

## MODULE 1L — BASIC KNOWLEDGE

Dit document herhaalt de modules leerstof en de onderdelen ervan, zoals beschreven in het huidige voorstel Part 66 "Light" (1 februari 2017)

<p>1L.1 Mathematics</p> <p>Arithmetic</p> <ul style="list-style-type: none"> <li>— Arithmetical terms and signs;</li> <li>— Methods of multiplication and division;</li> <li>— Fractions and decimals;</li> <li>— Factors and multiples;</li> <li>— Weights, measures and conversion factors;</li> <li>— Ratio and proportion;</li> <li>— Averages and percentages;</li> <li>— Areas and volumes, squares, cubes.</li> </ul> <p>Algebra</p> <ul style="list-style-type: none"> <li>— Evaluating simple algebraic expressions: addition, subtraction, multiplication and division;</li> <li>— Use of brackets;</li> <li>— Simple algebraic fractions.</li> </ul> <p>Geometry</p> <ul style="list-style-type: none"> <li>— Simple geometrical constructions;</li> <li>— Graphical representation: nature and uses of graphs.</li> </ul>	1
<p>1L.2 Physics</p> <p>Matter</p> <ul style="list-style-type: none"> <li>— Nature of matter: the chemical elements;</li> <li>— Chemical compounds;</li> <li>— States: solid, liquid and gaseous;</li> <li>— Changes between states.</li> </ul> <p>Mechanics</p> <ul style="list-style-type: none"> <li>— Forces, moments and couples, representation as vectors;</li> <li>— Centre of gravity;</li> <li>— Tension, compression, shear and torsion;</li> <li>— Nature and properties of solids, fluids and gases.</li> </ul> <p>Temperature</p> <ul style="list-style-type: none"> <li>— Thermometers and temperature scales: Celsius, Fahrenheit and Kelvin;</li> <li>— Heat definition.</li> </ul>	1
<p>1L.3 Electrics</p> <p>DC Circuits</p> <ul style="list-style-type: none"> <li>— Ohm's law, Kirchoff's voltage and current laws;</li> <li>— Significance of the internal resistance of a supply;</li> <li>— Resistance/resistor;</li> <li>— Resistor colour code, values and tolerances, preferred values, wattage ratings;</li> <li>— Resistors in series and parallel.</li> </ul>	1
<p>1L.4 Aerodynamics/<del>Aerostatics</del></p> <p>International Standard Atmosphere (ISA), application to aerodynamics and <del>aerostatics</del>.</p> <p>Aerodynamics</p> <ul style="list-style-type: none"> <li>— Airflow around a body;</li> </ul>	1

<ul style="list-style-type: none"> <li>— Boundary layer, laminar and turbulent flow;</li> <li>— Thrust, weight, aerodynamic resultant;</li> <li>— Generation of lift and drag: angle of attack, polar curve, stall.</li> </ul> <p><b>Aerostatics</b>  <del>Effect on envelopes, wind effect, altitude and temperature effects.</del></p>	
<p><b>1L.5 Workplace Safety and Environmental Protection</b></p> <ul style="list-style-type: none"> <li>— Safe working practices and precautions when working with electricity, gases (especially oxygen), oils and chemicals;</li> <li>— Labelling, storage and disposition of hazardous (to safety and environment) materials;</li> <li>— Remedial action in the event of a fire or another accident with one or more hazards, including knowledge of extinguishing agents.</li> </ul>	2

## MODULE 2L — HUMAN FACTORS

Vrijstelling vragen voor >= zweefvliegvergunning

2L.1 General — The need to take human factors into account; — Incidents attributable to human factors/human error; — Murphy's Law.	1
2L.2. Human Performance and Limitations Vision, hearing, information processing, attention and perception, memory.	1
2L.3 Social Psychology Responsibility, motivation, peer pressure, teamwork.	1
2L.4 Factors Affecting Performance Fitness/health, stress, sleep, fatigue, alcohol, medication, drug abuse.	1
2L.5 Physical Environment Working environment (climate, noise, illumination).	1

## MODULE 3L — AVIATION LEGISLATION

3L.1 Regulatory Framework — Role of the European Commission, EASA and National Aviation Authorities (NAAs); — Applicable parts of Part-M and Part-66.	1
3L.2 Repairs and Modifications — Approval of changes (repairs and modifications); — Standard changes and standard repairs.	2
3L.3 Maintenance Data — Airworthiness Directives (ADs), Instructions for Continuing Airworthiness (ICA) (AMM, IPC, etc.); — Flight Manual; — Maintenance records.	2

