N618AP

2014 Seamax M-22

Pilot Operating Handbook

MSN: 122

Prepared by the worldwide aviation specialists at RidgeAire, Inc.

SEAMAX AIRCRAFT

PILOT OPERATING HANDBOOK
&
AIRCRAFT FLIGHT TRAINING SUPPLEMENT

SEAMAX M-22

Serial Number:

Updates Registration

The revisions pages are updated by **SEAMAX AIRCRAFT LTDA**, each time revision is issued.

The list bellow contains all the revisions made on the aircraft operating instructions.

Revision number	Date issued	Affected chapters	Affected pages	Approved by
00	07/15/2007			Miguel Rosario
01	03/20/2010	1, 2.3, 4.9	8, 11, 12, 20, 29	Miguel Rosario
02	11/11/2013			Miguel Rosario
03	01/03/2017	1,2,3,4,7,8, 9, 10, 11	8, 9, 11, 17, 45, 47,48, 54, 56, 59, 61, 62 64, 65, 72, 75, 76, 78, 79, 80	Miguel Rosario
04	06/21/2017	10	66	Miguel Rosario
05	03/08/2018	4, 5, 6	19, 20, 32, 36, 37	Miguel Rosario
06	06/18/2018	3, 6	16, 37, 38	Miguel Rosario
07	09/25/2018	8, 11	58, 59, 81, 82	Miguel Rosario
07.1	07/23/2019	3	18	Miguel Rosario
07.2	03/26/2020	2, 4	10, 20, 22	Miguel Rosario
07.3	10/22/2020	1, 11	8, 76, 78	Miguel Rosario
07.4	01/17/2022	4	22, 29, 30	Miguel Rosario

Table of Content

Welcome to the Seamax enthusiast team!

This is the Seamax POH manual.

In accordance with ASTM specification of a Light Sport Aircraft (F2746-14), each **Seamax M-22** light sport aircraft includes an Pilot Operating Handbook (POH).

SEAMAX compliance with all standards ASTM for LSA: F2245-16c, F2483-12, F2295-10, F2746-14, F2972-15, F3035-13, F2745-11

BRAZIL HEADQUARTERS:

SEAMAX AICRAFT LTDA.
Aeroporto de São João da Boa Vista – SP - BRA
Hangar 01
Rod. SP 344, km 219, ZIP: 13.871-260
Phone: (55) 19 99850-6810
E-mail: support@seamaxaircraft.com
Site: www.seamaxaircraft.com

UNITED STATES HEADQUARTERS:

SEAMAX, LLC.
Embry Riddle Aeronautical University Research Park
1535, Aviation Center Parkway, Unit 2
Daytona Beach, FL, 32114 - USA
Phone: +1 (260) 460-7587
E-mail: info@seamaxaircraft.com

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2. General Information

Read this manual completely before attempting to fly the Seamax M-22.

Each airplane has its own limitations, which should be respected by the pilot in order to fly safe.

WARNING

This manual describes the operation and performance of the Seamax M-22 as well as very important information and limitations the owner and the operator must know. **So it is very important to read and understand it.**

All limitations, procedures, safety practices, time limits, servicing, and maintenance requirements contained in this manual are considered mandatory.

Read and understand the pre-flight check and how to perform it properly. Mastering it prevents in flight problems.

All installed equipment, including Rotax engine, has its own OEM manuals supplied with the airplane. Those manuals are considered to be a part of this manual and compliance with the provisions they contain is considered mandatory.

When flying an LSA always keep in mind the possibility of the need to make an emergency landing. In case of loss of power you will be safer when flying a Seamax; since it is an amphibian you can choose, water or land, whichever is safer.

The Seamax M-22 is approved for VFR. Due the speed and range of the Seamax M-22 – LSA flight into different weather situation and meteorological conditions can occur. Entry into bad weather or IFR without the necessary instrumentation and qualification conditions is extremely dangerous.
IFR operation: it is necessary to comply with 14 CFR FAR 91.205 (d).

CAUTION

As the owner or operator of an aircraft, you are responsible for the safety of your passenger and yourself. Do not attempt to operate Seamax M-22 in any manner that would endanger the aircraft, the occupants or people on the ground.

[00] Issued: 07/15/2007
[07.2] Date of Revision: 03/26/2020

WARNING

The ASTM F 2295 and the Light-Sport Aircraft standards require that each owner or operator of a light-sport aircraft provide the manufacturer with current contact information, to assure that the owner receives supplemental notification bulletins and manual revisions. A form is provided in section 11.10, page 84 of this manual which the owner or operator shall use to report contact information to Seamax and to report changes to that information.

2.1 Instructions for Reporting Possible Safety of Flight Concerns Found During Operation

The U.S. Federal Aviation Administration and the ASTM Light-Sport Aircraft standards require that each owner or operator of a light-sport aircraft provide the manufacturer with current contact information, to assure that the owner receives supplemental notification bulletins and manual revisions. A form is provided in section 11.10, page 82 of this manual which the owner or operator shall use to report safety of flight issues or service difficulties.

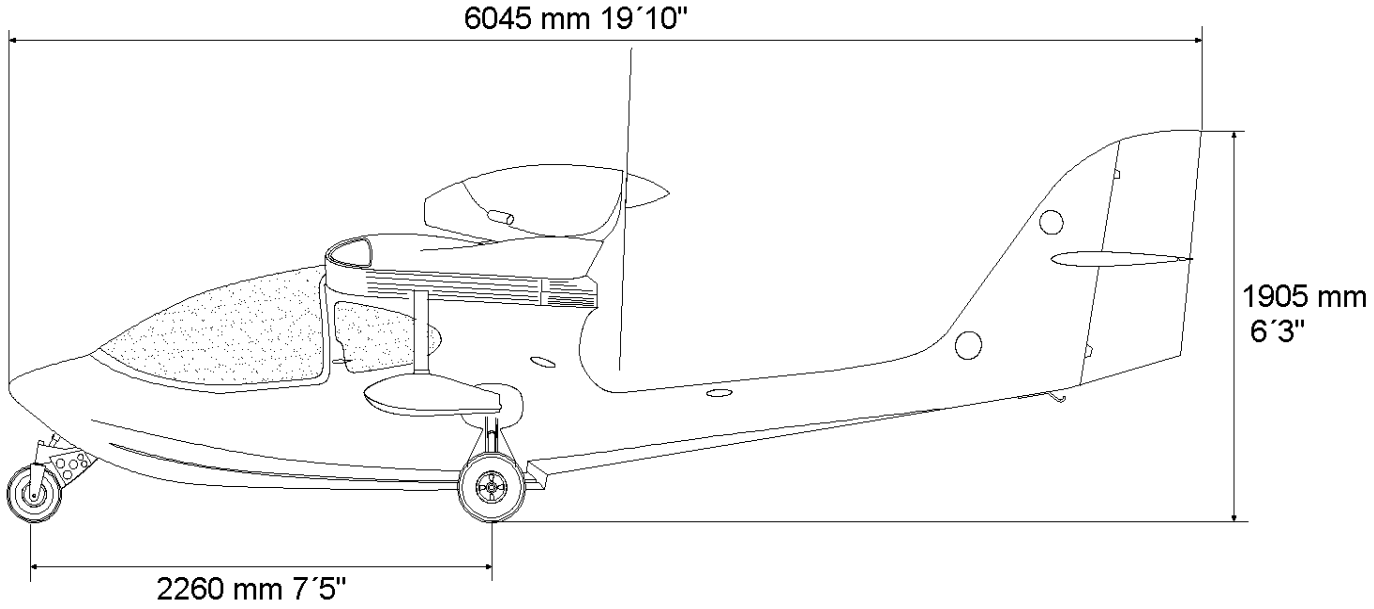
2.2 Description of the aircraft

The Seamax M-22 is an aircraft designed by Miguel Rosário. It is a monohull seaplane, with a **S-**LSA certification. It is a two-seater (side-by-side) high wing, with composite fuselage / hull, elevator and wing tip floats, and an aluminum fabric covered wing, ailerons and flaps. Landing gear is a retractable tricycle configuration, with differential brake steering for the main gear.

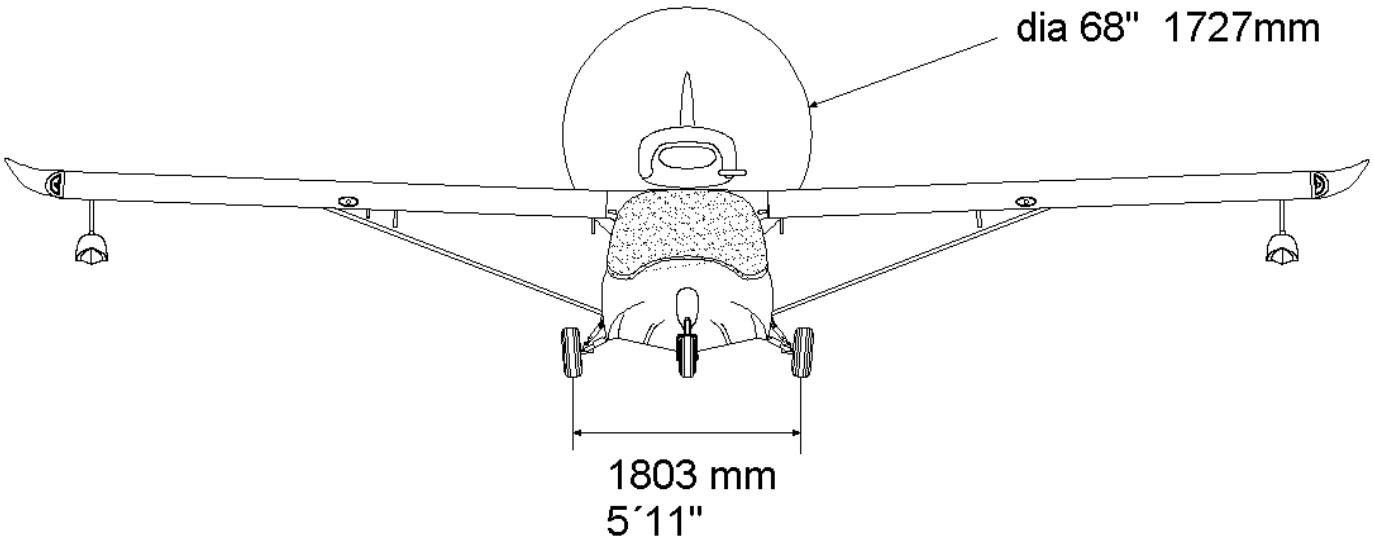
The one piece canopy, pusher engine, and stabilator with anti servo tab are other typical characteristics of this plane.

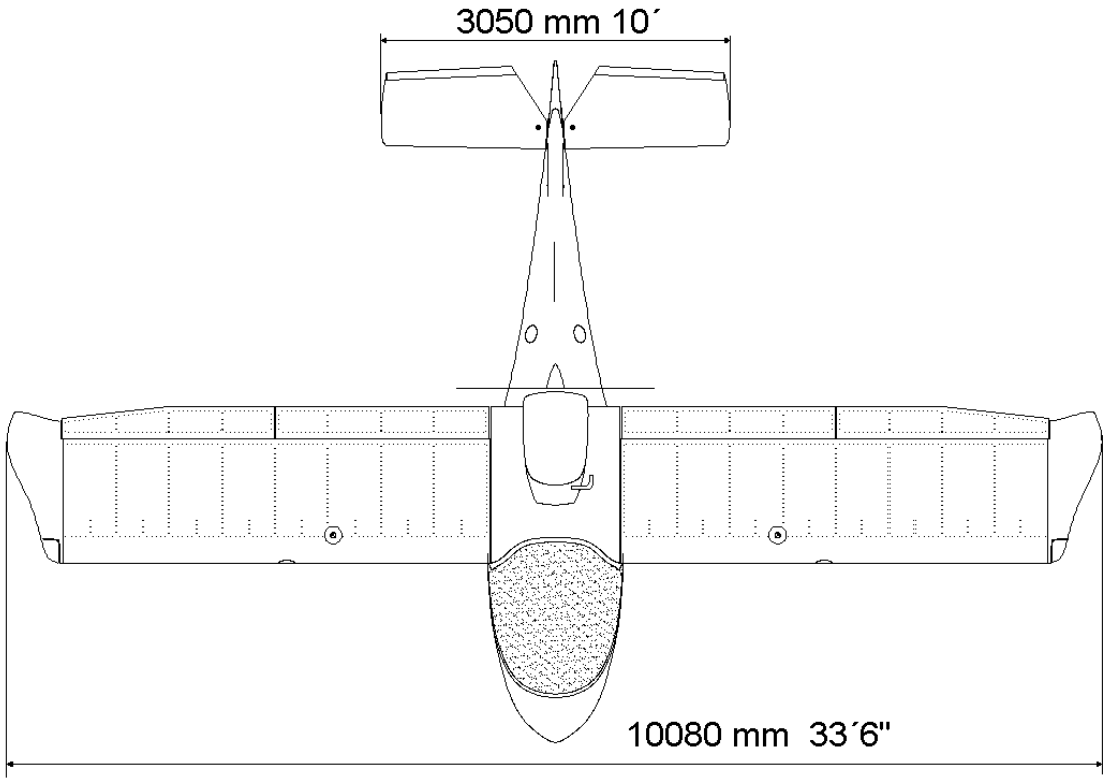
2.3 Views and dimensions

Wing span	33,07 ft	10,08 m
Stabilator span	10.09 ft	3.07 m
Vertical fin (height)	6.4 ft	1.905 m
Length	19.8 ft	6.05 m
Wing area	129.6 sqft	12.04 sqm
Height	6.2 ft	1.9 m



[00] Issued: 07/15/2007
[01] Date of Revision: 03/20/2010





[00] Issued: 07/15/2007
[01] Date of Revision: 03/20/2010

3 Airplane and Systems description

3.1 Engine

Manufacturer	Rotax
Type	912
Model	ULS/S

General specifications:

4 stroke, 4 cylinders opposed, one central camshaft, push rods OHV

Liquid cooled heads

Ram air cooled cylinders

Dry sump forced lubrication

2 constant depression carburetors

Mechanical fuel pump

Propeller drive via reduction gear with shock absorber and clutch, ratio 2,43:1

Electric starter

Integrated AC alternator with external rectifier/regulator

Operating Limits

Speed

Take off speed	5800 rpm (5 minutes)
Max. Continuous speed	5500 rpm
Idle speed	min .1400 rpm

Performance

Take off performance	73.5 KW @ 5800 rpm
Max. Continuous performance	69 KW @ 5500 rpm

Acceleration

Max.	5 seconds at max -0,5 g´s

Oil pressure

Max.	7 bar (102 psi) short period, cold start
Min.	0.8 bar (12 psi) below 3500 rpm
Normal	2.0-5.0 bar (29-73 psi) above 3500 rpm

Oil temperature

Max	130 C (266 F)
Min	50 C (120 F)
Normal	90-110 C (190-230 F)

Cylinder head temperature

Max	135 C (275 F)

*Monitoring of cylinder head temperature is necessary

Engine start, operating temperature

Max	50 C (120 F)
Min	-25 C (-13 F)

Fuel pressure

Max	0.4 bar (5.8 psi)
Min	0.15 bar (2.2 psi)

More detailed engine information is available in the Maintenance Manual for Rotax, type 912, supplied with the aircraft

NOTE

The engine Manufacturer Manuals will be supplied with each airplane for the type of engine installed on that particular airplane. The recommendations contained on those Manuals must be strictly observed.

