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The American Kitefliers Association

INTERNATIONAL SPORT KITE COMPULSORIES BOOK

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1. Original

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1. Added Multi-line Team figures and change history

Contents

I. Wind Window and Precision Grid Definitions 4
- A. Wind Window 4
- B. Center Window 4
- C. Precision Grid 4

II. Diagram 4

III. Critical Components and Explanation 5
- A. Critical Components 5
- B. Explanation 5
- C. Shorthand Notation Used in Descriptions 5

IV. Glossary of Terms 5
- A. Position within the precision grid 5
- B. Relative placement of components 5
- C. Turns 5
- D. Lines 6
- E. Launching 6
- F. Landing 6
- G. Arc 7
- H. Ground pass 7
- I. Nose 7
- J. Stall (Stop) 7
- K. Axel 7
- L. Speed Control 7
- M. Spacing 7
- N. Multi-line Diagonal Flight 7
- O. Multi-line Inverted Flight 8

P. Multi-line Backward Flight 8
Q. Multi-line Rotation (Spin) 8
R. Multi-line Slide 8
S. Multi-line Inverted Slide 8
Dual-line Individual 9
DI01: Rectangle 9
DI02: Circle 10
DI03: Circle Over Diamond 11
DI04: Launch, Circle, and Land 12
DI05: Lap and Snap 13
DI06: Axels 14
DI07: Jump 15
DI08: Pyramid 16
DI09: Octagon 17
DI10: Steps Down 18
DI11: Split Figure Eight 19
DI12: Stops 20
Dual-line Pair 21
DP01: Pair Rectangle 21
DP02: Pair Circle 22
DP03: Pair Circle Over Diamond 23
DP04: Pair Launch, Circle, and Land 24
DP05: The Wig-wams 25
DP06: Inverted Eitht with Landing 26
DP07: H 27
DP08: Twist 28
DP09: The Cliff 29
DP10: Split Pair Square 30
DP11: Meet Again 31
DP12: Pair Stops 32
Dual-line Team 33
DT01: Team Rectangle 33
DT02: Pick-up Sticks 34
DT03: Follow, Flank Up and Square 35
DT04: Team Hairpin 36
DT05: Arch de Triomph 37
DT06: Inverted Eight with Landing 38
DT07: Sorted Rectangle 39
DT08: The Basket 40
DT09: Spiderweb 41

DT10: Team Diamonds 42
DT11: Cascade 43
DT12: Loops and Vertical Threads 44
Multi-line Individual 45
MI01: Circle 45
MI02: Ladder Up 46
MI03: Step and Rotate 47
MI04: Two Down 48
MI05: Swing 49
MI06: Peak 50
MI07: Arc Circle 51
MI08: Camel Back 52
MI09: Clock Tower 53
MI10: Crystal Ball 54
MI11: Tip Pivots 55
MI12: Martini Glass 56
Multi-line Pair 57
MP01: Qisses 57
MP02: Tandem 58
MP03: Quadouble-S 59
MP04: Two Down 60
MP05: Sticky Wicket 61
MP06: Peaks 62
MP07: Circles and Slides 63
MP08: Double Diamonds 64
MP09: Lollypops 65
MP10: Parallel Boxes 66
MP11: Triangle Split 67
MP12: Split Square 68
Multi-line Team 69
MT01: Cascade 69
MT02: Follow, Slide, Roll 70
MT03: Vertical Thread and Rotate 71
MT04: Rainbow Slide 72
MT05: Two Down 73
MT06: Steps and Turns 74
:MT07: Arc du Carousel 75
MT08: Pivots 76
MT09: The Basket 77
MT10: Spiderweb 78

I. WIND WINDOW AND PRECISION GRID DEFINITIONS

A. Wind Window

Is the area within the roughly semicircular plane described by the greatest height a kite can reach at every angle in front of a stationary flier. The size of the window is limited by the ground, the length of the flying line, the speed of the wind, the skill of the flier, and the flight characteristics of the kite or kites.

B. Center Window

The center of the wind window is directly down wind from the flier (horizontal center) and half way to the top of the wind window at that location (vertical center).

C. Precision Grid

The backdrop for each figure is a grid that is used as a reference for its correct size, shape, and location. The figures are drawn on a grid 100 units high and 200 units wide; 100 units on either side of the horizontal center of the window. The size of a grid unit varies with the length of the flying line used. With 38 meter (125 foot) lines, a grid unit is about 0.3 meters (1 foot). Each 10 unit square on the grid with 38 meter (125 foot) lines would have roughly 3 meter (10 foot) sides. Grid lines at 10 unit intervals are shown in the diagrams, but only where they are necessary to locate the figure within the grid.

NB: In sub-optimal conditions, it may not be possible to fly to all sections of the precision grid unless the flier moves back during the figure. Said another way, some of the precision grid may be outside the wind window.

II. DIAGRAM

The compulsory figure diagram defines the size, shape, and location of each compulsory figure within the precision grid.

When there are fewer team members flying than there are kites shown in a diagram, the selection of kites will be one of -

- In numerical order. Which means assign the kites flying to the kites in the diagram in 1-2-3 order.
- Evenly spaced and centered between the first and last kite. Which means, using the positions of the first and last kites, evenly space the other kite or kites between them.

When there are more team members flying than there are kites shown in a diagram, the kites will be evenly spaced and centered. That means, using the center of all of the the kites as shown in the diagram, arrange all the team's kites evenly around that center point.

The evenly spaced options are the default. When the numerical order is important, it will be specified in the explanation.

III. CRITICAL COMPONENTS AND EXPLANATION

A. Critical Components

Each compulsory figure has two components that are weighted heavily by the judges in their scoring. For international competitions, these components are each worth 30% of the score for the compulsory. The weighting is intended to focus the attention of the pilots and judges on some aspects of the compulsory figure and encourage that component to be flown exactly as depicted. A critical component is only part of the overall compulsory figure and therefore, even if poorly executed, does not necessarily result in a zero score for the entire compulsory figure.

B. Explanation

If necessary, an explanation or clarification of the critical components will be provided. Additional remarks or comments about the compulsory and a list of additional components the compulsory is meant to test may also be provided. This section is not meant to describe the compulsory figure in detail.

C. Shorthand Notation Used in Descriptions

< as a prefix to a number, denotes a location to the left of the horizontal center of the precision grid.

> as a prefix to a number, denotes a location to the right of the horizontal center of the precision grid.

<0> denotes the horizontal center of the precision grid.

^ as a prefix to a number, denotes a location above the bottom of the precision grid.

IV. GLOSSARY OF TERMS

A. Position within the precision grid

Position within the precision grid refers to the location of the the entire compulsory in the precision grid. Although, all figures are intended to be flown as shown in the diagrams, the placement is sometimes a critical components to discourage moving the figure in the window or changing its size.

B. Relative placement of components

Relative placement refers to alignment of the components within a figure. For example, two squares may be shown drawn side by side with their tops on the same horizontal line or one directly above the other. Symmetry may be an aspect of the relative placement of components. As a critical component, relative placement makes the location of the components more important than other aspects.

C. Turns

All turns are crisp changes of the flight direction. An adjective may be used with turn to emphasize some aspect of the turn. If a change of direction is not intended to be a turn it will be described as an arc or curve.

D. Lines

All lines are straight unless otherwise noted. Straight line, while redundant, may be used for emphasis.

1. Horizontal line

A horizontal line is flown parallel to the horizon.

2. Vertical line

A vertical line is flown perpendicular to the horizon.

3. Parallel lines

Are an equal distance apart everywhere.

The qualifiers (horizontal, parallel, etc.) are used in the critical component or explanation sections to limit the focus to a particular line or lines.

E. Launching

A launch is the transition of a kite from a stationary position on the ground into flight. The control of the kite during the launch and the stability of the flight after the launch are of the most important aspects of a launch.

F. Landing

A landing brings the kite to a controlled stop on the ground. A nose first crash into the ground ***is not*** a landing. Unless otherwise indicated, no variety of landing is preferred over another.

1. Leading-edge landing

A leading edge landing brings the kite to a controlled stop on the ground with all of one of the leading edges meeting the ground along it full length.

2. 2-point landing

For delta-shaped kites, a two point landing brings the kite to a controlled stop on the ground resting on both wing tips at the same time. For kites with a single leading edge, a 2-point landing is brings the kite to a stop on the trailing edge.

a) Examples

(1) Snap 2-point landing

Is a combination of a snap stall and landing that happens as one movement.

(2) Stall 2-point landing

The kite is stalled close to the ground and then put down onto the ground directly.

(3) Spin 2-point landing

The kite is spun in a tight circle or part of a circle close to the ground and then put down onto the ground directly.

3. Belly landing

A belly landing brings the kite to a controlled stop on its front (bridle side) with the nose pointing away from the pilot.

G. Arc

The change of the direction of flight that follows some part of the circumference of a circle. Distinguished from a curve which does not have a constant radius.

H. Ground pass

A ground pass is horizontal flight close to the ground. For the purposes of the critical components and explanations herein, the maximum height of the lower wing tip off the ground is defined as 1/2 the distance between the wing tips. Flying closer to the ground is not rewarded or penalized.
When the ground is not horizontal, the height of a ground pass is measured from the highest point traversed.

I. Nose

Is the forward most part of the kite in forward flight. For delta shaped kites, it is the junction of the leading edges. For kites with a single leading edge, it is that leading edge.
The coordinate positions shown in the diagrams are given for the nose of the kite unless otherwise indicated.

J. Stall (Stop)

The kite comes to an obvious momentary stop.

1. Push stall

A push stall stops the movement of the kite without changing the kites orientation.

2. Snap stall

A snap stall stops the movement of the kite and brings the kite into a nose-up orientation in one motion.

K. Axel

An axel is a 360° flat spin rotation of the kite with the front parallel to the ground. It starts and ends with the nose pointing toward the flier.

L. Speed Control

For individual figures, speed control means maintaining a constant speed throughout the figure.
For pair and team figures, speed control also refers to the relative change of velocity among the kites needed to open or close distances between them as demanded by some figures.
Speed control is a consideration in all compulsory figures.

M. Spacing

For pair and team figures, spacing refers to the uniform distance maintained between kites. A change to the distance between kites may be necessary during a figure, but it is the uniformity of spacing that is important.
Spacing is a consideration in all pair and team compulsory figures.

N. Multi-line Diagonal Flight

The kite flies in a straight diagonal line with the kite in a constant orientation.

O. Multi-line Inverted Flight

The kite flies in any direction with the nose pointed down.

P. Multi-line Backward Flight

The kite flies in the opposite direction from the direction the nose is pointing. Backward flight is also inverted flight if the nose is pointing down.

Q. Multi-line Rotation (Spin)

The kite rotates with a designated part of the kite as the center of rotation. The most common points of rotation are the center of the kite or one of its wing tips. Unless otherwise specified, rotations are stationary. That is; the point of rotation does not move.

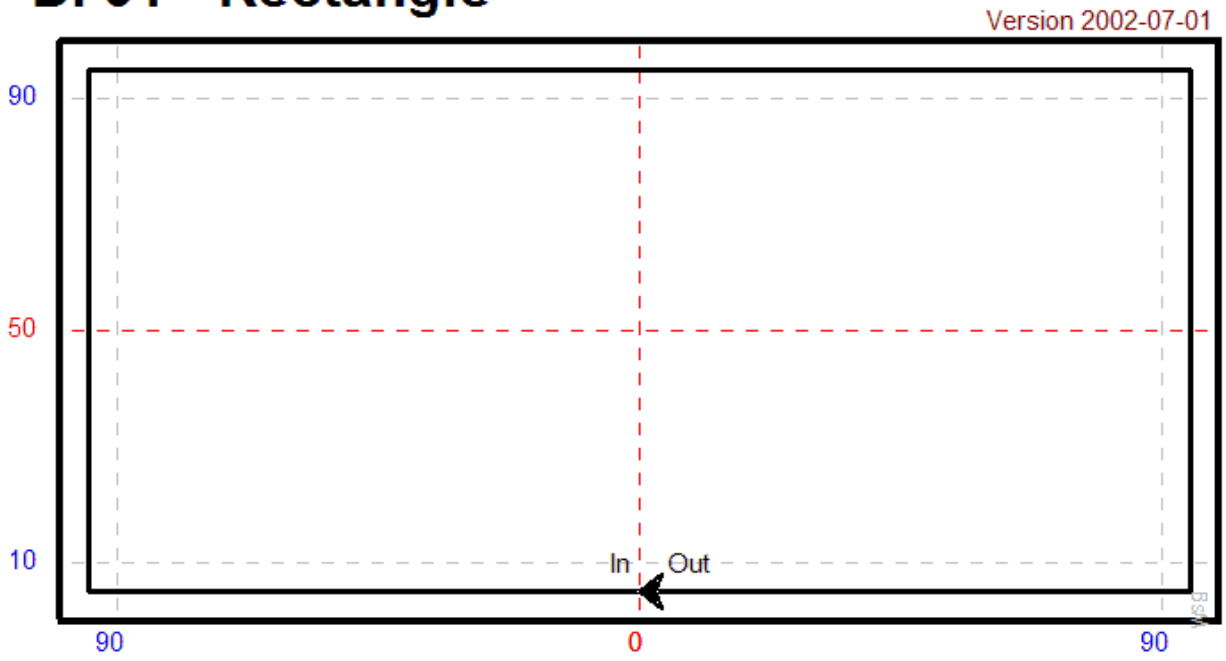
R. Multi-line Slide

The kite moves horizontally across the window with the nose pointing up (horizontal slide) or vertically in the window with the nose pointing to the left or right (vertical slide).

S. Multi-line Inverted Slide

The kite moves horizontally across the window with the nose pointing down.

DI 01 - Rectangle



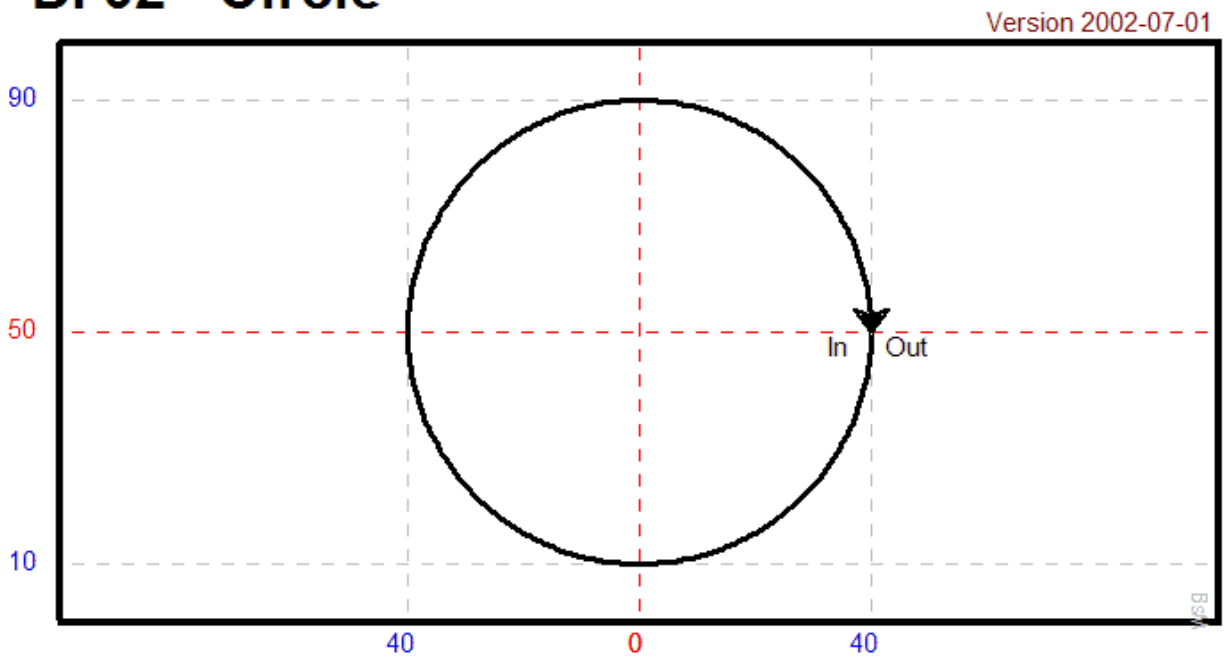
Critical Components

Position within the precision grid
Straight lines

Explanation

Other components:
- Speed control
- Parallel lines
- Right angles

DI 02 - Circle



Critical Components

Circle
Speed control

Explanation

Other components:
- Position within the precision grid
- IN/OUT at same location

DI 03 - Circle Over Diamond

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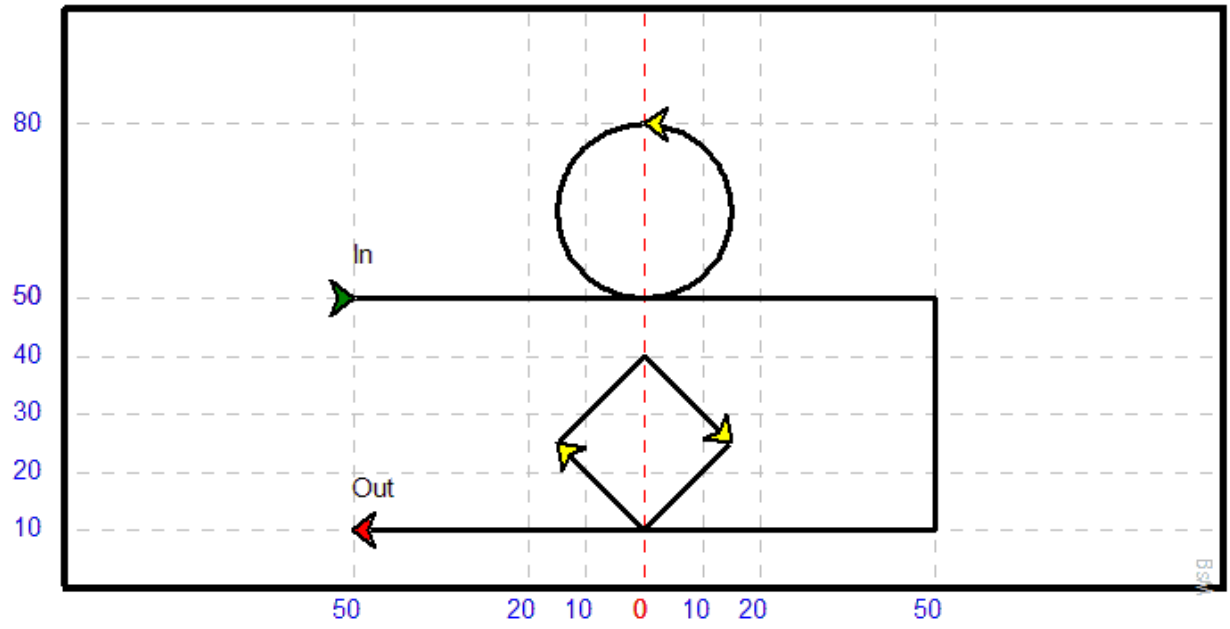


Critical Components

Placement of components
Size of components

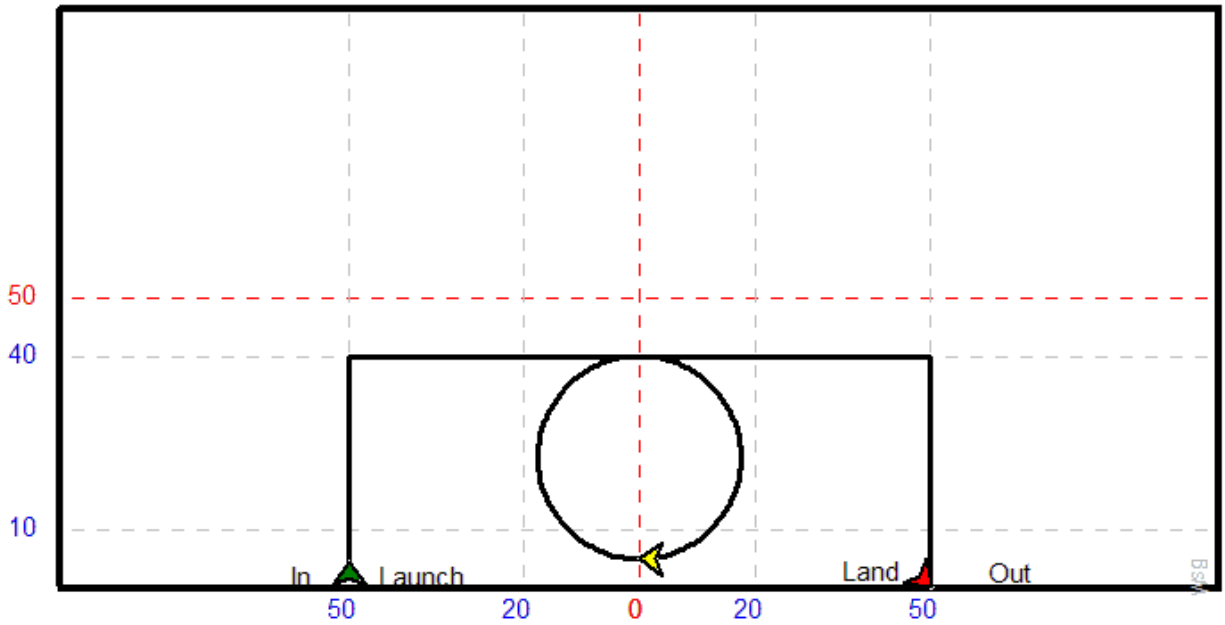
Explanation

The circle is directly above the diamond.
The diameter of the circle is the same as the width and height of the diamond.
Other components:

- Parallel lines
- Right angles
- Position within the precision grid
- Speed control
- Other angles

DI 04 - Launch, Circle, and Land

Version 2002-07-01



Critical Components

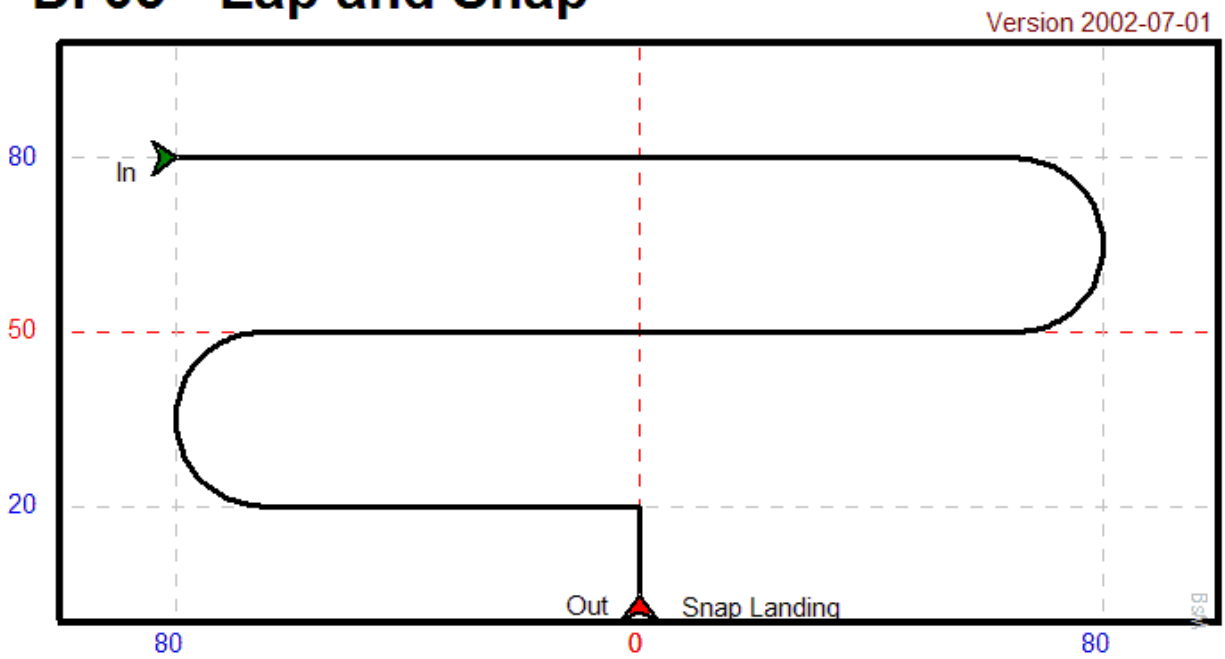
Straight vertical lines
Position within the precision grid

Explanation

No particular landing technique is specified. However, the closer the landing maneuver is to the ground when it begins the better.
Other components:

