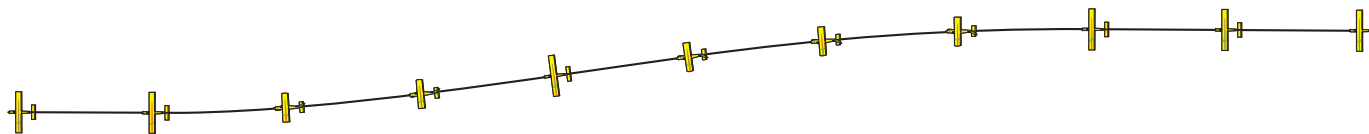
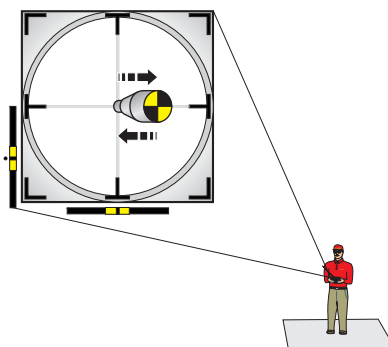
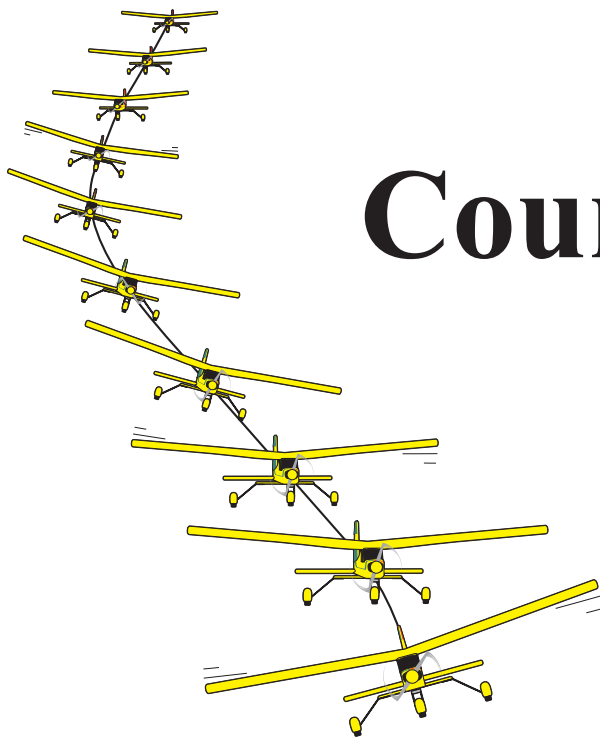


# Straight Lines and Course Adjustments



## Straight Lines and Course Adjustments


In this section: A-8 & 9 illustrate how small aileron “bumps” or nudges are used for making small course adjustments and establishing straight lines.

Bump analogy: When most people learn to drive a car, they work hard just trying to keep the car going straight. This is due to holding in the steering wheel corrections too long and attempting to “steer” the car straight. However, as we become better drivers, we are able to keep the car straight with very little effort! The reason is that we developed an understanding that most deviations can be corrected with a simple little nudge upon the wheel, and we’re confident that if one nudge doesn’t do the trick, we can always nudge the wheel again — until we achieve the desired path. Thus, applying small nudges to the steering wheel produces straighter lines and reduces our need to make corrections. Small brief nudges or bumps of aileron or rudder have precisely the same effect to help us fly straighter lines and make small course changes without over-controlling.

A-10 illustrates how aileron bumps are used in typical flight situations.

A-11 illustrates the more forgiving aspects of the aileron bump since its effect is small.

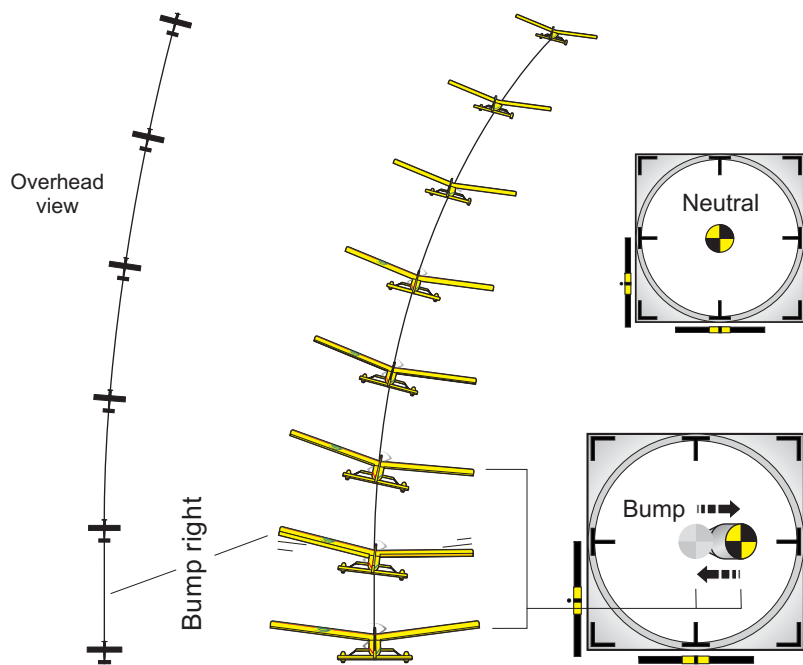
Note: As you become more proficient, and therefore relaxed, you will start noticing deviations the instant they occur. Thus, your corresponding aileron bumps will be so small that anyone watching will not even be able to tell that corrections are being made (and that’s how the really good flyers make their flying look so smooth and easy—in the same way a good driver makes driving look easy.)



