

Basics of CF2-Sequential

Version 0.2

Introduction

This guide is based on input given by Benoit Rotty during the CF2-sequential training at Moorsele skydiving center in May 2017.

The intention of this guide is to collect basic information on CF2 techniques in an open source document accessible to every CRW-dog interested in this discipline. This document is intended to provide new-comers to our sport with very basic instructions and tips, and suggested exercises that offer a relatively safe way to build CF2 skills and experience. It has been compiled for beginner CF2 teams to use as a supplement to actual coaching, not an alternative to coaching.

You are welcome to edit

All CF2 competitors are welcome to add their views on ways of approaching specific manoeuvres. If you do contribute to the guide, please keep the target audience in mind, and bear in mind that there is more than one way to fly any of these manoeuvres. Please use phrases such as 'another way of approaching this is ...' and use a name to distinguish the technique you are introducing. Also, please [log](#) your input by adding your information to the last page of the guide.

A note to the new CF2 jumpers

CF2 is a fun CF discipline which should be learnt in a safe and structured manner under the guidance of a suitably experienced coach. If you are reading this guide as a CRW-dog who has little or no CF2 experience, you are advised to firstly work with a coach and to discuss your use of this document with that coach.

Inhoudsopgave

Introduction	1
1. Starting a CF2 team.....	3
Team members	3
Canopies and wing-loading.....	3
Using radios.....	3
Exit altitude	3
2. Basics for the performers.....	4
Basic body position.....	4
Body movements	4
Fly/move backward.....	4
Fly/move downward	4
CF2 formations.....	5
Roles.....	5
The BOX	5
Steps of a transition.....	6
3. Basics for the camera flyer	7
4. Transition manoeuvres, training jumps.....	8
Training jump 1: BE (rotating over the top).....	8
Training jump 2: BBEE (top dock).....	8
Training jump 3: BAEF (flying level and docking).....	8
Training jump 4: CD (making asymmetric moves)	9
Training jump 5: CAFD (top dock from one side to the other)	9
Training jump 6: CBFE (top dock & airstep dock)	9
Log	9

1. Starting a CF2 team

Much can be said about starting a CF2 team. Depending on the team members' goals, experience and preferences, a range of different choices may be made, as briefly indicated here.

Team members

A CF2 team consists of two 'performers' and one camera flyer. This guide focuses on all three and the parts they play.

Canopies and wing-loading

The performers' wing-loading should be matched and should be determined by their canopy experience and skill-level, and by their CF skill-level. There is no need for a team to jump a wing-loading higher than 1.5 until they can make a 12-point CF2 competition jump. The camera flyer should adjust their wing-loading to that of the performers.

Using radios

Some teams like using radios, others don't. When starting a team, radios can help a team to stay closer and make good setups. Radios can be useful while the performers get used to how each other fly and build up good sight pictures. Once teams have some experience together and have smoothed out most of the 'big' flying issues, many find that the radios are unnecessary and decide to jump without them.

Exit altitude

Some teams like to jump from 7 or 9,000ft, Others prefer 12 or 13,500ft. The higher altitude jumps give more training time, but are also more tiring, which means that the extra time is often not used effectively. While teams are starting out and working at a slower pace as they build experience, it can be handy to have the extra altitude. On the other hand, if the objective of a jump is gaining skills, the intensity of lower altitude jumps can be very productive. The lower exit altitudes also reflect what a team will experience in competition.

Altitude discipline

Most teams have two, or even three, altitudes at which they change manoeuvres or stop training. For example, if exiting from 7,000ft, it can be useful to train in new manoeuvres until 4,000ft. Then, from 4,000 to 2,000ft the focus can shift to simpler and more familiar manoeuvres. Some teams chose to fly in synchronised form from 2,000ft to landing, which looks nice, is safe and still gives the opportunity to work on skills. Exercising this altitude discipline can also mean that the team routinely checks where they are in relation to the landing area at set intervals.