- Right angles
- Speed control
- Circle

DI 05 - Lap and Snap



Critical Components

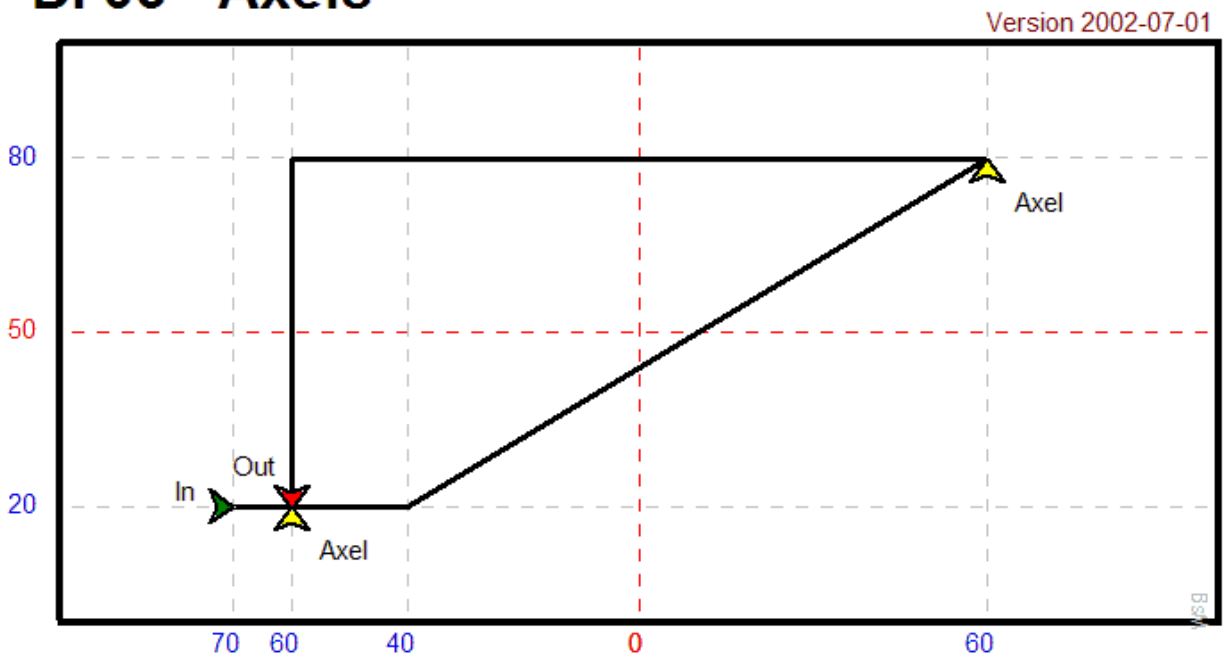
Parallel lines
Two-point landing

Explanation

The landing is quick and executed close to the ground.
The downward arc on the left side of the window is directly under the IN.
The landing is in the center of the figure and the precision grid.
Other components:

- Arcs
- Right angles
- Relative placement of components
- Relative size of components

DI 06 - Axels



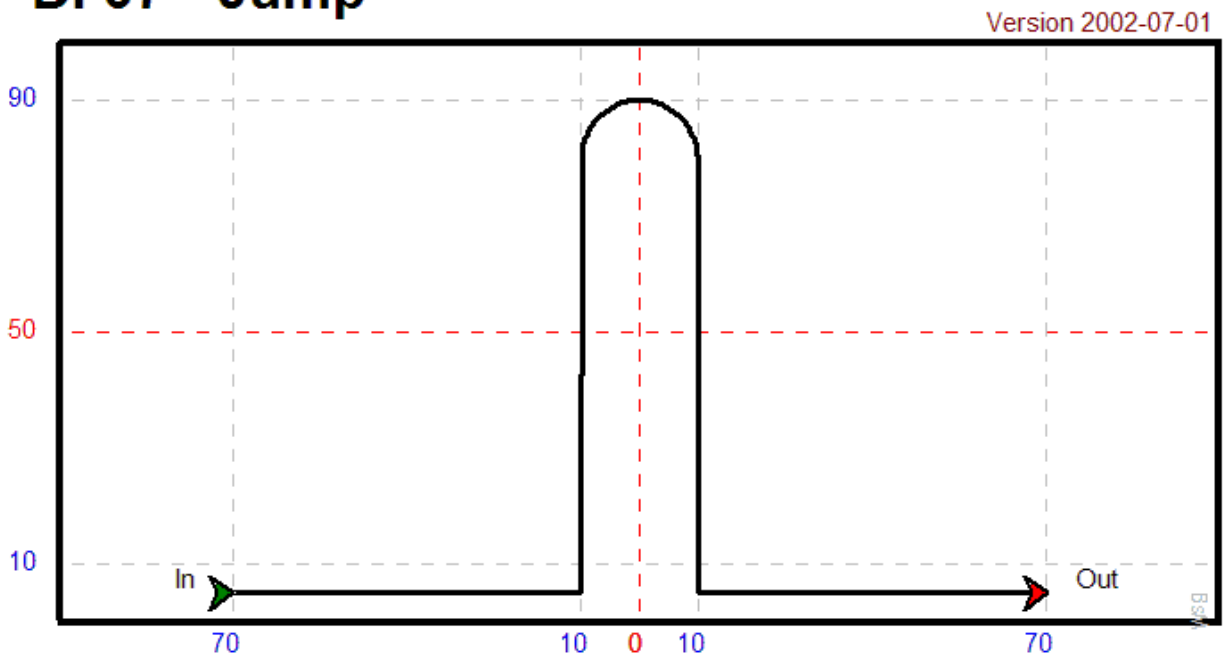
Critical Components

Axels
Straight lines

Explanation

The rotational direction of the axels is not specified.
Other components:
- Relative placement of components
- Sharp angle
- Position within the precision grid

DI 07 - Jump



Critical Components

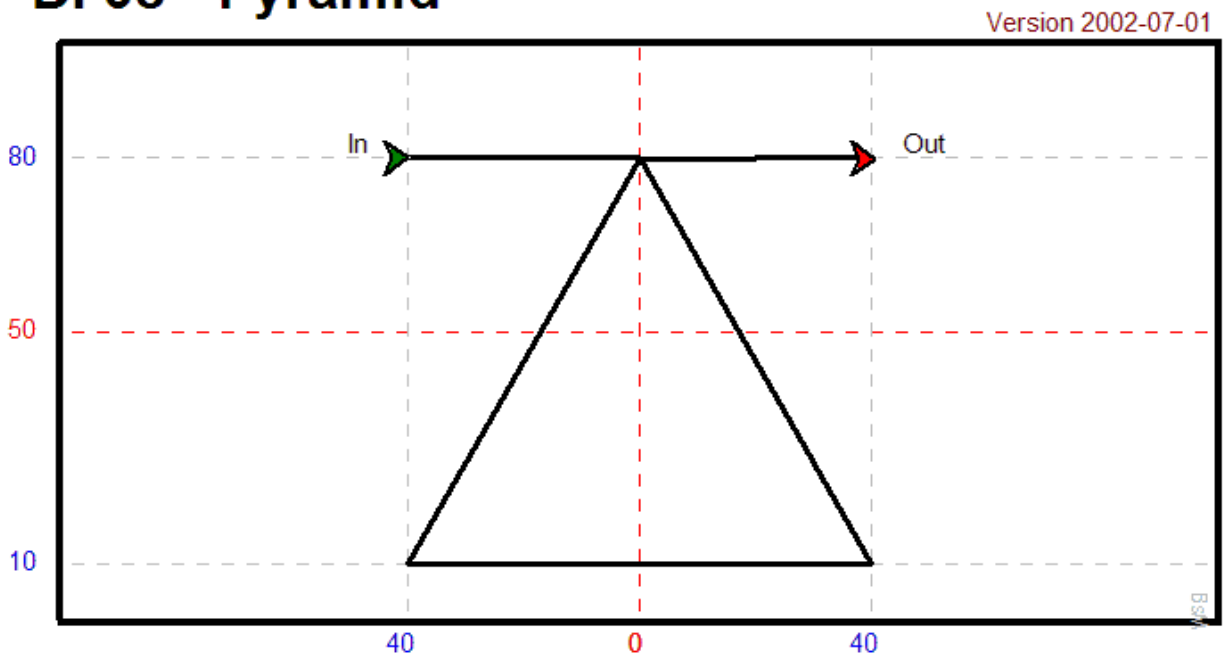
Right angles
Arc

Explanation

Other components:

- Danger
- Straight lines
- Position within the precision grid
- Speed control

DI 08 - Pyramid



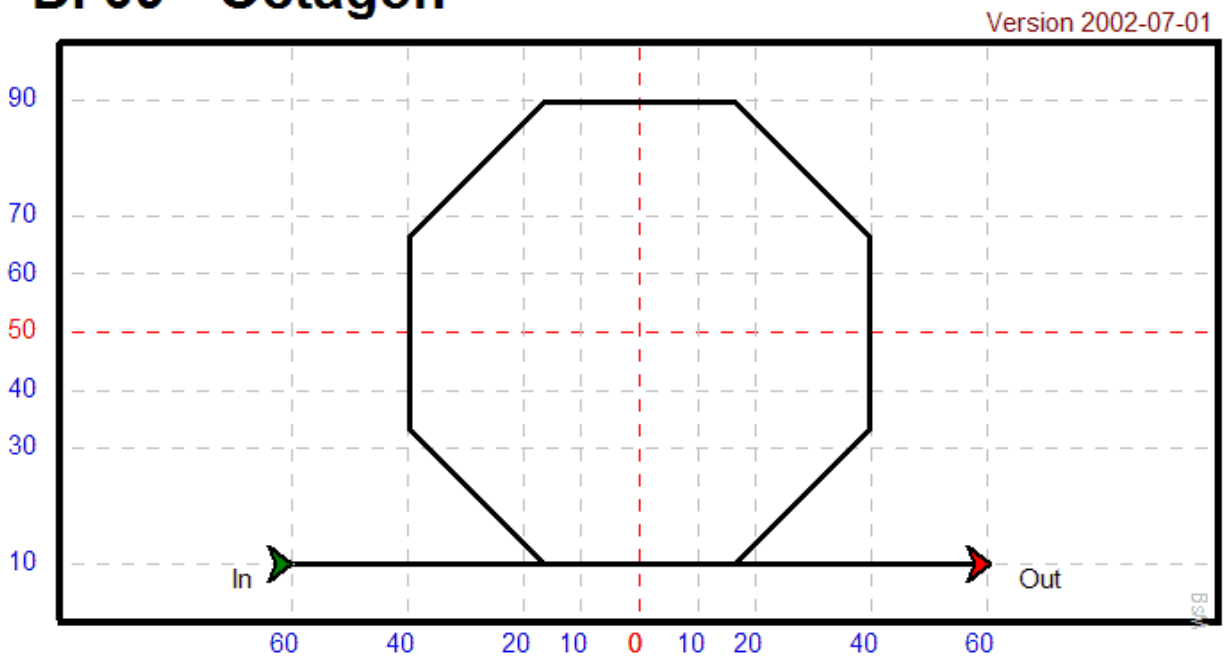
Critical Components

Position within the precision grid
Relative size of components

Explanation

The base angles are equal
Other components:
- Equal size of IN and OUT horizontal lines.
- Straight lines
- Speed control

DI 09 - Octagon



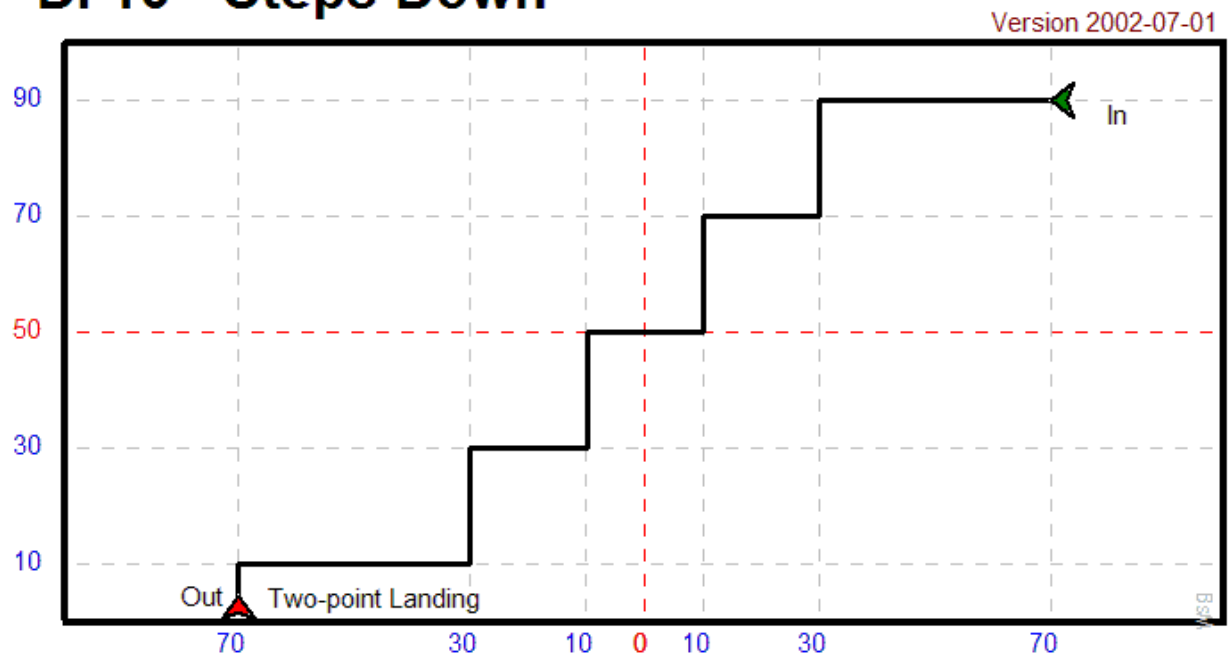
Critical Components

Position within the precision grid
Relative size of components

Explanation

All angles of the octagon are equal.
Other components:
- Speed control
- Equal size of IN and OUT horizontal lines
- Parallel lines

DI 10 - Steps Down



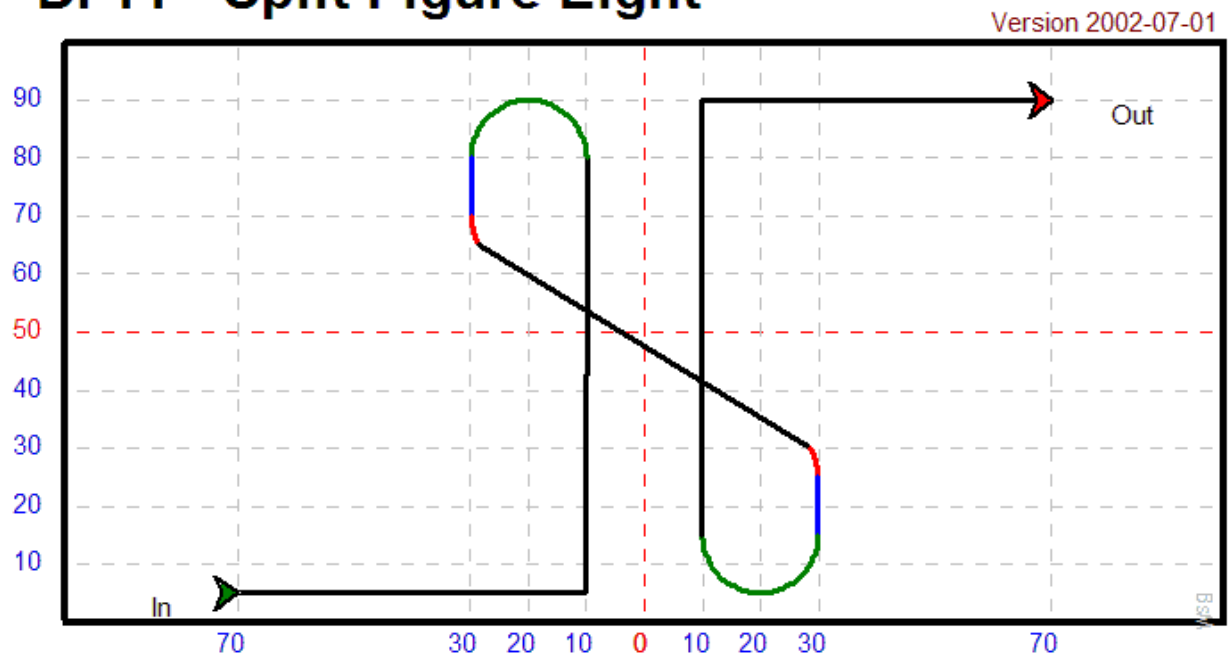
Critical Components

Relative size of components
Right angles

Explanation

The last turn down is followed by a two-point landing.
Other components:
- Two-point landing
- Position within the precision grid
- Speed control

DI 11 - Split Figure Eight



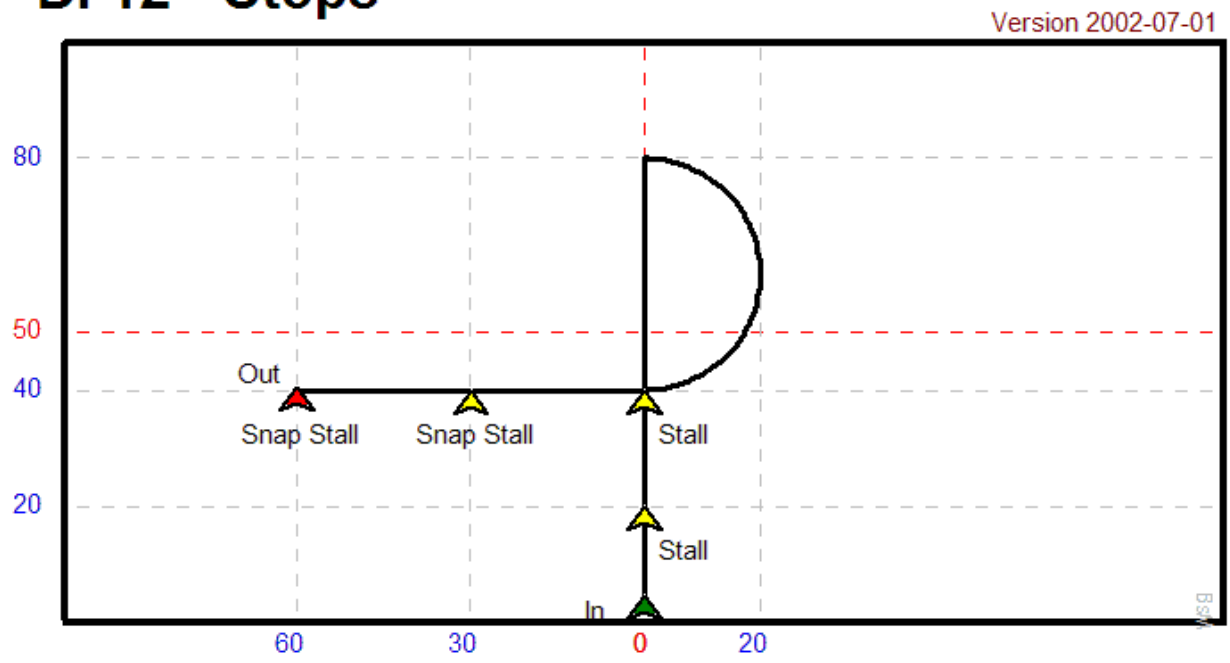
Critical Components

Relative placement of components
Speed control

Explanation

Other components:
- Position within the precision grid
- Straight lines
- Arcs

DI 12 - Stops



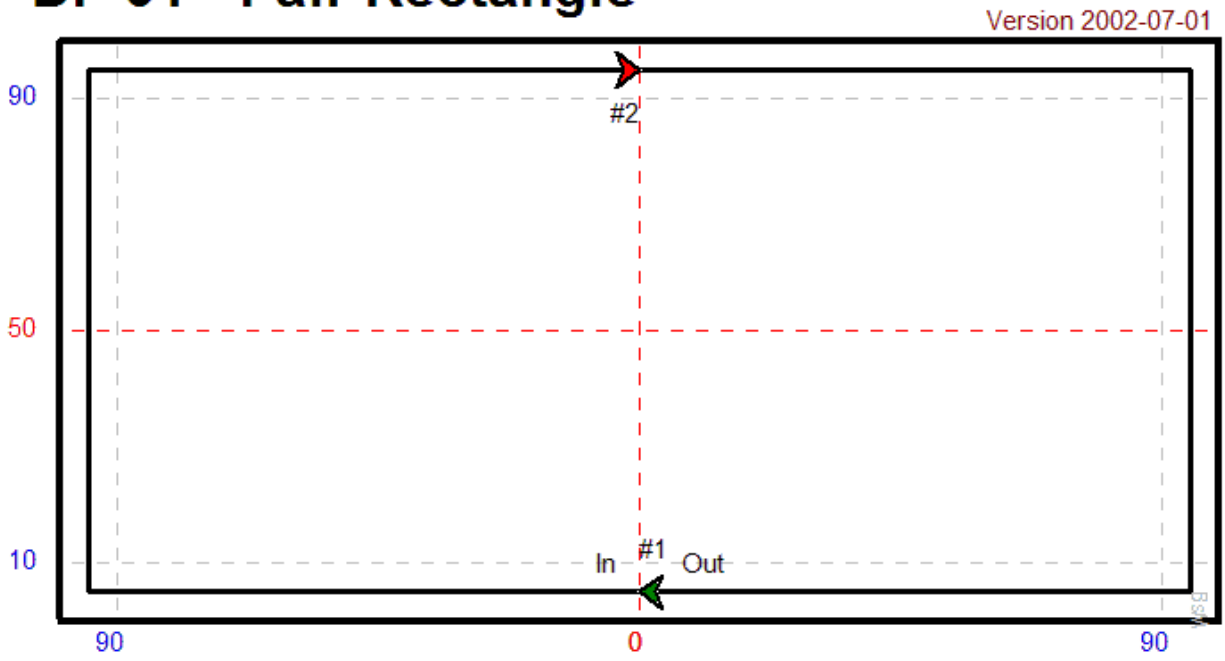
Critical Components

Stall
Speed control

Explanation

Other components:
- Launch
- Relative placement of components
- Straight lines
- Position within the precision grid

