

**APPENDIX R62.04  
RECREATIONAL PILOT LICENCE  
WEIGHT-SHIFT CONTROLLED MICROLIGHT AEROPLANES  
PRACTICAL TRAINING**

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**1. Aim of training course**

The aim of the course is to train a candidate to the level of proficiency required for the issue of a class and type rating for weight-shift controlled microlight aeroplanes, and to provide the training necessary to act as pilot-in-command of any weight-shift controlled microlight aeroplane, engaged in non-revenue flights under visual flight rules.

**2. Practical Training course**

**Exercise 1 : Familiarisation with the microlight aeroplane**

**Aim:** To become familiar with the component parts, controls and system of the aeroplane.

- a. Characteristics of the weight-shift microlight aeroplane
- b. Cockpit layout
- c. Systems
- d. Check lists, drills, controls; and
- e. emergency drills, consisting of –
  - (a) action in the event of fire on the ground and in the air;
  - (b) cabin and electrical system failures;
  - (c) escape drills, location and use of emergency equipment and exits
  - (d) action in the event of being blown over

**Exercise 2 : Preparation for, and action after flight**

**Aim:** To explain how to prepare the aircraft and pilot for flight, and how to leave the aircraft after flight.

- a. Local Rules
- b. Flight authorisation and microlight aeroplane acceptance
- c. Serviceability documents
- d. Required equipment, maps, etc.
- e. External checks
- f. Internal checks
- g. Seat, harness and controls adjustment
- h. Starting and warming-up checks including safety, people, animals, aircraft and  
airlaw
- i. Power checks
- j. Running down and switching off of engine
- k. Parking, security and picketing
- l. Completion of authorisation and flight folio sheets
- m. Ground handling

**Exercise 3 : Air Experience**

The aim of this sequence is to instil confidence in a learner who has previously flown very little or not at all, to impart some knowledge, and to familiarise the learner with the geography around the training base.

**Exercise 4 : Effect of controls**

**Aim:** To explain how each control affects the aircraft in flight.

- (1) Primary and secondary effects of bar movement backwards and forwards (pitch)
- (2) Primary and secondary effects of bar movement left and right (roll)
- (3) Primary and secondary effect of thrust
- (4) Effects of the following on wing controllability
  - (a) airspeed
  - (b) power changes
  - (c) combining thrust and pitch for instant attitude change.
  - (d) Effect of change in weight

**Exercise 5 : Taxiing**

**Aim:** To safely control the aeroplane while manoeuvring on the ground in different wind conditions and on different surfaces.

- (1) Pre-taxi checks
- (2) Starting, control of speed, and stopping
- (3) Engine handling
- (4) Control of direction and turns
- (5) Wing control including wing tilting in confined spaces
- (6) Parking area procedure and precautions
- (7) Effects of wind and control of wing
- (8) Effects of ground gradient
- (9) Marshalling signals
- (10) Instrument checks
- (11) Air traffic control procedures
- (12) Emergencies (throttle jamming)
- (13) Airmanship –
  - ii. wingtip
  - iii. prop-blast awareness
  - iv. look-out

**Exercise 6 : Straight and level flight**

**Aim:** To attain and maintain flight in a straight line and at a constant altitude.

- (1) At normal Hands-Off-Trim (HOT) speed, attaining and maintaining straight and level flight
- (2) Demonstration of inherent stability
- (3) Control in pitch including use of trim
- (4) Demonstrate pitch/bank bar movement to counter turbulence.
- (5) At selected airspeeds combining pitch and power, maintaining steady height.
- (6) Flights at maximum level speed without Pilot Induced Oscillations
- (7) Use of instruments
- (8) Airmanship
  - b. lookout
  - c. spatial awareness

**Exercise 7 : Climbing**

**Aim:** To enter and maintain a steady full-power climb and then return to level flight at a predetermined altitude, and to enter and maintain a steady cruise-climb.

- (1) Cruise entry, maintaining the climb and levelling off
- (2) Immediate entry, maintaining the climb and levelling off.
- (3) Levelling off at selected altitudes
- (4) Maximum angle of climb
- (5) Maximum rate of climb
- (6) Use of instruments
- (7) Airmanship

**Exercise 8 : Descending**

**Aim:** To enter and maintain a steady glide-descent and then, at a predetermined altitude, to return to level flight or to climb, and to enter and maintain a steady cruise descent.

- (1) Entry, maintaining and levelling off
- (2) Levelling off at selected altitudes
- (3) Glide, powered and cruise descent (including effect of power and airspeed)
- (4) Use of instruments
- (5) Demonstrate danger of banking then bar in for speed causing slipping turn
- (6) Airmanship

**Exercise 9 : Stalling**

**Note: Instructors must use discretion in entering the stall with various wing types. Never enter with the nose more than 10 degrees higher than normal level flying attitude**

**Aim:** To recognise and enter a fully-developed stall from various modes of flight both straight and turning, and to recover with minimum height-loss to a safe flight mode; to become familiar with the 'feel' of the aeroplane in slow flight just above the stall speed.

