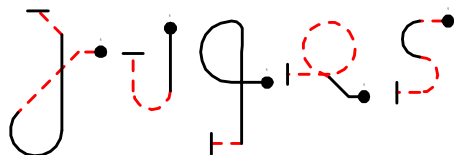




VOLTIGE AERIENNE

2018

Livret



et COMPETITEURS

**Niveau PROMOTION**

Les modifications sont indiquées en  
bleu

**Liste des figures autorisées  
pour  
tous les programmes**

Les figures marquées d'un cercle noir concernent les 5  
figures inversées obligatoires à choisir pour le libre

*Mis à jour le  
11/12/2017*

**Pour les erreurs constatées  
et  
vos suggestions d'amélioration :**

Jérôme HOUDIER

155 Avenue de Wagram  
75 017 PARIS  
FRANCE

[jerome.houdier@ff-aero.fr](mailto:jerome.houdier@ff-aero.fr)

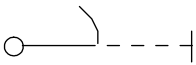
## Annexe au règlement de VOLTIGE AERIENNE Catalogue FFA Niveau Promotion

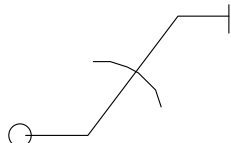
### 5-1. REGLES GENERALES :

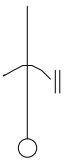
Ce catalogue de figures est destiné à la composition de tous les programmes. Il vous offre un large choix pour la composition de votre programme libre et vous permet de vous familiariser avec les règles CIVA et le catalogue de figures FAI.

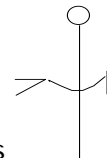
#### Rappels

- a) Les 8 premières familles sont les familles de base,
- b) la famille 9 est une famille complémentaire, qui se combine avec les familles 1, 5, 6, 7 et 8.

- c) le symbole  ajouté à la figure de base représente une 1/2 rotation qui change l'attitude de l'avion de 180°. Ce changement d'attitude de 180° est obligatoire sinon l'esprit de la figure de base n'est pas respecté.

- d) Les rotations de 360° - ex : 
- Ces rotations sont facultatives. Les figures de base sur lesquelles apparaît ce symbole peuvent être exécutées sans la rotation roulis de 360°, ce qui crée toute une gamme de figures.

- e) Les rotations de 90° 
- Ce symbole avec deux traits permet d'exécuter des rotations de 90°, soit 1/4, 1/2, 3/4, 1 tour, etc. dans toutes les attitudes de l'avion, dans la limite des possibilités offertes, selon le niveau, dans la famille 9. Ces rotations sont facultatives.



- f) Les vrilles

Ce symbole indique qu'il est possible d'effectuer une vrille sur la ligne. Cette vrille peut être seule ou suivie d'une rotation selon le niveau et les possibilités offertes dans la famille 9.

### 5.2 – Programme Libre

#### 5.2.1 Il est autorisé, au sein d'une même équipe de voltige, de voler des programmes libres identiques.

Toutes les figures sont choisies dans la liste ci-après.

#### 5.2.2 Le début et la fin du programme libre doivent être exécutés en vol horizontal, normal ou inversé.

Le programme est composé d'un maximum de 12 figures, dont **5 figures inversées obligatoires**, choisi dans la liste ci-après et signalisées par un **cercle noir**. Le total des coefficients de difficulté pour les figures ou combinaisons de figures ne doit pas excéder 200 points (K = 200 points).

#### 5.2.3 Toute figure doit comporter le numéro du catalogue ainsi que le coefficient (K) de difficulté. En cas de litige, c'est le numéro de figure indiqué sur le formulaire « A » qui fait foi.

#### 5.2.4 Répétition

Il est autorisé la répétition d'une seule rotation (famille 9).

### 5.2.5 Diversité

En vue d'obtenir la diversité dans la composition du programme libre, il est demandé aux pilotes d'inclure obligatoirement un minimum de 1 figure de chacune des familles suivantes dans la limite des figures autorisées sur la liste [2.2.5 ou 2.2.6 ou 2.3.4], 5, 7, 8, [9.11 ou 9.12].

Une rotation verticale montante 9.1.1.2 est exigée.

Les enchaînements qui ne comportent pas ce minimum de figures ne sont pas acceptés.

*Note : un seul virage ventre est autorisé*

### 5.2.6. Rédaction

**Les compétiteurs devront déposer leur programme libre, sur le site Internet fédéral, si possible lors de l'inscription en ligne, et au plus tard la veille du début de la compétition, sous forme informatique (fichier .seq), en utilisant la dernière version du logiciel homologué par le règlement national, sans oublier de faire apparaître sur les formes B et C l'endroit où se situe la coupure.**

5.2.7. Il appartient aux organisateurs de contrôler les feuilles A, B et C de chaque concurrent. Toutes inexactitudes dans le dessin des symboles ou dans l'indication des coefficients, ainsi que toute inadéquation de construction est signalée à l'intéressé afin d'être corrigée et les corrections sont représentées au contrôle.

La responsabilité finale des inexactitudes sur les formulaires A, B et C revient au compétiteur.

5.2.8. Au cas où le jury estime que le programme libre proposé par le concurrent est potentiellement dangereux compte tenu des caractéristiques de performance de l'avion, il peut imposer au concurrent une modification de son programme.

5.2.9. Au cas où un concurrent est en désaccord avec une décision des organisateurs sur son programme libre, il peut faire appel au jury avant le début des vols de ce programme. Si les vols sont déjà commencés, l'appel est irrecevable.

