FOR WATER OPERATION MUST BE 1320 LBS (600 KG)

5.2. Takeoff Distance Chart (1430 lbs – 650 kg)



TAKEOFF DISTANCE

WEIGHT LBS	TAKE OFF SPEED IAS		PRESS ALT FT	0 °C		10 °C		20 °C		30 °C		40 °C	
	LIFT OFF	AT 50 FT		GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS
1430	45	62	S.L	323	741	371	852	424	972	480	1102	545	1250
			1000	371	857	426	977	484	1111	549	1260	605	1389
			2000	428	982	488	1121	553	1269	607	1394	718	1648
			3000	492	1130	555	1273	609	1398	720	1653	815	1871
			4000	557	1278	617	1417	722	1658	819	1880	928	2130
			5000	621	1426	724	1662	823	1889	936	2149	1097	2519
			6000	726	1666	825	1897	938	2153	1099	2524	1372	3149
			7000	827	1899	940	2158	1103	2533	1384	3177	---	---
			8000	948	2176	1105	2538	1388	3186	---	---	---	---

5.3. Takeoff Distance Chart (1320 lbs – 600 kg)

TAKEOFF DISTANCE

WEIGHT LBS	TAKE OFF SPEED IAS		PRESS ALT FT	0 °C		10 °C		20 °C		30 °C		40 °C	
	LIFT OFF	AT 50 FT		GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS	GND ROLL	TOTAL TO CLEAR 50 FT OBS
1320	45	62	S.L	160	596	184	685	210	782	238	886	270	1005
			1000	184	691	211	786	240	894	272	1013	300	1117
			2000	212	789	242	901	274	1020	301	1121	356	1325
			3000	244	908	275	1024	302	1124	357	1329	404	1504
			4000	276	1028	306	1139	358	1333	406	1512	460	1713
			5000	308	1147	359	1337	408	1519	464	1728	544	2025
			6000	360	1340	409	1525	465	1731	545	2029	680	2532
			7000	410	1526	466	1735	547	2037	686	2554	---	---
			8000	470	1750	548	2040	688	2562	---	---	---	---

5.4. Landing Distance

A procedure similar to takeoff should be used in order to estimate the landing distance at the destination field. The chart shown below presents landing distances for various field altitude and temperature combination using the normal landing procedures.

For example. the takeoff distance information presented for a pressure altitude of 2000 feet and a temperature of 20 °C should be used and results in the following:

Ground roll	538 Feet (164 m)
Total distance to clear a 50-foot obstacle	964 Feet (294 m)

LANDING DISTANCE CHART

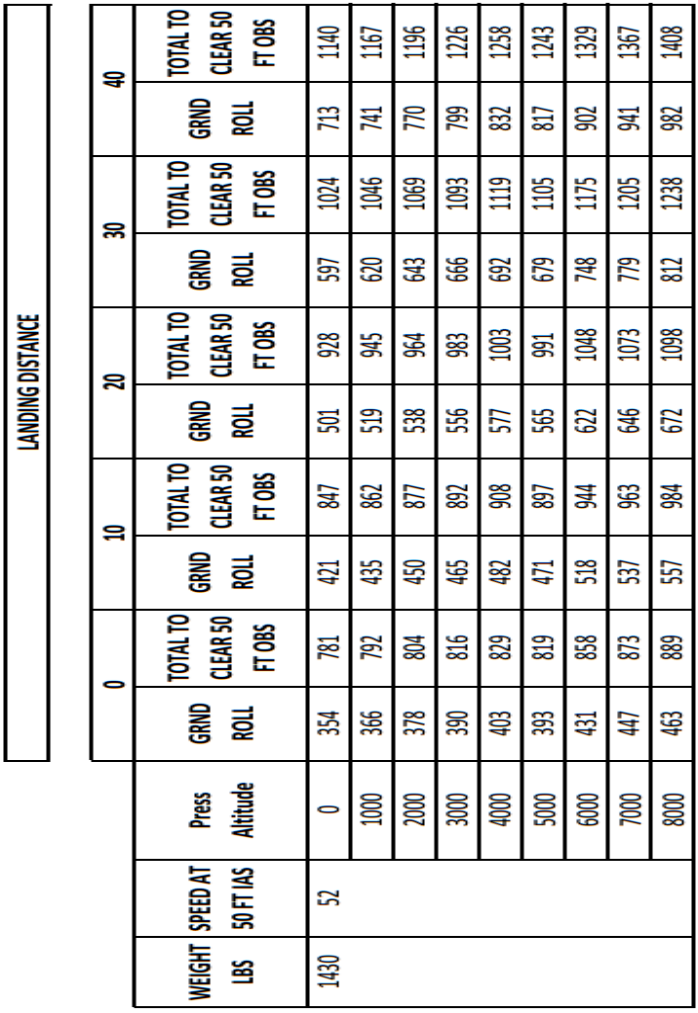
CONDITIONS:

- MTOW = 1430 lbs (650 kg)
- Engine at idle
- Ground Adjustable Propeller
- Paved, Level, Dry Runway
- Zero Wind
- Distances in Feet. **(For distance in meters, use the conversion 1 m = 3.28 feet)**

NOTES:

1. Normal landing procedures as specified in Section 4.
2. For operation on a dry, grass runway, decrease distances by 15% of the “ground roll” figure.
3. For water operation, decrease distance by 20% of the “ground roll” figure.

5.5. Landing Distance Chart



LANDING DISTANCE

WEIGHT LBS	SPEED AT 50 FT IAS	Press Altitude	0		10		20		30		40	
			GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS	GRND ROLL	TOTAL TO CLEAR 50 FT OBS
1430	52	0	354	781	421	847	501	928	597	1024	713	1140
		1000	366	792	435	862	519	945	620	1046	741	1167
		2000	378	804	450	877	538	964	643	1069	770	1196
		3000	390	816	465	892	556	983	666	1093	799	1226
		4000	403	829	482	908	577	1003	692	1119	832	1258
		5000	393	819	471	897	565	991	679	1105	817	1243
		6000	431	858	518	944	622	1048	748	1175	902	1329
		7000	447	873	537	963	646	1073	779	1205	941	1367
		8000	463	889	557	984	672	1098	812	1238	982	1408

5.6. Rate of Climb

Configuration:

MTOW = 1430 lbs (650 kg)
Ground adjustable propeller
At engine RPM: 5200 RPM
At V_Y = 70 mph (61 kts)