**A. Slow flight**

The objective is to improve the learner's ability to recognise inadvertent flight at critically low speeds and provide practice in maintaining the microlight aeroplane in balance should this situation occur.

- (1) Safety checks
- (2) Introduction to slow flight
- (3) Controlled flight just before the stall without losing or gaining altitude
- (4) Application of full power, adjusting for pitch and torque to achieve safe speed
- (5) Airmanship.

**B. Stalling**

- (1) Airmanship
- (2) Safety checks
- (3) Symptoms
- (4) Recognition
- (5) Clean stall and recovery without power and with power
- (6) Recovery when a wing drops
- (7) Demonstrate response time with proper engine management

**Exercise 10 : Medium Turns**

**Aim:** To enter and maintain a medium (up to approximately 30° bank angle) turn whilst maintaining level flight and then to return to straight and level flight on a new

predetermined heading; to enter and maintain a climb or descent while turning, or to enter and maintain a turn from a straight climb or descent.

- (1) Entry and maintaining medium level turns
- (2) Resuming straight and level flight
- (3) Faults in the turn
- (4) Turns onto selected headings, use of compass
- (5) Blind 20deg ground referencing turns
- (6) Judging bank angle by wing-tip reference
- (7) Judging bank angle by aerofoil reference
- (8) Use of instruments
- (9) Airmanship.

### **Exercise 11 : Descending and Climbing Turns**

**Aim:** To enter and maintain a medium (up to approximately 30° bank angle) turn whilst maintaining a climb or descent, or to enter and maintain a turn from a straight climb or descent.

**Note:** Ideally, climbing turns should not exceed 15 deg bank angle, to optimise rate of climb.

- (1) Entry and maintaining medium descending and climbing turns
- (2) Resuming straight and level flight
- (3) Faults in the turn
- (4) Turns onto selected headings, use compass
- (5) Use of instruments
- (6) Airmanship.

### **Exercise 12 : Take Off and Climb to Downwind Position**

**Aim:** To safely take-off and climb the aeroplane to position on the downwind leg at circuit height; to land safely in the event of an engine failure after take-off or at any time in the circuit; and to decide against continuation of the take-off – taking the appropriate action – if for some reason continuation would be unsafe.

- (1) Pre-take-off checks
- (2) Into wind take-off
- (3) Holding centreline by wing banking and steering
- (4) Rotation pendulum and torque management
- (5) Drills during and after take-off
- (6) Engine failure after take off (EFATO) up to early downwind  
**Note:** this exercise may not be practiced by a learner while flying solo.
- (7) Short take-off and soft-field procedures / techniques, including performance calculations
- (8) Abandoned take-off
- (9) Airmanship

### **Exercise 13 : Circuit, Approach and Landing**

**Aim:** To fly an accurate circuit and carry out a safe approach and landing.

- (1) Circuit procedures, downwind, base leg, key points
- (2) Powered approach and landing
- (3) Glide approach and landing
- (4) Effect of wind on approach and touchdown speeds

- (5) Turbulent approach and landing
- (6) Short-landing and soft-field procedures / techniques
- (7) Missed approach / go-around
- (8) Low and slow plus recovery
- (9) The hold off period and touch down.
- (10) Control during ground run
- (11) Airmanship

**Exercise 14 : Recovery from Pilot Induced Oscillations**

**Aim:** To identify the situation where PIO can occur and rectify it.

- (1) Demonstrate the cause of Pilot Induced Oscillations
- (2) Recognition of symptoms of Pilot Induced Oscillations
- (3) Recover from PIO
- (4) Most common situations of PIO
  - rotation and early climb out
  - finals
- (5) Airmanship

**Exercise 15 : First Solo**

**Aim:** To carry out a safe and accurate solo circuit, approach and landing.

**One circuit only. Then full stop.**

The student must be checked out for first solo by a Grade A or Grade B instructor , who, if possible, is in full uninterrupted radio contact with the student during the entire first solo exercise.

Before flying solo a learner must:

- 1. in addition to being proficient in exercises 1 to 14
- 2. be able to reasonably execute a simulated emergency landing from any position in the circuit.
- 3. He or she must also have completed a minimum of 6 (six) hours of dual instruction.
- 4. He or she must be the holder of a valid Student Pilot licence and have successfully passed the required exams.

During the next 3 hours of solo flight, the student must remain in the circuit, consolidating Exercise 12 and 13. The student must receive a dual check-out for each of these three hours, and the supervising instructor must, if possible, remain in full, uninterrupted radio contact with the student during this time.

