

APPENDIX 62.11
NATIONAL FLIGHT INSTRUCTOR RATING
MICROLIGHT AND LIGHT SPORT AEROPLANES
PRACTICAL TRAINING COURSE

The practical training course is subdivided into administration, ground school, patten flying and practical aircraft work.

Section 1

Administration

- (1) Student training files
- (2) Progress reports
- (3) Logbooks
 - a. Student log book
 - b. Aircraft log book
 - c. Instructor log book
- (4) Authorization sheets
- (5) Application forms
- (6) Medicals
- (7) Maintenance of Instructor personal training file
- (8) The filing, use and format of legislation, AIPs, AIP amendments, AIC's, Notams and other relevant documents.

Section 2

Ground School

- (1) Instructional aids
- (2) Textbooks
- (3) Additional notes
- (4) Reference library
- (5) Lecture methods and preparation
- (6) Lecture schedules
- (7) Student briefings
 - a. Before flight lesson
 - b. After flight lesson
 - c. Preparation of exams
 - d. After exams

Section 3A:

Patten flying (CONVENTIONAL MICROLIGHT AND LIGHT SPORT AEROPLANES)

In the case of a Grade C national flight instructor rating (conventional microlight and light sport aeroplanes), patten training including the following exercises. All the patten flying will be with a Grade A instructor.

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.

- (1) Local rules
- (2) Flight authorisation and microlight aeroplane acceptance
- (3) Serviceability documents
- (4) Required equipment, maps, etc.

- (5) External checks
- (6) Internal checks
- (7) Seat, harness and controls adjustment
- (8) Seating position – suitable clothing
- (9) Starting and warming-up checks
- (10) Power checks
- (11) Running down and switching off of engine
- (12) Parking, security and picketing; and
- (13) Completion of authorisation and flight folio sheets
- (14) Assessing student, communication and explanation of each aspect.

Exercise 4 : Effect of controls

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

- (1) Methods of assessing aircraft attitude
- (2) Primary effects when laterally level and when banked;
- (3) Further effects of aileron and rudder – effects of –
 - (a) airspeed
 - (b) slipstream
 - (c) power changes
 - (d) trimming of controls
 - (e) flaps
 - (f) other controls, as applicable
- (4) Use of engine controls
- (5) How much control to hand over to the student and when,
- (6) How to get full control back from the student – action in the event of a student locking on controls.
- (7) Typical errors to expect during type conversions.
- (8) Airmanship

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) Turns in confined spaces
- (6) Tail-wheel considerations (if applicable)
- (7) Parking area procedure and precautions
- (8) Effects of wind and use of flying controls
- (9) Effects of ground surface
- (10) Freedom of rudder movement
- (11) Marshalling signals
- (12) Instrument checks
- (13) Air traffic control procedures
- (15) Emergencies (brake and steering failure)
- (16) Typical problems with student co-ordination
- (17) What to expect from a student during type conversion.
- (18) Airmanship

Exercise 6 : Straight and level flight

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

- (1) At normal cruising power, attaining and maintaining straight and level flight
- (2) Demonstration of inherent stability
- (3) Control in pitch, including use of trim
- (4) Lateral level, direction and balance, trim
- (5) At selected airspeeds (use of power)
- (6) During speed and configuration changes
- (7) Use of instruments.
- (8) Typical student problems and how to address them.
- (9) Airmanship

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) Entry, maintaining the normal and maximum rate climb and levelling off, with and without flaps (if applicable)
- (2) Levelling off at selected altitudes
- (3) *En route* (cruise) climb
- (4) Maximum angle of climb
- (5) Use of instruments
- (6) Typical student problems and how to address it.
- (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 for precision
- (5) Side-slipping
- (6) Typical student reactions and problems
- (7) Airmanship

Exercise 9 : Stalling

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; and to recognise the symptoms of the incipient stall and to restore the aeroplane to safe flight before the stall occurs.

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
 - (a) clean at stall speed plus 10 MPH

- (b) full flaps at stall speed plus 10 MPH
- (4) Application of full power with correct attitude to achieve level speed
- (5) Typical student problems and addressing them
- (6) 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) Approach to stall in the approach configuration, with and without power, recovery at the incipient stage
- (8) After engine failure while climbing steeply at full power
- (9) Understanding student reluctance and gradually building confidence.
- (10) Pre-empting reactions from students and formulating appropriate responses

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.

- (1) Entry and maintaining medium level turns
- (2) Resuming straight and level flight
- (3) Faults in the turn – balance
- (4) Turns onto selected headings, use of gyro heading indicator and compass
- (5) Use of instruments
- (6) Addressing typical student errors
- (7) Airmanship.

Exercise 11 : Descending and Climbing Turns

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

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.