DP 01 - Pair Rectangle



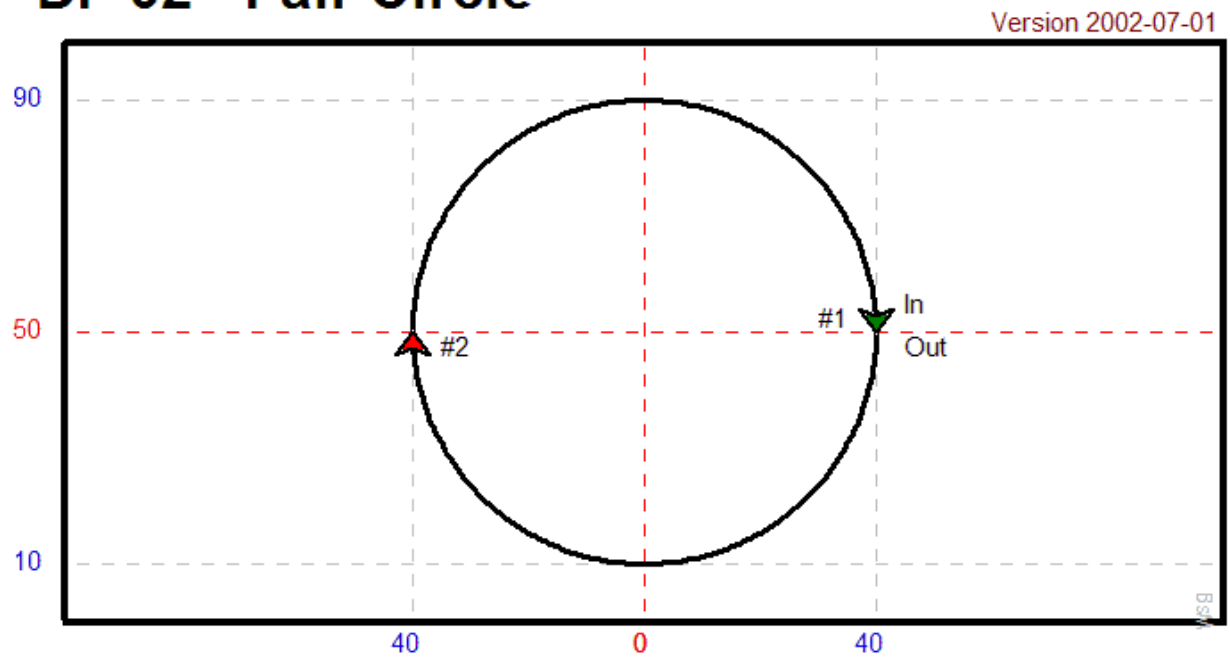
Critical Components

Position within the precision grid
Straight lines

Explanation

Other components:
- Spacing
- Speed control
- Parallel lines
- Right angles

DP 02 - Pair Circle



Critical Components

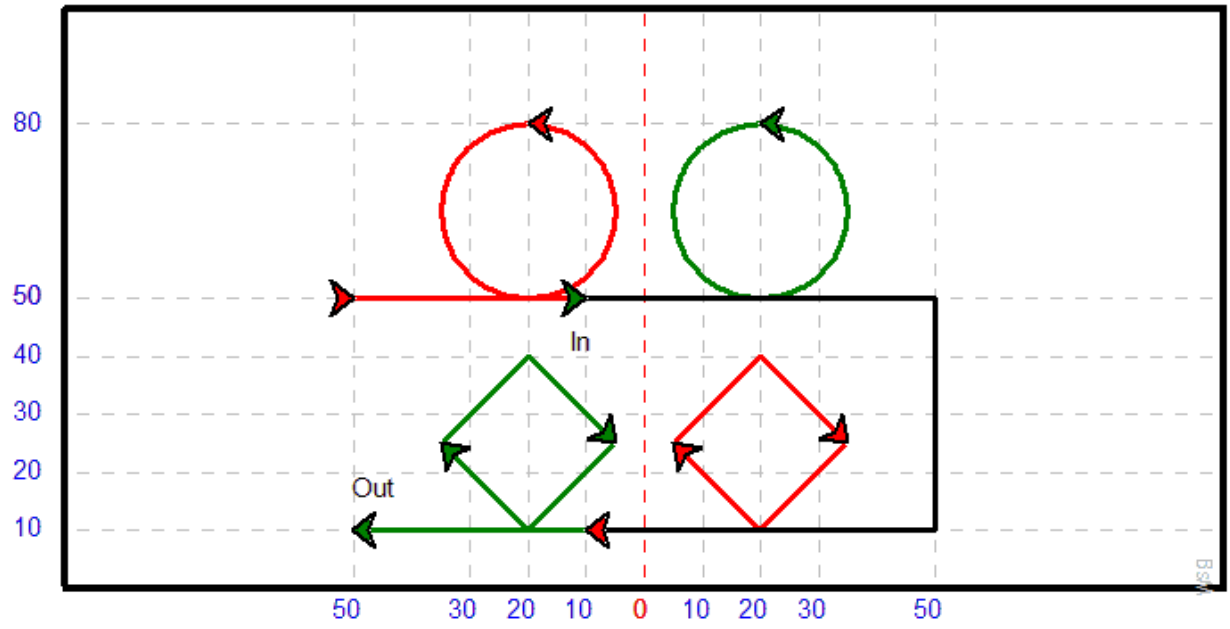
Circle
Speed control

Explanation

Other components:
- Position within the precision grid
- IN/OUT at same location

DP 03 - Pair Circles Over Diamonds

Version 2002-07-01



Critical Components

Placement of components
Size of components

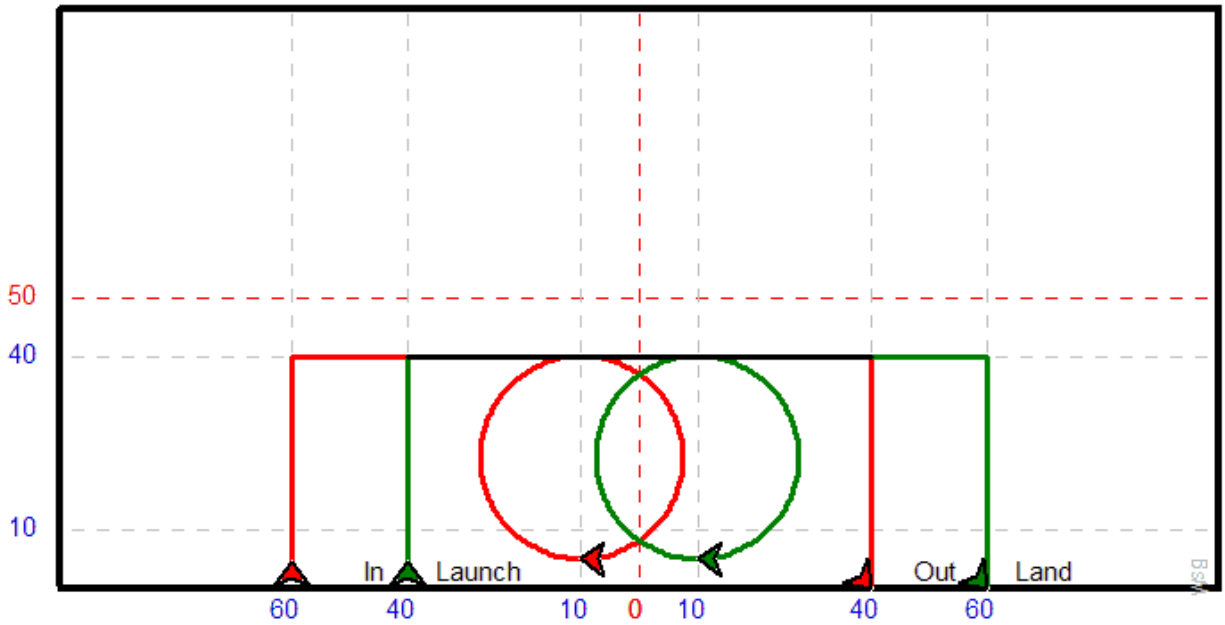
Explanation

The circles are directly above the diamonds.
The diameter of the circles are the same as the width and height of the diamonds.
Other components:

- Parallel lines
- Right angles
- Position within the precision grid
- Speed control
- Other angles

DP 04 - Pair Launch, Circle, and Land

Version 2002-07-01



Critical Components

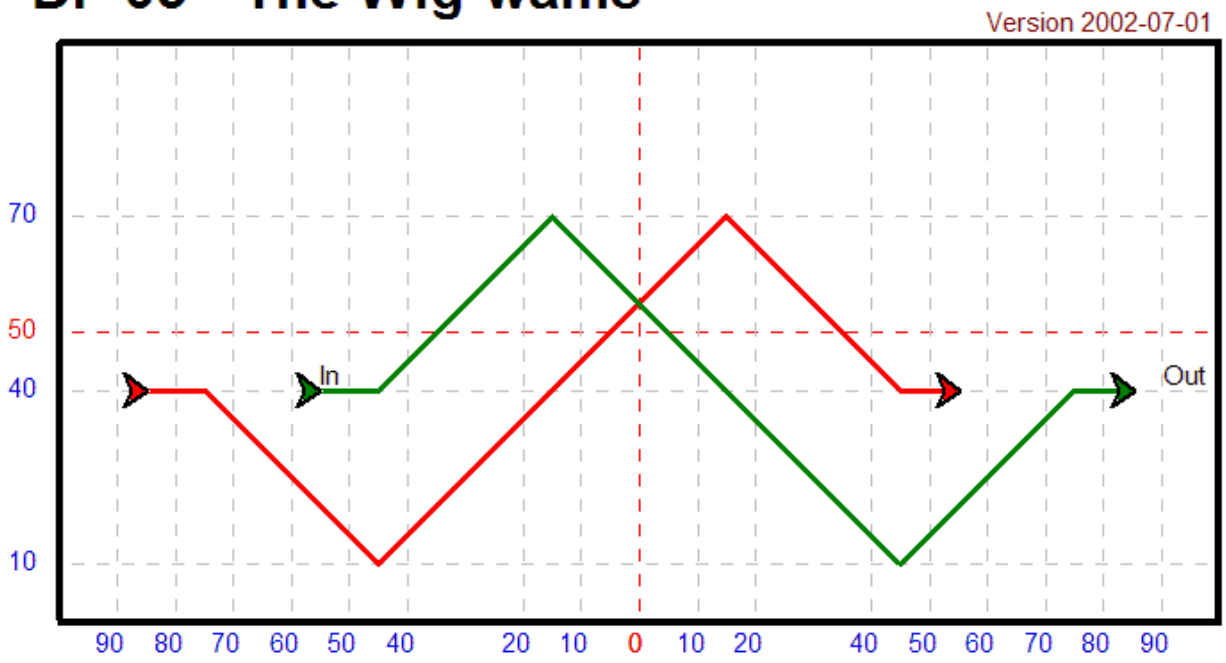
Straight vertical lines
Position within the precision grid

Explanation

No particular landing technique is specified. However, the closer the landing maneuver is to the ground when it begins the better.
Other components:

- Right angles
- Speed control
- Circle

DP 05 - The Wig-wams



Critical Components

Parallel lines
Speed control

Explanation

Other components:
- Spacing
- Timing

DP 06 - Inverted Eight with Landing

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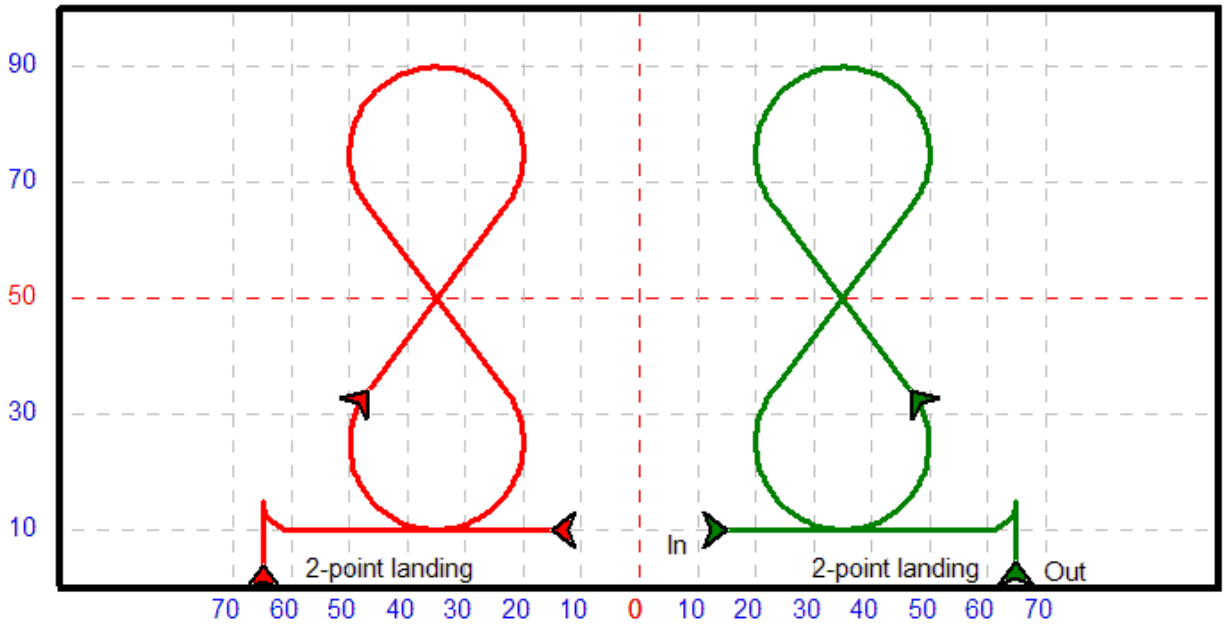


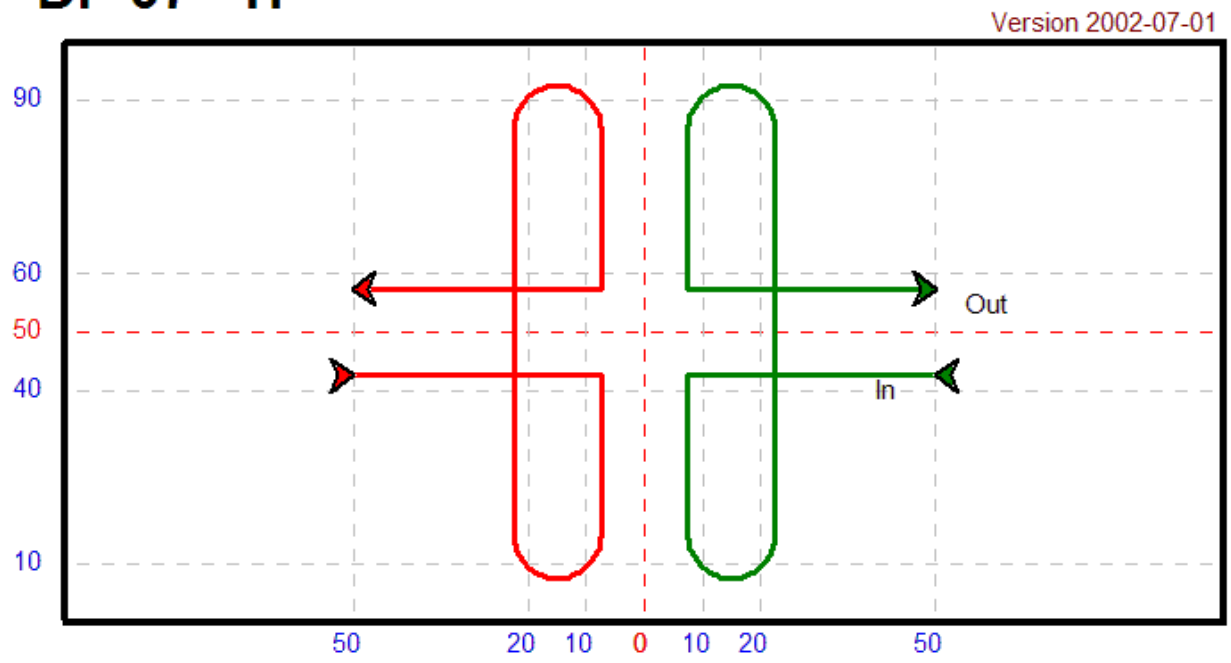
Critical Components

Relative position of components
Landing

Explanation

Two-point landing
Other components:
- Position within the precision grid
- Parallel lines
- Straight lines

DP 07 - H



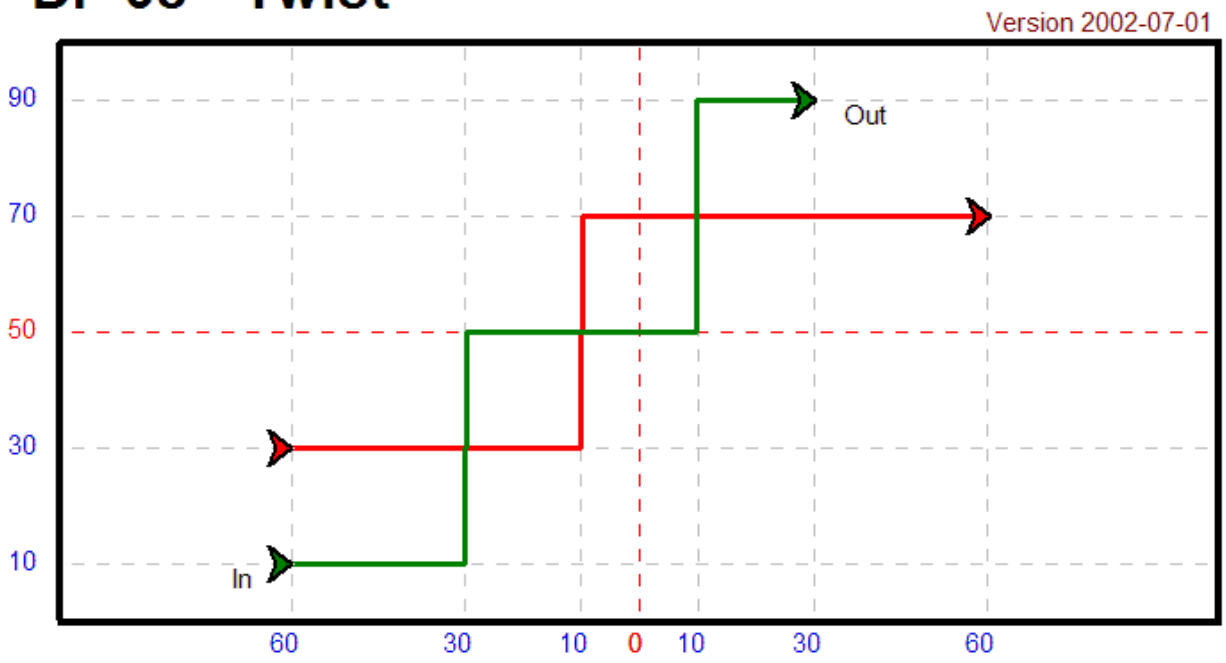
Critical Components

Parallel lines
Relative placement of components

Explanation

Other components:
- Spacing
- Position within the precision grid
- Arcs

DP 08 - Twist



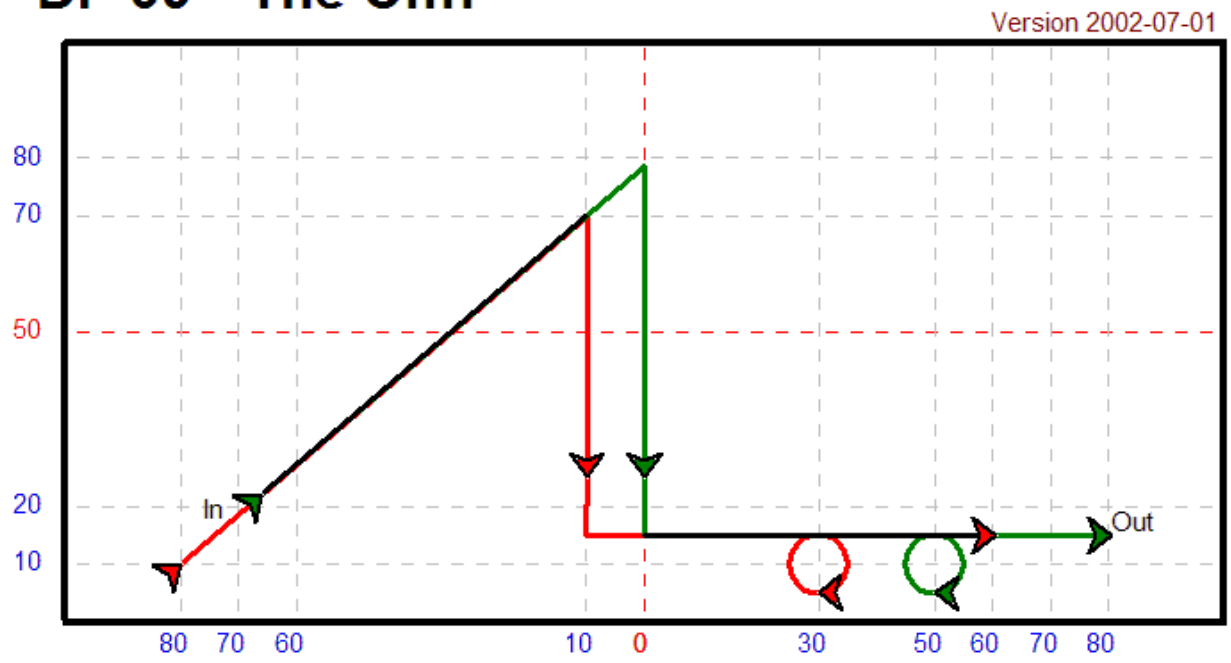
Critical Components

Timing
Parallel lines

Explanation

Other components:
- Speed control
- Right angles

DP 09 - The Cliff



Critical Components

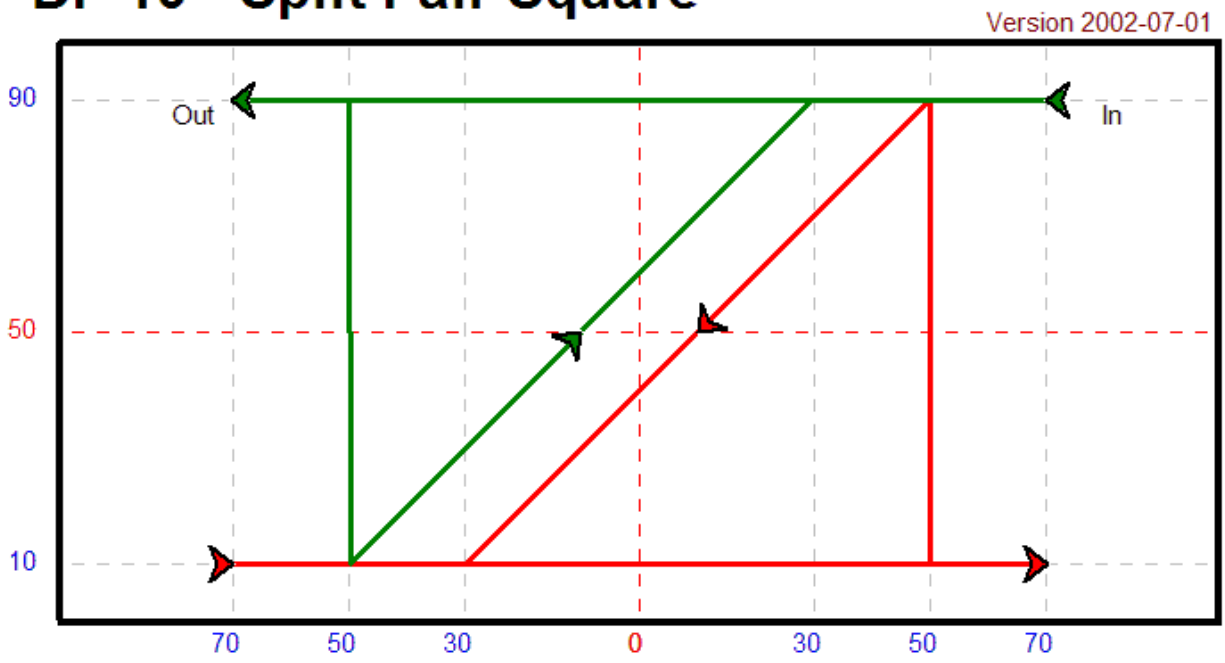
Speed control
Spacing

Explanation

Other components:

- Timing
- Circles
- Straight lines
- Other angles

DP 10 - Split Pair Square



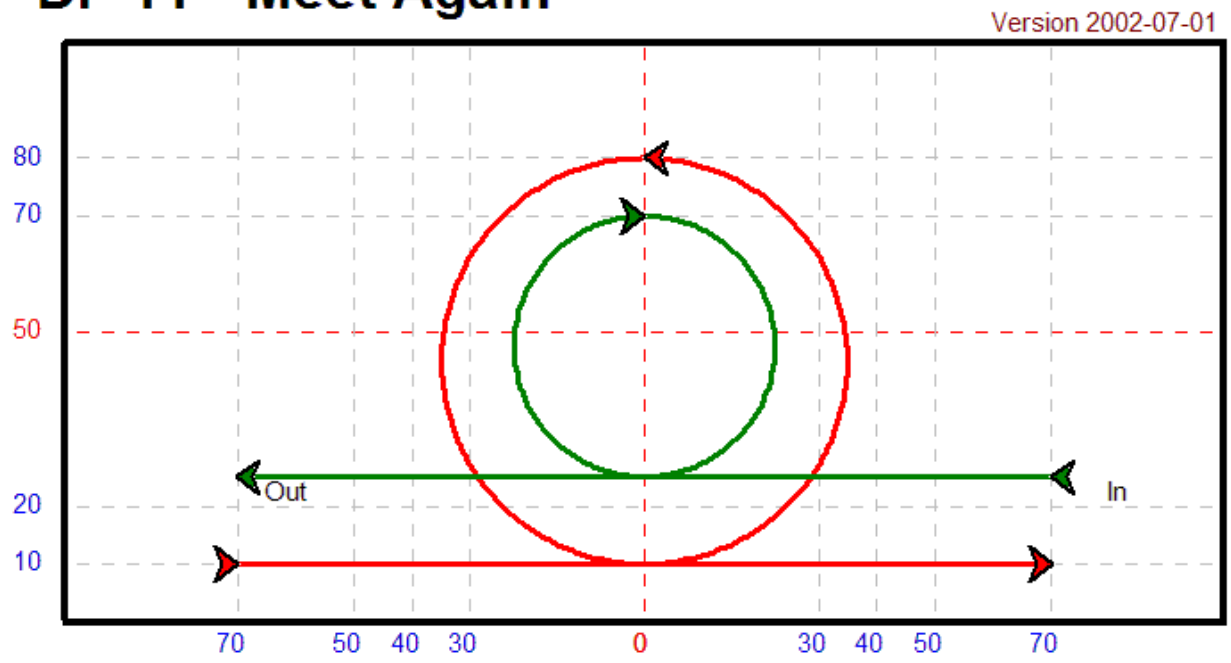
Critical Components

Parallel lines
Position within the precision grid

Explanation

Other components:
- Other angles
- Timing
- Spacing

DP 11 - Meet Again



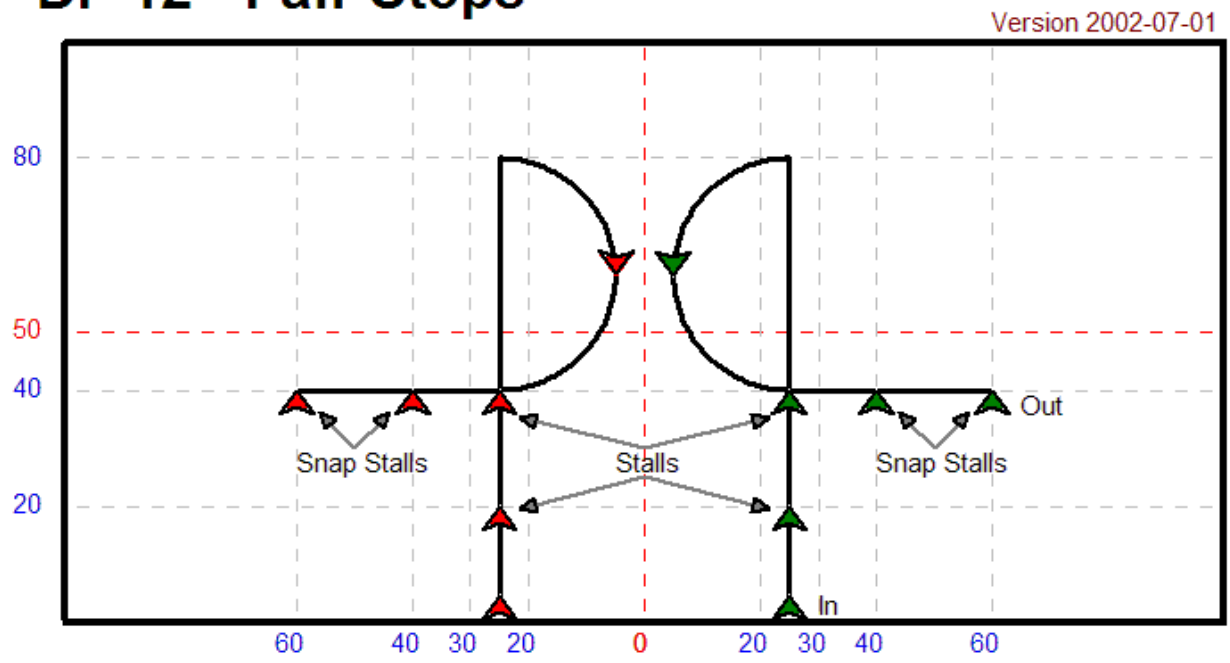
Critical Components

Circles
Speed control

Explanation

Other components:
- Timing
- Relative placement of components

DP 12 - Pair Stops



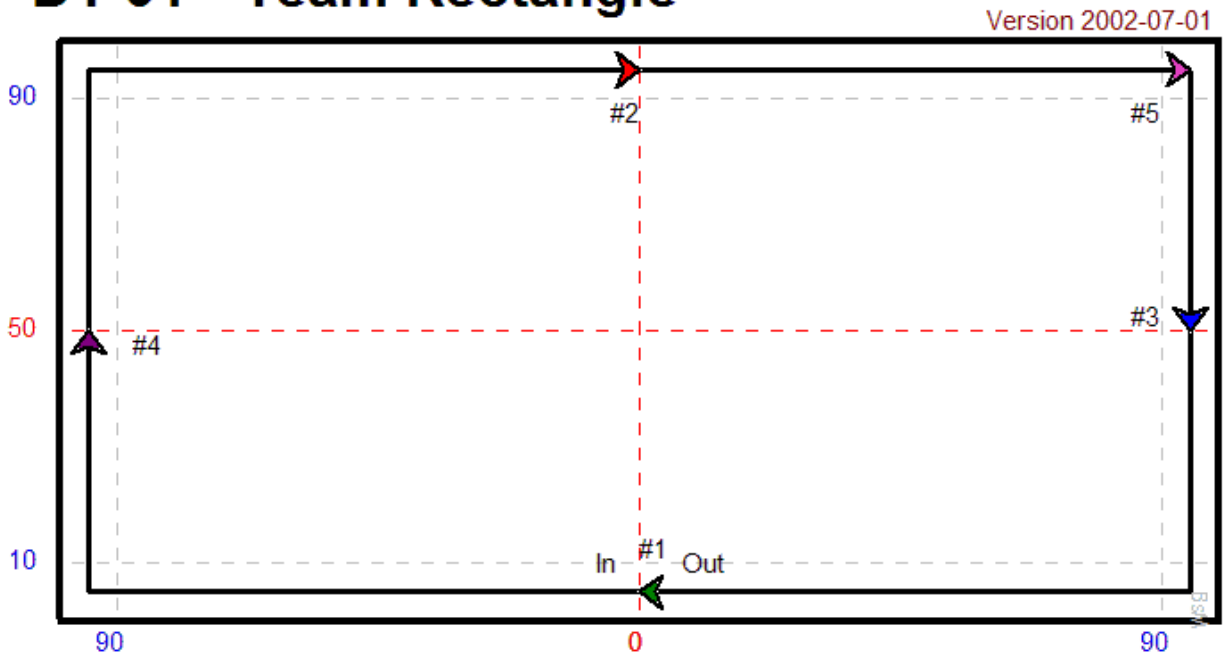
Critical Components

Stall
Speed control

Explanation

Other components:
- Launch
- Relative placement of components
- Straight lines
- Position within the precision grid

