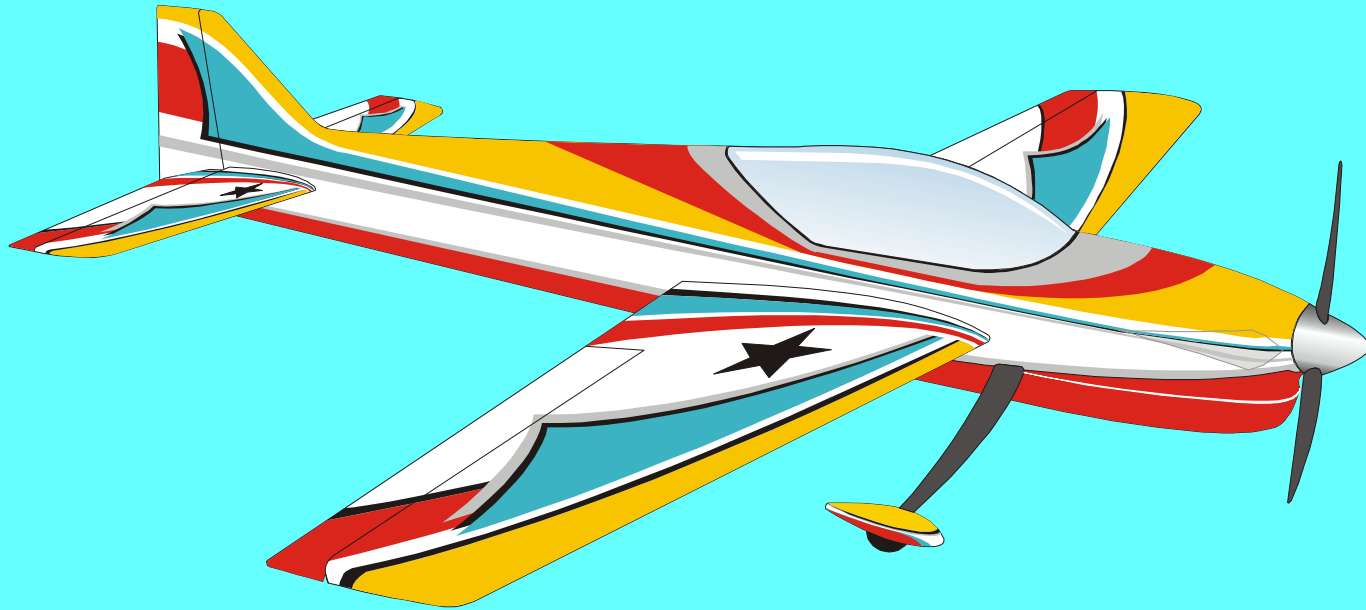
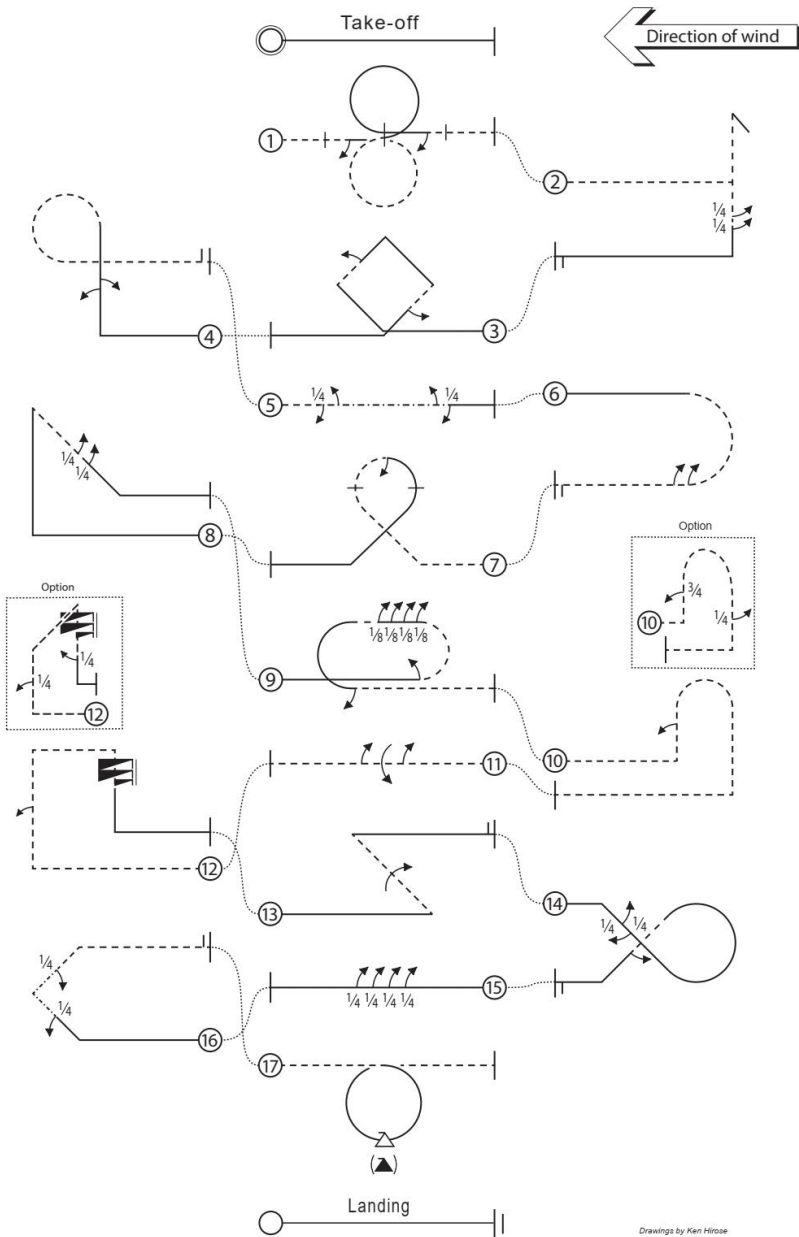


Flying and Judging F3A

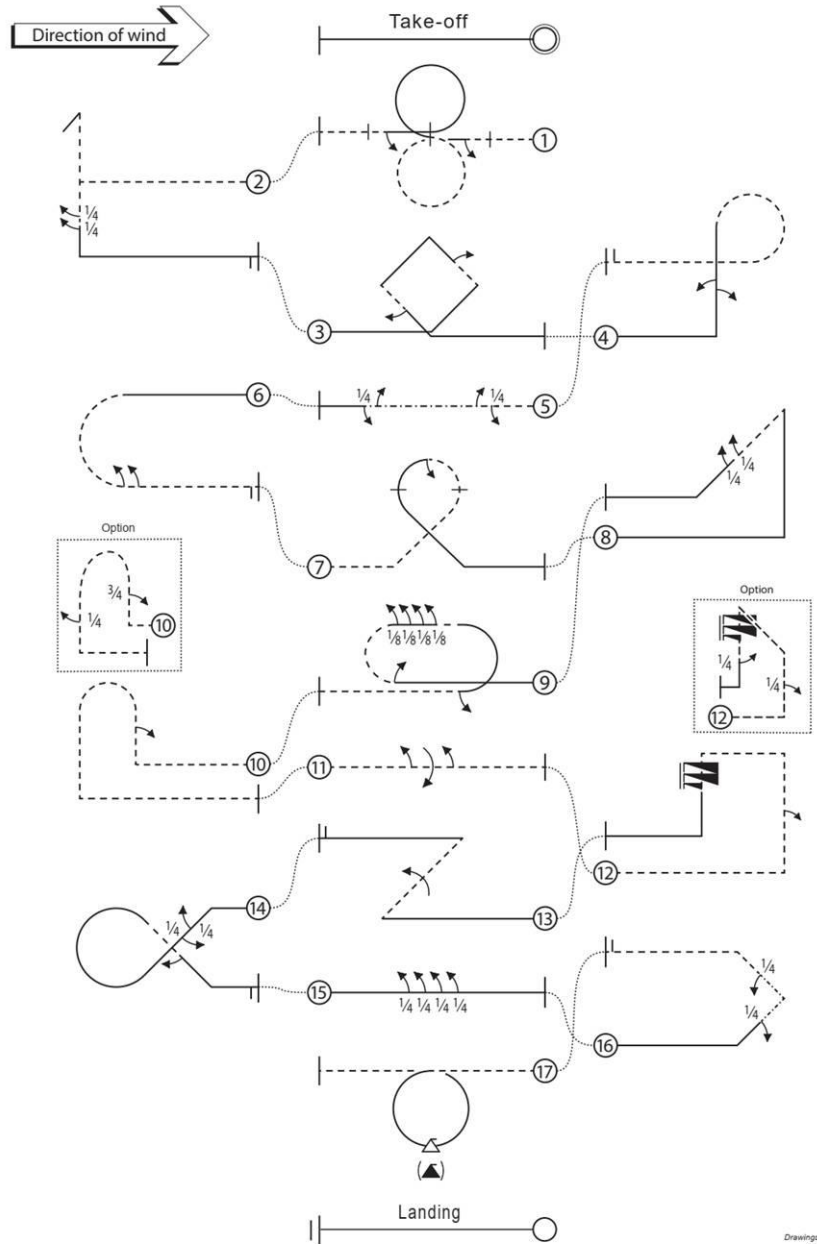


SCHEMATIC MANOEUVRE ILLUSTRATIONS
SCHEDULE P-21

PRELIMINARY SCHEDULE P-21 (2020-2021)

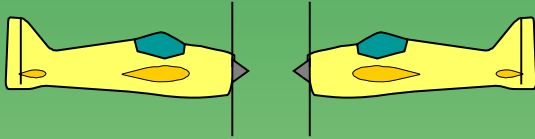


PRELIMINARY SCHEDULE P-21 (2020-2021)

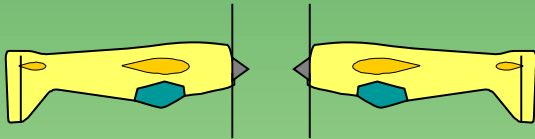




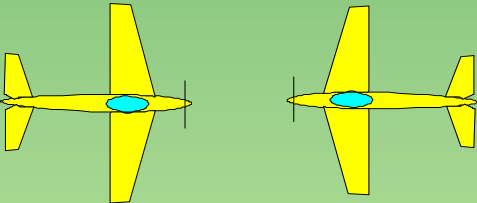
Explanations:



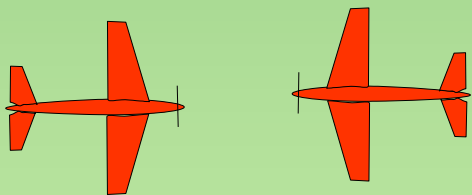
Aircraft upright



Aircraft inverted



**Aircraft in Knife-Edge
View from Top**

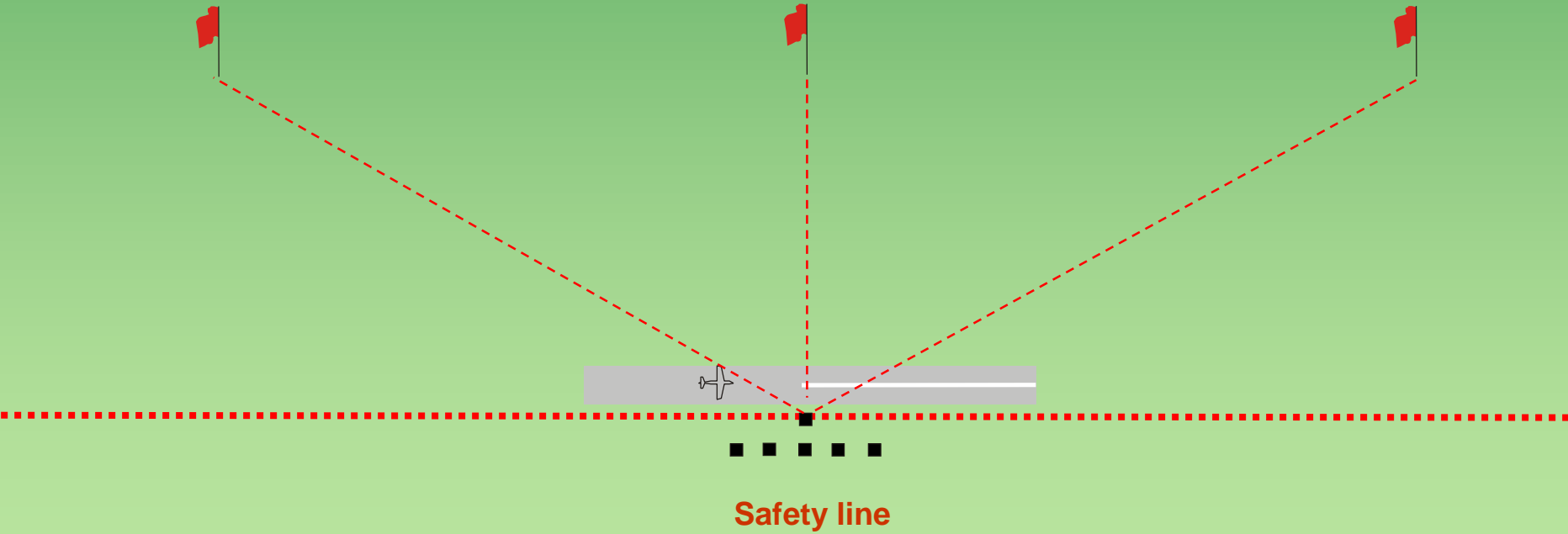


**Aircraft in Knife-Edge
View from Below**



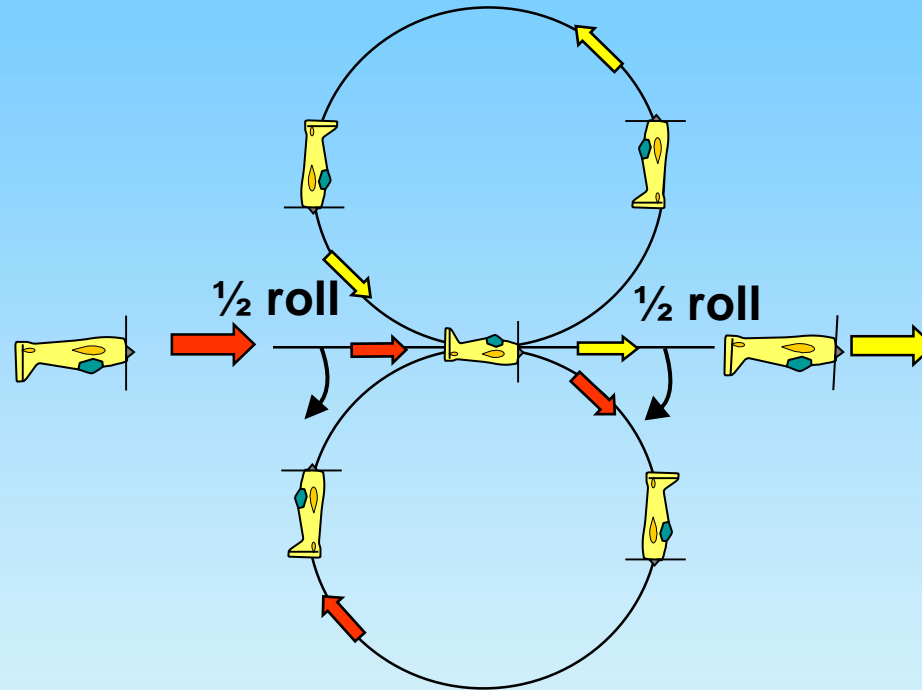
Take-off procedure (not judged, not scored)

