ANNEX 5D

F3C MANOEUVRE DESCRIPTIONS AND DIAGRAMS

The manoeuvre schedules are listed below with the starting and ending direction (UU = Upwind - Upwind; DD = Downwind - Downwind; DU = Downwind - Upwind; UD = Upwind - Downwind) of each manoeuvre, relative to the wind, as indicated. The competitor has 9 minutes to complete each schedule. Schedule P will be flown for the preliminary rounds 1 through 4. Schedule F will be flown for the Fly-Off rounds.

SCHEDULE P

P1. TRIANGLE 1 ..... (UU)
P2. FLOWER ..... (UU)
(FLY BY)
P3. CANDLE WITH DESCENDING FLIP ..... (DD)
P4. PULLBACK WITH 3 HALF LOOPS ..... (UU)
P5. UX.. ..... (DD)
P6. OVAL WITH TRAVELLING FLIP ..... (UU)
P7. OPPOSITE TWO ROLLS ..... (DD)
P8. DOUBLE STALL TURNS ..... (UU)
(FLY BY)
P9. AUTOROTATION WITH TWO 90º TURNS ..... (DU)

SCHEDULE F

F1. UMBRELLA ..... (UU)
F2. CONTINUOUS PIROUETTING TRIANGLE ..... (UU)
(FLY BY)
F3. DOUBLE CANDLE WITH DESCENDING FLIP ..... (DD)
F4. W… ..... (UU)
F5. DOUBLE STALL TURN and FLIP ..... (DD)
F6. X ..... (UU)
F7.OPPOSITE HALF AND FULL INVERTED ROLLS…. ..... (DD)
F8. LOOP WITH FLIP ..... (UU)
(FLY BY)
F9. AUTOROTATION WITH LOOP ..... (DU)

5D.1 General

The manoeuvres are displayed in pictorial form in Figures 5D-P and 5D-F for the case where the wind direction is left to right. The following descriptions apply to all manoeuvres and if not performed properly must result in downgrades. Points will also be subtracted if a manoeuvre is not performed as described. The starting/ending altitude for the hovering manoeuvres is 2m above the helipad. If a manoeuvre is unrecognisable it must be severely downgraded. If pirouettes are performed in the wrong direction, the score shall be zero (0) points. Ascents from, and descents to, the helipad must be vertical. Landings must be smooth and centred on the helipad. During the hovering manoeuvres all stops must be of 2 seconds minimum duration (unless specified otherwise). Circular and linear hovering segments must be performed at a constant speed. Every pirouette must be performed at a constant turning rate. The hovering manoeuvres must be started with the nose of the model aircraft (MA) facing left or right and must be flown as a unit (the starting heading must be same for each hovering manoeuvre). The competitor must stand in the 2m diameter circle marked “P” in Figure 5.4.A during all manoeuvres. All aerobatic manoeuvres must start and end in the direction indicated with a straight and level flight line of 10m minimum length. Entry and exit must be at the same altitude and heading. Loops or parts of a loop must be round and have the same diameter. Consecutive loops must be in the same location and plane. Rolls must be performed at a constant roll rate. Consecutive rolls must have the same roll rate and must be at the same altitude and heading. During all aerobatics manoeuvres the competitor must maintain his MA above a minimum altitude of 10 m. Aerobatic manoeuvres must be centred within the 120º horizontal field of view and must be symmetrical about the centre line. Aerobatic manoeuvres flown at a distance greater than 100m from the judges’ line will be downgraded. In case of a dispute the manoeuvre text takes precedence over Figures 5D-P and 5D-F.

Note: When the word “centred” is used, it means that the MA crosses an imaginary plane that extends from a line drawn vertically upward, from the centre judge out through the helipad. This refers to both Schedules P and F.

Scoring criteria for landing; See ANNEX 5E paragraph 5E.6.10.