DT 01 - Team Rectangle



Critical Components

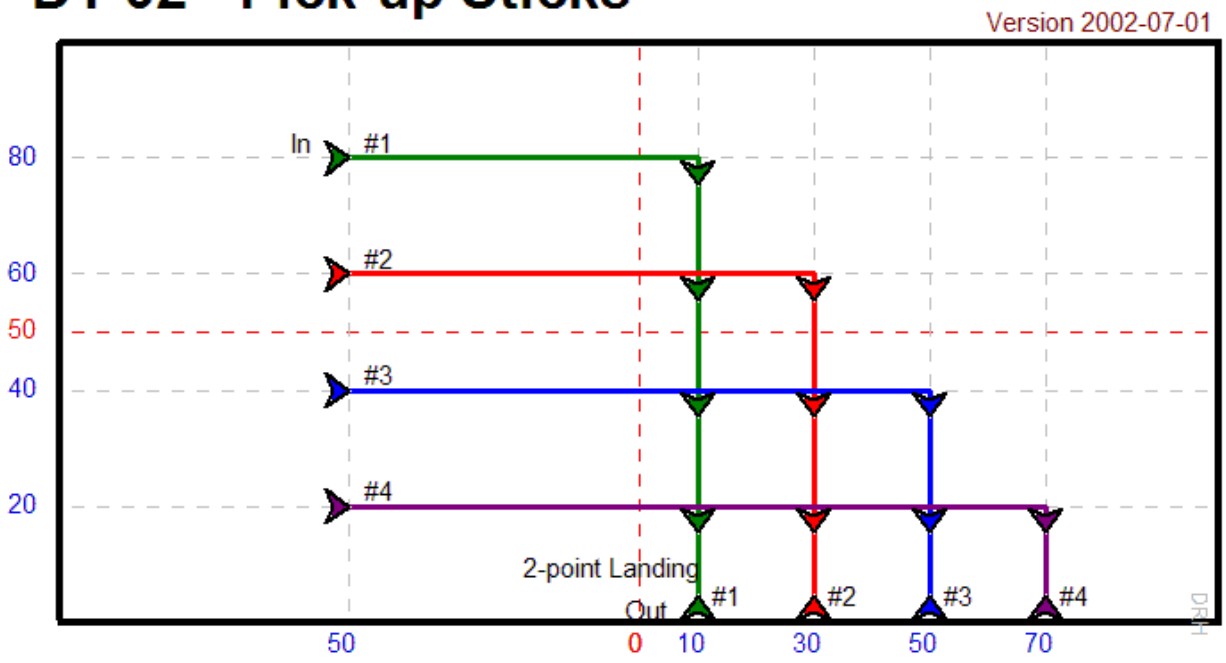
Position within the precision grid
Straight lines

Explanation

A 6th kite would start and end at <95 ^5, and so on.
Other components:

- Spacing
- Speed control
- Parallel lines
- Right angles

DT 02 - Pick-up Sticks



Critical Components

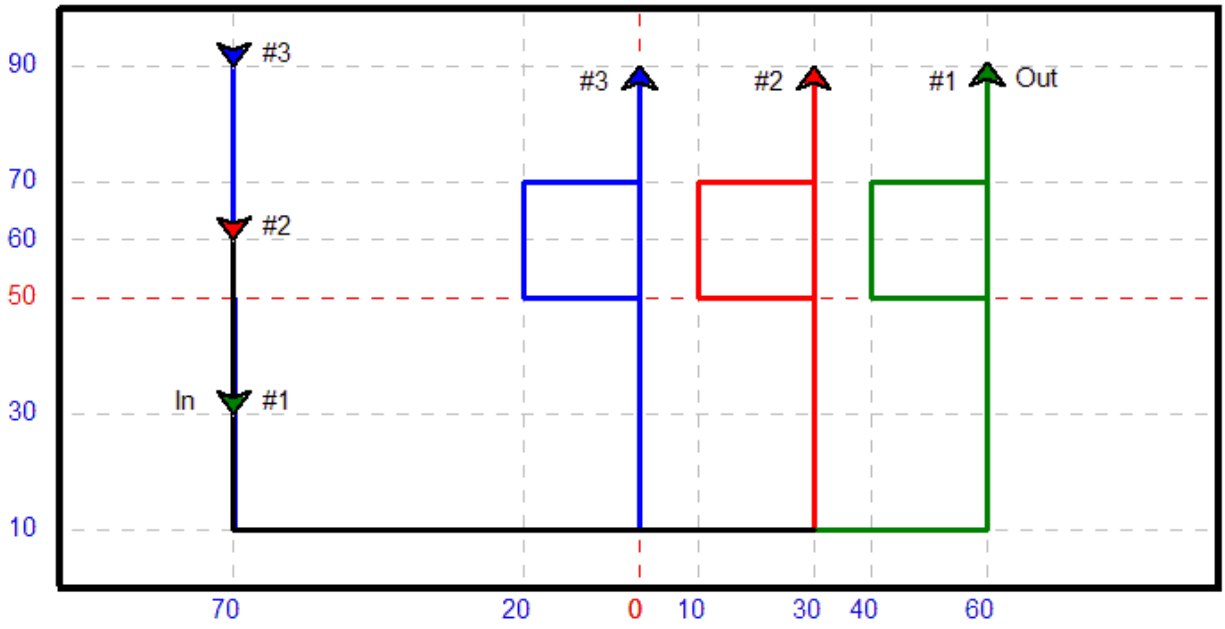
Relative placement of components
Speed control

Explanation

Other components
- Straight lines
- Landing

DT 03 - Follow, Flank Up and Square

Version 2002-07-01



Critical Components

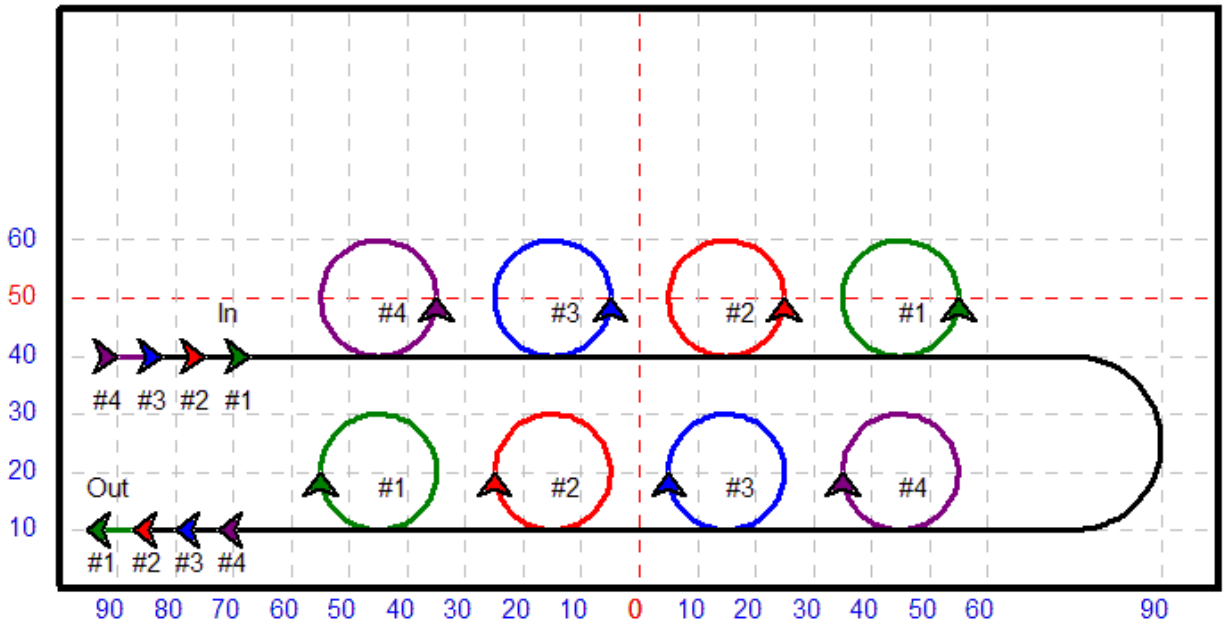
Parallel lines
Right angles

Explanation

Other components:
- Relative placement of components
- Timing

DT 04 - Team Hairpin

Version 2002-07-01



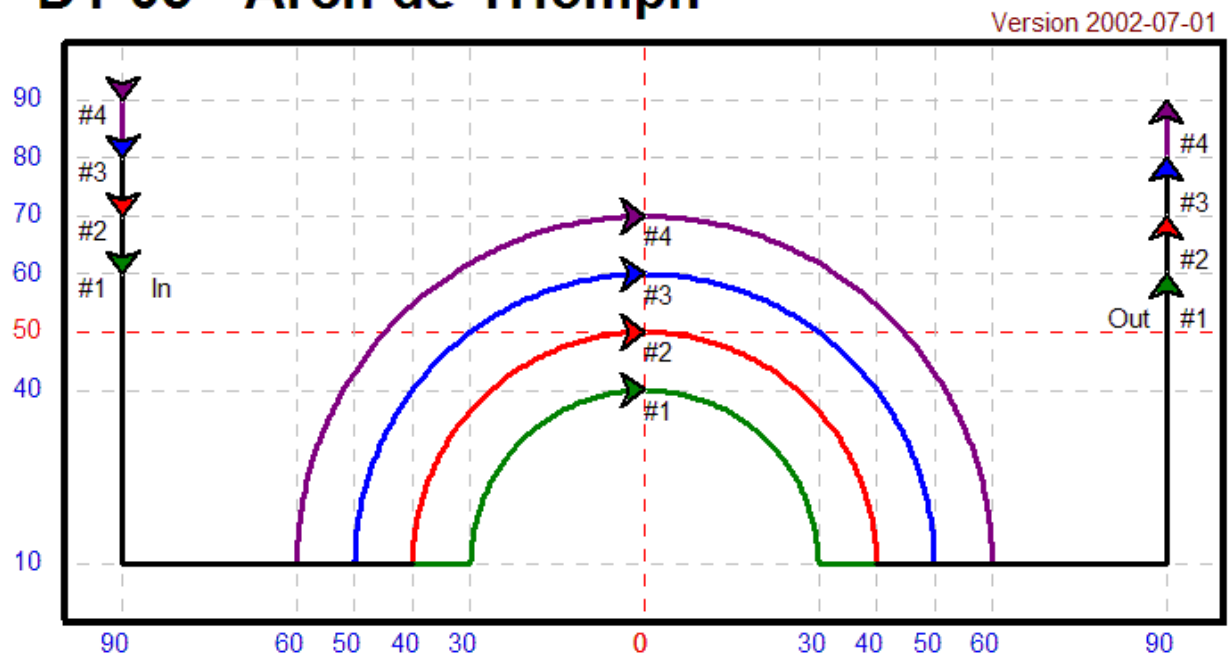
Critical Components

Circles
Spacing

Explanation

Other components:
- Position within the precision grid
- Relative placement of components

DT 05 - Arch de Triomph



Critical Components

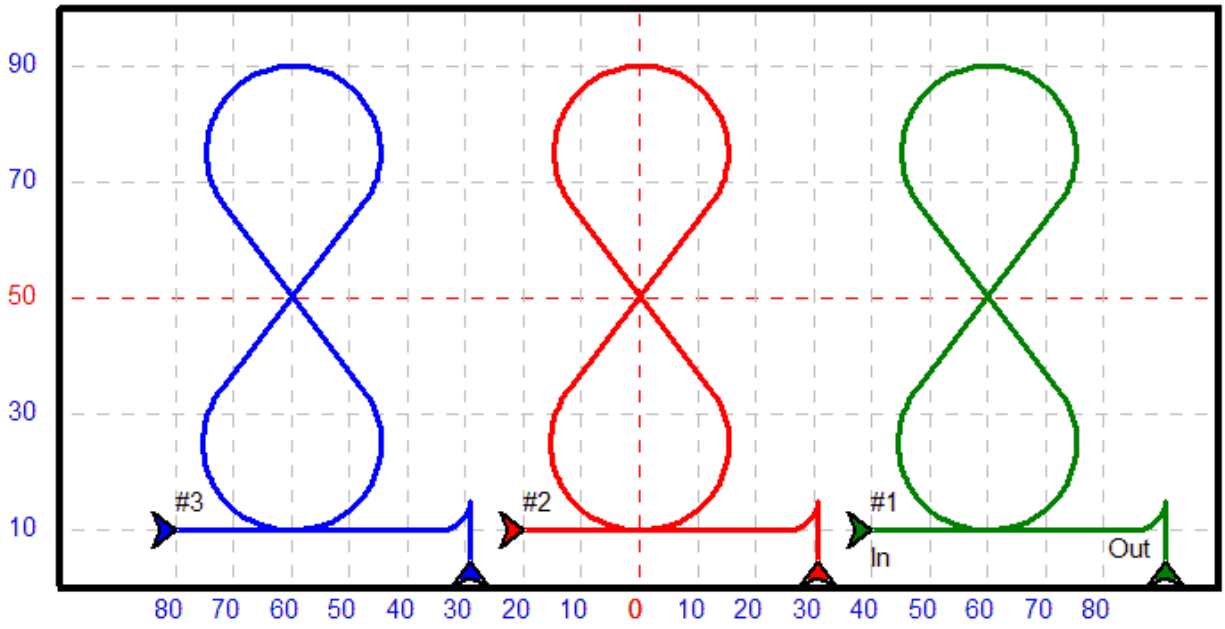
Speed control
Arcs

Explanation

Other components:
Relative placement of components
Position within the precision grid
Timing

DT 06 - Inverted Eight with Landing

Version 2002-07-01



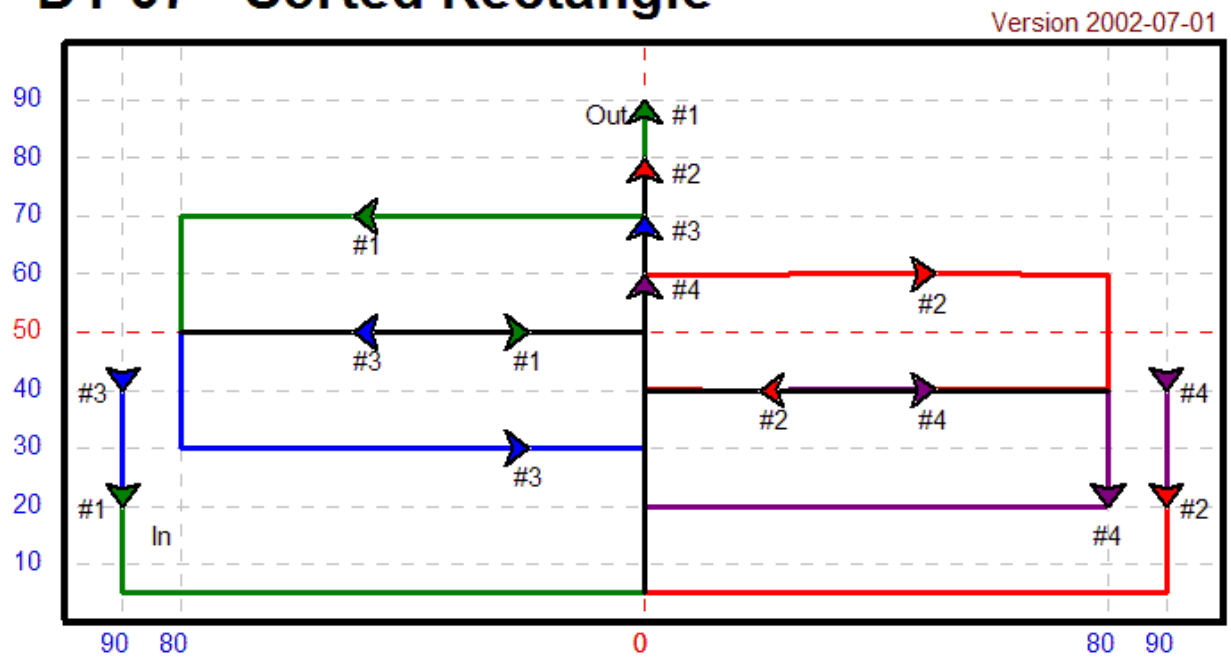
Critical Components

Landing
Relative placement of components

Explanation

Other components:
- Arcs
- Straight lines
- Parallel lines

DT 07 - Sorted Rectangle



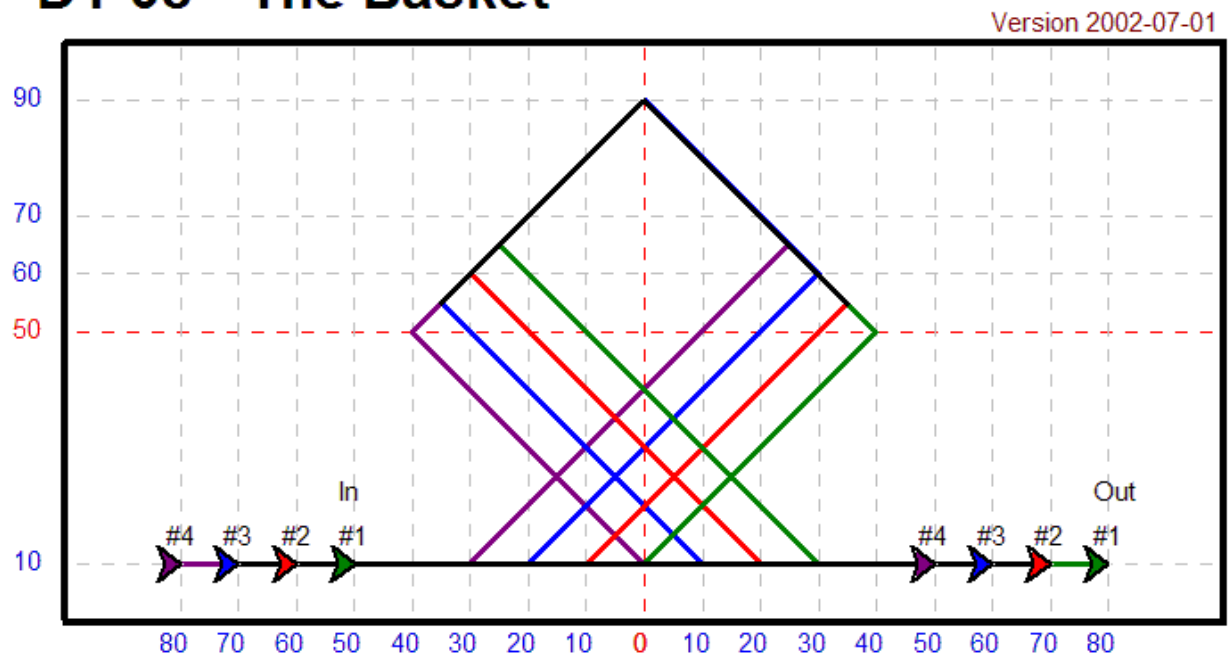
Critical Components

Timing
Relative placement of components

Explanation

Kites come down from the outside of the window and turn toward the center into a ground pass.
A zipper-merge is performed as the kites turn to go up the center of the window.
Kites alternate going left and right into rectangles that meet back at center window.
Other components:
- Ground pass
- Parallel lines

DT 08 - The Basket



Critical Components

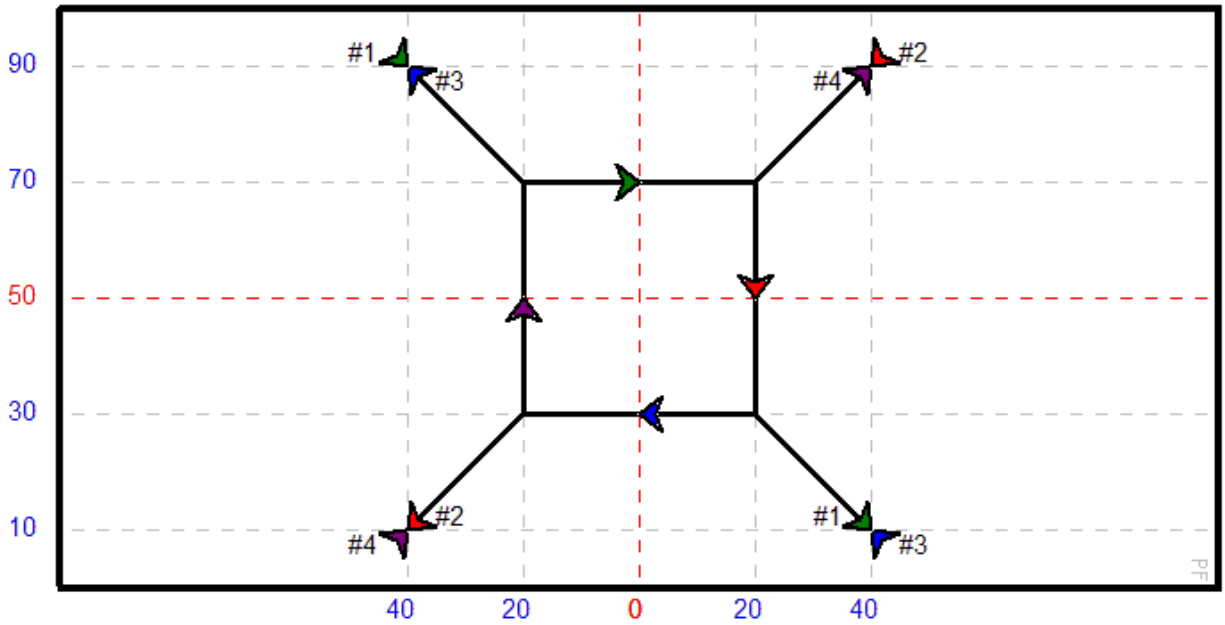
Speed control
Spacing

Explanation

Kites come abreast in the middle of the diagonal descent.
Other components:
- Timing
- Right angles
- Parallel lines