- (1) Entry and maintaining medium descending and climbing turns
- (2) Resuming straight and level flight
- (3) Faults in the turn – balance
- (4) Turns onto selected headings, use of gyro heading indicator and compass
- (5) Use of instruments
- (6) Addressing typical student errors
- (7) 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) Factors affecting the length of the take-off roll and the initial climb
- (3) Into wind take-off
- (4) Nose wheel / tail wheel considerations
- (5) Drills during and after take-off
- (6) Short take-off and soft-field procedures / techniques, including performance calculations
- (7) Undulating (rough field) considerations
- (8) Noise abatement procedures
- (9) Abandoned take-off
- (10) Engine failure after take-off up to early downwind
- (11) Addressing typical student errors
- (12) 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) Nose wheel / tail wheel considerations
- (4) Effect of wind on approach and touchdown speeds, use of flaps (if applicable)
- (5) Glide approach and landing
- (6) Short-landing and soft-field procedures / techniques
- (7) Missed approach / go-around
- (8) Noise abatement procedures
- (9) Correcting bad approaches
 - Hot and high
 - Low and slow
- (10) The hold-off period and touch-down
- (11) Effect of ground surface and gradient on the landing run
- (12) Use of brakes (if applicable)
- (13) Control during ground run
- (14) Addressing typical student errors
- (15) Airmanship

Exercise 14 – Spin awareness

Aim: To understand and recognise the onset of situations that may lead to an inadvertent spin, and to learn how to instinctively take the necessary control actions to effect a recovery back to normal flight condition before a spin occurs; i.e.: to recover at the incipient stage.

- (1) Cause of spin
- (2) Recognition of incipient spin
- (3) Recovery from the incipient spin
- (4) Understanding student reluctance and gradually building confidence.
- (5) Recognizing disorientation in the student
- (6) Pre-empting reactions from students and formulating appropriate responses
- (7) Airmanship

Exercise 16: Side-slipping

Aim: The learner should be shown and become convinced of the effect of side-slipping on the relationship between heading and ground path. How this out-of-balance manoeuvre can be used to increase the rate of descent for a given airspeed and its usefulness in crosswind landings. (While the learner is learning how to use the controls during a side-slip, the exercise should be performed at altitude.)

- (1) Effects of controls in a side-slip
- (2) Principles involved
- (3) Types of side-slips
- (4) How exercise applies to flying
- (5) Common reactions and errors of students and how to rectify it
- (6) 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.

- (1) Steep 360° turns (up to 45° bank angle) maintaining altitude, recovering to straight and level flight.
- (2) 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.
- (3) Wake turbulence / disorientation
- (4) Stalling in the turn and recovery
- (5) Recoveries from unusual attitudes, including spiral dives
- (6) Understanding student reluctance and gradually building confidence.
- (7) Recognizing disorientation in the student
- (8) Pre-empting reactions from students and formulating appropriate responses
- (9) Airmanship

Exercise 18: Use of instruments

Aim: To develop the habit of checking constantly both navigational and engine instruments from the instructor seat, while also pointing out relevant information to the student, and keeping a good look-out for other aircraft.

- (1) Navigational instruments
- (2) Engine instruments
- (3) Scanning techniques
- (4) GPS and other basic electronic navigation systems
- (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) Low-level familiarisation
- (3) Effect of drift
- (4) Effect of wind on ground speed
- (5) Effect of wind in inducing apparent skids and slips in turns
- (6) Effect of precipitation (as applicable to type)
- (7) Joining circuit in poor weather
- (8) bad-weather circuit

- (9) Addressing typical student errors
- (10) 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 correct drift to ensure the track is a continuation of the take-off and landing path of the aeroplane.

- (1) Aerodynamic and mechanical considerations
- (2) Cross-wind take-offs
- (3) The circuit
- (4) Approach and cross-wind landings
 - a. crabbing method
 - b. forward slipping method
- (5) Addressing typical student errors
- (6) 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) Occasions necessitating
- (2) Full procedure away from aerodrome to break-off height
- (3) In-flight conditions
- (4) Landing area selection -
 - a. normal aerodrome;
 - b. disused aerodrome
 - c. ordinary field.
 - d. habitation for after-landing assistance
- (5) Inspection of landing area
- (6) Circuit and approach
- (7) PAN call
- (8) Actions after landing
- (9) Specific emphasis on areas where students are generally weak.
- (10) Airmanship

Exercise 22: Forced landing

Aim: To carry out a safe descent and landing in the event of the engine failing during flight. To be practiced at the training airfield, outside of the circuit pattern. The touch down must be no more than 25m before or after a point chosen by the candidate, and verbally conveyed to the patten instructor before commencement.