5D.2 SCHEDULE P

K Factor

P1: Triangle 1 (UU) **1.5**

MA takes off vertically from the helipad and ascends to 2m and

hovers for a minimum of 2 seconds

flies backwards to flag 1 (2) and stops

hovers for a minimum of 2 seconds

ascends at 45° while simultaneously performing a 180° pirouette in either direction and stops over the helipad

hovers for a minimum of 2 seconds

performs a 360° pirouette in either direction

hovers for a minimum of 2 seconds

descends at 45° while simultaneously performing a 180° pirouette in either direction and stops over flag 2 (1)

hovers for a minimum of 2 seconds

flies backwards and stops over the helipad

hovers for a minimum of 2 seconds

descends and lands in the helipad

P2: Flower (UU) **1.5**

MA take off vertically from the helipad and ascends to 2m and

hovers for a minimum of 2 seconds

ascend backwards while performing a quarter of a 5m radius circle and stops over flag 1 (2)

hovers for a minimum of 2 seconds

performs half of a 5m radius circle while simultaneously performing a full 360° pirouette and stops over flag 2 (1)

hovers for a minimum of 2 seconds

descends backwards while performing a quarter of a 5m radius circle and stops over the helipad

hovers for a minimum of 2 seconds

descends and lands in the helipad

P3: Candle with descending flip (DD) **None**

MA flies straight and level for a minimum of 10m and

pulls up in a centred vertical ascent

after coming to a stop, MA flies vertically backwards for a minimum of 2m

performs a half pulled travelling flip

descends vertically for a minimum of 2m

MA pulls into horizontal straight and level flight for a minimum of 10m

Note: Vertical ascent and descent paths must be identical

P4: Pullback with 3 half loops (UU) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a vertical ascent

after coming to a stop, MA performs a half backward loop

after a vertical tail up, stop, MA performs a centred inverted half loop

after a vertical nose up, stop, MA performs a half backward loop

after a vertical tail up, stop, MA performs a vertical descent

MA pulls into horizontal straight and level flight for a minimum of 10m at the same altitude as entered.

Note: The 3 half loops must be of the same radius & altitude.

K Factor

P5: UX (DD) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a 45° ascent with a centred half roll

once the MA has come to a stop, MA performs a 135° pulled flip

performs a centred 'U', stop

performs a 135° pulled flip

performs a 45° descent with a centred half roll

MA pulls into horizontal straight and level flight for a minimum of 10m

Note: The bottom of the 'U' and the rolls must be centred.

P6: Oval with travelling flip (UU) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a half loop

flies inverted for a minimum of 1 second

performs a travelling 360° centred pushed flip

flies inverted for a minimum of 1 second

performs a half loop

MA pulls into horizontal straight and level flight for a minimum of 10m

P7: Opposite rolls (DD) **None**

MA flies straight and level for a minimum of 10m and

performs a full roll in either direction

immediately performs a full roll in the opposite direction

MA flies straight and level for a minimum of 10m

Note: The middle of the manoeuvre must be centred.

P8: Double stall turns (UU) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a vertical ascent with a stall turn at the apex

performs a vertical descent

performs a half outside loop

performs a vertical ascent with a stall turn at the apex

performs a vertical descent

MA pulls into horizontal straight and level flight for a minimum of 10m

Note 1: The lowest part of the outside loop must be centred and at the same altitude as the entry and exit phases.

Note 2: The 2 stall turns must be of the same altitude.

P9: Autorotation with two 90° Turns (DU) **None**

MA enters the manoeuvre in the autorotation state and must be called before it crosses the centre line and

performs 1/3 of the total descent, engine off or at idle, 10m minimum

90° turn

performs 1/3 of the total descent, engine off or at idle, 10m minimum

90° turn

MA lands on helipad

Note 1: Manoeuvre begins when MA is centred.

Note 2: MA must be in an auto rotational state when the manoeuvre begins.

Note 3: The descent rate must be constant from the start of the manoeuvre to just before landing in the helipad.

Note 4: The flight path of the MA must appear as an open square when viewed from above.