		RATE OF CLIMB – FPM (feet / min)		
WEIGHT LBS	**PRESS ALT FT**	**0 °C**	**20 °C**	**40 °C**
1430	S.L.	960	776	592
	2000	688	588	424
	4000	580	420	292
	6000	416	288	192
	8000	286	188	120

5.7. Cruise Speeds

Configuration:

Ground adjustable propeller
Maximum Cruise Speed at 5500 RPM: 112 mph (97 kts)

5.8. RPM Setting and Fuel Consumption (ISA Conditions)

Engine Power	RPM	Approximate Consumption
Maximum Power (5min)	5600	6.3 U.S Gal/h (24 l/h)
Continuous Maximum Power	5500	4.7 U.S Gal/h (22 l/h)
Cruising	5200	4.2 U.S Gal/h (16 l/h)
Economic Cruising	4800	3.4 U.S Gal (13 l/h)

NOTE

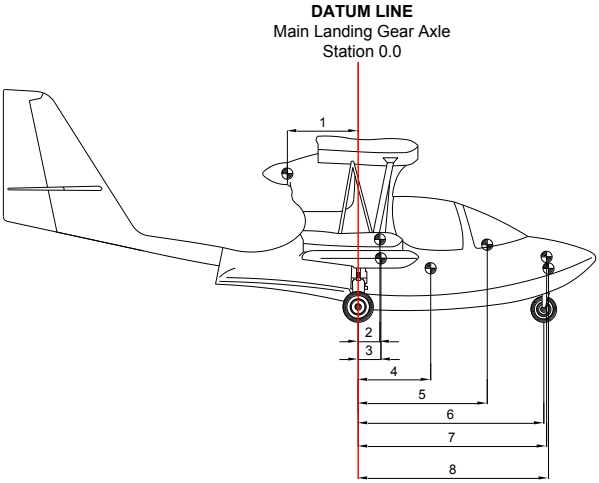
For more engine data, please refer to Rotax Operator's Manual.

6 WEIGHT AND BALANCE INFORMATION AND EQUIPMENT LIST

6.1. Weight and Balance Chart

The Weight and Weight Balancing should be checked:

- After Major repairs
- After repainting
- After fitting the airplane with additional equipment apart from its manufacturing configuration



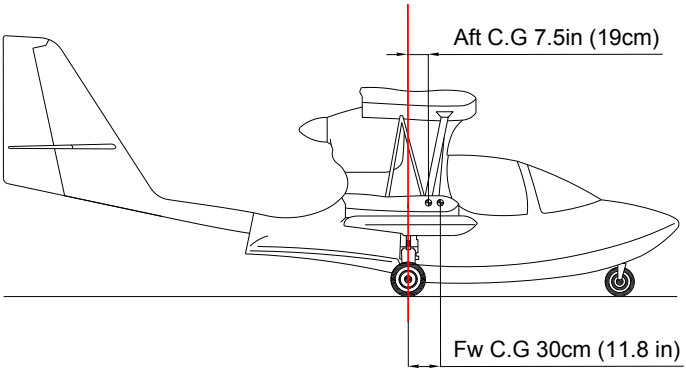
Nº	Equipment	Arm
01	Propeller	-32 in (-82 cm)
02	Fuel	12 in (31 cm)
03	Baggage	13 in (32 cm)
04	Pilot/Passenger	33 in (85 cm)
05	Instruments	53 in (135 cm)
06	Nose Wheel	81 in (205 cm)
07	Battery	82 in (208 cm)
08	Ballast	82.5 in (210 cm)

LOADING CHART

Aircraft Serial Number: S0_____ Date: _____

Registration Number: _____Owner: _____

Item		Weight Lb (Kg)	x	Arm	=	Moment lbxin (kgxcm)
	Empty Weight		x		=	
	Pilot		x	33in (85cm)	=	
	Pax		x	33in (85cm)	=	
	Baggage		x	13in (32cm)	=	
	Ballast		x	82.5in (210cm)	=	
Fuel Left Tank	10 USGAL/38LTR		x	12in (31cm)	=	
Fuel Right Tank	10 USGAL/38LTR		x			
Header Tank	4 USGAL/17LTR		x			
Total Weight =			Total Moment =			
Center of Gravity		Total Moment	/	Total Weight	=	C of G:_____ in (cm)
THE VALUE OF CG MUST BE HIGHER THAN 7.5in (19cm) AND LOWER THAN 11.8 in (30cm)						



6.1.1. Terminology

ARM: The horizontal distance from the reference datum to the center of gravity (CG) of an item.

BASIC EMPTY WEIGHT: Standard empty weight plus optional equipment.

CENTER OF GRAVITY (C.G.): The point at which an airplane would balance if suspended. Its distance from the reference datum is determined by dividing the total moment by the total weight of the airplane.

C.G ARM: The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.

C.G LIMITS: The extreme center of gravity locations within which the aircraft must be operated at a given weight.

DATUM: An imaginary vertical plane from all horizontal distances are measured from balance purposes.

MOMENT: The product of the weight of an item multiplied by its arm.

MAXIMUM LANDING WEIGHT: Maximum weight approved for the landing touchdown.

MAXIMUM TAKEOFF WEIGHT: Maximum weight approved for the start of the takeoff run.

PAYLOAD: Weight of occupants, cargo, and baggage.

STANDARD EMPTY WEIGHT: Weight of a standard airplane including unusable fuel, full operating fluids, and full oil.

UNUSABLE FUEL: Fuel remaining after a runout test has been completed in accordance with governmental regulations.

USABLE FUEL: Fuel available for flight planning.

USEFUL LOAD: Difference between takeoff weight and basic empty weight.

