



Syllabus **ENGLISH** **SEP (SEA)**

ATO DE.SH.004

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LoR

LoR REV1 / TBD

Datum	Ausgabe	Revision (REV)	Änderung
23.08.2024	1	0	1.Ausgabe

LoC Liste der Kapitel

LoC REV0 / TBD

LoR REV00 / TBD

LoC REV00 / TBD

ToC REV00 / TBD

LoA REV00 / TBD

Part 1

1.1 REV00 / TBD

1.2 REV00 / TBD

Part 2

2.1 REV00 / TBD

2.2 REV00 / TBD

2.3 REV00 / TBD

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Part 3

3.1 REV00 / TBD

Part 4

4.1. REV00 / TBD

4.2. REV00 / TBD

4.3 REV00 / TBD

4.4 REV00 / TBD



LoA-List of Abbreviations

LoA REV00 / TBD

The following abbreviations are included in this syllabus::

Abkürzung	Definition
(A)	Aircraft
AC	Alternating Current
AFM	Aircraft Flight Manual
AGL	Above Ground Level
ATO	Approved Training Organization
CFI	Flight Instructor
CG	Center of Gravity
DC	Direct Current
DTO	Declared Training Organization
EASA	European Union Aviation Safety Agency
EFIS	Electronic Flight Instrument System
FC	Flight Crew
FCL	Crew License
ft	Feet
HPA	High Performance Aircraft
HT	Head of Training
IMC	Instrument Meteorological Conditions
LAPL	Light Aircraft Pilot License
LBA	German Federal Aviation Authority
LoA	List of Abbreviations
LoC	List of Effective Chapters
LoR	List of Revisions
MP	Multi Pilot
Min	Minimum
N/A	Not Applicable
NM	Nautical Mile
P	Pressurization
POH	Pilot's Operating Handbook
PPL	Private Pilot License
Rev	Revision
RU	Retractable Undercarriage
RPM	Revolution pro Minute
SEP	Single Engine Piston
SLPC	Single Lever Power Control
SP	Single Pilot
T	Turbo-charged Engines
TCAS	Traffic Collision Avoidance System
TAWS	Terrain Awareness and Warning System



Abkürzung	Definition
TM	Training Manual
ToC	Table of Contents
TW	Tailwheel
VMC	Visual Meteorological Conditions
VP	Variable Pitch Propeller



00.

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01.

Flight Student



Records

1.1 REV00 / TBD

1.1 Flight Student Records

Personal Data

Surname:	Name:
Lizencense:	Signature:

Basic requirements for training fulfilled.

HT / CFI Signature:	Date:
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Documents to be stored

<input type="checkbox"/> Chapter 1, 3 u. 4 Syllabus	<input type="checkbox"/> theoretical Examination SEP (A) SEA
<input type="checkbox"/> 4.3 Flight Times SEP(SEA)	<input type="checkbox"/> Formular FCL.725 c (CR) SEA
HT / CFI Unterschrift:	Date:

Theoretical Examination SEP (A) SEA

Result (min. 75%):	HT / CFI Signature:
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Proof of Training

1.2 REV00 / TBD

1.2 Proof of training sections for SEP(SEA)

	Flugtraining	Datum	Unterschrift Fluglehrer
1.1 Familiarization	(1:00) / (1:00)		
1.2 Emergencies and Stall	(1:00) / (1:00)		
2.1 Water Flight 1	(1:00) / (1:20)		
2.2 Water Flight 2	(1:00) / (1:20)		
2.3 Water Flight 3	(1:00) / (1:20)		
2.4 Water Flight 4	(1:00) / (1:20)		
2.5 Water Flight 5	(1:00) / (1:20)		
2.6 Examination Preparation	(1:00) / (1:20)		

Gesamt mit SEP (A) 8:00	ohne SEP (A) (10:00)
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02.

Introduction



Introduction

2 Introduction

Teil 2 REV00 / TBD

2.1 Syllabus

2.1 REV00 / TBD

This syllabus, created by ATO BALTIC SEAPLANE GmbH for the water rating for single-engine piston aircraft, complies with the requirements of Part FCL. The purpose of this curriculum is to provide all necessary information for students and instructors involved in the training.

The training consists of theoretical instruction and flight training conducted by an instructor who is authorized to teach SEP(A) water rating.

