October 22, 2008. By Johannes Melén Sweden

The following manoeuvres are to be done under the rules applied in Sporting Code Volume 4 section F3C. Hovering manoeuvre stops are to be minimum 2 seconds. The schedule is a combination of the "old" F3C A+B+C schedule. Some minor changes have been done to old manoeuvres and some completely new manoeuvres exist. As for electric models, the sequence of the manoeuvres have been compromised and hopefully will give more flight time and better battery performance. Time has been saved after manoeuvre B9. There is no need for a fly-by, before performing the S-Auto.

F3C Manoeuvre Proposal A-Schedule

A1. DIAMOND 2 - UPWIND/UPWIND

The model aircraft lifts off from the helipad and hovers at eye level. Model aircraft then ascends backwards at 26,5º, while simultaneously performing a 180º pirouette in either direction, to a spot directly over flag 1(2) to stop and hover 2.5m AEL. The model aircraft then climbs another 2.5m, while simultaneously performing a 180º pirouette in either direction, to stop and hover over the helipad at a height of 5m AEL. A 360º pirouette in either direction is performed. The model aircraft then descends 2.5m, while simultaneously performing a 180º pirouette in either direction, to arrive over flag 2(1) to stop and hover 2.5m AEL. The model aircraft then descends, while simultaneously performing a 180º pirouette in either direction to the helipad. The model stops to hover at eye level over the centre of the helipad. The model aircraft descends and lands on the helipad.

A2. HOURGLASS 1 – UPWIND/UPWIND

Model aircraft takes off vertically from the helipad and ascends to eye level and stops. The model backs up to flag 1(2) while executing a travelling 180º pirouette in either direction and stops. A diagonal line is flown backwards across and up to 4m AEL, and stops to hover over the opposite flag 2(1). A 360º pirouette in either direction is performed while travelling at the same altitude to stop and hover over flag 1(2). A diagonal line is flown backward across and down to arrive at eye level over flag 2(1). Another 180º pirouette in either direction is performed while travelling to the centre helipad. The model stops to hover at eye level over the centre of the helipad. The model aircraft descends and lands on the helipad.

A3. HOVERING “M2” -UPWIND/UPWIND

Model aircraft takes off vertically from the helipad and ascends to eye level and stops. The model backs up to flag 1(2). Model aircraft then ascends vertically 5m while performing two 180º pirouettes of opposite direction and stops. Model then performs two 180º pirouettes of opposite direction, while descending at a 45º angle to eye level above the helipad and stops. Model then ascends at a 45º angle while performing two 180º pirouettes of opposite direction to a point 5m AEL over flag 2(1) and stops. Model aircraft then descends vertically 5m while performing two 180º pirouettes of opposite direction to eye level and stops. The model then flies backward to the helipad. The model stops to hover over the centre of the helipad. The model aircraft descends and lands on the helipad.

A4. ROLL REVERSAL – DOWNWIND/DOWNWIND

Model aircraft flies straight and level for a minimum of 10m. Model aircraft executes a roll in either direction followed by a recognisable upright straight segment, followed by a roll in the opposite direction while maintaining longitudinal axis in the direction of flight. Second roll must be executed at same roll rate. The upright straight segment must be centred on the centre line. The total duration of the two rolls must be four (4) seconds minimum.

A5. FIGURE M WITH 180º STALL TURNS -UPWIND/UPWIND

Model aircraft flies straight and level for a minimum of 10m. Model pulls vertical and does a quarter roll so that the top of the disk is toward the pilot and continues for a minimum of 1 fuselage length. When the model stops climbing the model performs a 180º stall turn. On the way down the model does another quarter roll and performs an inside half loop. Model goes vertical again and does another quarter roll so that the top of the disk is toward the pilot and continues for a minimum of 1 fuselage length. Model does another 180º stall turn. Model does another quarter roll and pulls out at starting altitude in level flight for 10m to finish the manoeuvre.

A6. CUBAN EIGHT with 2-point rolls -DOWNWIND/DOWNWIND

Model aircraft flies straight and level for a minimum of 10m and executes a 5/8 inside loop. When the model aircraft is in 45º descent and inverted it executes a 2-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 executes a second 2-point roll in either direction and finishes the first partial loop in upright attitude.

