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 10 minutes to complete each schedule. Schedule P will be flown for the preliminary rounds 1 through 4. Manoeuvre schedule D will be flown for the Fly-Off rounds.

SCHEDULE P

P1. FIGURE "M" WITH HALF PIROUETTES ON ALL SEGMENTS	(UU)
P2. SEMI CIRCLE WITH PIROUETTES	(UU)
P3. DIAMOND 3	(UU)
(FLY BY)	
P4. CUBAN 8 WITH HALF 4 POINT ROLLS	(DD)
P5. PULLBACK WITH BACKWARD ROLL	(UU)
P6. COBRA ROLL WITH ¾ PUSHED FLIP	(DD)
P7. CANDLE WITH 2 HALF ROLLS AND HALF PUSHED FLIP	(UU)
P8. TWO OPPOSITE HALF ROLLS	(DD)
P9. INSIDE LOOP WITH PIROUETTE ON TOP	(UU)
(FLY BY)	
P10. AUTOROTATION WITH TWO 90º TURNS	(DU)

SCHEDULE D

D1. STANDING 5M CIRCLE WITH ONE 360º PIROUETTE	(UU)
D2. INVERTED TRIANGLE 2	(UU)
D3. OVAL 1	(UU)
(FLY BY)	
D4. CUBAN 8 WITH PUSHED FLIP ON FIRST 45º DESCENT	(DD)
D5. PULLBACK WITH 3 HALF LOOPS AND 2 180° PIROUETTES	(UU)
D6. COBRA ROLL WITH PIROUETTE	(DD)
D7. 2 LOOPS WITH HALF ROLLS ON TOP	(UU)
D8. HORIZONTAL TRAVELLING PUSHED FLIP	(DD)
D9. VERTICAL 540º PUSHED FLIP	(UD)
(FLY BY)	
D10. "S" AUTOROTATION	(UU)

5D.1 GENERAL

The manoeuvres are displayed in pictorial form in Figures 5D-P and 5D-D 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. 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 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 model aircraft 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 following text takes precedence over Figures 5D-P-and 5D-D.

5D.2 SCHEDULE P

P1. FIGURE “M” WITH TWO HALF PIROUETTES ON ALL SEGMENTS - UPWIND/UPWIND

The Model Aircraft (MA) lifts off from the helipad and hovers at 2m. MA backs up, stops and hovers over flag 1(2). MA ascends 2.5m while performing a 180º pirouette and stops for 1 second, continues ascent while performing a 180º pirouette and stops at 5m. MA descends 2.5m at 45º while performing a 180º pirouette and stops for 1 second. MA continues 45º descent while performing a 180º pirouette and stops at 2m. MA ascends 2.5m at 45º while performing a 180º pirouette and stops for 1 second, continues ascent while performing a 180º pirouette and stops at 5m. MA descends 2.5m while performing a 180º pirouette and stops for 1 second, continues descent while performing a 180º pirouette and stops at 2m over flag 2(1). MA backs up 5m, stops and hovers over helipad. MA descends and lands on helipad.

P2. SEMI CIRCLE WITH PIROUETTES – UPWIND/UPWIND

MA takes off vertically to 2m and stops. MA flies backward to flag 1(2) and stops. MA then performs a semi circle with 90º pirouettes every quarter of the semi circle to flag 2(1) and stops. MA hovers backward to helipad and stops . MA descends to helipad and lands.

Note: All pirouettes in either direction, diameter of the semi circle = 5m

P3. DIAMOND 3 - UPWIND/UPWIND

MA ascends vertically to 2m and stops. MA ascends 2.5m at 45º while performing a 90º pirouette and stops over flag 1(2). MA ascends sideways 2.5m at 45º and stops over helipad. MA descends sideways 2.5m at 45º and stops over flag 2(1). MA descends 2.5m at 45º while performing a 90º pirouette and stops over helipad. MA descends to helipad and lands.

P4. CUBAN 8 WITH HALF 4 POINT ROLLS – DOWNWIND/DOWNWIND

MA flies straight and level for a minimum of 10m and performs a 5/8 inside loop. When MA is in 45º descent and inverted it performs half of a 4 point roll in either direction to upright and enters a ¾ inside loop. When the model aircraft is again in 45º descent and inverted it performs a second half of a 4 point roll in either direction and finishes the first partial loop in upright attitude. MA flies 10m straight and level exit.

