



*Fédération  
Aéronautique  
Internationale*

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# Indoor Skydiving Competition Rules

For  
**Dynamic 2-Way and Dynamic 4-Way**

2019 Edition  
Effective 1<sup>st</sup> May 2019

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1 FAI Statutes, ..... Chapter 1, ..... para. 1.6  
2 FAI Sporting Code, Gen. Section, ..... Chapter 4, ..... para 4.1.2  
3 FAI Statutes, ..... Chapter 1, ..... para 1.8.1  
4 FAI Statutes, ..... Chapter 2, ..... para 2.1.1; 2.4.2; 2.5.2 and 2.7.2  
5 FAI By-Laws, ..... Chapter 1, ..... para 1.2.1  
6 FAI Statutes, ..... Chapter 2, ..... para 2.4.2.2.5  
7 FAI By-Laws, ..... Chapter 1, ..... paras 1.2.2 to 1.2.5  
8 FAI Statutes, ..... Chapter 5, ..... paras 5.1.1, 5.2, 5.2.3 and 5.2.3.3  
9 FAI Sporting Code, Gen. Section, ..... Chapter 4, ..... para 4.1.5  
10 FAI Sporting Code, Gen. Section, ..... Chapter 2, ..... para 2.2.  
11 FAI Statutes, ..... Chapter 5, ..... para 5.2.3.3.7  
12 FAI Statutes, ..... Chapter 6, ..... para 6.1.2.1.3

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This document takes effect on the 1<sup>st</sup> of May 2019.

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**1 FAI Authority**

- 1.1 The competition will be conducted under the authority granted by the FAI, according to the regulations of the Sporting Code of the FAI, General Section, and Section 5 as approved by the IPC and validated by the FAI, and these rules. All participants accept these rules and the FAI regulations as binding by registering in the competition.

**2 Definitions of Words and Phrases used in these Rules**

- 2.1 A Dynamic 2-Way (D2W) Team is composed of two (2) Performers.  
A Dynamic 4-Way (D4W) Team is composed of four (4) Performers plus one (1) Alternate.
- 2.2 Body: a body consists of the entire Performer and his/her equipment.
- 2.3 Heading: the compass direction in which the front of the torso of the Performer faces.
- 2.4 Move: a change in body position, and/or a rotation around one or more of the three (3) body axes, or a static pose. See Addendum B.
- 2.5 Pattern: a movement sequence during which the Performers' bodies follow pathways, often with embedded moves or intermixing.
- 2.5.1 Compulsory Pattern: a Pattern with specific performance requirements. See Addenda A.
- 2.6 Sidelines (for Speed Routines): two (2) vertical lighted lines positioned on the transparent tunnel walls 180° opposite each other to describe a vertical plane that spans across the flight chamber. The Start Sideline is clockwise from the doorway (with respect to top view.)
- 2.7 Centreline: a vertical plane that spans across the centre of the flight chamber extending from one (1) vertical line positioned on the transparent tunnel wall 90° offset from the two (2) vertical lighted lines.
- 2.8 Ring (for Speed Routines): a horizontal line that crosses the centre of the flight chamber, two (2) metres above the cable floor, between the two (2) Sidelines.
- 2.8.1 Ring Plane (for Speed Routines): the plane parallel to the cable floor that spans across the entire flight chamber at the level of the Ring.
- 2.9 Antechamber: area used by Teams as a waiting area for entrance into the flight chamber. This area is separated from public viewing areas and is for the exclusive use of Teams on call.
- 2.10 Diffuser: that vertical part of the flight chamber above the transparent viewing section.
- 2.11 Flight: a Team's performance in the flight chamber.
- 2.12 Routine: a sequence of Moves or Patterns performed during the working time.
- 2.12.1 Speed Routine: a routine composed of three (3) randomly drawn Compulsory Patterns (one from each group, Snakes, Verticals and Mixers, in that order), and Compulsory Transitions, repeated three (3) times, in the fastest time possible. The Speed Routine starts with a compulsory entrance and ends with a compulsory exit sequence.
- 2.12.2 Free Routine: a routine composed of Moves and/or Patterns chosen entirely by the Team.
- 2.13 Battle: two (2) Teams compete against each other performing either a Free Routine or a Speed Routine. One (1) Team wins each Battle. (Battles may consist of more than two Teams)
- 2.14 Working Time: the period of time during which a Team may perform a routine during a flight. Performers will wait for a visual signal before entering the flight chamber.
- 2.14.1 Speed Routine Working Time starts when the first Performer crosses through the door's sensor beam and ends when the last Performer crosses through the door's sensor beam, completely exiting through the doorway of the flight chamber.
- 2.14.2 Sensor beam technology must be used to detect the start and end of Speed Routine Working Time.
- 2.14.3 Free Routine Working Time starts when both feet of any Performer leave either the antechamber floor, the cable floor, or any other pre-determined place in the flight chamber.
- D2W Free Routine: Working Time is 60 seconds.
  - D4W Free Routine: Working Time is 90 seconds.
- At the end of the Free Routine working time, a visual signal will be given and the Team will have 15 seconds to exit the flight chamber, if they have not already exited.

**3 Discipline, Event and Categories**

- 3.1 Discipline: The Indoor Skydiving Discipline consists in particular of the Dynamic Event, comprising the following two categories: 2-Way (D2W) and Dynamic 4-Way (D4W). There is no gender separation.
- 3.2 Objective of the Events: The objective for the Teams is to perform Free Routines with the highest possible merit and Speed Routines in the fastest possible time.
- 3.3 World Champions:
- 3.3.1 After all completed Rounds and Battles, World Champions in D2W and D4W, will be declared.

- 3.3.2** The D2W World Champions and the D4W World Champions are the Teams winning the top Battle of their category.
- 3.3.2.1** Ties: If two (2) Teams Battling each other each won a Battle in the last round of the Tournament, for 1st and 2nd place, and/or for 3rd and 4th place, tie-break Speed Routine Battle(s) will be held to determine placings.
- 3.3.3** Prizes and awards are awarded as follows:
- All Team Members in the categories will be awarded medals if placed First, Second or Third.
  - The flags of the countries of the Teams in the categories placed First, Second and Third shall be flown and the national anthems of the countries of the Teams placed First shall be played.

## **4 General rules**

- 4.1** Equipment: Performers are responsible for outfitting themselves in their own suitable clothing and footwear, including flight suits, full face helmets and ear plugs.
- 4.2** Wind Tunnel Equipage:
- 4.2.1** The minimum acceptable diameter for the flight chamber is 4.25 metres. The minimum height for the transparent wall is 3.7 metres.
- 4.2.2** The Sidelines must consist of two (2) vertical lines of lights, which must be changeable in colours. The lights may be LED technology. The Sidelines must extend from the floor up to the top of the transparent walls or five (5) metres, whichever is less.
- 4.2.2.1** For Speed Routines, the Start Sideline must be green and the opposite Sideline blue.
- 4.2.3** The two (2) Rings must have a five (5) cm hole. The diameter of the Ring (from outer rim to outer rim) must be between fifteen (15) and eighteen (18) cm. The two (2) Rings must be positioned two (2) metres above the cable floor, one (1) on each Sideline.
- 4.2.4** The Centreline may be a vertical line of lights or adhesive tape affixed to the transparent tunnel wall and must extend from the cable floor (or from the top of the door) up to the top of the transparent walls or five (5) metres, whichever is less.
- 4.2.5** The speed setting will be indicated in the tunnel and shall be clearly visible to the Team prior to entering the flight chamber.
- 4.2.6** The colour of the lights for Free Routines and the orientation of the two (2) Sidelines with respect to the flight chamber doorway that will be used for entry and exit will be published not less than 90 days before the start of competition.
- 4.2.7** The wind tunnel equipage and the video judging system must be approved by the Chief Judge prior to the start of the official Training Flights. If any equipment does not meet the requirements as determined by the Chief Judge, this equipment will be deemed to be unusable for the competition.
- 4.2.8** Video Recording: The Organiser shall record all competition flights in a High Definition digital video signal with a minimum of 50 frames per second and 720p progressive resolution (1080p recommended).
- 4.2.8.1** For Speed Routines, a minimum of two (2) cameras must record video; one camera positioned at one of the Sidelines, level with the Ring, and the other camera positioned at the Centreline. If the wind tunnel configuration permits, a third camera may be positioned at the other Sideline.
- 4.2.8.2** Video recording must allow the Judges to clearly view the cable floor up to at least three (3) metres (or to the top of the transparent wall, whichever is greater) above the Ring.
- 4.2.8.3** For Free Routines, one (1) camera must record video from a position at the centre of the viewing gallery arc.
- 4.2.9** The Organiser must provide the Teams with a way of identification of the Team, which will be included in the video along with the numeric ID for the Battle.
- 4.3** Official Speed Setting Flights and Training Flights:
- 4.3.1** Official Speed Setting Flights: Three (3) minutes per Team will be allocated for speed setting. The lighted Sidelines and Centerline plus the judging and scoring systems to be used in the competition will be used for the official Speed Setting Flights. No score or time will be given by Judges.
- 4.3.2** Each Team in each category, whose official registration duly reaches the Organiser of the competition before its official deadline, will have the opportunity, under the terms and conditions set by the Organiser, to book a maximum of fifteen (15) minutes Training Flights between 8:00 am and 24:00 pm (local time of the competition) to be performed within forty-eight (48) hours prior to Official Speed Setting Flights.
- 4.3.3** Official Speed Setting Flights and Training Flights may only take place prior to the start of the competition.