A7. FLIPPING PULLBACK -UPWIND/UPWIND

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

A8. COBRA ROLL WITH HALF ROLLS – DOWNWIND/DOWNWIND

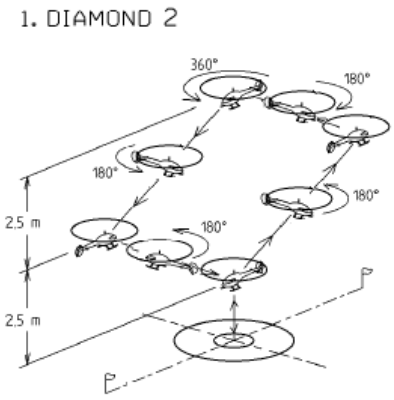
Model aircraft flies straight and level for 10m and enters the manoeuvre by pulling up into a 45º climb. After a 5m minimum straight segment the model aircraft performs a half roll in either direction to the inverted position and continues to climb at 45º for 5m minimum. At this point the model aircraft performs a ¼ inside loop and enters a 45º dive inverted and after a 5m minimum straight segment performs another half roll in either direction. Model aircraft continues for 5m minimum and then recovers at starting altitude in level flight for 10m to finish manoeuvre.

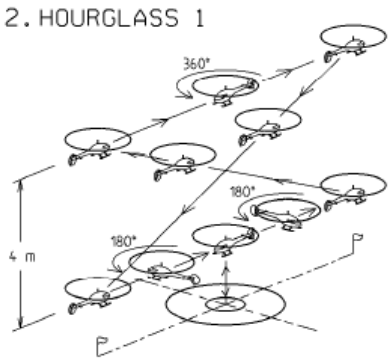
A9. PUSH OVER WITH HALF ROLL -UPWIND/UPWIND

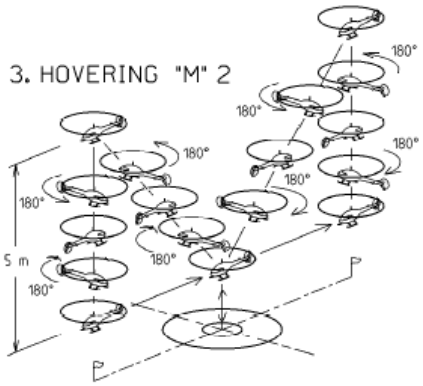
Model aircraft flies straight and level for a minimum of 10 m, then transitions to a vertical ascent at 90º followed by a half roll in either direction and followed by a vertical ascent of one fuselage length minimum. When model aircraft comes to a stop, model aircraft performs a ¼ pushed flip to upright position and stops. The model then completes two 90º pirouettes pausing to hover for a minimum of 2 second at each point to complete the 180º rotation. The direction of pirouette must be such that the model completes the 180º with the nose into the wind. Model aircraft then performs a ¼ pushed flip to vertical (nose down) position followed by vertical descent and ¼ inside loop back to the same altitude and heading as at start of the manoeuvre. Flying straight and level for 10m minimum completes manoeuvre.

A10. AUTOROTATION WITH TWO 90º TURNS -DOWNWIND/UPWIND

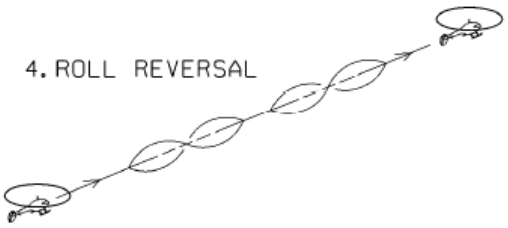
Model aircraft flies at a minimum altitude of 20 m. Manoeuvre begins when model aircraft crosses an imaginary plane that extends vertically upward from a line drawn from the centre judge out through the helipad. Model aircraft must be in the autorotation state when it cuts this plane, the engine must be off 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.

