General principle for CCC glider controls

- Processes, documents and any modification are published on the CIVL website.

- Reliable measurement instruments and processes must be in place before the controls are fully implemented in Category 1 competition.

- Measures are taken by the Test Laboratories after the flight tests. Test Laboratories verify that the Manufacturer Manual measurements comply with the tolerances.

- Once they are verified, the Test Laboratories send the Manufacturers Manual measurements to CIVL in a template .xls file. These measurements are the basis of CIVL controls. Tolerances applied are specified in the CCC document.

- The glider User’s Manual must include the same measurements as the Manufacturer Manual.

- Pilots are reminded that modifications that take a glider outside certification are not permitted (Section 7 - 11.1.2), whether the modified part of the glider is controlled or not.

- Controls others than described here can be done if thought necessary.

- Controls are done after a complaint or at the discretion of the Meet Director. Pilots must make available the glider or other equipment for checking, immediately upon any such request. It is suggested that:
  - Task winners’ gliders are controlled.
  - If such gliders have already been controlled, they can be controlled again (primarily lines only). In this case, gliders arriving 2nd are also controlled.
  - Podium gliders are controlled (primary lines only if they have already been controlled).

- Meet Directors anticipate and control potential podium gliders before the final day, so on this day only primary lines have to be controlled.
Example of gliders controls during the competition

**Step 1: on site**

- Full span
- Trailing edge
- Chord 1
- Inlet top 1
- Inlet bottom 1
- Tab Aa 1
- Tab Ab 1
- Tab B 1
- Tab C 1
- Chord 8
- Inlet top 8
- Inlet bottom 8
- Tab Aa 8
- Tab Ab 8
- Tab B 8
- Tab C 8
- Stabilo A
- Stabilo B
- Stabilo C
- Risers neutral
- Risers accelerated
- Lines length
- Lines diameters (not everyone, a few at random choice)

**Step 2: on site, if needed**

- Check with other supposed valid glider (other generation?)
- Tension band, diagonals, reinforcements, material...
- Glider aspect when flat on ground

**Step 3**

- Glider is sent to Test Laboratory for complete check.
### Example of data from Test Laboratories

**Brand**
- Butterfly

**Model**
- Magic Flower

**Size**
- Small

**CCC certification n°**
- CCC 20140816 0001

**Certification date**
- 2014 08 16

### Canopy dimensions

<table>
<thead>
<tr>
<th>Canopy dimension</th>
<th>Rib n° from center</th>
<th>Mm</th>
<th>Tension</th>
</tr>
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<tbody>
<tr>
<td>Full Span</td>
<td></td>
<td>12802</td>
<td>3 Kg</td>
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<tr>
<td>1/2 Tailing Edge</td>
<td></td>
<td>6490</td>
<td>3 Kg</td>
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<tr>
<td>Chord of first rib with lines</td>
<td>3</td>
<td>2098</td>
<td>1 Kg</td>
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<tr>
<td>Top of inlet of first rib with lines</td>
<td>3</td>
<td>1938</td>
<td>1 Kg</td>
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<td>Bottom of inlet of first rib with lines</td>
<td>3</td>
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<td>1 Kg</td>
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<tr>
<td>Chord of last rib with lines Group 2</td>
<td>26</td>
<td>1328</td>
<td>1 Kg</td>
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<tr>
<td>Top of inlet of last rib with lines Group 2</td>
<td>26</td>
<td>1224</td>
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<tr>
<td>Bottom of inlet of last rib with lines Group 2</td>
<td>26</td>
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<td>1 Kg</td>
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<tr>
<td>Chord stabilo with lines</td>
<td>41</td>
<td>716</td>
<td>1 Kg</td>
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</table>

### From trailing edge to tab

**Chord first rib with lines**

<table>
<thead>
<tr>
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<th>Rib n° from center</th>
<th>Mm</th>
<th>Tension</th>
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<tbody>
<tr>
<td>Tab Aa</td>
<td>4</td>
<td>1825</td>
<td>1 Kg</td>
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<td>4</td>
<td>1722</td>
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<td>Tab C</td>
<td>4</td>
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**Chord first rib with lines Group B could be different for A & B**

<table>
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<tbody>
<tr>
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### Chord last stabilo with lines

<table>
<thead>
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<th>Rin n° from center</th>
<th>Mm</th>
<th>Tension</th>
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</thead>
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### Absolute line length from bottom riser to canopy

**Rib with lines n°**  | **Aa** | **Ab** | **Ba** | **Bb** | **C** | **BRAKES**
---|---|---|---|---|---|---
Aa1, Ab 1. Bb1, C 1 | 7289 | 7256 | 7242 | 7337 | 8500 |
Aa2, Ab 2. Bb2, C 1 | 7166 | 7132 | 7108 | 7215 | 8223 |
3 | 7128 | 7094 | 7081 | 7215 | 8068 |
4 | 7175 | 7144 | 7175 | 7300 | 8049 |
5 | 7062 | 7035 | 7034 | 7164 | 7900 |
6 | 6952 | 6926 | 6918 | 7048 | 7801 |
7 | 6907 | 6883 | 6887 | 7012 | 7754 |
8 | 6941 | 6920 | 6963 | 7061 | 7866 |
9 | 6741 | 6727 |  |  | 7731 |
10 | 6656 | 6656 |  |  | 7683 |
11 | 6586 | 6621 |  |  | 7730 |
12 | 6569 | 6651 |  |  | 7858 |
13 | 6506 | 6570 |  |  |  |
14 | 6490 | 6567 |  |  |  |