- 4.3.4** Before the start of the Training Flights, the team captain has the option to explain the delivered Free Routine description sheet(s). The Teams may present video of previous flights for move explanation.
- 4.4** The Draw:
- 4.4.1** The Draw for the Compulsory Patterns will be done publicly and supervised by the Chief Judge. Teams will be given not less than two (2) hours knowledge of the results of the Draw before the competition starts.
- 4.4.2** The Compulsory Patterns will be drawn as follows: One (1) Pattern from each group (Snakes, Verticals and Mixers), as shown in Addenda A, will be drawn for each Speed Round.
- 4.4.2.1** All Compulsory Patterns will be singularly placed in three (3) containers, one for each group of Patterns. Individual withdrawal from each container, without replacement, will determine the Patterns to be performed.
- 4.4.3** Freefall: Competitors are not allowed to freefall from any aircraft or use any freefall simulator or wind tunnel, for flights other than competition flights, after the draw has been published.
- 4.5** Order of Flights: During the Qualification Rounds, all Teams will fly each round in Team number order. Team numbers will be randomly drawn. During the Tournament, all Battles will fly in numeric order. (The Tournament Brackets identify each Battle with a unique numeric ID.)
- 4.5.1** The FAI Sporting Code, Section 5, Chapter 5.2.5. requirement for the minimum time between flights will not apply for each Team's second flight in the last round of the Tournament and for any tie-break Battles.
- 4.5.2** The relevant order of flights will be maintained throughout the competition, except for any logistical changes deemed necessary by the Chief Judge and the Meet Director.
- 4.6** Flight Chamber Entry: Only one (1) doorway leading into the flight chamber will be used for entries and exits. The tunnel will be set to the correct speed decided by the Team during the Speed Setting time. When the tunnel is at the correct speed, a signal will be given to the Team.
- 4.7** Flight Abortion: If, during any competition flight, one (1) or more of the Performers intentionally leaves the flight chamber for any reason (other than a direct order from the Event Judge or Chief Judge), deliberately stopping the flight early, no re-entrance or re-flight will be allowed.
- 4.8** Re-flights:
- 4.8.1** A re-flight may be granted if the Event Judge or Chief Judge concludes that the performance of a Team has been adversely affected by any external factor(s). The Event Judge's or Chief Judge's decision is no grounds for a protest.
- 4.8.2** Contact or other means of interference between (a) Performer(s) and/or the tunnel walls/cable floor shall not be grounds for a re-flight.
- 4.8.3** Problems with a competitor's equipment shall not be grounds for a re-flight.
- 4.8.4** A re-flight will be granted if a tunnel spotter must abort a Team's flight for any safety reason, provided that there was no intentional act on the part of the Team to create a safety problem.
- 4.8.5** For safety reasons, if a Performer demonstrates inadequate flying skills and/or persistent unsafe flying requiring repeated intervention by a tunnel spotter, FAI Sporting Code, Section 5, Chapter 4.8 SAFETY will apply.
- 4.8.6** In accordance with FAI Sporting Code, Section 5, Chapter 5.2.11 (1), a re-flight will be made as soon as possible after the incident giving rise to the re-flight. In all cases, a re-flight must be made with a minimum of a two (2) minute delay starting from the time when the last Performer of the aborted flight completely exits the doorway.

## **5 Rules specific to the event**

- 5.1** Teams:
- 5.1.1** Dynamic Teams may consist of either or both sexes.
- 5.1.2** A Team may only represent one (1) NAC.
- 5.2** Routines: D2W and D4W are composed of Speed Routines and Free Routines.
- 5.2.1** In D4W, and except for D4W World Championships, the routines shall only be composed of Speed Routines.
- 5.2.2** Teams must deliver a video of their Free Routine(s) to the Chief Judge at least three (3) days in advance (72 hours) before the start of the competition. The video must be delivered to the Chief Judge as on Google Drive or as is described in Bulletin 1.
- 5.2.3** Failure to provide the video of the Free Routine(s) will lead to receiving no credit for Technical Difficulty for all Free Routines.
- 5.2.4** Teams must declare to the Chief Judge whether their Free Routine starts from the Antechamber floor, the cable floor, or from any other pre-determined place in the flight chamber.

- 5.2.5** Teams may optionally include a written description and/or present and explain their Free Routine(s) to the Judges before the start of the competition. Deviation from the written Free Routine description as set forth in Addendum D form will not influence the scoring.
- 5.2.6** A standard form (see Addendum D) is provided for this purpose.
- 5.3** Number of rounds:
- The Qualification Rounds will have three (3) rounds.
  - The number of rounds in the Tournament is determined by the number of Teams registered.
- 5.4** Order of the Routines: (F = Free Routine, S = Speed Routine)
- Qualification Rounds: Rd 1 S; Rd 2 S; Rd 3 F.
  - Tournament with 4 Teams: Rd 1 F; Rd 2 F&S.
  - Tournament with 5-8 Teams: Rd 1 S; Rd 2 F; Rd 3 F&S.
  - Tournament with 9-18 Teams: Rd 1 F; Rd 2 S; Rd 3 F; Rd 4 F&S.
  - Tournament with 19-32 Teams: Rd 1 S; Rd 2 F; Rd 3 S; Rd 4 F; Rd 5 F&S.
  - Tournament Tie-Break: S.
- 5.5** Battles:
- 5.5.1** For each Battle in the Tournament, the Teams will fly in reverse order of their ranking in the Qualification Rounds.
- 5.5.2** If a Team does not arrive to the Antechamber in time for their Battle (or is withdrawn or disqualified), the other Team in the Battle will win and may choose whether or not they will fly their routine for that Battle.
- 5.5.3** If both Teams (neither of which is withdrawn or disqualified) for a specific Battle do not arrive to the Antechamber in time for their Battle, the winner will be the Team who placed higher in the Qualification Rounds.
- 5.6** Qualification Rounds:
- 5.6.1** All Teams will fly round 1, then round 2, then round 3.
- 5.6.2** Team placings in the Qualification Rounds will be determined as follows:
- Compulsory Round: The final time, after all penalties have been applied, will be used for this calculation. The fastest Team of the round will receive 100 points. All other Teams will be awarded points based on their time compared with the fastest Team. The fastest final time will be divided by the Team's final time and multiplied by 100 to determine their points.
  - Free Round: The Group with the highest Group score (see para. 6.2.2.3.) will receive 100 points. Other Groups will be awarded a number of points based on a proportional ratio of 100 points and calculated as follows: (i) Each Group score will be divided by the highest Group score and multiplied by 100, (ii) The teams in a Group will be awarded the same number of points as that attributed to the Group to which they belong.
  - Total scores for the Qualification Rounds are calculated by adding (i) the points accrued for the two (2) compulsory rounds and (ii) the free round points multiplied by two (2). This total is rounded to the first decimal place. For the rounding, intermediate values must be converted from multiple decimal places to one (1), by rounding to the nearest tenth, except where the second decimal digit is exactly halfway between the two values, where it must be rounded to the higher of the two. The maximum possible points is 400.
  - The teams will be placed in descending order according to the number of points accrued, the team with the highest number of points being placed first.
  - If two (2) or more Teams have equal points, their placings will be determined by adding their two (2) Speed routine times. The Team(s) with the fastest accrued times will earn the higher placing(s).
- 5.6.3** If one or more Team(s) is(are) withdrawn or disqualified during the Qualification Rounds, the Tournament Bracket for the number of remaining Teams will be used.
- 5.7** The Tournament:
- 5.7.1** Based on their placings from the Qualification Rounds, Teams are put into the appropriate Battles in the Tournament Bracket, as shown for the number of Teams in the Event following the link: <http://brackets.dynamicflying.com>.
- 5.7.1.1** The maximum number of Teams allowed is thirty-two (32) Teams.
- 5.7.1.2** The Tournament Bracket will be approved by the Event Judge and published before the start of the Tournament. Such approval is no grounds for a protest.
- 5.7.2** If, after the Tournament has started, any Team(s) is(are) withdrawn or disqualified, they will follow the losing pathways for all their remaining Battles in the Tournament.
- 5.7.3** The last round of the Tournament determines the final placings of the Teams and will consist of one (1) Free Routine and one (1) Speed Routine.
- 5.7.3.1** After the completion of the Tournament, for determination of the final placings, any withdrawn and/or disqualified Team(s) will be moved to the lowest placings and then removed.