**Exercise 16 : Slipping turns**

**Aim:** To understand the initiation of a slipping turn, and know when it is appropriate.

- (1) Use of controls to induce and recover from a slipping turn
- (2) Height loss in a slipping turn
- (3) Use of slipping turns
- (4) Airmanship

**Exercise 17 : Steep Turns**

**Aim:** To carry out a co-ordinated level turn at steep angles of bank and to recognise and recover from a spiral dive; and to avoid wake turbulence.

Maximum of 270 degree, or 360 degrees if climbing through the last 90 deg

- (1) Steep turns (45°), level and descending, with and without power;
- (2) Thorough explanation of the hazards of stalling in the turn and recovery
- (3) Recoveries from unusual attitudes, including spiral dives
- (4) Steep descending turns (up to 60° bank angle), completing a minimum of 2 complete orbits, without engine power and without entering spiral dive, then recovering to straight and level flight.
- (5) Maximum rate of descent multiple turns, reversing orbit
- (6) Airmanship

**Exercise 18 : Use of instruments**

**Aim:** To develop the habit of checking constantly both navigational and engine instruments in flight whilst keeping a good look-out for other aircraft.

**Note:** Weight shift pilots are expected to fly comfortably with very little instrument referencing. Flying must be 95% “outside”, and only 5% “inside”

- (1) Navigational instruments
- (2) Engine instruments
- (3) Scanning techniques
- (4) GPS
- (5) Airmanship

**Exercise 19 : Low flying**

**Aim:** To safely operate the aeroplane at heights lower than those normally used.

- (1) Emphasis on regulations governing low flying
- (2) Effect of drift
- (3) Effect of wind on ground speed
- (4) Bad weather circuit
- (5) Low flying down centreline to learn skill of absolute height control with primary bar movement
- (6) Airmanship

**Exercise 20 : Cross-wind Take-off and Landing**

**Aim:** To be able to handle both cross-wind take-offs and landings, including downwind landings in an emergency; to be able to input the correct amount of control to manage drift to ensure the track is a continuation of centreline on the final approach for landing.

- (1) Cross-wind take-offs
- (2) Wing management to minimize hang assembly torque stress
- (3) “Punching” rotation – technique
- (4) Cross-wind landings
- (5) Airmanship

### **Exercise 21 : Precautionary landings**

**Aim:** A precautionary landing is one not contemplated before the flight commenced and where engine power is still available, enabling the pilot the opportunity of selecting and inspecting a suitable landing area before executing a landing in an unfamiliar place.

- (1) Full procedure away from aerodrome
- (2) Occasions necessitating
- (3) In-flight conditions
- (4) landing area selection
- (5) Circuit and Inspection
- (6) PAN call
- (7) Actions after landing
- (7) Airmanship

### **Exercise 22. Forced landing**

**Aim:** To carry out a safe descent and landing in the event of the engine failing during flight.

**Note:** This exercise to be practiced at the training airfield, and commenced outside of the circuit pattern. Under no circumstances may the learner switch off the engine while practicing this exercise solo.

- (1) Forced-landing procedure
- (2) Choice of landing area
- (3) Gliding distance
- (4) Descent plan
- (5) Key positions
- (6) Engine cooling
- (7) Engine failure checks
- (8) Use of radio, Mayday call
- (8) Engine restart procedures
- (9) Downwind
- (10) Base leg
- (11) Final approach
- (12) Landing
- (13) Actions after landing
- (14) Airmanship

### **Exercise 23 : Action in Event of Fire**

**Aim:** Fire is extremely rare in modern microlight aeroplanes but it is essential that a pilot has a thorough knowledge of the procedures to be adopted in his or her particular type of aeroplane in order to extinguish a fire both on the ground and in the air.

- (1) Identification of fire
- (2) Isolation / extinguishing of fire
- (3) Flight procedures / emergency actions
- (4) Airmanship

**Exercise 24 : Restarting the engine in flight**

**This exercise only with an instructor on board, within easy glide to the training field, to be treated as a simulated emergency until engine is successfully restarted.**

**Aim:** Most two-stroke engines will at some time or another stop whilst in flight. It is important that the learner does not panic but is prepared mentally for and able to cope with the situation.

- (1) Engine failure checks
- (2) Engine restart procedures
- (3) Airmanship

**Exercise 25 : Unusual and dangerous attitudes / conditions**

**Aim:** To recognise potentially dangerous conditions of flight and to recover safely from unusual attitudes.

Note: this exercise must not be practised by a learner while flying solo.

