

## Guidance for Instructors during Flight Training

**Note: 1 This is written for electric models on 2.4GHz. See Annex for IC and/or 35MHz.  
2 This only covers flying. Other aspects are covered in a separate note**

### Post-Flight briefings and end of session briefings

After each flight, tell the Student what was going well and what needs to be corrected.

Make it clear that there is also a need to consolidate each stage before moving on to the next so that the basics become almost sub-conscious.

Take the opportunity to explain any points of aerodynamics or operational procedures that were shown up during the flight or session.

### Stage zero - Selecting and acquiring a model and equipment

Objectives:

Role of the Instructor:

- Make sure that the student receives balanced advice regarding the different types of model that are suitable for training, not just a 'buy this one' approach. Consider the type of flying that the Student is aiming for (if he knows this).
- Inform the student of BMFA guidance against the use of dry cells in Tx
- Similarly, ensure that the student is aware of the different options for radio gear and that gyro-stabilisation is not suitable for learning.
- Make sure that the student is aware of all of the equipment and tools that are necessary.
- Strongly advise the student to check his planned purchases with at least one instructor prior to purchase.

Safety issues at this stage:

- LiPo handling and Charging. Inform Student of fire hazard and need to charge out of doors on fireproof surface. Storage in a safe place and a safe container.
- Hazard of propellers. Always stand behind prop when connecting battery and when model is live. Expect the motor to start on its' own. Remove the prop for system set-up and test.
- Test the Fail Safe before fitting prop (and at start of each flying session).
- Range check with any newly configure model
- Ensure Tx is charged

### Stage 1 – First flight and Flight Pattern 1 (Level flight and circuits)

Objectives:

- Instructor to check structural integrity of model and soundness of radio installation.
- Instructor to flight-test and trim the model
- Allow the student to gain a 'feel' for the controls
- Develop the ability to judge the attitude of the aircraft in the air, the speed and the direction of travel.
- Establish a height and circuit size that is comfortable for the model and Student
- Keep the model in one piece!

When to move on to next stage:

- Student can maintain circuit at a constant height and on intended line.
- Both left hand and right hand circuits can be executed satisfactorily.
- Turns can be executed smoothly without loss of height.

- Student rarely gives 'left' when 'right' is needed (or vice-versa).

#### Pre-flight briefing

- Explain that you will take-off and trim model prior to handover.
- Describe the intended flight pattern. (Mention that you will take control every few minutes to give the Student a Break)
- Explain how to fly straight (level wings). Explain that Throttle controls height and Elevator controls speed. Explain how to achieve turns (bank the wings to a steady angle). Explain need to keep bank to modest levels (up to 30 degrees)
- Explain process for hand-over of control between Instructor and Student (with or without a buddy box).

#### Role of the Instructor:

- Check model for airworthiness, including CG and security of internal equipment
- Take-off and trim model for straight and level flight
- Check CG in flight with dive test
- Check that power change does not cause excessive pitch change (Adjust thrust line if necessary)
- Check that student seems to have adequately good eyesight. Discuss any problems and suggest eye test if necessary

#### Safety issues at this stage

- Demonstrate and explain pre-flight checks and tests
- Explain need for model restraint once armed.
- Explain need for Fail-Safe test and then Range Check (in that order) and demonstrate
- Remind student to not point armed model at anyone.

### **Stage 2 – Flight Pattern 2 (Ascent and Descent, Speed Variation, Stall and Recovery plus some simple manoeuvres)**

#### Objectives:

- To learn how to steadily gain height or to steadily descend by using the throttle.
- To learn how to use elevator to control the speed of the model and how to supplement this with throttle when needed.
- To gain experience of the change in control authority that occurs with change in speed.
- To learn how to develop and use speed to penetrate against a headwind
- To understand what causes a stall and how to recover from it. Also how to avoid it, especially during landing. Special attention should be given to dealing with gusty conditions.