 wind





P-21.01 Vertical 8 with $\frac{1}{2}$ roll, $\frac{1}{2}$ roll



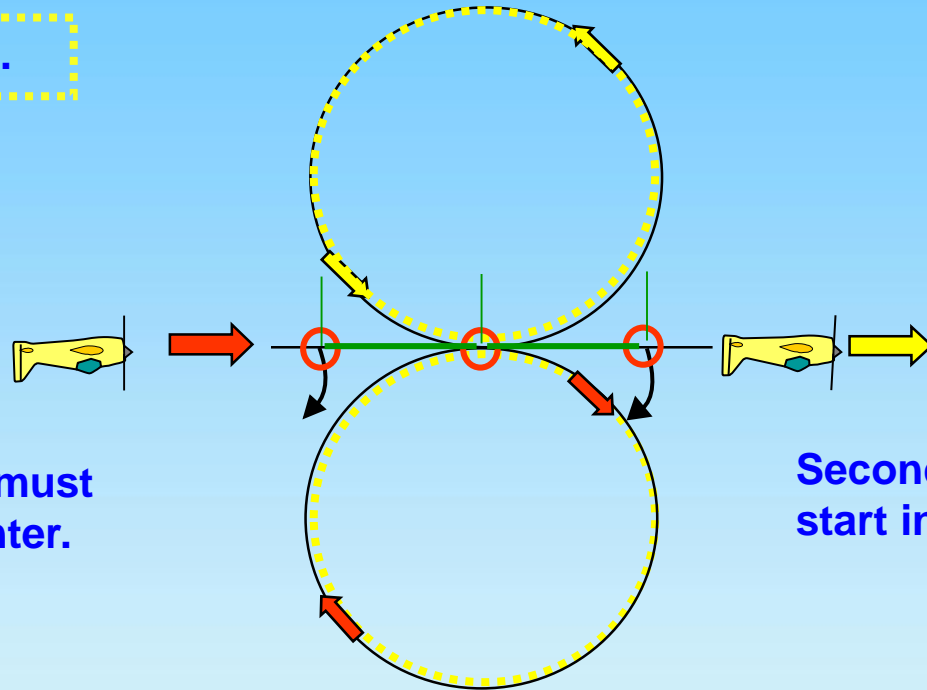
From inverted, perform a $\frac{1}{2}$ roll ending in the centre, push through a loop, pull through a loop, perform a $\frac{1}{2}$ roll starting in the centre, exit inverted.





P-21.01 Vertical 8 with $\frac{1}{2}$ roll, $\frac{1}{2}$ roll

All radii are equal.



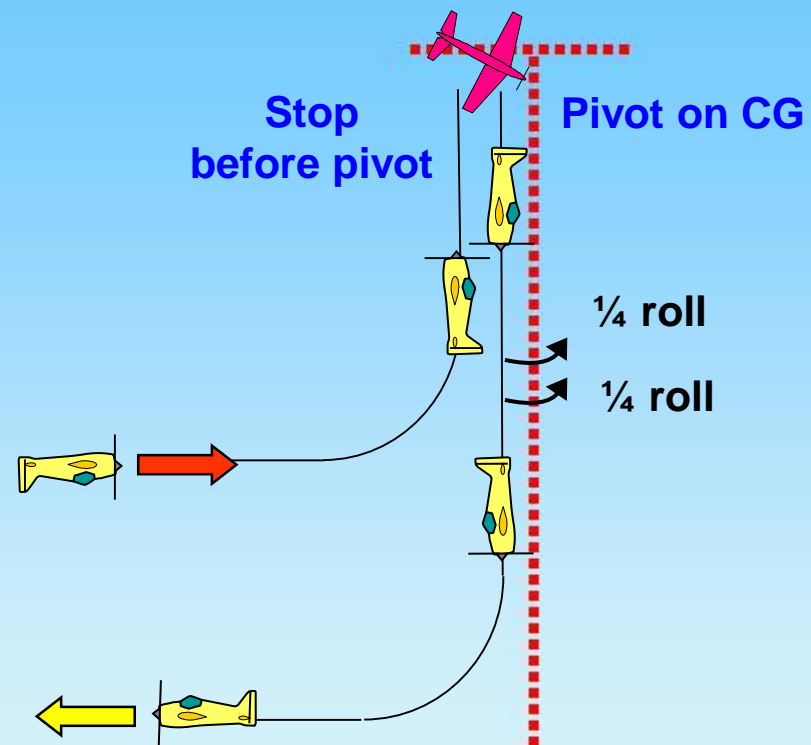
First half roll must end in the center.

Second half roll must start in the center.





P-21.02 Stall Turn with consecutive two $\frac{1}{4}$ rolls



From inverted, push through a $\frac{1}{4}$ loop into a vertical upline, perform a stall turn into a vertical downline, perform consecutively two $\frac{1}{4}$ rolls, pull through a $\frac{1}{4}$ loop, exit upright.



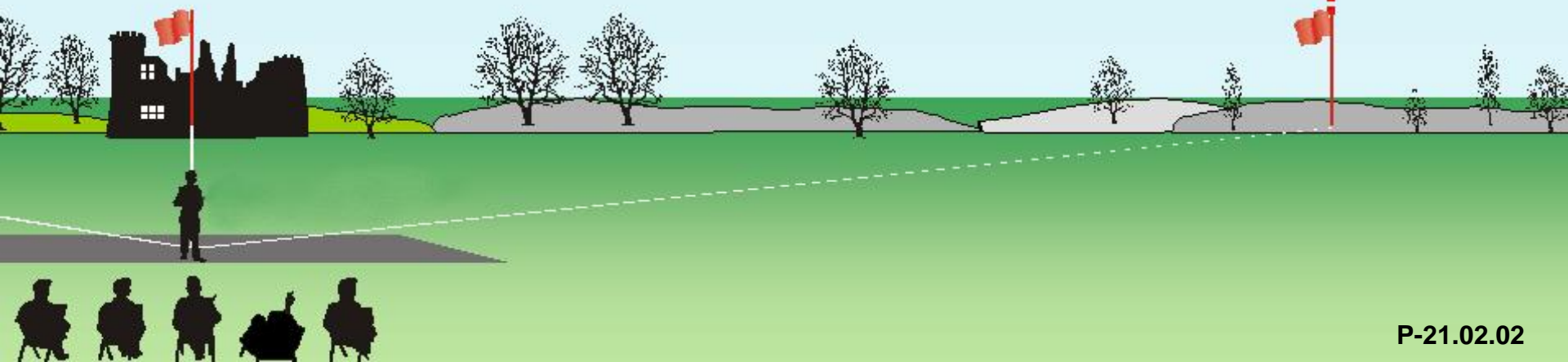
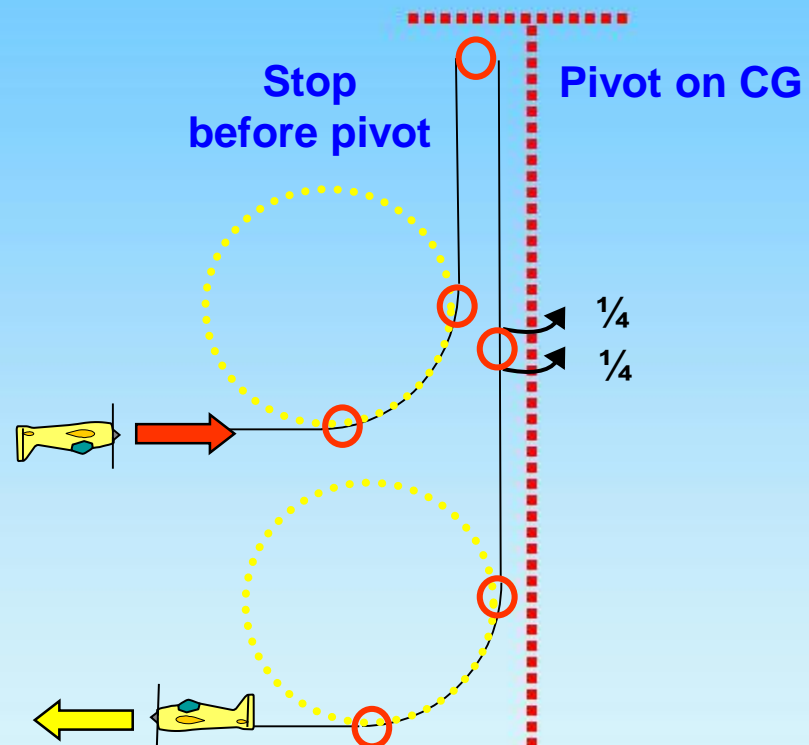
P-21.02 Stall Turn with consecutive two $\frac{1}{4}$ rolls

$\frac{1}{4}$ rolls centered on middle of the line.

Two wing spans or more
– zero points!

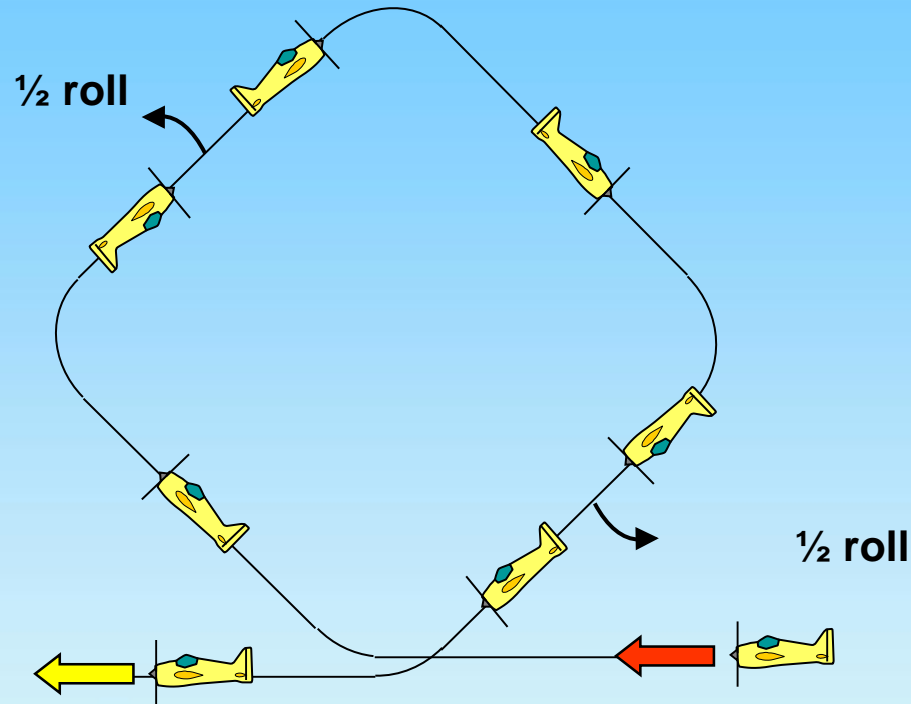
Lines between part rolls must be short
and of recognizable length.

All radii are equal.





P-21.03 Square Loop on Corner with $\frac{1}{2}$ roll, $\frac{1}{2}$ roll

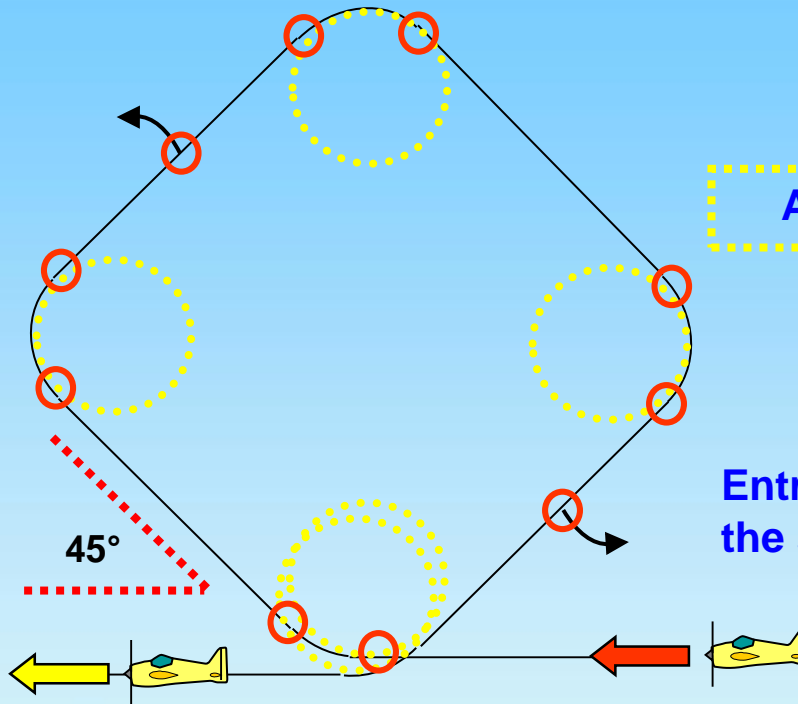


From upright, pull through a $\frac{1}{8}$ loop into a 45° upline, pull through a $\frac{1}{4}$ loop into a 45° upline, perform a $\frac{1}{2}$ roll, push through a $\frac{1}{4}$ loop into a 45° downline, push through a $\frac{1}{4}$ loop into a 45° downline, perform a $\frac{1}{2}$ roll, pull through a $\frac{1}{8}$ loop, exit upright.