5D.3 SCHEDULE F

K Factor

F1: Umbrella (UU) **1.5**

MA takes off vertically from the helipad and ascends to 2m and

hovers 2 seconds minimum

performs a half 2,5m radius circle while performing a 180° nose in pirouette and stops over flag 1 (2)

hovers 2 seconds minimum

performs a half 5m radius circle while performing a 360° pirouette in either direction and stops over flag 2 (1)

hovers 2 seconds minimum

performs a half 2,5m radius circle while performing a 180° nose in pirouette and stops over helipad

hovers 2 seconds minimum

descends to helipad and lands

F2: Continuous pirouetting triangle (UU) **K=1,5**

MA takes off vertically from the helipad and ascends to 2m and

hovers 2 seconds minimum

flies backward to flag 1 (2) while performing a 180° pirouette and stops

immediately performs a stationary 180° pirouette over flag 1 (2)

immediately ascends at 45° while performing a 180° pirouette until the vertical of the helipad

immediately descents at 45° while performing a 180° pirouette and stops over flag 2 (1)

immediately performs a 180° pirouette over flag 2 (1).

immediately flies to the helipad while performing a 180° pirouette and stops over helipad

hovers 2 seconds minimum

descends to helipad and lands

Note 1: The pirouetting must be continuous in one direction and at a constant rate during the whole manoeuvre. No stop of the pirouetting is allowed.

Note 2: Consequence of Note 1, the translation speed of the MA is not the same during the whole manoeuvre.

F3: Double candle with descending flip (DD) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a vertical ascent

after a nose up stop, MA flies backwards vertically for 2m minimum

performs a half pulled travelling flip

descends vertically for a minimum of 2m

performs a centred half loop

ascents vertically

after a nose up stop, MA flies backwards vertically for 2m minimum

performs a half pulled travelling flip

descends vertically for 2m minimum

MA pulls into horizontal straight and level flight for a minimum of 10m

Note: The 2 flips must be made at the same altitude.

K Factor

F4: W (UU) **None**

MA flies straight and level for a minimum of 10m and
- pulls up into a vertical ascent with a 540° tail turn at apex
- performs a vertical descent
- performs a half loop
- performs a centred vertical ascent with a half pulled flip at apex
- performs a centred vertical descent
- performs a half loop
- performs a vertical ascent with a 540° tail turn at apex
- performs a vertical descend
- MA pulls into horizontal straight and level flight for a minimum of 10m

Note 1: the radius and the altitude of the two half loops must be the same.

Note 2: the altitude of the 3 apexes must be the same.

F5: Double stall turn and flip (DD) **None**

MA flies straight and level for a minimum of 10m and
- pulls up into a ¼ loop
- performs a centred vertical ascent with a stall turn at apex
- performs a centred vertical descent
- performs 3/4 of loop
- performs 1 centred pushed translated flip
- performs 3/4 of loop
- performs a centred vertical ascent with a stall turn at apex
- performs a centred vertical descent
- performs 1/4 of loop into horizontal straight and level flight for a minimum of 10m

Note 1: the radius and altitude of all the looping portions must be the same.

Note 2: the centred flip is not necessary performed immediately after the 3/4 loop.

F6: X (UU) **None**

MA flies straight and level for a minimum of 10m and
- Pulls up into a 45° ascent with a centred half roll.
- when MA stops, it performs a centred, horizontal 3/4 transitional pushed flip
- performs a 45° descend with a centred half roll.
- MA pulls into horizontal straight and level flight for a minimum of 10m

Note: the bottom of the triangle must be centred.

F7: Opposite half and full inverted rolls (DD) **None**

MA flies straight and level for a minimum of 10m and
- performs a half roll in either direction
- Flies inverted for a minimum of 1 second
- performs a full centred inverted roll in the opposite direction
- Flies inverted for a minimum of 1 second
- performs a half roll in the same direction as the first half roll
- MA flies straight and level flight for a minimum of 10m

cont/…

K Factor

F8: Loop with flip (UU) **None**

MA flies straight and level for a minimum of 10m and

pulls up into a full centred loop with a full centred transitional pulled flip on top

MA pulls into horizontal straight and level flight for a minimum of 10m

Note 1: The flip trajectory must be included in the loop path.

Note 2: The flip must be ¼ of the loops trajectory.

F9: Autorotation with loop (DU) **None**

MA flies straight and level for a minimum of 10m and

performs a centred loop and cuts the engine (or at idle) at the top of the loop

completes the loop with the engine off (or at idle)

enters a descending 180° turn toward the pilot and land upwind

Note 1: An excessively high entry level will be 1 point downgraded.

Note 2: The descent rate must be constant from the end of the loop to a point just before touchdown on the helipad.

