CSPA Movement (Track & Angle) Ground Briefing and Skill Progression Reference Guide

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REVISION HISTORY

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FOREWORD

With the popularity of Movement flying growing exponentially, it is more important than ever to ensure that new and existing Movement flyers are developing the skills required to fly and progress safely. With proper instruction and monitored progression, Movement flyers will learn in a systematic and safe manner.

The sport of skydiving continues to grow around the world, and as the sport enlarges, so does our knowledge of the technical and training complexities. As new ideas and systems introduced to our sport are proven sound, they are adopted by the Canadian Sport Parachuting Association (CSPA) and new information is distributed. To ensure that the best available techniques are being utilised, it is your responsibility to keep abreast of them by participating in Coaching and Instructor programmes and seminars offered by both local organizations and the CSPA.

If you have questions, suggestions, corrections or additional material relevant to this document, please forward them to ltad@cspa.ca so that your ideas can be considered.

THE GOAL OF THIS EDUCATIONAL RESOURCE DOCUMENT

The goal of this document is to provide Dropzone Owners (DZOs) and Dropzone Safety Officers (DZSOs) an educational resource to assist them in implementing and assessing their specific guidelines surrounding Movement flying within their operations. It is also the goal that CSPA coaches can utilize the document to better understand the different aspects of safety that are unique to Movement flying and to assist them in the continued education for novice jumpers. Additionally, it is the hope that skydivers themselves utilize the document when assessing their personal skill level and decision-making process as it relates to progression in Movement flying.

ACKNOWLEDGEMENTS

As a result of collaborative efforts a resource that enhances the safety of the sport while maintaining an excellent level of resources for all stakeholders was created.

Appreciation is given to subject matter experts, Dustin Chantler, Derek Klassen, and Brad Chase, all of whom contributed their time, knowledge, and passion into the core foundations of movement flying as an integral part of this resource development. Thanks also to our professionals for their diligence and attention to detail in the graphics and French translation. Additionally, gratitude to the CSPA Long Term Athlete Development (LTAD) Chair, Coaching and Working Committee (CWC) Members, and Technical & Safety Committee (T&SC) Chair.

MOVEMENT FLYING

DEFINED

A *Tracking Dive* is defined as one in which the majority of the time is spent in a track, with a fairly normal freefall descent rate and a substantial amount of horizontal movement. The flight path typically covers up to a kilometre or more of horizontal distance and is often in a straight line or has slight course changes.

An *Angle Flying Dive* is defined as one in which there is a horizontal component, but the angle is much steeper than a conventional tracking dive, resulting in a faster fall rate and less horizontal movement. The horizontal component may involve several directional changes.

**Wingsuit Flying is* considered Movement Flying, however will not be covered in this documentation. It is recommended to contact a CSPA Coach 3 – Wingsuit and/or a wingsuit manufacturer for specific guidelines and safety recommendations.

TECHNICAL INFORMATION

All movement jumps should be conducted in a way that accommodates local weather conditions, landing topography, landing hazards and other jumpers on the load.

Deployment Zone must be accommodated for and accurate within 200m.

EQUIPMENT

- Harness:
  - Fits properly (no shoulder slip)
  - Properly closing riser cover tabs and pin cover flaps (no Velcro)
- Premature openings at track/angle speeds can kill you, therefore:
  - no exposed bridle whatsoever
  - tight closing loop
  - well maintained/tight BOC properly stowed pilot chute & handle (Use of a tuck-tab is recommended to provide additional security of the pilot chute during high freefall speeds encountered while movement flying)
- All movement jumps should be with the assist of an Audible Altimeter in addition to your visual altimeter
- Movement jumps greater than 30 degrees MUST have at least one (1) Audible Altimeter
- Leg straps should be connected with a seat strap to keep the leg straps from moving toward the knees.
- Properly tightened leg straps with the excess stowed securely
- Properly fastened, hard shell helmet and tightly secured goggles / glasses, or a full face with a good visor that will remain closed in freefall
- Clothing or jumpsuit that will remain in place during movement flights and will not obscure or obstruct deployment, emergency handles or altimeter
- A tight chest strap, without exaggerating (and tie your shoelaces properly!)

GUIDELINE REFERENCES FOR MOVEMENT PROGRESSION

Flyers wishing to join movement jumps should acquire and maintain various technical knowledge and skydive skills related to movement jumps as they work through their progression.