P-21.03 Square Loop on Corner with $\frac{1}{2}$ roll, $\frac{1}{2}$ roll

$\frac{1}{2}$ rolls on middle of the line.



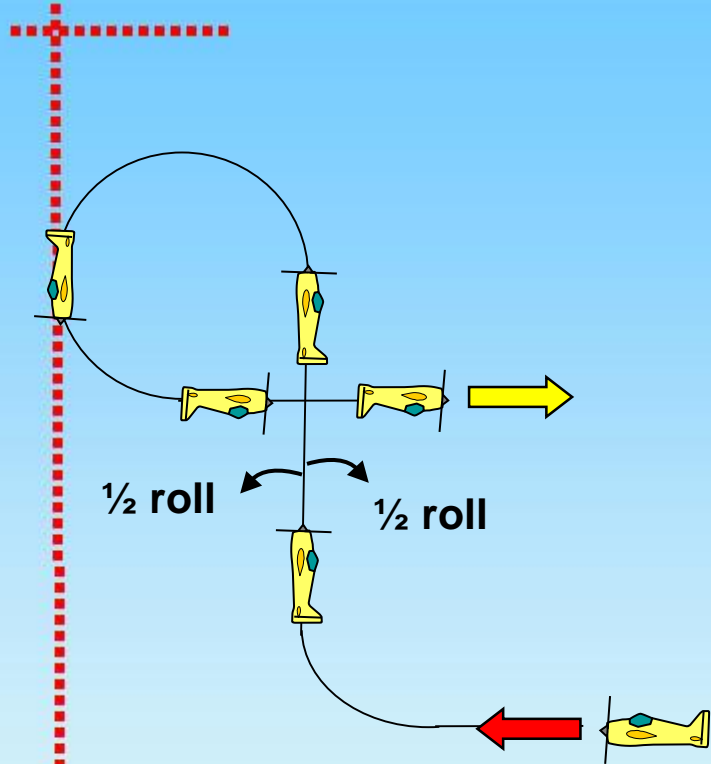
All radii are equal.

Entry and exit must be at the same altitude.





P-21.04 Figure 9 with consecutive two 1/2 rolls in opposite directions

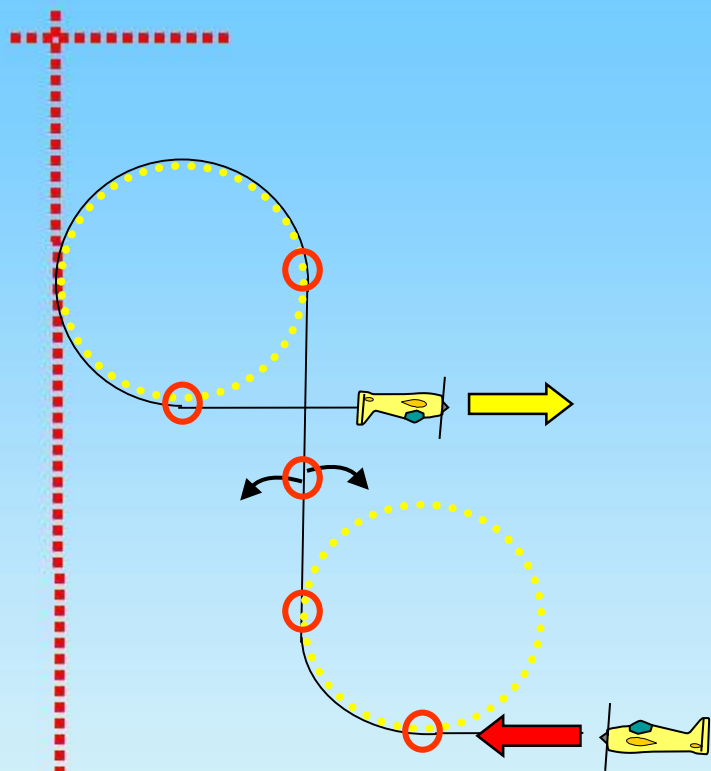


From upright, pull through a 1/4 loop into a vertical upline, perform consecutively two 1/2 rolls, in opposite directions, push through a 3/4 loop, exit inverted.





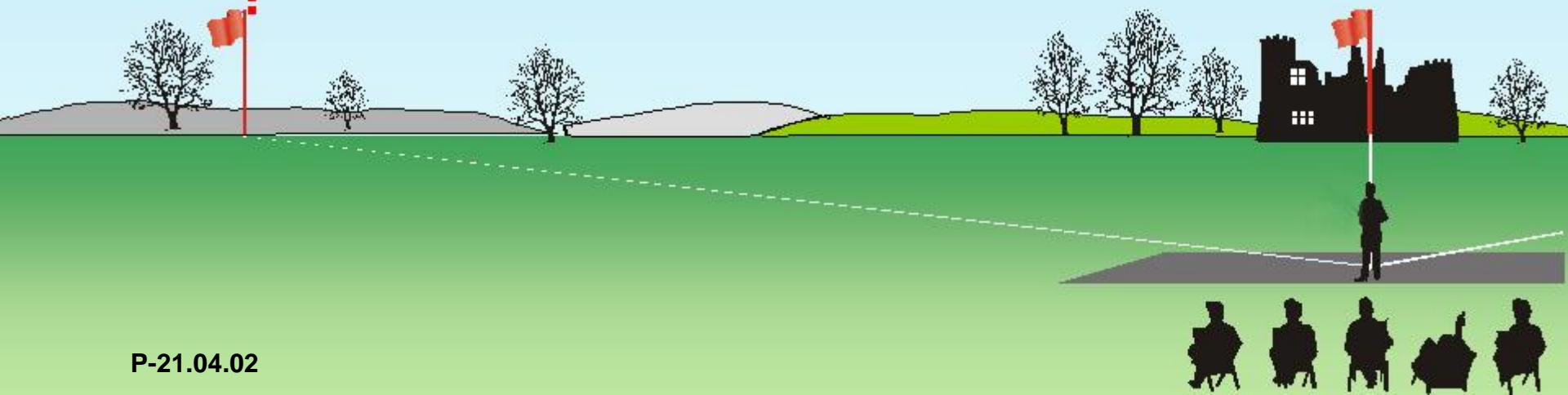
P-21.04 Figure 9 with consecutive two 1/2 rolls in opposite directions



1/2 rolls centered on middle of the line.

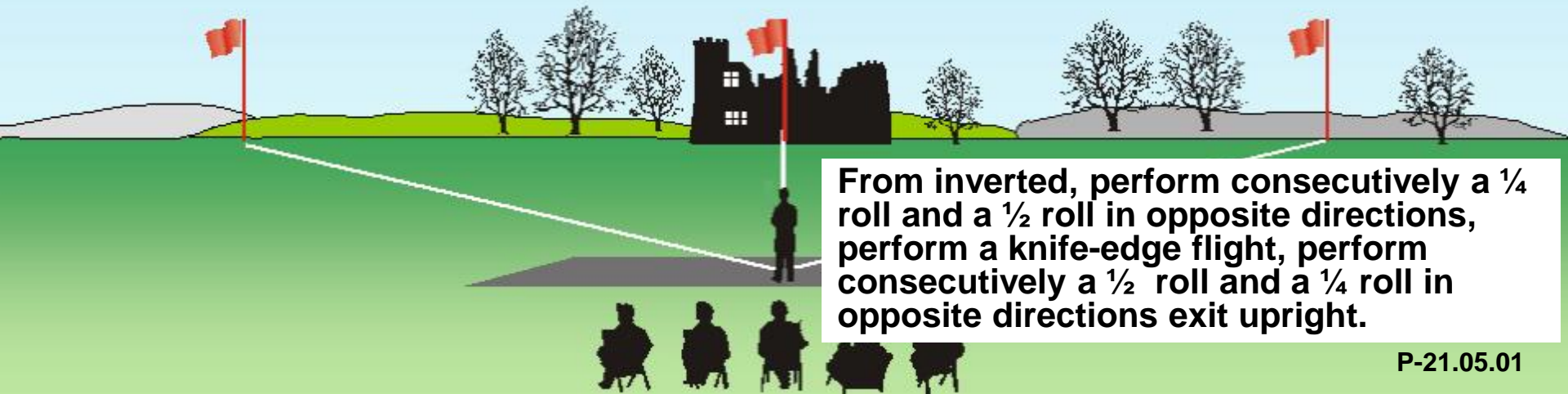
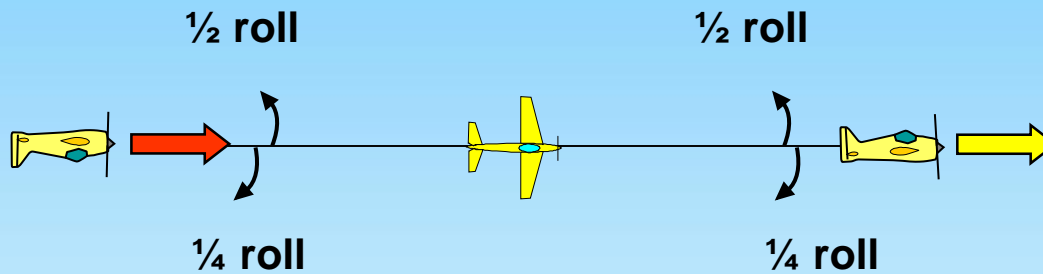
Between part rolls in opposite directions there must be no line.

All radii are equal.





P-21.05 Knife-Edge flight with consecutive $\frac{1}{4}$, $\frac{1}{2}$ roll in opposite directions, consecutive $\frac{1}{2}$, $\frac{1}{4}$ roll in opposite directions

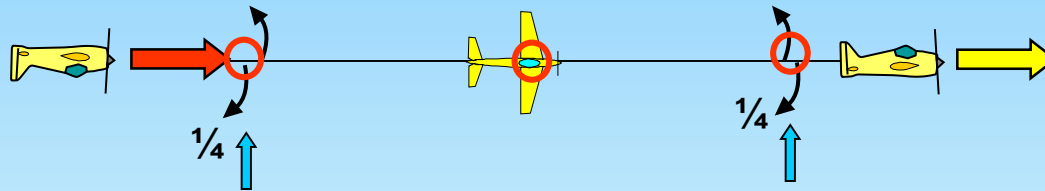


From inverted, perform consecutively a $\frac{1}{4}$ roll and a $\frac{1}{2}$ roll in opposite directions, perform a knife-edge flight, perform consecutively a $\frac{1}{2}$ roll and a $\frac{1}{4}$ roll in opposite directions exit upright.



P-21.05 Knife-Edge flight with consecutive $\frac{1}{4}$, $\frac{1}{2}$ roll in opposite directions, consecutive $\frac{1}{2}$, $\frac{1}{4}$ roll in opposite directions

During the knife edge the wing must be in the vertical plane.

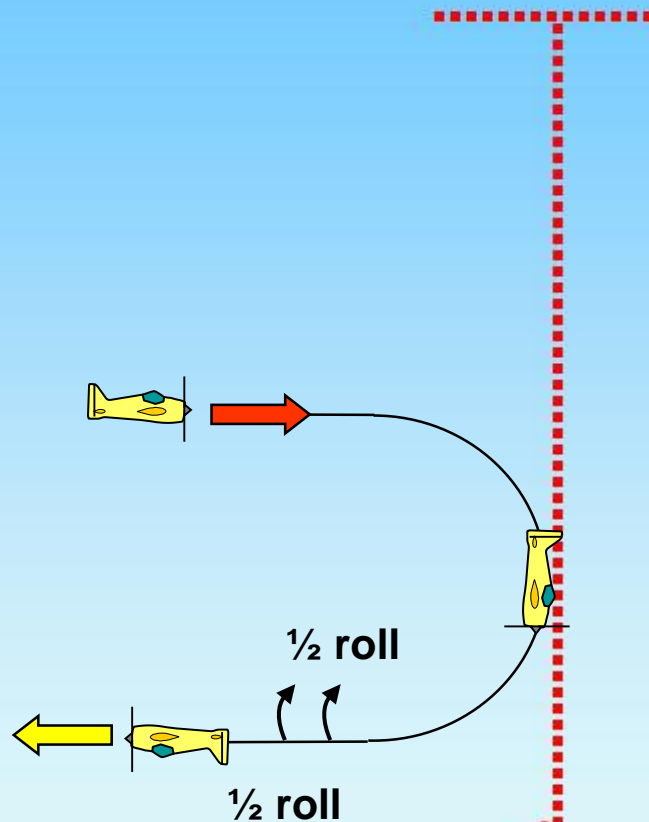


Between rolls in opposite directions there must be no line.