## MODULE 4L — AIRFRAME WOODEN/METAL TUBE AND FABRIC

<p>4L.1 Airframe wooden/combination of metal tube and fabric</p> <ul style="list-style-type: none"><li>— Timber, plywood, adhesives, preservation, power line, properties, machining;</li><li>— Covering (covering materials, adhesives and finishes, natural and synthetic covering materials and adhesives);</li><li>— Paint assembly and repair processes;</li><li>— Recognition of damages from overstressing of wooden/metal-tube and fabric structures;</li><li>— Deterioration of wood components and coverings;</li><li>— Crack test (optical procedure, e.g., magnifying glass) of metal components.</li></ul> <p>Corrosion and preventive methods Health and fire safety protections.</p>	2
<p>4L.2 Material</p> <ul style="list-style-type: none"><li>— Types of wood, stability, and machining properties;</li><li>— Steel and light alloy tubes and fittings, fracture inspections of welded seams;</li><li>— Plastics (overview, understanding of the properties);</li><li>— Colours and paints, paint removal;</li><li>— Glues, adhesives;</li><li>— Covering materials and technologies (natural and synthetic polymers).</li></ul>	2
<p>4L.3 Identifying damage</p> <ul style="list-style-type: none"><li>— Overstress of wood / metal-tubing and fabric structures;</li><li>— Load transfers;</li><li>— Fatigue strength and crack testing.</li></ul>	3
<p>4L.4 Performance of practical activities</p> <ul style="list-style-type: none"><li>— Locking of pins, screws, castellated nuts, turnbuckles;</li><li>— Thimble splice;</li><li>— Nicopress and Talurit repairs;</li><li>— Repair of coverings;</li><li>— Repair of transparencies;</li><li>— Repair exercises (plywood, stringer, handrails, skins);</li><li>— Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces;</li><li>— Performance of 100-hours/annual inspections on a wood or combination of metal-tube and fabric airframe.</li></ul>	2

## MODULE 5L — AIRFRAME COMPOSITE

<p>5L.1 Airframe fibre-reinforced plastic (FRP)</p> <ul style="list-style-type: none"> <li>— Basic principles of FRP construction;</li> <li>— Resins (Epoxy, polyester, phenolic resins, vinyl ester resins);</li> <li>— Reinforcement materials glass, aramide and carbon fibres, features;</li> <li>— Fillers;</li> <li>— Supporting cores (balsa, honeycombs, foamed plastics);</li> <li>— Constructions, load transfers (solid FRP shell, sandwiches);</li> <li>— Identification of damage during overstressing of components;</li> <li>— Procedure for FRP projects (according to Maintenance Organisation Manual) including storage conditions for material.</li> </ul>	2
<p>5L.2 Material</p> <ul style="list-style-type: none"> <li>— Thermosetting plastics, thermoplastic polymers, catalysts;</li> <li>— Understanding properties, machining technologies, detaching, bonding, welding;</li> <li>— Resins for FRP: epoxy resins, polyester resins, vinyl ester resins, phenolic resins;</li> <li>— Reinforcement materials;</li> <li>— From elementary fibre to filaments (release agent, finish), weaving patterns;</li> <li>— Properties of individual reinforcement materials (E-glass fibre, aramide fibre, carbon fibre);</li> <li>— Problem with multiple-material systems, matrix;</li> <li>— Adhesion/cohesion various behaviours of fibre materials;</li> <li>— Filling materials and pigments;</li> <li>— Technical requirements for filling materials;</li> <li>— Property change of the resin composition through the use of E-glass, micro balloon, aerosols, cotton, minerals, metal powder, organic substances;</li> <li>— Paint assembly and repair technologies;</li> <li>— Support materials;</li> <li>— Honeycombs (paper, FRP, metal), balsa wood, Divinycell (Contizell), development trends.</li> </ul>	2
<p>5L.3 Assembly of Fibre-Reinforced Composite-Structure Airframes</p> <ul style="list-style-type: none"> <li>— Solid shell;</li> <li>— Sandwiches;</li> <li>— Assembly of aerofoils, fuselages, control surfaces.</li> </ul>	2
<p>5L.4 Identifying Damage</p> <ul style="list-style-type: none"> <li>— Behaviour of FRP components in the event of overstressing;</li> <li>— Identifying delaminations, loose bonds;</li> <li>— Bending vibration frequency in aerofoils;</li> <li>— Load transfer;</li> <li>— Frictional connection and positive locking;</li> <li>— Fatigue strength and corrosion of metal parts;</li> <li>— Metal bonding, surface finishing of steel and aluminium components during bonding with FRP.</li> </ul>	3
<p>5L.5 Mold Making</p> <ul style="list-style-type: none"> <li>— Plaster molds, mold ceramics;</li> <li>— GFK molds, Gel-coat, reinforcement materials, rigidity problems;</li> <li>— Metal molds;</li> <li>— Male and female molds.</li> </ul>	2