Manufacturer	Aircraft Model/Name	Variants	Complex	SP/SP HPA/MP	OEB report/OSD FC available	Remarks
All Manufacturers	Single-engine piston (Sea) SEP (Sea)	X	-	SP		Class rating SEP (SEA). Aircraft within the SEP (SEA) class rating are not individually listed in this table unless specific provisions have been established.
	Einmotorkolben (Sea) mit variablen Pitch Propellern (VP)					
	Einmotorkolben(Sea) mit Turbo-/Super-Geladenen Motoren(T)					
	Einmotorkolben(Sea) mit elektronischem Fluginstrumentensystem (EFIS)					
	Einmotorkolben(Sea) mit Einhebel-Leistungsregelung (SLPC)					



2.2 Course Objectives

REV00 / TBD

2.2

- 1.1. The training shall provide the student with appropriate theoretical knowledge, ground handling training, and flight techniques based on established teaching methods.
- 2.2. The objective of the training is to master single-engine piston operations to operate the SEP(A)-SEA safely and competently in normal, abnormal, and emergency situations. Therefore, this training provides the student with:
 - a) necessary air and sea information for seaplane operations
 - b) necessary training in the new water environment
 - c) thorough knowledge of aircraft systems, engine, avionics, and associated limitations
 - d) knowledge of operating flight controls and displays for the aircraft and its systems
 - e) understanding of system malfunctions, their effects on flight operations, and interaction with other systems
 - f) understanding of normal, abnormal, and emergency procedures specified in the aircraft flight manual
 - g) understanding of performance and mass and balance calculations
- 3.3. During training, the student will be made aware of hazardous attitudes and their effects on flight safety. Safety awareness and risk management are essential components of the course

2.3 Basic Requirements for Training

2.3 REV00 / TBD

See Part FCL.725.

2.4 Summary of Minimum Training Hours

2.4 REV00 / TBD

The training includes: a) theoretical knowledge instruction b) 10 hours of dual flight instruction

2.4.1 Credits for Previous Experience

If the applicant holds the SEP(A) land class rating, only 8 hours of dual flight instruction are required.

2.5 Theory Training

2.5 REV00 / TBD

The theoretical training includes all necessary course content and consists of classroom instruction as well as flight instructor briefings. Additional theoretical knowledge required for specific flight exercises will be covered by the flight instructor during the briefing.



2.6 Fight Training

2.6 REV00 / TBD

The numbering of flight exercises serves primarily as an exercise reference list and comprehensive teaching guide. Therefore, the exercises and practices do not necessarily need to be applied in the given order. The actual sequence and content depend on several interconnected factors:

- The student's progress and ability
- Weather conditions and water conditions affecting the flight
- Available flight time
- Teaching considerations
- The local operating environment
- The applicability of exercises to the aircraft type

2.6.1 Flight Exercises

Flight exercises are not independent; therefore, sessions can be combined. Times shown on the training record are guidelines. During each exercise, the student must be aware of good vigilance, diligence, and airspace observation, which should be emphasized at all times.

2.7 Teaching Materials

2.7 REV00 / TBD

The following list represents the reference material covering the technical details shown in the main part of the curriculum:

- AFM Aircraft Flight Manual / POH Pilot's Operating Handbook (Manufacturer)
- Seaplane Operations (ASA)
- Helicopter Operations Manual with Seaplane, Ski plane, and Float/Ski (FAA-H-8083-23)

2.8 Time Scale

2.8 REV00 / TBD

The applicant must complete the practical test within 6 months of starting the SEP (A) SEA course. The coordination of ground and flight training is a necessary and important component of every pilot course. Flight training and theory should be carefully adapted to the student's prior knowledge.

2.9 Course Standards and Proficiency Check

2.9 REV00 / TBD

The student must demonstrate after completing the training course:

- Adequate experience
- Flight competency
- Knowledge required for initial issuance of an SEP (A) SEA rating
- Awareness of the privileges, responsibilities, and duties as Pilot in Command



- The written examination consists of 30 multiple-choice questions. The minimum required score is 75%.

The applicant for a CR (A) SEA rating must demonstrate to an examiner that they can safely and reliably handle the aircraft under normal, abnormal, and emergency conditions, including pre- and post-flight operations.

2.10 Renewal

2.10 REV00 / TBD

See Part FCL.740.

2.11 Familiarization / Differences Training

2.11 REV00 / TBD

When a pilot wants to fly an aircraft with a variable pitch propeller or retractable landing gear for the first time, they must complete differences training. When changing within the single-engine land aircraft class, for example from a Cessna 172 to a Piper PA18, familiarization training is required.

The differences training must be entered in the pilot's logbook or an equivalent document and signed by the instructor where applicable.





03.