6.2. Loading Method

1. Multiply each item´s weight times its arm to find the moment. Record each on its respective line.
2. Add all the weights and moments and record each on its respective total line.
3. Divide the total moment by the total weight and the result is the C.G.
4. Determine that the airplane´s Loaded C.G. falls within the applicable limits (Forward and Aft C.G. Limits)

SAMPLE LOADING CHART (Maximum Forward C.G)

Item		Weight lb	x	Arm	=	Moment lbxin
	Empty Weight	784 lbs	x	0	=	0
	Pilot	250 lbs	x	33 in	=	8250 Lb.in
	Pax	182 lbs	x	33 in	=	6006 Lb.in
	Baggage	60 lbs	x	13 in	=	780 Lb.in
	Ballast	0	x	82.5 in	=	0
Fuel Left Tank	10 US Gallons	60 lbs	x	12 in	=	720 Lb.in
Fuel Right Tank	10 US Gallons	60 lbs	x			720 Lb.in
Header Tank	4 US Gallons	24 lbs	x			288 Lb.in
Total Weight =		**1430**	**Total Moment =**			16674 Lb.in
Center of Gravity		**Total Moment**	**/**	**Total Weight**	**=**	**C of G: 11.723 in**
THE VALUE OF CG MUST BE HIGHER THAN 7.5in (19cm) AND LOWER THAN 11.8 in (30cm)						

SAMPLE LOADING CHART (Maximum AFT C.G)

Item		Weight Lb (Kg)	x	Arm	=	Moment lbxin (kg.cm)
	Empty Weight	784 lbs	x	0	=	0
	Pilot	110 lbs	x	33in (85cm)	=	3630 Lb.in
	Pax	0 lbs	x	33in (85cm)	=	0
	Baggage	0 lbs	x	13in (32cm)	=	0
	Ballast	44 lbs	x	82.5in (210cm)	=	3630 Lb.in
Fuel Left Tank	0 US Gallons	0 lbs	x	12in (31cm)	=	0
Fuel Right Tank	0 US Gallons	0 lbs	x			0
Header Tank	2.5 US Gallons	15 lbs	x			180 Lb.in
Total Weight =		953	**Total Moment =**			7440 Lb.in
Center of Gravity		**Total Moment**	/	**Total Weight**	=	**C.G: 7.8 in**
THE VALUE OF CG MUST BE HIGHER THAN 7.5in (19cm) AND LOWER THAN 11.8 in (30cm)						

6.3. Operating Weights and Loading

6.3.1. Weight Definitions

Maximum Takeoff Weight	1430 lbs (650 kg)
Maximum Landing Weight	Maximum Takeoff Weight
Maximum Empty Weight	1010 lbs (459 kg)
Typical Empty Weight	810 lbs (368 kg)
Basic Empty Weight	788 lbs (358 kg)
Minimum Useful Load	420 lbs (191 kg)

NOTE
The limits of C.G. range are measured ahead of Datum.

6.3.2. Worst Loading Case

Forward C.G. Limit	Maximum Takeoff Weight with heavy passenger and pilot, full fuel tank and 90% of the baggage capacity (Approx. 60 lbs) ***SEE SAMPLE LOADING CHART (Maximum Forward C.G.)***
Aft C.G. Limit	With a very light pilot only and reserve fuel. ***SEE SAMPLE LOADING CHART (Maximum AFT C.G.)***

6.3.3. Baggage Compartment

The baggage compartment is located next to the C.G. and, therefore has little effect on the balance. Baggage area is located behind the seats, above the main landing gear.

The baggage limit is 66 lb (30 kg)

NOTE
The maximum baggage load will be limited by the MTOW.

6.3.4. Ballast Tank

NOTE
When the occupants' total weight (Pilot and Passenger) is less than 290 lb (132 kg), additional ballast will be necessary. The MINIMUM ballast added to the area beside the nose gear compartment is indicated in the following table:

Weight (PILOT+ PASSENGER)		MINIMUM BALLAST WEIGHT	BALLAST
120 – 210 lb	54.4 – 95 kg	44 lbs (20 kg)	Full Water
210 – 290 lb	95 – 132 kg	22 lbs (10 kg)	Half Water
above 290 lb	above 132 kg	0 lbs (0 kg)	0

6.4. Center of Gravity (CG) range and determination

Longitudinal Limits

DATUM	Main Landing Gear Shaft
Forward Limit	11.8 in (30 cm)
Aft Limit	7.5 in (19 cm)

Procedure

Insert the respective loads in the Loading Chart in order to calculate the final position of the center of gravity (C of G).

WARNING

THE TOTAL WEIGHT OF THE AIRCRAFT MUST BE NO GREATER THAN THE MAXIMUM WEIGHT ALLOWED 1430 LBS (650 KG) AND THE CENTER OF GRAVITY MUST BE MAINTAINED WITHIN THE ALLOWABLE LIMITS 11.8 in (30 cm) and 7.5 in (19 cm)

NOTE

It is pilot's responsibility to use the most updated weight and balance data when operating the aircraft.

6.5. Installed Optional Equipment List

Information on installed equipment and references may be found on the Equipment List Supplement of this Manual.

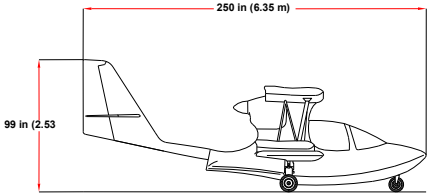
NOTE

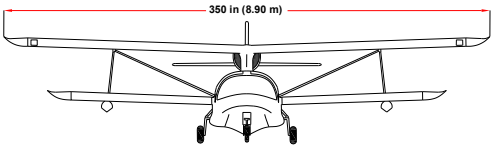
The Weight and Balance Sheet corresponding to this aircraft is located on the Weight and Balance Supplement of this Manual.

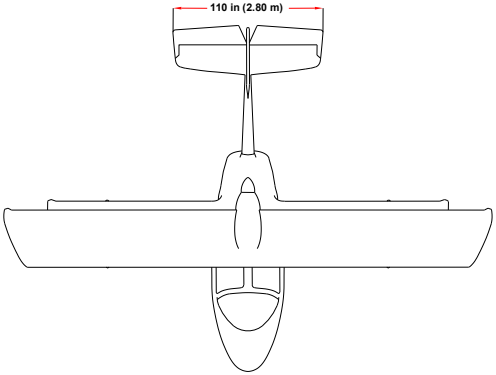
7 DESCRIPTION OF AIRPLANE AND SYSTEMS

7.1. General

7.1.1. Three View







7.2. Configuration

Super Petrel LS is an amphibious seaplane with equilibrium floats attached to its lower wings. The ailerons are located in the upper wings and the tail is conventional, with the horizontal stabilizer built half way up the tail fin.

Both seats are side by side with dual controls in an enclosed cockpit.

The engine is a pusher configuration attached to the upper wing pylon.

A carbon fiber cowling encloses the engine.

NOTE
The aircraft is able to operate without doors.

CAUTION
When operating the aircraft without doors, loose objects in the cabin or baggage compartment can fly towards the propeller and cause damage.