P-21.06 Inverted Split S with consecutive two $\frac{1}{2}$ rolls



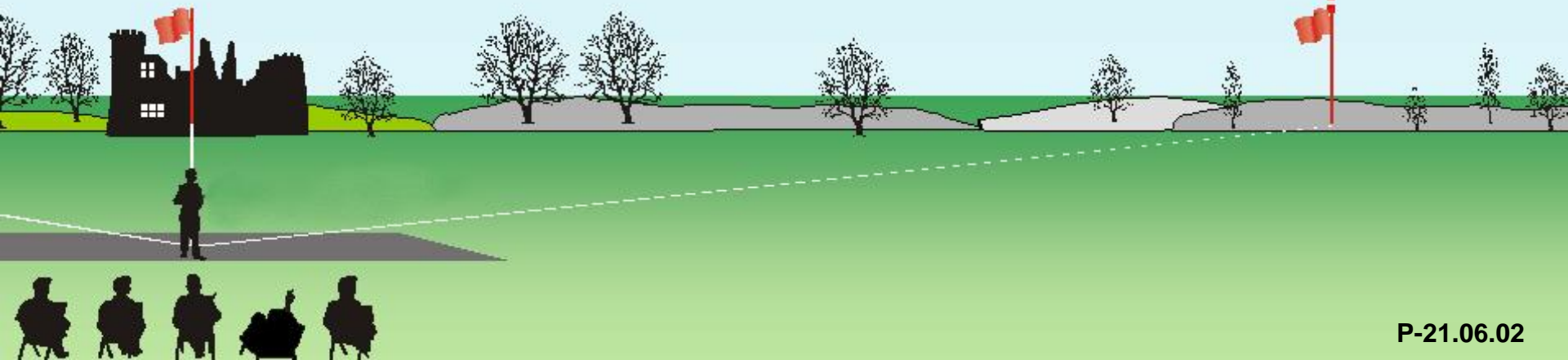
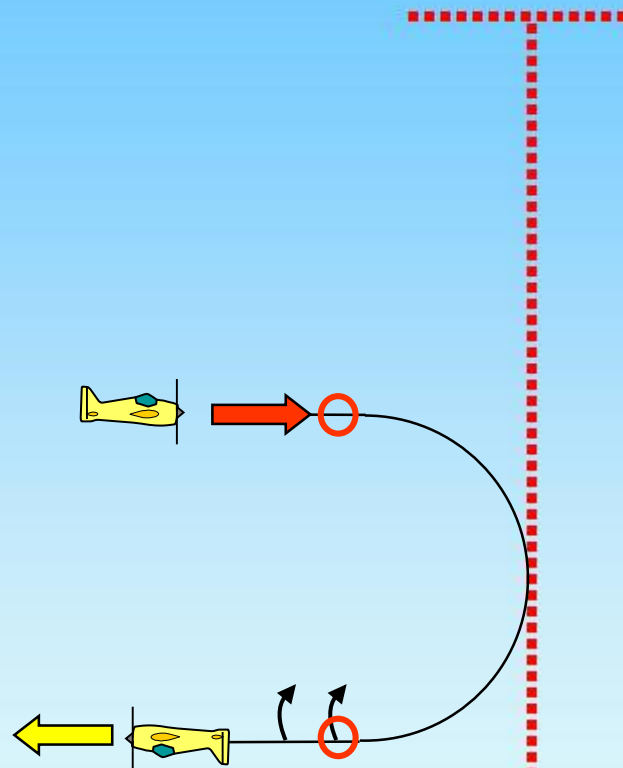
From upright, push through a $\frac{1}{2}$ loop, perform consecutively two $\frac{1}{2}$ rolls, exit inverted.



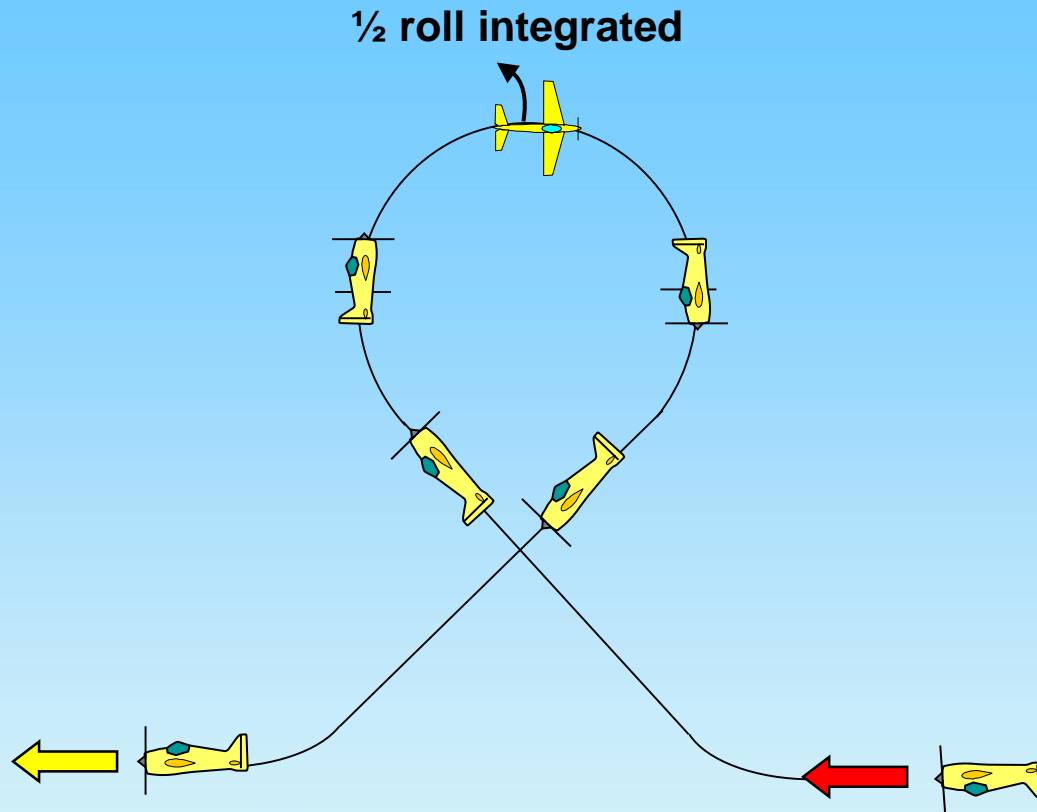
P-21.06 Inverted Split S with consecutive two ½ rolls

There must be no line between the half loop and the ½ rolls.

Lines between part rolls must be short and of recognizable length.

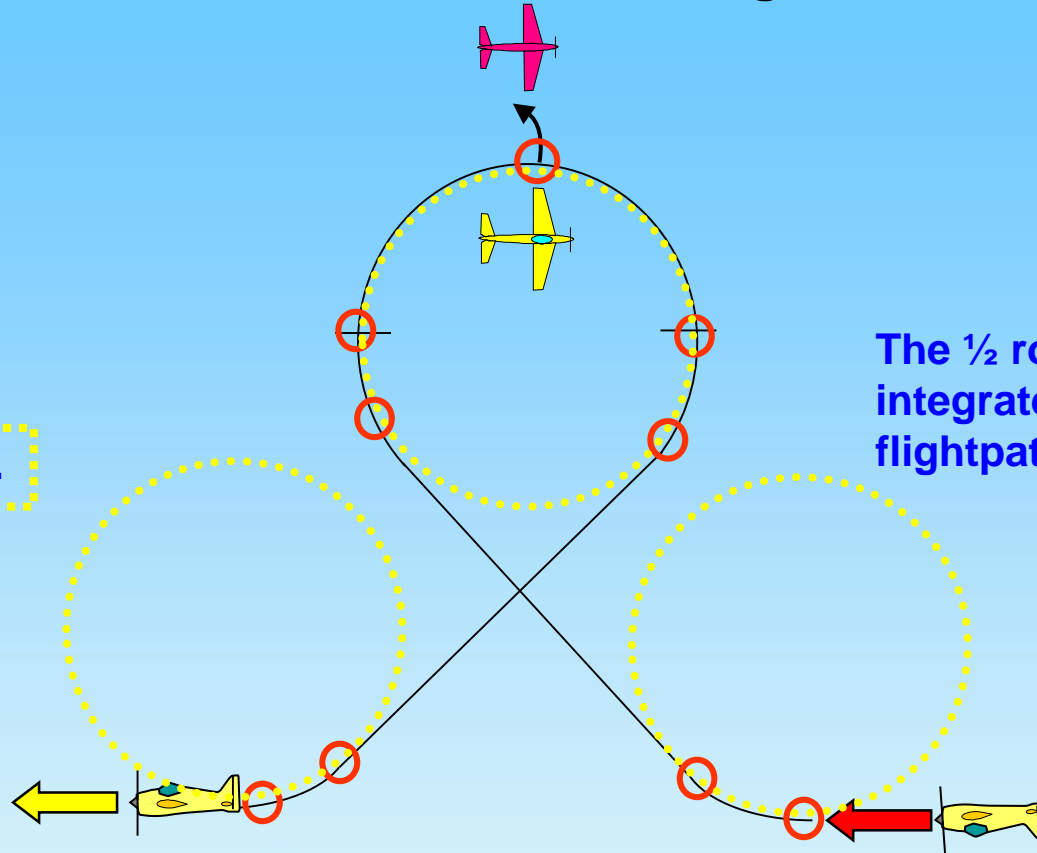


P-21.07 Golf Ball with $\frac{1}{2}$ roll integrated



From inverted push through a $\frac{1}{8}$ loop into a 45° upline, push through a $\frac{3}{4}$ loop into a 45° downline, while performing a $\frac{1}{2}$ roll integrated in the top 180° , pull through a $\frac{1}{8}$ loop, exit upright.

P-21.07 Golf Ball with $\frac{1}{2}$ roll integrated

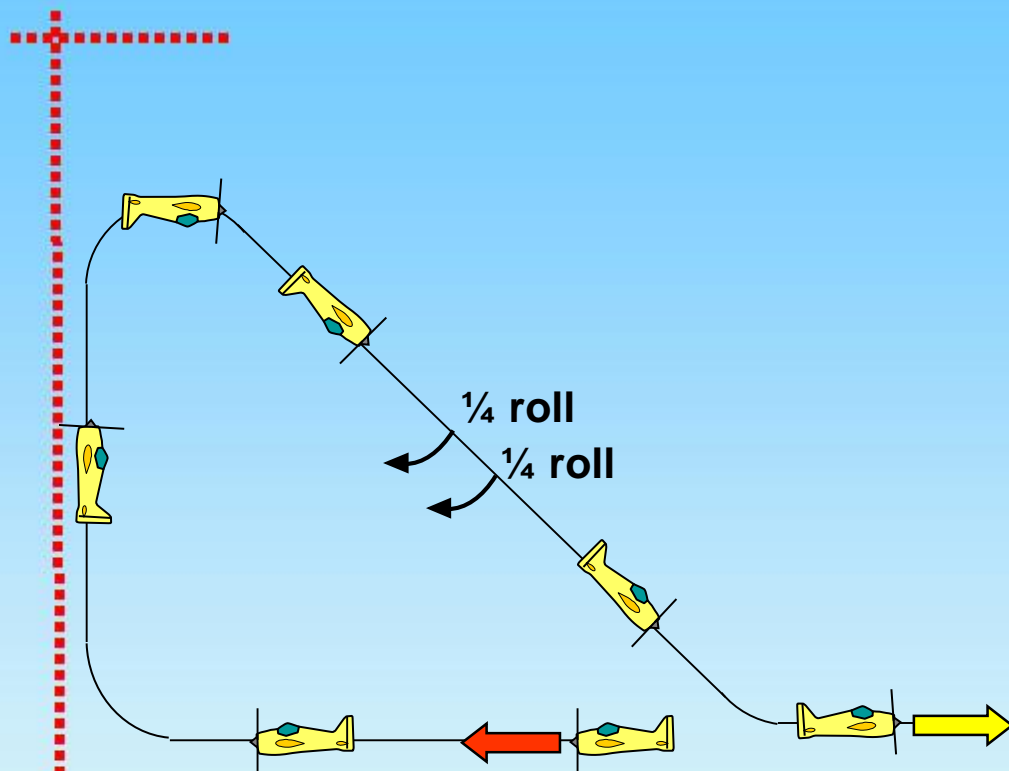


All radii are equal.

The $\frac{1}{2}$ roll must be integrated on circular flightpath of the $\frac{1}{2}$ loop.



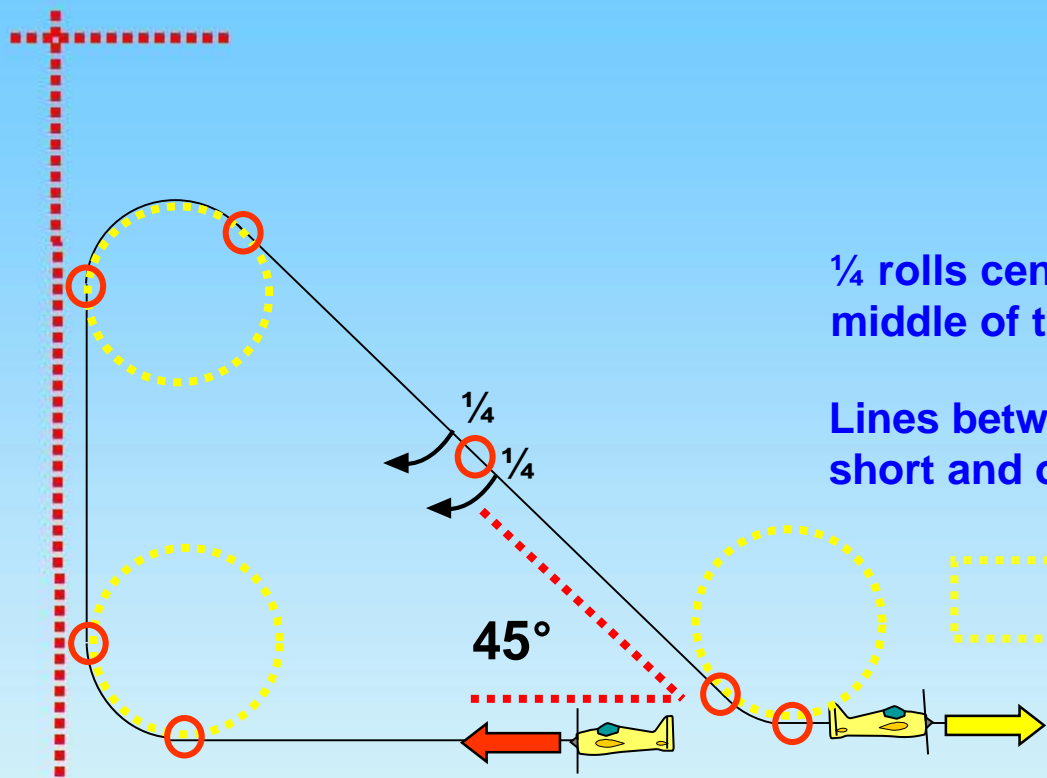
P-21.08 Shark Fin with consecutive two $\frac{1}{4}$ rolls



From upright, pull through a $\frac{1}{4}$ loop into a vertical upline, pull through a $\frac{3}{8}$ loop into a 45° downline, perform consecutively two $\frac{1}{4}$ rolls, pull through a $\frac{1}{8}$ loop, exit upright.