### 5.3 - Programme Inconnu

5.3.1. Le ou les programme(s) imposé(s) inconnu(s) est (sont) composé(s) par le jury.

5.3.2. Les figures sont choisies en considération des caractéristiques de performance de chaque avion de compétition et ne doit pas excéder 155 points (K = 155 points).

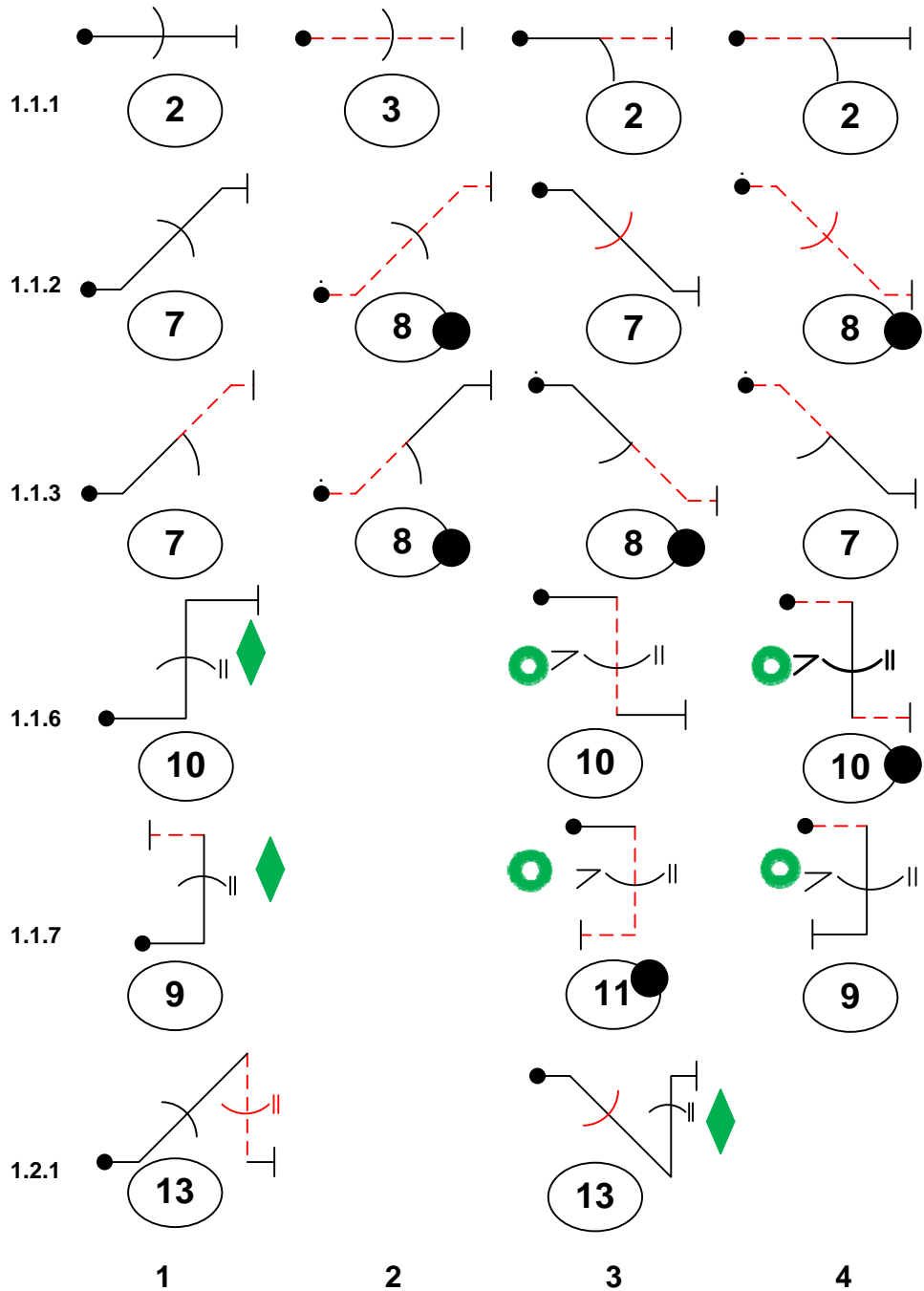
5.3.3. L'entraînement pour le programme imposé inconnu est interdit sous peine de disqualification.