<p>5L.6 Performance of Practical Activities</p> <ul style="list-style-type: none"> <li>— Locking of pin, screws, castellated nuts, turnbuckles;</li> <li>— Thimble splice;</li> <li>— Nicopress and Talurit repairs;</li> <li>— Repair of coverings;</li> <li>— Repair of solid FRP shells;</li> <li>— Mold fabrication/molding of a component (e.g. fuselage nose, landing gear fairing, wing tip and winglet);</li> <li>— Repair of sandwich shell where interior and exterior layer are damaged;</li> <li>— Repair of sandwich shell by pressing with a vacuum bag;</li> <li>— Transparency repair (PMMA) with one- and two-component adhesive;</li> <li>— Bonding of transparency with the canopy frame;</li> <li>— Tempering of transparencies and other components;</li> <li>— Performance of a repair on a sandwich shell (minor repair less than 20 cm);</li> <li>— Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces;</li> <li>— Performance of 100-hour/annual inspections on an FRP airframe.</li> </ul>	2
--	---

## MODULE 6L — AIRFRAME METAL

<p>6L.1 Airframe metal</p> <ul style="list-style-type: none"><li>— Metallic materials and semi-finished products, machining methods;</li><li>— Fatigue strength and crack test;</li><li>— Assembly of metal-construction components, riveted joints, adhesive joints;</li><li>— Identification of damage to overstressed components, effects of corrosion;</li><li>— Health and fire protection.</li></ul>	2
<p>6L.2 Material</p> <ul style="list-style-type: none"><li>— Steel and its alloys;</li><li>— Light metals and their light alloys;</li><li>— Rivet materials;</li><li>— Plastics;</li><li>— Colours and paints;</li><li>— Metal adhesives;</li><li>— Types of corrosion;</li><li>— Covering materials and technologies (natural and synthetic).</li></ul>	2
<p>6L.3 Identifying Damage</p> <ul style="list-style-type: none"><li>— Overstressed metal airframes, levelling, measurement of symmetry;</li><li>— Load transfers;</li><li>— Fatigue strength and crack test;</li><li>— Identifying loose riveted joints.</li></ul>	3
<p>6L.4 Assembly of Metal- and Composite-Construction Airframes</p> <ul style="list-style-type: none"><li>— Skins;</li><li>— Frames;</li><li>— Stringers and longerons;</li><li>— Frame construction;</li><li>— Problems in multiple-material systems.</li></ul>	2
<p>6L.5 Fasteners</p> <ul style="list-style-type: none"><li>— Classifications of fits and clearances;</li><li>— Metric and imperial measuring systems;</li><li>— Oversize bolt.</li></ul>	2
<p>6L.6 Performance of Practical Activities</p> <ul style="list-style-type: none"><li>— Locking of pins, screws, castellated nuts, turnbuckles;</li><li>— Thimble splice;</li><li>— Nicopress and Talurit repairs;</li><li>— Repair of coverings, surface damage, stop drilling cracks;</li><li>— Repair of transparencies;</li><li>— Cutting out sheet metals (aluminiums and light alloys, steel and alloys);</li><li>— Folding bending, edging, beating, smoothening, beading;</li><li>— Repair riveting of metal airframes according to repair instruction or drawings;</li><li>— Evaluation of rivet errors;</li><li>— Aircraft Rigging. Calculation of control surface mass balance and range of movement of the control surfaces, measurement of operating forces;</li><li>— Performance of 100-hour/annual inspections on a metal airframe.</li></ul>	2