P5. PULLBACK WITH BACKWARD ROLL - UPWIND/UPWIND

MA flies straight and level for 10m and enters the manoeuvre by pulling up into a vertical ascent after passing the centre line. After MA comes to a stop the model aircraft performs small backward ¼ inside loop and flies backwards and performs a full roll at constant altitude. This is followed by another small backward ¼ inside loop to a vertical nose down stop. MA then continues by descending on a path that mirrors the entry path. After the descent, model aircraft transitions to same heading and altitude as at the start of the manoeuvre. Model aircraft continues for 10m to finish the manoeuvre.

P6. COBRA ROLL WITH ¾ PUSHED FLIP – DOWNWIND/DOWNWIND

MA flies straight and level for 10m and enters the manoeuvre by pulling up into a 45º climb. After a 5m minimum straight segment MA performs a half roll in either direction to the inverted position and continues to climb at 45º for 5m minimum. At this point MA makes a 270º pushed flip before it enters a 45º dive and after a 5m minimum straight segment performs another half roll in either direction. MA continues for 5m minimum and then recovers at starting altitude in level flight for 10m to finish manoeuvre.

P7. CANDLE WITH 2 HALF ROLLS AND HALF PUSHED FLIP - UPWIND/UPWIND

MA flies straight and level for 10m and enters the manoeuvre by pulling up into a vertical ascent, with a centered half roll. After MA comes to a stop the MA performs a half pushed flip. MA goes into a vertical descent with a centered half roll and pulls out at same altitude as entry. Model continues for 10m to finish the manoeuvre.

Note : MA must be horizontal at the top.

P8. TWO OPPOSITE HALF ROLLS - DOWNWIND/DOWNWIND

MA flies straight and level for a minimum of 10m and performs a ½ roll and continues with 1 second inverted flight. MA performs a second half roll in same direction followed by 1 second upright flight. MA performs third half roll in opposite direction of first two and continues with 1 second inverted flight. MA performs third half roll in same direction as third half roll to upright flight. Manoeuvre is completed with 10m straight and level flight.

P9. INSIDE LOOP WITH PIROUETTE ON TOP - UPWIND/UPWIND

MA flies straight and level for 10m minimum entry. MA performs an inside loop with a 360º pirouette on top. MA does not hover on top of the loop, the pirouette must be made during the loop.

P10. AUTOROTATION WITH TWO 90º TURNS - DOWNWIND/UPWIND

Model aircraft flies at a minimum altitude of 20 m. Manoeuvre begins when model aircraft crosses an imaginary plane that extends vertically upward from a line drawn from the centre judge out through the helipad. Model aircraft must be in the autorotation state when it cuts this plane. The engine power must **be reduced to idle** at this point and the model aircraft must be descending. The first 90º turn must be made after the model aircraft has made 1/3 of the total descent. After this turn the model aircraft must fly straight before the next turn is made after the model aircraft has made 2/3 of the descent. The model aircraft then flies straight down to the helipad.

Each leg of the manoeuvre must be a minimum of 10m in length. The descent rate must be constant from start to a point just before touchdown on the helipad. The flight path of the model aircraft must appear as an open square when viewed from above, starting at the vertical plane and ending at a line drawn from the centre judge through the helipad.

Scoring criteria for landing: See ANNEX 5E Paragraph 5E.6.10.

5D.3 SCHEDULE D

D1. STANDING 5M CIRCLE WITH ONE 360º PIROUETTE – UPWIND/UPWIND

MA takes off vertically from the helipad and ascends to 2m and stops. MA starts backwards into a 5m vertical circle while simultaneously performing a 360° pirouette. At the end of the vertical circle MA comes to a stop at 2m over helipad. MA then descends to a landing on the helipad.

D2. INVERTED TRIANGLE 2– UPWIND/UPWIND

MA takes off vertically from helipad and stops at 2m. MA performs a 90º pirouette so nose points to the pilot. MA ascends at 45º while performing ½ pirouette and stops over flag 1(2). MA then flies horizontally to flag 2(1) while performing a 4 point pirouette and stops. MA descends at 45º while performing ½ pirouette and stops at 2m over helipad. MA then descends to and lands on the helipad.