### 5.4 - REGLES ADDITIONNELLES COMMUNES A TOUS LES PROGRAMMES DU NIVEAU PROMOTION :

**UTILISER LE TABLEAU PAGE 25 du livret**

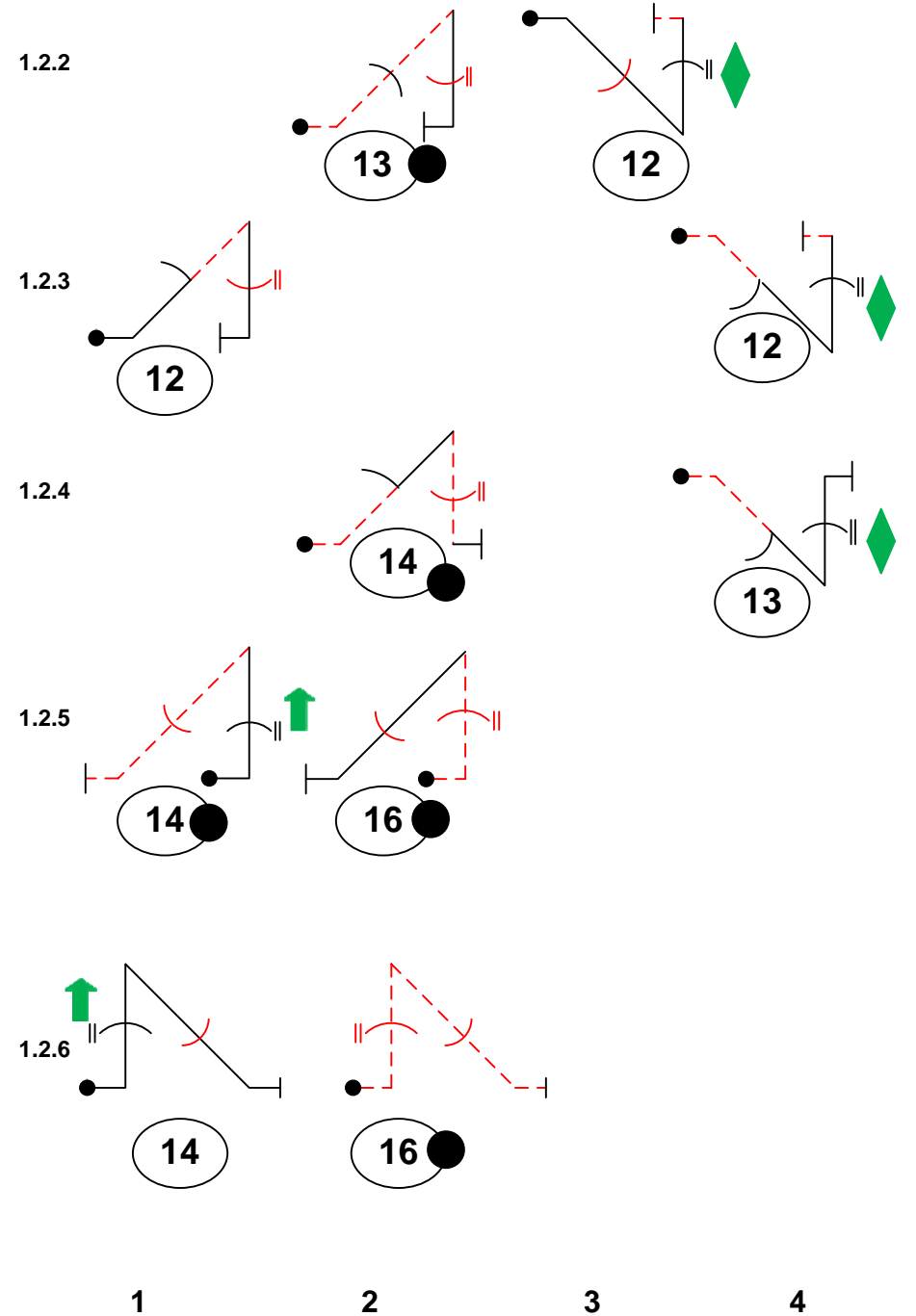
1. LIGNES AND ANGLES

Niveau PROMOTION p5

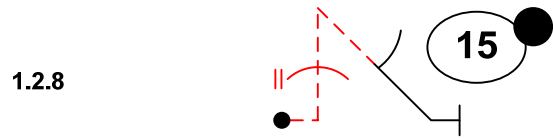
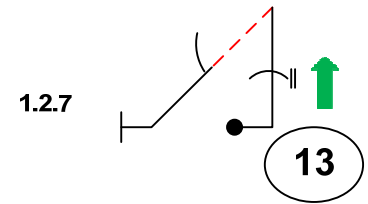


1. LIGNES AND ANGLES

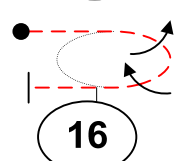
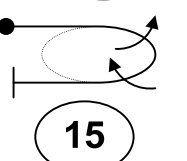
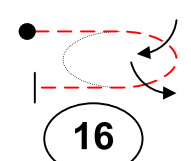
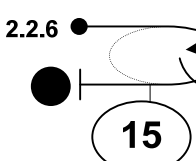
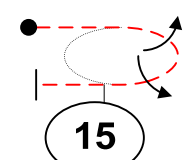
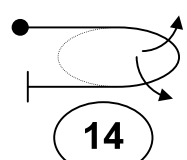
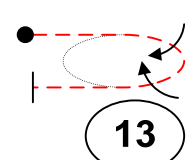
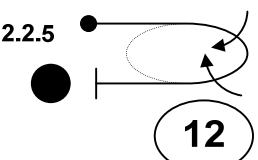
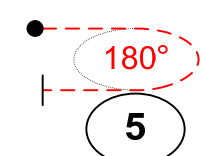
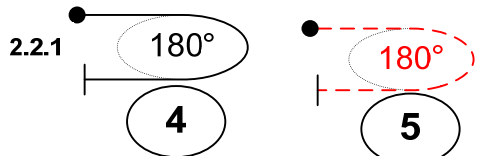
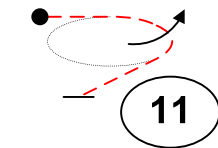
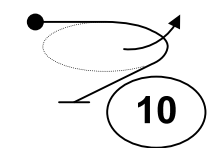
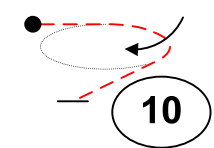
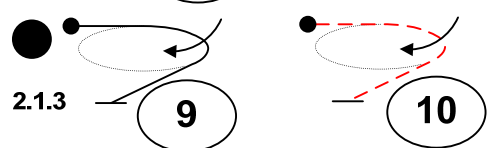
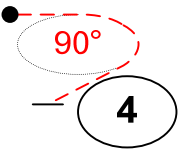
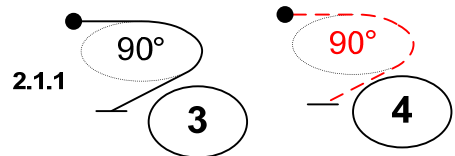
Niveau PROMOTION p6