MOVEMENT 1 (M1) – TRACKING (BELLY)

- CSPA B CoP (or FAI equivalent)
- Review of the *Movement Ground Briefing & Skill Progression Reference Guide* with a CSPA Coach 2 (preferably with Movement experience)
- Demonstration and completion of M1 technical knowledge and in-air skills with a CSPA Coach 2 as described in the *Movement Flying Skill Progression & Technical Guide*

MOVEMENT 2 (M2) – TRACKING (BELLY & BACK)

- CSPA B CoP (or FAI equivalent) and a minimum of one hundred (100) skydives
- Successfully completed M1
- Successfully demonstrated proficiency in M1 skills set
- Demonstration and completion of M2 technical knowledge and in-air skills with a CSPA Coach 2 (experience in Movement flying is strongly recommended) as described in the *Movement Flying Skill Progression & Technical Guide*

MOVEMENT 3 (M3) – ANGLE FLYING

- CSPA B CoP (or FAI equivalent) and a minimum of two hundred (200) skydives
- Successfully completed M1 & M2
- Successfully demonstrated proficiency in M1 & M2 skills set
- Demonstration and completion of M3 Technical Knowledge and in-air skills with a CSPA Coach 2 (experience in Movement Flying (specifically Angle Flying) is strongly recommended) as described in the *Movement Flying Skill Progression & Technical Guide*

MOVEMENT LEADER 1 (ML1) – BASIC TRACKING LEADER

- CSPA B CoP (or FAI equivalent) and a minimum of three hundred (300) skydives
- Successfully completed M1 & M2
- Successfully demonstrated proficiency in M1 & M2 skills set
- Demonstration and completion of ML1 Technical Knowledge and in-air skills with a CSPA Coach 2 (experience in Movement Flying is strongly recommended) as described in the *Movement Flying Skill Progression & Technical Guide*

MOVEMENT LEADER 2 (ML2) – ANGLE FLYING LEADER

- CSPA C CoP (or FAI equivalent) and a minimum of five hundred (500) skydives in which a minimum of seventy-five (75) jumps having greater horizontal steepness
- Successfully completed all Movement & the ML1
- Successfully demonstrated proficiency all Movement & the ML1 skills set
- Demonstration and completion of ML2 Technical Knowledge and in-air skills with a CSPA Coach 2 (experience in Angle Flying is strongly recommended) as described in the *Movement Flying Skill Progression & Technical Guide*

MOVEMENT FLYING SKILL PROGRESSION & TECHNICAL GUIDE

MOVEMENT 1 (M1)

- Minimum CSPA B CoP (or FAI equivalent)
- Can fly safely on their belly without noticeable unwanted changes in fall rates or loss of heading
- Understands how to approach on level and not dive at the formation
- Can stay in their designated quadrant and relative to others in groups of no more than four (4)
- Can approach a formation and break off from formation in a safe and controlled manner

MOVEMENT 1 (M2)

- Minimum CSPA B CoP (or FAI equivalent) and a minimum of 100 jumps
- Can fly safely on their back without noticeable changes in fall rates or loss of heading, while utilizing another M1 rated flyer as a guide for direction.
- Ability to have situational awareness of altitude, location and other flyers
- Can stay in their designated quadrant and relative to others (can be directly below leader) in groups of no more than four (4)
- Ability to break off, transition to belly and have a fully deployed main canopy by 3000 feet AGL
- An M2 Flyer may join on groups larger than four (4) with a designated ML1 or ML2 and the horizontal steepness is relatively flat

MOVEMENT 3 (M3)

- Minimum CSPA B CoP (or FAI equivalent) and a minimum of 200 jumps
- Can fly M1 and M2 skills at an angle of more than 30 degrees without noticeable change in fall rates or loss of heading while utilizing another M3 rated flyer as guide/reference
- Control fall rate while flying angles greater than 30 degrees
- Demonstrated ability to safely approach on level and break off on angles of 30 degrees or more with groups no larger than four (4)
- If all M3 skills noted above are met, M3 Flyer may join on groups larger than four (4)

MOVEMENT LEAD 1 (ML1)

- Minimum CSPA B CoP (or FAI equivalent) and a minimum of 300 jumps
- Proficiency in all M1 & M2 skills
- Leader needs to have understanding of the following topics before jumping:
- DZ terrain; Exit order; Navigation; Communication with DZSO, pilot, & other jumpers on load; Weather; Flight Planning
- ML1 may lead groups no larger than six(6) and only relatively flat horizontal steepness

MOVEMENT LEAD 2 (ML2)

- Minimum CSPA C CoP (or FAI equivalent) and a minimum of 500 jumps (with a minimum of 75 jumps having greater horizontal steepness)
- Proficiency in all M1, M2, M3 & ML1 skills
- Ability to maintain speed, pitch and heading while giving hand signals and looking around
- Is able to fly confidently on belly and back angles, as well as transitioning without excessive loss of speed or pitch
- ML2 may lead groups of any size