## MODULE 7L — AIRFRAME GENERAL

<p>7L.1 Flight Control System</p> <ul style="list-style-type: none"> <li>— Cockpit controls: controls in cockpit, colour markings, knob shapes;</li> <li>— Flight controls surfaces, flaps, air brakes surfaces, controls, hinges, bearings, brackets, push-pull rods, bell cranks, horns, pulleys, cables, chains, tubes, rollers, tracks, jack screws, surfaces, movements, lubrication, stabilisers, balancing of controls;</li> <li>— Combination of controls: flap ailerons, flap air brakes;</li> <li>— Trim systems.</li> </ul>	3
<p>7L.2 Airframe</p> <ul style="list-style-type: none"> <li>— Landing gear: characteristics of landing gears and shock absorber strut, extension, brakes, drum, disks, wheel, tyre, retraction mechanism, electrical retraction, emergency;</li> <li>— Wing and stabiliser of fuselage connections, wing flap ailerons of fuselage interconnection, stabiliser and elevator of fuselage installation;</li> <li>— Permissible maintenance measures;</li> <li>— Towing: towing/lifting equipment/mechanism;</li> <li>— Cabin: seats and safety harness, cabin arrangement, windshields, windows, placards, baggage compartment, cockpit controls, cabin air system, blower;</li> <li>— Water ballast: water reservoirs, lines, valves, drains, vents, tests;</li> <li>— Fuel system: tanks, lines, filters, vents, drains, filling, selector valve, pumps, indication, tests, bonding;</li> <li>— Hydraulics: system layout, accumulators, pressure and power distribution, indication;</li> <li>— Liquid and gas: hydraulic, other fluids, levels, reservoir, lines, valves, filter;</li> <li>— Protections: firewalls, fire protection, lightning strike bonding, turnbuckles, locking devices, dischargers.</li> </ul>	2
<p>7L.3 Fasteners</p> <ul style="list-style-type: none"> <li>— Reliability of pins, rivets, screws;</li> <li>— Control cables, turnbuckles;</li> <li>— Quick-release couplings (L’Hotellier, SZD, Poland).</li> </ul>	2
<p>7L.4 Locking Equipment</p> <ul style="list-style-type: none"> <li>— Admissibility of locking methods, locking pins, spring steel pins, locking wire, stop nuts, paint;</li> <li>— Quick-release couplings.</li> </ul>	2
<p>7L.5 Weight and Balance Levelling</p>	2
<p>7L.6 Rescue Systems</p>	2
<p>7L.7 On-board Modules</p> <ul style="list-style-type: none"> <li>— Pitot-static and pressure system, vacuum/dynamic system, hydrostatic test;</li> <li>— Flight instruments: airspeed indicator, altimeter, vertical-speed indicator, connection and functioning, markings;</li> <li>— Arrangement and display, panel, electrical wires;</li> <li>— Gyroscopes, filters, indicating instruments; testing of function;</li> <li>— Magnetic compass: installation and compass swing;</li> <li>— Sailplanes: acoustic vertical-speed indicator, flight recorders, anticollision aid;</li> <li>— Oxygen system.</li> </ul>	2
<p>7L.8 On-board Modules Installation and Connections</p> <ul style="list-style-type: none"> <li>— Flight instruments, mounting requirements (emergency landing conditions as per CS-22);</li> <li>— Electric wiring, power sources, types of storage batteries, electrical parameters, electric generator, circuit breaker, energy balance, earth/ground, connectors, terminals, warnings, fuses, lamps, lightings, switches, voltmeters, ampere meters, electrical</li> </ul>	2



gauges.	
7L.9 Piston Engine Propulsion Interface between power plant and airframe.	2
7L.10 Propeller — Inspection; — Replacement; — Balancing.	2
7L.11 Retraction System — Propeller position control; — Engine folding system.	2
7L.12 Physical Inspection Procedures — Cleaning, use of lighting and mirrors; — Measuring tools; — Measure of controls deflection; — Torque of screws and bolts; — Wear of bearings; — Inspection equipment; — Calibration of measuring tools.	2