1. LIGNES AND ANGLES



2. TURNS AND ROLLING TURNS



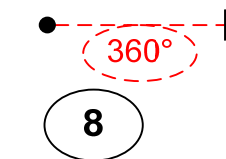
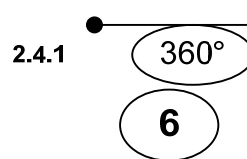
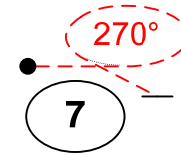
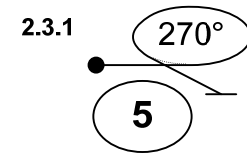
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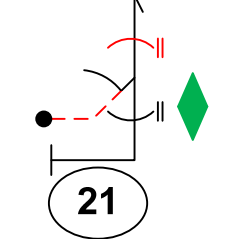
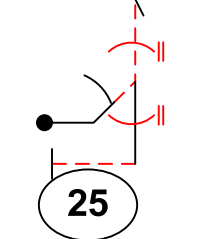
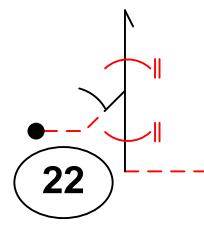
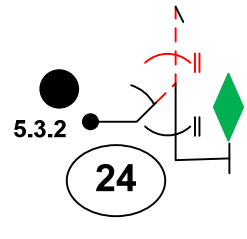
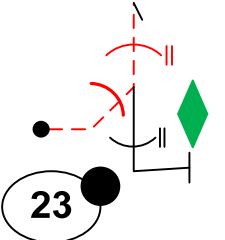
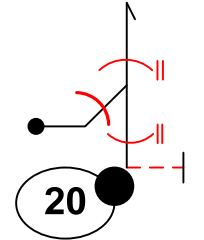
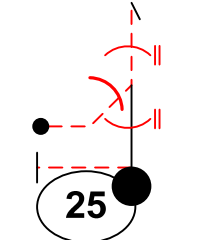
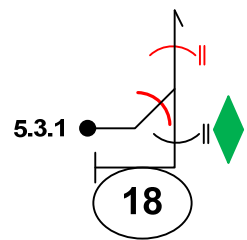
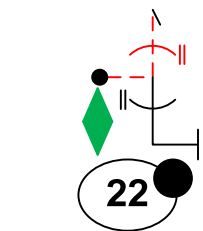
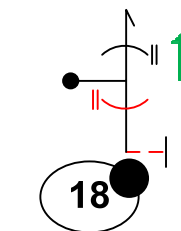
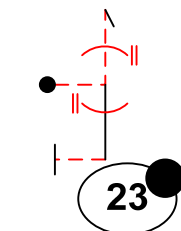
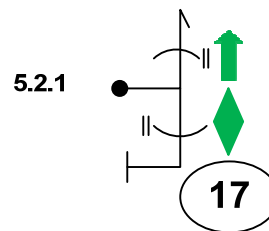
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4

2. TURNS AND ROLLING TURNS



5. STALL TURNS



1

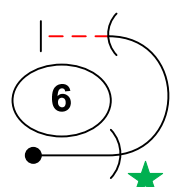
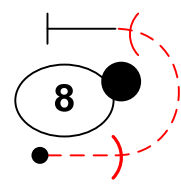
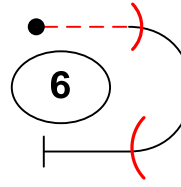
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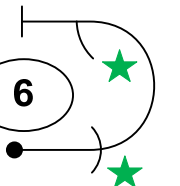
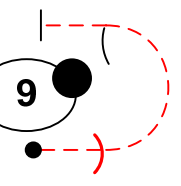
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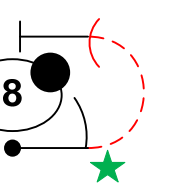
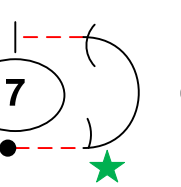
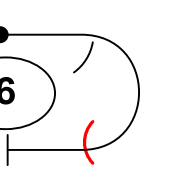
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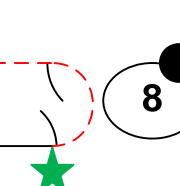
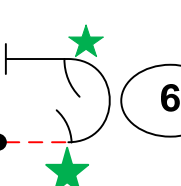
7. LOOPS AND EIGHTS

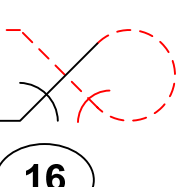
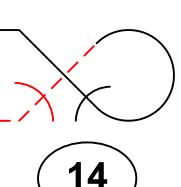
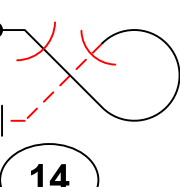
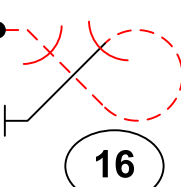
Niveau PROMOTION p9