3.2 Propeller

The standard propeller installed on the Seamax M-22 is manufactured by Warp Drive or Sensenich. The leading edges of the blades are protected with a metallic strip to minimize erosion due to water spray contact.

Manufacturer.....WarpDrive
Model……Constant Speed Blade
Diameter .....68”
Number of Blades 3
Type.....ground adjustable
Maximum RPM 2800

Manufacturer.....Sensenich
Model……3BR05-FDR68C
Diameter .....68”
Number of Blades 3
Type.....ground adjustable
Maximum RPM 2800

3.3 Fuel and fuel capacity

Fuel specification: Minimum RON 95; Minimum AKI 92 octane auto fuel

Usable types: EN 228 Premium; EN 228 Premium Plus, AVGAS 100LL

Fuel Capacity: Two wing fuel tanks of 12.5 Gals (46 L) each and a fuselage header tank of 1.6 Gals (6 L) for a total of 26 Gals (98 L)

Total Usable Fuel: 24.8 Gals (94L)

Due to the high lead content of AVGAS, this type of fuel shall be used only if:

a) The available fuel presents vapor lock problems; or
b) There are no other recommended fuel types available.

3.3.1 Fuel Management

Any flight, no matter how short, must be planned carefully. The pilot shall calculate the amount of fuel required for the intended flight and then verify that the airplane is fueled with at least that amount plus the quantity needed for 30 minutes of flight time as a fuel reserve.

The Pilot must monitor fuel consumption during the flight and land to refuel with convenient margin before running out of fuel in flight.

3.3.2 Fuel Management during Water Operations

WARNING

During all water operations, one of the fuel valves shall remain OPEN and the other CLOSED.

CAUTION

During water operations, if both fuel valves remain OPEN, fuel will flow from the high wing to the low wing, making it heavier and rendering water taxi or takeoff impossible.

3.4 Oil

Use motorcycle oil of a registered brand, with gear additives.

Use only API classification “SF” or “SG”

Oil Capacity: 3 L (6.4 liq pt) minimum 2 L (4.2 liq pt)
Oil Consumption: maximum 0.1 L/H (0.2 liq pt/h)
Oil viscosity: See chapter 10 of Rotax operator’s manual

For complete oil specification see the Rotax operator’s manual.

3.5 Operating weights and loading (occupants, baggage, fuel, ballast)

Minimum load per seat (crew of one):	122 lb	55 kg

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2013

Maximum load on front seats, w/o ballast	489 lb	220 kg
Empty weight (standard):	715 lb	325 kg
Maximum permissible take of weight (MTOW)	1,320 lb	600 kg
Maximum baggage weight, for each side	45 lb	20,4 kg

WARNING

Combination of fuel, baggage and crew must respect MTOW

3.6 Coolant

Please check on the Rotax maintenance Manual detailed information about coolant. There is a placard on the coolant filler, indication type of coolant used.

Cooling liquid capacity:	5, 3 liq pt	2,5 l

WARNING

Do not mix different types of coolants. Check the Rotax Manual.

3.7 Wheel Tires

	Specification:	**Tire Pressure:**
Main Landing Gear:	5.50 x 5	2.1 – 2.8 bar (30 – 40 psi)
Nose Landing Gear:	3.50 x 4	1.0 – 1.4 bar (15 – 20 psi)

[00] Issued: 07/15/2007
[07.1] Date of Revision: 07/23/2019

4 Operating Limitations

4.1 Stalling speeds at maximum takeoff weight (V_{S1} and V_{s0})

Flaps	0°	ALL (red and green) lights OFF	V_S	-	46 kts	53 mph
Flaps	10°	ONE green light ON	V_{S1}	-	44 kts	51 mph
Flaps	35°	Three last green lights ON	V_{S0}	-	39 kts	45 mph

4.2 Flap extended speed range ($V_{S0}$to V_{FE})

Maximum speed with flaps extended

All lights off	VNE	135 kts	155 mph
First green light on	V_{FE10}	65 kts	75 mph
Last three green lights on	V_{FE}	55 kts	63 mph

4.3 Maximum maneuvering speed (V_A)

VA = 96 kts 110 mph

Maximum speed in turbulent air (V_{RA})
V_{RA} = VA = 96 kts 110mph

4.4 Never exceed speed (V_{NE})

V_{NE} = 135 kts 155 mph

4.5 Crosswind and wind limitations

Maximum direct cross wind components for take off and landing

With flaps from 0° to 10°	15 kts	17 mph
With flaps more than 15° to 35°	10 kts	12 mph

Maximum Demonstrated Crosswind Velocity

Takeoff or Landing	10 kts	12 mph

[00] Issued: 07/15/2007
[05] Date of Revision: 03/08/2018

Maximum Recommended Turbulent Air Penetration Speed

At Max Takeoff Mass of 600 kg (1320lb) 79 kts 91 mph

4.6 Service ceiling

Maximum service ceiling is 12.000 ft

4.7 Load factors

From V_{S0} up to V_{NE} + 4 g / - 2 g

4.8 Prohibited maneuvers

Seamax M-22 is not certified for aerobatics. Steep turns beyond 60° should not be performed

Other limitations
Flights are to be made under VFR conditions. IFR require to comply with 14 CFR FAR 91.205 (d) and pilot qualification.

	SPEED	kts	mph	Remarks
V_{NE}	Never Exceed Speed	135	155	Do not exceed this speed in any operation
V_{NO}	Maximum Structural Cruising Speed	105	121	Do not exceed this speed except in smooth air, and then only with caution
V_A	Maneuvering Speed	96	110	Do not make full or abrupt control movements above this speed
V_S	Stall Speed Flaps 0º	46	53	
V_{SO}	Stall Speed Flaps Full Down (three last green lights on)	39	45	
V_{FE10}	Maximum Flaps Extended Speed (first green light on)	65	74	Do not exceed these speeds with the given flap setting
V_{FE}	Maximum Flaps Extended Speed (all green lights ON)	55	63	

[00] Issued: 07/15/2007
[07.2] Date of Revision: 03/26/2020

4.9 Structures and Systems Description

Airframe

All materials used in airframe are typically aeronautical and accepted by the Brazilian Civil Aviation Authority (ANAC), FAR, JAR, LSA (ASTM): Kevlar, glass fiber, carbon fiber, composite materials, ST aluminum, Ceconite, steel tubes, ball joints, fasteners (rivets, steel bolts, washers, nuts, Dzus).

Fuselage

The hull-shaped fuselage is made of glass fiber reinforced with carbon fiber. A welded steel tube structure (cage type) is attached to the hull and supports the wings, main landing gear and engine. The engine cowling and the seats are made of composite materials.

Empennage

The fin is an extension of the fuselage and is made in the same way as the fuselage. It has an internal box type structure made of composite ribs. The rudder construction is similar to the one used for the fin.

The horizontal surface, “stabilator” type, is located half way up on the fin. Its construction is similar to the one used for the rudder. Attached to the stabilator’s trailing edge is the electrically actuated trim tab that acts also as an anti-servo device. A progressive-type light indicator located on the upper part of the control panel shows the position of the trim tab.
To improve yaw behavior, fins to install on elevator wing tip are optional

Wings

The wing structure is an integral type (for stress calculations the main spar is the only element responsible to resist the aerodynamic loads). Each wing has a tubular spar, 10 ribs and 9 false-ribs used in the leading edge. A composite shell leading edge and a composite fairing for the aileron and flaps complete the wing structure. All the structural wing elements are made of aluminum and held together by rivets and adhesive. The wings are covered with polyester cloth, glued to the ribs and the wing leading edge.

The wing loads are transferred to the fuselage by means of a wing strut attached to the steel tube cage and by the spar attachment to the same cage.

The ailerons and flap construction are similar to the wings (aluminum structure, composite leading edge, covered with polyester).

The “Frise” type ailerons are fixed to the wings by two hinges. The ailerons are controlled by a single stick located on the cockpit central console, between the seats. The movement is transmitted to the ailerons by steel cables and pulleys to a belcrank, and by push/pull tubes.
The flaps are of the slotted type. When actuated, they move down and aft (Fowler) due to the position of the hinge axis and the geometry of the scissors-type extension mechanism. A set of lights located on the left side of the control panel shows the flap position.

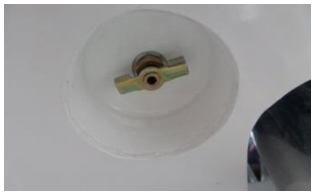
2017 version of Seamax has high efficiency wing tips, which can be retrofitable to old airplanes, as an optional.

Wing Carbon Fiber Version - Seamax Aircraft made a modification in the design of the wing for its Seamax M-22 model, now completely made of composite material. All physical and aerodynamic characteristics were maintained in the original design, with the structure being optimized only due to the new material used, basically carbon fiber.
Such technology change makes the Seamax M-22 structure more harmonic and advantageous, now 100% in composite material. As improvements, the new composite wing achieved a weight reduction of approximately 18 kgf, and in addition, the structural components are immune to corrosion and fatigue.
It has a C wing spar, with a leading edge in a rigid D structure.
It has the same coating process, same tank capacity and same wing folding operation.
The inspection, maintenance, installation and removal procedures of the wings remain the same as for the aluminum version.

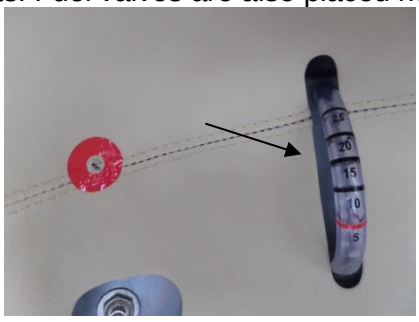
Fuel System

The Seamax M-22 fuel system consists of two main fuel tanks (one in each wing), a fuselage header tank, two fuel shutoff valves, one electrical fuel pump, one engine mounted mechanical fuel pump and a choke control.

To drain water and sediment from the fuel system, a fuel drain valve is located on the left main landing gear compartment.



Two fuel quantity indicators (one for each wing tank) are located on both sides of the cockpit near the wing roots. Fuel valves are also placed near the fuel quantity indicators, one for each wing fuel tank.



CAUTION

The fuel quantity indicator will start showing diminishing fuel quantity only when there are 8,5 Gals (32 liters) remaining in each tank. This is due to the dihedral effect of the wing.

NOTE

[00] Issued: 07/15/2007
[07.4] Date of Revision: 01/17/2022

Fuel indication is reliable only when on straight and level flight or on ground.

The fuel system does not have a fuel selector valve. Instead, each main (wing) tank has its own fuel shutoff valve.

CAUTION

Before takeoff, make sure that at least one fuel shutoff valve is open. We strongly recommend that both fuel valves are open.

Hull residual water drainage

An electrical bilge pump is provided to drain residual water from inside of the hull. The water outlet pipe is located in the left main landing gear compartment (close to the drain valve). The bilge pump switch is located on the electrical panel on the roof console. This pump can drain up to 360 gallons/hour, which is about 20 liters/minute

Electrical system

DC power is supplied by a battery located behind the right passenger seat.
All electrical control devices are installed on the roof panel, as far as possible from water. A Master Switch, protected by a red cover (when lowered will interrupt all power) is located on the roof center panel. The Ignition Switch, located at same panel is of the Left – Right – Both – Start type.

The switches are green colored and will illuminate when ON. The standard electrical sub-systems are Landing lights, Strobe lights, Navigation lights, Bilge pump, Electrical fuel pump, Electrical instruments (Artificial Horizon, Directional Gyro, Turn and Bank Indicator) and Cabin Lights.
A 12 Volt lighter-type socket can be installed on the right side of the instrument panel to allow the connection of accessories, i.e. portable **stand alone** GPS.