2. Basics for the performers

All input must be very subtle and should not make the performer pendulum under the canopy. The French teach their students to fly with two fingers in the steering toggles, just to make sure the input is indeed subtle. This two-finger technique also allows more of the hand to be in contact with the risers when making riser inputs while keeping hold of the toggles, which can be very efficient.

Basic body position

The arms are held in a 'W' position with the palms of the hands at ear level. This gives a steady 25-35% brake setting, making it easy to fly either faster or slower with only a small input.

The body is arched and symmetrical from the shoulders to the hips, making sure the input on the leg straps is even so the canopy flies straight forward. The legs hang straight down, maintaining a stable and symmetrical pressure on the leg straps, ready to accept a dock.



Body movements

To keep flying straight, the body, shoulders to hips, should not move or turn in the harness. If a steering input is made or grip taken, this part of the body needs to be kept still. Train yourself to look left, right, up and down without your shoulders and hips following where you are looking or taking a grip.



Fly/move backward

To work backwards on level by making a flat sashay, first release the opposite toggle just a tiny bit (for example, if the first turn is to the right, release your left toggle a little bit), stop the drift and then release the other toggle the same amount to fly back to the new 'way point.'

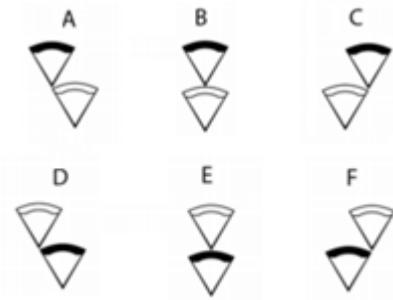
Fly/move downward

To work asymmetrically downwards, using short, quick inputs take your outer front riser and then the inner.

CF2 formations

With two performers and three grips per performer, CF2 has six formations to build. As with other formation disciplines, the competition is more about the skills (= speed) to fly from one formation to the other rather than flying formations.

Of course, the formations need to be presented in a controlled manner with at least one of the Pilot's feet clearly 'hooking' the appropriate line from the lower canopy to 'make' the specific formation. Depending on the formation, the lines which need to be 'hooked' are one of the outer A-lines or one of the two centre A-lines. Also, the shoulders of the top member (the Pilot) need to be above the top skin of the lower canopy when the formation is made.



Roles

In a CF2 jump, the performers take up 4 different roles.

While in a formation the top team member is the 'Pilot' and the lower is called 'No2.'

When transitioning from one formation to another, they become the 'Reference' (who provides a fixed point of reference for the other jumper) and the 'Relative' (who flies to the new slot).

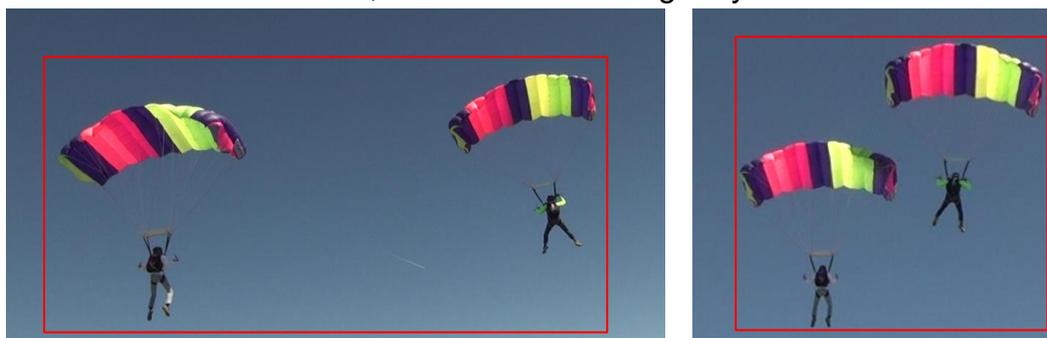
Remember, CF was called CRW (= Canopy Relative Work) in the early days?

In most transitions No2 becomes the Reference and the Pilot becomes the Relative. In the picture to the left the lower jumper was No2 and is now the Reference. The higher jumper was the Pilot in the previous formation and is now the Relative performing the 'over the top' move (see training jump 1 below). Both jumpers fly in the 'basic body position' throughout the jump.