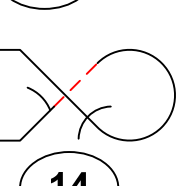
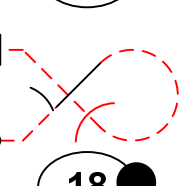
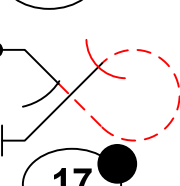
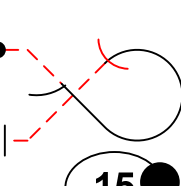
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7.2.2  

7.2.3   

7.2.4  

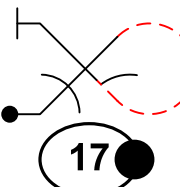
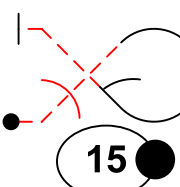
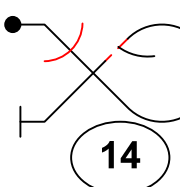
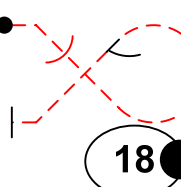
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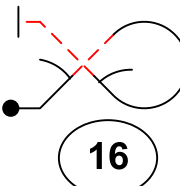
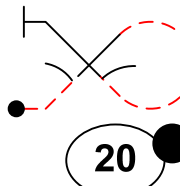
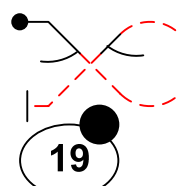
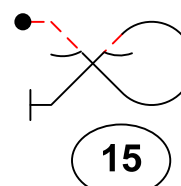
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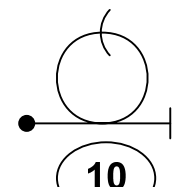
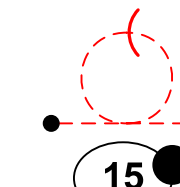
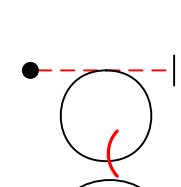
1 2 3 4

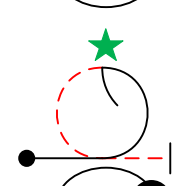
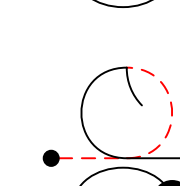
7. LOOPS AND EIGHTS

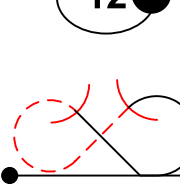
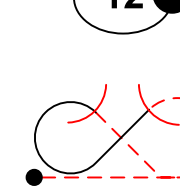
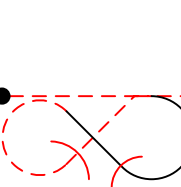
Niveau PROMOTION p10

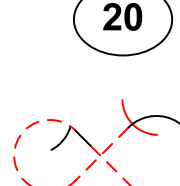
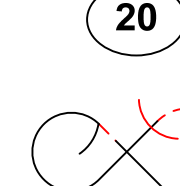
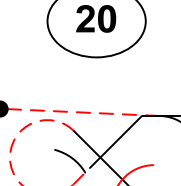
7.3.3    