The circuit breakers are of the “POP” type (in case of overload they pop out). There are circuit breakers for each electrical sub-system plus for the engine instruments, radio and transponder.
Battery charging malfunction is indicated by a red light located beneath the green landing lights.

Landing Gear

The retractable tricycle landing gear is electrically actuated. All landing gear legs have shock absorbers and main landing gear legs retract sideways to appropriate bays. The nose landing gear leg retracts forward and up into a watertight compartment in the nose.

The landing gear actuator switch is located on the forward side of top panel.

The nose wheel **swivels** freely, which allows the Seamax to pivot 360º on one of the main wheels.

Three green lights on the center console indicate that the **landing** gear is down and locked.

Two mirrors, one on each wing float, allow visual check of the main landing gear position ~~a~~ **as well the nose landing gear position.**

There is no emergency landing gear extension mechanism. In case the landing gear is stuck in the Up and Locked position, a water landing will be the best solution. In case a water landing is not an option or the landing gear is in an intermediate position, one can land on the hull. The resulting damage is minimal.

Brakes

Each main landing gear wheel is equipped with a hydraulic disk brake. The brakes are independently actuated by toe pedals on top of the rudder pedals.

Directional control on the ground is achieved by differential braking.

Rudder

Is conventional type operated by the rudder pedals and actuated by steel cables.

Water Rudder

The Seamax M-22 is equipped with a water rudder to facilitate maneuvering on the water. It is lowered and raised by actuating a lever located between the seats, behind the armrest.

NOTE

The water rudder is controlled by the rudder pedals and can be used only at low taxing speeds, with engine at idle.

The water rudder is kept in the DOWN position by a spring. In case it collides with an obstacle it will retract freely.

CAUTION

Do not try to take off with water rudder down.

Stabilator

The stabilator is actuated by push/pull tubes, with rod ends. Two belcrancks inside the fuselage, allows shorter push/pull tubes, a total of three, from the control stick to the stabilator.

Ailerons

Ailerons are actuated by the central control stick, through steel cables, pulleys and push/pull rods.

Flaps

Flaps are electrical actuated by a spring loaded switch located at left side of front panel. At the right side of the flap switch, five lights indicate the flap deflection. First one is red and indicates negative deflection. The other four are green and indicate progressive deflection from 0 to **35^0** degrees. Between the red and first green light is the neutral position, where no led is lighted.
Flap deflection can also be visually checked thought the rear side windows.

Stabilator Trim System

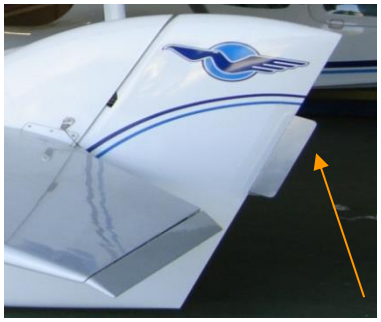
The pitch trim is electrically actuated. A pitch trim switch is located on top of the control stick. Trim position can be visually checked on the trim position indicator located on the main instrument panel.

Aileron Trim System

If necessary a fixed trim tab can be installed by a certificated mechanic on the aileron trailing edge, for trim purposes.

Rudder Trim System

A fixed rudder trim tab located in the trailing edge of rudder is used to trim yaw.



Cockpit

The Seamax M-22 cockpit is fully enclosed by a bubble-type Plexiglas canopy. The canopy hinges up and forward and is held open by two gas springs.

Canopy opens upward and forward.

Canopy lock in open position.

Two locks, one on each side, ensure that the canopy remains fully closed during flight. The locks can be actuated from inside as well as from outside the cockpit. The lock on the left side has a key.

NOTE

The canopy is locked when both lock arms are in the horizontal position.

To help **enter and leave the** cockpit, a hand hold is provided on the top of the instrument upper dash panel. To get in the cockpit, just put a leg inside the cockpit, hold the recess and then step upright in the cockpit, moving the other leg inside and then sit down. To move out, just do the reverse movement.

CAUTION

Do not use the top (ceiling) console as a hand hold. It can break.

Cabin heater is optional for cold countries.

Seats and Seatbelts

The seats may be moved forward or aft (on the ground) and the set back adjusted to any comfortable angle (on the ground and in flight). Safety belts are of the H (4 point) type.

Seats have to be adjusted before flight; lift the bottom cushion, remove the fixation bar, adjust according to each person and finally reposition the fixation bar.

To adjust the tilt position in the seat, press the backward ball into the rear seat bar and adjust properly until ball is fixed again into cylinder.

Baggage Compartment

The baggage compartment is located behind the seats. It is accessible from inside the cabin. Maximum load in the baggage compartment is 45 lb (22.5 lb in each side).

CAUTION

Always check the airplane weight and Center of Gravity position before flight.

Ballast

In solo flight it is sometimes necessary to use a 15.5 lb lead ballast to keep the center of gravity within limits. The lead ballast is inserted into a suitably shaped compartment on the forward right side of the cockpit.

15.5 lb ballast being inserted into its proper position.

WARNING

Whenever flying solo, make sure the lead ballast is placed in its compartment. Failure to do so may cause the center of gravity to fall outside the aft limit.

Flight Controls

The Seamax M-22 flight control system consists of ailerons, rudder and stabilator (single piece stabilizer and elevator). These control surfaces are manually operated through mechanical linkage using a single central stick for the ailerons, stabilator and pedals for the rudder (and also the water rudder, when in the down position).

The electrically actuated slot-type wing flaps move back when lowered, thus acting as Fowler flaps. The flap switch is located on the low left side of the instrument panel. This is a spring loaded continuous actuation switch, i.e. the flaps can be set to any position between -5º (reflexed) and +35º (full DOWN). Five position lights, next to the flap switch, indicate the following typical flap settings:

Red light ON.....	- 5º
All lights OFF.....	0º
One green light ON.....	+ 10º
Two green lights ON.....	+ 18º
Three green lights ON	+ 28º
Last Three green lights ON.....	+ 35º

NOTE
Flap angles are average values

[00] Issued: 07/15/2007

Pitot – Static System

The Pitot tube is located on the left wing lower surface. Pitot tube can be removed from the wing for transport, just twist and pull out gentle.
The static port is inside the cockpit.

Instrument Panel

The Seamax M-22 standard instrument panel is composed of a set of VFR flight instruments plus a complete set of engine monitoring instruments. There are several options of instrument panel layout, depending on customer requirements. The three typical instrument panel layout is shown below:

Performace Trim 	• Altimeter • Airspeed • Climb • Compass • RPM • Oil Temp • CHT • Oil Pressure • Voltimeter • Fuel Pressure • Hourimeter • Radio GTR – 225 Garmin • Transponder Appareo Stratus ADS-B • Antenna AV-10 • Antena RAMI AV-22 • Module -S • Aera 760 • ELT
Exclusive Dual 	• Garmin G3X GDU 10.6” Landscape Touch • Display W/ Sirus XM • Integrated Communication System • Parking Brake • External Camera • 02 Jacks 12V (USB)
	• 10” SkyView HDX Display bundle • Class 1 SV-XPNDR-261. TRANSPONDER – ADS-B • RAMI AV-74 DME XPDR ANT TSO • DUAL BAND TRAFFIC AND WEATHER RECEIVER • BACK UP BATTERY • COMPLIANT RECEIVER / ANTENA (2 units) • REMOTE MAGNETOMETER • DYNON SKYVIEW KNOB CONTROL PANEL HORIZONTAL • PRIMARY MODULE (INCLUDE OAT) • DYNON AUTOPILOT SERVO SV42 STANDARD ARM • DYNON AUTOPILOT GENERIC SERVO

[00] Issued: 07/15/2007
[07.4] Date of Revision: 01/17/2022

	MOUNT KIT • Dedicated AP control, Trim Controller • DYNON SKYVIEW INTERCOM VERTICAL • Dynon Skyview Com Radio • SkyView Engine Monitoring Module • 3 NETWORK CABLE FOR DYNON SKYVIEW • DYNON SKYVIEW NETWORK 5 PORT HUB • DYNON SKYVIEW 1.5 NETWORK CABLE SV-NET-1.5CC • 10 NETWORK CABLE FOR DYNON SKYVIEW • DYNON SKYVIEW 1 NETWORK SPLITTER • 6 NETWORK CABLE FOR DYNON SKYVIEW • DYNON SKYVIEW DISPLAY HARNESS • ELT KIT WITH WHIP ANTENNA USA • SIRS NAV COMPASS UNLIT NH • Dynon Kavlico Rotax 912 Probe Package • Antena do radio • Network Autopilot Servo Wiring Kit Includes 20 • HARNESS FOR SV - ADSB 470/472 • HARNESS FOR SV - XPNDR 261/262 • HARNESS FOR INTERCON

Throttles

The Seamax M-22 standard version has two throttles, one on each cabin wall. The left throttle is equipped with a friction lock.

A throttle lever is available in each side of the cabin in the lateral panel.
On the pilot side, an adjustable friction lock is provided.

5. Weight and Balance Information

Each particular aircraft, depending on the engine model, accessories, optional equipment, interior finishing and painting, has its own empty weight and center of gravity (CG) position. Before the first flight, the aircraft is weighed and the position of its CG calculated. An initial empty weight and balance report is provided by Seamax as part of the aircraft records

After a few years of aircraft operation the aircraft's weight and CG position will change due to repairs, modifications and equipment changes. The same happens each time new equipment is added or removed. These changes require the empty weight and balance report to be updated by qualified maintenance personnel whenever they occur.

CAUTION

The performance, stability and control of the aircraft are directly affected by its weight and CG position.

This section describes procedures for weighing the aircraft and determining the weight and CG position for different loading arrangements.

5.1 Installed equipment list

Standard equipment

Outside paint, UV resistant, PU base white

Outside decorative stripes in vinyl

One piece canopy, tinted green with two snap vents

Inside leather finishing

Four points seat belts

Adjustable seats, with leather cushions

Carpets for both sides

Front pockets in leather

Central joystick mount

Dual power levers

Dual hydraulic brakes, differential for steering

Electric pitch trim with indicator on instrument panel

Electric actuated flaps, with indicator lights on instrument panel

Two fuel valves, one for each tank

Two wing tanks and a central header tank

Retractable, electric activated landing gear with indicator lights on instrument panel

Ignition switch with key

Circuit brakes for all electric system

Retractable water rudder

Landing lights

Strobe lights

Navigation lights

Electric bilge pump

5.2 Structural Limitations

Maximum Total Weight:	1320 lbs (600 kg)
Maximum Weight in each Baggage Compartment:	45 lb (22,5 kg)

5.3 Takeoff Weight

Minimum Pilot Weight (solo Flight):	121 lb	(55 kg)
Ballast Weight for Solo Flight:	15.5 lb	(7 kg)
Maximum Takeoff Weight (MTOW) :	1320 lb	(600 kg)
Maximum Landing Weight:	1320 lb	(600 kg)

[00] Issued: 07/15/2007
[05] Date of Revision: 03/08/2018

5.4 Center of gravity (CG) range and determination

Center of Gravity Range:	17.7 to 27.0 inches aft of datum
Reference Datum:	Wing root leading edge with the airplane leveled.
Level:	Bottom of the wing, near root with 4.6 degrees of attack (to raise the nose)

5.4.1 Weight and Center of Gravity Position Calculations – Basic Empty Aircraft

The aircraft empty weight and center of gravity position shall be determined using instructions described in AMM chapter 2.8 Weight and balance information and shall be documented in a current empty weight and balance report.

5.4.2 Weight and Center of Gravity Position Calculations – Loaded Aircraft

The table bellow is used for determining the center of gravity of the aircraft loaded for flight with pilot, passenger, fuel baggage, etc, and assuring that the loaded weight and center of gravity position are within the allowable limits. This determination shall be performed prior to each flight.

A sample loading is show in the table bellow, however, the actual loaded weight and center of gravity check for any given flight will be different, based on differing weights and center of gravity locations of the empty aircraft, pilot an passenger weights fuel loading, baggage loading, etc.

Use the following procedure to determine the loaded weight and center of gravity position.

1. Photocopy of the blank weight and balance form provided on one of the following pages.
2. Enter the N-number and serial number of the aircraft at the top of the form.
3. Enter the empty weight, moment, and center of gravity position from the current aircraft empty weight and balance report into the appropriate columns in Lines 1.1 and 1.2. Line 2.1.
4. Enter the weight of the pilot in the weight column of Line 2.1. **NOTE:** arm measurements are obtained from the Aircraft Maintenance Manual (AMM). The pilot and passenger seats are adjustable plus or minus one inch from the nominal values listed in the AMM; enter the current value considering the seat adjustment.
5. Multiply the pilot's weight by the pilot's arm and enter the result in the Moment column.
6. Repeat steps 2 and 3 for the passenger, fuel, baggage, and any other item of weight to be carried on the aircraft. If the 15.5 lb ballast weight is installed in its receptacle in the forward cockpit, include its weight using the correct arm for the receptacle. If the ballast weight is to be carried in the baggage compartment, use an arm measurement appropriate to the baggage compartment.
7. Add all the weights to obtain a total loaded weight and enter the result on Line 3.1 in the

weight column.