Small bump left                      Small bump right

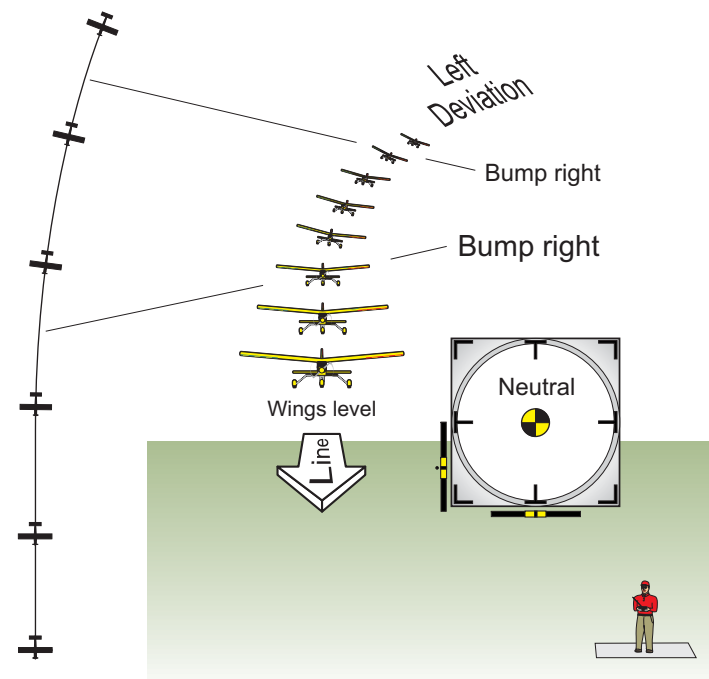
KPTR: Small smooth aileron bumps (not held in) are used to make small course changes and establish straighter lines.

## Basics of Straight Lines and Course Adjustments



**Course Adjustment Aileron Bump:** A brief small aileron bump establishes a slight bank that results in a gradual drift/course adjustment.

Note that when applied properly, the degree of bank is small, so no altitude is lost after a bump, and thus there is no need for elevator after a bump.