<b>6</b>	<b>Judging and Scoring</b>
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- 6.1** General: Once any Performer has entered the flight chamber, the flight shall be evaluated and scored.
- 6.2** Scoring Free Routines:
- 6.2.1** Criteria for scoring Free Routines:
- Technical Difficulty:**
- New original Moves/Patterns are performed.
  - Moves/Patterns performed require precision, e.g., head touching to head with no other grips.
  - Technicality/complexity of Moves/Patterns performed, e.g., complex intermixing and/or embedded moves.
  - Wind loading (tunnel speed setting used).
  - Difficulty of Moves and Patterns.
  - See Addendum C.
- Execution:**
- Full use of working time.
  - Moves/Patterns are performed without crashing or loss of balance.
  - Use of space in the tunnel.
- Variety:**
- A variety of orientations is shown.
  - A variety of Moves/Patterns is performed.
  - Original Moves/Patterns and choreography.
  - A variety of transitions between sequences is shown.
- Flow:**
- Display of balance.
  - Uniformity of body position: Efficient, clean positioning for appropriate power from the wind.
  - Synchronisation.
  - Rhythm.
  - Body Form, visually appealing body position(s) are shown.
- Entertainment:**
- Use of visual effect(s).
  - Choreography; Story-telling.
  - Creativity.
  - Excitement/Energy.
- 6.2.2** The Free Round (Third Round) of the Qualification Rounds will be evaluated as follows:
- 6.2.2.1** After watching all the free routines, judges shall, by conference, take into account the above criteria, and score each Performance between 0.0 to 10.0, rounded to the first decimal.
- 6.2.2.2** Judges shall decide to divide the Teams into groups, based on similar merit, keeping them in ranking order. Such decision is no grounds for a protest.
- 6.2.2.3** Each Team in a group will then be attributed by Judges a score (between 0.0 to 10.0 and rounded to the first decimal) equal to the average score of the teams in the same group (the "Group score").
- 6.2.3** During the Tournament, at the completion of each Free Routine Battle of two (2) Teams, the Judges, taking into account the above criteria, determine the winning Team of the Battle.
- 6.3** Scoring Speed Routines: The score is based on the time, measured in thousandths of a second that the Team takes to perform the three (3) Compulsory Patterns, repeated three (3) times, as well as the Compulsory Entrance, the Compulsory Transitions, and the Compulsory Exit Sequence; plus penalty times for infringements and omitted Compulsory Patterns.
- 6.3.1** Infringements: Each incorrect, incomplete or non judgeable Compulsory Entrance, Compulsory Pattern, Compulsory Transition or Compulsory Exit Sequence will lead to adding a penalty of five (5) seconds to the total time for the Speed Routine. See Addenda A for performance and scoring requirements.
- 6.3.2** The Performers become designated as P#1, P#2, P#3 and P#4 (P#1 and P#2 for D2W) according to the order in which they enter the flight chamber at the start of the Speed Routine.
- 6.3.3** A five (5) second penalty will apply to the Compulsory Entrance, each Compulsory Pattern, each Compulsory Transition and the Compulsory Exit Sequence if:
- any part of the first Performer's body crosses the doorway entering the flight chamber before the visual signal is given to start the working time.

- any Performer does not maintain their designated slot. If the same positioning error is carried into the following Patterns to the end of the Speed Routine, this will be considered as one infringement only, provided that the intent of following the performance requirements in the following Patterns and compulsory exit sequence is clearly presented and no other infringement occurs. (After the positioning error, the new order of the Performers must be maintained.)
  - the Team does not stay in view and clearly present the performance requirements to the Judges. e.g., if any Performer flies so high in the Diffuser that the Judges cannot determine that the Pattern has been performed correctly, (e.g., properly crossed a Sideline, rotation away from the Start Sideline, etc.).
  - the leading Performer completely crosses the next Sideline before the following Performer completely crosses the previous Sideline, i.e., lack of synchronisation. (D2W only)
- 6.3.4** The Compulsory Entrance, certain listed Transitions (as set forth in Addenda A), each Pattern, and the Compulsory Exit Sequence may receive a maximum of one (1) five (5) second time penalty; the maximum number is fourteen (14).
- 6.3.5** An omitted Compulsory Pattern will lead to adding a penalty of twenty (20) seconds to the total time for the Speed Routine. An omission is one of the following:
- A Compulsory Pattern missing from the drawn sequence.
  - No clear intent to finish the Compulsory Pattern (e.g., after an infringement) is seen and there is a resulting time advantage to the Team.
  - No clear intent to perform the correct Compulsory Pattern is seen and another Pattern is presented and there is a time advantage to the Team resulting from the substitution.
- 6.3.6** If a Team crashes and becomes disorganised during a Compulsory Pattern, the Team may continue to the next Compulsory Pattern accruing only a five (5) second time penalty provided that the Judges see the Team losing time in the process of getting organised and there is no time advantage to the Team.
- 6.3.7** One or more Judges may make an evaluation of any infringements and of an omission.
- 6.3.8** During the Tournament, the Team with the fastest time, after all time penalties are applied, wins the Battle.
- 6.3.9** Challenge : A Team may challenge an infringement or omission given by the Judges. No Team can challenge any infringement or omission given by the Judges to another Team.
- 6.3.9.1** After the judges have officially announced their time and busts (specifying the pattern(s) and line(s)), the team may request an official review. This request triggers the challenge procedure and cannot be cancelled. In such case, a visual signal could given (eg: yellow lines).
- 6.3.9.1.2** This official request must be made before the next flight of the other team, if any, and before leaving the Antechamber.
- 6.3.9.1.3** The review by the Team can only be made once and at normal speed.
- 6.3.9.2** Right after this official review, the team decides to confirm their challenge or to give up. If the team persists in the challenge procedure, then the judges will watch the video of the flight, according to para 6.5.2 and 6.5.3, and determine whether or not the infringement or omission occurred.
- 6.3.9.3** If the Judges determine that the infringement or omission occurred, or if the Team, after watching the video, gave up the procedure, the Team may not again challenge another infringement or omission given by the Judges.
- 6.4** Scores and Results:
- 6.4.1** The final time for each Speed Routine will be published, including the raw speed routine completion time, time penalties, infringement types and any omissions.
- 6.4.2** For the free round in the Qualification Rounds (para 5.6), the final score for each Free Routine will be published.
- 6.4.3** For each Free Routine during the Tournament (para 5.7), the decision of each Judge will be published.
- 6.4.4** Final Team placings will be determined by a series of Battles in the Tournament (para 5.7).
- 6.4.5** For all Teams, the individual Battles with their winners will be published on the Tournament Bracket diagram.
- 6.5** Judging rules:
- 6.5.1** Viewing the Flights:
- 6.5.1.1** The Judges will watch live each Team's flight.
- 6.5.1.2** No Performer will approach or talk to the Judges during any Team's flight. Non-compliance may result in the application of FAI Sporting Code, Section 5, Chapter 5.4 PENALTIES.
- 6.5.2** Speed Routine Judging:
- 6.5.2.1** A panel of a minimum of five (5) Judges, three (3) Judges for D2W, must evaluate each Team's Speed Routine.
- 6.5.2.2** Each Judge will watch each Team's flight from an assigned physical location or by viewing the