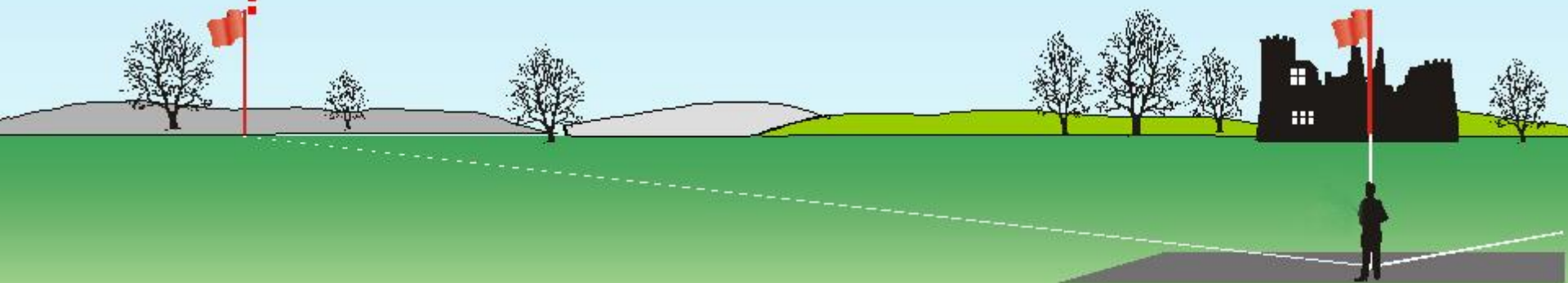
P-21.08 Shark Fin with consecutive two $\frac{1}{4}$ rolls



$\frac{1}{4}$ rolls centered on middle of the line.

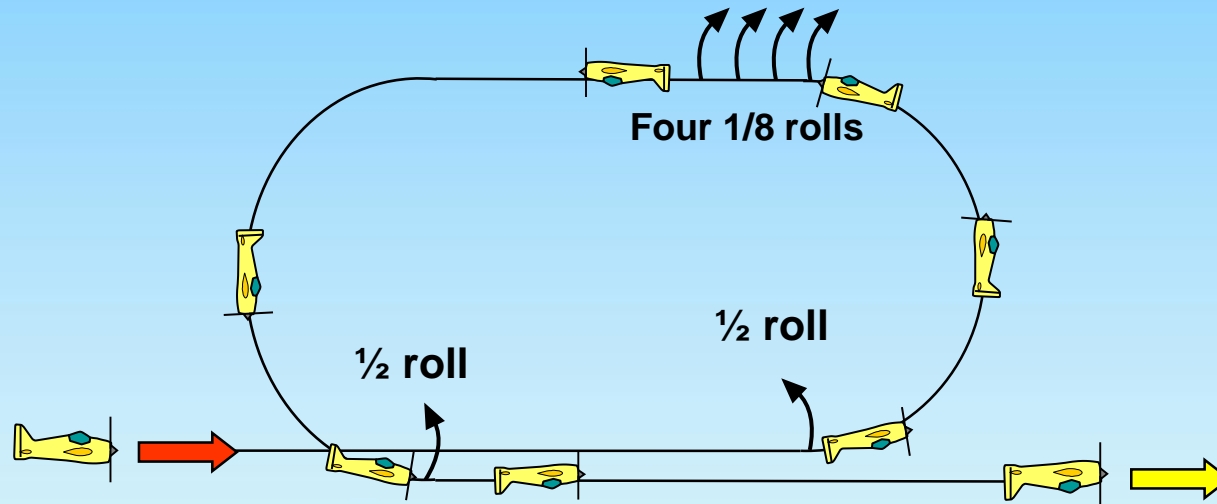
Lines between part rolls must be short and of recognizable length.

All radii are equal.





P-21.09 Double Immelman with $\frac{1}{2}$ roll, consecutive four $\frac{1}{8}$ rolls, $\frac{1}{2}$ roll



From upright perform a $\frac{1}{2}$ roll, push through a $\frac{1}{2}$ loop, perform consecutively four $\frac{1}{8}$ rolls, pull through a $\frac{1}{2}$ loop, perform a $\frac{1}{2}$ roll, exit inverted.





P-21.09 Double Immelman with $\frac{1}{2}$ roll, consecutive four $\frac{1}{8}$ rolls, $\frac{1}{2}$ roll

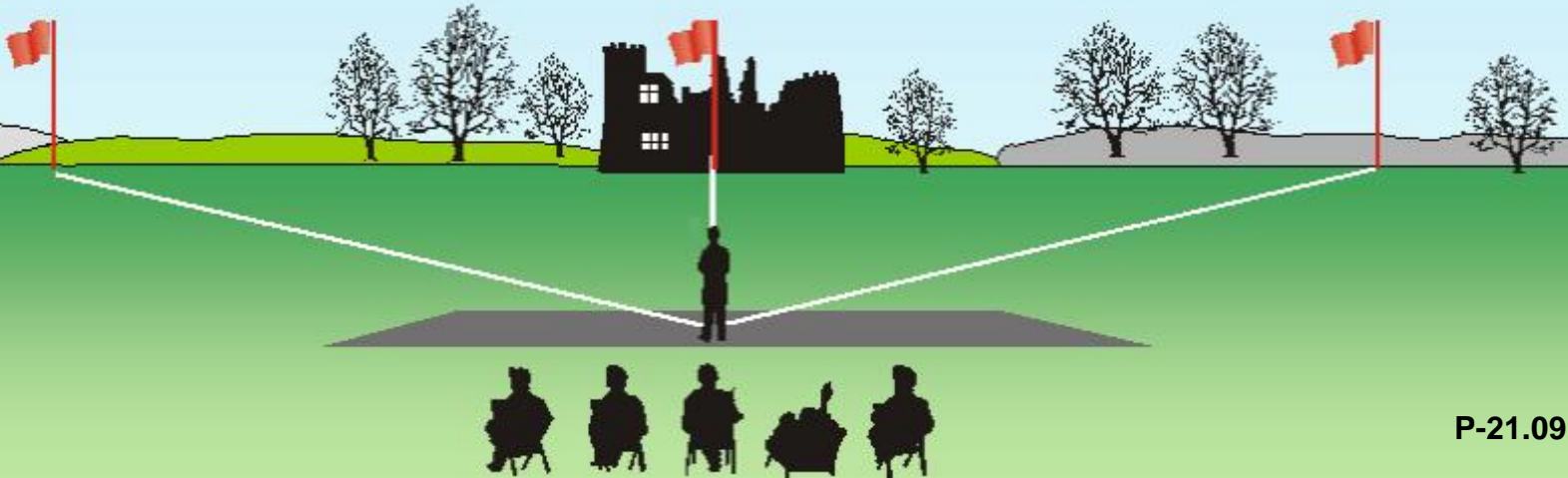
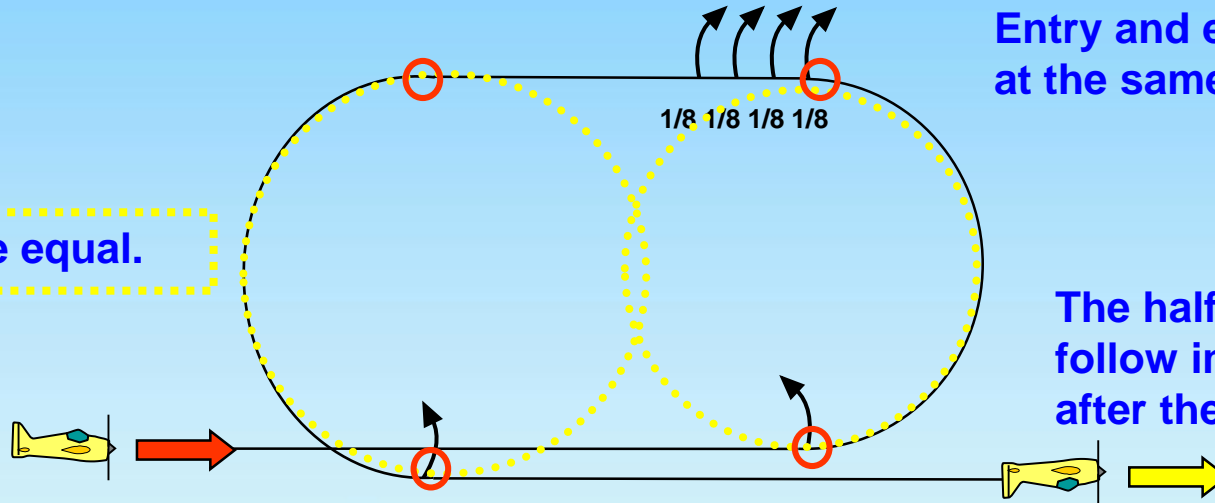
There must be no line between the half loops and the part rolls.

Lines between part rolls must be short and of equal length.

Entry and exit must be at the same altitude.

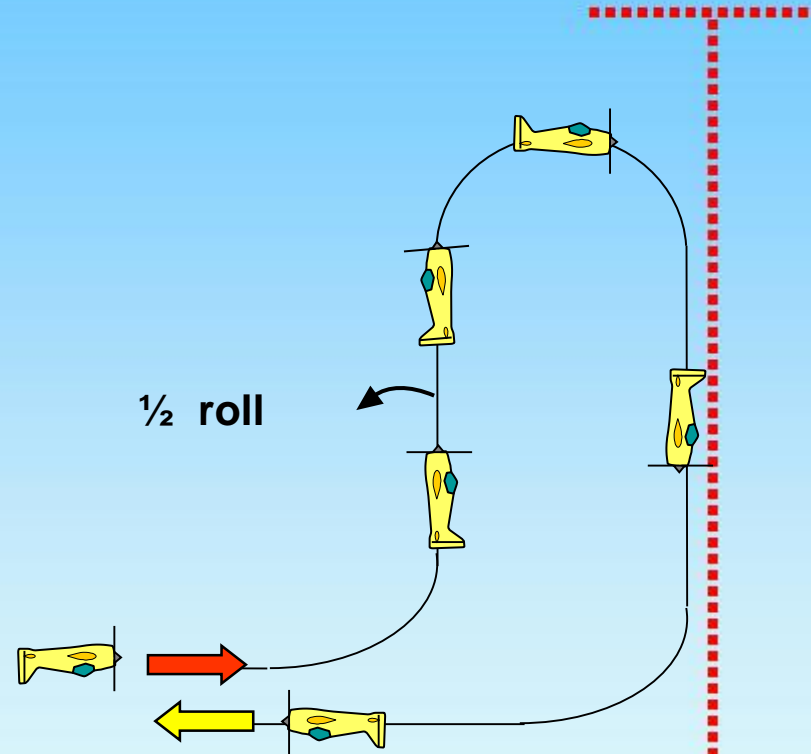
All radii are equal.

The half loop must follow immediately after the $\frac{1}{2}$ roll.





P-21.10 Push-Push-Push Humpty-Bump with $\frac{1}{2}$ roll (Option: with $\frac{3}{4}$ roll, $\frac{1}{4}$ roll)



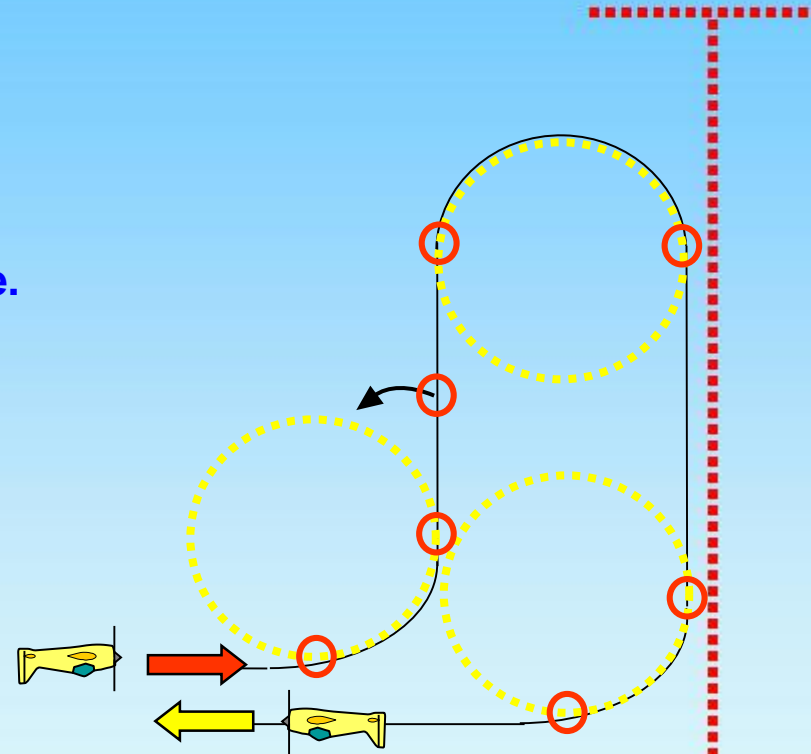
From inverted, push through a $\frac{1}{4}$ loop into a vertical upline, perform a $\frac{1}{2}$ roll, push through a $\frac{1}{2}$ loop into a vertical downline, push through a $\frac{1}{4}$ loop, exit inverted.



P-21.10 Push-Push-Push Humpty-Bump with $\frac{1}{2}$ roll (Option: with $\frac{3}{4}$ roll, $\frac{1}{4}$ roll)

$\frac{1}{2}$ roll on middle of the line.

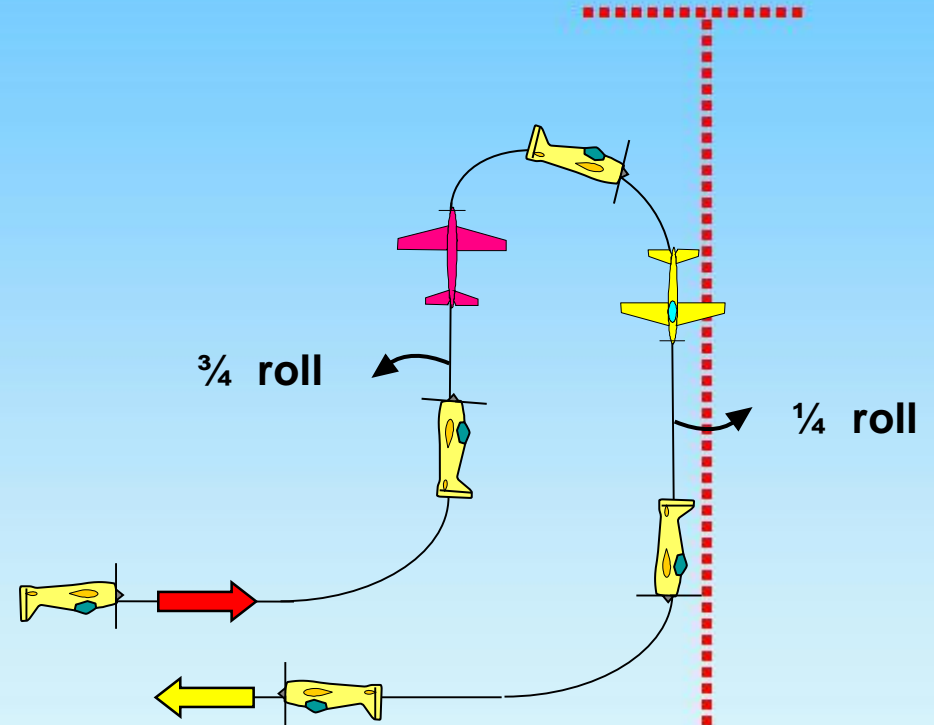
All radii are equal.