D3. OVAL 1- UPWIND/UPWIND

Model aircraft takes off vertically from helipad to 2m and stops. MA moves 2.5m backwards while performing ¼ pirouette and continues into a half ascending vertical circle while simultaneously performing a ½ pirouette. MA continues from first 2.5m point to second 2.5m point with nose facing the pilot. MA continues into a half descending vertical circle while simultaneously performing a ½ pirouette to second 2.5m point. MA continues back to 2m over helipad and stops. MA descends to a landing on the helipad.

D4. CUBAN 8 WITH PUSHED FLIP ON FIRST 45º DESCENT - DOWNWIND/DOWNWIND

Model aircraft flies straight and level for a minimum of 10m and performs a 5/8 inside loop. When the model aircraft is in first 45º descent and inverted it performs a full pushed flip. MA continues with a ¾ inside loop. When MA is in second 45º descent and inverted it performs a ½ roll in either direction and finishes the first partial loop in upright attitude. Model aircraft flies straight and level for a minimum of 10 m.

D5. PULLBACK WITH 3 HALF LOOPS AND TWO 180° PIROUETTES- UPWIND/UPWIND

MA flies straight and level for a minimum of 10m. MA enters vertical ascent and stops and performs a small backward inside loop and stops. MA performs a 180° pirouette followed by a small backward outside loop and stops. MA performs another 180° pirouette followed by another small backward inside loop and stops. MA then descends vertically to same altitude as entry and finishes by flying straight and level for 10m.

D6. COBRA ROLL WITH PIROUETTE - DOWNWIND/DOWNWIND

MA flies straight and level for a minimum of 10 m. Model aircraft pulls up to establish a 45º line. Model then performs a 1/2 roll to inverted and continues to the apex. AT apex MA performs a 135º pushed flip followed by a 360º pirouette and a second 135º pushed flip. MA then enters a 45º descent with a centered half roll back to the same altitude as at entry. MA finishes manoeuvre with straight and level flight of 10m minimum.

D7. 2 LOOPS WITH HALF ROLLS ON TOP - UPWIND/UPWIND

MA flies straight and level for a minimum of 10m. MA flies a half loop with a half roll on top, continues with a full outside loop followed by a half roll and half inside loop. MA finishes manoeuvre with a straight and level flight of 10m minimum.

D8. HORIZONTAL TRAVELLING PUSHED FLIP - DOWNWIND/DOWNWIND

MA flies straight and level for a minimum of 10m. MA performs a 1/2 roll to 1 second duration inverted flight. MA then performs a travelling, full pushed flip followed by 1 second inverted flight. MA then performs a second ½ roll to upright and finishes the manoeuvre with 10m straight and level flight.

D9. VERTICAL 540º PUSHED FLIP - UPWIND/UPWIND

MA flies straight and level for a minimum of 10m. MA then enters a centered vertical climb and performs a 540º pushed flip. MA then descends vertically and performs a centered half roll back to entry altitude and heading. MA finishes manoeuvre with 10m minimum straight and level flight.

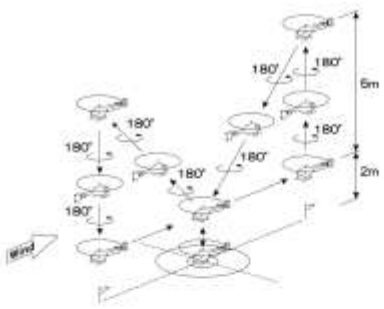
D10. “S” AUTOROTATION– UPWIND/DOWNWIND/UPWIND

MA enters the manoeuvre going upwind at a minimum altitude of 40m and some distance out. After crossing the centre plane upwind, and some distance out, the model aircraft must be in the auto rotation state when it cuts this plane, the engine power must be **reduced to idle** at this point and the MA must be descending. MA then makes the first 180º turn towards the pilot. As MA crosses the plane again but downwind it enters another descending 180º turn toward the pilot and lands.