- video monitor of a camera set in that same assigned physical location.
- 6.5.2.2.1** The Judges may use video monitors and these cameras must record video (para 4.2.8). The cameras for the video monitors must be positioned in accordance with the Judges' assigned physical locations below.
- 6.5.2.3** Judges' Assigned Physical Locations:
- 6.5.2.3.1** In D2W, one Judge, positioned at a Sideline, will evaluate for complete crossings of the Sidelines. In D2W, the one Sideline Judge will also evaluate Synchronisation. In D4W, two (2) Judges, positioned at either or both Sideline(s), will evaluate for complete crossings of the Sidelines. The Sideline Judge(s) must be positioned such that the Sideline on the far wall is obscured from view by the Sideline on the near wall.
- 6.5.2.3.2** A Ring Judge will evaluate that no part of any Performer's body is visible in the Ring hole (Vertical Patterns only). The Ring Judge must be positioned with the Judge's eye level with the Ring and the outer rim (but no view beyond the outer rim) of the far Ring visible through the five (5) cm hole of the near Ring.
- 6.5.2.3.3** A Judge, positioned at the Centreline, will evaluate the Team's correctness in following the performance description of each Compulsory Pattern (e.g., Performers flying in the correct order, pirouettes in correct direction, etc.) This judge will also evaluate for complete crossings of the Centreline.
- 6.5.2.3.4** In D4W, a Judge may be positioned between the Centreline and a Sideline Judge. This Judge will evaluate the Team's adherence to the performance description of each Compulsory Pattern (e.g., Performers flying in the correct order, pirouettes in correct direction, etc.)
- 6.5.2.4** Judges' Video Review Process for Speed Routines:
- 6.5.2.4.1** At the request of any member of the judging panel, made within fifteen (15) seconds after the end of the flight, the Chief Judge or the Event Judge will allow a video review, from a particular camera view, of the part of the flight in question. A video from a particular camera view may be subject to several different requests as long as the same part of the flight is not reviewed.
- 6.5.2.4.2** For each request, a maximum of three (3) viewings per camera view is permitted. Two (2) viewings may be done at different speeds.
- 6.5.2.4.3** Three (3) or more judges, overseen by the Chief Judge or the Event Judge, will make an assessment by a majority decision of the part(s) of the flight in question.
- 6.5.3** Free Routine Judging:
- 6.5.3.1** A panel of a minimum of three (3) Judges must evaluate each Team's Free Routine. Each Judge will evaluate all criteria (para 6.2).
- 6.5.3.2** The Free Routine Judges will be positioned in an arc spread throughout the entire viewing gallery, not including the Antechamber and controller booth. The Event Judge will sit at the centre of the Judges.
- 6.5.3.3** The chronometer will be operated by the Judges or by (a) person(s) appointed by the Chief Judge or by sensor beam technology, and will be started at the beginning of working time (para 2.14.2).
- 6.5.3.4** At the end of working time, a signal will be given. Without discussion with other Judges, each Judge will record their evaluation of the performance executed within the working time and submit it to the Event Judge.
- 6.5.3.5** For the Free Routines in the Qualification Rounds, the Judges may review video of any or all of the Teams.
- 6.5.3.6** During the Tournament, in consideration of the five (5) criteria (para 6.2), each Judge will select the best Team in the Battle.
- 6.5.4** The Judges may use an electronic scoring system to record their evaluations.

<b>7</b>	<b>Rules specific to the competition</b>
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- 7.1** Composition of Delegations: Each Delegation may be composed of:
- One (1) Head of Delegation
  - One (1) Team Manager
  - A maximum of two (2) D2W Teams and two (2) D4W Teams for a WISC or Continental Indoor Skydiving Championship.
  - The number of Teams for an Indoor Skydiving World Cup will be decided by the Organiser.
- 7.2** Competition schedule: The competition will be organised in accordance with two (2) official training days and a minimum time frame of three (3) competition days.

**ADDENDA A1, A2, A3, B, C, D**

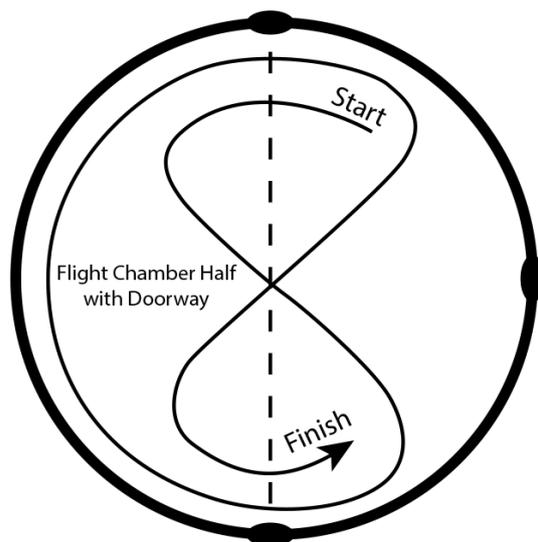
- Addendum A1: Speed Routine Compulsory Patterns - Snakes
- Addendum A2: Speed Routine Compulsory Patterns - Verticals
- Addendum A3: Speed Routine Compulsory Patterns - Mixers
- Addendum B: Basic Orientations, Rotations and Pathways
- Addendum C: Difficulty
- Addendum D: Free Routine Description Form

## ADDENDUM – A1

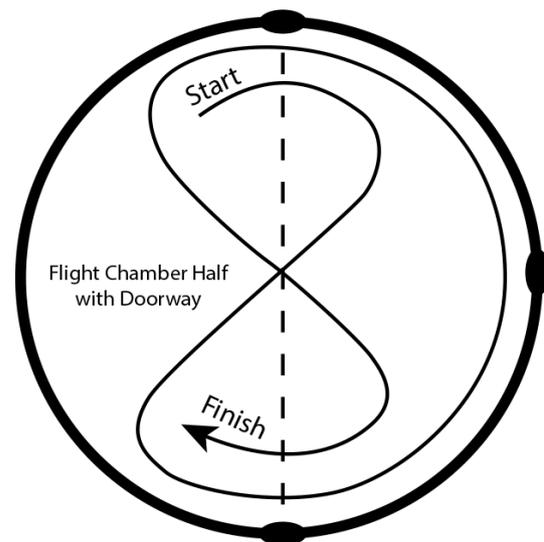
### SPEED ROUTINE COMPULSORY PATTERNS - SNAKES PERFORMANCE REQUIREMENTS & JUDGEMENT CRITERIA

#### Performance Requirements for Snakes:

- The Sidelines and Centreline apply.
- Each Performer's entire body must completely cross each Sideline and Centreline.
- Each Performer must be in the orientation of the Snake before crossing the Start Sideline after the Compulsory Entrance.
- For the Compulsory Entrance and before reaching the Start Sideline:
  - In D2W, P#1 must be closer to the Start Sideline than P#2 before starting the first Snake.
  - In D4W:
    - P#1 must be closer to the Start Sideline than P#2, P#3 and P#4 before starting the first Snake.
    - P#2 must be closer to the Start Sideline than P#3 and P#4 before starting the first Snake.
    - P#3 must be closer to the Start Sideline than P#4 before starting the first Snake.
- The following Performer(s) follow the leader throughout the illustrated pathway, with respect to top view. (Mirror image is not permitted.)



First and Third Snake



Second Snake

- During any Snake, each Performer crosses a Sideline six (6) times and crosses the Centreline three (3) times.

#### Infringements Applicable to the Compulsory Entrance:

- If the Compulsory Entrance is not performed correctly, a five (5) second penalty will apply.

#### Infringements Applicable to Snakes:

- If a Performer flies any Snake differently from that which is described, (e.g., failure to switch to outface during a Switching Snake, etc.) a five (5) second penalty applies.
- Apart from the Compulsory Entrance, if a Performer's body is not in the correct orientation, (e.g., it is horizontal,) before crossing the Start Sideline, a five (5) second penalty applies.
- If a Sideline or Centreline is not completely crossed, (e.g., a hand does not pass the line, even though the rest of the body does,) a five (5) second penalty applies.
- If the Performers change their order of following one another, or a different Performer becomes the leader during any Snake, a five (5) second penalty applies (para 6.3.3).

#### *Compulsory Entrance (D4W & D2W)*

P#1, followed by P#2 through P#4, must completely cross the vertical plane defined by the Sidelines. The Performers may cross this vertical plane in any orientation. Maintaining sequential order, the Performers must flow counterclockwise (with respect to the top view) into the first Snake.

*S-1 Head-down Inface Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-down inface orientation and remain in head-down inface carving during the entire Pattern. Performers begin by carving towards the Performers' left in the first and third Snake (right in the second Snake). When passing through the centre the first time, each Performer changes to carving towards his/her right in the first and third Snake (left in the second Snake). When passing through the centre the second time, each Performer changes to carving towards his/her left in the first and third Snake (right in the second Snake).

*S-2 Head-down Switching Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-down inface orientation and remain head-down during the entire Pattern. Performers begin by inface carving towards the Performers' left in the first and third Snake (right in the second Snake). When passing through the centre the first time, each Performer changes to outface carving towards his/her left in the first and third Snake (right in the second Snake). When passing through the centre the second time, each Performer returns to inface carving towards his/her left in the first and third Snake (right in the second Snake).

*S-3 Head-up Inface Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-up inface orientation and remain in head-up inface carving during the entire Pattern. Performers begin by carving towards the Performers' right in the first and third Snake (left in the second Snake). When passing through the centre the first time, each Performer changes to carving towards his/her left in the first and third Snake (right in the second Snake). When passing through the centre the second time, each Performer changes to carving towards his/her right in the first and third Snake (left in the second Snake).

*S-4 Head-up Switching Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-up inface orientation and remain head-up during the entire Pattern. Performers begin by inface carving towards the Performers' right in the first and third Snake (left in the second Snake). When passing through the centre the first time, each Performer changes to outface carving towards his/her right in the first and third Snake (left in the second Snake). When passing through the centre the second time, each Performer returns to inface carving towards his/her right in the first and third Snake (left in the second Snake).