### Riser length

**Figure 2 & 3 CCC 7.4.1**  | **A1, A2** | **A3, Stab** | **B1, B2, B3** | **Tension**
---|---|---|---|---
Neutral | 520 | 520 | 520 | 5 Kg
Accelerated | 400 | 456 | 514 | 5 Kg

### Table of lines: suppliers name and reference

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</table>
Pictures & drawings requested from Test Laboratories

Span, chord and trailing edge
Tabs positions and numbers

First rib lined

Last rib group 2
Tension bands
Mini ribs
Inlet shape
General control process

**STEP 1**
1. CONTROL HALF WING
   - HALF WING OK
     - DONE
   - HALF WING FAILS
     - COMPARISON IMPOSSIBLE DURING COMPETITION
       - GLIDERS NOT IDENTICAL
         - STEP 3
       - BOTH GLIDERS IDENTICAL
         - STEP 2
   - HALF WING OK
     - HALF WING FAILS AGAIN
     - STEP 2
   - OTHER HALF WING OK
     - COMPARISON IMPOSSIBLE DURING COMPETITION
       - GLIDERS NOT IDENTICAL
         - STEP 3
     - BOTH GLIDERS IDENTICAL
       - STEP 2
   - OTHER HALF WING FAILS
     - STEP 3
   - OTHER HALF WING FAILS
     - STEP 2

**STEP 2**
- DEGRADATION
  - IF ADVANTAGE FOR THE PILOT, CONTROL HAS FAILED
  - 1ST OFFENCE: PENALTY 100 PTS
    - GLIDER MUST BE RE-CHECK
    - 2ND OFFENCE: 0 PT
  - 1ST OFFENCE: PENALTY 100 PTS
  - GLIDER MUST BE RE-CHECK
  - 2ND OFFENCE: 0 PT
- TRIMING ERROR
  - IF ADVANTAGE FOR THE PILOT, CONTROL HAS FAILED
  - 1ST OFFENCE: PENALTY 100 PTS
    - GLIDER MUST BE RE-CHECK
    - 2ND OFFENCE: 0 PT
  - 1ST OFFENCE: PENALTY 100 PTS
  - GLIDER MUST BE RE-CHECK
  - 2ND OFFENCE: 0 PT
- PILOT'S CHEATING
  - CONTROL HAS FAILED
  - 1ST OFFENCE: PENALTY 100 PTS
    - GLIDER MUST BE RE-CHECK
    - 2ND OFFENCE: 0 PT
  - 1ST OFFENCE: PENALTY 100 PTS
  - GLIDER MUST BE RE-CHECK
  - 2ND OFFENCE: 0 PT
- WRONG INFORMATION FROM MANUFACTURER/TEST LABORATORIES
  - ASK FOR NEW DATA AND CHECK AGAIN (1)
- PRODUCTION ERROR
  - BOTH GLIDERS IDENTICAL
    - STEP 2
  - GLIDERS NOT IDENTICAL
    - STEP 3

**STEP 3**
- COMPARISON IMPOSSIBLE DURING COMPETITION
  - GLIDERS NOT IDENTICAL
    - 1ST OFFENCE: PENALTY 100 PTS
      - GLIDER MUST BE RE-CHECK
      - 2ND OFFENCE: 0 PT
    - 1ST OFFENCE: PENALTY 100 PTS
      - GLIDER MUST BE RE-CHECK
      - 2ND OFFENCE: 0 PT
  - BOTH GLIDERS IDENTICAL
    - DONE
**STEP 1**

- GLIDERS NOT IDENTICAL

**STEP 2**

- PRODUCTION ERROR
  - CHECK OTHER GLIDERS (SAME MODEL & SIZE, PREVIOUS PRODUCTION IF POSSIBLE)
  - CHECK WITH MANUFACTURERS
  - CHECK OTHER GLIDERS
  - IS THE ERROR GIVING PERFORMANCE ADVANTAGES?
  - IS THE ERROR MAKING THE WING DANGEROUS?
  - NO ADVANTAGE: GLIDER IS GROUNDED
  - ADVANTAGE: PENALTY 10% ON EACH TASK
  - NO PENALTY

**STEP 3**

- MANUFACTURER’S CHEATING
  - AFTER THE COMPETITION, SEND THE WING TO TEST LABORATORY FOR CHECKING
  - TEST LABORATORY MUST CHECK WITHIN 30 DAYS
  - TRANSPORTATION RESPONSIBILITY: ORGANISERS
  - WING FAIL: MANUFACTURER PAYS ALL EXPENSES
  - WING OK: CIVIL PAYS ALL EXPENSES
  - IF ADVANTAGE, PENALTY: 10% ON EACH TASK
  - FOR ALL GLIDERS CONCERNED
  - COMPETITION RESULTS ARE ADJUSTED AND FINALIZED