DT 09 - Spiderweb

Version 2002-07-01



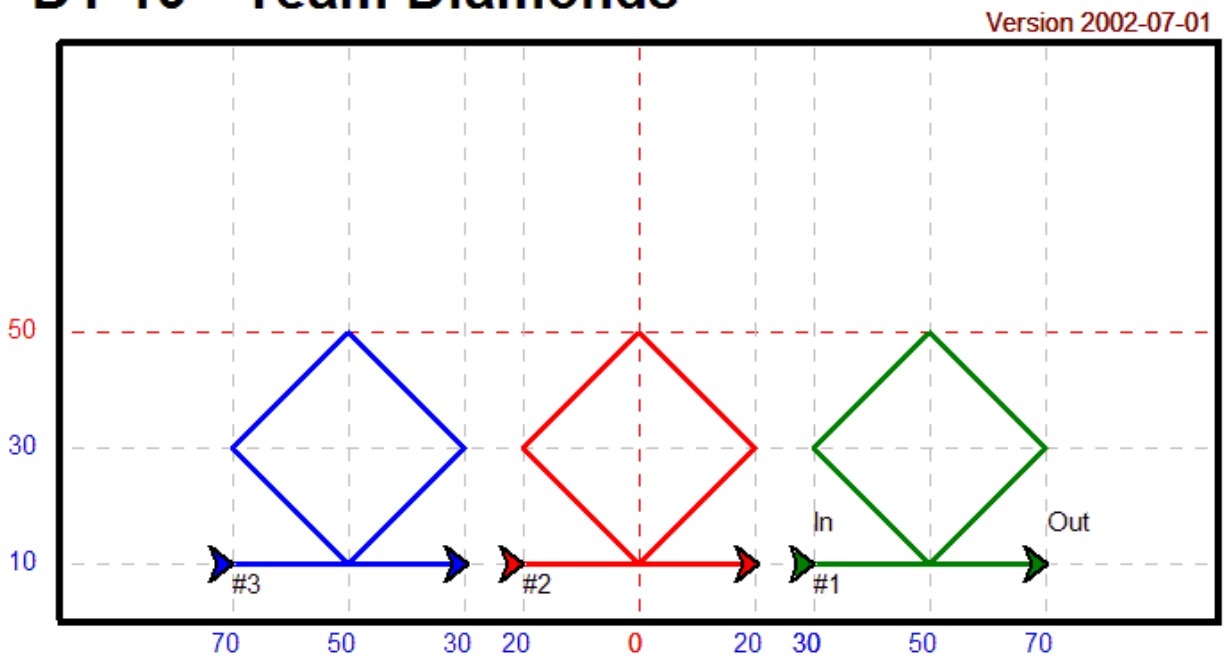
Critical Components

Parallel lines
Timing

Explanation

Each kite flies two sides of the square and exits at the opposite corner.
Other components:
- Relative placement of components
- Speed control

DT 10 - Team Diamonds



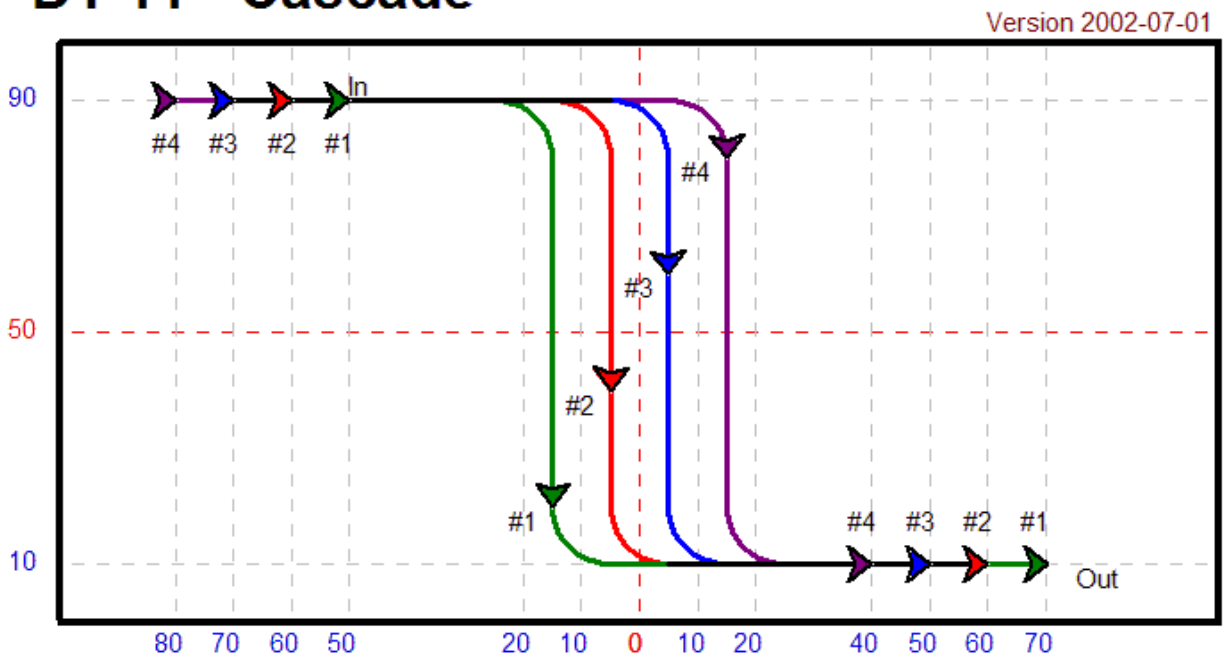
Critical Components

Relative placement of components
Timing

Explanation

Other components:
- Spacing
- Right angles

DT 11 - Cascade



Critical Components

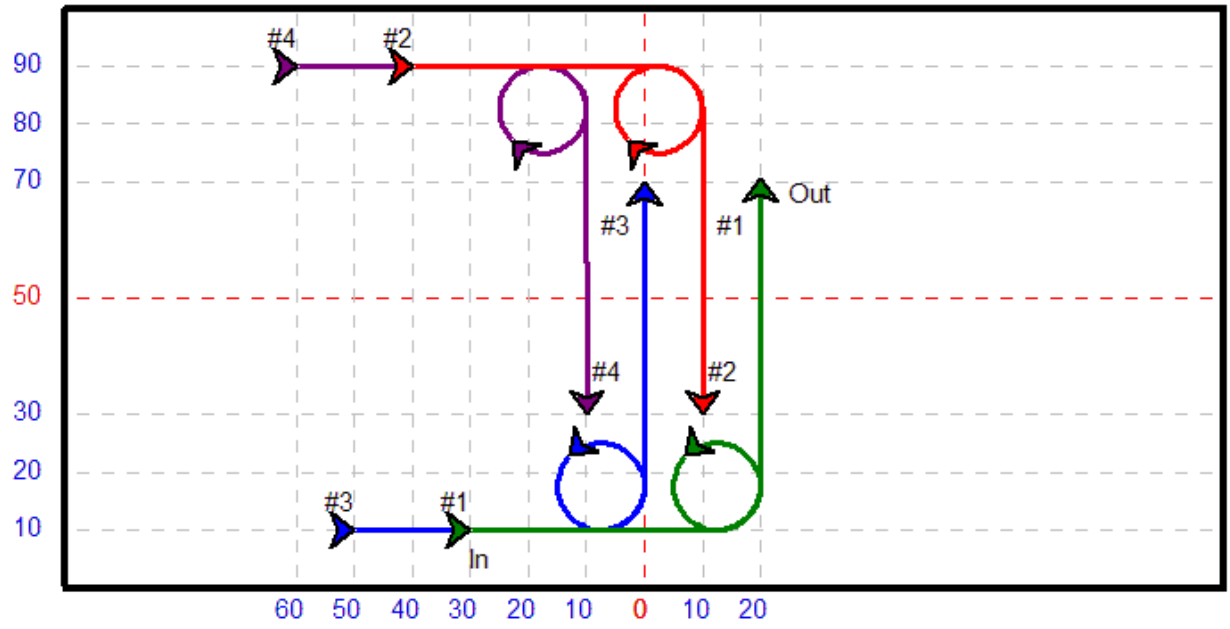
Speed Control
Position within the precision grid

Explanation

Other components:
- Spacing
- Parallel lines

DT 12 - Loops and Vertical Threads

Version 2002-07-01



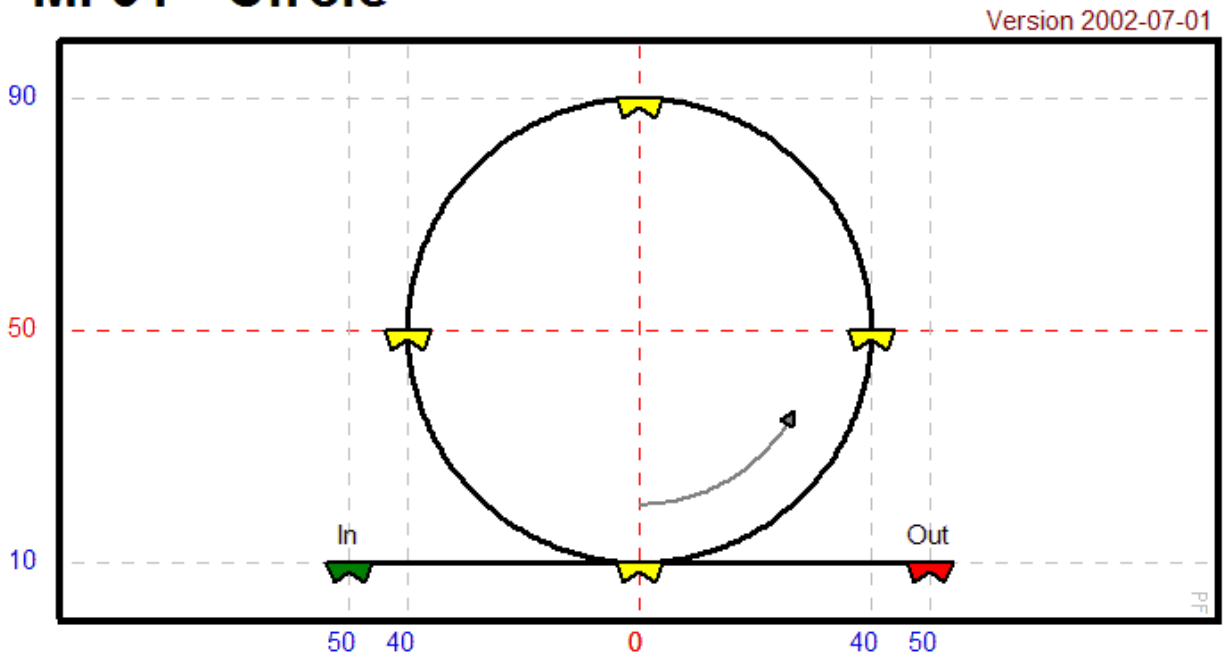
Critical Components

Circles
Relative placement of components

Explanation

Other components:
- Speed control
- Position within the precision grid
- Parallel lines

MI 01 - Circle



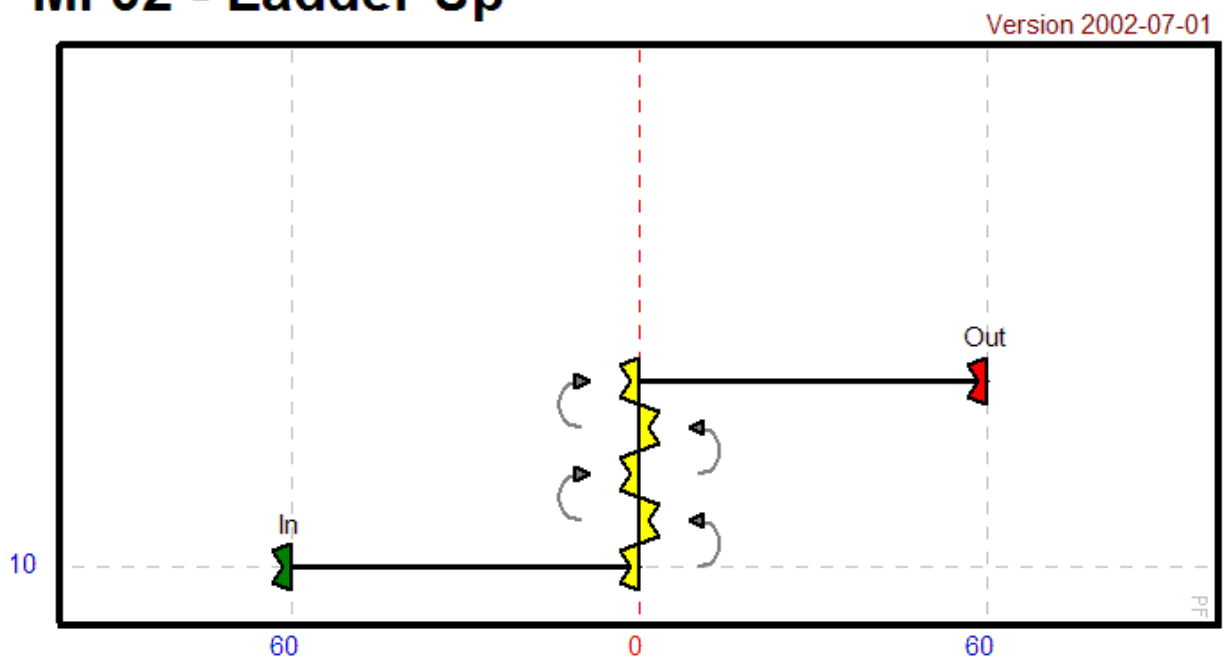
Critical Components

Circle
Orientation

Explanation

The kite is oriented nose-up throughout the figure.
Other components
- Multi-line slide
- Position within the precision grid

MI 02 - Ladder Up



Critical Components

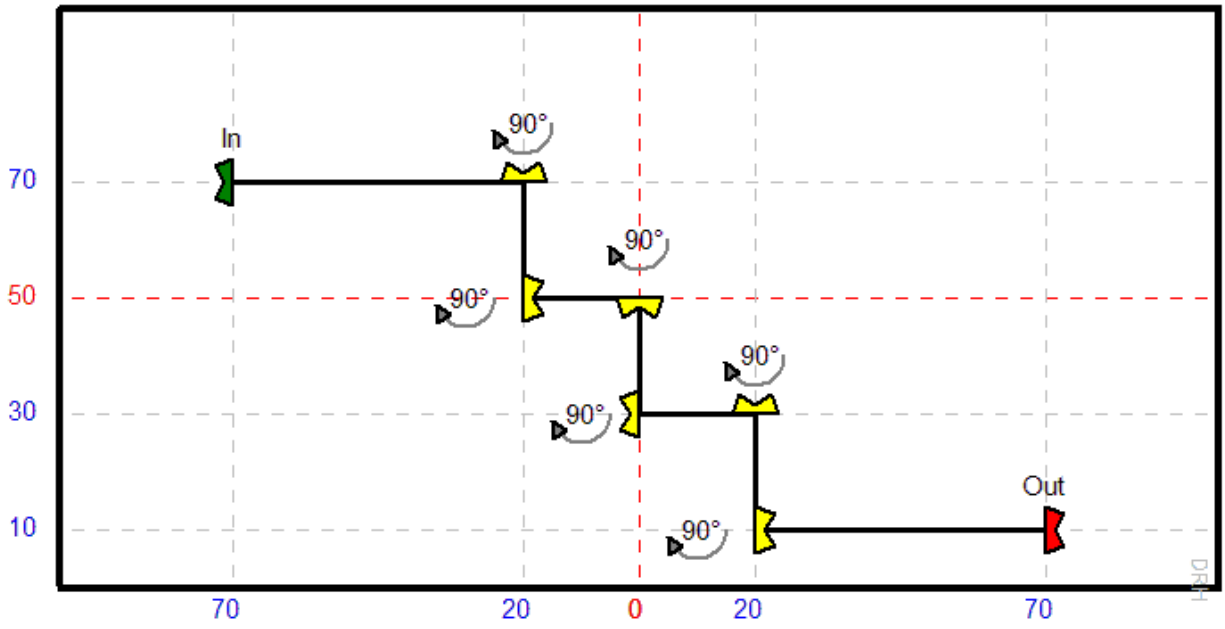
Rotation
Position within the precision grid

Explanation

The kite rotates forward around one wingtip after the other as it climbs.
The position of the kite after each rotation is determined by the width of the kite. Therefore, the vertical position of the kite at the end of each rotation and the last horizontal line are undefined.
Other components
- Relative placement of components
- Parallel lines

MI 03 - Steps and Turns

Version 2002-07-01



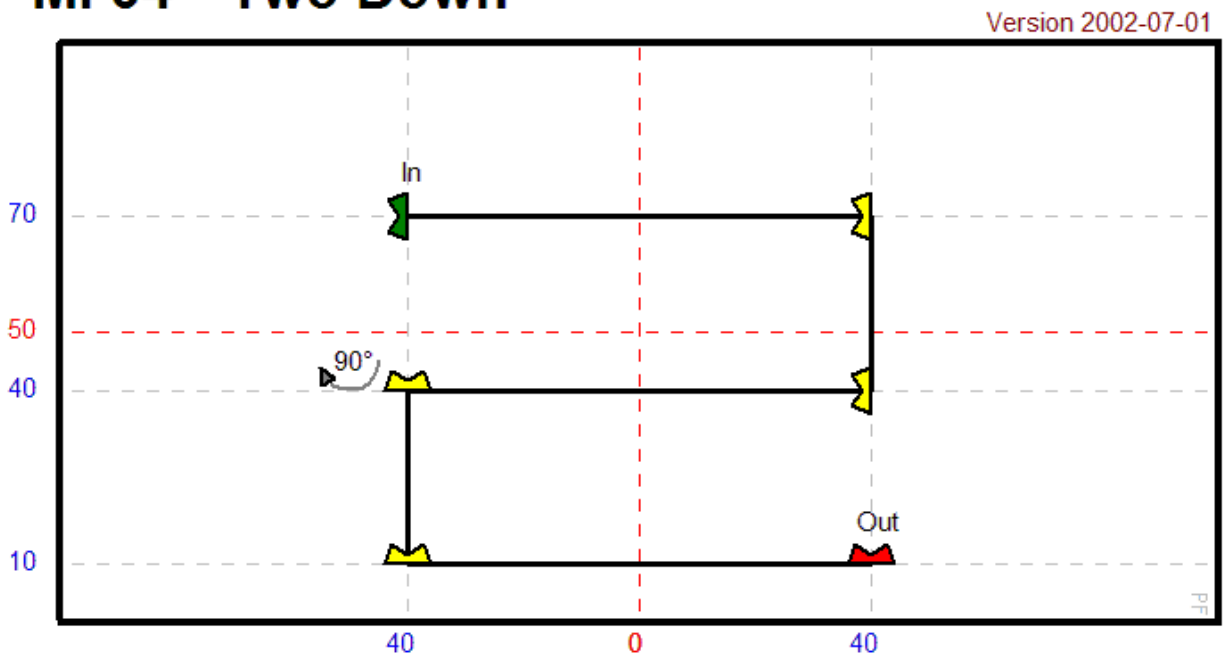
Critical Components

Relative placement of components
Rotation

Explanation

The kite rotates 90° around its center at each change of direction.
Other components
- Straight lines
- Position within the precision grid
- Backward flight

MI 04 - Two Down



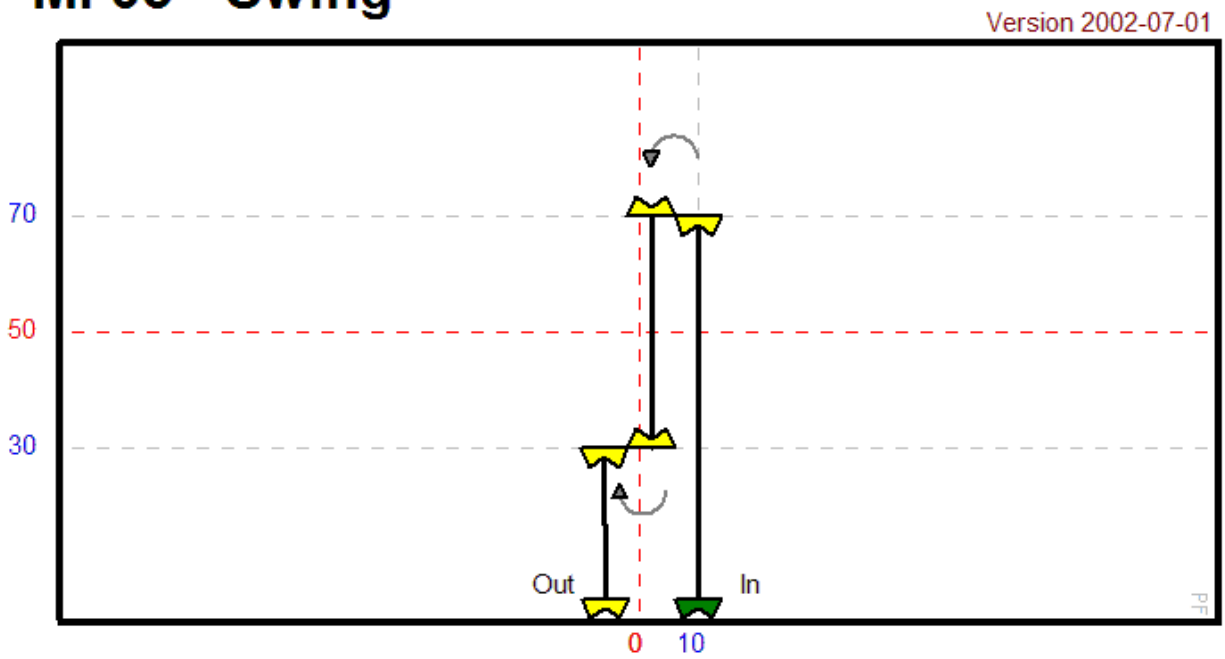
Critical Components

Parallel lines
Inverted flight

Explanation

Other components
- Center rotation
- Speed control

MI 05 - Swing



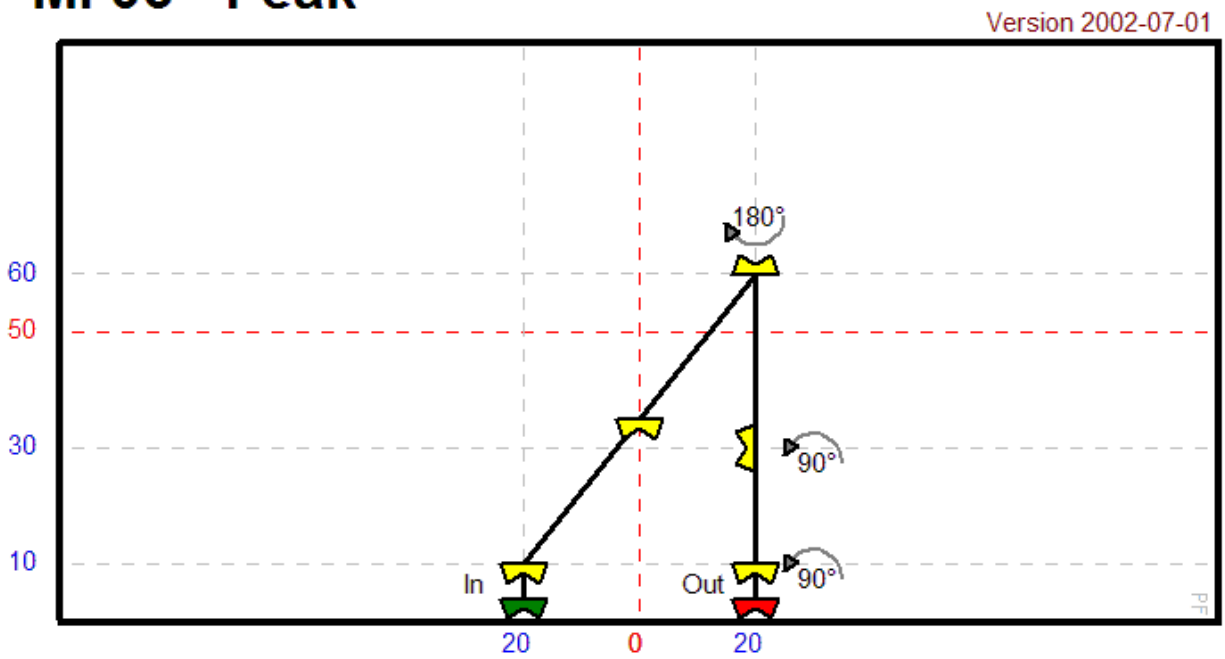
Critical Components

Wingtip rotation
Parallel lines

Explanation

Other components
- Launch
- Landing

MI 06 - Peak



Critical Components

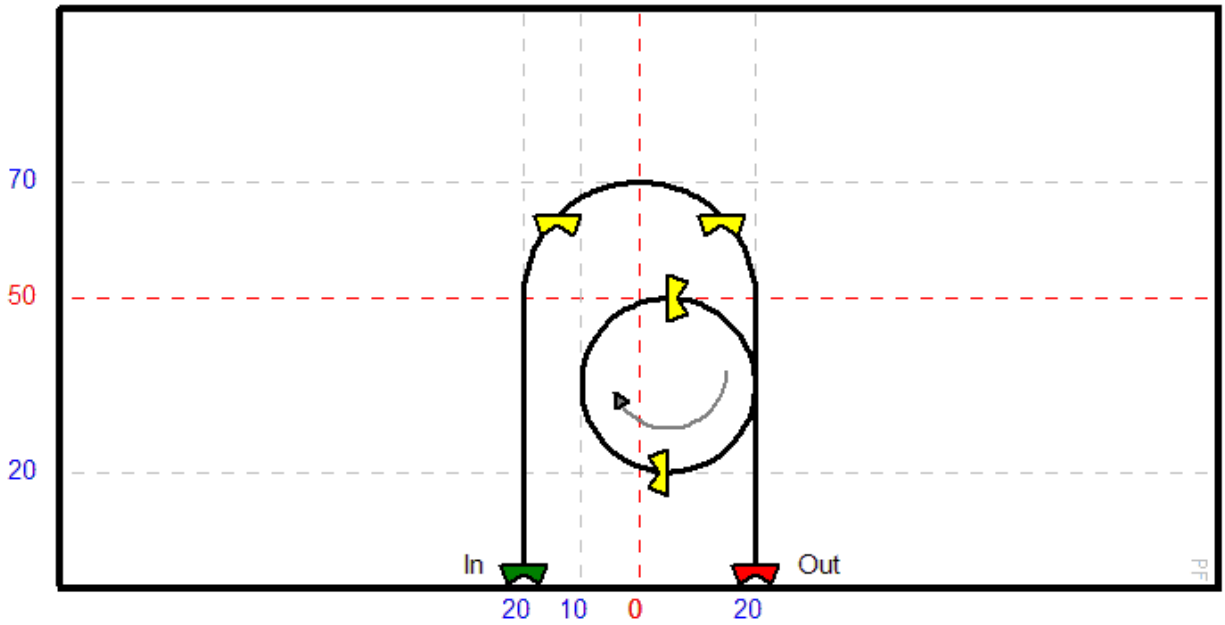
Diagonal flight
Relative placement of components