7.3.4    

7.4.1   

7.4.2  

7.8.1   

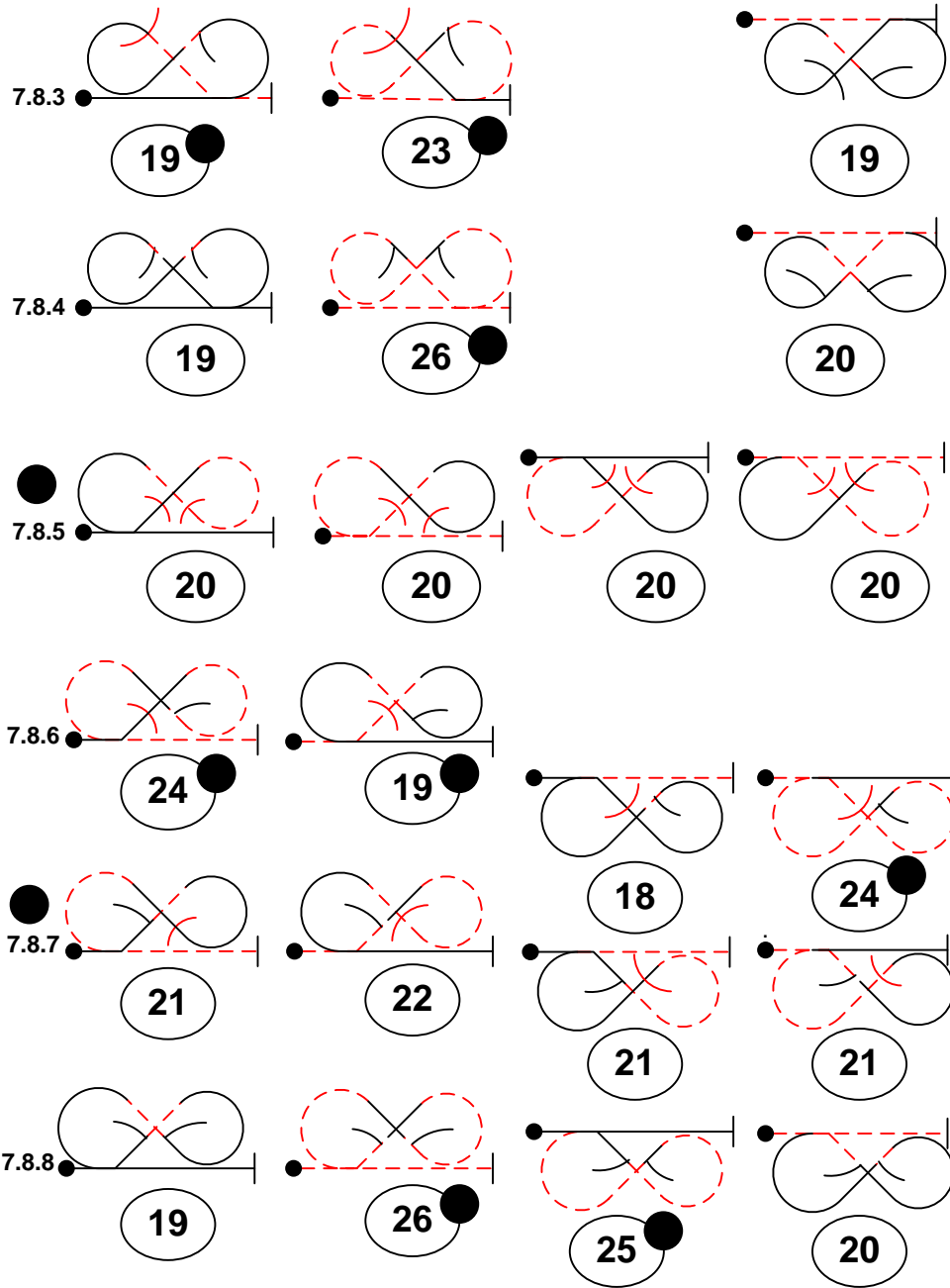
7.8.2   

1 2 3 4

7. LOOPS AND EIGHTS

Niveau PROMOTION p11

8. COMBINATIONS OF LINES, ANGLES Niveau PROMOTION p12

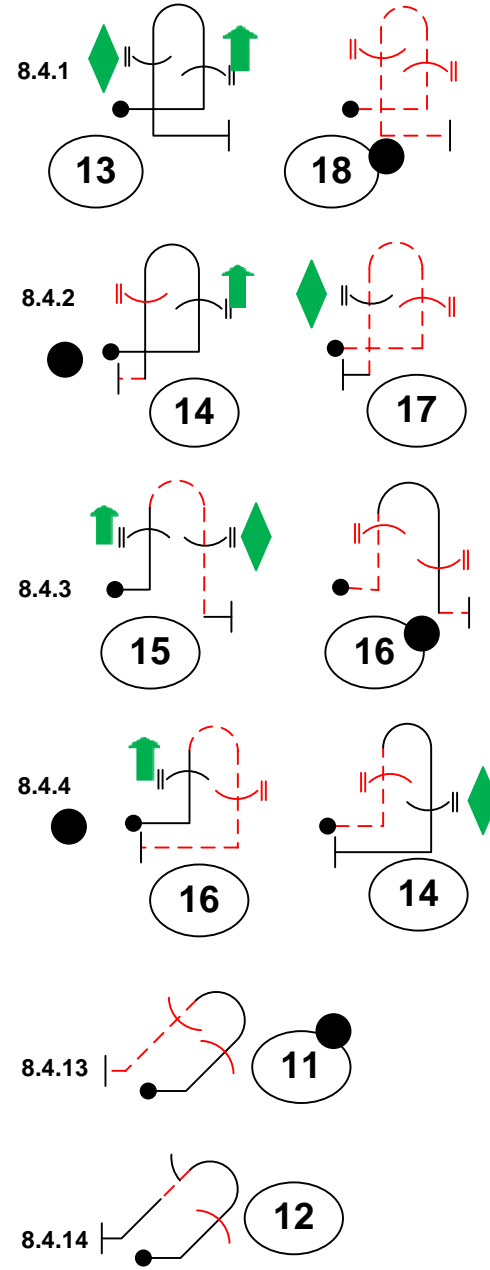


1

2

3

4



1

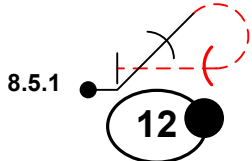
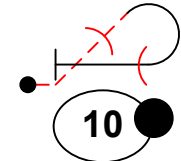
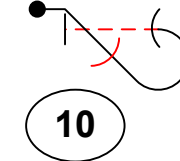
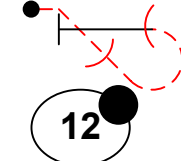
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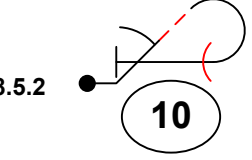
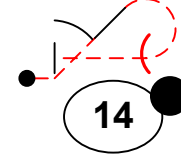
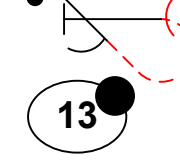
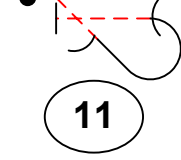
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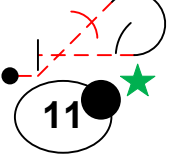
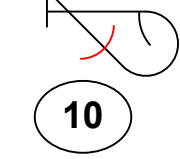
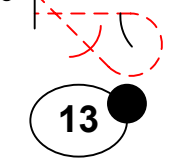
4