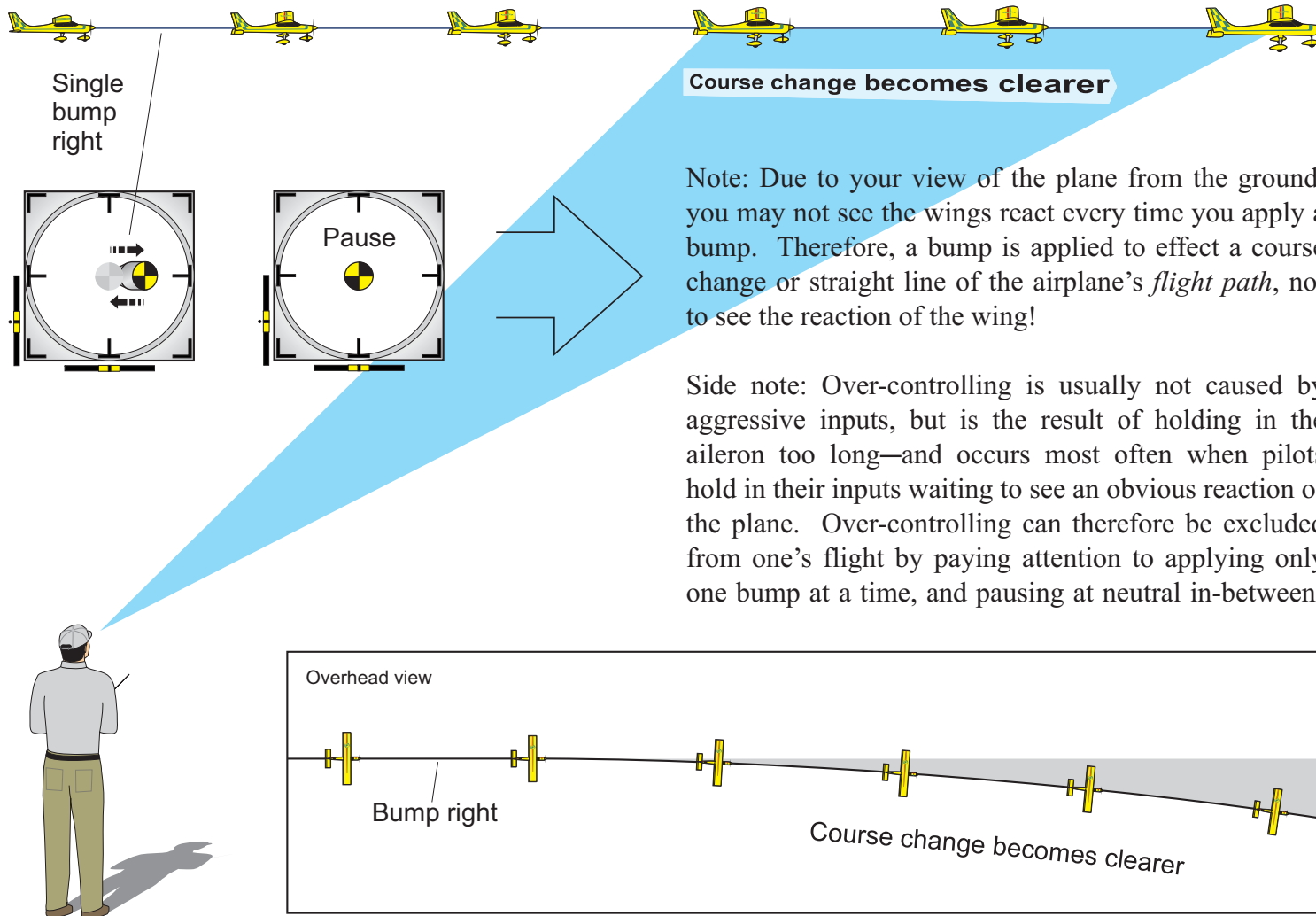
**Bumping to a Straight Line:** An aileron bump or two establishes a wings level straight line (as compared to holding in the aileron trying to *steer* straight).



KPTR: A small bump (or two) will establish a new course without the airplane losing altitude, as long as it is not held in.

## Basics of Course Adjustments

After a small aileron bump is applied, the slight bank and gradual drift may not be immediately obvious. Therefore, a pilot must pause at neutral after a bump in order to see the result of the input, and whether another bump is really(?) needed.

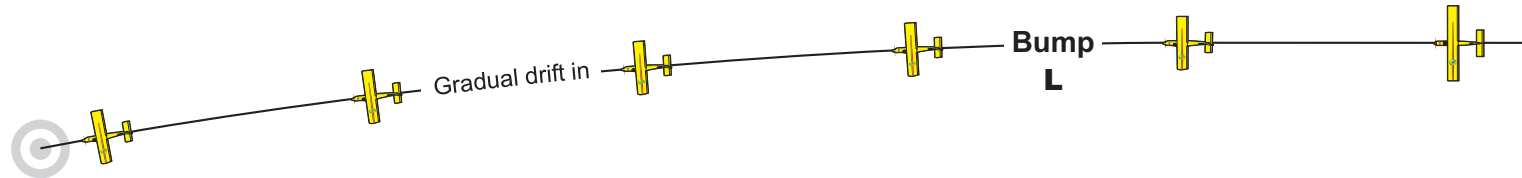


## Typical Bump Applications

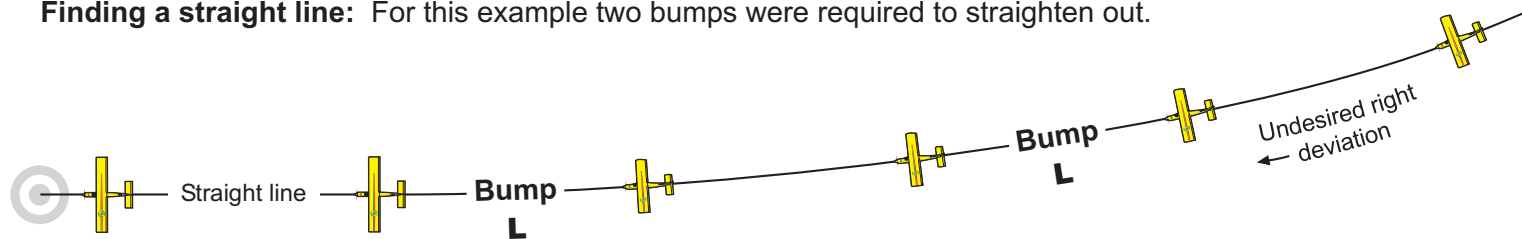


A bump is applied when you see the need for one. For example: A left bump is not always followed by a right correction bump if the plane is presently heading where you want it to go or the intended course change has yet to become clear.