Explanation

Other components
- Launch
- Landing
- Center Rotation

MI 07 - Arc Circle

Version 2002-07-01



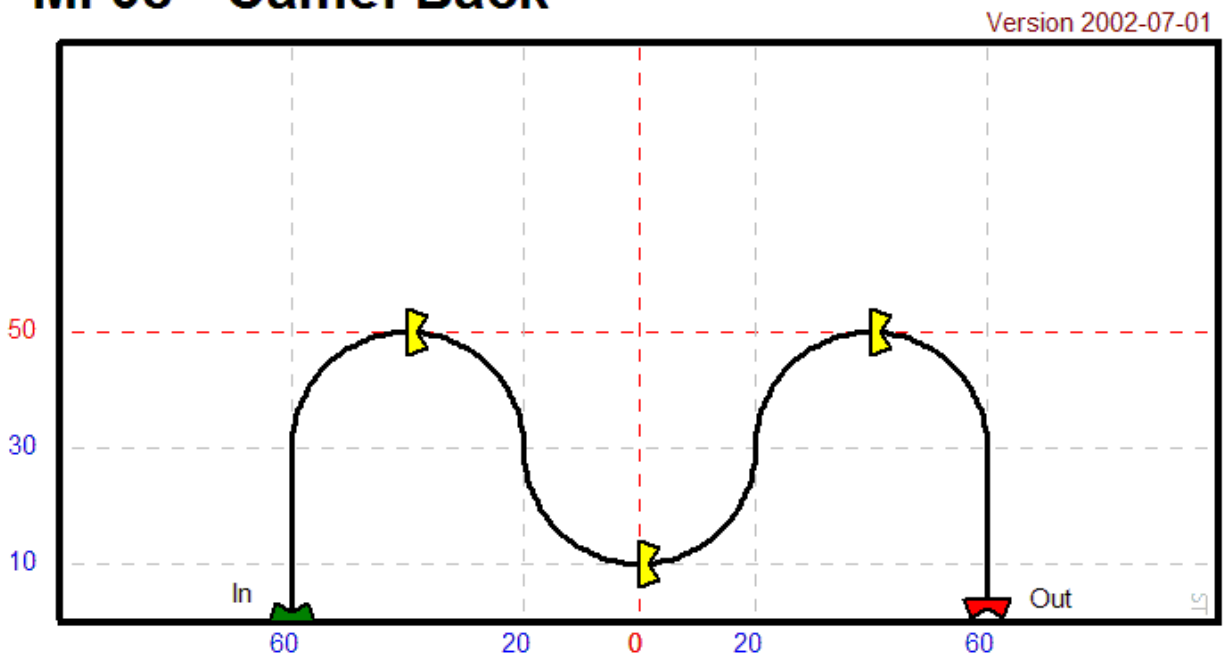
Critical Components

Circle
Backwards flight

Explanation

Other components
- Arc
- Launch
- Landing

MI 08 - Camel Back



Critical Components

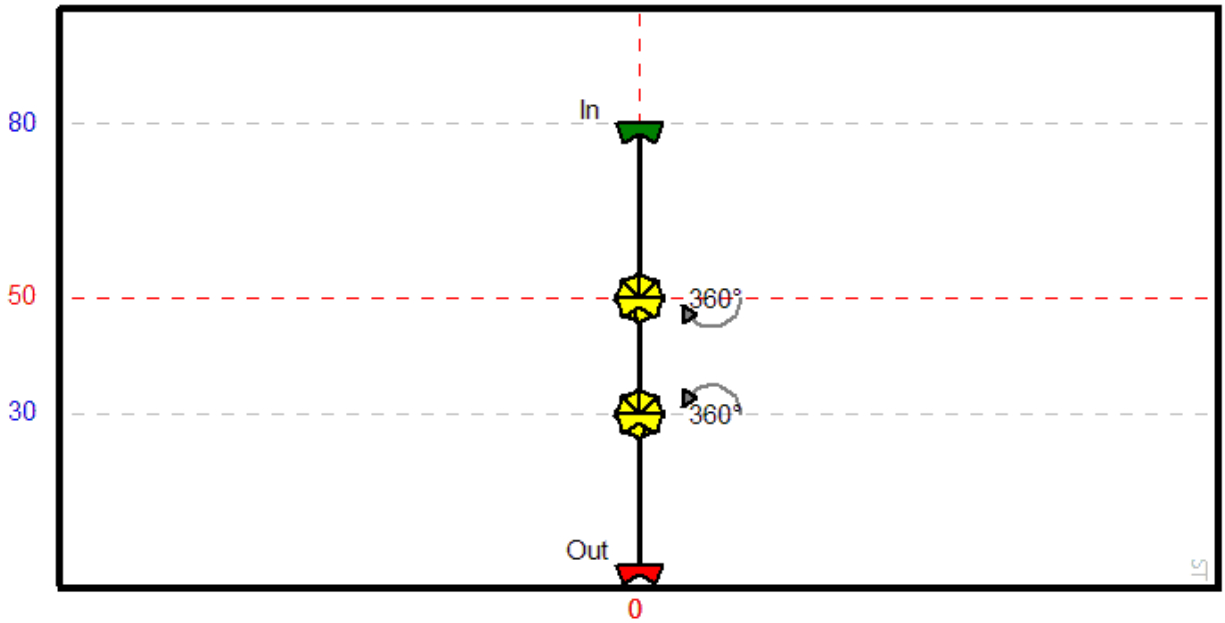
Arcs
Backward flight

Explanation

Other components
- Speed control
- Launch
- Landing
- Straight lines

MI 09 - Clock Tower

Version 2002-07-01



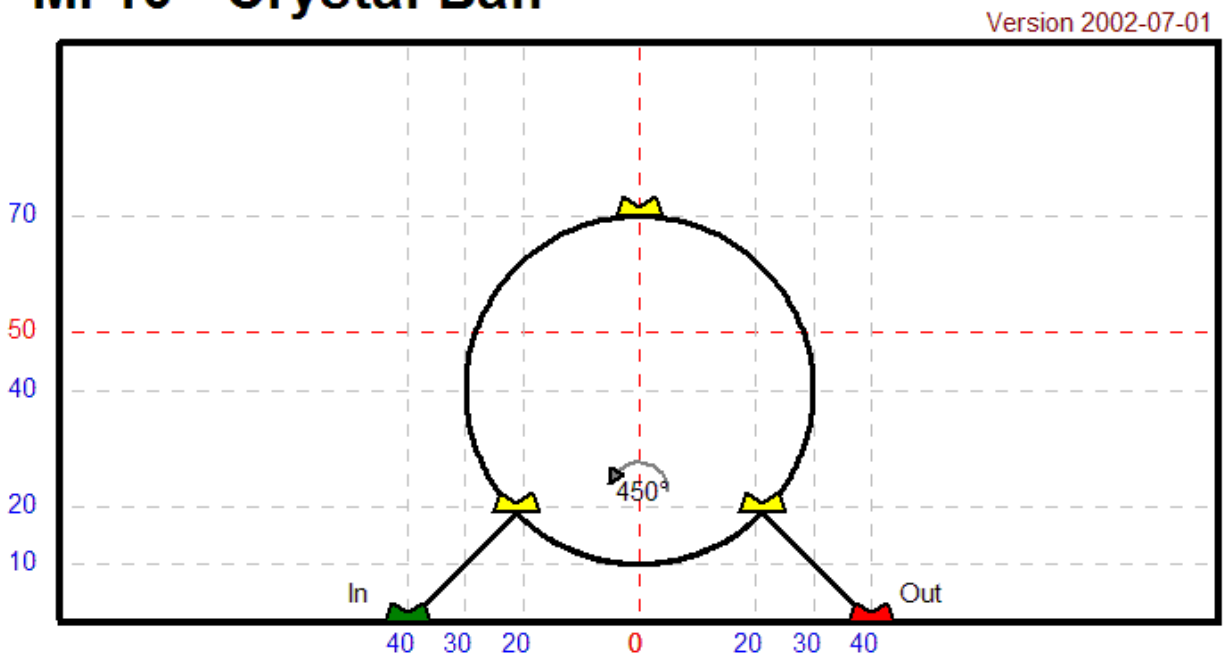
Critical Components

Center Rotation
Straight line

Explanation

Both 360° rotations are done in eight individual 45° steps.
Other components
  Speed control

MI 10 - Crystal Ball



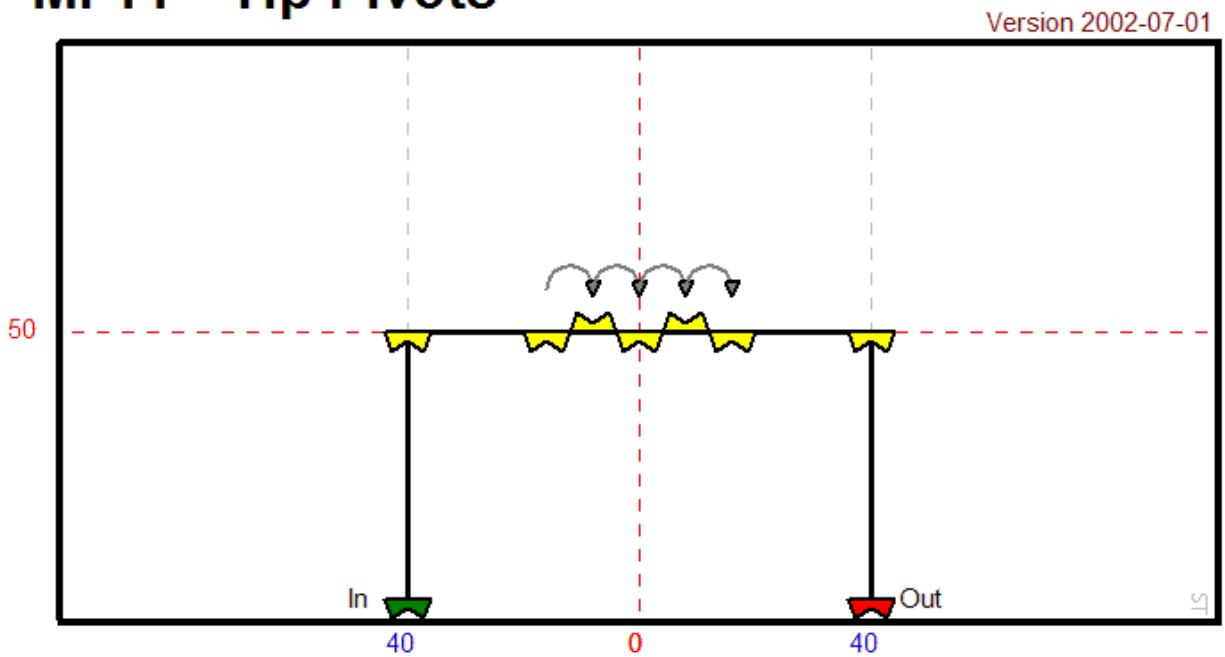
Critical Components

Circle
Inverted flight

Explanation

Other components
- Speed control
- Relative placement of components (size)

MI 11 - Tip Pivots



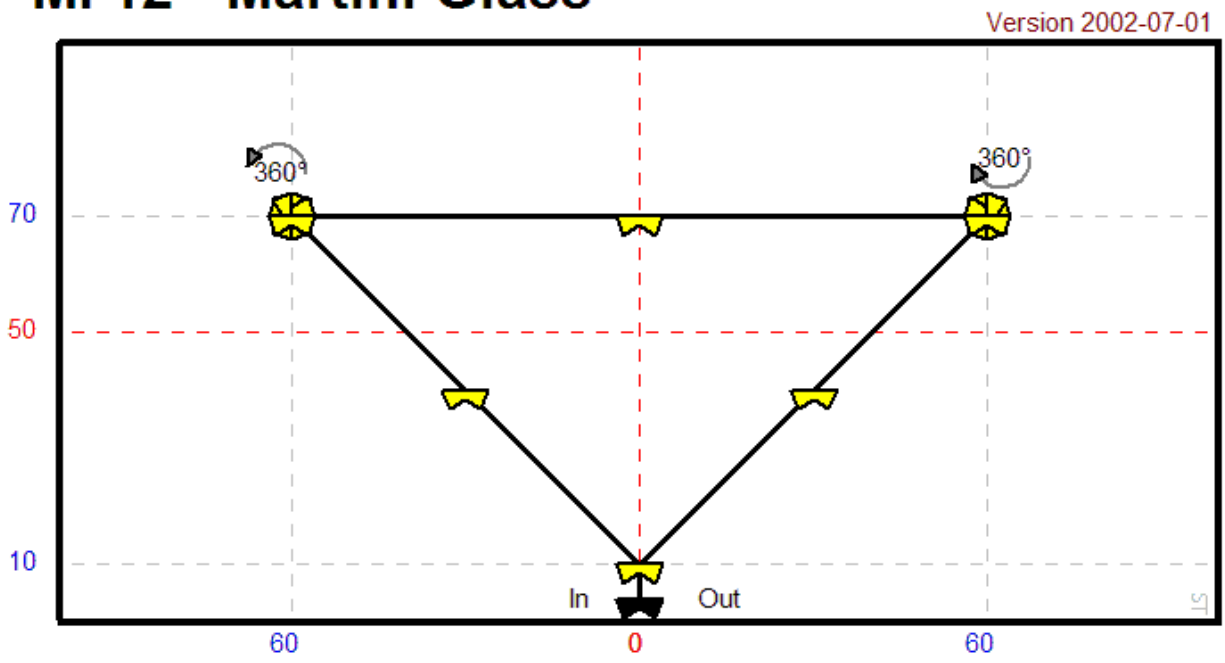
Critical Components

Wingtip rotations
Straight lines

Explanation

Other components
- Position within the precision grid
- Relative placement of components
- Speed control

MI 12 - Martini Glass



Critical Components

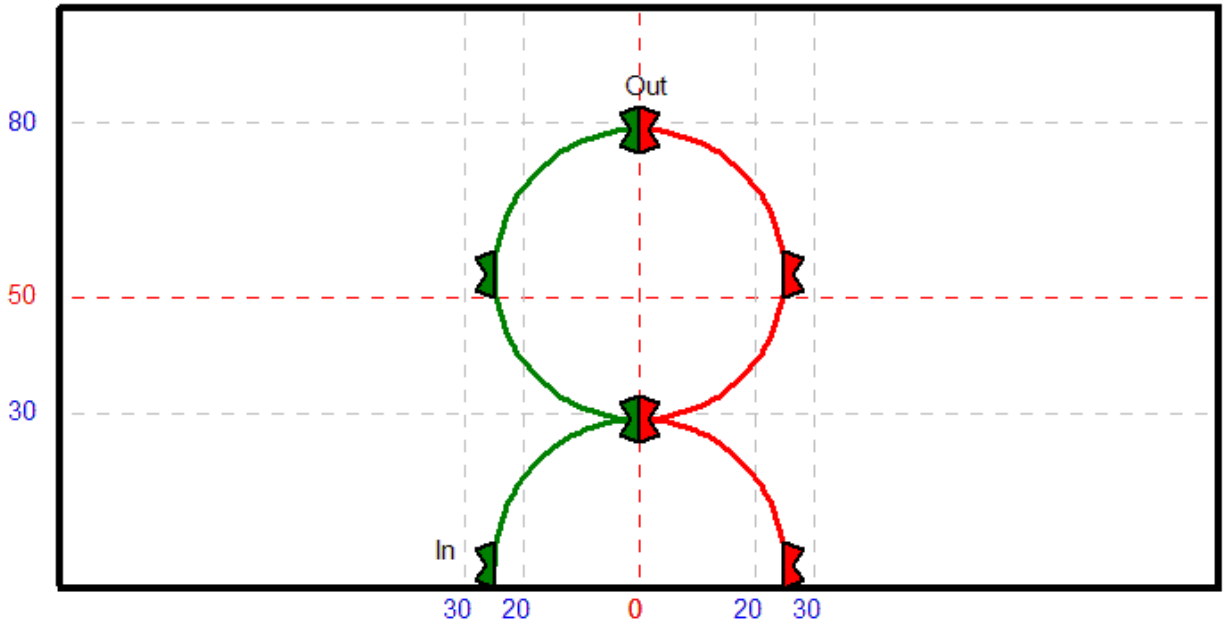
Straight lines
Center rotation

Explanation

Other components
- Position within the precision grid
- Relative placement of components
- Speed control

MP 01 - Qisses

Version 2002-07-01



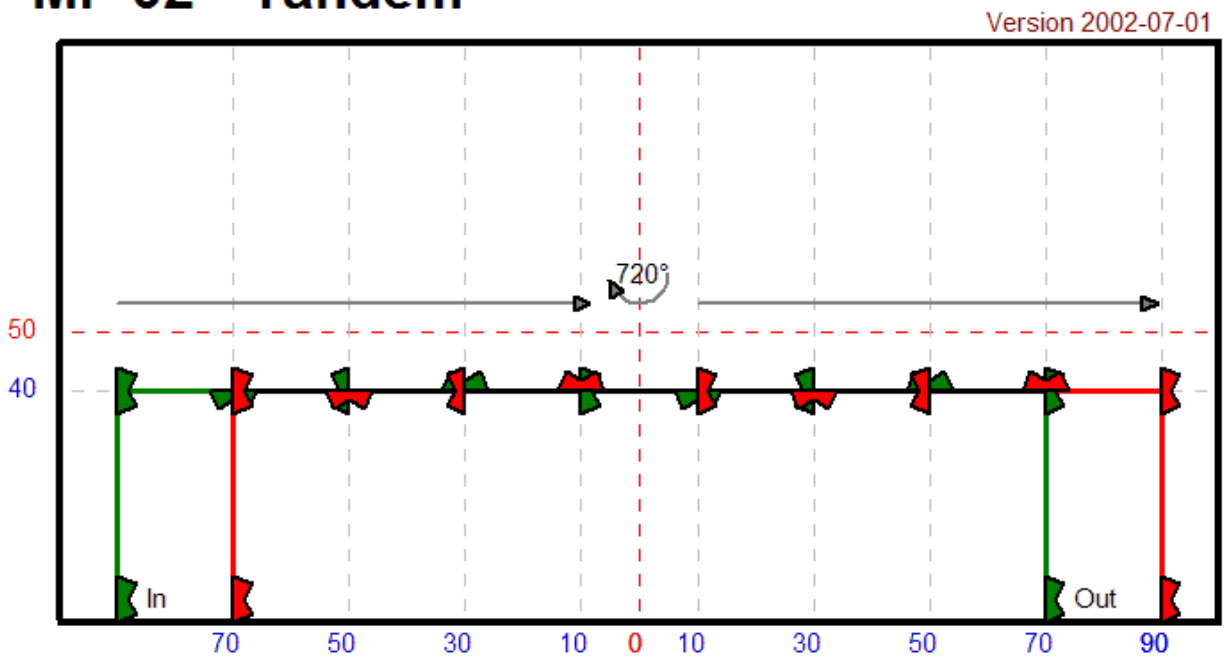
Critical Components

Relative placement of components
Speed control

Explanation

Other components
- Position within the precision grid
- Spacing

MP 02 - Tandem



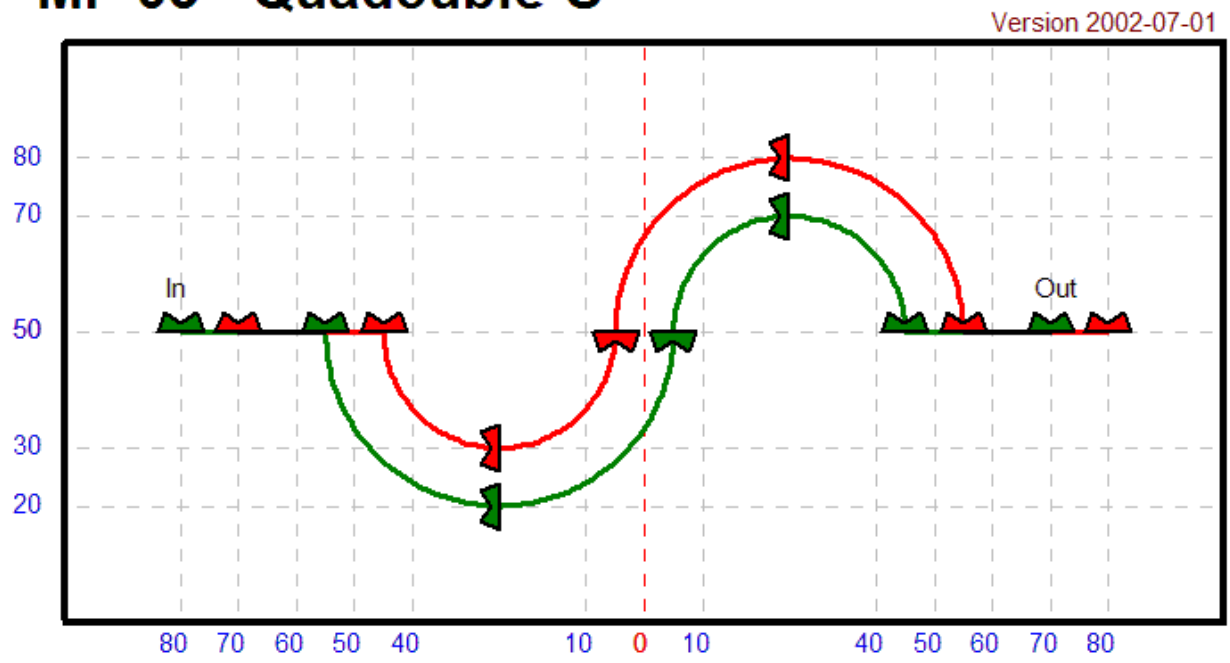
Critical Components

Center rotations
Timing

Explanation

The two full rotations are done simultaneously as the kites travel across the grid.
Other components
- Position within the precision grid
- Speed control
- Straight lines

MP 03 - Quadouble-S



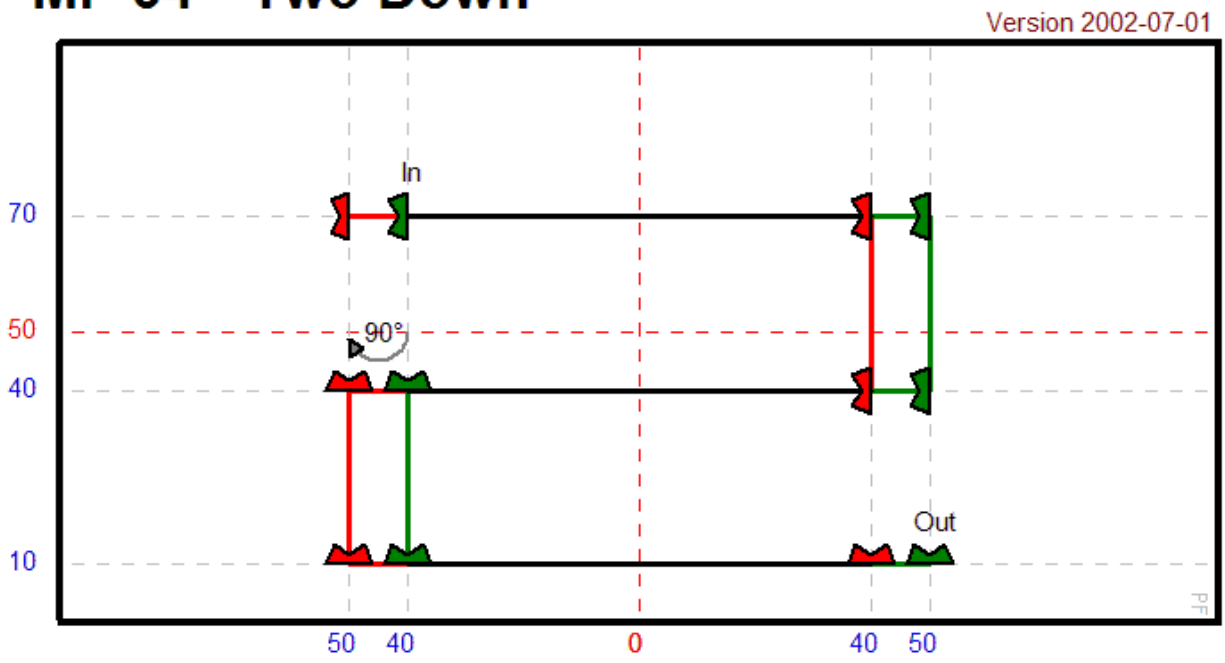
Critical Components

Arcs
Spacing

Explanation

Other components
- Inverted flight
- Position within the precision grid
- Speed control