GENERAL KNOWLEDGE & GROUP SIZE PROGRESSION

- A review of the Movement Ground Briefing & Skill Progression Reference Guide to ensure understanding of core topics (Equipment; Technical Knowledge; Hazards associated with movement flying, etc.)
- Prior to any new skill transition (i.e. belly, back, and greater pitch changes) a flyer should work 1:1 with a ML1 or ML2 and progress through group size appropriately to their skill level (refer to Group Size Progression Guidelines)
- Ability to have situational awareness of altitude, location and other flyers
- Groups should always plan and execute their skydive to the individual with the lowest skill level in the group unless otherwise specified by a ML1/ML2 on the jump
- Recognition of personal accountability for safe progression

GROUP SIZE PROGRESSION GUIDELINES

1 ON 1

Movement jumps with someone as a direct reference for speed and pitch. Prior to any new skill transition a flyer should work 1:1 with a ML1 or ML2.

SMALL GROUPS (2-3)

Movement jumps may be led by an approved leader in a group of 2-3 working on speed, heading, and break-off. A non ML1/ML2 can be approved to lead a small group by a Dropzone Safety Officer (DZSO) and/or a Coach 2.

LARGE GROUPS (4+)

Movement jumps led by a ML1 or ML2 in a controlled setting to confidently work on approaching a group safely, heading, flight path manoeuvring, break-off and small pitch changes.

SMALL GROUPS – INCREASING ANGLE (NO MORE THAN 4)

Movement jumps with greater steepness led by a ML2 where a flyer can work on speed, pitch, and roll in a small group setting while maintaining flight path manoeuvring, quadrant and pitch.

LARGE GROUPS – ANGLE FLYING (4+)

Movement jumps with greater steepness where a flyer can work on speed, pitch, and roll in a larger setting. Flyers should be able to hold their own slot and quadrant, as well as flight path manoeuvring.

MOVEMENT PLANNING

DEFINITIONS

Deployment Zone – Roughly a 300-foot circle of intended opening for the entire movement jump

Quadrants – An invisible line dividing the leader into 4 quadrants, 2 in front and 2 behind. Flyers should be able to fly in the Back Left Quadrant without drifting into the Back Right or Front Left Quadrant.

INFLIGHT – PLANNING

The planning phase is the most important one in order to minimize risk associated with the increased distance, speed and changes in direction of the movement groups. Since the notion of movement and ability to travel horizontally as well as vertically is added to this particular type of skydive, managing the group's position in the airspace (navigation) becomes one of the key aspects of the overall safety of the group.

Key points associated with navigating a movement group should include:

- Movement jumps must be loaded according to local dropzone recommendations.
- Direction of flight immediately after the exit.
- Direction/heading resulting in increased distance with the drop line / jump run (the aircraft and the other jumpers).
- Navigating a pattern that will never cross the drop line / jump run
- Establishing a target opening area away from the drop line / jump run and the other jumpers and/or movement groups in order to minimize the risk of collisions and off-DZ landings.
- If more than one movement group is on the same load, coordinate the planned patterns or jump order and consider alternating group pattern's directions (left or right of jump run). Always confirm your exit order with others prior to boarding (preferably with an experienced instructor/Load Organizer on the load).
- Due to the flexibility of movement jumps and the distance travelled, the exit order should generally abide by the following guideline: Movement group 1, Belly (Big-small), Freefly (Big-small), Movement group 2, Wingsuits, High Pulls, Tandems.
    - If there are more than 3 movement jumps on a particular load, minimum 2 groups MUST be led by qualified ML1 and ML2. Otherwise, a group without a qualified ML1 or ML2 MUST change their jump plan.
    - All movement jumps must co-ordinate with wingsuit jumpers to ensure clear Deployment Zone

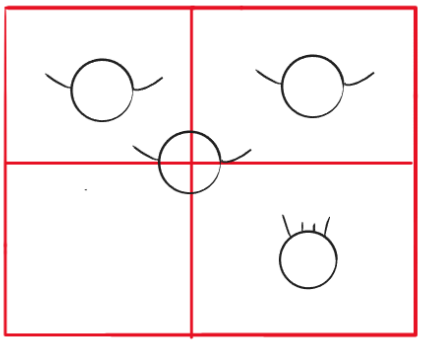
INFLIGHT

It is important to realize that most turbine aircraft will initially descend at the same rate as some of the movement groups. Pilots should use proper descent patterns to avoid descending in the same area as the movement groups. In order to minimize the risk of collision, especially if a premature opening should happen and/or when the last skydivers to exit the aircraft are a movement group, pilots should consider the airspace immediately behind the aircraft and on the side of the movement group patterns as a no-fly zone.