7.3. Airframe

Two parts comprise the fuselage: The main fuselage and tail.

The main fuselage is molded in carbon and Kevlar® reinforced by PVC foam bulkheads.

The tail, the horizontal stabilizer and the elevator are molded in carbon fiber and have internal PVC foam reinforcements. The rudder is built using the same process and is covered with fabric.

The upper wings structure have a carbon fiber "C" channel spar, forming a “D” box when bonded to the carbon fiber and PVC foam leading edge. The wing tips are made of carbon fiber and the wings are covered with fabric.

The lower wings are built in the same way; the difference is that tanks are located in the leading edge. The floats are attached to the lower wing's structure.

The struts are made of 6061-T6 aluminum profile.

7.4. Landing Gear

The main landing gear is equipped with oil pneumatic shock absorbers, hydraulic disk brakes, aluminum wheels and 11x4.00-5 tires with inner tubes. The nose gear is castering and equipped with 10X3.00-4 tire and inner tube. The landing gear retraction system is manually operated and the operating load of the system is balanced by a gas spring.

TIRES	MINIMUM PRESSURE	MAXIMUM PRESSURE
Nose Wheel Tire	20 PSI	28 PSI
Main Wheel Tires	32 PSI	40 PSI

7.5. Flight Controls

Stainless steel cables operate the rudder and elevator; ailerons are activated by rigid tube. Elevator trim is electrically operated.

Controls Ranges:

- Ailerons: 17° up/ 10° down (± 2°)
- Elevator: 30° up/ 20° down (±2°)
- Rudder: 30°right/ 30° left (±2°)
- Trim: 15° up / 13°down (± 2°)
- Aileron Trim: 20° up / 18°down (± 2°)

7.6. Typical Instrument Panel

The typical instrument panel contains all flight, navigation and engine instruments that are required for day and night operations. Switches are located as follows:

- **Engine Panel:** Located on the left side of the instrument panel.
- **Lights Panel:** Located in the middle of the instrument panel below the GPS.
- **Miscellaneous Panel:** Located on the center console.
- **Circuit Breaker Panel:** Located on the right side of the instrument panel.

7.6.1. Instrument Panel and Flight Instruments

The instrument panel of this aircraft is detailed on the Instrument Panel and Flight Instruments Supplement of this Manual.

7.7. Electrical System

Super Petrel LS operates on 12-volt DC electrical system and incorporates the electrical starter and voltage rectifier.

7.7.1. Battery

Super Petrel LS uses a 12-volt, 18 A Hour sealed lead acid or gel battery, which is located in front of the rudder pedals.

7.7.2. Master Switch

The Master switch is located on the engine panel and labeled as MASTER.

RIGHT position is ON and LEFT position is OFF.

Master switch activates the backup battery and battery relay of the aircraft, both displays (pilot and copilot) as well as all the aircraft electrical system.

7.7.3. Avionics Switch

The Avionics switch is located on the engine panel and labeled as AVIONICS.

UP position is ON and DOWN position is OFF.

Avionics switch activates VHF, Transponder, GPS, EMS and ADAHRS.

7.7.4. Backup Battery Switch

The Backup Battery Switch contains a guard and is located on the engine panel and labeled as BACKUP.

UP position is ON and DOWN position is OFF.

Backup Battery Switch feeds the EMS system by the onboard battery when the aircraft is on ground with engine off or in emergency procedures in case of supply failure by the internal generator.

7.7.5. Lane A and Lane B Switches

The Lane A and Lane B switches are two independent switches located on the engine panel and labeled as LANE A and LANE B.

UP position is ON and DOWN position is OFF.

Lane A and Lane B switches connect the ECU for the relevant Lane to the EMS supply.

7.7.6. Electrical Fuel Pumps (Main and Auxiliary)

The Super Petrel LS have two 12-volt electrical fuel pumps, which are located behind the baggage compartment on the main bulkhead of the aircraft. These are controlled by two single switches with guards (MAIN F. PUMP and AUX. F. PUMP) located on the engine panel.

7.7.7. Power Switch

The power switch is a momentary switch located on the engine panel and labeled as POWER.

UP position is ON (MOMENTARY).

Power switch makes a connection only during the start-up procedure between the ECU, ignition system and the EMS lamps with the aircraft battery.

7.7.8. Start Button

The start button is located on the engine panel and labeled as START.

Start button activates the starter motor.

7.7.9. 12V Receptacle

The stainless steel receptacle supplies 12-volt battery voltage for low power devises such as a cell phones charger, iPad power or audio entertainment device. The circuit is protected by a circuit breaker of 5 A.

7.7.10. Headphones Plugs

There are two types of plugs: 6 pins Jack and Dual plug. These are located behind the pilot´s and passenger´s seat on the upper baggage compartment surface.

7.7.11. Bilge Pump

The bilge pump is located in the hull behind the baggage compartment. It should be used to expel the water, which is accumulated in the interior of the hull. The bilge pump switch is located in the miscellaneous panel.

Automatic (Bilge Pump)

The automatic is located in the hull below the lower baggage compartment. It is self activated when there is water inside the aircraft hull and is connected directly to the battery, so that it works with the Master switch OFF.

NOTE
The led, which is located above the bilge pump switch, indicates when the bilge pump is working. When is blinking it indicates that the automatic is working.

7.7.12. Emergency Locator Transmitter (ELT)

The ELT is mounted behind the upper baggage compartment. It has a control panel located on the instrument panel for testing the transmitter and observing its operation. The pilot should become familiar with its operation and maintenance by consulting the manufacturer user manual.

7.7.13. Elevator Electrical Trim

An electrical actuator is located inside of the left elevator airframe, which controls the up, or down position of the trim through a rod.

The electrical trim is operated by using trim switch that is located on top of both control sticks. Forward movement of the switch will cause nose down trim and rearward movement will cause nose up trim.

7.7.14. Aileron Electrical Trim

An electrical actuator is located inside of the left aileron airframe, which controls the up or down position of the trim through a rod.

The electrical trim is operated by using trim switch that is located on top of both control sticks. Left movement of the switch will cause left trim and right movement will cause right trim.