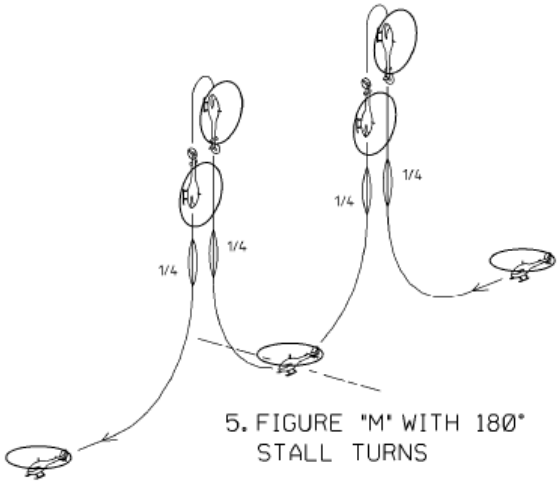






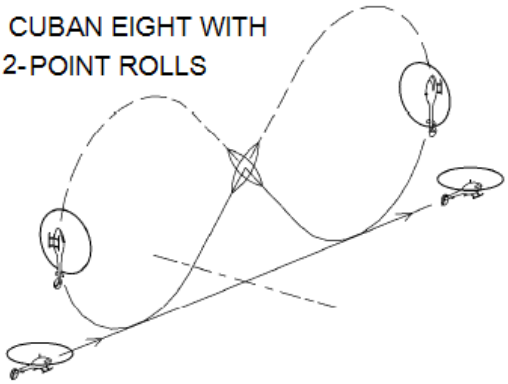
4. ROLL REVERSAL

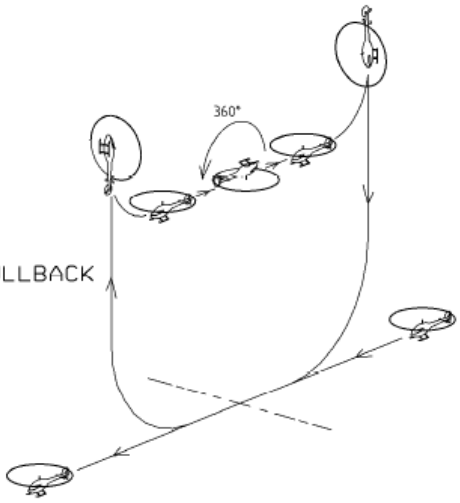




5. FIGURE "M" WITH 180° STALL TURNS

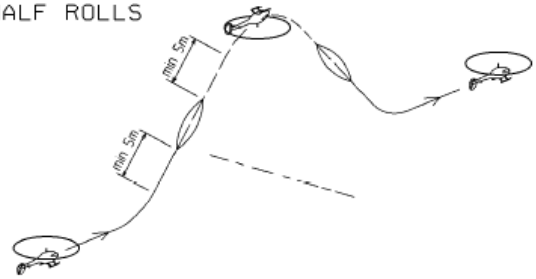
6. CUBAN EIGHT WITH 2-POINT ROLLS



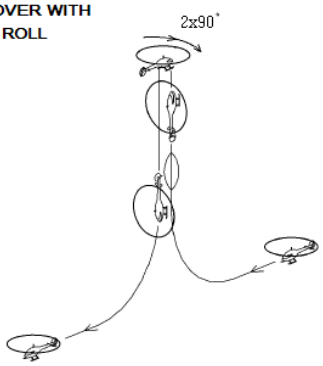


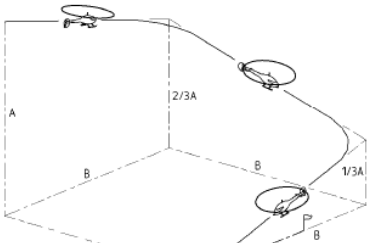
7. FLIPPING PULLBACK

8. COBRA ROLL WITH HALF ROLLS



9. PUSH OVER WITH HALF ROLL





10. AUTOROTATION WITH TWO 90° TURNS

F3C Manoeuvre Proposal B-Schedule

B1. DIAMOND 3 - UPWIND/UPWIND

The model aircraft lifts off from the helipad and hovers at eye level. Model aircraft then ascends backwards at 26,5º, while simultaneously performing a 360º pirouette in either direction, to a spot directly over flag 1(2) to stop and hover 2.5m AEL. The model aircraft then climbs another 2.5m, while simultaneously performing a 360º pirouette in either direction, to stop and hover over the helipad at a height of 5m AEL. A 360º pirouette in either direction is performed. The model aircraft then descends 2.5m, while simultaneously performing a 360º pirouette in either direction, to arrive over flag 2(1) to stop and hover 2.5m AEL. The model aircraft then descends, while simultaneously performing a 360º pirouette in either direction, to the helipad and stops to hover at eye level. The model aircraft descends and lands on the helipad.