MP 04 - Two Down



Critical Components

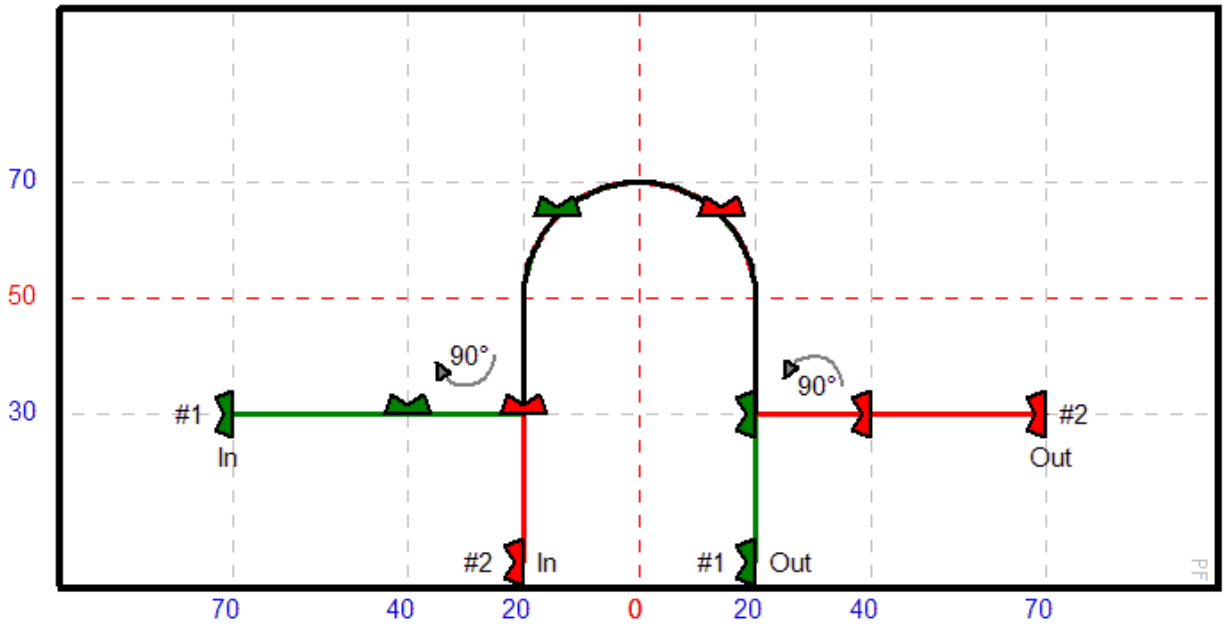
Speed control
Spacing

Explanation

Other components
- Position within the precision grid
- Straight lines
- Center rotation

MP 05 - Sticky Wicket

Version 2002-07-01



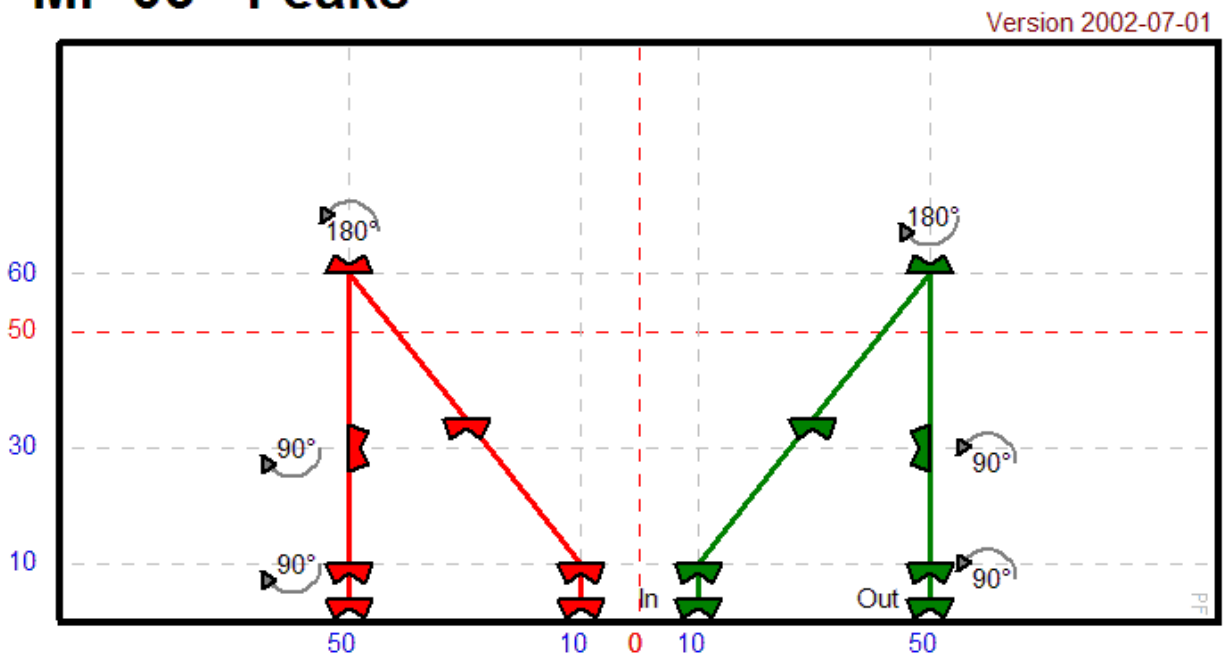
Critical Components

Arc
Spacing

Explanation

Kites #1 and #2 rotate right 90° simultaneously at <40 and <20 respectively.
Kites #1 and #2 rotate left 90° simultaneously at >20 and >40 respectively.
Kite #1 flies inverted from <40 to <20.
Kite #2 flies inverted from >20 to >40.
Other components
- Center rotation
- Position within the precision grid
- Relative placement of components
- Parallel lines

MP 06 - Peaks



Critical Components

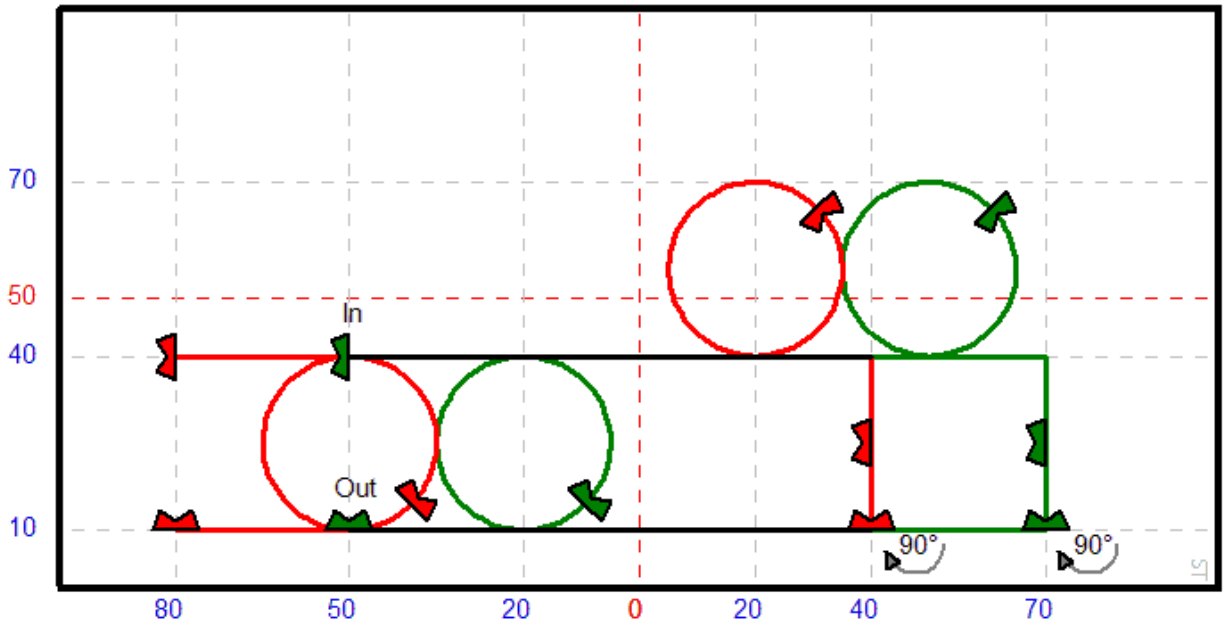
Diagonal flight
Relative placement of components

Explanation

Other components
- Launch
- Landing
- Center rotation

MP 07 - Circles and Slides

Version 2002-07-01



Critical Components

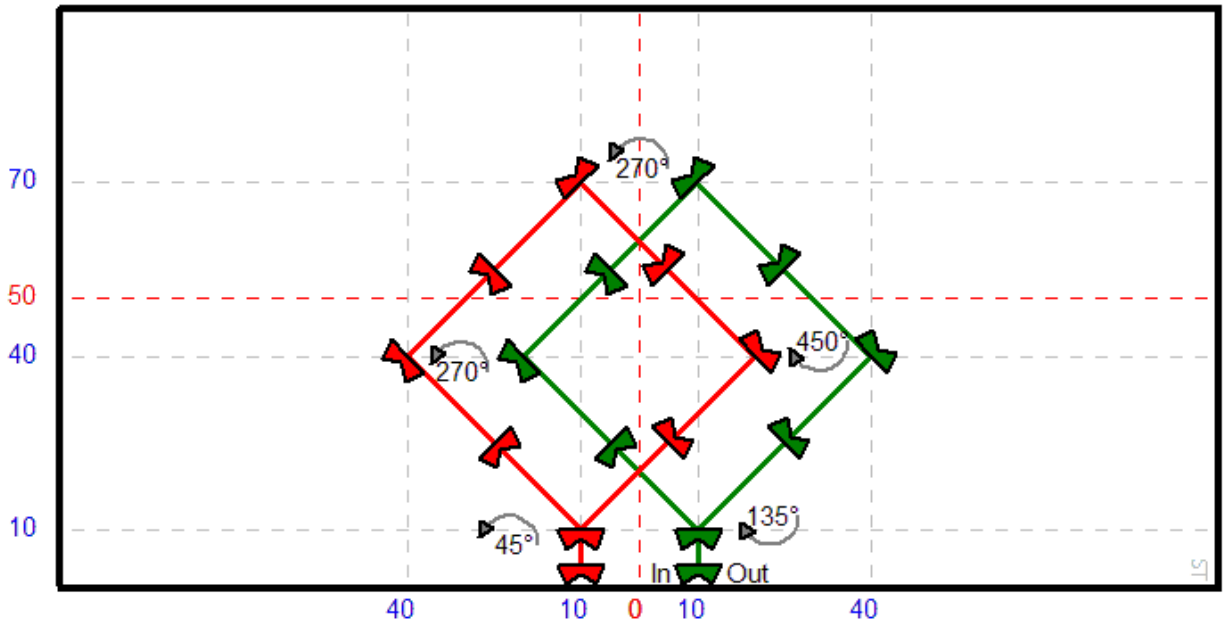
Circles
Inverted slide

Explanation

Both sets of circles are flown with the leading edge forward.
The circles on the left are flown first and go downward.
Other components
- Parallel lines
- Spacing

MP 08 - Double Diamonds

Version 2002-07-01



Critical Components

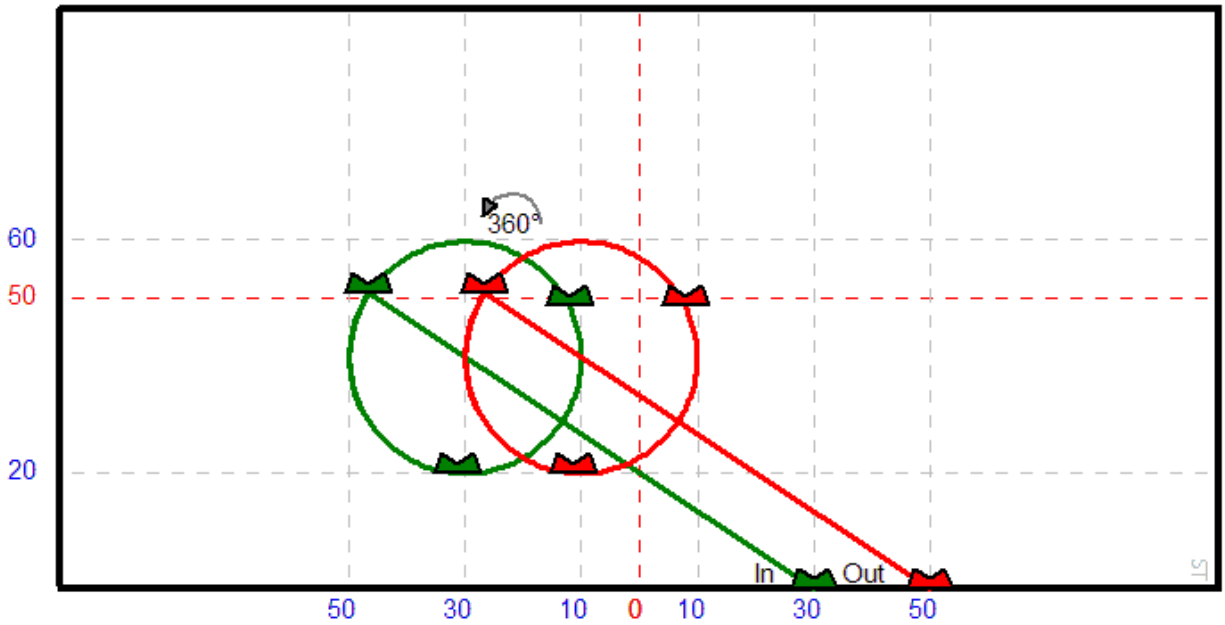
Spacing
Center rotation

Explanation

Both kites make a 45° left turn at ^10 after launching.
Both kites make a 135° right turn at ^ 10 before landing.
Other components
- Parallel lines
- Straight lines
- Relative placement of components

MP 09 - Lollypops

Version 2002-07-01



Critical Components

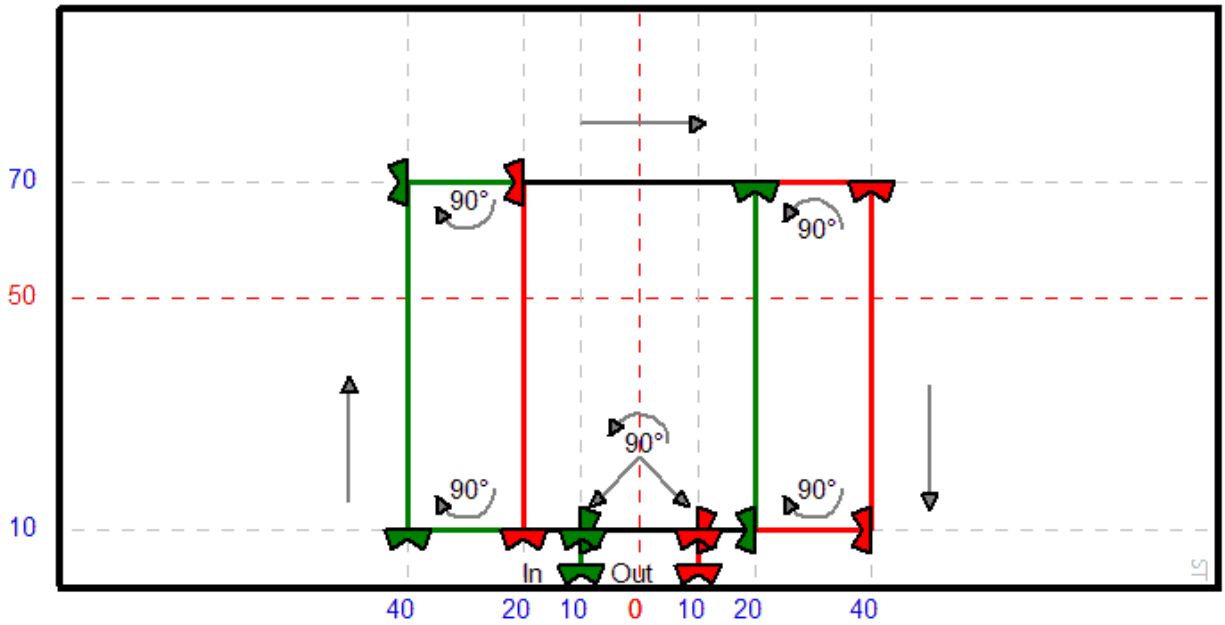
Diagonal flight
Circles

Explanation

Other components
- Inverted flight
- Parallel lines
- Spacing
- Relative placement of components

MP 10 - Parallel Boxes

Version 2002-07-01



Critical Components

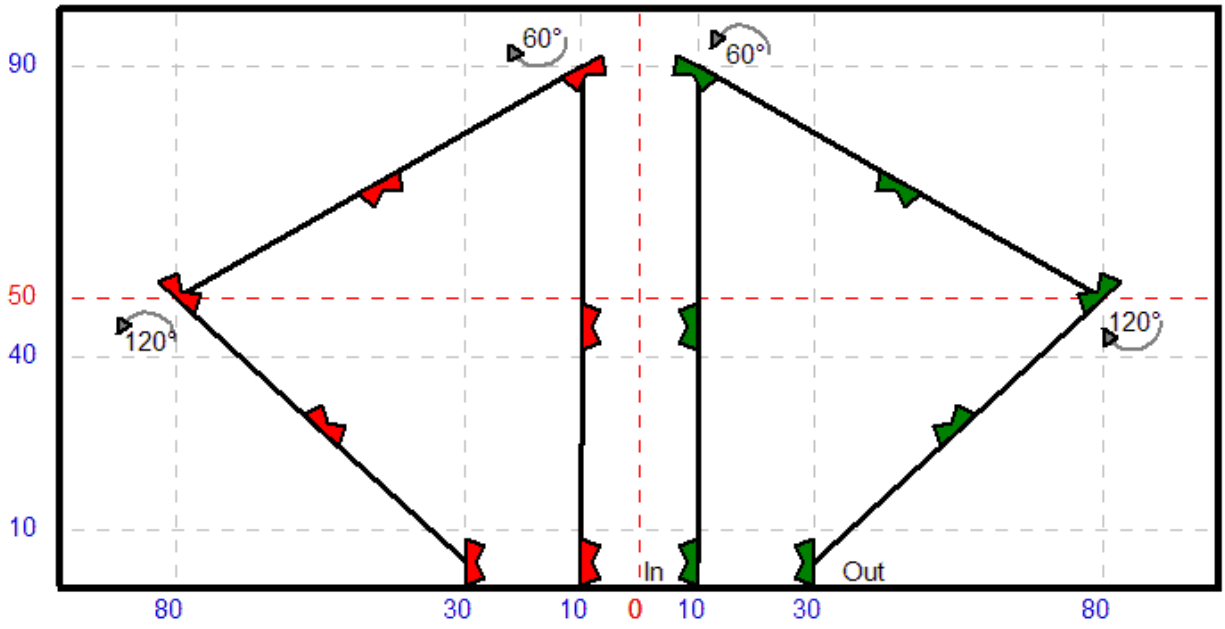
Straight lines
Speed control

Explanation

After launch and before landing, both kites rotate 90° left at ^10.
Other components
- Parallel lines
- Spacing
- Relative placement of components
- Center rotation

MP 11 - Triangle Split

Version 2002-07-01



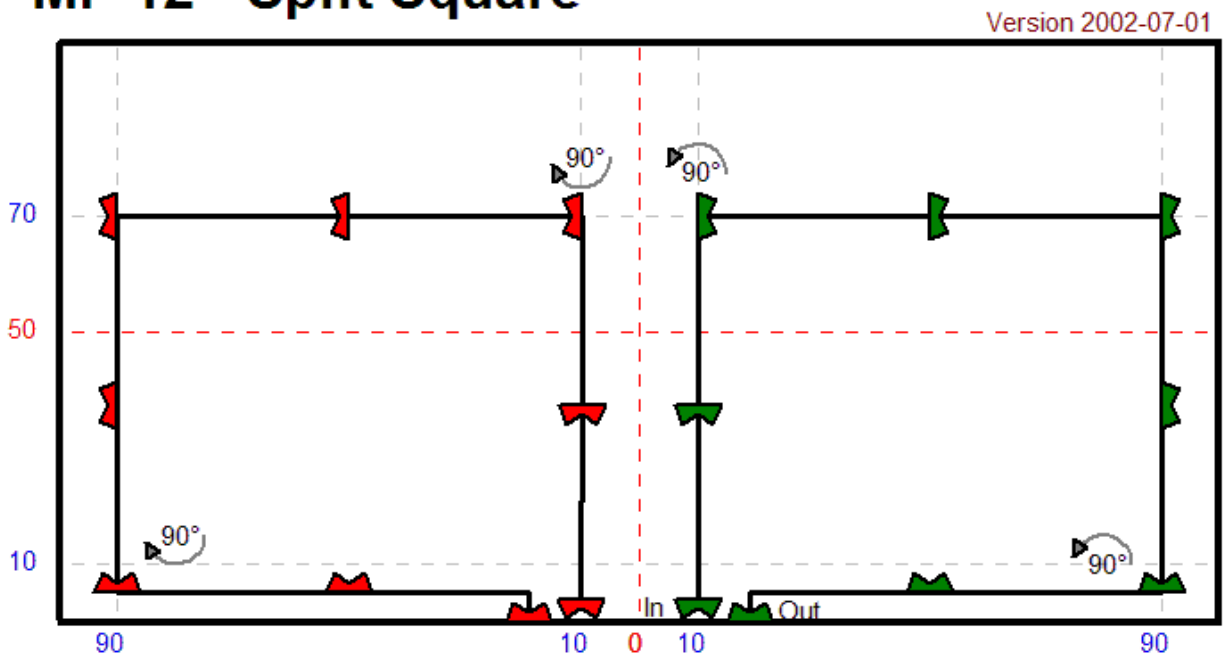
Critical Components

Straight lines
Position within the precision grid

Explanation

Other components
- Timing
- Center rotations
- Backwards flight
- Vertical slide

MP 12 - Split Square



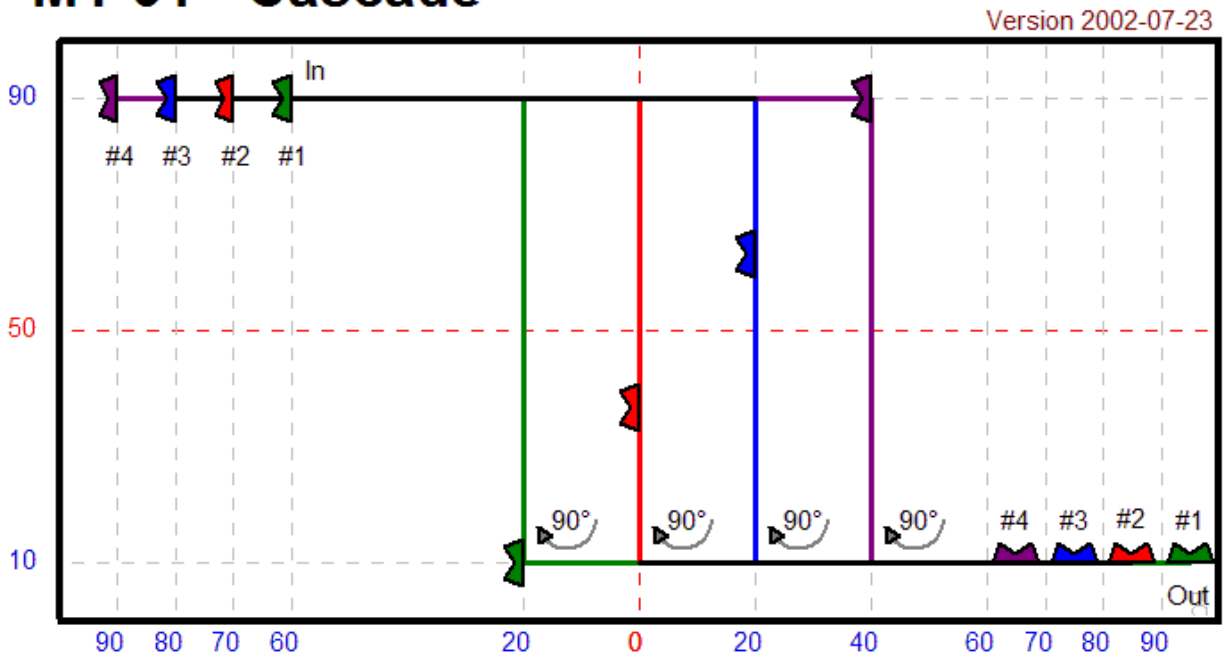
Critical Components

Straight lines
Relative placement of components

Explanation

Other components
- Inverted slide
- Vertical slide
- Center rotations
- Position within the precision grid