Theory Training



3 Theory Training

Part 3 REV00 / TBD

3.1 Theoretical Subjects

3.1 REV00 / TBD

Systeme
<p>Flugzeug allgemein</p> <ul style="list-style-type: none"> • Maße • Flugzeugstruktur und Ausrüstung
<p>Engine:</p> <ul style="list-style-type: none"> • Engine type • General function of the following systems or components: • Engine • Oil system • Fuel system • Ignition system • Starting system • Generators and generator drives • Power indication • Propeller system <p>Engine Controls and Instruments:</p> <ul style="list-style-type: none"> • Engine controls (including starter) • Engine instruments and cockpit displays • Their function, interrelation, and interpretation • Engine operation during engine start, takeoff, and engine malfunctions • Procedures for normal operation in correct sequence
<p>Fuel System:</p> <ul style="list-style-type: none"> • Location of fuel tanks, fuel pumps, fuel lines to engines, tank capacities, valves, and measurements • Location of following systems: • Filtration • Fueling • Venting <p>In cockpit:</p> <ul style="list-style-type: none"> • Monitoring and display of fuel system • Quantity and flow indication • Interpretation • Fuel distribution to different tanks and fuel supply



Vacuum System and Heating System:

- System components and protection systems
- Cockpit monitors and displays
- Interpretation of operating conditions
- Normal system operation during:
 - Start
 - Cruise
 - Approach
 - Landing
- Ventilation and temperature control

Hydraulic System:

- Hydraulic system components
- Quantities and system pressure
- Hydraulically operated components
- Controls, monitors, and displays in cockpit
- Function and interrelation
- Interpretation of displays

Landing Gear:

- Main components of:
 - Landing gear
 - Wheel brake system
- Extending and retracting landing gear (including trim and drag changes due to gear operation)
- Required tire pressure or position of corresponding slip marking
- Controls and displays including warning indicators in cockpit regarding gear extension/retraction status
- Components of manual emergency extension system

Floats:

- Installation
- Construction method
- Characteristics of how floats work
- Water in floats and contamination of float bottom
- Leak testing
- Effects on aerodynamics and performance in water and air



Flight Control Elements:

- Various elements:
- Aileron system
- Elevator
- Rudder
- Flaps
- Trim systems
- Stall warning system
- Controls, monitors and displays, including warning indicators
- Flight control system from cockpit control to flight control surfaces

Water Rudder:

- Installation
- Construction method
- Characteristics
- Danger of lowered water rudder during takeoff and landing

Power Supply:

- Power, voltage
- Location of controls, monitors and displays in cockpit
- Flight instruments, communication and navigation systems
- Main and backup power sources
- Position of vital power switches
- Procedures for operating and monitoring generator power supply

Flight Instruments, Communication, Navigation Equipment, Autopilot:

- Visible antennas
- Controls and instruments in cockpit during normal operation of:
- Flight instruments
- Communication and navigation systems
- Warning systems

Cockpit, Cabin and Cargo Area:

- Operation of exterior, cockpit, and cabin lighting
- Operation of cabin and cargo doors, windows, and emergency exits

Emergency Equipment:

- Operation and intended use of mobile emergency equipment in aircraft:
- Portable fire extinguisher
- First aid kits
- Life vests
- Emergency locator transmitter



Limitations

According to AFM

- POH Minimum Equipment List
- Structure and philosophy
- Application

Performance, Flight Planning and Monitoring:

According to AFM / POH

High altitude lakes / Density altitude

Important factors for planning and decision making

Introduction to seaplane flying

Alternative measures to end the flight

Mass and Balance

According to AFM / POH

Emergency Procedures

According to AFM / POH

Ground Operations:

Pilot pre-flight inspection

Land procedures

Equipment for next flight lesson

- Ground checks:
- fuel
- oil
- Observe safety regulations

Emergency Measures:

According to AFM / POH

Seaplane Operations:

- Types of Seaplanes
- Amphibious aircraft
- Straight float seaplanes
- Flying boats



Rules and Regulations:

- Ratings and limitations
- Seaplane regulations

Right of way rules:

- Collision avoidance (ICAO Annex 2, paragraph 3.2.6)
- Buoys, lights, and horns
- Inland and international waters

Nautical charts:

- Depths and shallows
- Water currents
- Danger from currents, wind shifts, and turbulence
- Landing areas
- Anchored boats

Radio operator certificate for inland (UBI) and sea (SRC)**Respekt und Schutz von:**

- Tieren
- Natur
- Umgebung
- Flug in Nationalparks

Seenotrettungsdienst**Water Properties and Hydrodynamic Effects:**

- Water Characteristics:
- Properties of water
- Effects of water and wind on aircraft and operations
- Surface water conditions:
- Smooth
- Calm
- Rough
- Swell