Note 3: The flight path of the MA must appear as a half circle when viewed from above.

Note: Manoeuvre diagrams are overleaf.

FIGURE 5D-P: F3C MANOEUVRE SCHEDULE P

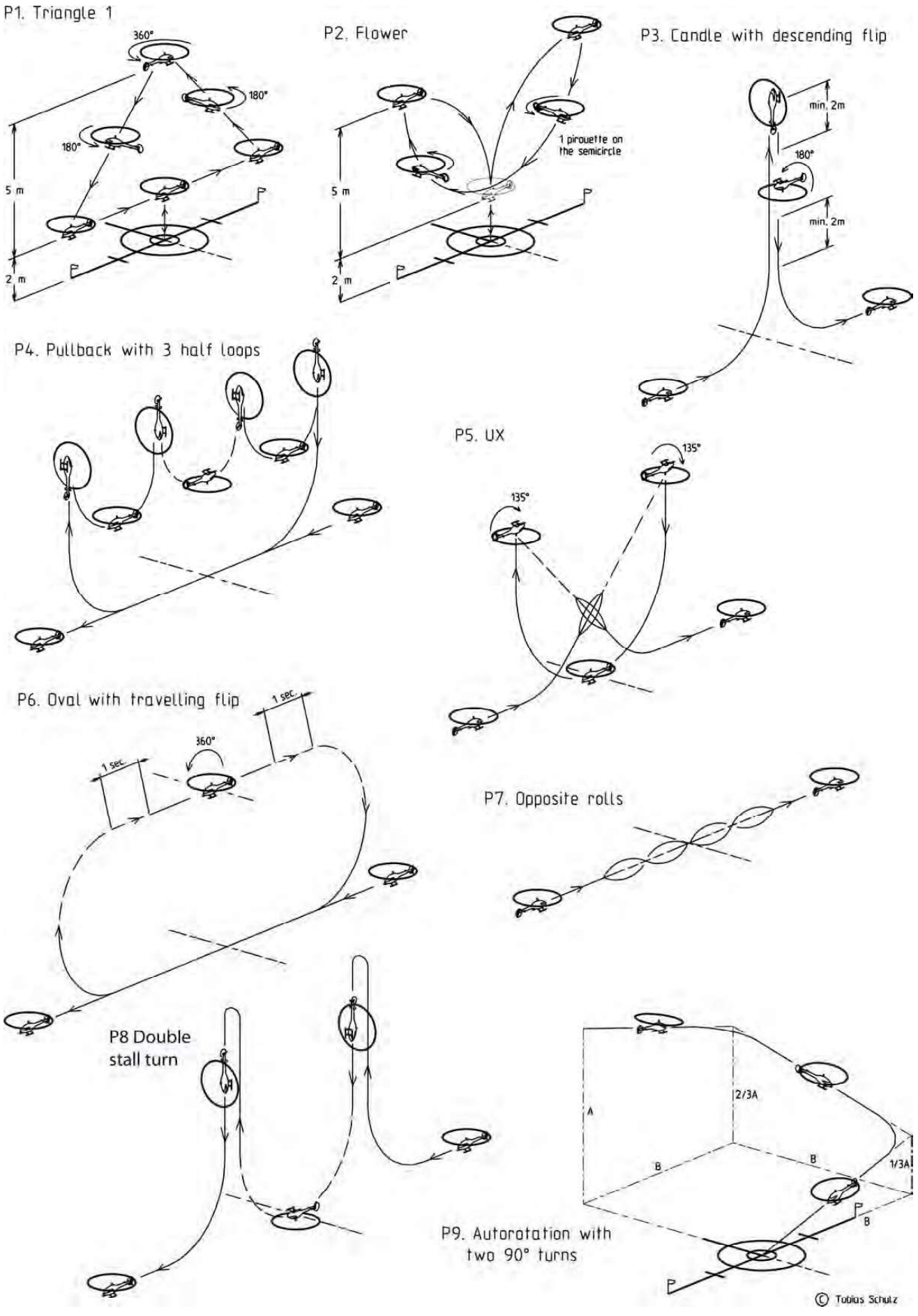

FIGURE 5D-F: F3C MANOEUVRE SCHEDULE F