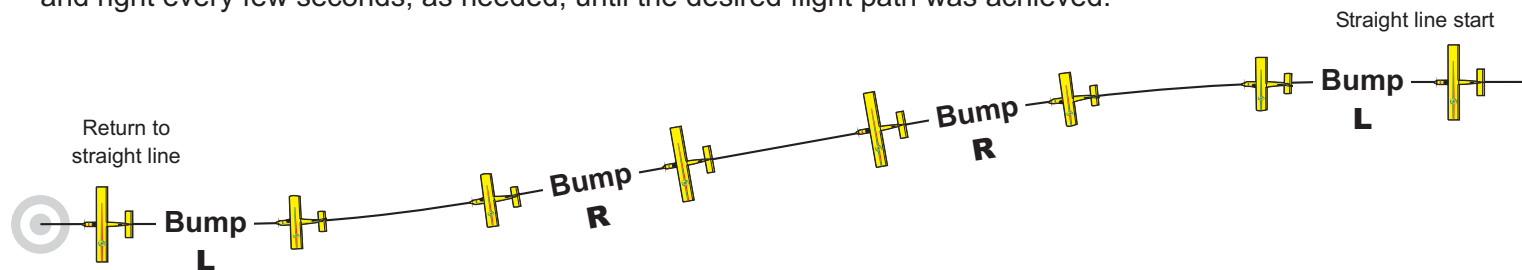
**Moving it in closer:** For this example a single bump put the airplane where the pilot wanted it to go.



**Finding a straight line:** For this example two bumps were required to straighten out.



**Moving a straight line in closer:** For this example bumps were applied both left and right every few seconds, as needed, until the desired flight path was achieved.



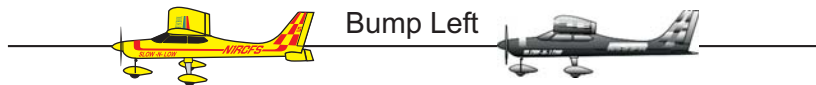
KPTR: Determining when to apply a bump is based on seeing the need for one.

# The Bump: Orientation and Confidence

The initial greatest advantage of the small aileron bump is knowing that regardless of the situation, the initiative of bumping can be taken without drastically altering flight.

## Orientation: Part 1

When the attitude of the plane is not clear due to poor lighting or it's too far away, applying a bump of aileron should alter the airplane enough to orient the pilot with a clearer view of what attitude the plane is in.



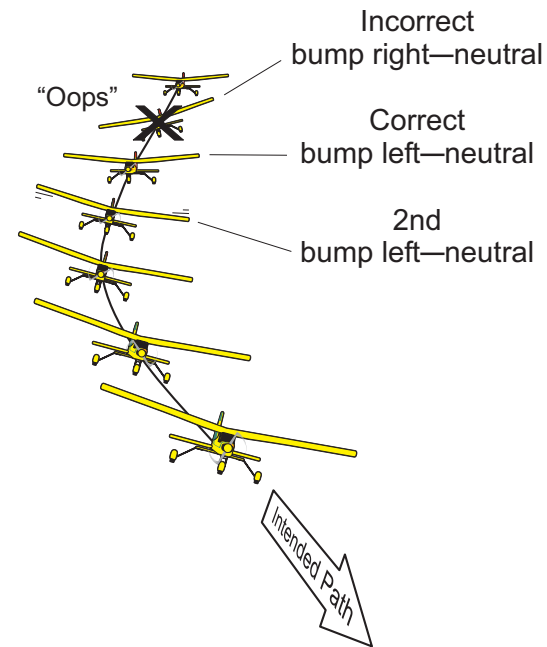
## Part 2

If you're not sure whether the plane is coming at you or going away, bump Left and see what happens.



## Confidence

If a bump is accidentally applied in the wrong direction, attention to neutralizing the bump input (stopping the response) affords the pilot time to properly correct without incident.



KPTR: When in doubt, bump, with the confidence that you won't get into trouble as long as the aileron is not held in.