P-21.10 Push-Push-Push Humpty-Bump with $\frac{1}{2}$ roll (Option: with $\frac{3}{4}$ roll, $\frac{1}{4}$ roll)

Option



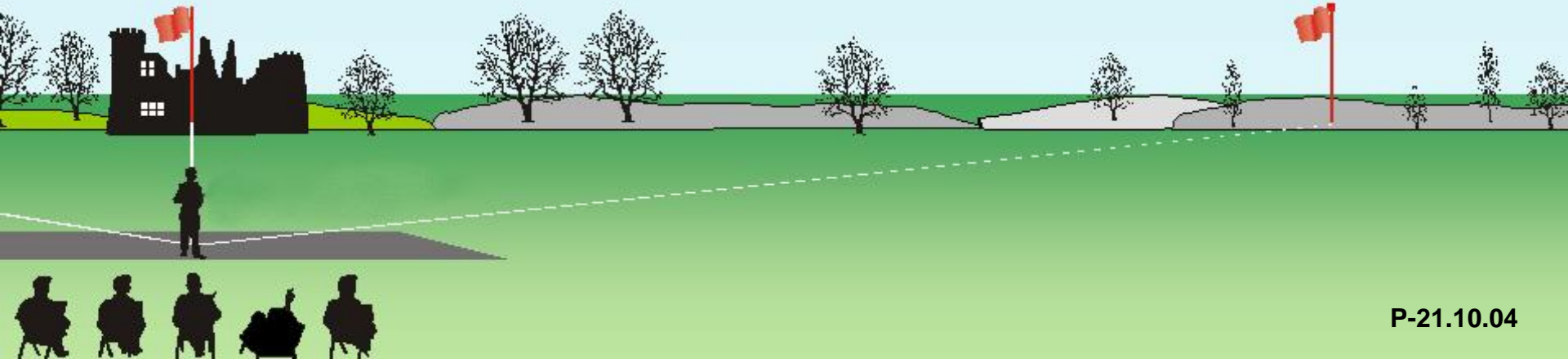
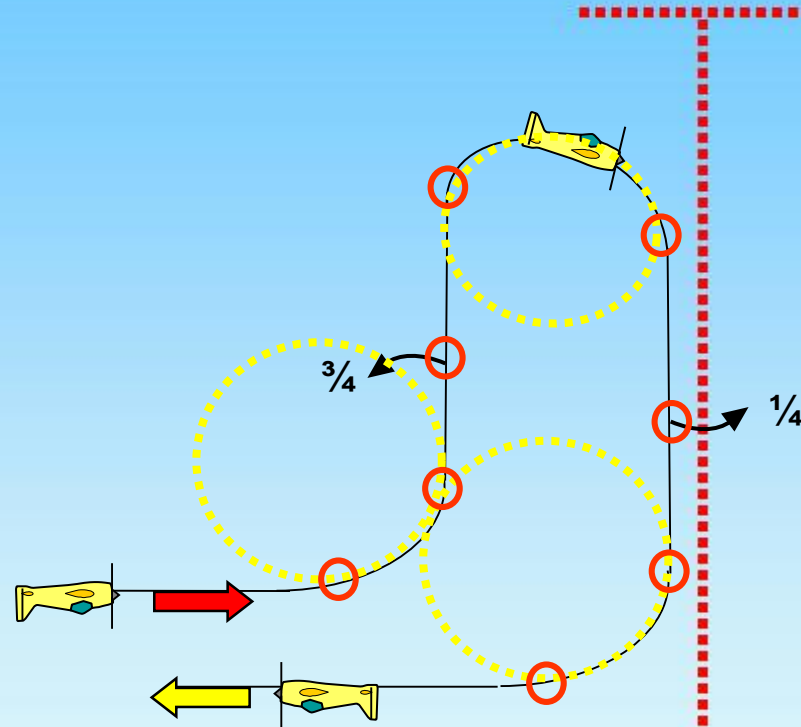
Option: From inverted, push through a $\frac{1}{4}$ loop into a vertical upline, perform a $\frac{3}{4}$ roll, push through a $\frac{1}{2}$ loop into a vertical downline, perform a $\frac{1}{4}$ roll, push through a $\frac{1}{4}$ loop, exit inverted.

P-21.10 Push-Push-Push Humpty-Bump with $\frac{1}{2}$ roll (Option: with $\frac{3}{4}$ roll, $\frac{1}{4}$ roll)

Option

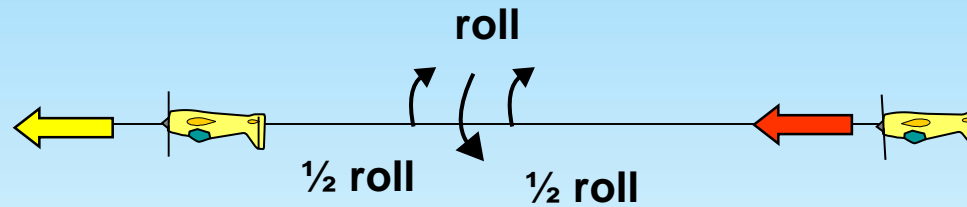
Rolls on middle of the line.

All radii are equal.





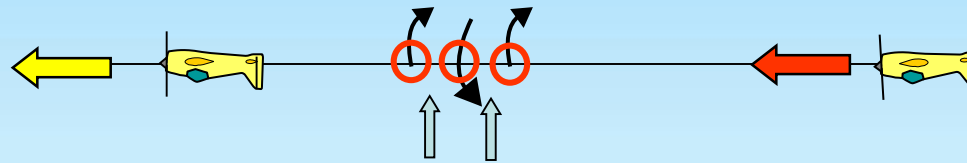
P-21.11 Roll Combination with consecutive $\frac{1}{2}$ roll, roll, $\frac{1}{2}$ roll in opposite directions



From inverted, perform consecutively a $\frac{1}{2}$ roll, roll, $\frac{1}{2}$ roll in opposite directions, exit inverted.



P-21.11 Roll Combination with consecutive $\frac{1}{2}$ roll, roll, $\frac{1}{2}$ roll in opposite directions

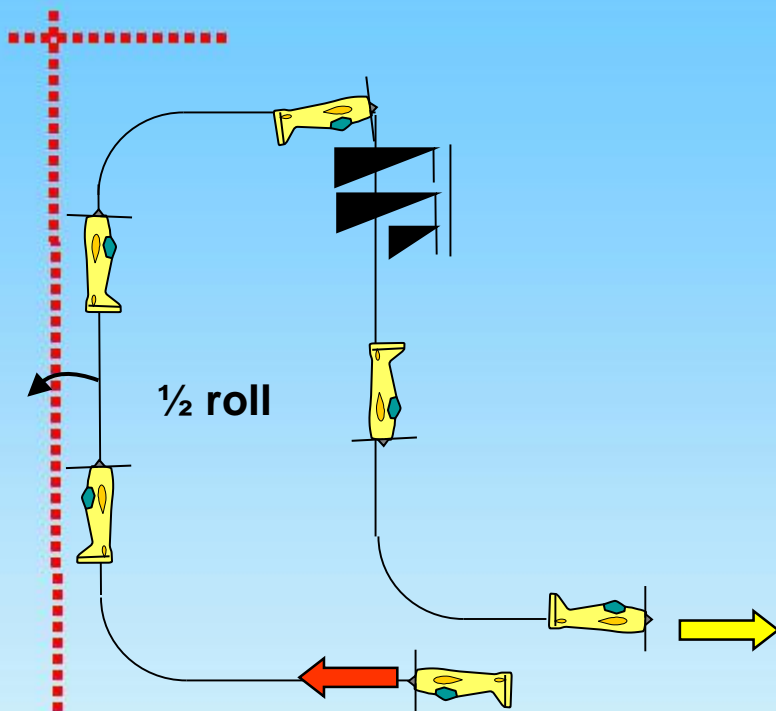


Between rolls and part rolls in opposite direction there must be no line.





P-21.12 Top Hat with $\frac{1}{2}$ roll, inverted spin (Option: with $\frac{1}{4}$ roll, $\frac{1}{4}$ roll)

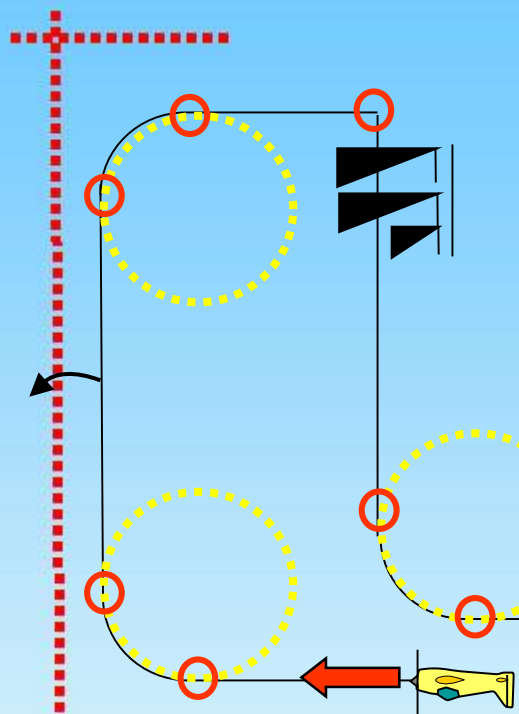


From inverted, push through a $\frac{1}{4}$ loop into a vertical upline, perform a $\frac{1}{2}$ roll, pull through a $\frac{1}{4}$ loop into a horizontal line, perform a spin with $2 \frac{1}{2}$ turns into a vertical downline, pull through a $\frac{1}{4}$ loop, exit upright.





P-21.12 Top Hat with $\frac{1}{2}$ roll, inverted spin (Option: with $\frac{1}{4}$ roll, $\frac{1}{4}$ roll)



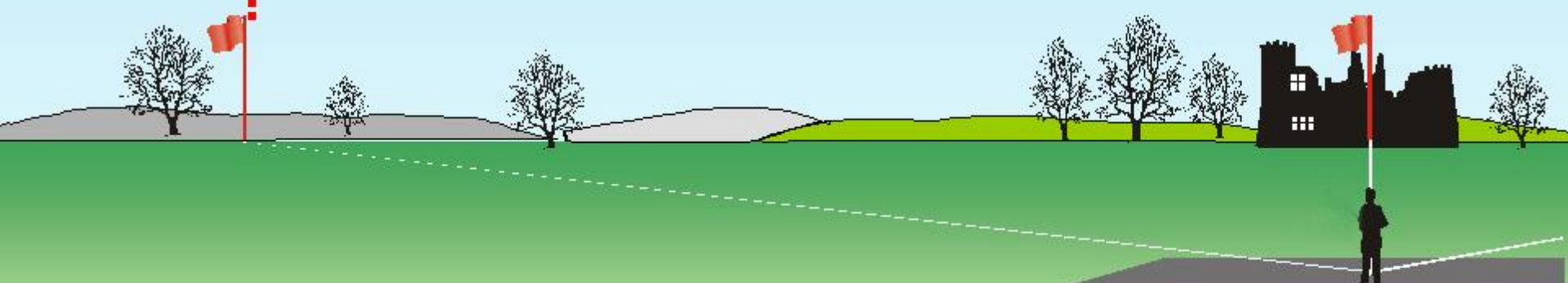
Snap entry - 0 points!

Spiral dive - 0 points!

Forced entry: downgrade.

$\frac{1}{2}$ roll on middle of the line.

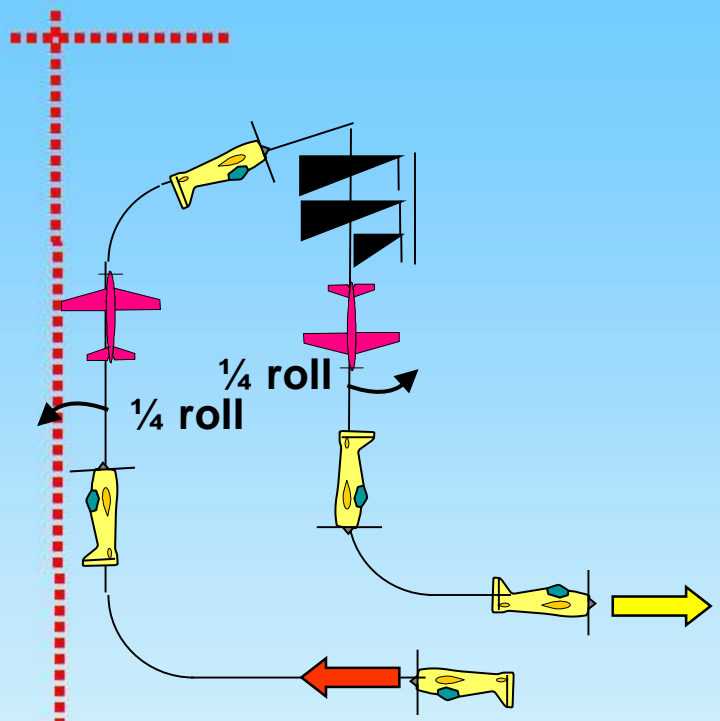
All radii are equal.