B2. CIRCLE WITH TWO 360º PIROUETTES – UPWIND/UPWIND

Model aircraft takes off vertically from helipad and stops at eye level. Model flies backwards into an ascending vertical circle (5m diameter) while simultaneously executing a 360º pirouette ending at the top of the first half. At this point the pirouette switches direction for the second half of the circle stopping over the helipad at eye level. Model then descends to a landing on the helipad.

B3. RECTANGLE 4 -UPWIND/UPWIND

Model aircraft takes off vertically from helipad to eye level and stops. The model backs up to flag 1(2) while simultaneously performing a 360º pirouette in either direction and stops. Model aircraft then ascends vertically 5m while performing two 360º pirouettes of opposite direction and stops. Model then flies horizontally across to flag 1(2) simultaneously performing two 360º pirouettes in opposite directions and stops. Model aircraft then descends vertically 5m while performing two 360º pirouettes of opposite direction to eye level and stops. Another 360º pirouette in either direction is performed while travelling to the centre helipad. The model stops to hover over the centre helipad then lands.

B4. ROLL REVERSAL 3 -DOWNWIND/DOWNWIND

Model aircraft flies straight and level for a minimum of 10m. Model aircraft executes a roll in either direction followed by a recognisable upright straight segment. The second roll is done in the opposite direction, passing the centre line when half the second roll is performed, followed by a recognisable upright straight segment. A third and final roll is executed in the opposite direction of the second roll (same direction as the first roll). All rolls are maintaining longitudinal axis in the direction of flight. All rolls must be executed at same roll rate. The total duration of the three rolls must be four (4) seconds minimum.

B5. FIGURE “M” WITH 540º STALL TURNS AND OUTSIDE ROLLS -UPWIND/UPWIND

Model aircraft enters the manoeuvre by performing a half roll to inverted flight. Model then flies straight and level for 20m. Helicopter pulls vertical and establishes a vertical line. The helicopter completes a ¼ roll such that the rotor disc faces pilot and continues for a minimum of 1 fuselage length. At the top, model aircraft executes a 540º pirouette so that the nose points downward. The model aircraft descends vertically and performs a ¼ roll to an inverted attitude. The model aircraft then performs a centred inverted outside half loop and continues on a second vertical ascent. The model aircraft performs another ¼ roll so that the rotor disc again pilot and continues for a minimum of 1 fuselage length. After the model aircraft stops it performs another 540º pirouette until the nose points downward. The model aircraft then descends vertically and performs another ¼ roll. The model aircraft then performs a ¼ inside loop to recover at the same altitude as the entry. After the ¼ inside loop, model aircraft flies straight and level for 20m and executes a half roll to upright flight.

B6. COBRA ROLL WITH ½ ROLLS AND PUSHED FLIP -DOWNWIND/DOWNWIND

Model aircraft flies straight and level for 10m and enters the manoeuvre by pulling up into a 45º climb. After a 5m minimum straight segment the model aircraft performs a half roll in either direction to the inverted position and continues to climb at 45º for 5m minimum. At this point the model aircraft 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. Model aircraft continues for 5m minimum and then recovers at starting altitude in level flight for 10m to finish manoeuvre.

B7. TWO REVERSE OUTSIDE LOOPS -UPWIND/UPWIND

Model aircraft enters the manoeuvre by performing a half roll to inverted flight. Model then flies straight and level for 20m and executes two upward outside loops. After the loops, model aircraft flies straight and level for 20m and executes a half roll to upright flight.

B8. HORIZONTAL EIGHT WITH ROLLS -DOWNWIND/DOWNWIND

Model aircraft flies straight and level and executes a 5/8 inside loop. When the model aircraft is in 45º descent it performs a full roll and enters a ¾ outside loop. When the model aircraft is again in 45º descent it executes another full roll and a partial inside loop to upright attitude.