7.7.15. Avionics

The Super Petrel LS is equipped with Garmin G3X system. Instructions for the use of installed avionics can be found in the manufacturer´s manuals. These include:

- Screens
- GPS
- XPNDR
- VHF
- Autopilot

7.7.16. External Lights

- Landing Lights: Located on the leading edge of both upper wings. Its switch has three positions: OFF-PULSE-ON. This is located in the lights panel.
- Navigation Lights: Located on the tip of both upper wings. Its switch is located in the lights panel.
- Strobe Lights: Located on the tip of both upper wings. Its switch is located in the lights panel.

7.7.17. Cockpit Lights

- Instrument Panel Light: This is a LED panel lightning system, which can be dimmed independently from the instrument lights. The dim control knob is located in the lights panel.
- Dome Light: Located behind the door handle lock. This is dimmed independently from all instruments lights system. The dim control knob is located in the lights panel.

For additional information regarding electrical systems, please refer to the last revision of the aircraft Maintenance Manual.

7.8. Engine

CAUTION

Use only oils with API classification "SG" or higher!
Aero Shell OIL Sport Plus 4 is highly recommended

WARNING

THIS ENGINE IS NOT SUITABLE FOR ACROBATICS (INVERTED FLIGHT ETC.) NON COMPLIANCE CAN RESULT IN SERIOUS INJURIES OR DEATH! CERTAIN AREAS, ALTITUDES AND CONDITIONS PRESENT GREATER RISK THAN OTHERS. NEVER FLY THE AIRCRAFT EQUIPPED WITH THIS ENGINE AT LOCATIONS, AIRSPEEDS, ALTITUDES OR OTHER CIRCUMSTANCES FROM WHICH A SUCCESSFUL NO-POWER LANDING CANNOT BE MADE AFTER SUDDEN ENGINE SHUTDOWN.

PLEASE SEE OPERATORS MANUAL FOR ROTAX 912 ENGINE TYPE SERIES REFERENCE OM-912 i Series

The Super Petrel LS is powered by an engine Rotax 912 iS Sport configuration 2, 4 strokes, 4 cylinders, with dual ignition, and mixed air/water cooling system. It has an incorporated reduction gearbox, electric starter system and voltage rectifier (12 V).

7.9. Fuel System

The fuel system is fed by two wing tanks built of fiberglass inside the lower wings leading edges and a header tank located behind the passenger´s seat (right side of the aircraft).

These two wing tanks, each having a capacity of 10.3 US gallons – 39 liters (10 US gallons usable – 38 liters), are not interconnected but are connected to a fuel valve which has three positions (right wing, left wing or closed) which feeds the header tank with a capacity of 4.5 US gallons – 17 liters (4 US gallons usable – 15 liters).

The fuel system also contains a shut-off valve which avoids the engine being fed by usable fuel during emergency procedures. The shut-off valve is located next to the header tank behind the passenger´s seat.

The full capacity of the system is 25 US gallons – 95 liters (24 US gallons usable – 91 liters).

The fuel quantity gauge located on the instrument panel only indicates the selected wing fuel quantity. The pilot should be directed to the header tank sight gauge for the remaining fuel quantity.

NOTE
The aircraft is able to use fuel which contains up to 10% of ethanol. In case this type of fuel is needed, use high-octane fuel.

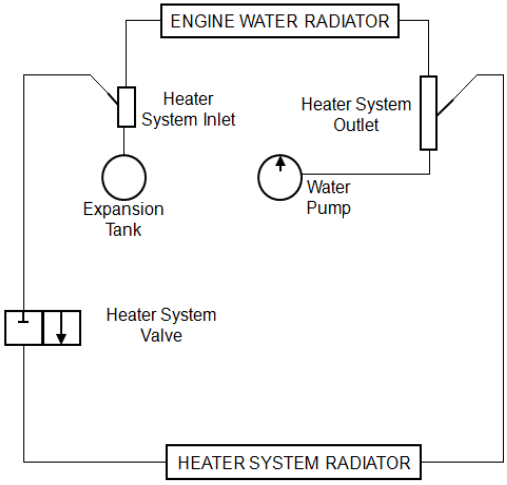
7.10. Propeller

The Super Petrel LS is equipped with three blade propellers with ground adjustable pitch:

- DUC THREE BLADE INCONEL FLASH – 2

7.11. Cabin Heater

Super Petrel LS cabin heater system uses the engine coolant as a heat source. The coolant is bled from the engine and taken to the heater radiator inside the cabin. A fan, coupled to the radiator, blows hot air through the cabin. Cabin heater system is protected with a fuse in order to avoid any damage or overvoltage on the electrical fan. This fuse is located inside the aircraft nose above the electrical fan.



Cabin heater switch is located below the lower part of the instrument panel (console). The valve (WOG) is located in front of the pilot´s seat on the aircraft floor.

CLOSE (OFF)

OPEN (ON)

7.11.1. Cabin Heater Operation

Valve	OPEN
Switch	ON

CAUTION

It is not recommended to operate the cabin heater system with the valve open and the switch turned OFF.

8 HANDLING AND SERVICE

8.1. Introduction

While carrying out tasks on the airplane, strictly observe some safety precautions.

- Avoid exposing the main fuselage to temperatures above 140º F (60º C).
- Never move the aircraft by pushing it by the wings, specially the trailing edges.
- Do not step on the wings, tail boom or horizontal stabilizer.
- Do not rest, machines or containers on the airplane skin.
- While working on the fuel system, ground the airplane; do not smoke, do not work with open fire and do not work simultaneously on the electrical system.
- When working with dangerous chemical substances (adhesives, thinners), use adequate protective equipment such as goggles, gloves, etc.
- For engine's assembling or disassembling, use only adequate and tested lifting equipment.
- While running the engine on the ground, keep away from the propeller.
- An accidental engine start is very dangerous! Ensure that the Ignition switch is OFF!
- Upon completion of work, carefully check to remove tools and unwanted objects from the airplane.

8.2. Ground Handling

8.2.1. Jacking Up

This process is only used to change the wheels or to make the operational test of the landing gear system. One person is required to lift the nose of the aircraft and put a support under the keel located under the fuselage. Then put a jack under each point of the main gear.

CAUTION

Preferably, put protective foam among the support – keel and jack – fuselage. Lift the aircraft simultaneously with the jack placed in each point of the main gear, do not lift too high, just enough to let the wheels turn freely.

8.2.2. Parking

To accomplish this process it is good to know the local conditions. It is advisable to place chocks in each wheel of the main gear in order to avoid any displacement of the aircraft. There is no need to chock the nose wheel.