8. Add all the moments to obtain a total loaded moment and enter the result on Line 3.1 in the Moment column.
9. Divide the total moment by the total weight and enter the result on Line 3.2 in the Arm column. This is he loaded center of gravity position.
10. Enter the maximum takeoff weight on Line 3.3 in the weight column. Assure that the total loaded weight is equal or less than the maximum takeoff weight.
11. Enter the allowable forward and aft center of gravity limits in the appropriate columns of Line 3.4. Assure that the loaded center of gravity position is within the allowable limits.

WARNING

Do not operate the aircraft if the loaded weight exceeds the Maximum Takeoff Weight (1320 lb or 600 kg) or the Center of Gravity falls outside its allowable limits (17.7 to 27.0 inches aft of the Datum).

NOTE

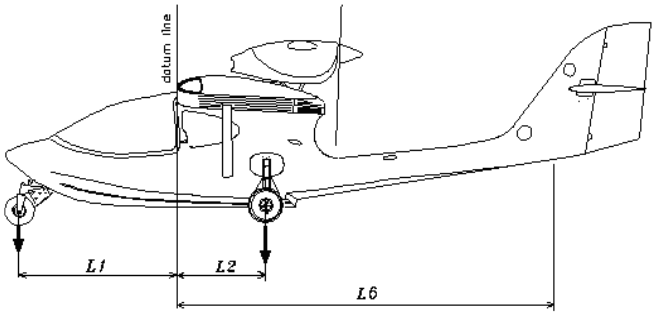
It is strongly recommended that the aircraft operator produce a table with the more common aircraft loading configurations to allow rapid determination of the weight and center of gravity position.

5.5 Table for Weight and Balance Calculations

The loading show bellow is only a typical sample. Photocopy the blank form on the next page to use for an actual flight. The current weight of each aircraft is register in the current weighting record.

Weight @ CG position

Tail Number		Maker	**SEAMAX AIRCRAFT**
Model	**Seamax M-22**	S/N:	
Datum	***leading edge of wing***		
level	***bottom of wing, near root with 4,6 degrees of attack.***		



Basic Empty Weight

[00] Issued: 07/15/2007

		① Weight lb	② Arm in	③=①x② Moment in.lb
1. O	)			
1.1	From empty weigh and balance report	**795,4**		25.403,6
1.2	Empty weight CG *(typical)*		31,94	
2. Itens to add or to subtract	**LOAD**			
2.1 pilot		**200**	**-1**	**-200**
2.2 passenger		169	-1	-169
2.3 fuel		157	5.5	863.5
2.4 baggage		45	15.5	697.5
2.5 ballast			-56.95	0
2.6				0
2.7				0
2.8				0

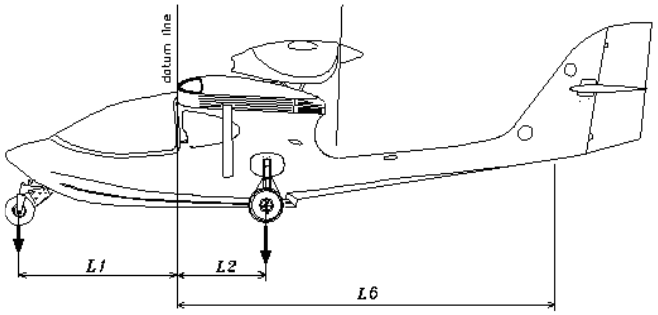
3. Weight and C.G.		⑥	⑦=⑧/⑥	⑧
3.1 Take off Weight amd moment (lb)	Summ	**1,366.4**		**26,595.6**
3.2 Take off CG ; inchs from Datum			19.46	
3.3 Maximum takeoff weight		**1320**		
3.4 C.G limits (inches)	front	**17.70**	rear	**27.0**

Date: Operatorr

Take Off Weight (**TOW**) = Operational Empty Weight (**EOW**) + **LOAD**
Total Moment (**Tm**) = Empty Moment **(Em)** + Load Moment (**Lm**)
CG Position = Total Moment (**Tm**) / Take Off Weight (**TOW**)
Datum Line: Wing Leading Edge at Wing Root

Weight @ CG position

Tail Number	***N-***	Maker	**SEAMAX AIRCRAFT**
Model	**Seamax M-22**	S/N:	
Datum	***leading edge of wing***		
level	***bottom of wing, near root with 4,6 degrees of attack.***		



Basic Empty Weight

			① Weight lb	② Arm in	③=①x② Moment in.lb
1. *Operational Empty Weight (EOW)*					
1.1	Basic Empty Weight and moment	From empty weigh and balance report			
1.2	Empty weight CG *(typical)*				
2. Itens to add or to subtract		**LOAD**			
2.1	pilot		**200**		
2.2	passenger		169		
2.3	fuel		157		
2.4	baggage		45		
2.5					
2.6					
2.7					
2.8					

3. Weight and C.G.						
3.1 Take off Weight amd moment	(lb)	Summ				
3.2 Take off CG ; inchs from Datum						
3.3 Maximum takeoff weight			**1320**			
3.4 C.G limits (inches)		front	**17.70**	rear	**27.0**	

Date: Operatorr

Take Off Weight (**TOW**) = Operational Empty Weight (**EOW**) + **LOAD**
Total Moment (**Tm**) = Empty Moment **(Em**) + Load Moment (**Lm**)
CG Position = Total Moment (**Tm**) / Take Off Weight (**TOW**)
Datum Line: Wing Leading Edge at Wing Root

[00] Issued: 07/15/2007
[05] Date of Revision: 03/08/2018

6 Performance

The Seamax M-22 is equipped with Rotax 912 S engine and a three blade Warp Drive or Sensenich propeller.

All the performance data shown below apply at sea level and international standard atmosphere conditions. Operation at higher altitudes will reduce performances, as shown on table.

Example 1: Temperature effects compared to the same condition of weight, flap and density altitude in a typical aircraft (reference to 0º C):

Temperature ºC	Increase in take off roll	Increase in take off total distance
10	8 %	7 %
20	15 %	15%
30	24 %	23,5 %
40	33 %	32 %

Example 2: Pressure altitude effects compared to the same condition of weight, flap and temperature in a typical aircraft (reference to sea level):

Increase in PA	Increase in take off roll	Increase in take off distance
1000	9 %	10 %
2000	20 %	21%
4000	46 %	48 %
8000	118 %	136 %

6.1 Takeoff and landing distances

Take off roll	432 ft
Take off distance over a 50 ft (15 M) obstacle	599 ft
Landing roll	520 ft
Landing distance over a 50 ft (15 M) obstacle	1100 ft

6.2 Rate of climb

Best rate of climb 850 ft/m at 57 kts (66 mph) ,10 degrees of flaps (one green light)

6.3 Cruise speeds

Cruise speed at 4800 rpm (60% power)	85 kts	98 mph
Cruise speed at 5000 rpm (75% power)	94 kts	108 mph

[00] Issued: 07/15/2007
[06] Date of Revision: 06/08/2018

Cruise speed at 5200 rpm (cruise speed) 101 kts 117 mph

6.4 RPM

The Warp Drive or Sensenich three blade propeller should be adjusted per manufacturer instruction to 5150 to 5250 rpm, static on ground. With this pitch adjustment, normal engine rpm will be:

Idle	1500-1700 rpm
On take off roll	5300-5400 rpm
Climbing	5300-5500 rpm
Cruise	4200-5500 rpm
Maximum rpm (5 minutes)	5800 rpm

6.5 Fuel consumption

Fuel consumption at take off	5.1 gph (19 l/h)
Fuel consumption at cruise	3.4 – 5.8 gph (12 – 21 l/h)

Consult Rotax operation manual for more details about limits, performance and consumption.

7 Emergency Procedures

Emergencies caused by airplane or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced.

Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered.

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

7.1 Stalls

A stall can make the Seamax M-22 lose about 200 ft.

To recover from a stall, move control stick to a gentle pitch down position and apply full power.

After the airspeed increases above stall speed, slowly pitch nose up to the level flight position.

To recover from a stall spin, level the ailerons (center the stick), move stabilator to neutral, use rudder (pedals) opposite to the spin direction. After the rotation has stopped, continue with normal stall recovery procedure.

7.2 Engine Failure

Engine failure could be for many reasons as example, loss oil pressure, high oil pressure, alternator failure, overvoltage.

In case of high or low oil pressure, reduce engine power setting to the minimum necessary and carry out precautionary landing, because you can get the stop engine suddenly!

7.2.1 During Takeoff Run

If the aircraft did not reach V_1, that is, the maximum speed in the takeoff at which the pilot must take the first action (e.g., apply brakes, reduce thrust) to stop the airplane within the accelerate-stop distance and the minimum speed at which the takeoff can be continued and achieve the required height above the takeoff surface within the takeoff distance. In this context, V_1 is the takeoff decision speed

1. Throttle - IDLE.
2. Brakes - APPLY.
3. Ignition Switch - OFF.
4. Master Switch - OFF.

7.2.2 Immediately after Takeoff

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after takeoff.

In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstacles.
Altitude and airspeed are seldom sufficient to execute a 180º gliding turn necessary to return to the runway.

1. Lower aircraft nose and establish a glide.
2. Airspeed (with flaps - one green light ON) – 52 kts 60 MPH.

NOTE

In case of a water takeoff, with enough room ahead, perform an emergency landing on water.

3. Throttle – IDLE.
4. Fuel Valves – Both CLOSED.
5. Flaps – as required
6. Ignition Switch - OFF.
7. Landing Gear – RETRACT if there is the possibility of landing on water, soft terrain or tall grass.
8. Master Switch – OFF.
9. Canopy – UNLOCK immediately before touchdown.
10. Touchdown - SLIGHTLY TAIL LOW.
11. Airplane – EVACUATION PROCEDURE.

7.2.3 During Flight

1. Airspeed – 65 MPH (75 MPH if propeller stopped).
2. Throttle – IDLE.
3. Fuel Pump – ON.
4. Fuel Valves - BOTH OPEN.
5. Ignition Switch -- BOTH (or START if propeller is stopped).

NOTE

An engine stopped in flight cools down very rapidly. If the engine is cool, consider using CHOKE to start the engine

6. Master Switch - ON.
7. After Engine Start – ACCELERATE GRADUALLY

CAUTION

Do not try to restart the engine bellow 300 ft If the engine refuses to restart, perform a forced landing.

7.3 Overturn on Land

After the airplane stops

Unfasten seat belts
Open canopy
Leave the airplane immediately. Be careful, and pay attention to possible fuel spilling and potential fire problems,

7.4 Forced Landings

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field (land or water) and prepare for the landing as discussed in the checklist for Emergency Landing without Engine Power.

NOTE

Whenever a runway is not available for a safety landing always position the landing gear in the up position on forced landings.

Before attempting an "off airport" landing with engine power available, one should fly over the landing area at a safe but low altitude to inspect the terrain for obstructions, surface conditions and wind direction, then proceed as discussed under the Precautionary Landing with Engine Power checklist.

Prepare for forced landing by securing heavy objects located in the baggage area and use folded coats or other soft materials for protection of occupants' face at touchdown. Fasten and tighten seat belts. Transmit Mayday message on 121.5 MHz giving location and intentions and squawk 7700 if a transponder is installed.

CAUTION

In a forced landing situation, do not turn off the master switch until a landing is assured. Premature deactivation of the switch will disable the encoding altimeter and airplane electrical systems, namely flaps and trim.

Unlock the canopy immediately before touchdown to prevent canopy locks jamming.

7.4.1 Emergency land without engine power

1. Airspeed – 65 MPH (57 kts) (flaps UP).
2. Throttle – IDLE.
3. Fuel Valves – BOTH CLOSED.
4. Ignition Switch -- OFF.
5. Flaps – ONE Green Light ON (+10º).

6. Reduce Airspeed – 60 MPH (52 kts).
7. Landing Gear - DOWN (UP if terrain is rough or soft).
8. Flaps – Gradually FULL DOWN All Green Lights ON (+35º)..
9. Reduce Airspeed – 50 MPH (43 kts).
10. Canopy - UNLOCK PRIOR TO TOUCHDOWN.
11. Master Switch -- OFF when landing is assured.
12. When Landing is Assured, Reduce Airspeed – 45 MPH (39 kts).
13. Touchdown -- SLIGHTLY TAIL LOW.
14. Brakes -- APPLY HEAVILY. (If landing gear is down)

7.4.2 Precautionary landing without engine power

1. Airspeed - 65 MPH (57 kts).
2. Flaps – ONE GREEN LIGHT ON (10º).
3. Selected Field -- FLY OVER, noting terrain, obstructions and wind direction.
4. Electrical Switches – OFF (except Ignition and Master Switches).
5. Airspeed – 60 MPH (52 kts).
6. Flaps – TWO GREEN LIGHTS ON (+18º).
7. Airspeed – 48 MPH
8. Landing Gear - DOWN (UP if terrain is rough or soft).
9. Flaps – FULL DOWN 3 last green lights ON (+35º).
10. Airspeed – 45 MPH (39 kts)
11. Canopy - UNLOCK PRIOR TO TOUCHDOWN.
12. Ignition Switch - OFF.
13. Master Switch – OFF.
14. Touchdown -- SLIGHTLY TAIL LOW.

7.4.3 Water landing or eventual Ditching

1. Radio - TRANSMIT MAYDAY on 121.5 MHz, giving location and intentions and SQUAWK 7700 if transponder is installed.
2. Heavy Objects (in baggage area) - SECURE.
3. Life Vests – PUT ON and Check Condition
4. Landing Gear - UP.
5. Airspeed – 60 MPH (52 kts)
6. Flaps – TWO GREEN LIGHTS ON (+18º).
7. Power -- ESTABLISH 300 FT/MIN DESCENT.
8. Approach - High Winds, Heavy Seas -- INTO THE WIND.
   Light Winds, Heavy Swells - PARALLEL TO SWELLS.