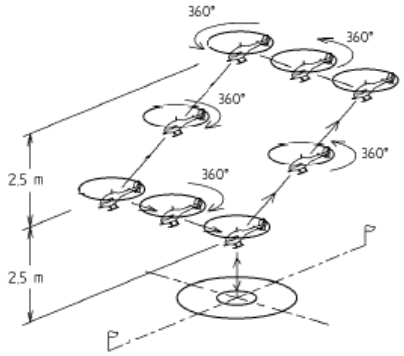
B9. VERTICAL SPIKE 2 -UPWIND/DOWNWIND

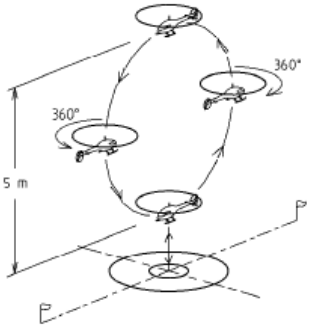
Model aircraft flies straight and level for 10m minimum. The model aircraft pulls to vertical and ascends vertically and performs a ¼ roll such that the rotor disc pilot and continues for a minimum of 1 fuselage length. After the model stops it performs a ¼ pulled flip to an inverted nose-in hover and stops. The model aircraft then hovers inverted for 3 seconds. The model then completes three 90º pirouettes pausing to hover inverted for a minimum of 1 second at each point to complete the 270º rotation. The direction of pirouette must be such that the model completes the 270º with the tail into the wind and inverted. The model then performs a ¼ pulled flip and begins to fall vertically. The model aircraft descends vertically and executes a ½ roll. The model aircraft then performs a ¼ inside loop and recovers upright at the starting altitude.

B10. “S” AUTOROTATION– UPWIND/DOWNWIND/UPWIND

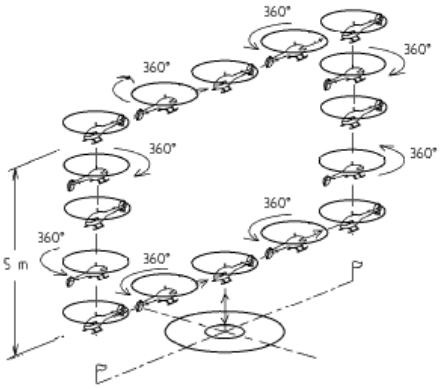
The model aircraft enters the manoeuvre going upwind at a minimum altitude of 40m and some distance out. After crossing the plane upwind, and some distance out, the model makes the first 180º turn towards the pilot. As the model crosses the plane again but downwind it enters another descending 180º turn toward the pilot and lands.