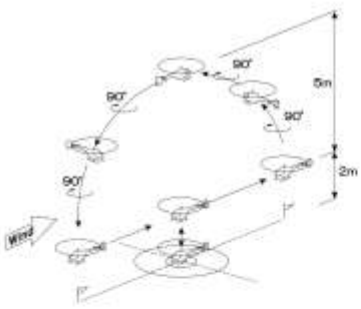
Scoring criteria for landing: See ANNEX 5E Paragraph 5E.6.10.

Note: Manoeuvre diagrams are overleaf.

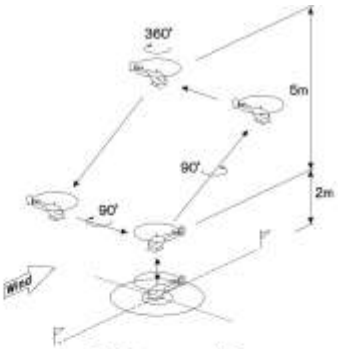
FIGURE 5D-P F3C MANOEUVRE SCHEDULE P



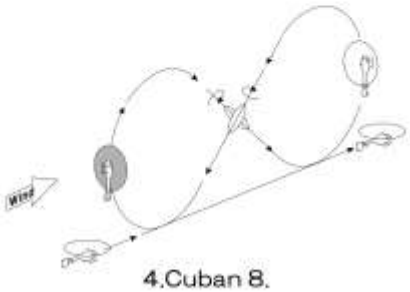
1."M"with 2 half pirouettes on all side.



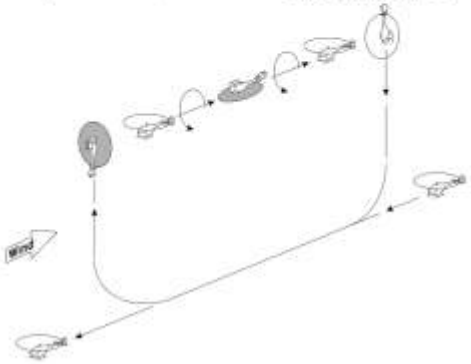
2.Semicircle with pirouette.



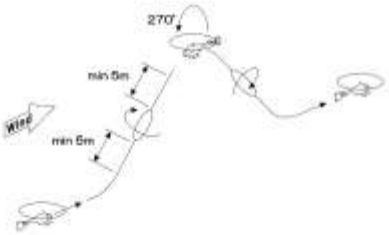
3. Diamond 3.



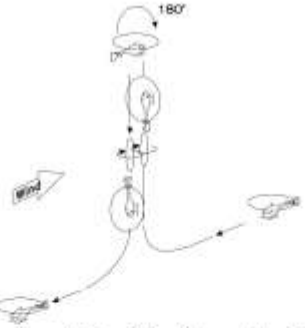
4.Cuban 8.



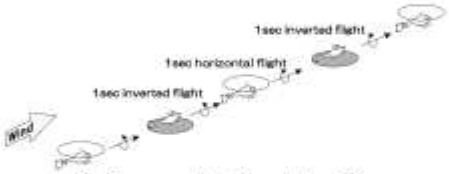
5.Pullback with backward full roll.



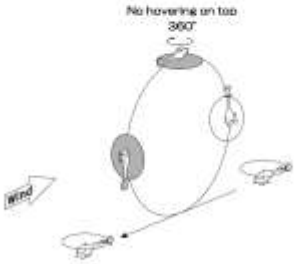
6.Cobra Roll with ½ rolls and pushed flip.



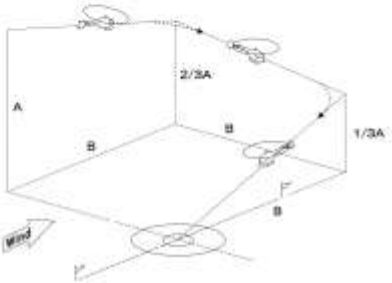
7.Vertical candle with half rolls and half pushed flip.



8. 2 opposite 2 point rolls.

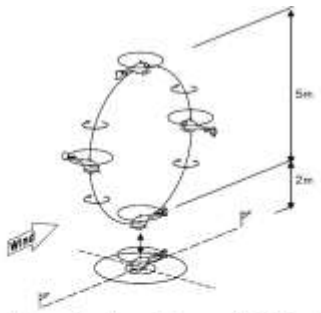


9.Inside loop with full pirouette on top.