## MODULE 8L — POWER PLANT

<p>8L.1 Noise Limits</p> <ul style="list-style-type: none"> <li>— Explanation of the concept of ‘noise level’;</li> <li>— Noise certificate;</li> <li>— Enhanced sound proofing;</li> <li>— Possible reduction of sound emissions.</li> </ul>	1
<p>8L.2 Piston Engines</p> <ul style="list-style-type: none"> <li>— Four-stroke spark ignition engine, air-cooled engine, fluid-cooled engine;</li> <li>— Two-stroke engine;</li> <li>— Rotary-piston engine;</li> <li>— Efficiency and influencing factors (pressure–volume diagram, power curve);</li> <li>— Noise control devices.</li> </ul>	2
<p>8L.3 Propeller</p> <ul style="list-style-type: none"> <li>— Blade, spinner, backplate, accumulator dome pressure, hub;</li> <li>— Operation of propellers;</li> <li>— Variable-pitch propellers, ground and in-flight adjustable propellers, mechanically, electrically and hydraulically;</li> <li>— Balancing (static, dynamic);</li> <li>— Noise problems.</li> </ul>	2
<p>8L.4 Engine Control Devices</p> <ul style="list-style-type: none"> <li>— Mechanical control devices;</li> <li>— Electrical control devices;</li> <li>— Tank displays;</li> <li>— Functions, characteristics, typical errors and error indications.</li> </ul>	2
<p>8L.5 Hosepipes</p> <ul style="list-style-type: none"> <li>— Material and machining of fuel and oil hoses;</li> <li>— Control of life limit.</li> </ul>	2
<p>8L.6 Accessories</p> <ul style="list-style-type: none"> <li>— Operation of magneto ignition;</li> <li>— Control of maintenance limits;</li> <li>— Operation of carburettors;</li> <li>— Maintenance instructions on characteristic features;</li> <li>— Electric fuel pumps;</li> <li>— Operation of propeller controls;</li> <li>— Electrically operated propeller control;</li> <li>— Hydraulically operated propeller control.</li> </ul>	2
<p>8L.7 Ignition System</p> <ul style="list-style-type: none"> <li>— Constructions: coil ignition, magneto ignition, and thyristor ignition;</li> <li>— Efficiency of the ignition and preheat system;</li> <li>— Modules of the ignition and preheat system;</li> <li>— Inspection and testing of a spark plug.</li> </ul>	2
<p>8L.8 Induction and Exhaust Systems</p> <ul style="list-style-type: none"> <li>— Operation and assembly;</li> <li>— Silencers and heater installations;</li> <li>— Nacelles and cowlings;</li> <li>— Inspection and test;</li> <li>— CO emission test.</li> </ul>	2
<p>8L.9 Fuels and Lubricants</p> <ul style="list-style-type: none"> <li>— Fuel characteristics;</li> </ul>	2

<ul style="list-style-type: none"> <li>— Labelling, environmentally friendly storage;</li> <li>— Mineral and synthetic lubricating oils and their parameters: labelling and characteristics, application;</li> <li>— Environmentally friendly storage and proper disposal of used oil.</li> </ul>	
<p>8L.10 Documentation</p> <ul style="list-style-type: none"> <li>— Manufacturer documents for the engine and propeller;</li> <li>— Instructions for Continuing Airworthiness (ICA);</li> <li>— Aircraft Flight Manuals (AFMs) and Aircraft Maintenance Manuals (AMMs);</li> <li>— Time Between Overhaul (TBO);</li> <li>— Airworthiness Directives (ADs), technical notes and service bulletins.</li> </ul>	2
<p>8L.11 Illustrative Material</p> <ul style="list-style-type: none"> <li>— Cylinder unit with valve;</li> <li>— Carburettor;</li> <li>— High-tension magneto;</li> <li>— Differential-compression tester for cylinders;</li> <li>— Overheated/damaged pistons;</li> <li>— Spark plugs of engines that were operated differently.</li> </ul>	2
<p>8L.12 Practical Experience</p> <ul style="list-style-type: none"> <li>— Work safety/accident prevention (handling of fuels and lubricants, start-up of engines);</li> <li>— Rigging-engine control rods and Bowden cables;</li> <li>— Setting of no-load speed;</li> <li>— Checking and setting the ignition point;</li> <li>— Operational test of magnetos;</li> <li>— Checking the ignition system;</li> <li>— Testing and cleaning of spark plugs;</li> <li>— Performance of the engine tasks contained in an aeroplane 100-hour/annual inspection;</li> <li>— Cylinder compression test;</li> <li>— Static test and evaluation of the engine run;</li> <li>— Documentation of maintenance work including replacement of components.</li> </ul>	2
<p>8L.13 Gas Exchange in Internal-Combustion Engines</p> <ul style="list-style-type: none"> <li>— Four-stroke reciprocating engine and control units;</li> <li>— Energy losses;</li> <li>— Ignition timing;</li> <li>— Direct flow behaviour of control units;</li> <li>— Wankel engine and control units;</li> <li>— Two-stroke engine and control units;</li> <li>— Scavenging;</li> <li>— Scavenging blower;</li> <li>— Idle range and power range.</li> </ul>	2
<p>8L.14 Ignition, Combustion and Carburation</p> <ul style="list-style-type: none"> <li>— Ignition;</li> <li>— Spark plugs;</li> <li>— Ignition system;</li> <li>— Combustion process;</li> <li>— Normal combustion;</li> <li>— Efficiency and medium pressure;</li> <li>— Engine knock and octane rating;</li> <li>— Combustion chamber shapes;</li> <li>— Fuel/air mix in the carburettor;</li> <li>— Carburettor principle, carburettor equation;</li> <li>— Simple carburettor;</li> </ul>	2