8.3. Towing Instructions

To tow the aircraft, one person is required:

1. Make sure the space near the aircraft is clear of obstacles and people.
2. The aircraft can be towed by the eyebolt located in the aircraft nose.
3. Smoothly pull the aircraft in the desired direction.

8.4. Tie-Down Instructions

To tie the aircraft down, one person is required:

1. Make sure the plane is set on the wheel wedges.
2. Attach the tie down lines to the support of the wing struts and nose gear.
3. Attach the lines to the mooring arrangements on the ground. Make sure the lines are tightened.

CAUTION

If the aircraft is left in the sunlight, do not use dark covers. Preferably, use a white light cover.

8.5. Servicing Fuel, Oil and Coolant

Before commencing refueling operations it is recommended, do the following:

Tires	CHOCKED / WEDGED
LANE B switch	OFF
LANE A switch	OFF
Fuel Pumps (Main and Auxiliary)	OFF
Avionics	OFF
Master	OFF
Bonding Cable	ATTACHED
Tank Cap	OPEN
Check the fuel specifications	FILL

Cap	CLOSE
Check for Spillage	CLEAN IF NECESSARY
Other tank	REPEAT THE PROCEDURE

When servicing the oil, it is required to use the following procedure:

Tires	CHOCKED
LANE B switch	OFF
LANE A switch	OFF
Fuel Pumps (Main and Auxiliary)	OFF
Avionics	OFF
Master	OFF
Support or Ladder	IN FRONT TO THE UPPER WING
Rotate the propeller (from aft part of the aircraft)	COUNTERCLOCKWISE until engine burps
Reservoir cap	OPEN
Oil level	CHECK DIPSTICK **(see section 8.7)**
Add oil	AS NECESSARY
Reservoir cap	CLOSED

8.6. Approved fuel grades and specifications

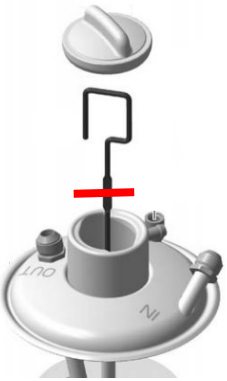
In accordance with engine Operator's Manual, the following fuels can be used.

		Usage / Description
MOGAS	European Standard	EN 228 Super (min. ROZ 95)
		EN 228 Super Plus (min. ROZ 95)
	Canadian Standard	CAN/CGSB3.5 Quality 3 (min. AKI 91)
	US Standard	ASTM D4814

AVGAS	US Standard	AVGAS 100 LL (ASTM D910)

For more details about the fuel's correct selection, refer to the engine manufacturer's original manuals.

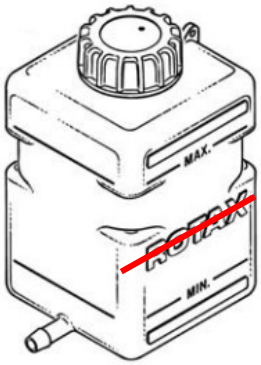
8.7. Approved oil grades and specifications

Types of oil	As per Rotax 912 iS Sport Engine original manuals.
• (Recommended: SAE 10 W-40) **Aero Shell OIL Sport Plus 4 is highly recommended. (Oil changes** are required depending on climatic conditions)	
• **Oil changes procedure should be performed as per Rotax Instructions.**	
• **Recommended Oil Level:** it should be in the middle of the dipstick. 	

CAUTION

If engine runs mainly on AVGAS, more frequently oil changes will be required. See the latest edition of engine manufacturer's Service Information SI-912i-001.

8.8. Coolant

Types of coolant	As per Rotax 912 iS Sport Engine original manuals.
• (Recommended: Conventional Coolant 50 / 50) **Honda Genuine Coolant Type 2 – All season antifreeze.**	
• **Coolant replacing procedure should be performed as per Rotax Instructions**	
• **Recommended Coolant Level:** it should be in the middle of the overflow bottle. 	

8.9. Tire Inflation Pressure

TIRES	MINIMUM PRESSURE	MAXIMUM PRESSURE
Nose Wheel Tire	20 PSI	28 PSI
Main Wheel Tires	32 PSI	40 PSI

8.10. Cleaning and Care

The washing and cleaning of the aircraft can be made according to the criteria of the owner; it is not obligatory for each inspection. When washing and cleaning the aircraft the following steps are recommended:

8.10.1. Canopy External Part

CAUTION

Only recommended cleaning products should be used to clean the aircraft´s canopy.

1. Spray enough water on the surfaces.
2. Spread generously with a good quality neutral soap the entire surface of the aircraft.
3. Pass the hands palm and fingers softly, spreading the soap forward and backward (lengthwise).

CAUTION

Do not make circular moves.

4. Remove carefully with the fingers or nail (slightly) insects and dirt which can eventually be nailed.
5. Wash and remove remained dirt, repeating the process only on that spot.
6. Apply a specific product for plexiglass cleaning and gently dry with a clean and new soft cloth.
7. If polishing is needed it must be done at the moment in order to complete the surface cleaning as following:
   - Use a specific product for plexiglass polishing.
   - Open it carefully in order to not spill dust into the recipient.
   - Remove a thin layer of polish and throw it away.
   - Use only a clean piece of cotton.
   - Complete the polishing moving the piece of cotton forward and backward.

8.10.2. Canopy Internal Part

1. Sprinkle the specific product for plexiglass cleaning generously.
2. Clean softly with a clean and new piece of cotton.

8.10.3. Fuselage External Part (Wings/Tail)

CAUTION

When washing the aircraft with high-pressure water spray, careful must be taken with avionics, connectors and sensors.

1. Seal the Pitot tube, vents, etc., with masking tape.
2. Seal the possible water intakes in the aircraft with masking tape.
3. Use a good quality neutral soap.
4. Soap the surface with a clean and soft cloth.
5. Wash the surface generously.
6. Clean all surfaces with a clean cloth.
7. If necessary polish the entire surface with a specific product for polishing.

WARNING

WHEN FINISHED WASHING, REMOVE ALL SEALS AND COVERS

8.10.4. Fuselage Internal Part

1. Clean the seats with a neutral soap with a perfectly clean and new cloth.
2. Hydrate the skin of the seats with liquid Vaseline if necessary.

8.10.5. Salt Water Care

Corrosion inspection frequency, corrosion identification, and corrosion treatment is to be responsibility of the operator. Refer to the latest edition of the FAA ADVISORY CIRCULAR AC 43-4A, CORROSION CONTROL FOR AIRCRAFT.