- (1) Forced-landing procedure
- (2) Choice of landing area, provision for change of plan
- (3) Gliding distance
- (4) Descent plan
- (5) Key positions
- (6) Engine cooling
- (7) Use of radio, Mayday call

- (8) Base leg
- (9) Final approach
- (10) Landing
- (11) Actions after landing
- (12) Techniques of building student confidence.
- (13) 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

Aim: Most two-stroke engines will at some time or another stop whilst in flight. It is important that the candidate must show exceptional presence of mind in this situation, and be able to either take over from his student immediately, or guide him through it.

Note: This exercise only to be attempted within easy glide of the training airfield and to be treated as a simulated emergency until the engine is successfully re-started.

- (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, with the emphasis of situations where a student may inadvertently cause unusual and dangerous attitude, how to recognize the onset and correct timorously

- (1) Recovery from inadvertent mishandling of controls –
 - (a) at high speeds
 - (b) in stall recovery in various configurations
 - (c) in a steep turn
 - (d) following hitting wake turbulence in a 360° steep turn at 45° to 60° bank angles
- (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 their effect
- (8) Radio work

Section 3B:

Patter flying (WEIGHT-SHIFT CONTROLLED MICROLIGHT AEROPLANES)

In the case of a Grade C recreational flight instructor rating (weight-shift controlled microlight aeroplane) patter training covering the following:

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.

- (1) Flight authorisation and microlight aeroplane acceptance
- (2) Serviceability documents
- (3) Required equipment, maps, etc.
- (4) External checks
- (5) Internal checks
- (6) Seat, harness and controls adjustment
- (7) Starting and warming-up checks including safety, people, animals, aircraft and air law
- (8) Power checks
- (9) Action in the event of being blown over
- (10) Running down and switching off of engine
- (11) Parking, security and picketing; and
- (12) Completion of authorisation and flight folio sheets
- (13) Ground handling
- (14) Assessing student, communication and explanation of each aspect

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
- (5) How much control to hand over to the student and when.
- (6) Typical errors during type conversions
- (7) How to get full control back from the student – action in the event of student locking on controls
- (8) Airmanship

Exercise 5: Taxiing

Aim: To safely guide 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) Turns 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) Typical problems with student - wing and undercarriage coordination
- (14) What to expect from a student during type conversion
- (15) Airmanship –
 - a. wingtip
 - b. prop-blast awareness
 - c. 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) Addressing typical student errors
- (9) Airmanship
 - a. lookout
 - b. 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) Addressing typical student errors
- (8) 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) Addressing typical student errors
- (7) Airmanship

Exercise 9: Stalling

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.

Note: A thorough explanation of the stall characteristics of different wings must be explained, and if possible, demonstrated.

A. Slow flight

The objective is to improve the candidate’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) Addressing typical student errors
- (6) 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
- (8) Understanding student reluctance and gradually building confidence.
- (9) Pre-empting reactions from students and formulating appropriate responses

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 – balance
- (4) Turns onto selected headings, use of gyro heading indicator and 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) Addressing typical student errors
- (10) 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 – balance
- (4) Turns onto selected headings, use of gyro heading indicator and compass
- (5) Use of instruments
- (6) Addressing typical student errors
- (7) 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
- (7) Short take-off and soft-field procedures / techniques, including performance calculations
- (8) Abandoned take-off
- (9) Addressing typical student errors
- (10) 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) Effect of wind on approach and touchdown speeds
- (4) Glide approach and landing
- (5) Turbulent approach and landing
- (6) Short-landing and soft-field procedures / techniques
- (7) Missed approach / go-around
- (8) Correcting bad approaches
 - Hot and High
 - Low and Slow
- (9) The hold-off period and touch down
- (10) Control during ground run
- (11) Addressing typical student errors
- (12) Dangers of opposite control during early type conversion
- (13) Airmanship

Exercise 14: Recovery from Pilot Induced Oscillations

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

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- (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
 - a. Rotation and early climb out
 - b. finals
- (5) Recognising when the student is entering PIO
- (6) Addressing typical student errors and taking control from the student
- (7) Airmanship

Exercise 16: Slipping turns

Note: A thorough explanation of the side slip characterises of different wings must be explained, and if possible, demonstrated.

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) Recovery from a slipping turn
- (4) Recognizing disorientation in the student
- (5) Pre-empting reactions from students and formulating appropriate responses
- (6) 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) Identifying common student errors and rectifying it
- (7) Understanding student reluctance and gradually building confidence.
- (8) Recognizing disorientation in the student
- (9) Pre-empting reactions from students and formulating appropriate responses
- (10) Airmanship

Exercise 18: Use of instruments

Aim: To develop the habit of checking constantly both navigational and engine instruments from the instructor seat, while also pointing out relevant information to the student, and keeping a good look-out for other aircraft.