*S-5 Head-down Mixed Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-down inface orientation and begin by head-down inface carving towards the Performers' left in the first and third Snake (right in the second Snake). When crossing through the Sidelines for the first time, each Performer transitions through the back down orientation to head-up inface carving towards his/her left in the first and third Snake (right in the second Snake). When crossing through the Sidelines for the second time, each Performer transitions through the back-down orientation to head-down inface carving towards his/her left in the first and third Snake (right in the second Snake).

*S-6 Head-up Mixed Snake (D4W & D2W)*

Performers cross the Start Sideline in a head-up inface orientation and begin by head-up inface carving towards the Performers' right in the first and third Snake (left in the second Snake). When crossing through the Sidelines for the first time, each Performer transitions through the back-down orientation to head-down inface carving towards his/her right in the first and third Snake (left in the second Snake). When crossing through the Sidelines for the second time, each Performer transitions through the back-down orientation to head-up inface carving towards his/her right in the first and third Snake (left in the second Snake).

## ADDENDUM – A2

### SPEED ROUTINE COMPULSORY PATTERNS - VERTICALS PERFORMANCE REQUIREMENTS & JUDGEMENT CRITERIA

#### Performance Requirements for Verticals:

- The Sidelines and Ring apply.
- During each Vertical (not including the Compulsory Transition), each Performer will cross a Sideline four (4) times.
- Any Vertical starts and ends in a head-down orientation with each Performer on their side of the Centreline. During a Vertical, the Performers may partially cross the Centreline, but must finish completely on the correct side of the Centreline.
- Apart from the Compulsory Transition to any Vertical, Performers must fly around the Ring, completely clear of the Ring. The Performers must completely cross a Sideline on each half of the Vertical.
- All 180° and 360°, head-up and head-down pirouettes, and all half barrel rolls must rotate away from the Start Sideline.
- All 180° and 360°, head-up and head-down pirouettes must be performed with all parts of the body completely above the Ring Plane.
- All half barrel rolls must be performed with all parts of the body completely under the Ring Plane and as described in Addendum B.

#### Infringements Applicable to the Transition from any Snake:

- If the Compulsory Transition to the Vertical from the Snake is not performed correctly, a five (5) second penalty will apply.

#### Infringements Applicable to Verticals:

- At the beginning and the end of the Vertical, if each Performer is not on their side of the Centreline, a five (5) second penalty applies.
- If any Performer flies any Vertical Pattern differently from that which is described, (e.g., Performers not pirouetting in the correct direction, etc.) a five (5) second penalty applies.
- If a Sideline is not completely crossed, a five (5) second penalty applies.
- Apart from the Compulsory Transition to any Vertical, no part of any Performer's body may be visible through the Ring. If any part of a Performer's body is visible through the Ring, a five (5) second penalty applies.

#### Performance Requirements and Infringements Applicable to V-2 Butterfly:

- The Centreline applies.
- Each Performer must remain on his/her side of the Centreline when performing the half back loops (from head-down to head-down) and will only cross the Centreline two (2) times when flying over the Ring. Any infringement will lead to a five (5) second penalty.

## D4W VERTICALS

#### *Compulsory Transition from Any Head-down Snake to Any Vertical*

While remaining head-down throughout the Compulsory Transition, P#1, followed by P#2 through P#4, must cross the Centreline and then the Start Sideline before starting any Vertical. P#1 and P#3 must continue across the Centreline again before starting any Vertical.

#### *Compulsory Transition from Any Head-up Snake to Any Vertical*

While remaining head-up throughout the Compulsory Transition, P#1 and P#3 must cross the Centreline. When crossing through the Sidelines, each Performer transitions to head-down in a half inface Reverse Eagle before starting any Vertical.

#### *V-1 Back Layout (D4W)*

While head-down, the Performers separate into two (2) pairs. P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. Each pair, one after the other, flies forward over the Ring and then performs one-half outface Eagle passing under the Ring to head-up. Next, each pair, one after the other, flies backward over the Ring and performs one-half inface Reverse Eagle under the Ring to head-down.

*V-2 Butterfly with Bottom Loops (D4W)*

While head-down, the Performers separate into two (2) pairs: P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. Each pair, one after the other, flies forward, with the two (2) Performers in the pair crossing each other, over the Ring. Then each pair, one after the other, performs one-half outface Eagle with one-half back loop passing under the Ring to head-down. When initiating the half back loop each Performer must be on their side of the Centreline. This sequence is performed twice.

*V-3 Classic (D4W)*

While head-down, the Performers separate into two (2) pairs. P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. While head-down and flying over the Ring, each Performer in the pair performs a 180° pirouette. Each pair then performs one-half inface Eagle under the Ring to head-up. While head-up and flying over the Ring, each Performer in the pair performs a 180° pirouette. The pair performs one-half inface Reverse Eagle under the Ring to head-down.

*V-4 Half Barrel Roll 180° (D4W)*

While head-down, the Performers separate into two (2) pairs. P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. Each pair, one after the other, flies forward over the Ring and then performs one-half outface Eagle with one-half barrel roll, passing under the Ring to head-up. The half barrel roll must rotate away from the Start Sideline and be initiated when the whole body is under the Ring Plane. As the pairs fly over the Ring, they perform a 180° pirouette. Each pair, one after the other, then performs one-half inface Reverse Eagle under the Ring to head-down.

*V-5 Head-down 360° (D4W)*

While head-down, the Performers separate into two (2) pairs. P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. Each pair, one after the other, flies forward over the Ring and then performs one-half outface Eagle with one-half back loop passing under the Ring to head-down. As the pairs fly over the Ring, they perform a 360° pirouette and perform one-half outface Eagle with one-half back loop passing under the Ring to head-down. The 360° pirouette must rotate away from the Start Sideline.

*V-6 Head-up 360° (D4W)*

While head-down, the Performers separate into two (2) pairs. P#1 and P#2 will be the leading pair and P#3 and P#4 will be the following pair. Each pair, one after the other, flies forward over the Ring and then performs one-half outface Eagle passing under the Ring to head-up. Next, each pair flies backwards over the Ring and performs a 360° pirouette and then performs one-half inface Reverse Eagle under the Ring to head-down.

## D2W VERTICALS

*Compulsory Transition from Any Head-down Snake to Any Vertical*

While remaining head-down throughout the Compulsory Transition, P#1, followed by P#2, must cross the Centreline and then the Start Sideline before starting any Vertical. P#1 must continue across the Centreline again before starting any Vertical.

*Compulsory Transition from Any Head-up Snake to Any Vertical*

While remaining head-up throughout the Compulsory Transition, P#1 must cross the Centreline. When crossing a Sideline, each Performer transitions to head-down in a half inface Reverse Eagle before starting any Vertical.

*V-1 Back Layout (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. The pair flies forwards over the Ring and then performs one-half outface Eagle passing under the Ring to head-up. Next, the pair flies backwards over the Ring and performs one-half inface Reverse Eagle under the Ring to head-down.

*V-2 Butterfly with Bottom Loops (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. The pair flies forward, with the two (2) Performers in the pair crossing each other, over the Ring. The pair then performs one-half outface Eagle with one-half back loop passing under the Ring to head-down. When initiating the half back loop each Performer must be on their side of the Centreline. This sequence is performed twice.

*V-3 Classic (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. While head-down and flying over the Ring, each Performer in the pair performs a 180° pirouette. The pair then performs one-half inface Eagle under the Ring to head-up. While head-up and flying over the Ring, each Performer in the pair performs a 180° pirouette. The pair performs one-half inface Reverse Eagle under the Ring to head-down.

*V-4 Half Barrel Roll 180° (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. The pair flies forwards over the Ring and then performs one-half outface Eagle with one-half barrel roll, passing under the Ring to head-up. The half barrel roll must rotate away from the Start Sideline and be initiated when the whole body is under the Ring Plane. As they fly over the Ring, they perform a 180° pirouette. The pair then performs one-half inface Reverse Eagle under the Ring to head-down.

*V-5 Head-down 360° (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. The pair flies forwards over the ring and then performs one-half outface Eagle with one-half back loop passing under the Ring to head-down. As they fly over the Ring, they perform a 360° pirouette and perform one-half outface Eagle with one-half back loop passing under the Ring to head-down.

*V-6 Head-up 360° (D2W)*

While head-down, the two (2) Performers fly this Pattern as a pair. The pair flies forwards over the Ring and then performs one-half outface Eagle passing under the Ring to head-up. Next, the pair flies backward over the Ring and performs a 360° pirouette and then performs one-half inface Reverse Eagle under the Ring to head-down.