NOTE

If no power is available, approach at 54 MPH (47 kts) with flaps ONE Green Light ON or at 48 MPH (42 kts) with Two Green Lights ON.

9. Flaps – FULL DOWN 3 last green lights ON (+35º).
10. Airspeed – 45 MPH (39 kts)
11. Canopy – UNLOCK IMMEDIATELY BEFORE TOUCHDOWN.

12. Touchdown - LEVEL ATTITUDE AND SLIGHTLY TAIL LOW.
13. Face - CUSHION at touchdown with folded coat.
14. Seatbelts - OPEN
15. Airplane - EVACUATE IMMEDIATELY. If necessary, open windows and flood cabin to equalize pressure so canopy can be opened.
16. Life Vests and Raft -- INFLATE.

NOTE

Whenever flying over water, life jackets must be worn during the flight.

7.5 Fires

7.5.1 During Engine Start on ground

1. Cranking -- CONTINUE, attempting to start the engine, which would suck the flames and accumulated fuel through the carburetor and into the engine.
2. Fuel Pump – OFF.
3. Choke – OFF.
4. Engine – 2500 RPM for 2 or 3 minutes.
5. Ignition Switch - OFF

If engine does not start:

6. Throttle – FULL OPEN.
7. Fuel Valves – BOTH CLOSED.
8. Cranking – CONTINUE until all fuel in fuel lines is exhausted.
9. Ignition Switch – OFF.
10. Master Switch - OFF.
11. ABANDON Airplane.
12. Fire - EXTINGUISH using fire extinguisher, wool blanket, or dirt.
13. Fire Damage - INSPECT, repair damage or replace damaged components or wiring before conducting another flight.

7.5.2 Engine fire on takeoff

If still on the ground or with sufficient runway ahead (V1 decision take off speed not reached)

1. Throttle – IDLE.
2. Brakes – APPLY.
3. Ignition – OFF.
4. Master Switch – OFF.
5. Fuel Valves – BOTH CLOSED.
6. ABANDON Airplane.
7. Fire - EXTINGUISH using fire extinguisher, wool blanket, or dirt.

If on the takeoff run with not enough runway to stop (Speed higher than V1)

1. Throttle – FULL OPEN.
2. Flaps – One Green Light ON (+10º).
3. Airspeed – 70 MPH (V_Y) (61 kts)
4. Altitude – Enough for traffic pattern.
5. Flaps – AS NECESSARY

When on Final Approach, Landing Assured:

6. Throttle – IDLE.
7. Ignition Switch – OFF.
8. Master Switch – OFF.
9. Fuel Valves – BOTH CLOSED.
10. Fuel Pump – OFF.
11. Airspeed – 45 MPH (39 kts)
12. Canopy – UNLOCK IMMEDIATELY BEFORE TOUCHDOWN.
13. Brakes -- APPLY HEAVILY.
14. Airplane – ABANDON
15. Fire - EXTINGUISH using fire extinguisher.

7.5.3 Engine fire in flight

1. Throttle - IDLE.
2. Fuel Valves – BOTH CLOSED.
3. Ignition Switch - OFF
4. Master Switch - OFF.
5. Airspeed – 65 MPH (56 kts) (If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture).
6. Forced Landing - EXECUTE (as described in Emergency Landing without Engine Power).

7.5.4 Electrical fire in flight

1. Master Switch - OFF.
2. Avionics Power Switch - OFF.
3. All Other Switches (except ignition switch) - OFF.
4. Vents/Cabin Air - CLOSED.
5. Fire Extinguisher - ACTIVATE (if available).

After discharging an extinguisher within a closed cabin, ventilate the cabin.
If fire appears out and electrical power is necessary for continuance of flight:

6. Master Switch - ON.
7. Circuit Breakers - CHECK for faulty circuit, do not reset.

8. Radio Switches - OFF.
9. Radio/Electrical Switches - ON one at a time, with delay after each until short circuit is localized.
10. Vents/Cabin Air/Heat - OPEN when it is ascertained that fire is completely extinguished.
11. Land the airplane as soon as possible to inspect for damage.

7.5.5 Cabin fire

1. Master Switch - OFF.
2. Vents/Cabin Air - CLOSED (to avoid drafts).
3. Fire Extinguisher -- ACTIVATE (if available)

NOTE

.After discharging an extinguisher within a closed cabin, ventilate the cabin.

4. Land the airplane as soon as possible to inspect for damage.

7.5.6 Wing fire

1. Navigation Light Switch - OFF.
2. Strobe Light Switch (if installed) - OFF.
3. Land as soon as possible

WARNING

Perform a sideslip to keep the flames away from the fuel tank and cabin, and land as soon as possible using flaps only as required for final approach and touchdown.

4. ABANDON the aircraft on the side opposite to the fire.
5. Fire Extinguisher -- ACTIVATE (if available).

7.6 Icing

7.6.1 Icing conditions

WARNING

Flight into icing conditions is prohibited. An inadvertent encounter with these conditions can best be handled by turning back or changing altitude to escape icing conditions.

7.6.2 Inadvertent icing encounter

1. Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.
2. Increase engine speed to minimize ice build-up on propeller blades.
3. Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.
4. With an ice accumulation of 1/4 inch or more on the wing leading edges, be prepared for significantly higher stall speed.
5. Leave wing flaps retracted. With a severe ice build-up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
6. Open the window and, if practical, scrape ice from a portion of the windshield for visibility in the landing approach.
7. Perform a landing approach using a forward slip, if necessary, for improved visibility.
8. Perform a landing in level attitude.

7.7 Landing Gear Malfunction Procedures

7.7.1 Landing gear fails to retract

1. Master Switch - ON.
2. Landing Gear Lever – CHECK, Up position.
3. Landing Gear Circuit Breaker - IN.
4. Landing Gear Lever - RECYCLE.
5. Gear Motor -- CHECK operation (ammeter and noise).
6. Landing Gear Position – CHECK Visually Position of Main Gear Legs

WARNING

DO NOT attempt a water landing if you are not sure that the landing gear is in the UP position.

7.7.2 Landing gear fails to extend

1. Master Switch - ON.
2. Landing Gear Lever – CHECK, DOWN position.
3. Landing Gear Circuit Breaker - IN.
4. Landing Gear Lever - RECYCLE.
5. Gear Motor -- CHECK operation (ammeter and noise).
6. Landing Gear Position – CHECK visually position of main gear legs

7.7.3 Gear up landing on ground

1. Landing Gear Lever - UP.
2. Landing Gear Circuit Breaker - IN.

3. Runway - SELECT longest hard surface or smooth sod runway available.
4. Wing Flaps – FULL DOWN on final approach - 3 green lights on (+35º).
5. Airspeed – 42 MPH.
6. Master Switch - OFF when landing is assured.
7. Touchdown -- SLIGHTLY TAIL LOW.
8. Ignition Switch - OFF.
9. Fuel Valves – BOTH CLOSED.
10. Airplane - EVACUATE.

7.7.4 Landing without positive indication of gear locking

1. Before Landing Check - COMPLETE.
2. Approach - NORMAL (full flap).
3. Landing Gear Circuit Breaker - IN.
4. Landing - TAIL LOW as smoothly as possible.
5. Braking - MINIMUM necessary.
6. Taxi - SLOWLY.
7. Engine - SHUTDOWN before inspecting gear.

7.7.5 Landing with a defective nose gear (or flat nose tire)

1. Movable Load - TRANSFER to baggage area.
2. Seatbelts - Tighten.
3. Before Landing Checklist - COMPLETE.
4. Runway - HARD SURFACE or SMOOTH SOD.
5. Flaps – FULL DOWN- 3 green lights on (+35º).
6. Master Switch - OFF when landing is assured.
7. Land - SLIGHTLY TAIL LOW.
8. Ignition Switch - OFF.
9. Fuel Valves – BOTH OFF.
10. Elevator Control - HOLD NOSE OFF GROUND as long as possible.
11. Airplane -- EVACUATE as soon as it stops.

7.7.6 Landing with a flat main tire

1. Approach - NORMAL
2. Touchdown - GOOD TIRE FIRST, hold airplane off flat tire as long as possible with aileron control.
3. Directional Control -- MAINTAIN using brake on good wheel as required.

7.8 Electrical Power Supply System Malfunctions

LOW-VOLTAGE LIGHT ILLUMINATES DURING FLIGHT (Ammeter Indicates Discharge)

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

NOTE

Illumination of the low-voltage light may occur during low RPM conditions with an electrical load on the system such as during a low RPM taxi. Under these conditions, the light will go out at higher RPM. The master switch need not be recycled since an over-voltage condition has not occurred to de-activate the alternator system. Momentary illumination and/or ammeter needle deflection may also occur during startup of the landing gear system hydraulic pump motor.

1. Avionics Power Switch -- OFF.
2. Alternator Circuit Breaker -- CHECK IN.
3. Master Switch – OFF
4. Master Switch -- ON.
5. Low-Voltage Light -- CHECK OFF.
6. Avionics Power Switch -- ON.

   If low-voltage light illuminates again:
7. Alternator -- OFF.
8. Nonessential Radio and Electrical Equipment -- OFF.
9. Flight -- TERMINATE as soon as practical.

7.9 Emergency Descent

In case of emergency descent follow the proceeds below:

1. Throttle - IDLE.
2. Drop the nose down up to ride desinable speed according limits below
3. Minimum Airspeed – 65 MPH (56 kts) , DO NOT across the Vna Airpeed
4. In case emergency landing proceding as described at section 7.2

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

8 Normal Procedures

Before first flight of the day, the Seamax M-22 should be checked with care. Follow those main points, listed below for the daily flight check;

CAUTION

The operator must read and follow instructions on the Rotax 912 manual

1- Check to see that the master switch is off
2- Remove key from ignition key
3- Check throttle position at idle
4- Remove the engine cowling, by unscrewing eleven D-zuz fasteners. Put tail down to make the engine easier to reach
5- Check cooling liquid on overflow bottle. If necessary add cooling liquid as required
6- Check oil level with the aircraft leveled. If low, first action is turn on the engine for 30 seconds. Then check for the proper level on the oil dipstick, must be between the two marks. (With tail down, oil may flow from the bottle to the carter, and show a wrong quantity on the bottle)

NOTE

The Rotax operator manual specifies a procedure before checking the oil. Turning the prop by hand until a gurgling sound is heard.

7- Check all visible bolts, hoses, cables and tubes. Check if they are properly fixed and in good conditions
8- Check exhaust system, looking for loose springs, cracks or signs of unusual wearing;
9- Reinstall the engine cowling. Pay attention to his proper position. Fasten the eleven D-zus fasteners.

For all the other flights during the day, the engine cowling does not need to be removed again, unless strange noises or abnormal behavior occurs.

8.1 Preflight check

8.1.1 Power Plant (First flight of the day)

1. Ignition Switch - OFF.
2. Engine Cowling – REMOVE.
3. Exhaust – NO LEAKS and connections secure.
4. Ignition Harness and Spark Plugs – CHECK condition.
5. Reduction Gearbox and Connected Equipment – CHECK condition.

6. Engine Coolant System – CHECK condition.
7. Engine Coolant Radiator – CHECK condition and attachment points.
8. Engine Coolant Level – CHECK.
9. Engine Oil Radiator – CHECK condition and attachment points.
10. Engine Oil System – CHECK condition.
11. Engine Oil Level – CHECK.
12. Fuel System – CHECK condition.
13. Carburetors – CHECK condition and attachment points.
14. Engine Mount – CHECK condition.
15. Electrical Wiring – CHECK condition and connections.
16. Control Cables – CHECK condition and connections.
17. Propeller – FREE, without abnormal noises.
18. Reinstall engine cowling and fasten all Dzus fasteners.

8.1.2 External Inspection

1. Ignition Switch – OFF.
2. Nose Wheel Compartment – CHECK.
3. Nose Wheel Leg – CHECK condition and retraction mechanism.
4. Nose Wheel Tire – CHECK condition, inflation and marks.
5. Canopy Hinge and Strut – CHECK.
6. Wing Strut and Attachments – CHECK.
7. Fuel Filler Cap – CHECK secure.
8. Right Wing (leading edge, wing tip, upper and lower surfaces) – CHECK clean and condition.
9. Landing Light – CHECK.
10. Navigation Light – CHECK.
11. Aileron and Flap – CHECK condition and free movement.
12. Float – CHECK condition and attachment.
13. Right Main Landing Gear Leg – CHECK retraction mechanism, hinges, bolts, shock absorber and door.
14. Right Wheel – CHECK condition, marks and inflation.
15. Right Wheel Brake – CHECK for leaks and condition.
16. Engine Air Intake – FREE from obstructions.
17. Engine Cowling – CHECK secure (all Dzus fasteners in place – marks matching)
18. Oil and Coolant Radiators – CHECK for condition and leaks.
19. Propeller – CHECK (covers removed, condition of blades, hub and attachment bolts.
20. Propeller – CHECK free movement, absence of abnormal noises and cylinders compression.
21. Fuselage (Right Side, Upper and Lower Surfaces) – CHECK condition.
22. Antennas – CHECK condition.
23. Tail Surfaces (empennage) – CHECK free movement of rudder and elevator, condition of all surfaces, lubrication and control cables connections.
24. Fuselage (Left Side, Upper and Lower Surfaces)– CHECK condition.
25. Left Main Landing Gear Leg – CHECK retraction mechanism, hinges, bolts, shock absorber and door.
26. Left Wheel – CHECK condition, marks and inflation.
27. Left Wheel Brake – CHECK for leaks and condition.