1. DIAMOND 3



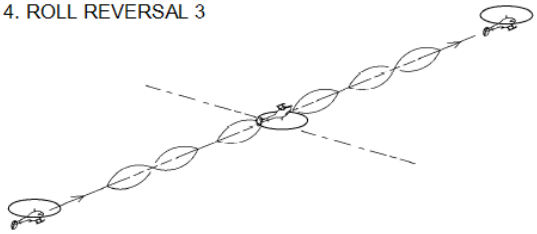


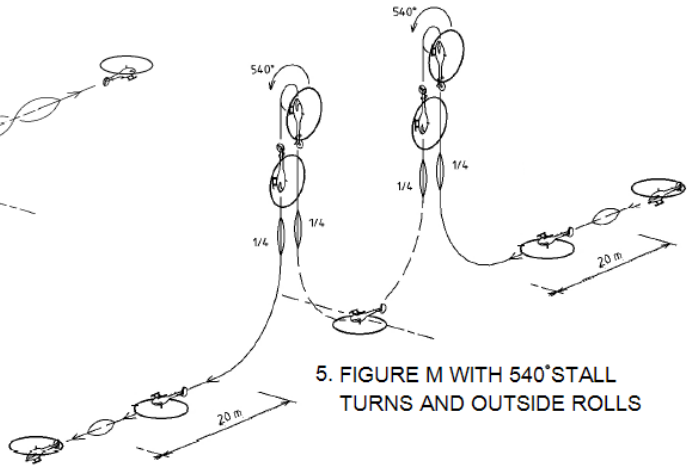
2. CIRCLE WITH TWO 360° PIROUETTES



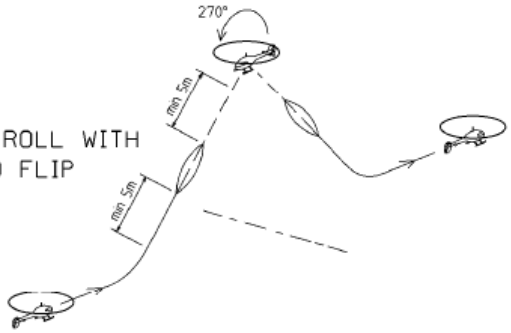
3. RECTANGLE 4

4. ROLL REVERSAL 3

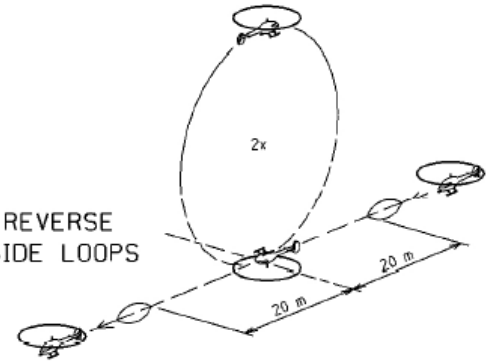




5. FIGURE M WITH 540°STALL TURNS AND OUTSIDE ROLLS

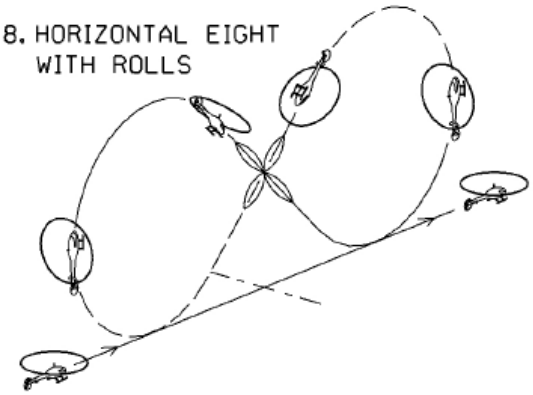


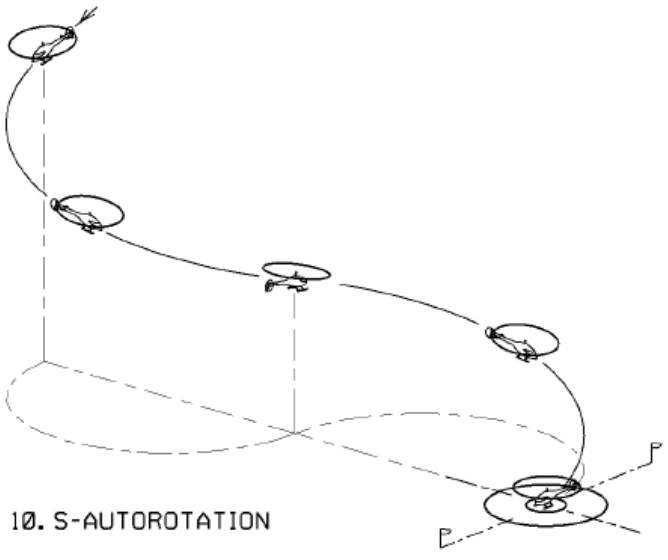
6. COBRA ROLL WITH PUSHED FLIP



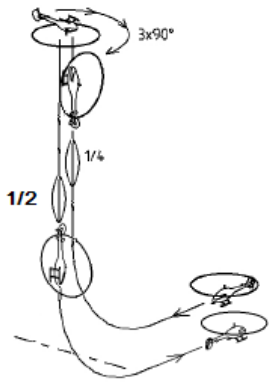
7. TWO REVERSE OUTSIDE LOOPS

8. HORIZONTAL EIGHT WITH ROLLS





10. S-AUTOROTATION



9. VERTICAL SPIKE 2