P-21.12 Top Hat with 1/2 roll, inverted spin (Option: with 1/4 roll, 1/4 roll)

Option

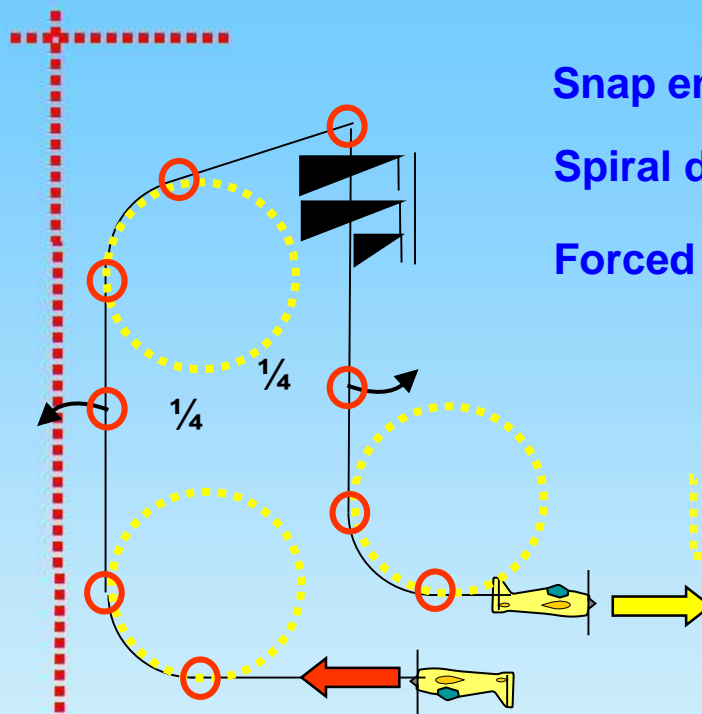


Option: From inverted push through a 1/4 loop into a vertical upline, perform a 1/4 roll, pull through a 1/4 loop into a horizontal line, perform a spin with 2 1/2 turns into a vertical downline, perform a 1/4 roll, pull through a 1/4 loop, exit upright.





P-21.12 Top Hat with 1/2 roll, inverted spin (Option: with 1/4 roll, 1/4 roll)



Snap entry - 0 points!

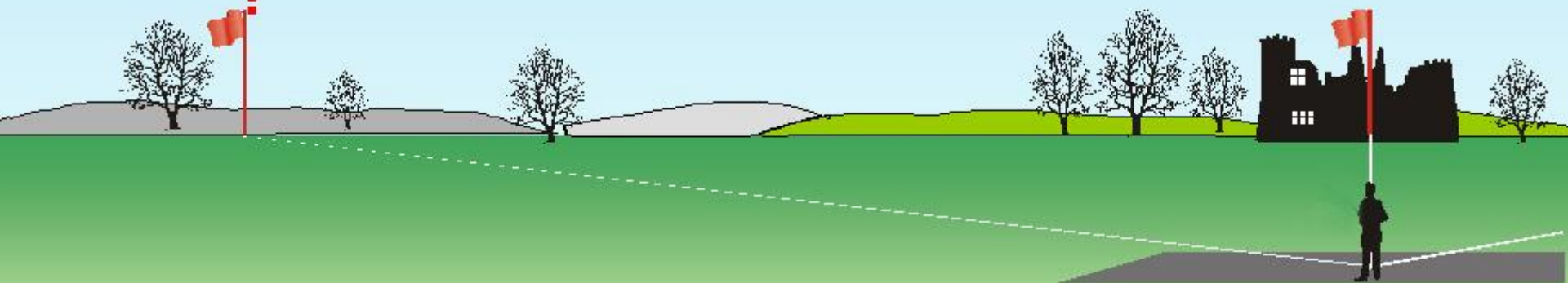
Spiral dive - 0 points!

Forced entry: downgrade.

Option

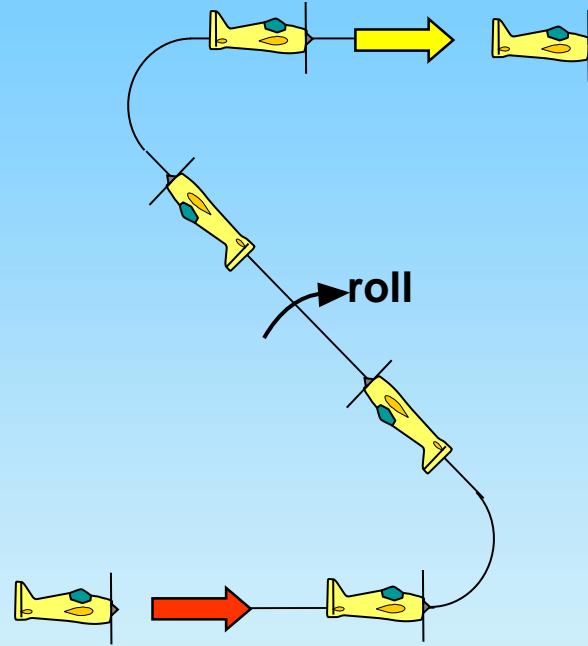
1/4 rolls on middle of the line.

All radii are equal.





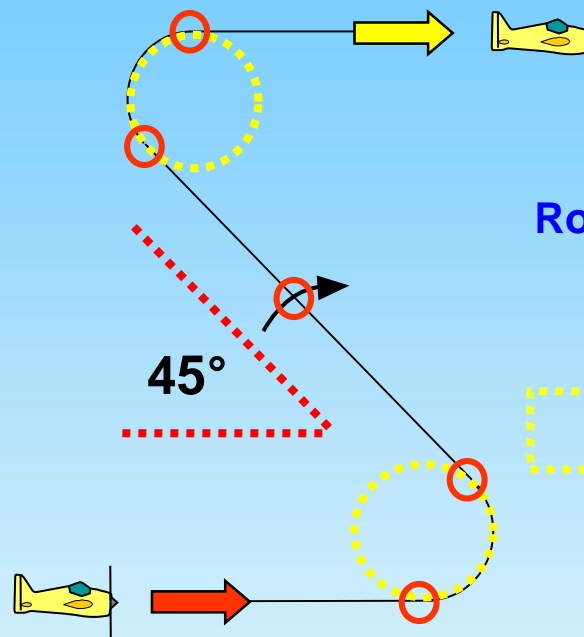
P-21.13 Figure Z with roll



From upright, pull through a 3/8 loop into a 45° upline, perform a roll, push through a 3/8 loop, exit upright.



P-21.13 Figure Z with roll



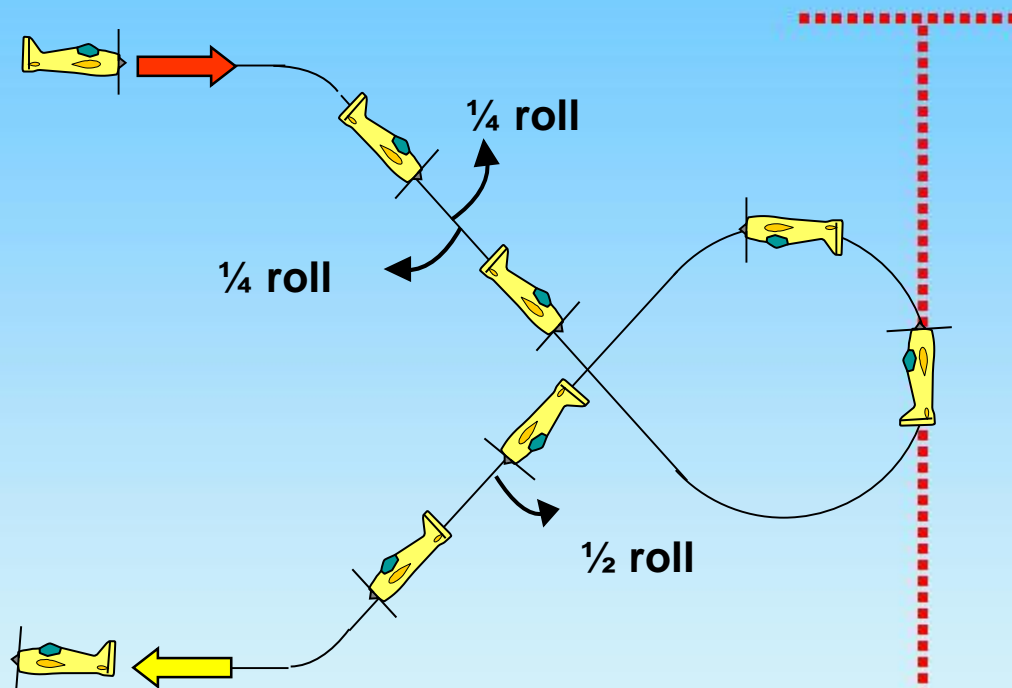
Roll on middle of the line.

All radii are equal.





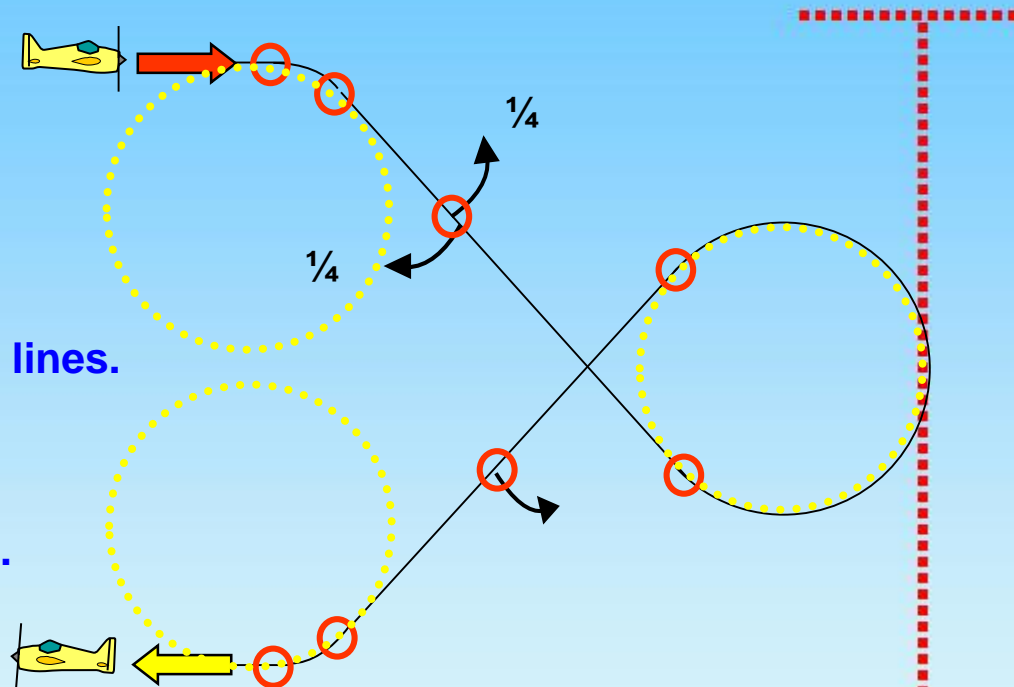
P-21.14 Comet with consecutive two $\frac{1}{4}$ rolls in opposite directions, $\frac{1}{2}$ roll



From upright, push through a $\frac{1}{8}$ loop into a 45° downline, perform consecutively two $\frac{1}{4}$ rolls in opposite directions, pull through a $\frac{3}{4}$ loop into a 45° downline, perform a $\frac{1}{2}$ roll, pull through a $\frac{1}{8}$ loop, exit upright.



P-21.14 Comet with consecutive two $\frac{1}{4}$ rolls in opposite directions, $\frac{1}{2}$ roll

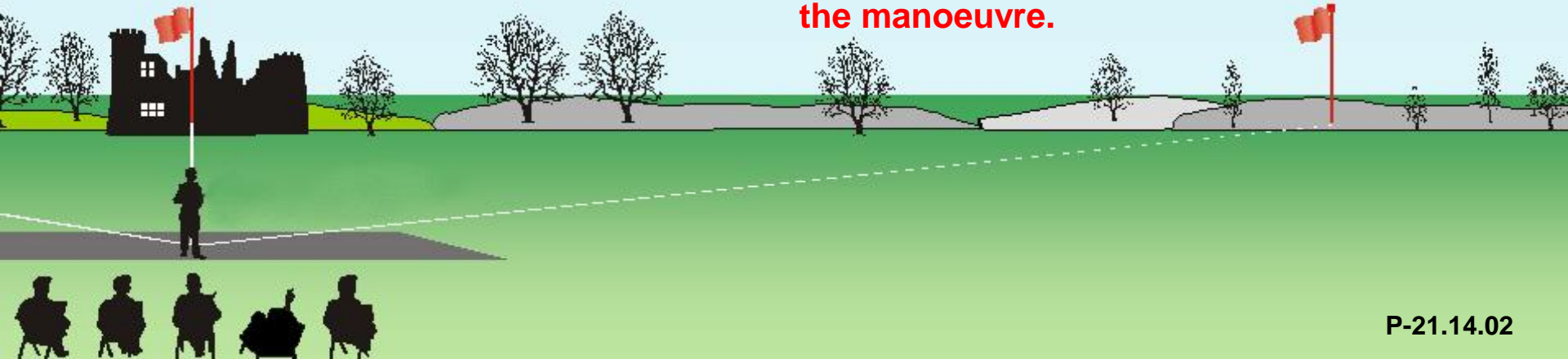


Rolls centered on middle of the lines.

Between part rolls in opposite directions there must be no line.

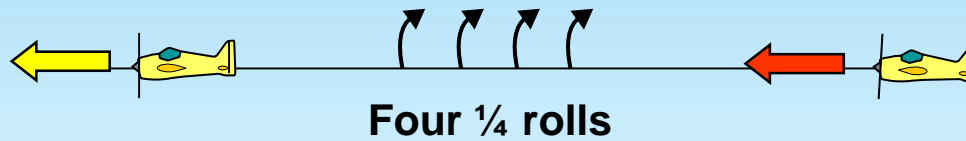
All radii are equal.

Rolls on middle of the lines, but not necessarily in the center of the manoeuvre.