## ADDENDUM – A3

### SPEED ROUTINE COMPULSORY PATTERNS - MIXERS PERFORMANCE REQUIREMENTS & JUDGEMENT CRITERIA

#### **Performance Requirements for Mixers:**

- The Sidelines apply during any Mixer. Each Performer must completely cross a Sideline during each part of a Mixer.
- The Centreline applies during any Shuffler.
- The Compulsory Transition to any Snake or Exit Sequence is considered to be a part of the Mixer.
- Mixers finish to a head-down orientation when all Performers have performed a bottom loop (one-half outface Eagle with one-half back loop) to head-down and, then, inface carve crossing a Sideline. When head-down (before the inface carve), the Performers must be on the correct side of the Centreline.
- Mixers finish to a head-up orientation when the Performers have performed one-half outface Eagle to the head-up orientation and, then, flown backwards through the Sidelines again. When head-up (before flying backwards), the Performers must be on the correct side of the Centreline.
- During a Mixer, the Performers may partially cross the Centreline, but must finish completely on the correct side.

#### **Infringements Applicable to Mixers:**

- If any Performer flies any Mixer differently from that which is described, (e.g., failure to switch to outface during a Shuffler, etc.) a five (5) second penalty applies.
- If any Performer crosses through the centre in the incorrect order during any Shuffler, (e.g., P#2 crosses the centre before P#1,) a five (5) second penalty applies.
- If any Performer does not completely cross a Sideline during each part of a Mixer, (e.g., a Performer does not perform their circle sufficiently wide enough for their entire body to completely cross a Sideline on each half circle,) a five (5) second penalty applies.
- At the beginning of the Mixer, if each Performer is not on their side of the Centreline, a five (5) second penalty applies to the previous Vertical.
- At the end of the Mixer, if each Performer is not on their side of the Centreline when head-down, right after his/her half back loop, a five (5) second penalty applies.
- At the end of the Mixer, if each Performer is not on their side of the Centreline when head-up just before moving backwards during the transition to a head-up Snake, a five (5) second penalty applies.

#### **Performance Requirements and Infringements Applicable to Specific Mixers:**

- After the half back loop to head-up, at the beginning of each head-up Mixer (M-2 and M-6), a five (5) second penalty applies if any Performer, when proceeding into inface carving, is not in a head-up orientation before reaching the Sideline.
- In D4W, during any Circling Mixer (M-1, M-2, M-3 and M-4), a five (5) second penalty applies if any pair of Performers (P#1 and P#3, and P#2 and P#4) does not fly the circles in a circular orbit in a horizontal plane.

#### **Infringements Applicable to the Transition from the Mixer to the Snake:**

- If the transition from the Mixer to the Snake is not performed correctly, a five (5) second penalty will apply to the Mixer.

#### **Infringements Applicable to the Compulsory Exit Sequence:**

- If the Compulsory Exit Sequence from any Mixer is not performed correctly, a five (5) second penalty applies to the Compulsory Exit Sequence.

## D4W MIXERS

### *M-1 Head-down Inface Circles (D4W)*

While head-down, each pair of Performers separates into inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline, and P#2 followed by P#4, crossing the other Sideline. While head-down, P#1 and P#3, facing one another, and P#2 and P#4, facing one another, perform an additional 360° of inface carving, crossing a Sideline two (2) additional times, once for each half circle. P#1 and P#2 then become the leading pair and fly forwards, crossing through the Sidelines, followed by P#3 and P#4. Thence...

*M-2 Head-up Inface Circles (D4W)*

While head-down, each pair of Performers flies forwards, crossing through the Sidelines, performing one-half back loop to head-up. While head-up, each pair of Performers separates into inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. While head-up, P#1 and P#3, facing one another, and P#2 and P#4, facing one another, perform an additional 360° of inface carving, crossing a Sideline two (2) additional times, once for each half circle. P#1 and P#2 become the leading pair and perform one-half inface Reverse Eagle, crossing through the Sidelines, to head-down, followed by P#3 and P#4. P#1 and P#2 fly forwards, crossing through the Sidelines, followed by P#3 & P#4. Thence...

*M-3 Mixed Circles (D4W)*

While head-down, each pair of Performers flies directly through the Sidelines, presenting their backs to each other into 180° of inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline, and P#2 followed by P#4, crossing the other Sideline. Each pair, one after the other, flies forwards, crossing through the Sidelines, and then performs one-half outface Eagle, passing through the Sidelines again, to head-up, into 180° of outface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. Then, P#1 and P#2 become the leading pair and fly backwards, crossing through the Sidelines, followed by P#3 and P#4. Each pair, one after the other, then performs one-half inface Reverse Eagle, crossing through the Sidelines, to head-down. P#1 and P#2 fly forwards, crossing through the Sidelines, followed by P#3 and P#4. Thence...

*M-4 Reverse Mixed Circles (D4W)*

While head-down, each pair flies forwards, crossing through the Sidelines, and then performs one-half outface Eagle, crossing through the Sidelines, into 180° of head-up outface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. While head-up, P#1 and P#2 then become the leading pair and fly backwards, crossing through the Sidelines, followed by P#3 and P#4. Each pair, one after the other, then performs one-half inface Reverse Eagle, crossing through the Sidelines again, to head-down. Each pair then flies directly through the Sidelines, presenting their backs to each other into 180° of inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. P#1 and P#2 then become the leading pair and fly forwards through the Sidelines, followed by P#3 and P#4. Thence...

*M-5 Head-down Shuffler (D4W)*

While head-down, each pair of Performers separates into inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. Next, P#1, then P#2, then P#3, then P#4, passes through the centre into 180° of outface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. Continuing the Shuffler, P#1, then P#2, then P#3, then P#4, passes through the centre into 180° of inface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. P#1 and P#2 then become the leading pair and fly forwards through the Sidelines, followed by P#3 & P#4. Thence...

*M-6 Head-up Shuffler (D4W)*

While head-down, each pair flies forwards, crossing through the Sidelines, performing one-half back loop to head-up. While head-up, each pair of Performers separates into inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. Next, P#1, then P#2, then P#3, then P#4, passes through the centre into 180° of outface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. Continuing the Shuffler, P#1, then P#2, then P#3, then P#4, passes through the centre into 180° of inface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. P#1 and P#2 then become the leading pair and perform one-half inface Reverse Eagle, crossing through the Sidelines, to head-down, followed by P#3 and P#4. Each pair then flies forwards crossing through the Sidelines. Thence...

*M-7 Mixed Shuffler (D4W)*

While head-down, each pair of Performers separates into inface carving in opposite directions, with P#1 followed by P#3, crossing a Sideline and P#2 followed by P#4, crossing the other Sideline. Next, P#1, then P#2, then P#3, then P#4, crosses through the Sidelines while performing one-half inface Eagle to head-up and then perform 180° of inface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. Continuing the Shuffler, while head-up, P#1, then P#2, then P#3, then P#4, crosses through the Sidelines and performs 180° of outface carving, with P#1, then P#3, crossing a Sideline and P#2, then P#4, crossing the other Sideline. Then, P#1 and P#2 become the leading pair and fly backwards through the Sidelines, followed by P#3 and P#4. Each pair, one after the other, then

performs one-half inface Reverse Eagle, crossing through the Sidelines, to head-down. P#1 and P#2 fly forwards, crossing through the Sidelines, followed by P#3 and P#4. Thence...

Compulsory Transition to any Snake or Compulsory Exit Sequence (D4W):

*...To transition to a Head-down Snake or Head-down Compulsory Exit Sequence (D4W):*

Each pair, one after the other, performs one-half outface Eagle with one-half back loop, crossing through the Sidelines, to head-down, ending with each Performer head-down completely on his/her side of the Centreline, right after his/her half back loop. While head-down, each pair then inface carves, crossing a Sideline, before starting any Head-down Snake or Head-down Compulsory Exit Sequence.

*...To transition to a Head-up Snake or Head-up Compulsory Exit Sequence (D4W):*

Each pair, one after the other, performs one-half outface Eagle, crossing through the Sidelines, to head-up, ending with each Performer completely on his/her side of the Centreline. While head-up, each pair then flies backwards through the Sidelines, before starting any Head-up Snake or Head-up Compulsory Exit Sequence.

*Head-down Compulsory Exit Sequence (D4W)*

While head-down, P#1, followed by P#2, then P#3, then P#4, will inface carve towards the Performers' right, completely crossing the Centreline, then the Start Sideline before exiting the flight chamber from the far side, while maintaining sequential order.

*Head-up Compulsory Exit Sequence (D4W)*

While head-up, P#1, followed by P#2 then P#3, then P#4, will inface carve towards the Performers' left, completely crossing the Centreline, then the Start Sideline before exiting the flight chamber from the far side, while maintaining sequential order.