NOTE

Refer to the latest revision of the Super Petrel Maintenance Manual, Corrosion, Inspection and Protection Section.

CAUTION

After operation on salt water, always wash the aircraft with fresh water.

9 SUPPLEMENTS

9.1 Introduction

This section provides additional information regarding the airplane.

NOTE
Additional equipment according to customer´s request will increase the empty weight of the aircraft and reduce the permitted useful load.

9.2 Supplement: Original Equipment Manufacturer Manuals

Engine

For more detailed information about the Rotax Engine and Systems must be consulted the Rotax official site www.flyrotax.com

Propeller

For more detailed information about the Propeller must be consulted the official site www.duc-helices.com

Avionics

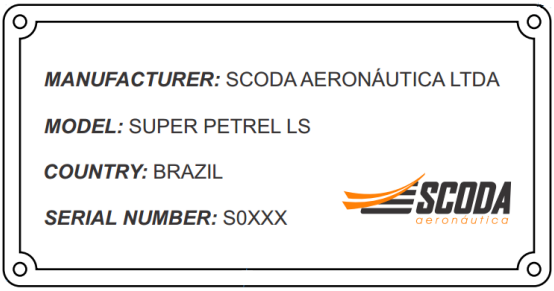
For more detailed information about the Digital Screens and Avionics installed in the aircraft must be consulted the official site: www.garmin.com/en-US

Emergency Equipment

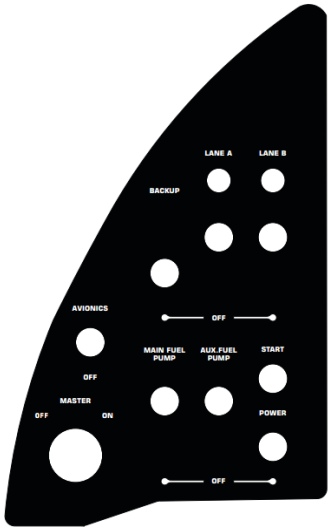
For more detailed information about the Emergency Locator Transmitter (ELT) must be consulted the official site www.ackavionics.com

9.3 Supplement: Placards and Markings

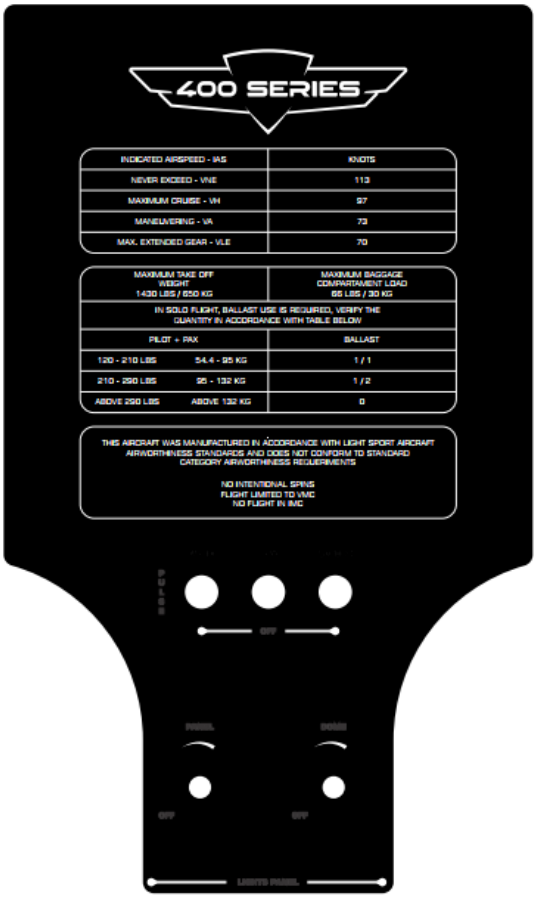
IDENTIFICATION PLATE: metallic placard containing information about the aircraft's manufacturer, designer, model, serial number, marks, country and manufacturing year is placed on the right side of the vertical stabilizer.



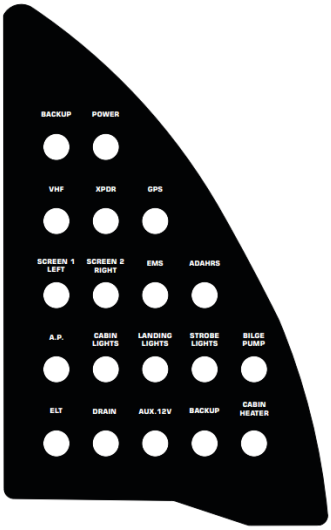
ENGINE PANEL PLACARD: Located in the left side of the instrument panel. Used for Master, Avionics, Lane A, Lane B, Fuel Pumps (Main and Auxiliary), Power and Start switches.



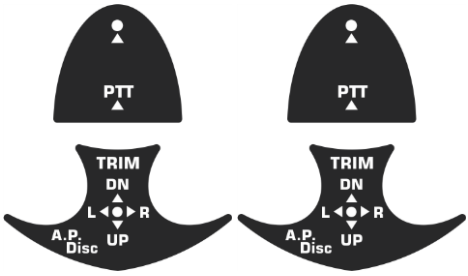
CENTRAL PLACARD: Located in the middle part of the instrument panel between both screens. Used for speed, ballast and warning placard. In addition, this is used for Land/Pulse, Nav, Strobe switches and Panel/Dome Dimmer Control.



CIRCUIT BREAKERS PANEL PLACARD: Located in the right side of the instrument.

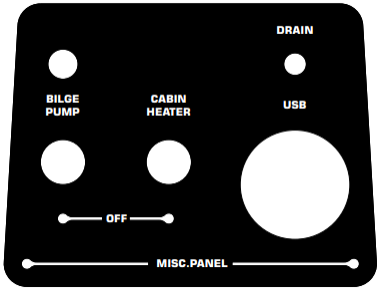


AUTOPILOT DISCONNECT, ELEVATOR AND AILERON TRIM CONTROL AND VHF PLACARD: Located on the joystick levers.

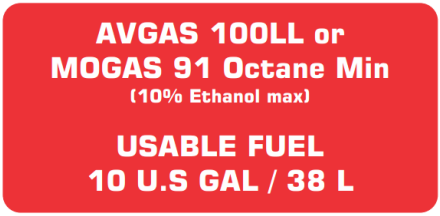


THROTTLE PLACARD: Located next to the throttle levers.