- (1) Navigational instruments
- (2) Engine instruments
- (3) Scanning from the back seat
- (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) Addressing typical student errors
- (7) 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 correct drift 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) Addressing typical student errors
- (6) 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 to break-off height
- (2) Occasions necessitating
- (3) In-flight conditions
- (4) landing area selection
- (5) Circuit and approach
- (6) PAN call
- (7) Actions after landing
- (8) Airmanship

Exercise 22: Forced landing

Aim: To carry out a safe descent and landing in the event of the engine failing during flight. To be practiced at the training airfield, outside of the circuit pattern. The touch down must be no more than 25m before or after a point chosen by the candidate, and verbally conveyed to the padder instructor before commencement.

- (1) Choice of landing area, provision for change of plan
- (2) Gliding distance
- (3) Descent plan

- (4) Key positions
- (5) Engine cooling
- (6) Engine failure checks
- (7) Use of radio, Mayday call
- (8) Engine restart procedures
- (9) Base leg
- (10) Final approach
- (11) Landing
- (12) Actions after landing
- (13) Techniques for building student confidence
- (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

Aim: Most two-stroke engines will at some time or another stop whilst in flight. It is important that the candidate must show exceptional presence of mind in this situation, and be able to either take over from his student immediately, or guide him through it.

Note: This exercise only to be attempted within easy glide of the training airfield and to be treated as a simulated emergency until the engine is successfully re-started.

- (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, with the emphasis of situations where a student may inadvertently cause unusual and dangerous attitude, how to recognize the onset and correct timorously

- (1) Recovery from inadvertent mishandling of controls –
 - (b) at high speeds
 - (c) in stall recovery in various configurations
 - (d) in a steep turn
 - (e) following hitting wake turbulence in a 360° steep turn at 45° to 60° bank angles
 - (f) in high nose whip stall attitude
 - (g) typical reactions of students, and how to manage them

(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 or 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 their effect
- (8) Radio work
- (9) Common perception errors of students and how to rectify it.

Section 4A:

Practical Aircraft work (CONVENTIONAL MICROLIGHT AND LIGHT SPORT AEROPLANES)

In the case of a Grade C recreational flight instructor rating practical aircraft work covering the following:

(1) **Pre-flight**

Aim: To enhance pre-flight ability and the ability to encourage systematic, thorough and regular pre-flights on a variety of aircraft

- (1) Airframe
 - a. Symmetry
 - b. Materials
 - c. Control surfaces
 - d. suspension
 - e. steering
 - f. brackets
 - g. Instrument console, including power supply to instruments, intercom, radio and aerial connections.
 - h. engine mount
 - i. wheels and tyres
 - j. brakes
 - k. tubing
 - l. cables
 - m. seats and seatbelts
 - n. fuel-tank
 - o. battery
- (2) 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. Feul system
 - b. Electrical system
- (2) **Basic engine maintenance**
- (1) Spark plug changes
 - (2) Main jets, needle jets and jet needles
 - (3) Balancing carburettors
 - (4) Replacing carb rubbers
 - (5) Cleaning air filters
 - (6) Replacing fuel filters
 - (7) Adjusting fan belts
 - (8) When to call the AP or Mechanic
- (3) **Propellor**
- (1) Replacing
 - (2) Torque
 - (3) Track
 - (4) Pitch and Track adjustments

SECTION 4B Practical Aircraft Work (WEIGHT-SHIFT CONTROLLED MICROLIGHT AEROPLANES)

In the case of a Grade C recreational flight instructor rating practical aircraft work covering the following:

(1) **Pre-flight Inspection**

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

- (1) Wing
 - 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
- (4) Systems
 - a. Feul system

(2) Basic engine maintenance

- (1) Spark plug changes
- (2) Main jets, needle jets and jet needles
- (3) Balancing carburetors
- (4) Replacing carb rubbers
- (5) Cleaning air filters
- (6) Replacing fuel filters
- (7) Adjusting fan belts
- (8) Gear box oil
- (9) When to call the AP or Mechanic

(3) Propellor

- (1) Replacing
- (2) Torque
- (3) Track
- (4) Pitch and Track adjustments

(4) Advanced wing work

- (1) Adjusting Pitch pressure
- (2) Adjusting wing for turning problems
- (3) Adjusting roll stability
- (4) Adjusting hang point position
- (5) Adjusting trim
- (6) Batton profiling
- (7) When to call the AP or *Wing Man*

(5) Rigging and de-rigging

De-rigging without damage

- (1) Cable, sail, bracket and tube protection
- (2) Trailoring without damage
- (3) Rigging without damage
- (4) Special techniques and considerations