

Use of Flaps

Flap extension during landings provides several advantages by:

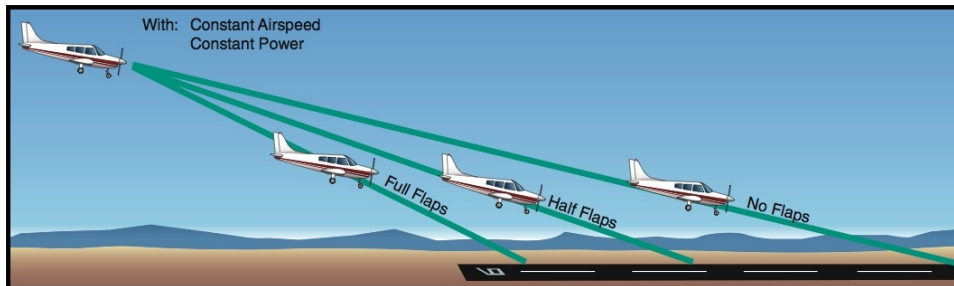
- Producing greater lift and permitting lower landing speed.
- Producing greater drag, permitting a steep descent angle without airspeed increase.
- Reducing the length of the landing roll.

Flap extension has a definite effect on the airplane's pitch behavior. The increased camber from flap deflection produces lift primarily on the rear portion of the wing, producing a nose-down force. This pitch behavior varies on different airplane designs. In general, though:

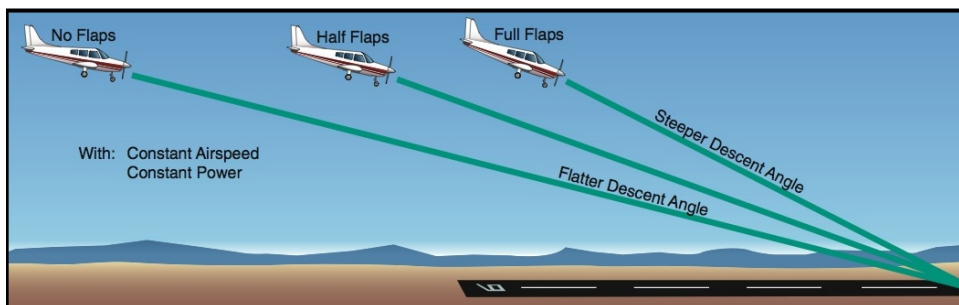
- Flap deflection of up to 15° primarily produces lift with minimal drag. The airplane has a tendency to balloon up with initial flap deflection because of the lift increase. The nose down pitching moment, however, tends to offset the balloon.
- Flap deflection beyond 15° produces a large increase in drag. In high-wing airplanes, a significant nose up pitching moment can occur because the resulting downwash increases the airflow over the horizontal tail.

When the flaps are lowered, the airspeed will decrease unless the power is increased or the pitch attitude lowered. On final approach, therefore, you must estimate where the airplane will land through discerning judgment of the descent angle. If it appears that the airplane is going to overshoot the desired landing spot, use more flaps, reduce power, and lower pitch attitude for a steeper approach.

If the desired landing spot is being undershot, shallow the approach by increasing power and pitch to readjust the descent angle. Never retract the flaps to correct for an undershoot, since that will suddenly decrease the lift and cause the airplane to sink even more rapidly.



Effect of flaps on the landing point.



Effect of flaps on approach angle.