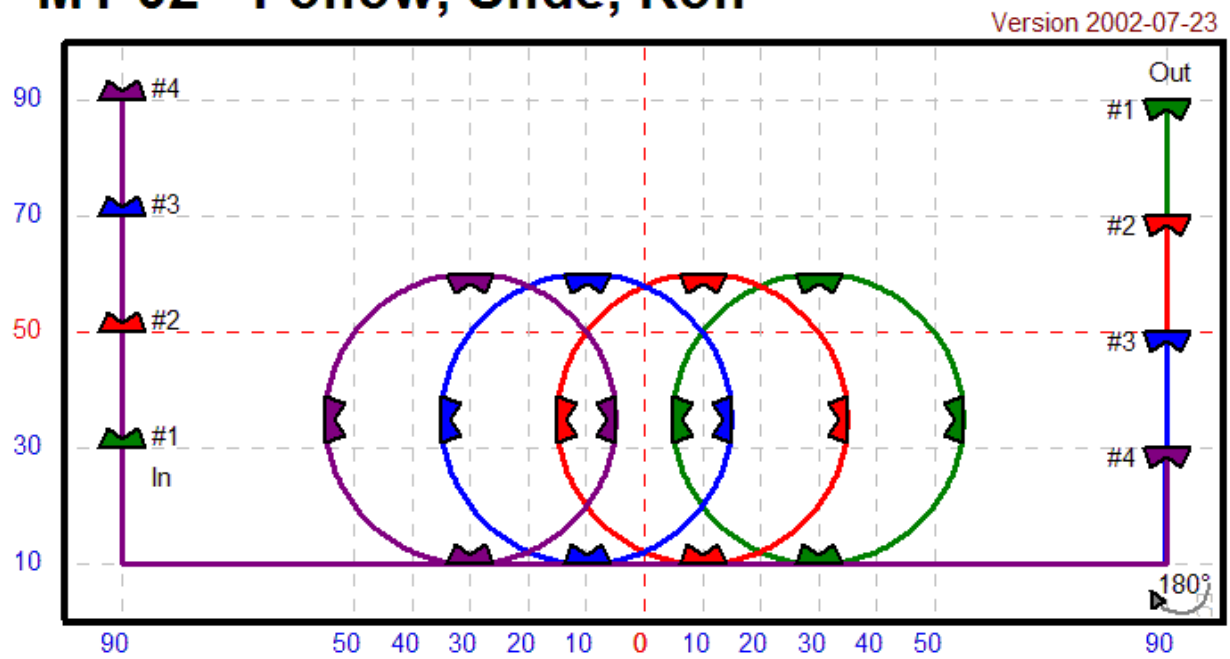
MT 01 - Cascade



Critical Components
Spacing
Speed control

Explanation
At the end of each downward vertical slide each kite rotates 90° and slides to the right.
Kite #1 passes under kites #2, #3, and #4 as it slides to the right.
Kite #2 passes under kites #3, and #4 as it slides to the right.
Kite #3 passes under kites #4 as it slides to the right.
Other components
- Position within the precision grid
- Straight lines
- Center rotations

MT 02 - Follow, Slide, Roll

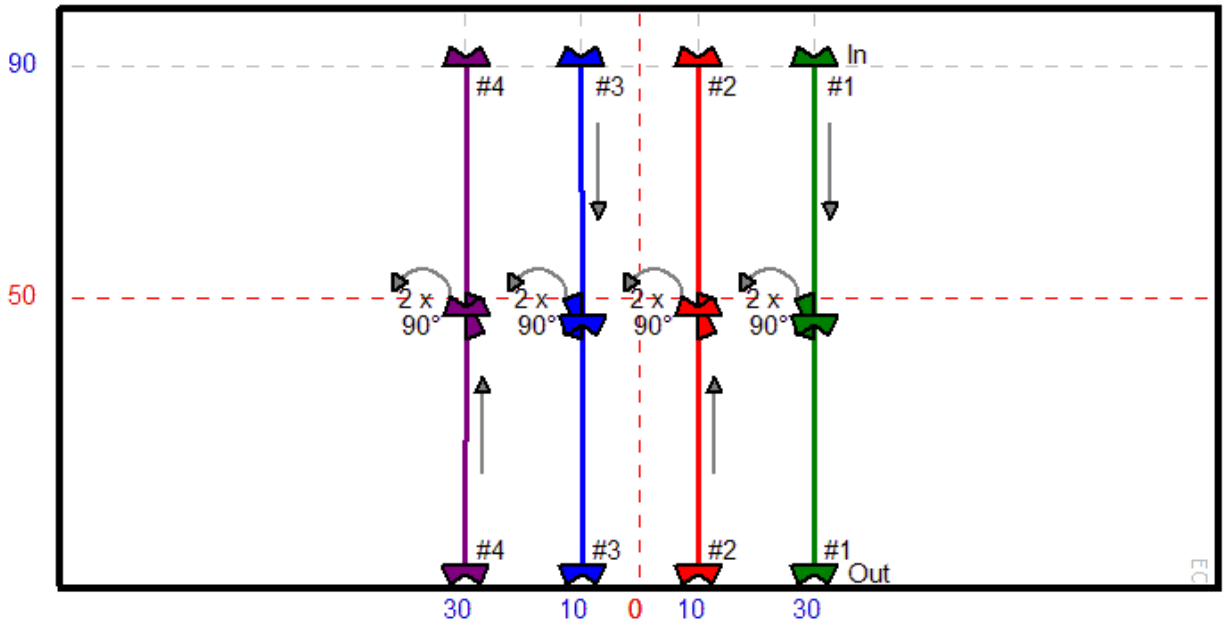


Critical Components
Circles
Spacing

Explanation
The circles are executed with the nose pointed outside the circle throughout.
Other components
- Straight lines
- Relative placement of components
- Inverted slide
- Center rotations

MT 03 - Vertical Thread and Rotate

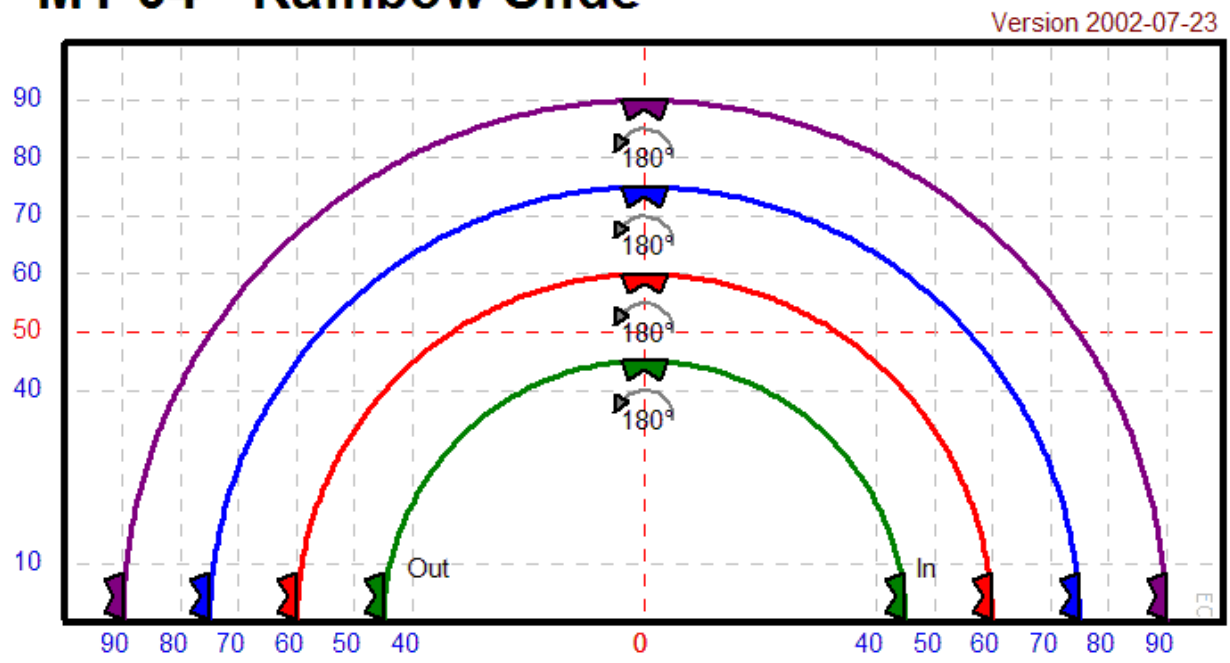
Version 2002-08-04



Critical Components
Straight lines
Center rotations

Explanation
The center rotations at ^50 are composed of two separate 90° rotations with a stop before and after each.
Other components
- Spacing
- Relative placement of components

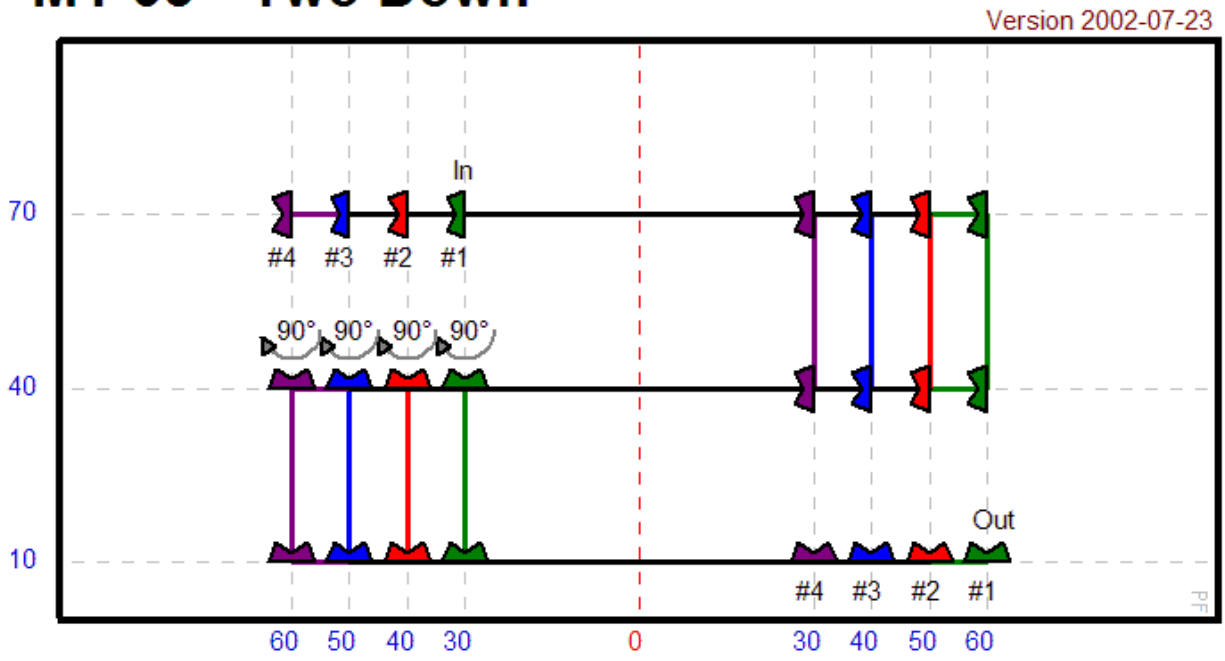
MT 04 - Rainbow Slide



Critical Components
Spacing
Speed control

Explanation
The launch is from a wingtip stand.
The 180° center rotations are executed in unison and end in a stop.
Other components
- Position within the precision grid
- Center rotations

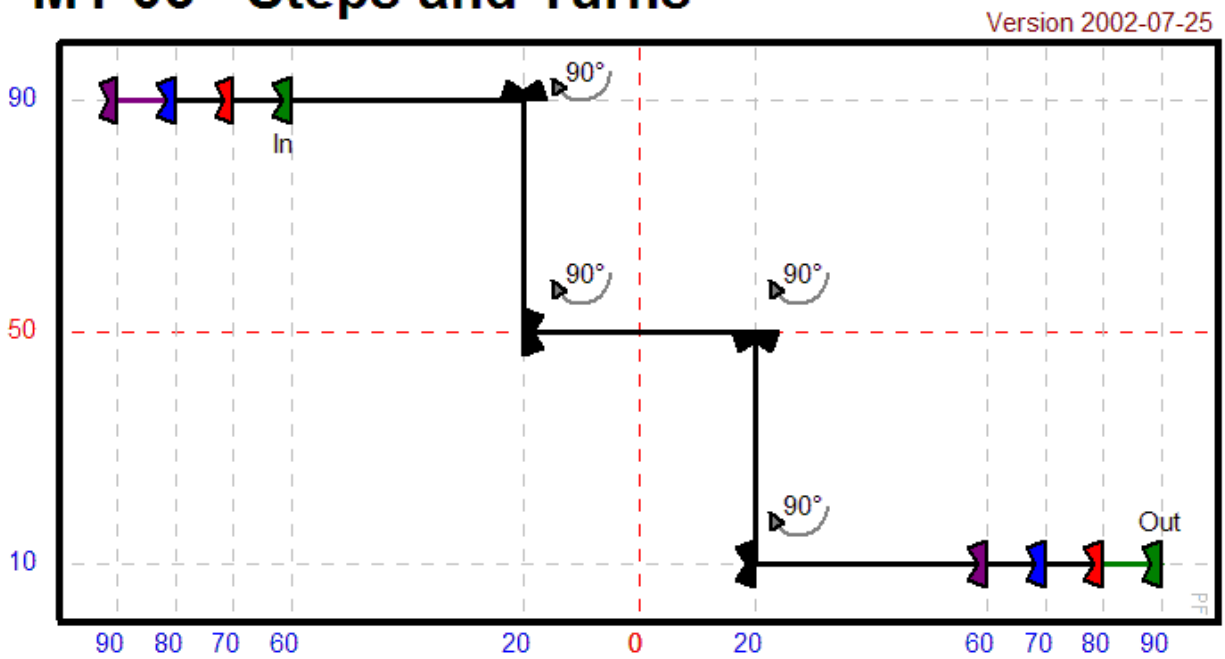
MT 05 - Two Down



Critical Components
Speed control
Spacing

Explanation
Other components
- Vertical slide
- Center rotation
- Position within the precision grid
- Straight lines

MT 06 - Steps and Turns

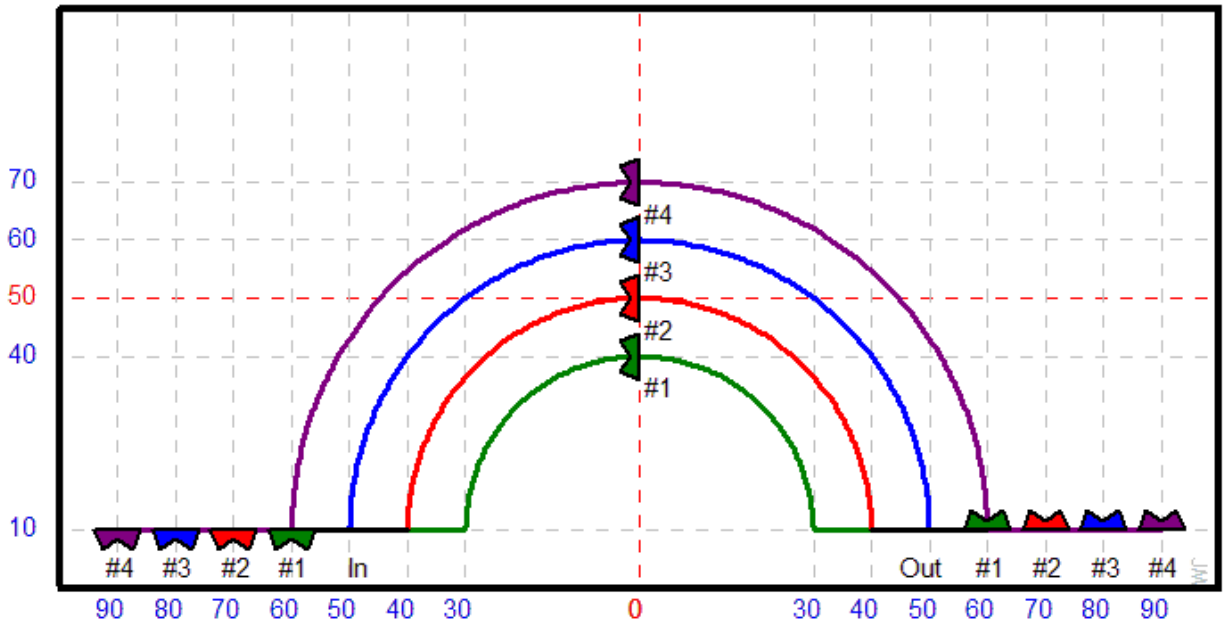


Critical Components
Relative placement of components
Center rotations

Explanation
The kites rotate 90° clockwise at each corner.
Other components
- Straight lines
- Position within the precision grid
- Backward flight

MT 07 - Arch du Carousel

Version 2002-07-23



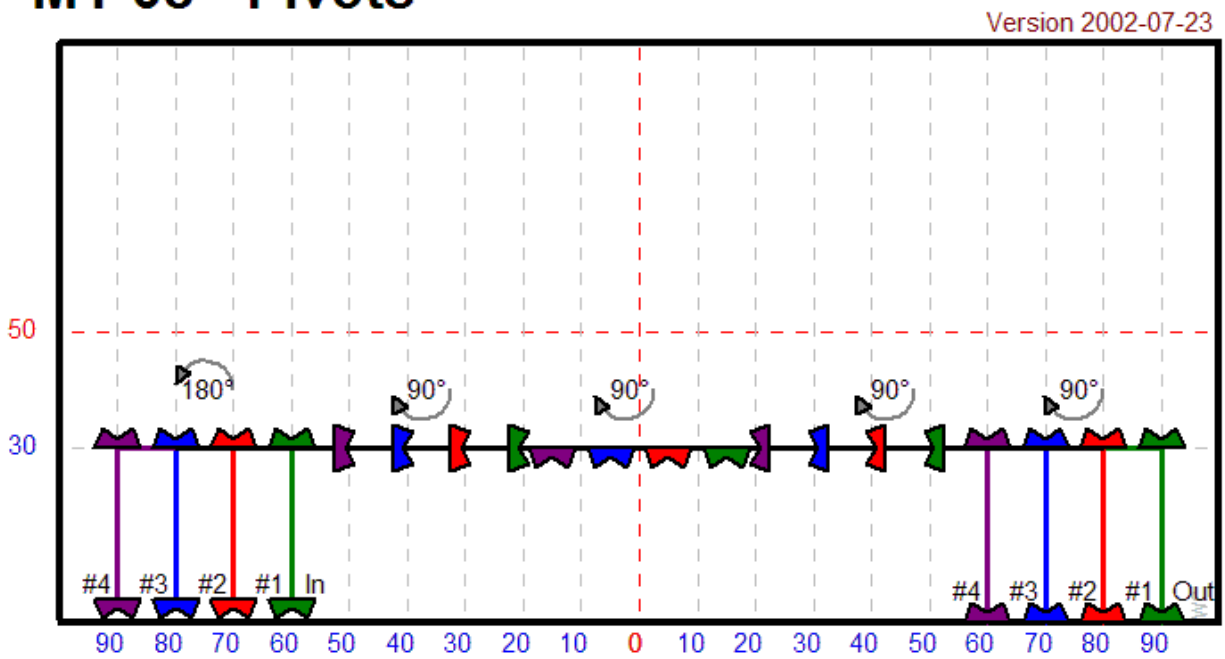
Critical Components

Arcs
Speed control

Explanation

Other components
- Relative placement of components
- Position within the precision grid
- Timing

MT 08 - Pivots



Critical Components

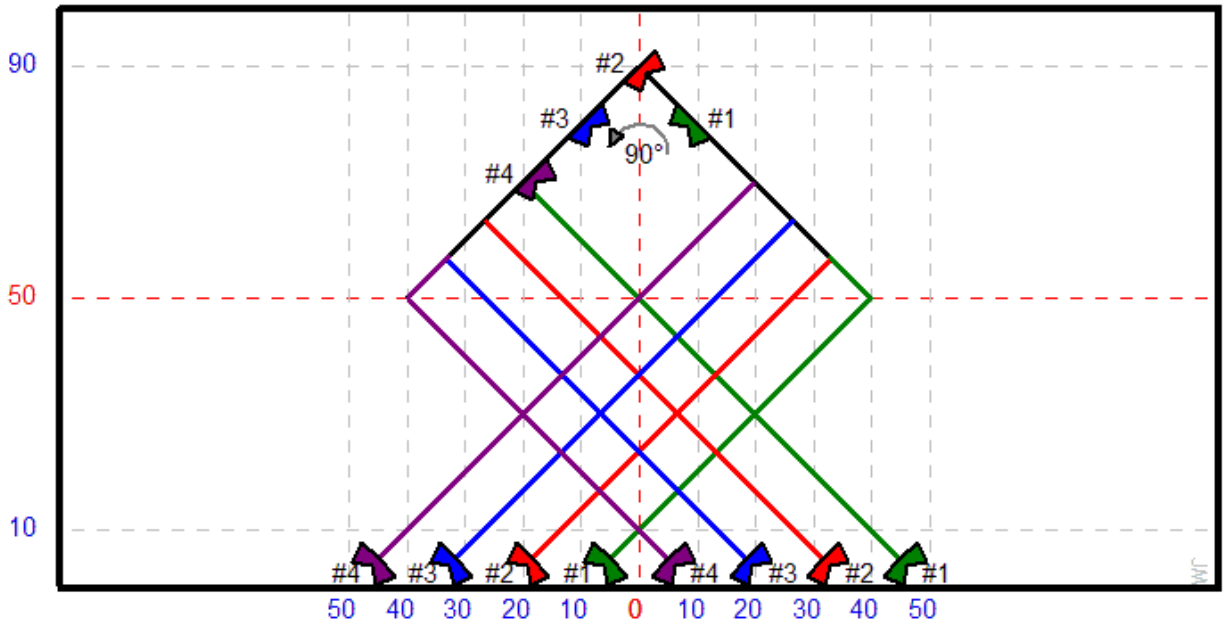
Center rotations
Straight lines

Explanation

All rotations by all kites are executed simultaneously.
Other components
- Position within the precision grid
- Relative placement of components
- Speed control
- Backward flight
- Horizontal slide

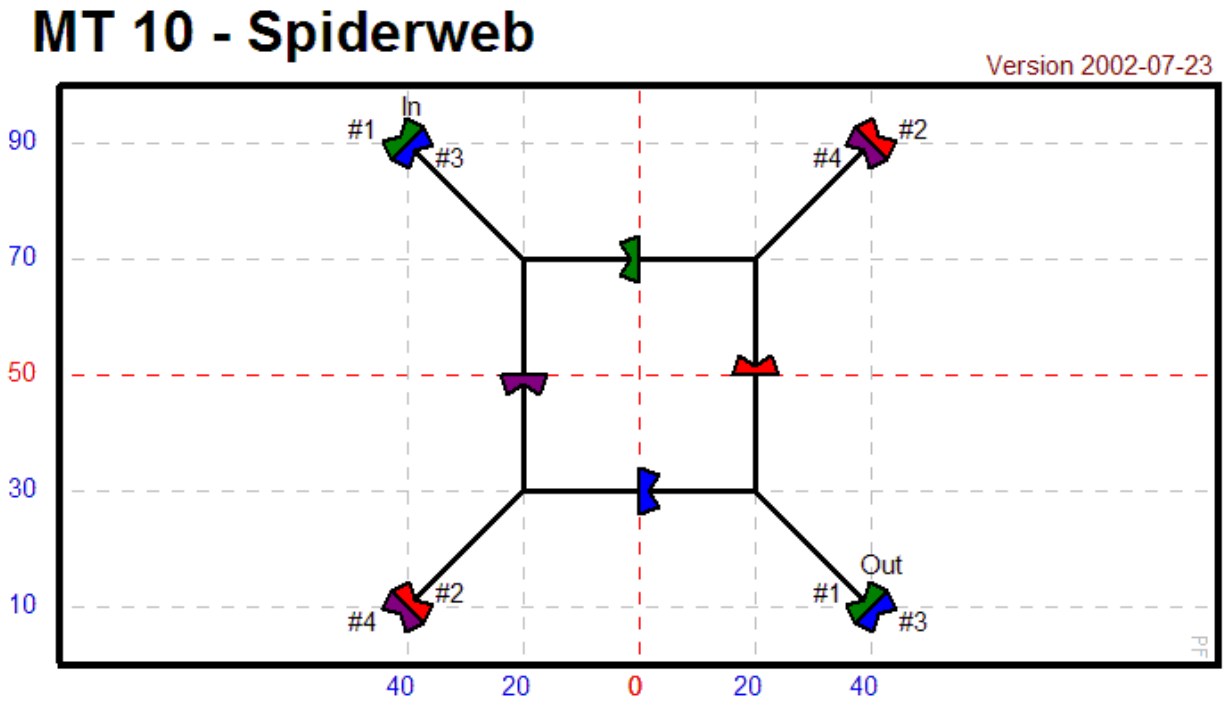
MT 09 - The Basket

Version 2002-07-23



Critical Components
Speed control
Spacing

Explanation
All kites launch at the same time with the noses pointed at a 45° angle to the right.
All kites reach the top right side of the basket at the same time.
All kites slide diagonally up to and down from <0> ^90
All kites land at the same time with the noses pointed at a 45° angle to the left.
Other components
- Timing
- Right angles
- Parallel lines



Critical Components
Parallel lines
Timing

Explanation
Each kite flies two sides of the square and exits at the opposite corner.
Other components
- Relative placement of components
- Speed control