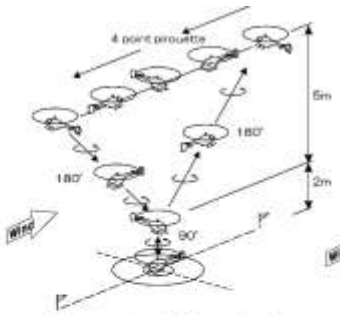


10.Autorotation with two 90° turns.

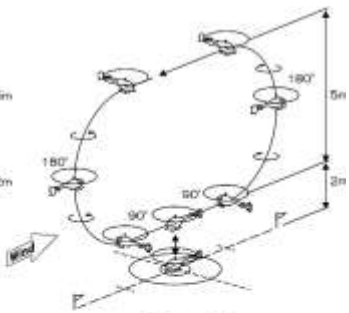
FIGURE 5D-D F3C MANOEUVRE SCHEDULE D



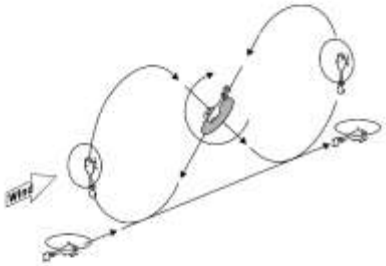
1.Vertical 5m circle with one 360° pirouette.



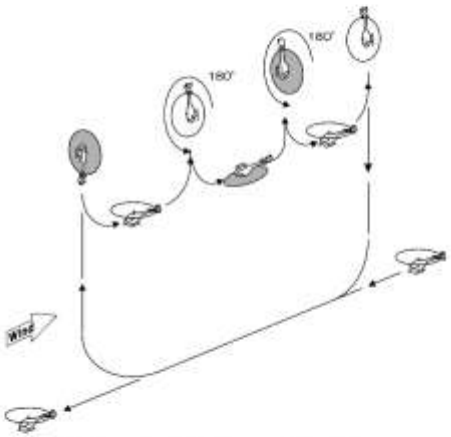
2.Inverted Triangle 2.



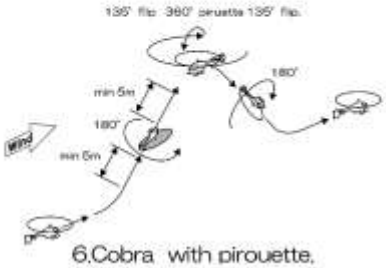
3.Oval 1



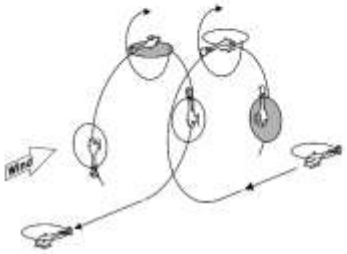
4.Cuban 8 with negative flip.



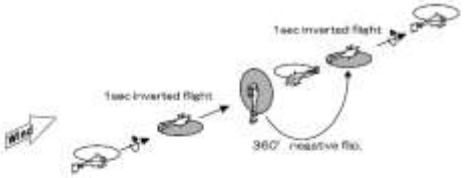
5.Pullback with 3 small half loops.



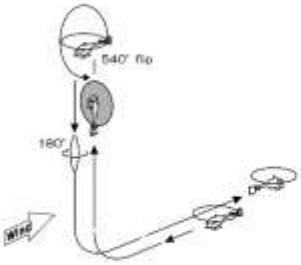
6.Cobra with pirouette.



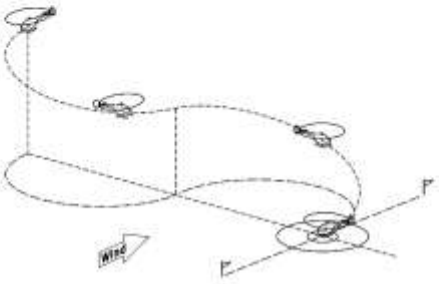
7. 2 Loops with half rolls on top.



8. Horizontal translation negative flip .



9. 1vertical 540° flip.



10."S" Autorotation.