For that particular reason, movement groups should communicate with the pilot to specify if the movement group pattern is navigating left or right of the drop line / jump run after the exit. If a movement pattern takes the group across the drop line and under the aircraft after the exit, the pilot must be aware of it in order to adapt his descent trajectory.

FREEFALL

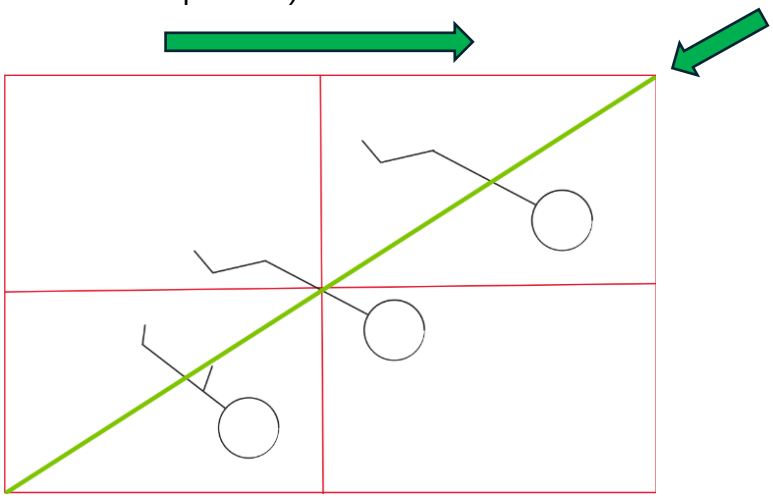
- All movement jumps should proceed with the idea of “quadrants”. A quadrant is any of the four quarters into which the leader is divided by imaginary lines that intersect each other at right angles.
- Flyers shall not pass from one quadrant to another without pre-planning in the briefing.
- Beginner and Intermediate jumps should only have 1 flyer per quadrant



Picture depicts a view directly on the helmet of the leader (flyer in center of diagram).

This is used to reference the quadrants that a flyer should reside in without crossing into another quadrant.

- Flyers shall approach any movement jump in the same way, by first joining the group horizontally, before closing any distance vertically, depicted below (note: leader is in the center, while flyers maintaining position in their quadrant)



- Flyers must attempt to stay on level with the group, as depicted by the green line in the diagram. As the angle increases or decreases, “On Level” changes in relation to the change
- Any flyer wanting to increase the angle of their jump should first have a firm understanding of the speed and pitch they wish to fly. A flyer without the understanding of speed control becomes increasingly more dangerous when increased pitch is involved.
- If a flyer loses stability, they should attempt to re-establish stability rather than give up on the formation.
    - An unstable flyer is more dangerous when they “give up” than if they were to continue flying through the instability.

BREAK OFF

- Break of should always consist of a gradual flattening out from whatever angle is being flown, this is to ensure that there are no dramatic changes in speed or pitch during break-off.
- All flyers should be aware of their own “lane” and give “right of way” to any back flyers who may not be able to gain the same amount of lift during break off.
- If you are on your back at breakoff, avoid flipping to a belly-to-earth orientation until you are on a clear trajectory with no one above you. Once on your belly, continue to track off until it's time to clear airspace and pull
- Opening in the correct, predetermined spot is crucial for safety

UNUSUAL SITUATIONS

- In the event that a jumper is unable to re-join their group for any reason, they MUST maintain visual on the group until break-off, to ensure they have clear airspace for their own deployment, and are not travelling in a direction opposite to the group.
- In the event that a jumper falls behind on a group, the flyer must approach on level above or below the group, before closing the distance vertically.
- In the event that a jumper loses visual on the leader of the jump, they should not “assume” that the leader has made a significant change, and should instead follow a general, conservative, pre-determined flight path that allows them to safely rejoin the group.
- In the event that a jumper falls behind on a group during a turn, they must not attempt to rejoin the group directly by targeting directly at the group. Instead, they should approach on level (either above or below the group) and re-join the formation in a slow, controlled manner, while maintaining heading with the entire group.
- Flyers should never enter a “converging” path with the group as this could lead to high-speed collisions.
- If the leader of the group loses visual awareness of the group, they are leading, they MUST maintain pitch and heading to ensure there are no converging flightlines at a high rate of speed.