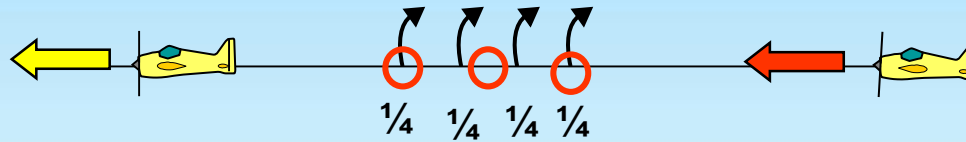
P-21.15 Roll Combination with consecutive four $\frac{1}{4}$ rolls



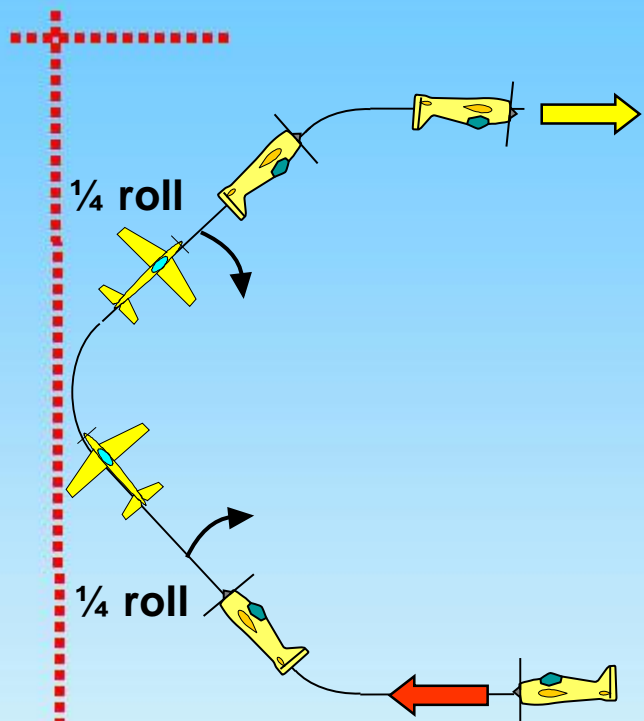


P-21.15 Roll Combination with consecutive four $\frac{1}{4}$ rolls

Lines between part rolls must be short and of equal length.



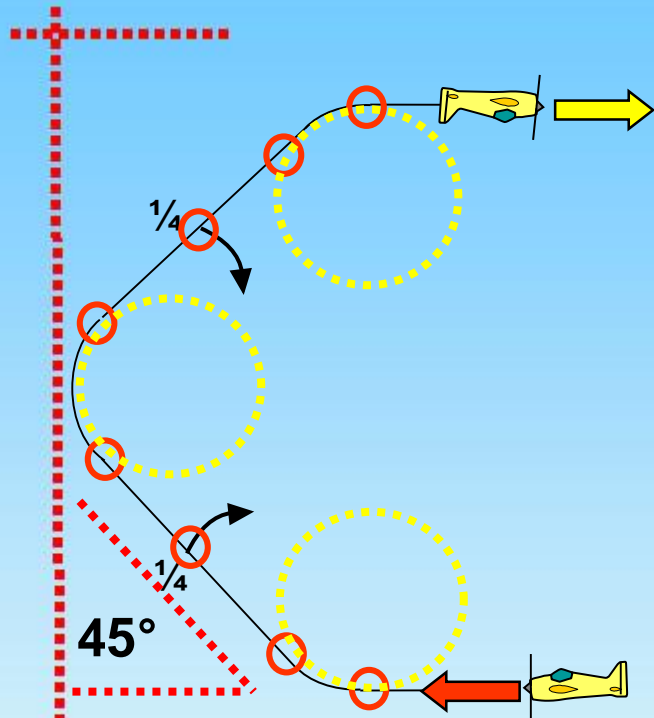
P-21.16 Half Square Loop on Corner with $\frac{1}{4}$ roll, $\frac{1}{4}$ roll



From upright, pull through a $\frac{1}{8}$ loop into a 45° upline, perform a $\frac{1}{4}$ roll, perform a $\frac{1}{4}$ knife-edge loop into a 45° upline, perform a $\frac{1}{4}$ roll, pull through a $\frac{1}{8}$ loop, exit inverted



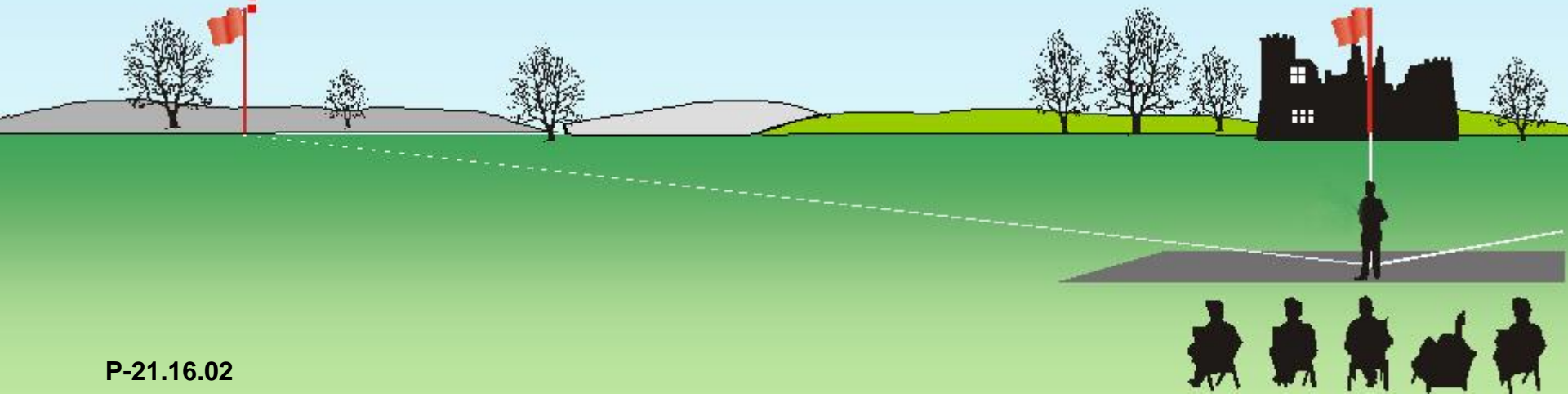
P-21.16 Half Square Loop on Corner with $\frac{1}{4}$ roll, $\frac{1}{4}$ roll



During the knife-edge
the wing must be in the
vertical plane.

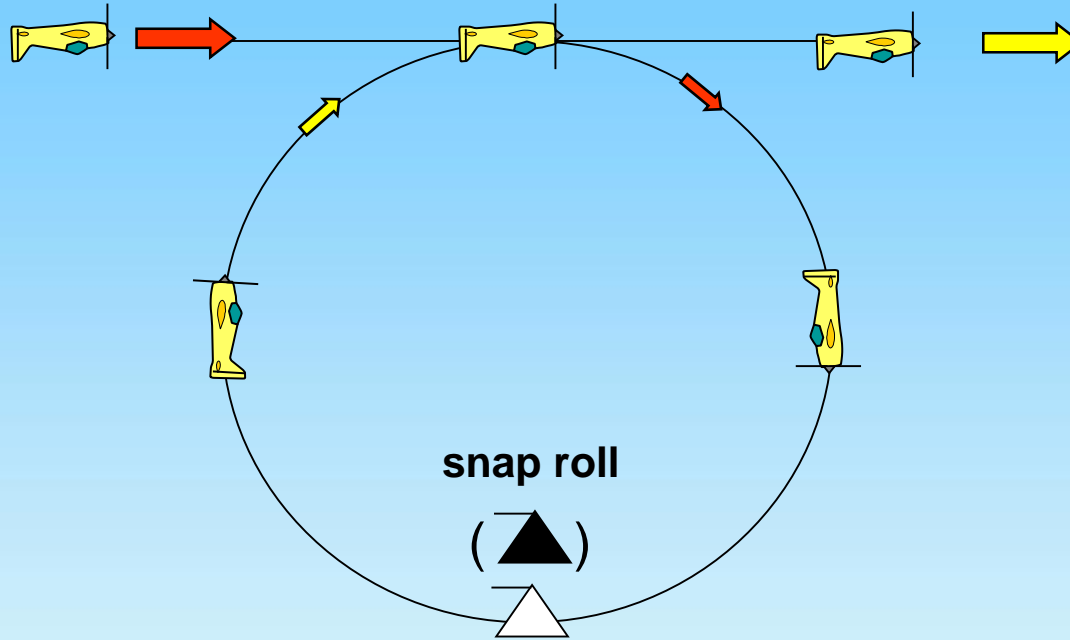
$\frac{1}{4}$ rolls on middle of the line.

All radii are equal.





P-21.17 Avalanche

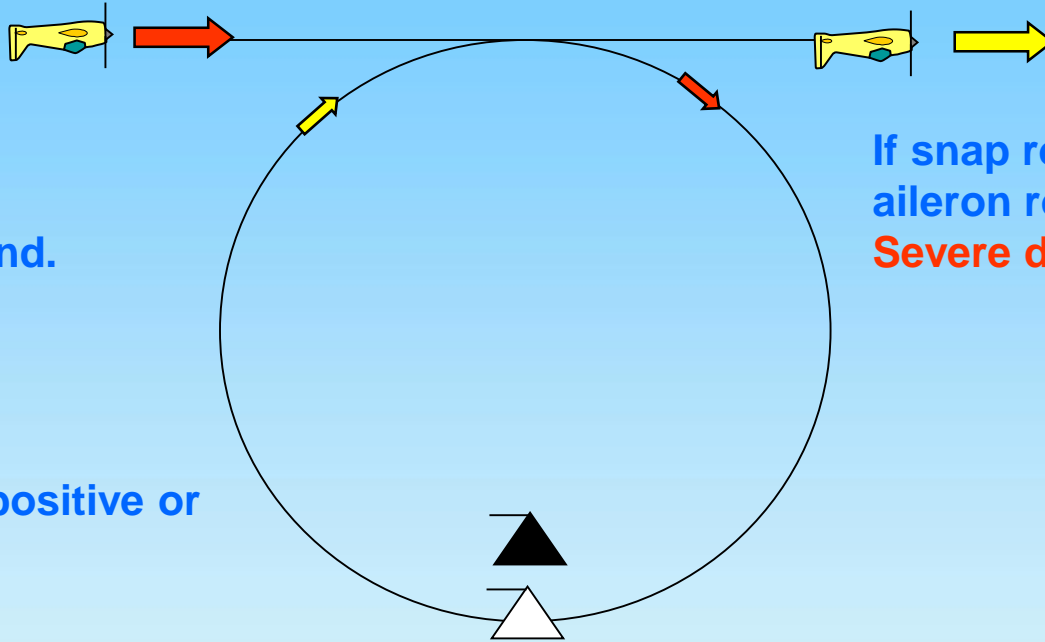


From inverted pull through a loop while performing a snap roll in the low centre, exit inverted.





P-21.17 Avalanche



Loop must be round.

If snap roll = barrel roll or aileron roll:
Severe downgrade > 5 pts.

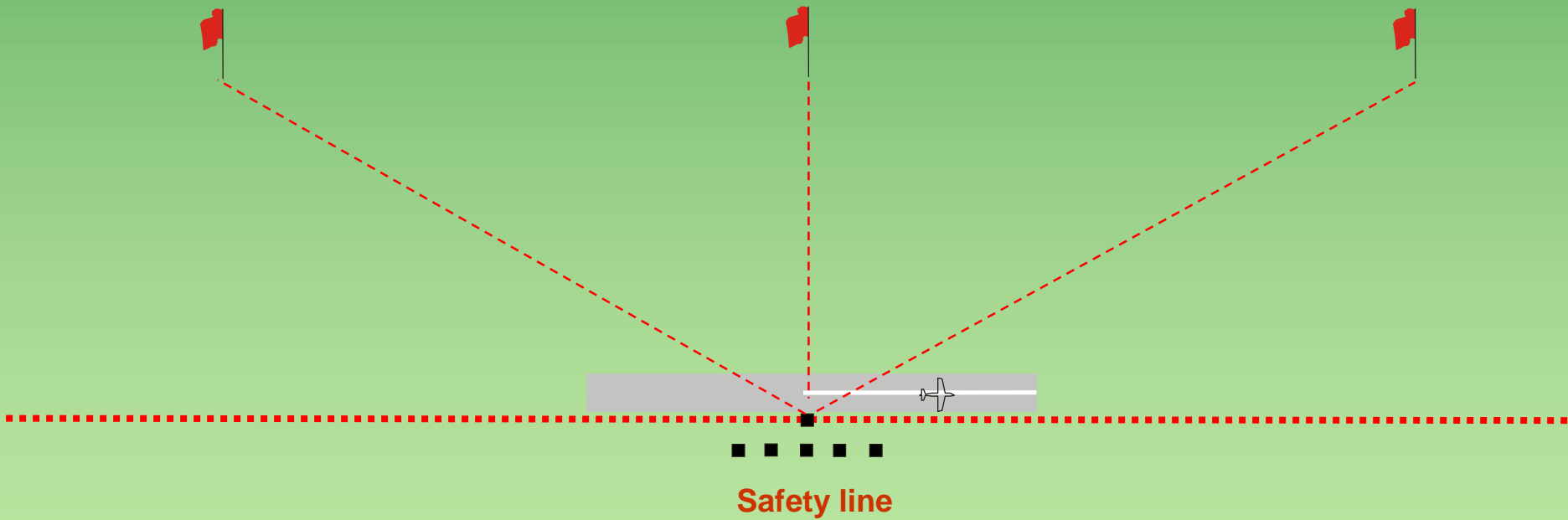
Snap roll may be positive or negative.





Landing procedure (not judged, not scored)

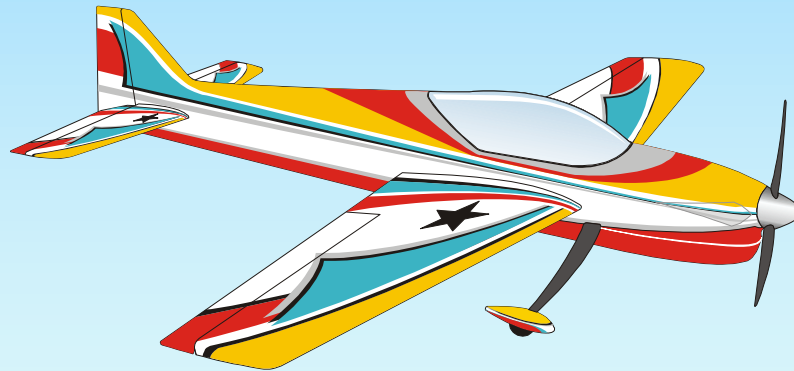
The direction of the landing may be different to the take off.



Forget **WHO** is flying
(friend, rival, countryman, flier from other nation)

Forget **WHAT** is flying
(2-stroke, 4-stroke, electric)

LOOK ONLY AT LINES DESCRIBED IN THE SKY!
(and the precision, smoothness, positioning, and size)



Thank you!

© Peter Uhlig, November 2018