<ul style="list-style-type: none"> <li>— Problems of the simple carburettor and their solutions;</li> <li>— Carburettor models;</li> <li>— Fuel/air mix during injection;</li> <li>— Mechanically controlled injection;</li> <li>— Electronically controlled injection;</li> <li>— Continuous injection;</li> <li>— Carburettor-injection comparison.</li> </ul>	
<p>8L.15 Flight Instruments in Aircraft with Injection Engines</p> <ul style="list-style-type: none"> <li>— Special flight instruments (injection engine);</li> <li>— Interpretation of indications in a static test;</li> <li>— Interpretation of indications in flight at various flight levels.</li> </ul>	2
<p>8L.16 Maintenance of Aircraft with Injection Engines</p> <ul style="list-style-type: none"> <li>— Documentation, manufacturer documents, etc.;</li> <li>— General maintenance instructions (hourly inspections);</li> <li>— Functional tests;</li> <li>— Ground test run;</li> <li>— Test flight;</li> <li>— Troubleshooting in the event of faults in the injection system and their correction.</li> </ul>	2
<p>8L.17 Workplace Safety and Safety Provisions</p> <p>Work safety and safety provisions for work on injection systems.</p>	2
<p>8L.18 Visual Aids:</p> <ul style="list-style-type: none"> <li>— Carburettor;</li> <li>— Components of injection system;</li> <li>— Aircraft with injection engine;</li> <li>— Tool for work on injection systems.</li> </ul>	2
<p>8L.19 Electrical Propulsion</p> <ul style="list-style-type: none"> <li>— Energy system, accumulators, installation;</li> <li>— Electrical motor;</li> <li>— Heat, noise and vibration checks;</li> <li>— Testing windings;</li> <li>— Electrical wiring and control systems;</li> <li>— Pylon, extension and retraction systems;</li> <li>— Motor/propeller brake systems;</li> <li>— Motor ventilation systems;</li> <li>— Practical experience of 100-hour/annual inspections.</li> </ul>	2
<p>8L.20 Jet Propulsion</p> <ul style="list-style-type: none"> <li>— Engine installation;</li> <li>— Pylon, extension and retraction systems;</li> <li>— Fire protection;</li> <li>— Fuel systems including lubrication;</li> <li>— Engine starting systems, gas assist;</li> <li>— Engine damage assessment;</li> <li>— Engine servicing;</li> <li>— Engine removal / refit and test;</li> <li>— Practical experience of conditional / run time / annual inspections;</li> <li>— Conditional inspections.</li> </ul>	2
<p>8L.21 Full Authority Digital Engine Control (FADEC)</p>	2

**MODULE 12L — RADIO COM/ELT/TRANSPONDER/INSTRUMENTS**

12L.1 Radio Com/ELT — Channel spacing; — Basic functional test; — Batteries; — Testing and maintenance requirements.	2
12L.2 Transponder — Basic operation; — Typical portable configuration including antenna; — Explanation of Modes A, C, S; — Testing and maintenance requirements.	2
12L.3 Instruments — Handheld altimeter/variometers; — Batteries; — Basic functional test.	2