Water Level affected by:

- Air pressure
- Wind
- Tides
- Water movement at sea

Waves:

- Origin and extent



- Swelling
- Current

Wind Direction Determination:

- Tide
- Strength and direction
- Water birds
- Smoke
- Flags
- Wave patterns

Water Current:

- Tidal current
- Water movement on lakes

Wind and Turbulence:

- Over lakes
- Islands
- Mountain areas

Additional Considerations:

- Salt water
- River estuaries
- Characteristics of landing areas for water operations:
- Rivers
- Open sea
- Lakes

Water Operations:

- Center of buoyancy
- Objects (floating/underwater)
- Sandbanks
- Operating modes:
- Displacement taxi
- Plowing
- Step taxi/planing
- Wind strength and direction

Most Critical Moments:

- Takeoff
- Landing/Water landing
- Water taxi operations
- Docking



04.

Flight Training



Part 4 REV1 / TBD

Liste der Luftübungsabschnitte:

4.1. Familiarization

4.2. Water Flight 1-5

4.3. Flight Times



4.1.1 Familiarization

4.1 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:30	1:00	0:15	SEP(A) sea

Program		
Basic flight exercises (straight and level, climbing, descending, roll exercises, standard turns and 45° full circles)		
Exercise Content	Vorgeführt / Geübt	Lernziel erreicht,
	Datum / Unterschrift	Datum / Unterschrift
Introduction to SEP(A) SEA and explanation of cockpit layout and engine systems		
Effects of floats on aircraft performance and flight characteristics		
Checklists, exercises, checks		
Emergency drills: location and use of emergency equipment and exits		
Equipment for seaplane operations		
External and internal functions		
All systems: normal operation and general handling		
Limitations		
Visual inspection of aircraft exterior (walk-around)		
Inspection of propeller for water damage		
Determination of fuel quantity		
Float inspection: <ul style="list-style-type: none"> • Visual inspection of floats for signs of damage • Inspection of all float attachment points to main fuselage • Inspection of spreader bars and flying wires 		
Draining floats/hull		
Check water rudder and cables for damage and proper operation		
Difficulties during external inspection when aircraft is on water, including wave conditions <ul style="list-style-type: none"> • Cockpit Inspektion 		
Ground handling procedures		
Takeoff Procedures:		
Pre-takeoff Procedures:		
Visual References: For descent, climb, level flight, Including the effects of: Power changes on aircraft attitude, Airspeed variations on performance, Configuration change		



Turns (30 °, 45 ° Bank)		
Pre-landing Procedures		
Ground Safety Procedures		
Theoretical Basis:		
• POH		
Theory subjects according to 3.1		
Objetives		
1 Good knowledge of cockpit layout		
2 Appropriate control inputs and corrections during basic air-work		
3 Personal objectives		

Open Items



4.1.2 Emergencies and Stall

4.1 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:30	1:00	0:15	SEP(A) sea

Program		
<ul style="list-style-type: none"> • Simulated engine fire • Engine failure in different flight phases • Simulated emergency and abnormal situations as instructed 		
Exercise Content	Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Engine starting problems		
System failures: Corrective actions for leaks: Oil, Fuel, Hydraulic, etc.		
Application of emergency procedures/checklists, exercises from memory		
Engine malfunctions		
Engine failure handling		
Actions for fire in air and on ground: Engine fire, Cabin fire, Electrical fire		
Factors affecting stall: Effect of flaps, Power, Mass, Center of gravity, Load factor		
Stall recognition and recovery		
Theoretical Basis:		
• POH		
Theory subjects according to 3.1		
Objectives:		
Application of correct flight procedures and emergency procedures		
Correct stall recovery procedure		
Personal objectives:		

Open Items



4.2.1 Water Flight 1

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
1:00	1:00/1:20	0:15	SEP(A) sea
Program			
Various taxi and turning techniques: Displacement taxi, Plowing, Step taxi/planing			
Exercise Content		Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Water taxi and turning techniques: Displacement taxi, Plowing-Step taxi			
Maximum allowable RPM during water operations			
Proper use of water rudder			
Water effect during operation			
Maximum wave height			
Go-around procedures			
Theoretical Basis:			
POH			
Theory subjects according to 3.1			
Objectives			
Positive control of aircraft during water taxi			
Proper planning, assessment, and control of aircraft during water operations			
Personal objectives			