- (1) Recovery from inadvertent mishandling of controls –
  - at high speeds
  - in stall recovery in various configurations
  - in a steep turn
  - following hitting wake turbulence in a 360° steep turn at 45° to 60° bank angles
  - in high nose whip stall attitude
- (2) Airmanship

**Exercise 26 : Loose Formation / Group flying**

**Aim:** to safely fly in loose formation with other aircraft and know safe landing and taking off procedures

- (1) Positioning in front, behind or alongside other aircraft
- (2) Taking off and landing considerations
- (3) Turning
- (4) Wake turbulence
- (5) Awareness of other aircraft
- (6) Blind spots
- (7) Manoeuvres in front of other aircraft and the effect on them.
- (8) Radio work
- (9) Air Law

**Exercise 27 : Navigation**

**Aim:** To fly accurately and safely in VMC under VFR a predetermined triangular route, with one out-landing as per CAR 62.05.2 (1) (a) and (b), without infringing the rules governing regulated airspace.

**A : Basic Navigation**

- (1) Flight planning



- (a) Weather forecast
  - (b) Map selection
    - (i) choice of route
    - (ii) controlled airspace
    - (iii) danger, prohibited and restricted areas
    - (iv) safety altitudes
  - (c) Calculations
    - (i) magnetic heading(s) and time(s) *en route*
    - (ii) fuel consumption
    - (iii) gross mass
    - (iv) mass and performance
  - (d) Flight information
    - (i) NOTAMS etc.
    - (ii) radio frequencies
    - (iii) selection of alternate aerodromes
  - (e) Microlight aeroplane documentation
  - (f) Notification of the flight
    - (i) pre-flight administrative procedures
    - (ii) flight plan form
- (2) Departure
- (a) Organisation of cockpit workload
  - (b) Departure procedures
    - (i) altimeter settings
    - (ii) ATC liaison in controlled / regulated airspace
    - (iii) setting-heading procedure
    - (iv) noting of ETAs
      - (14) Maintenance of altitude and heading
      - (15) Revisions of ETA and heading
      - (16) Mental Log keeping
      - (17) Use of radio
      - (18) Minimum weather conditions for continuation of flight
      - (19) In-flight decisions
      - (20) Transiting controlled / regulated airspace
      - (21) Uncertainty of position procedure
      - (22) Lost procedure
- (3) Arrival
- (a) Aerodrome joining procedure
    - (i) ATC liaison in controlled / regulated airspace
    - (ii) altimeter setting
    - (iii) entering the traffic pattern
    - (iv) circuit procedures
  - (b) Parking
  - (c) Security of microlight aeroplane
  - (d) Refuelling
  - (e) Closing of flight plan, if applicable
    - ii. Post-flight administrative procedures

**B : Navigation at low heights and in reduced visibility**

**Note:** This is not to be accepted as standard cross country technique. The student should know to avoid situations where it may be encountered.

- (1) Actions prior to descending
- (2) Hazards (e.g. obstacles, other aircraft)
- (3) Difficulties of map reading
- (4) Effects of wind and turbulence
- (5) Avoidance of noise-sensitive areas
- (6) Joining the circuit
- (7) Bad-weather circuit and landing

**C : Use of GPS**

- (1) Entering weigh-points
- (2) Reading GPS information
- (3) Following GPS routes
- (4) Practical limitations

**Note: Exercise 28, 29 and 30 do not need to reflect practical flying. These exercises merely need to be endorsed in the student/ pilot's log book by the instructor. This endorsement can be done by any grade instructor.**

**Exercise 28: Pre-flight inspections**

**Aim:** To instil in the student the habit of systematic, thorough and regular pre-flights

- (1) Wing
  - (a)
    - (a) symmetry
    - (b) sail
    - (c) cables
    - (d) brackets
    - (e) hang point
    - (f) spreader bar cable
    - (g) nose cable
    - (h) tubing
- (2) Undercarriage
  - (a) symmetry
  - (b) suspension
  - (c) steering
  - (d) brackets
  - (e) Instrument console, including power supply to instruments, intercom, radio and aerial connections.
  - (f) engine mount
  - (g) wheels and tyres
  - (h) brakes
  - (i) tubing
  - (j) cables
  - (k) seats and seatbelts
  - (l) fuel-tank
  - (m) battery
- (3) Engine, exhaust and gearbox
  - (a) Oil leaks
  - (b) Spark plug caps

- (c) Cables and electrical wiring
  - (d) Carb rubbers
  - (e) Fan belt / Radiator / Cooling system
  - (f) Exhaust blow-by
  - (g) Exhaust springs
  - (h) Air filters
  - (i) Carburetors
- (3) Systems
- (a) Fuel system
  - (b) Electrical system

**Exercise 29: Passengers**

- (1) Embarking, disembarking, briefing
- (2) Security
- (3) Comfort

**Exercise 30: Wing Rigging and De-rigging**

- (1) minimizing damage during de-rigging
- (2) Cable, fabric, bracket and tube protection
- (3) minimizing damage during transport
- (4) minimizing damage during rigging
- (5) special techniques and considerations
- (6) Batten profiles
- (7) Wind considerations
- (8) Surface consideration
- (9) Trailer towing considerations