MISCELLANEOUS PANEL: Located in the aircraft console. Used for Bilge Pump lamp, Bilge Pump and Cabin Heater switches, Fuel Drain button and USB charger.

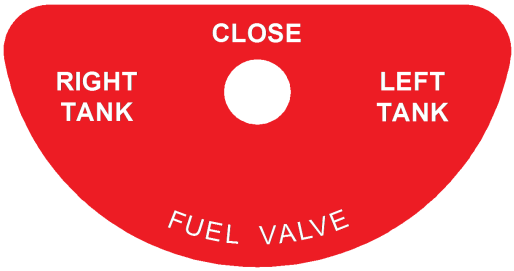


FUEL QUANTITY PLACARD: Located next to the filler cap on the lower wings tank.



DRAIN PLACARD: Located next to the fuel drain valve.

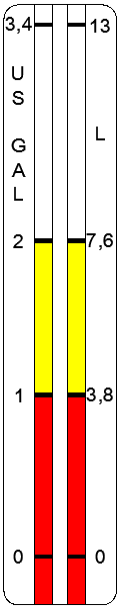
FUEL VALVE: Located behind of the passenger´s seat on the aircraft floor.



SHUT OFF VALVE PLACARDS: Located behind the passenger´s seat on the lower part of the header tank. The OPEN / CLOSE placards are located on the aircraft floor next to the valve.

OIL ENGINE PLACARD: Located on the upper engine cowling.

HEADER TANK QUANTITY PLACARD: Located on the header tank.



TIRE PRESSURE PLACARDS: Located on the nose gear and main landing gear legs.

NO PUSH PLACARD: Located on the lower wings, upper wings and elevators trailing edge.

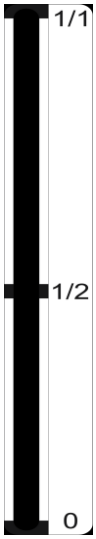
LAND AND WATER PLACARDS: Located on the landing gear lever.

BALLAST OPEN AND CLOSE VALVE PLACARD: Located on the floor in front of the passenger seat.

CABIN HEATER OPEN AND CLOSE VALVE PLACARD: Located on the floor in front of the pilot seat.

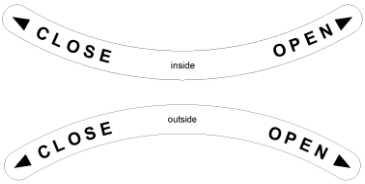
ONLY WATER PLACARD: Located next to the ballast tank filler cap.

BALLAST TANK QUANTITY PLACARD: Located on the ballast tank.



DOORS LATCHES PLACARD: Located next to the doors latches.

DOORS LOCK: Located inside and outside of the cabin.



CONNECT ANTENNA PLACARD: Used for Transponder and VHF antennas, located on the fuselage upper part.

PROPELLER PLACARD: Located on the sides of the fuselage rear part.

9.4 Supplement: Flight Training

Scoda Aeronáutica advises the pilot to strictly follow the Super Petrel LS training program listed below.

I. GROUND SCHOOL (1.5 H)

Before practical flight training, the pilot must be familiarized to the following procedures and documents:

- PILOT OPERATING HANDBOOK.
    1. General Information
    2. Operating Limitations
    3. Emergency Procedures
    4. Normal Procedures
    5. Performance
    6. Weight and Balance Information
    7. Description of Airplane and Systems
    8. Handling and Service
    9. Supplements
- MAINTENANCE MANUAL
- AVIONICS AND INSTALLED AIRCRAFT´S EQUIPMENT OPERATION

II. GROUND OPERATION (2.0 h)

1. Pre Flight
2. Engine Starting
3. Taxi

4. Runway Threshold Check
5. Take-off
6. Climb
7. Level Flight
8. Handling (Turns, Coordination, etc)
9. Stall
10. Descent and Gliding
11. Touch and Go
12. Landing
13. Post Flight

III. WATER OPERATION (2.0 h)

1. Pre Flight
2. Engine Starting
3. Take-off Check
4. Low speed taxi
5. High speed taxi (on the step)
6. Take-off
7. Excessive Wave Water Landing
8. Glassy Water Landing
14. Margin and Pier Approach
15. Ramp Climb
16. Post Flight

IV. EMERGENCIES (1.0 h)

1. Ground
2. Water

9.5 Supplement: Listing of Owner / Operator Responsibilities for Continued Operational System

- Each Owner/Operator shall to provide current contact information to the manufacturer that is suitable for delivery of COS Notices. (FORM_SPLS_001_Aircraft Registration Form).

- Each Owner/Operator shall to notify the manufacturer of any unsafe condition or service difficulty (faults, malfunctions, defects, and other occurrences) immediately upon discovery. This notification must be made in a manner acceptable to the manufacturer. (FORM_SPLS_002_Continued Operational Safety Reporting Form).

- Each Owner/Operator should to read and comply, as specified within the Notice, with any Notices of Corrective Action provided by Scoda Aeronáutica as well as all applicable consensus standards and CAA regulations in regard to maintain the airworthiness of the LSA.

- Each Owner/Operator should to understand that may submit written comments and questions regarding any mandatory Notice to Scoda Aeronáutica. Those comments and questions may be sent to engineering@scodaero.com.br

- Owner / Operator should to understand it is his responsibility to consult frequently the company´s support link in order to search new COS notices. The sending of messages directly to the registered e-mail addresses is made with the purpose of increasing the speed of information dissemination.

9.6 Supplement: Improvements or Corrections

In order to report any improvements or corrections in this manual, please advise to the following email address: engineering@scodaero.com.br

9.7 Supplement: Continued Operational Safety Reporting Form

The Continued Operational Safety Reporting Form is added to this supplement.

9.8 Supplement: Aircraft Registration Form

The Aircraft Registration Form is added to this supplement.

9.9 Supplement: Warranty Claim Form

The Warranty Claim Form is added to this supplement.

9.10 Supplement: Weight and Balance

The weight and balance sheet is added to this supplement. This document is generated after the aircraft´s production.

9.11 Supplement: Equipment List

The list of equipment and instruments installed on the aircraft is added to this supplement. This document is generated after the aircraft´s production.

9.12 Supplement: Instrument Panel and Flight Instruments

The instrument panel and flight instruments installed on the aircraft is added to this supplement. This document is generated after the aircraft´s production.