## D2W MIXERS

*M-1 Head-down Inface Circles (D2W)*

While head-down, the two (2) Performers separate into inface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. While head-down, they perform 360° of inface carving, crossing a Sideline two (2) additional times, once for each half circle. Joining as a pair, the Performers then fly forwards, crossing through the Sidelines. Thence...

*M-2 Head-up Inface Circles (D2W)*

While head-down, the two (2) Performers, as a pair, fly forwards, crossing through the Sidelines, performing one-half back loop to head-up. While head-up, the two (2) Performers separate into inface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. They perform an additional 360° of inface carving, crossing a Sideline two (2) additional times, once for each half circle. Joining as a pair, the Performers perform one-half inface Reverse Eagle, crossing through the Sidelines, to head-down and then fly forwards, crossing through the Sidelines. Thence...

*M-3 Mixed Circles (D2W)*

While head-down, the two (2) Performers, as a pair, fly directly through the Sidelines, presenting their backs to each other into 180° of inface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. As a pair, the Performers fly forwards, crossing through the Sidelines, and then perform one-half outface Eagle, passing through the Sidelines again, to head-up, into 180° of outface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Joining as a pair, the Performers fly backwards, crossing through the Sidelines. The pair then performs one-half inface Reverse Eagle, crossing through the Sidelines, to head-down. The pair flies forwards, crossing through the Sidelines. Thence...

*M-4 Reverse Mixed Circles (D2W)*

While head-down, the pair flies forwards, crossing through the Sidelines, and then performs one-half outface Eagle, crossing through the Sidelines, into 180° of head-up outface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. While head-up, both Performers, as a pair, fly backwards, crossing through the Sidelines, and then perform one-half inface Reverse Eagle, crossing through the Sidelines again to head-down. The pair then flies directly through the Sidelines, presenting their backs to each other into 180° of inface carving in opposite directions, with P#1 crossing a

Sideline and P#2 crossing the other Sideline. Joining as a pair, the Performers fly forwards, crossing through the Sidelines. Thence...

*M-5 Head-down Shuffler (D2W)*

While head-down, the two (2) Performers separate into inface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Next, P#1, then P#2, passes through the centre (completely crossing the Centreline) into 180° of outface carving, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Continuing the Shuffler, P#1, then P#2, passes through the centre (completely crossing the Centreline) into 180° of inface carving, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Joining as a pair, the Performers fly forwards through the Sidelines. Thence...

*M-6 Head-up Shuffler (D2W)*

While head-down, the two (2) Performers, as a pair, fly forwards, crossing through the Sidelines, performing one-half back loop to head-up. While head-up, the two (2) Performers separate into inface carving in opposite directions, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Next, P#1, then P#2, passes through the centre (completely crossing the Centreline) into 180° of outface carving, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Continuing the Shuffler, P#1, then P#2, passes through the centre (completely crossing the Centreline) into 180° of inface carving, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Joining as a pair, the Performers perform one-half inface Reverse Eagle, crossing through the Sidelines, to head-down. The Performers then fly forwards, crossing through the Sidelines. Thence...

*M-7 Mixed Shuffler (D2W)*

While head-down, the two (2) Performers separate into inface carving in opposite directions, with P#1, crossing a Sideline and P#2, crossing the other Sideline. Next, P#1 then P#2, crosses through the Sidelines, while performing one-half inface Eagle to head-up and then performs 180° of inface carving, with P#1 crossing a Sideline and P#2 crossing the other Sideline. Continuing the Shuffler, while head-up, P#1, then P#2, crosses through the Sidelines and then performs 180° of outface carving, with P#1, crossing a Sideline and P#2 crossing the other Sideline. Joining as a pair, the Performers fly backwards through the Sidelines. The Performers then perform one-half inface Reverse Eagle, crossing through the Sidelines, to head-down and then fly forwards, crossing through the Sidelines. Thence...

Compulsory Transition to any Snake or Compulsory Exit Sequence (D2W):

*...To transition to a Head-down Snake or Head-down Compulsory Exit Sequence (D2W):*

The pair then performs one-half outface Eagle with one-half back loop, crossing through the Sidelines, to head-down, ending with each Performer head-down completely on his/her side of the Centreline. They then inface carve, crossing a Sideline, before starting any Head-down Snake or Head-down Compulsory Exit Sequence.

*...To transition to a Head-up Snake or Head-up Compulsory Exit Sequence (D2W):*

The pair then performs one-half outface Eagle, crossing through the Sidelines, to head-up, ending with each Performer completely on his/her side of the Centreline. While head-up, the pair then flies backwards through the Sidelines, before starting any Head-up Snake or Head-up Compulsory Exit Sequence.

*Head-down Compulsory Exit Sequence (D2W)*

While head-down, P#1, followed by P#2, inface carves towards the Performers' right, completely crossing the Start Sideline before exiting the flight chamber from the far side, while maintaining sequential order.

*Head-up Compulsory Exit Sequence (D2W)*

While head-up, P#1, followed by P#2, inface carves towards the Performers' left, completely crossing the Start Sideline before exiting the flight chamber from the far side, while maintaining sequential order.

## ADDENDUM B BASIC ORIENTATIONS, ROTATIONS AND PATHWAYS

### A. ORIENTATIONS

There are six (6) basic orientations (not including diagonal orientations) which a body can have to the wind (or cable floor). These define which way the torso is oriented.

#### A-1. Belly-down Orientation

The torso is horizontal, on its front, facing down towards the wind (or the cable floor).

#### A-2. Back-down Orientation

The torso is horizontal, on its back, facing up, away from the wind (towards the ceiling).

#### A-3. Sideways Orientation

The torso is horizontal, on its side, with either side facing towards the wind (or cable floor). The chest is facing the tunnel wall.

#### A-4. Head-up Orientation (HU)

The torso is vertical with the head up, directly away from the wind (towards the ceiling). For the Compulsory Patterns, the Performers may lean, but the feet must be below the knees, the knees below the hips and the hips below the shoulders.

#### A-5. Head-down Orientation (HD)

The torso is vertical with the head down, pointing directly down into the wind (towards the cable floor). For the Compulsory Patterns, the Performers may lean, but the shoulders must be below the hips, the hips below the knees and the knees below the feet.

### B. ROTATION AXES

Most moves involve a form of rotational motion of the body. A total of five (5) axes are used to describe the six (6) possible basic rotational motions.

#### B-1. Wind Axes

There are two inertial axes which stay fixed with respect to the wind (or cable floor).

##### Vertical Axis

The vertical axis remains parallel to the wind, (pointing from the ceiling to the cable floor). Spins are rotations about the Vertical Axis.

##### Horizontal Axis

The horizontal axis is any axis perpendicular (90°) to the wind, (pointing to the tunnel wall). It may have any heading (pointing towards any wall).

#### B-2. Body Axes

There are three (3) body axes which stay fixed with respect to each Performer's body.

##### Body Head-Tail Axis

The body head-tail axis is oriented lengthwise, pointing from head to tail-bone, normally through the Performer's torso. (In a layout position, the head and feet are in the same line. When the body is bent at the hips, this axis is aligned with the spine and does not include the legs.)

##### Body Front-Back Axis

The body front-back axis is oriented forwards and backwards, pointing from front to back, normally through the Performer's belly.

##### Body Left-Right Axis

The body left-right axis is oriented sideways, pointing from left to right, normally through the Performer's hips.

### C. BASIC ROTATIONAL ACTIONS

There are six (6) basic rotational actions. Twisting combines rotational actions by adding a rotation about the body head-tail axis during a rotation about the body left-right or front-back axis.

#### C-1. Flat Turns

Flat turns involve a rotation about the body front-back axis when that axis is aligned with the vertical axis. The Performer's heading is changing. The body can be belly-down or back-down while performing a flat turn.

**C-2 Pirouettes**

Pirouettes involve a rotation about the body head-tail axis when that axis is aligned with the vertical axis. The Performer's heading is changing. The body can be head-up or head-down while performing a pirouette.

**C-3 Barrel Rolls**

A barrel roll is a rotation about the body head-tail axis when that axis is aligned with the horizontal axis. A barrel roll may begin and end in a belly-down, back-down or sideways orientation.

**C-4 Cartwheels**

A cartwheel is a head-over-heels rotation about the body front-back axis when that axis is aligned with the horizontal axis. The body passes through a head-up, sideways and/or head-down orientations during the course of a cartwheel. A cartwheel needs not start nor finish in an exact head-up, sideways or head-down orientation. A cartwheel is considered to be a full cartwheel when the head has travelled 360° around the horizontal axis from the point at which it started. A cartwheel may be performed to the right or left.