28. Fuel Drain – Use sampler cup and drain small quantity of fuel from fuel system quick-drain valve to check for water, sediment and proper fuel grade until no water or sediment are visible in sampler cup.
29. Bilge Pump Outlet Valve – CHECK unobstructed.
30. Float – CHECK condition and attachment.
31. Aileron and Flap – CHECK condition and free movement.
32. Landing Light – CHECK.
33. Navigation Light – CHECK.
34. Left Wing (leading edge, wing tip, upper and lower surfaces) – CHECK clean and for condition.
35. Fuel Filler Cap – CHECK secure.
36. Wing Strut and Attachments – CHECK.
37. Pitot Tube – remove cover then CHECK for pitot tube blocking .

NOTE
Do not blow into the pitot Tube.
This will cause damage to the pitot System.

39. Canopy –check hinges and strut. Open canopy.

8.1.3 Cabin Internal Inspection

1. Master Switch - OFF.
2. Ignition Switch – OFF.
3. Aircraft Documentation, Insurance, etc. – ON BOARD and valid.
4. Ballast – ON BOARD and secure as required for the flight loading.

WARNING

For solo flights, the ballast MUST be placed in the ballast compartment before takeoff. Failure to do so may cause the position of the Center of Gravity to fall outside approved limits.

5. Life Jackets – ON BOARD and check condition.
6. Fire Extinguisher – CHECK condition, validity and secure.
7. Anchor and Cable - ON BOARD and check condition.
8. Head Sets - ON BOARD and check condition.
9. Maps and Navigation Equipment - ON BOARD and check condition and validity.
10. Seat Position – ADJUST and check for locked position.
11. Loose Objects – SECURE.
12. Control Locks – REMOVE
13. Flight Controls – FREE and CORRECT MOVEMENT.
14. Seat Belts – CHECK condition.
15. Instrument Panel – CHECK condition.
16. Fuel Quantity Indicators – CHECK for condition and leaks.

17. Fuel Quantity Indicators – CHECK fuel quantity (enough for the planned flight plus 30 minutes reserve).
18. All covers – ON BOARD and secure.
19. Luggage – Properly stored and secure.

8.2 Engine Starting

8.2.1 Before Starting Engine

1. Area around the aircraft – FREE.
2. Chocks – REMOVED.
3. Seats, Seat Belts – ADJUST and LOCK.
4. All loose Items – SECURE.
5. Fuel Valves – AT LEAST ONE OPEN.
6. All Switches – OFF.
7. Radios, Transponder, GPS – OFF.
8. Circuit Breakers – ALL IN.
8. Check landing gear switch position DOWN before ….
9. Master Switch – ON.
10. Instruments – CHECK for proper indication.
11. Radio – ON, set desired frequency.
12. Intercom and Had Sets – CHECK.
13. Landing Gear Position Lights – CHECK 3 green lights ON if on land, OFF if on water.

CAUTION

For water operations, the Landing Gear must be in the UP and LOCKED position before taxi.

14. Landing Lights – ON, Check, then OFF.
15. Position Lights - ON, Check, then OFF.
16. Bilge Pump - ON, Check, then OFF.

8.2.2 Starting Engine

1. Fuel – CHECK quantity.
2. Master Switch – ON.
3. Electrical Fuel Pump – ON.
4. Choke – AS REQUIRED (Pull for cold start. Do not use when engine is warm).
5. Throttle – IDLE.
6. Area Around Propeller – FREE.
7. Ignition Switch – START (release when engine starts).
8. Oil Pressure – CHECK 2.0 – 5 bar (29 - 73 psi), 7 bar (101 psi) maximum for cold engine.
9. Warm engine at 2300 rpm until engine oil temperature reaches 50 ºC (120 ºf) minimum.

8.3 Taxiing

8.3.1 Before Takeoff (holding position)

1. Flight Controls – FREE AND CORRECT.
2. Brakes – ON.
3. Flight Instruments – CHECK (pitot cover removed).
4. Engine Instruments – CHECK:
   Oil Temperature – Minimum 50 ºC (120 ºf) ; Maximum 130 ºC (266 ºf)
5. Altimeter – SET and CHECK (plus or minus 60 feet maximum error).
6. Choke – OFF.
7. Flaps – ONE Green Light ON (+10 º) .
8. Trim – SET.
9. Magnetos – CHECK at 3800 rpm. Maximum drop 300 rpm.
10.
11. Idle Speed – CHECK at 1800 rpm and engine running smooth.
12. Canopy – CLOSED AND LOCKED on BOTH sides.
13. Seats and Seatbelts – FASTEN and TIGHTEN.
14. Fuel Quantity – CHECK sufficient for the planned flight + 30 minutes.
15. Fuel Valves – AT LEAST ONE OPEN.
16. Fuel Pump – ON.
17. Navigation Lights – ON.
18. Water Rudder – CHECK RETRACTED.

8.4 Takeoff

8.4.1 Water takeoff

1. Hull Water – DRAIN completely.
2. Bilge Pump – OFF.
3. Water Rudder – RETRACTED.
4. Landing Gear – UP (3 green lights OFF).
5. Aircraft heading wind direction.
6. Flaps – ONE or TWO green lights ON (+10 º-+18 º), as required.
7. Throttle – half FORWARD (4000 rpm).
8. Wings leveled during taxi
9. Control Stick – Slightly backward until the aircraft “lifts to the step”.
10. When “on the step”, control stick **slightly back** to avoid purposing.
11. After 35 mph set control stick to neutral, and accelerate up to 55 mph (48 kts).
11. Climb initially at 60 mph (52 kts).
12. First Climb Segment – 63 mph (55 kts) and FLAPS UP.
13. Fuel Valves – BOTH OPEN.
14. Second Climb Segment – 65 mph.

8.4.2 Ground Normal takeoff

1. Flaps – ONE green light ON (+10º).
2. Throttle – FULL FORWARD (5300 rpm aprox).
3. Lift the nose wheel slightly to accelerate.
4. Lift off at 55 mph (48 kts).
5. Climb at 60 mph (52 kts).
6. Landing Gear – UP.
7. First Climb Segment – 63 mph (55 kts) and FLAPS UP (0 º).
8. Fuel Valves – BOTH OPEN.
9. Second Climb Segment – 65 mph

8.4.3 Ground Short takeoff

1. Flaps – Two green lights ON (18º).
2. Throttle – FULL FORWARD (5300 rpm aprox).
3. Lift the nose wheel slightly to accelerate.
4. Lift off at 52 mph (45 kts).
5. Maintain aircraft in ground effect until reaching 55 mph.
6. Climb at 60 mph (52 kts).
7. Retract flaps to ONE green light ON (+10º).
8. Landing Gear – UP.
9. First Climb Segment – 63 mph (55 kts) and FLAPS UP, all lights off (0 º).
10. Fuel Valves – BOTH OPEN.
11. Second Climb Segment – 65 mph (56 kts).

NOTE

DO NOT attempt a takeoff with Flaps with 3 green lights ON (+35 º). Drag will be very high and the aircraft may not accelerate to takeoff speed.

8.4.4 Climb

1. Flaps – ALL LIGHTS OFF (0º)
2. Throttle – AS NECESSARY (not more than 75%).
3. Trim – ADJUST.

8.4.4.1 Enroute climb

1. Flaps – ALL LIGHTS OFF (0º).
2. Fuel Pump – OFF.
3. Bilge Pump – CHECK OFF.
4. Throttle – AS NEEDED to maintain cruise speed

8.5 Climb

8.5.1 Best angle of climb speed (V_X)

Seamax best angle of climbing speed is 54 kts (62 mph), with 10 degrees of flap (one green led on)

8.5.2 Best rate of climb speed (V_Y)

Seamax best rate of climb speed is 57 kts (66 mph) with 10 degrees of flap (one green led on)

8.6 Cruise

Cruise flight can be performed with rpm between 4200 and 5200, depending on witch speed is chosen.

The flaps can be positioned on the reflex position (-5º) for cruising speed. That will increase cruise speed in about 3-5 mph.

Pay special attention to fuel. To control fuel levels, it is recommended that in normal cruise flight, only one fuel valve be open at a time, switching tanks every 20 minutes.

Both fuel valves can stay open, but one fuel tank may deliver a different amount of fuel than the other.

8.7 Approach

Approach for water on ground landing procedures are the same, except, for water landing, landing gear must be up, and ground landing must be down. Whenever possible head the aircraft towards the wind.

An approach speed of 52 kts (60 mph) a one green led ON of flaps (+10º).

Set power as required, and pay attention to the speed. Slower speed tends to increase airplane sink, and higher speeds can cause overrun on field.

On final approach, set flaps as required, from zero to full flaps.

WARNING

Respect flap speed limits.

8.8 Landing

8.8.1 Before Landing

1. Airspeed – 56 kts (65mph)
2. Fuel Pump – ON.

3. Seats, Seat Belts – ADJUST and LOCK.

WARNING

4. Landing on Land : Landing Gear – DOWN and LOCKED (3 green lights ON).

or

4. Landing on Water: Landing Gear – UP and LOCKED (3 green lights OFF).

5. Flaps – ONE green light ON (+10º).
6. Approach Speed – 52 kts (60 mph)

CAUTION

If flying in rain, increase airspeed by 3 mph.

7. Flaps –PROGRESSIVELY LOWER to last 3 green lights ON (+35º)
8. Airspeed – REDUCE to 45kts (52 mph)
9. Touchdown on Land -38 kts to (44 mph)
10. Touchdown on Water – 43 kts (50 mph)
11. Throttle – IDLE.

WARNING

12. Landing on ground: Control Stick –neutral to a little back.
or
12. Landing on Water: Control Stick – Slightly back, and pulling back progressively as speed decreases, until the airplane stops on water.

8.8.2 Short Field landing

1. Airspeed – 52 kts (60 mph)
2. Fuel Pump – ON
3. Seats, Seat Belts – ADJUST and LOCK.

WARNING

4. – Landing on Land: Landing Gear – DOWN and LOCKED (3 green lights ON).

WARNING

4. Landing on Water: Landing Gear – UP and LOCKED (3 green lights OFF).

5. Airspeed – 52 kts (60 mph)
6. Flaps – PROGRESSIVELY EXTENDED FULL DOWN, three last green lights ON (+35º).
7. Approach Speed – 52 kts (60 mph)

NOTE
If flying in rain, increase airspeed by 3 mph.

8. Airspeed – REDUCE to 42 to 44 mph.
9. Throttle – IDLE.
10. Touchdown on Land – 35 kts to (41mph)
11. Touchdown on Water – 38 kts to (44 mph)

12. Landing on Land: Control Stick – progressively full AFT.

13. Landing on Water: Control Stick – progressively full AFT.

8.8.3 Go Around

1. Throttle – FULL OPEN.
2. Attitude – LEVEL FLIGHT.
3. Flaps – PROGRESSIVELY RETRACT to one green light ON (+10º).
4. Climb at 60 mph.
5. Landing Gear – UP.
6. First Climb Segment – 63 mph and FLAPS UP (0º).
7. Fuel Valves – BOTH OPEN.
8. Second Climb Segment – 65 mph.

8.8.4 After Landing

1. Flaps – UP (0º).
2. Transponder – STBY.
3. Trim – NEUTRAL

8.8.5 Control of the emergency locator transmitter

Check if ELT is activated.

8.8.6 Engine stop

Inflight, the engine is sufficient cooled, but after landing pay special attention to long distance taxi, because the pusher engine may over heat. After shutting down the engine, the temperature inside engine cowling will increase a little before the normal decrease. After a long taxi, let the engine cool down at least 15 minutes before starting it again.

8.8.7 Soft field landing procedures

The procedure to landing on soft field is the same to regular airstrip (see Cap. 8), but you will spend more airstrip, in view of increase of coefficient of friction. The airplane will take more time and space to reach takeoff speed. On the Takeoff just keep the lift on front wheel as much as you can and wait to main landing gear touches the field.

8.9 Water Operation

WARNING

The Seamax M-22 is an amphibious aircraft designed to operate on calm waters. Do not try to operate on open seas when the swell exceeds one foot. Waves more than one foot in height can impose loads on the aircraft exceeding its design limits and prevent the aircraft to from attaining lift off speed.

NOTE

The landing gear can to be used like “drogue” for slowing velocity.
The Seamax it’s equipped with water anchor (1,5 Kgf) , localized in the center console.
It’s must be to use only for anchoring the airplane.

8.9.1 Fuel System

During water operation (taxi, takeoff, landing, mooring, etc.) one of the fuel shutoff valves should be kept CLOSE and the other OPEN.

NOTE

[00] Issued: 07/15/2007
[07] Date of Revision: 09/25/2018

On water, with one of the wings lower than the other, the fuel will tend to flow from the higher wing to the lower wing making it heavier. Taxiing and takeoff will not be possible on this condition.

8.9.2 Cabin Ventilation

NOTE

Water takeoff must be made with the canopy “snap-vents” CLOSED.

Due to the canopy aerodynamics, the water spray will flow attached to the canopy surface. If the “snap-vents” are left open, water will flow inside the cabin.

8.9.3 Water Rudder

To ease water taxi, use the water rudder. The water rudder is lowered by releasing the lever located between the seats, behind the armrest. Use rudder pedals gently with the water rudder down.