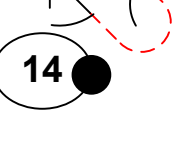
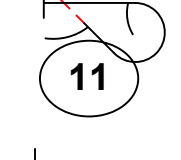
8. COMBINATIONS OF LINES, ANGLES Niveau PROMOTION p13

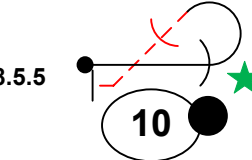
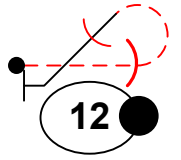
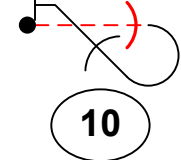
8. COMBINATIONS OF LINES, ANGLES Niveau PROMOTION p14

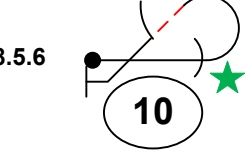
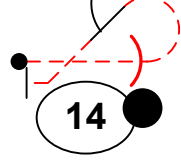
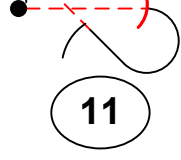
8.5.1    

8.5.2    

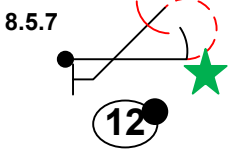
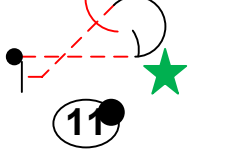
8.5.3   

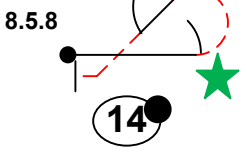
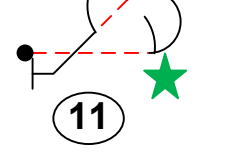
8.5.4  

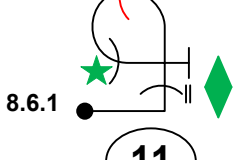
8.5.5   

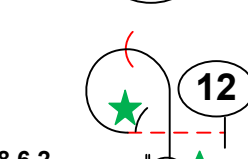
8.5.6   

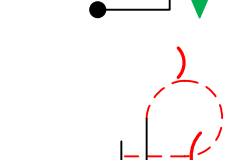
1 2 3 4


8.5.7  

8.5.8  

8.6.1 

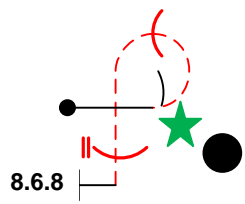
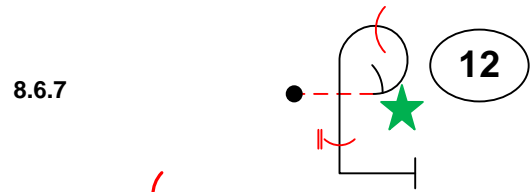
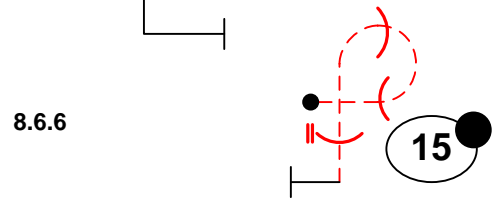
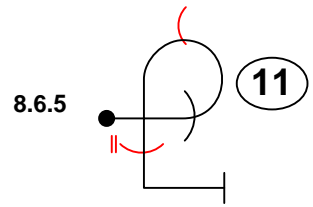
8.6.2 

8.6.3 

8.6.4 

1 2 3 4

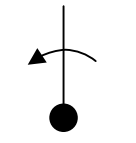
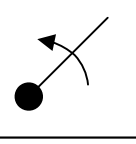
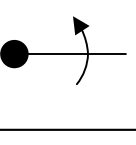
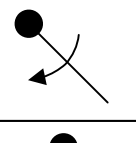
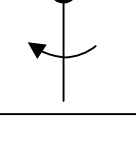




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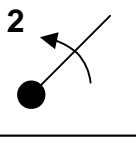
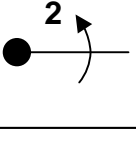
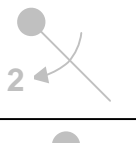
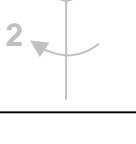
9. ROLLS AND SPINS  
FAMILY 9.1 (Aileron Rolls)

Niveau PROMOTION p17

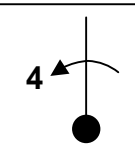
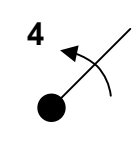
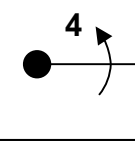
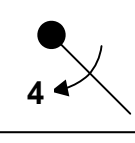
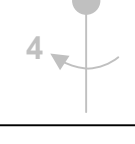
| 9.1 |  | 1/4 | 1/2 | 3/4 | 1  | 1<br>1/4 | 1<br>1/2 | 1<br>3/4 | 2  |
|-----|--|-----|-----|-----|----|----------|----------|----------|----|
| 1   |   | 6   | 8   |     |    |          |          |          |    |
| 2   |   |     | 6   |     | 10 |          |          |          |    |
| 3   |   |     | 4   |     | 8  |          | 10       |          | 12 |
| 4   |   |     | 4   |     |    |          |          |          |    |
| 5   |  | 2   |     |     |    |          |          |          |    |
|     |  | 1   | 2   | 3   | 4  | 5        | 6        | 7        | 8  |