#### When to move on to next stage:

- Student can maintain the circuit path whilst changing the climb/descent rate
- Student can induce and recover from stall without being talked through it.
- Student has become comfortable with model in unusual attitudes

#### Pre-flight briefing

- Explain the reason why the model responds to elevator by going faster
- Explain the reason that the model responds to throttle by climbing
- Explain what causes a stall and how to recover

#### Role of the Instructor

- Ensure that student maintains the intended circuit path during ascent and descent practice.
- Demonstrate the stall and recovery

#### Safety issues at this stage

- Re-enforce the practice of '2 mistakes high' for new manoeuvres
- Ensure that student understands need to regain normal flying speed after a stall and not to pull in up elevator until the speed is regained

### **Stage 3 – Flight Pattern (Overshoots)**

#### Objectives:

- To become familiar with the glide path for landing and any helpful landmarks
- To become comfortable with the model near to the ground
- To become comfortable with checking the patch is clear and calling intentions to others.
- To be able to safely transition to a full power climb-out (and thus be able to abort a future landing)
- To become familiar with the straight climb-out to the first turn and thus become familiar with the pattern expected for take-off

#### When to move on to next stage:

- Student can reliably align model on the chosen glide path at the correct height and at a speed suited to landing
- The student is confident to align the model with the centre of the strip and overshoot at 10 feet or less from around the centre of the strip length.
- Student can transition to full power and maintain the model in the correct line during climb-out. (Common problem is to lose concentration on steering whilst transitioning to full power.)

#### Role of the Instructor

- To explain the need to follow a pre-determined flight path (height and line) from around the mid-point of the downwind leg.
- To point out any helpful landmarks and ensure that the final leg is aligned with the centre of the strip
- To guide the student in descending without excessive or inadequate forward speed
- To explain the need to have adequate speed and throttle before commencing the climb-out
- To tell the student to check for the presence of people in the overshoot area and to call overshoots

#### Safety issues at this stage

- Ensure that the student checks that the landing area is clear
- Ensure that student understands need to regain normal flying speed before initiating the climb and not to pull in up elevator too soon

### **Stage 4 – Flight Pattern 4 (Take-offs)**

#### Objectives:

- To become familiar with the pre-take-off procedure
- To be able to hold a steady line on the ground and during climb-out
- To be able to abort the take-off safely

When to move on to next stage:

- Student can reliably track the model straight and achieve a gentle climb-out on a straight path to circuit height and then turn
- Student can actively correct any tendency of the model to turn on the ground during the take-off run

Role of the Instructor

- To tell the student to check for the presence of people in the flight area and to note where they are in case of a need to ditch the model
- To explain how to achieve a straight take off run and when to abort if it goes wrong
- To explain the reason for a gentle and straight climb-out

Safety issues at this stage

- Student consistently calls before entering the patch and before starting the take-off run
- Student consistently checks carefully for people in the flight area
- Student understands the need to abort a take-off that is going wrong.
- Student to understand the hazards of too steep a take-off

### **Stage 5 – Flight Pattern 5 (Approach and Landing)**

Objectives:

- To understand the means of reducing the speed of the aircraft during the approach and for touch-down
- To build on the overshoot experience, adding a satisfactory flare.
- To become accustomed to calling, walking forward and checking that the area is clear.

When to move on to next stage:

- Student can reliably approach and land with a good touch-down and roll-out
- Landings are at a safe speed
- Landings reliably not too near the ends or sides of the strip

Role of the Instructor

- To make sure that the student checks that the area is clear and calls landing
- To warn the student to abort if his approach would miss the strip or otherwise cause damage.
- Advise on the subtleties of achieving a satisfactory flare and touch-down

Safety issues at this stage

- Failure to check that the area is clear or to call landing
- Failure to abort a poorly set-up landing approach

### **Stage 6 – Flight Pattern 6 (Manoeuvres and dead stick landings)**

Objectives:

- To gain more experience of the flight envelope of the model
- To learn to recover from differing unexpected situations
- To practice semi-solo flying

Role of the Instructor

- To suggest manoeuvres, how to do them and their place in the flight pattern
- To advise on achieving better manoeuvres
- To assess the manoeuvres and the overall flight pattern

- To supervise from afar so as to provide solo-like experience

When to move on to next stage:

- This flight pattern can be interspersed with stage 7

Safety issues at this stage

- Becoming over-confident and sloppy
- Not starting manoeuvres at adequate height

### **Stage 7 – Flight Pattern 7 (Practice for A cert)**

Objectives:

- To learn and practice the flight patterns for the A cert in different weather conditions
- To learn to present a complete, competent flight
- To be able to consistently present a good flight under different conditions.

Role of the Instructor

- To advise on the progress towards readiness for the A-cert
- To offer solutions to any difficulties in achieving satisfactory flights
- To supervise from afar so as to provide solo-like experience
- To check the student's knowledge of aspects likely to be the subject of A-cert questions

Safety issues at this stage

- Ensure that all ground handling, pit procedures and flightline procedures and calls are routinely performed.