NOTE

The water rudder will not lock in the DOWN position. It is kept in the down position by spring load and will move back and upwards if it bumps against an obstacle. Never take off with water rudder down.

CAUTION

The water rudder movement is controlled by the rudder pedals. The slower the water speed the more effective the water rudder is. All water rudder movements must be progressive. Excessive water rudder deflection shall be avoided.

8.9.4 Use of the Bilge Pump

The Seamax M-22 fuselage is watertight. However, fuselage damage, rain water or water that got in due to operation with the canopy or the “snap-vents” open might cause water to accumulate in the lower part of the fuselage. To drain that water the aircraft is equipped with a bilge pump. The aircraft standard bilge pump is not automatic.

WARNING

For aircraft parked on water, check at 30 minutes intervals **and before takeoff** if there is water accumulated in the lower part of the fuselage, by switching ON the bilge pump until all water has been drained. The bilge pump is able to drain uo to 20 liters/minute (360 G/H).

CAUTION

Do not let the bilge pump run continuously. It can be damage if working with no water, also it will deplete the battery.

NOTE

You will hear a different noise from the pump, if it is pumping water, and when there are no more water to drain.

8.9.5 Transition to Land

The transition from water to land can be made with the landing gear down and locked. This transition must be done smoothly and using an appropriate ramp free of obstacles or steps.
When taxing up a ramp, be sure of ramp conditions, and always approach the ramp at 90 degrees.

WARNING

Angled approaches must be avoided due to potential nose landing gear damage.

CAUTION

When transitioning from water to land, retract the water rudder, and make sure that the water is deep enough for lowering the landing gear.

8.10 Short Field takeoff and landing procedures

Take off:
Set 10 to 18 degrees of flaps (one or two green lights on)
Apply full brakes
Apply full throttle
Release brakes
From neutral, start pulling control stick gently back, after reaching 35 kts (40 mph) of airspeed
After take off, keep airplane near ground up to 50 kts (58 mph).
Do not turn the airplane lower than 300 ft

Landing:
Reduce approach speed to 47 kts (55 mph)
After touching the ground apply brakes and progressively pull control stick back to avoid extra stress on nose gear.

8.11 Balked landing procedures

Check if runway and approach to runway are clear

Apply throttle to full position slowly;
Level the plane before starting to climb to a safe altitude
Flaps – PROGRESSIVELY RETRACT to one green light ON (+10º)
Restart approach procedures after climbing to a safe altitude: at least 500 ft

8.12 Information on stalls, spins, and any other useful pilot information

8.12.1 Stalls

A stall can make the Seamax lose about 200 ft.
Before a stall (approximately 2 kts above stall speed), a little buffering is noted. Releasng back pressure on control stick at that point will avoid stall.

To recover from a stall, move control stick to a gentle pitch down position and apply full power.

After the airspeed increases above stall speed, slowly pitch nose up to the level flight position.
To recover from a stall spin, level the ailerons (center the stick), move stabilator to neutral, use rudder (pedals) opposite to the spin direction. After the rotation has stopped, continue with normal stall recovery procedure.

8.12.2 Banked turn

All turns should be coordinated, using ailerons and rudder.

WARNING

Avoid turns with more than 30 degrees of bank.

WARNING

On a 60 degrees of bank, stall speed will be twice than at level flight.

Do not perform tight turns at low altitude.

In case of spin stall, proceed as described on 8.12.1, or 7.1

8.13 Parking and Mooring

8.13.1 Engine Shutdown

1. Parking Brake (if installed) – SET.
2. Throttle – IDLE.
3. Electrical Switches – OFF.
4. Radio, Transponder and GPS – OFF.
5. Ignition Switch – OFF.
6. Master Switch – OFF and remove key.
7. Control Lock – INSTALL.
8. Fuel valves CLOSED

8.13.2 Securing Aircraft

1. Canopy – CLOSED and LOCKED.
2. Wheel Chocks – INSTALL.
3. Wing Tie Downs – TIED.
4. Covers – INSTALL (pitot, canopy, propeller, engine, air intakes).

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

9 Aircraft Ground Handling and Servicing

9.1 Service and Maintenance

9.1.1 Aircraft and engine data plates

The aircraft stainless steel data plate, mounted on left side of the fin, contains the following information:

- Manufacturer
- Model
- Serial Number
- Year of Manufacture

The engine has also a data plate with similar information.

NOTE

The data plates shall not be removed from the aircraft or any part of it. The information contained on the data plates identifies the aircraft, its parts and engine and is necessary for obtaining spare or replacement parts. It also is used to obtain information from the manufacturers regarding Service Bulletins or Service Letters pertaining to that specific type or serial number.

9.1.2 Publications

Various publications and flight operations instructions are furnished with the aircraft when delivered from authorized distributors or agents. Some of these items are:

Seamax M-22 Pilot Operating Handbook (POH);

Rotax engine manufacturer's Operator's Manual

Propeller Installation and Maintenance

Optional Components Installation and Operation Manuals

9.1.3 Aircraft Documentation

To be displayed in the airplane at all times:

- Aircraft Airworthiness Certificate
- Aircraft Registration Certificate

To be carried in the airplane at all times:

- Flight Manual
- Operating Limitations
- Check List
- Weight and Balance Sheets
- Equipment List

To be made available upon request by FAA, NTSB, or law enforcement officials

- Aircraft Maintenance Log Book
- Engine Maintenance Log Book

9.1.4 Normal Care

CAUTION

Do not manhandle the aircraft while moving it on the ground.

During ground operations, push or pull the aircraft by the wing struts (as close as possible from the wing or fuselage attachment points) or by the tail cone (near the empennage). The Seamax nose can be pushed by the landing gear housing near the nose.

NOTE

Never push the aircraft on the wing or tail leading or trailing edges.

9.1.5 Cleaning

The aircraft should be cleaned at the end of each day of flying or once a week, if the aircraft is parked.

NOTE

After operation on salt water, always wash the plane with fresh water, and lubricate moving parts of the landing gear. Do not lubricate disk brakes.

9.1.5.1 Airframe

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

Wash the aircraft externally using water and a neutral soap. Remove all soap using water liberally. Dry in a ventilated place avoiding direct sunlight.

Drain all hull water using the bilge pump. Wipe the interior of the hull with a clean cloth.

NOTE

The accumulation of water, liquid chemicals and dirt in the bottom of the hull can, with time, damage the composite structure.

Spread a thin layer of good quality wax and polish with a soft cloth. It will improve the aircraft appearance, increase the life of the paint and improve performance and fuel consumption.

NOTE

Never cover the aircraft unless it is completely dry.

The canopy and canopy vents should be cleaned with good aircraft canopy cleaners (Plexus, Meguiar's Mirror Glaze, Tend Windshield Products, Supercoat Aircraft Windshield Treatment, Active Plastic Cleaner and Polish, CRC Aviation Glass Cleaner, etc.)

CAUTION

Never use gasoline, benzine, alcohol, acetone, thinner or domestic glass cleaning products. These products may cause damage to the canopy Plexiglas and reduce its useful life.

Clean the aircraft internally with a vacuum cleaner. For the instrument panel, use a soft cloth.

NOTE

Do not use silicone, wax or other polishing product on the upper coating of the instrument panel. It will reflect the sunlight and hinder pilot vision.

9.1.5.2 Engine

Engine cleaning shall be done with an appropriate solvent recommended by the engine manufacturer (see Rotax engine Maintenance Manual). A spray type cleaning product is the most efficient.

Before using any cleaning product, refer to the Rotax Maintenance Manual and properly protect any engine parts that might be damaged by it.

9.1.5.3 Propeller

An undamaged, clean, and polished propeller has a much better performance. It will provide better speed, better traction for takeoff, and lower fuel consumption. The propeller should be cleaned after each flight and then inspected for damage.

To clean the propeller use a neutral detergent diluted in water. Apply with a soft sponge. At least once a year the propeller should be polished using an automotive type neutral polish.
Inspect regularly and, if needed have a certificated aviation mechanic to change the propeller leading edge protection strip.

9.1.6 Jacking

Refer to the Seamax M-22 Aircraft Maintenance Manual for instructions on jacking the airplane

9.1.7 Special care after salt water operation

After salt water operation, wash the aircraft abundantly with fresh water. Ailerons, flaps, elevator and rudder hinges and the landing gear must be washed carefully.

After washing, apply a thin layer of water repellant lubricant.

9.2 Servicing fuel, oil and coolant

Fuel

-Attach a ground wire to the engine exhaust pip
-Use a ladder near the leading edge in a position to reach the fuel cap
-Open the fuel cap
-Fill the fuel tank with the desired quantity, but fill it slowly. The fuel tank has five inside compartments, and it take a little time to equalize the fuel quantity. If you fill it fast, the first compartment will be full before the fuel flows to the others
-Check the fuel quantity before closing the cap. Close the cap.
-Repeat for the other fuel tank;
-Make sure that no spilled fuel is on the wings, top and bottom.

Oil

Check oil level with the aircraft leveled. The Rotax operator manual specifies a procedure before checking the oil. Turning the prop by hand until a gurgling sound is heard.
Then check for the proper level on the oil dipstick, must be between the two marks. (With tail down, oil may flow from the bottle to the carter, and show a wrong quantity on the bottle)

If the engine has already run in the day, you don’t need to run it again.

-Check the master switch OFF and remove the ignition key,
-Remove the top of the engine cowling;

[00] Issued: 07/15/2007
[04] Date of Revision: 06/21/2017

-Remove the oil cap on the bottle, and check the oil level on th oil dipstick. Level should be between the two marks.

-If necessary add oil up to the correct level.

-Check coolant at this step (as described bellow) to avoid removing again the engine cowling.

-Close the cap and reinstall the top engine cowling.

Coolant

-Check the master switch off and remove the ignition key,
- Remove the engine cowling, if it is closed;
-In the overflow bottle, assure that the coolant level is a little above the minimum mark. It should not be much higher than minimum mark.
-If the level is bellow the minimum mark on the overflow bottle, **carefully open** the cap on the expansion tank (top of the engine) and check the level. If necessary fill with coolant to the top. Fill also on the overflow bottle, a little more than the minimum mark.
-Close both caps
-Install the top engine cowling.

CAUTION

Check the correct type of coolant use, to avoid mixing different types.

9.3 Towing and tie-down instructions

The Seamax M-22 may be towed by attaching ropes to the lower ends of the wing struts at the wing strut attach fitting. The ropes should be of equal length and sufficiently long to extend past the nose of the aircraft without interference.

CAUTION

Do not attach ropes at any other location on the wing struts; damage to the struts or other portions of the aircraft may result.

-Place the airplane in the desired position
-Use chocks on main wheels
-Install the ballast on its position, (ballast housing is inside the airplane)
-Use ropes to tie it down. Lace it the upper end of wing struts. On ground use the ring moorings, or spikes, whichever is available.

9.4 Hangar storage and Parking

The best place to park an aircraft when not flying is inside a hangar, protected from the weather.

When kept inside a hangar, the aircraft should be covered with a non-waterproof cloth (to avoid humidity) to protect it from dust, moisture and insects.

Cushioned protective covers for propeller blades, wings tips, stabilators and rudder are very useful to preserve these parts, especially in a congested hangar.

Chock the main wheels.

Engine air intakes and Pitot tube covers are also strongly recommended to avoid bird nests, insect entrance and the effects of dust accumulation.

NOTE

All covers should be red with white “REMOVE BEFORE FLIGHT” lettering

9.4.1 Flyable Storage

If the airplane is to be stored for more than 30 days in flyable condition, but without flying, perform the following procedures:

Every seventh day, the propeller should be rotated by hand through at least three revolutions. This action "limbers" the oil and prevents any corrosion on engine cylinder walls.

CAUTION

For maximum safety, assure that the master switch is OFF, the ignition key is removed, the throttle is closed and the airplane is secured (chocks on) before rotating the propeller by hand. Disconnect battery. Do not stand within the arc of the propeller blades while turning the propeller.

After 30 days, the airplane should be flown for 30 minutes or a ground run-up should be made just long enough to produce an oil temperature within the lower green arc range. Excessive ground run-up should be avoided.

9.4.2 Hangar Storage for more than 3 months or indefinite term without flying

If the aircraft is to be stored for more than 3 months without flying, follow storage procedures in the Seamax M-22 Aircraft Maintenance Manual (AMM).

9.4.3 Parking exposed to the weather

It is strongly recommended NOT to park the aircraft exposed to the weather for extended periods.
When the aircraft will not be operated for extended periods, it should be kept in a hangar. Nevertheless, situations occur that might require an extended period of outdoor parking. In these situations, proceed as follows:

- Head the aircraft into the prevailing wind

- Chock the wheels

- Tie sufficiently with strong ropes or chains to the wing and tail tie-down fittings and secure each rope to a ramp tie-down

- Cover the aircraft with a light color waterproof cover. The color of the cover shall be light enough to prevent warming due to the sun radiation but opaque to protect the aircraft against ultraviolet radiation

- Install the propeller blades covers

- If the aircraft is to be left parked for a long time, put spacers between the aircraft surface and the waterproof cover for proper ventilation

- Cover all openings (fuselage, wings and engine), including the pitot tube

- Lock the control surfaces (use the safety belt to block the movement of the control stick).

WARNING

After a long period of parking, DO NOT FLY the airplane before performing a Inspection Check per the Aircraft Maintenance Manual, AMM

9.4.4 Temporary Parking

9.4.4.1 On Water

- Maintain the canopy closed with the ventilation scoops closed

- Lock the control stick with the seatbelts;

- Maintain the water rudder retracted (UP position)

- Moor the aircraft or tie it to a buoy, making sure it has enough room to move with currents or tides.