**C-5. Loops**

A loop is a head-over-heels rotation about the body left-right axis when that axis is aligned with the horizontal axis. The body passes through a head-up, belly-down, head-down and/or back-down orientation during the course of the loop. A loop may begin and end in a head-up, belly-down, head-down and/or back-down orientation. A loop needs not start nor finish in an exact head-up, belly-down, head-down and/or back-down orientation. A loop is considered to be a full loop when the head has travelled 360° around the horizontal axis from the point at which is started. There are two (2) kinds of loops. (Loops are referred to by the direction in which the loop is initiated, since in the case of twisting loops, the direction in which the loop completes may be different from the direction at the start.)

**Back Loop**

A back loop is a loop rotation initiated with the torso rotating backwards.

**Front Loop**

A front loop is a loop rotation initiated with the torso rotating forwards.

**C-6. Side Loops (Loops on the Side)**

A loop in the sideways orientation is a rotation about the body left-right axis when that axis is aligned with the vertical axis. For example, a Spinning Egg is a true loop on the side.

**C-7. Twists**

Twisting combines rotational actions by adding a rotation about the body head-tail axis during a rotation about the body left-right or front-back axis, aligned with either the horizontal or vertical axis. There are two (2) basic categories of twists.

**Vertical Twists**

A vertical twist is a head-over-heels rotation about the horizontal axis (loop or cartwheel) combined with a rotation about the body head-tail axis. A single or full twist is defined to be a 360° rotation about the body head-tail axis over the course of a 360° loop or cartwheel. The amount of twist contained within a loop or cartwheel is the amount of twisting rotation completed after a 360° looping or cartwheeling rotation has been performed, when measured from the point in the loop or cartwheel at which the twist was first initiated. Twists may be initiated at any position in the loop or cartwheel and in any direction.

**Horizontal Twists**

A horizontal twist is a rotation about the vertical axis (flat turn or side loop) combined with a rotation about the body head-tail axis. A single or full twist is defined to be a 360° rotation about the body head-tail axis over the course of a 360° flat turn or side loop. For example, a Flip Through is a horizontal twist.

**D. CIRCULAR PATHWAYS**

There are two (2) basic types of circular pathways a Performer may follow, which can be performed either infacing or outfacing. Circular pathways may have embedded moves (e.g. Bottom Loop) or intermixing of Performers.

**Inface**

The front of the torso faces inward towards the concave side of the pathway, usually, but not always, towards the centre of the flight chamber.

**Outface**

The front of the torso faces outward, away from the concave side of the pathway, usually, but not always, towards the wall of the flight chamber.

**D-1. Carving**

The Performer(s) body(ies) trace(s) a circular path in approximately a horizontal plane. Carving is performed while head-down, head-up or in other orientations.

**D-2. Vertical Orbits**

The Performer(s) body(ies) trace(s) a circular path in a vertical plane. Eagles and Reverse Eagles are two (2) common forms of Vertical Orbits that involve also rotating about the Body Left-Right Axis.

**Eagle**

The Performer(s) travel(s) in a Vertical Orbit while continuously leading with the head, passing through the back-down, head-up, belly-down and/or head-down orientation (in that order, if infacing). An Eagle may begin from any orientation in this progression. A Half Eagle is when the Performer has travelled head first through 180° of vertical orbiting. A Full Eagle is when the Performer has travelled head first through 360° of vertical orbiting.

**Reverse Eagle**

The Performer(s) travel(s) in a Vertical Orbit while continuously leading with the feet (or tail-bone), passing through the back-down, head-down, belly-down and/or head-up orientation (in that order, if infacing). A Reverse Eagle may begin from any orientation in this progression. A Half Reverse Eagle is when the Performer has travelled feet (or tail-bone) first through 180° of vertical orbiting. A Full Reverse Eagle is when the Performer has travelled feet (or tail-bone) first through 360° of vertical orbiting.

## ADDENDUM – C DIFFICULTY

'Difficulty' is the combined result of several factors. The overall performance of the Flights (moves, patterns and transitions) counts for Difficulty. In general, Difficulty factors are:

<b>Easier</b>	<b>More Difficult</b>
High drag moves flown with slow tunnel speed	High drag moves flown with fast tunnel speed, the longer the duration of high drag move(s), the more difficult
Low drag moves flown with fast tunnel speed	Low drag moves flown with slow tunnel speed, the longer the duration of the low drag move(s), the more difficult
Moves executed individually	Moves executed in a connected sequence
Body position lost during move(s)	Ideal body position maintained throughout move(s)
Random Movements	Precisely Choreographed Movements
Move(s)/Pattern(s) without elements of precision	Move(s)/Pattern(s) with elements of precision, e.g., head-to-head with no other grips
Easy natural body positions	Awkward body position and/or grip(s), such as a hand grip on one's own foot with that grip behind
Move(s) do(es) not require flexibility	Move(s) require(s) flexibility
Move(s) do(es) not require strength and power.	Move(s) require(s) strength and power
Basic, simple Move(s)/Pattern(s)	Move(s)/Pattern(s) require(s) long learning progression
Performing previously seen Move(s)/Pattern(s)	Performing brand new Move(s)/Pattern(s)
Rotations on 1 axis	Rotations on more than 1 axis (in which use of 3 axes is more difficult than use of 2 axes)
Slow flying in loose proximity	Fast flying in very close proximity
Performing moves, carving/rotating always in a preferred direction	Performing moves, carving/rotating in both directions
Performer(s) flying in clean airflow	Performer(s) flying across burble of other Performer(s) and/or doorway
Fast transitions through burble(s) of other Performer(s) and/or doorway	Performer(s) remaining in burble(s) of other Performer(s) and/or doorway for extended time
All Performers flying in same direction and pathway (carving, vertical orbiting, etc.)	Performers simultaneously flying different directions and pathways, intermixing (while carving, vertical orbiting, etc.)
Carving/vertical orbits without embedded move(s)	Carving/vertical orbits with embedded move(s)
Transitions between Moves/Patterns with the same axes	Transitions between Moves/Patterns with different axes at a precise heading/orientation
No direction change	Reversal of direction at a precise heading/orientation
Complex Moves/Patterns using arms and legs to control flying	Variety of complex Moves/Patterns without using arms or with arms and/or legs in fixed pose or in creative, artistic gestures
Eye contact with other Performer(s)	No eye contact (blind) with other Performer(s)
Landing on the cable floor to exit and end routine	Landing exactly in the doorway with a complex move to exit and end routine

Combinations of multiple factors further increase difficulty. Teams are not expected to demonstrate all of the above difficulty factors within one routine. A difficulty factor may sometimes have the opposite effect of making a Move/Pattern easier, e.g., retracting the arms keeping them fixed to the body may decrease the difficulty of certain moves. Judges are expected to apply additional knowledge and understanding of Difficulty.

Table of Difficulty factors – examples only.

<b>Difficulty Free Routine Moves and Patterns Categorised by Type of Movement</b>					
<b>Type of Move</b>	<b>Very easy</b>	<b>Easy</b>	<b>Moderate</b>	<b>Difficult</b>	<b>Very Difficult</b>
HD Inface Carving	Same direction	With direction change	With mixed orientations	With mixed directions	Mixed orientations AND directions
HD Outface Carving		Same direction	With direction change	Mixed orientations OR directions	Mixed orientations AND directions
HU Inface Carving	Same direction	With direction change	With mixed orientations	With mixed directions	Mixed orientations AND directions
HU Outface Carving		Same direction	With direction change	Mixed orientations OR directions	Mixed orientations AND directions
HD Flares	Same direction	With direction change	With mixed orientations	While crossing & burble hoping, mixed directions	While crossing & burble hoping, mixed orientations AND directions
HU Flares	Same direction	With direction change	With mixed orientations	While crossing & burble hoping, mixed directions	While crossing & burble hoping, mixed orientations AND directions
Cheerleaders	Direction change returning to same orientation	Direction change into different orientation	With mixed orientations	Transition into verticals or flares	Transition into verticals or flares with tricks OR spins
Interlacing	Transition into carving	Transition into carving with orientation change	Transition into verticals	Transition into verticals with spins	Transition into verticals with flips/loops
Breakers	Same direction	Mixed direction & crossing with burble hoping	With mixed orientations	Anti-breakers	Anti-breakers with mixed directions & crossing with burble hoping
Back Layouts (Verticals)	Back Layout (V-1)	Verticals while crossing & burble hopping	Back Layout with spins OR tricks		Mixed orientation back layouts with tricks OR spins
Front Layouts (Verticals)		Front Layout (2015 D2W/D4W-10)	Verticals while crossing & burble hopping	Front Layout with spins OR tricks	Mixed orientation Front Layouts with tricks OR spins

The above table shows a scale of difficulty for each type of move/pattern and each type of move/pattern is to be read within its own line. The table does not compare the difficulties of each type of move/pattern to the other types of moves/patterns, e.g., it does NOT intend to imply that a basic Breaker is as easy as basic HD Inface Carving.

Judges are expected to apply additional knowledge and understanding of Difficulty.