The BOX

The easiest way to move quickly from one formation to the next is to keep the distance short by flying very close to each other. The shorter the distance to each other between formations, the smaller the imaginary 'box' will be.



In the picture on the left, the box is bigger than in the one on the right.

A smaller box is also much better energy-wise. In a bigger box the greater distance that the Relative needs to cover to fly back to the Reference consumes all the energy that was created by changes to the difference in height. The aim is to keep the box small so that the energy gained by the changes in height can be used to position the Relative's canopy in the slot for the next formation.

To keep the box small, give small, firm inputs to initiate a movement and stop the input directly with a firm counter input. For instance, when rotating over the top (see below), the front risers should be released before the Relative's canopy goes under the Reference and then the Relative needs to apply brake as a counter input in time to stop their canopy in the right place.

Steps of a transition

The basic means of transitioning from one formation to the other is to gain energy/speed through a firm input and then to counter the input before half of the distance is covered. Use the rest of the distance to position the canopy as precisely as possible in the next slot. Focus on flying the perfect slot. This will result in not only a perfect formation, but also in a perfect start of the next transition.

Flying from top to bottom is done in 4 steps, as shown in the picture, which illustrates the transition from A to F.

A. Pilot drops the grip and becomes the Relative (black canopy) which means No2 becomes the Reference (white canopy).

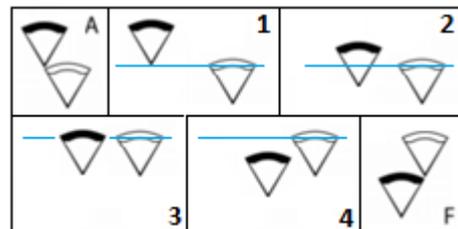
1. Reference flies in position keeping the heading while Relative creates room to manoeuvre by flying to the side. When practicing the transition for the first few times, a full stop at the end of this step is recommended. When you have more experience, you will be able to move from one step to the next without coming to a full stop.

2. Relative initiates the downwards movement using front risers (asymmetrical).

3. Relative immediately releases front risers and firmly goes into basic body position.

4. Relative finishes the flight to the slot for the next formation. At the end, a slap on the brake might be necessary to stop the canopy in the right slot. Relative's canopy never dives under the Reference.

F. Reference picks up the grip and becomes the Pilot ... for a split second.



3. Basics for the camera flyer

Without a camera flyer, debriefing training jumps and scoring points at competition would be much harder. A good camera flyer makes sure the team gets the most out of training and the points they worked hard for and deserve.

Filming the foot

The camera flyer's job doesn't start with the first point. They need to film the foot of the first team member leaving the aircraft door. This signals the start of the jump (in CF2 competition the team usually have 30 seconds from the foot leaving the door in which to build the first formation). Camera flyers should practise this on every training jump with the team, not just competition jumps.

Filming the exits

It is the camera flyer's task to film as much of both exits and openings as possible as this can be invaluable for debriefing and analysing any irregularities. So, this should be part of the camera flyer's work on every jump too.

Filming the jump

Training – on training jumps, it is useful to have both performers in frame throughout as this allows for more effective debriefing.

Competition - for competition jumps the camera flyer needs to be considerably closer to the formation and to ensure that both the grip and the Pilot's shoulder above the top skin of No2's canopy are clearly visible in the frame for each point.

End of filming

The performers should let the camera flyer know when the actual training or competition manoeuvres are finished by giving a clear 'wave off' signal with their legs. If the camera flyer lands first it can be useful for beginner teams to have footage of their landings for debriefing.

4. Transition manoeuvres, training jumps

Working through the following exercises can help a beginner team develop and practise a range of core skills required for CF2 (remember; skills = speed). As team members gain experience they can build on this foundation and try different approaches to these manoeuvres or even develop their own.

Training jump 1: BE (rotating over the top)

Practise: refining the speed of inputs.