NOTE

With changing tides and the effect of winds, the aircraft will circle about its mooring point.

- If the aircraft is equipped with an automatic electric bilge pump, switch the pump ON. If not, see the procedure in paragraph 8.9.5 – Water Operation and transition to land;

- Use extreme caution when moving the aircraft close to shore to prevent damage to the bottom of the hull due to sand or underwater obstacles;

- If the aircraft has the landing gear down and locked, follow the procedures set on paragraph 8.9.5
- Water Operation and transition to land.

- Close **both** fuel shutoff valves.

CAUTION

On water the Seamax M-22 will lean to one side. With the wings not leveled, if both fuel valves are open, the fuel will flow from the high wing to the low wing, making it heavier and precluding taxi and takeoff.

NOTE

On water the Seamax M-22 will attract people's attention, especially children. Before operation, inspect the aircraft carefully checking for damage or missing parts, especially the control surfaces.

WARNING

Before starting the takeoff run, make sure no one is in contact with the aircraft and the takeoff path is free.

9.4.4.2 On Land

- Head the aircraft into the prevailing wind
- Chock the wheels
- Tie sufficiently strong ropes or chains to the wing and tail tie-down fittings and secure each rope to a ramp tie-down
- Close both fuel shutoff valves
- Lock the control surfaces (use the safety belt to block the movement of the control stick)
- Close the canopy, maintaining the "snap-vents" half open
- Install the canopy cover.

WARNING

The canopy glass is a huge lens. With the sun behind the aircraft and the canopy open, the sun rays are concentrated on two spots of the instrument panel glare shield. The temperature increase caused by the concentrated sun rays might start a fire.

10 Required Placards and Markings

10.1 Airspeed indicator range markings

Green or White markings indicate normal operation conditions; Yellow markings indicate above normal operation conditions not exceeding limitations;

NOTE

Red markings indicate operation limits and shall be avoided at all times.

Marking	Speed Range kts (mph)	Significance
White Arc	38 – 55 (44 – 63)	Flap Operating Range with 1320 lb MTOW
Green Arc	50 – 91 (58 – 105)	Normal Operating Range with Flap -5º or 0º
Yellow Arc	91 – 128 (105 – 147)	Operations must be conducted with caution and only in smooth air. Maximum rudder deflection 1/3 travel.
Red Line	(135) (155)	Maximum speed for all operations. Never exceed.

10.2 Operating limitations on instrument panel

RPM

Marking	RPM Range Turns/min	Significance
yellow Arc	0-1400	Idle must be higher than 1400
Green Arc	1400-5500	Normal rpm range
Yellow Arc	5500-5800	For 5 minutes operation
Red Line	5800	Maximum rpm limit

Heat temperature

Marking	Temp. Range ºC (ºF)	Significance
Green Arc	130 (266)	Normal use
Yellow Arc	130 (266)–135 (275)	attention
Red Line	135 (275)	Max temperature

Oil temperature

Marking	Temp. Range ºC (ºF)	Significance
yellow Arc	bellow 50 (120)	Minimum operating temperature
Green Arc	50 (120)-120 (248)	Normal use
Yellow Arc	120 (248)- 130 (266)	attention
Red Line	130 (266)	Maximum temperature

Oil pressure

Marking	Pressure Range Bar (psi)	Significance
Red arc	Bellow 0.8 (12)	Minimum pressure
yellow Arc	0.8 (12) – 2 (29)	attention
Green Arc	2 (29) – 5 (73)	Normal use
Yellow Arc	5 (29) – 7 (101)	attention

Fuel pressure

Marking	Pressure Range Bar (psi)	Significance
yellow Arc	Bellow 0.15 (2.2)	attention
Green Arc	0.15 (2.2) – 0.4 (5.8)	Normal use
Yellow Arc	0.4 (5.8) -	attention

10.3 Passenger warning

The warning
"This aircraft was manufactured in accordance with Light Sport Aircraft airworthiness standards and does not conform to standard category airworthiness requirements"
is placed at the top of the cabin, on the spear box, passenger side.

10.4 No intentional spins

The placards "No intentional spins" is placed under the airspeed indicator.

10.5 Miscellaneous placards and markings

Subject	description	Place were it is fixed
fuel	Minimum 92 Octane auto fuel, Or 100 LL Avgás12,2 Gals	Over wings, on tank filler

Fuel valves	On and off, left and right	both sides of the cockpit near the wing roots
Fuel level	Marks of quantity	both sides of the cockpit near the wing roots, on levels
coolant	Type of coolant	On the coolant filler
coolant	Type of coolant	On the overflow bottle
oil	Type and volume	On the oil reservoir
choke	On and off	On the roof console
Circuit brakes	Description of the circuit brakes	On the roof console
Switches	Description of switches	On the roof console
Master switch	On and off	On the roof console
Pitch trim indicator	Up and down	On instrument panel
Pitch trim switches	Nose up and nose down	On top of control stick
Flap switch	Up and down	On instrument panel
Flaps positioning lights	-5º, 0º, +10º, +18º, +28º and +35º	On instrument panel, near the respective position lights
Landing gear lights	Lock down	On instrument panel
Landing gear switch	up and down	On roof console
Water rudder	Up and down	On rear part of central console
throttles	Full and idle	Near the throttle levels
12 V plug	12V	On instrument panel
Canopy locks	Open and closed	Near the locks
Handhold	handhold	On top of instrument panel
Light Sport	Light sport	On fuselage sides
No handle	No handle on the roof console	On the roof console
ballast	Ballast, check weight & balance	Near the ballast location

(All switches on up dashboard), Landing lights, strobo lights, navigation lights, fuel pump, bilge pump, instruments illumination, turn coordinator, GPS, etc.
-Each circuit breaker

11 Supplementary Information

11.1 Familiarization flight procedures

Familiarization flight procedures may be determined by reading information and following instructions contained I other sections of this manual.

11.2 Contact Information Reporting

Owners and operators of special light-sport aircraft (SLSA) are required by the ASTM standards and by the FAA or ANAC to maintain current contact information with the manufacturer of their aircraft, in order to assure that they receive service bulletins, manual revisions, and other information. To report contact information or changes, photocopy the form on following page, complete it, and mail, fax or scan/email it to SEAMAX AIRCRAFT or an authorized distributor within 30 days of acquiring the aircraft or of changes to contact information.

Contact Information Report Form

Aircraft data (as show on FAA form 8050-3)

Aircraft N number	
Manufacturer	
Model	
Serial number	

Registered owner (as show on FAA form 8050-3)

Name	
Mailing address	
Telephones	
E-mail address	

Signature of owner or operator_____

Date: _____

11.3 Safety of flight issues & service difficulty reporting

Owners and operators of special light-sport aircraft (SLSA) are required by the ASTM standards and by the FAA or ANAC to report any safety of flight issues or service difficulties to the manufacturer. The manufacturer will analyze those difficulties and issue any necessary supplement notification bulletins r other documentation.

To report safety of flight issues or service difficulties, photocopy the form on following page, complete it, and mail, fax or scan/email it to SEAMAX AIRCRAFT or an authorized distributor as soon as possible.
The owner can use the Seamax Aircraft form S.A 043

Safety of Flight Issues & Service Difficulty Reporting Form

Aircraft data (as show on FAA form 8050-3)

Aircraft N number	
Manufacturer	
Model	
Serial number	

Description of safety of flight issue:

Description of service difficulty:

Signature of owner or operator_____

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

Date: _____

11.4 Addresses for SEAMAX AIRCRAFT

Mail, fax, or scan/email contact information forms and safety of flight/service difficulty reporting forms to one of the following addresses:

BRAZIL HEADQUARTERS:

SEAMAX AICRAFT LTDA.
Aeroporto de São João da Boa Vista – SP - BRA
Hangar 01
Rod. SP 344, km 219, ZIP: 13.870-970
Phone: (55) 19 99850-6810
E-mail: support@seamaxaircraft.com
Site: www.seamaxaircraft.com

UNITED STATES HEADQUARTERS:

SEAMAX, LLC.
Embry Riddle Aeronautical University Research Park
1535, Aviation Center Parkway, Unit 2
Daytona Beach, FL, 32114 - USA
Phone: +1 (260) 460-7587
E-mail: info@seamaxaircraft.com

11.5 Current equipment list

Equipment List

Tail Number: _____ Maker: _____

Model: _____ S/N: _____

INSTALLED EQUIPMENT

11.6 CONTINUED AIRWORTHINESS INFORMATION

The actual **Safety Monitoring Plan** establishes the standard practice for the Continued Operational Safety monitoring of light sport aircraft by **SEAMAX AIRCRAFT LTDA**.

In a manner similar to the Airworthiness Directives and Service Bulletins issued for aircraft certificated in other categories, SEAMAX issues Safety Directives. These are notifications of corrective actions determined by SEAMAX in response to a reported safety-of-flight or service issue.
The content and format is determined by applicable Federal Aviation Regulations as well as ASTM F 2295 standards for “Notice of Corrective Action” and “Operational Risk Assessment Procedure”.

We have adopted the ASTM Format to issue Safety Directives compliant with requirements that enable SEAMAX AIRCRAFT to inform aircraft owners and operators about "mandatory action".

SEAMAX AIRCRAFT will maintain a Website **Bulletin**, www.seamaxaircraft.com.br where all Safety Alert notifications and/or Service Bulletins will be available for reference.

The mailing addresses are

BRAZIL HEADQUARTERS:

SEAMAX AICRAFT LTDA.
Aeroporto de São João da Boa Vista – SP - BRA
Hangar 01
Rod. SP 344, km 219, ZIP: 13.870-970
Phone: (55) 19 99850-6810
E-mail: support@seamaxaircraft.com
Site: www.seamaxaircraft.com

UNITED STATES HEADQUARTERS:

SEAMAX, LLC.
Embry Riddle Aeronautical University Research Park
1535, Aviation Center Parkway, Unit 2
Daytona Beach, FL, 32114 - USA
Phone: +1 (260) 460-7587
E-mail: info@seamaxaircraft.com

[00] Issued: 07/15/2007
[03] Date of Revision: 10/22/2020

11.7 SEAMAX RESPONSIBILITIES

SEAMAX AIRCRAFT has implemented a system of receiving, evaluating, and correcting safety-of-flight and service issues. The system has three sources of input:

a) Reports made whenever a non-conformity occurs that may cause a safety-of-flight issue.
b) Test Flight Reports that present a safety-of-flight issue;
c) **Customer's Communications for Service Difficulty - (Form S.A 043)** indicating safety-of-flight and service issues and suggestions;

SEAMAX AIRCRAFT will keep a file with all the issues reported, identifying them by subject and date of occurrence, safety effect, corrective action, date of implementation, and the aircraft serial number following the implementation.

a) If the risk assessment is considered a Urgent Safety of Flight Situation (Potential Emergency Safety of Flight Action), a Service Alert will be issued.
b) The corrective action, once determined, must be immediately incorporated into production.
c) Customers will be notified through a **MANDATORY Service Bulletin** (**MANDATORY SB**) with instructions regarding Corrective Action/Mandatory Inspection/modifications as needed.

11.8 NOTICE OF CORRECTIVE ACTION

SEAMAX AIRCRAFT uses the following notices of corrective actions to the known owner/operators of the affected aircraft:

- **SAFETY ALERT :** Notification that require immediate action.
- **SERVICE BULLETIN :** Notification that do not require immediate action but do recommend future action.
- **NOTIFICATION:** Notification that do not require immediate but are primarily for promulgation of continued airworthiness information.

Link website for Notice of Corrective Action:

http://www.seamaxaircraft.com/ownership.html#tech-support

[00] Issued: 07/15/2007
[03] Date of Revision: 01/03/2017

11.9 OWNER/OPERATOR RESPONSIBILITIES

SEAMAX AIRCRAFT strongly recommends that owner/operators of a Seamax M-22 aircraft:

a) Read and comply with the maintenance and continued airworthiness information and instructions provided.

b) Provide SEAMAX AIRCRAFT with current contact information to allow the manufacturer to send supplemental notification bulletins. Applicable instructions are listed in the Technical Delivery in the QAM, as well in the AMM and the POH.

c) Notify SEAMAX AIRCRAFT of any safety-of-flight issue or significant service difficulty upon discovery, using the **Customer's Communications for Service Difficulty (S.A-043)** form.

d) Ensure that any needed corrective action be completed as specified in a notice or by the next scheduled annual inspection.

e) If not comply with any mandatory service requirement, the Seamax M-22 shall be considered not in compliance with ASTM F 2295 standard and may be subject to regulatory action by the presiding aviation authority.

[00] Issued: 07/15/2007
[07] Date of Revision: 09/25/2018

11.10 Customer communication form S.A 043

Service Difficulty Report - Seamax M-22	
1- Report Nº	2- Sent by manufacture or owner for:
3- Owner:	4- Manufacture:
5- Model	6- Serial Number
7- Registration Number	8- Date of occurrence
9- Hours	10- Place
11- Damage	12- Fase of operation:
( ) Materials ( ) peoples	( ) flight ( ) ground/line ( ) ground/maintenance.
13- System Affected	14- Cause:
	( ) probable ( ) confirmed
15- Description of occurrence:	
16- Corrective action by the manufacturer or operator:	
Relevant observations:	
Date:	
Signature RT:	
Form S.A-043 - REV.00	

[00] Issued: 07/15/2007
[07] Date of Revision: 09/25/2018