9. ROLLS AND SPINS  
FAMILY 9.2 (2-Point Aileron Rolls)

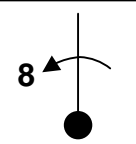
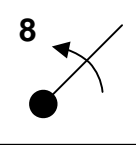
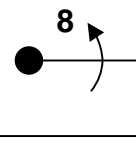
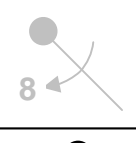
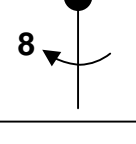
Niveau PROMOTION p18

| 9.2 |  |   |   |   | 1  | 1<br>1/2 |    | 2 |    |
|-----|--|---|---|---|----|----------|----|---|----|
| 1   |   |   |   |   |    |          |    |   |    |
| 2   |   |   |   |   | 11 |          |    |   |    |
| 3   |   |   |   |   | 9  |          | 12 |   | 15 |
| 4   |   |   |   |   |    |          |    |   |    |
| 5   |  |   |   |   |    |          |    |   |    |
|     |  | 1 | 2 | 3 | 4  | 5        | 6  | 7 | 8  |

9.4



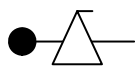
|   |  |  | 1/2 | 3/4 | 1  | 1<br>1/4 | 1<br>1/2 |  |  |
|---|--|--|-----|-----|----|----------|----------|--|--|
| 1 |   |  | 9   |     |    |          |          |  |  |
| 2 |   |  | 7   |     |    |          |          |  |  |
| 3 |   |  | 5   |     | 11 |          | 15       |  |  |
| 4 |   |  | 5   |     |    |          |          |  |  |
| 5 |  |  |     |     |    |          |          |  |  |
|   |  |  | 2   | 3   | 4  | 5        | 6        |  |  |

9.8

|   |  |  | 1/4 | 1/2 | 3/4 | 1  |  |  |  |
|---|--|--|-----|-----|-----|----|--|--|--|
| 1 |   |  | 7   |     |     |    |  |  |  |
| 2 |   |  |     | 9   |     |    |  |  |  |
| 3 |   |  |     | 7   |     | 15 |  |  |  |
| 4 |   |  |     |     |     |    |  |  |  |
| 5 |  |  | 3   |     |     |    |  |  |  |
|   |  |  | 1   | 2   | 3   | 4  |  |  |  |

FAMILY 9.9 (POSITIVE FLICK ROLLS) Niveau PROMOTION p21





9.9

|   |   |  |     |     |    |  |  |  |  |
|---|---|--|-----|-----|----|--|--|--|--|
|   |   |  | 1/2 | 3/4 | 1  |  |  |  |  |
| 1 |  |  |     |     |    |  |  |  |  |
| 2 |  |  | 13  |     |    |  |  |  |  |
| 3 |  |  | 11  |     | 11 |  |  |  |  |
|   |   |  | 2   | 3   | 4  |  |  |  |  |


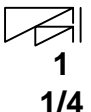
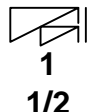



**PAS** de déclenché dans les rotations composées

FAMILY 9.10 (NEGATIVE FLICK ROLLS) Niveau PROMOTION p22

9.10







|   |   |  |     |  |  |  |  |  |  |
|---|---|--|-----|--|--|--|--|--|--|
|   |   |  | 1/2 |  |  |  |  |  |  |
| 1 |  |  |     |  |  |  |  |  |  |
| 2 |  |  |     |  |  |  |  |  |  |
| 3 |  |  | ●   |  |  |  |  |  |  |
| 4 |  |  |     |  |  |  |  |  |  |
|   |   |  | 2   |  |  |  |  |  |  |

**PAS** de déclenché dans les rotations composées







|      |   |                    |   |   |   |   |  |
|------|---|--------------------|---|---|---|---|--|
| 9.11 |   |                    |  |  |  |  |  |
|      | X   |                    |   | PAS de ressources négatives après ces vrilles                                     |   |   |  |
| 1    |  | Upright entry line | 5   | 4   | 3   | 3   | 3  |
|      |   |                    | 4   | 5   | 6   | 7   | 8  |

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FAMILY 9.12 (NEGATIVE SPINS)

|      |   |                     |   |  |  |  |  |
|------|---|---------------------|---|--|--|--|--|
| 9.12 |   |                     |  |  |  |  |  |
|      | X   |                     |   | PAS de ressources négatives après ces vrilles                                      |  |  |  |
| 1    |  | Inverted entry line | 7   |  |  |  |  |
|      |   |                     | 4   | 5  | 6  | 7  | 8  |

## REGLES ADDITIONNELLES COMMUNES A TOUS LES PROGRAMMES DE NIVEAU **PROMOTION**

|   |  |
|---|--|
|  | Les rotations indiquées en rouge sur les figures de base sont interdites   |
|  | Indique qu'une figure est négative. Placé en tête de ligne, le cercle noir indique que toutes les figures de la ligne sont négatives.        |
|  | Limitée à 1/2  |
|  | Limitée à 1/4  |
|  | Autorisée uniquement avec une vrille   |
|  | Les déclenchés 9.9.3 et 9.10.3 sont interdits sur les lignes basses ( <u>famille 7.2.1 à 7.2.4, 7.8.1 à 7.8.8 et famille 8.5.1 à 8.6.8</u> ) |
|   | Famille 9.2 et familles 9.4 et 9.8 voir pages 16,17 et 18  |
|   | Rotations composées maximum : horizontale 720° - 45° montant : 360° - 45° descendant : 180°  |
|   |  |
|   |  |
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