The Pilot releases their grip and becomes the Relative flyer, No. 2 becomes the Reference. With a smooth, sharp input Relative goes into a deep stall and immediately lets the brakes up, then immediately uses the front risers to steer the canopy through the burble. With the energy gained from this movement the remaining gap to the slot can be closed. Coming out of the burble, Relative gives a firm brake movement, making sure the canopy does not sink under the Reference. When this manoeuvre is executed correctly Relative can finish by giving the brakes a sharp slap for a full stop as they fly into the slot.

Training jump 2: BBEE (top dock)

Practise: staying on level and flying to your slot, top dock.

BB requires the Pilot to release the B grip and, as the Relative flyer, make a very small input with the opposite toggle to fly to the end of the other canopy and set up beside Reference (next to the cascade point on the AB-lines). Relative then becomes the Reference and asks the other jumper to slide over (or 'open') and position the canopy for the next B grip.

Alternative approach 1: 'same roles' - Another way to approach this is to keep the same roles. Using this technique, the Pilot will act as Relative throughout the transition and will fly back to the B grip just by giving the counter action, first lifting the arm a bit, which will initiate the flight back to the centre A-line and then immediately countering that input.

In both techniques it is important that Relative comes to a complete stop besides Reference before flying back to the B position or the No2 'opens and closes' to fly their canopy to B.

The team then makes the BE transition (see jump 1 rotating over the top) and the new Pilot makes the EE moves in the same way.

Training jump 3: BAEF (flying level and docking)

Practise: making small movements across the top of the canopy.

Pilot releases the grip from the centre cell, makes a small elevation input to slide across the front of Reference's canopy, cancels that out with opposite input, stops and takes the A grip. Pilot then releases the grip and makes the AE transition.

The AE transition is flown by Relative lifting up the inner toggle, directly followed by input on the inner front riser (remember the counter action). Immediately after this counter front riser input the outer front is pulled down after which the inner front riser is let go, followed by letting go of the outer front riser and going back into the basic flying position. Relative can then fly their canopy to it's E slot with the energy gained

by this active and firm input. A short slap on the brakes is usually needed to stop the canopy in its slot. The EF and FB moves are then made using the same techniques.

Training jump 4: CD (making asymmetric moves)

Practise: going diagonally down.

Pilot releases the C grip and releases the inner toggle, immediately making an asymmetric input with the inner front riser, followed by the outer front riser. This input is also stopped asymmetrically by releasing the inner front riser followed by the outer front riser. Relative then goes in to neutral position, finishing the flight to the D grip with a firm brake input. It is then up to the other performer to execute the DC flight in the same way.

Training jump 5: CAFD (top dock from one side to the other)

Practise: timing and flying level.

Approach flying over longer moves by lifting up one arm (right for the CA move) ... just a bit, go in to the basic position and then counter it with the other arm (left in this case) before passing the center cell. The AF transition requires the same moves as the CD transition practiced in training jump 4. The FD transition is then flown in the same way as CA.

Training jump 6: CBF E (top dock & airstep dock)

Practise: another top dock and the challenge of flying a airstep dock.

The Pilot maintains the heading and checks the tension in the formation. When the formation is flying well, Pilot releases the C grip and gives the 'open' signal to No2. The Pilot then becomes the Reference so that the lower jumper can fly their canopy to the B grip. The Reference takes the dock, and becomes Pilot for a split second. From here, the Pilot releases the B grip and initiates a small drift to the side by elevating the opposite toggle then immediately making an asymmetric input on the front risers, taking the inner one a fraction earlier than the outer. After a very short dive, the front risers are released, first the inner, then the outer. This puts the canopy in line with the Reference who takes the F dock, and, as Pilot, maintains the heading and checks the tension in the formation before releasing the grip and flying the short transition to E.

Log

Version 0.1 26 May 2017 The kick off by Henk Lunshof & Mary Barratt

Version 0.2 6 June 2017 released to the Moorseele students for input

Henk Lunshof, Mary Barratt, Marc Calluy, Jason Hobbs, Kelly Spittle, Wes Guest,
Emily Sugars, Natasha Higman, Peter Lindstrand and Frans Van Wijngaarden

Version 1 will be released after input/correction Benoit Rotty

All input is welcome, please send to hlunshof@gmail.com