Open Items



4.2.2 Water Flight 2

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:45	1:00/1:20	0:15	SEP(A) sea
Program			
Various water exercises: Sailing, Anchoring, Docking, Beaching, Mooring, Different approaches to buoy/pier/ramp (actual or simulated)			
Exercise Content:		Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Aerial observation and assessment of: Surrounding terrain, Possible power lines and obstacles, Water landing areas, Mooring areas, Takeoff areas			
Assessment and determination of: Wind direction, Wind strength, Water conditions			
Determining wind direction with the aircraft			
Sailing (with and without engine)			
Floating debris (surface/underwater)			
Surface water conditions: smooth, calm, and rough			
Anchoring			
Docking			
Beaching			
Mooring			
Approaches to: Buoys, Piers, Ramps			
Securing aircraft with appropriate knots			
Water navigation: attention to buoys, obstacles, and other traffic			
Theoretical Basis:			
POH			
Theory subjects according to 3.1			
Objectives:			
1 Appropriate observation and assessment of landing, mooring, and takeoff areas			
2 Correct water operations			
3 Personal objectives			



Open Items



4.2.3 Water Flight 3

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:45	1:00/1:20	0:15	SEP(A) sea

Program		
Takeoffs and landings in calm water conditions		
Takeoffs and landings on glassy water		
Exercise Content	Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Selection of climb speed/climb rate		
Constant descent rate using vertical speed indicator only		
Takeoff and landing technique in calm water conditions		
Takeoff and landing technique in glassy water conditions with and without external references		
Current/tidal effects		
Congested areas		
Theoretical Basis:		
• POH		
Theory subjects according to 3.1		
Objectives:		
1 Determine water surface conditions		
2 Smooth and correct operation during takeoff		
3 Personal objectives		

Open Items



4.2.4 Water Flight 4

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:45	1:00/1:20	0:15	SEP(A) sea
Programm			
<ul style="list-style-type: none"> • Takeoffs and landings with varying water conditions • Takeoffs and landings with different wind conditions • Maximum performance takeoffs and landings • Confined area takeoff with turn 			
Exercise Content		Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Confined area and maximum climb performance			
Takeoff and landing technique in rough water conditions			
Takeoff and landing technique in crosswind conditions			
Takeoff and landing technique in headwind			
Maximum performance takeoffs and landings			
Confined area takeoff with turn			
Corrective measures for wind shear and turbulence			
Theoretical Basis			
• POH			
Theory subjects according to 3.1			
Objectives			
1 Proper assessment of landing and takeoff areas			
2 Correct rough water and crosswind techniques			
3 Personal objectives			

Open Items



4.2.5 Water Flight 5

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft	
0:45	1.00/1:20	0:15	SEP(A) sea	
Program				
Simulated emergency and abnormal situations as instructed by instructor				
Exercise Content			Vorgeführt / Geübt Datum / Unterschrift	Lernziel erreicht, Datum / Unterschrift
Corrective measures for leaks: oil, fuel, etc.				
Aborted takeoff				
Distance from coast/shore				
Water temperature and cooling effect				
Open sea operations				
Survival equipment				
Emergency exit from an overturned seaplane:				
<ul style="list-style-type: none"> • Orientation • Water pressure • Floating equipment • Normal and unusual exits 				
Man overboard procedures				
Emergency landing from high and low altitude on land and water				
Wave system assessment: Determining wave height, Selecting landing course, Selecting landing area, Landing parallel to swell, Landing perpendicular to swell, Landing and takeoff with swell				
Landing with multiple wave systems				
Loss of water rudder/controllability				
Airmanship and seamanship				
Theoretical Basis				
<ul style="list-style-type: none"> • POH • 3.1 Theoriefächer 				
Objectives				
1 Unabhängige Auswahl des Notlandebereichs				
2 Sicherer Betrieb				
3 Persönlich:				



Note: Emergency landing exercises outside the airport: For safety reasons, go-around over land must be initiated at minimum 150 ft/AGL once the success of the approach can be assessed. Over water, a landing attempt should be made. If flight safety is compromised, a go-around must be initiated.

Open Items

4.2.6 Examination Preparation

4.2 REV00 / TBD

Pre-briefing	Flight training	Post-briefing	Aircraft
0:30	1:00/1:20	0:15	SEP(A) sea
Program			
Preparation for SEP(SEA) examination			
Exercise Content			Lernziel Erreicht Datum Unterschrift
Discuss open elements			
Administration before practical test according to „EASA Part FCL Examiner Guide			
Theoretical Basis			
General review of all chapters			
Objectives			
1 Ready for SEP(A) SEA examination			
2 Personal objectives:			



Notes

