

## VII.I. Short Field Approach and Landing

**About:** Landing on fields that are relatively short where the approach is made over obstacles.

**TSW:** Develop precise, positive control of the rate of descent and airspeed to produce an approach that clears any obstacles, minimizes floating, and stopped in shortest possible distance

**How:** Performing a full flap landing, touching down at minimum speed, and stopping in the shortest possible distance.

### Procedure (C172):

#### **Downwind**

1. Carb heat, mixture rich
2. Abeam touchdown point (power 1500rpm, 10° flaps in white arc)
3. Hold same level attitude- TRIM 80 MPH
4. When touchdown point is 45° off shoulder turn base (< 30° bank)

#### **Base**

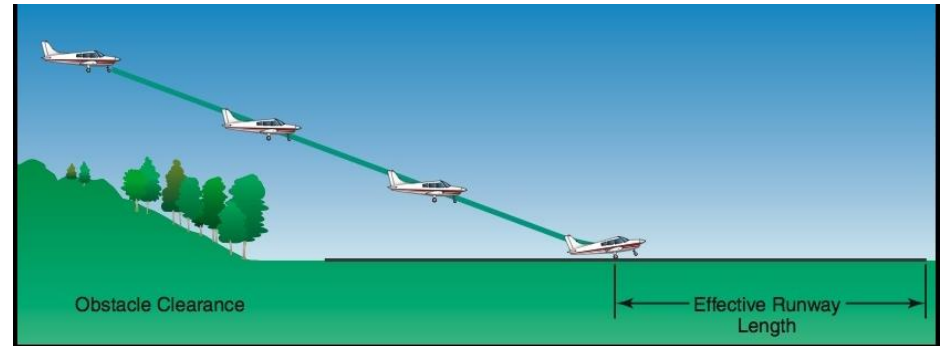
5. Apply 20° flaps, if trimmed correctly AS will slow to 75 MPH.
6. Check for traffic on final, Turn final (< 30° bank)

#### **Final Approach**

7. Apply 30° flaps, if trimmed correctly AS will slow to 70 MPH
8. Smoothly reduce power as to land on the selected point on the runway
  - a. **Must be at or beyond specified point, within 200ft**
9. Upon touchdown, power to idle, if not already there.
  - a. Hold positive pitch attitude for aerodynamic breaking.
  - b. Apply appropriate breaking

### Discussion Points:

10. Care must be taken to avoid excessively low airspeed. If the speed is to slow, an increase in pitch attitude and power may only result in a further rate of descent.
  - a. This is referred to as operating on the back side of the power curve or region of reverse command.
  - b. When in doubt go around.
11. **Round out:** Stop the decent rate by starting to pull back on the elevator
  - a. Nose will be higher due to lower airspeed and higher power.
  - b. Progressively raise the nose to **hold the airplane just off the runway** as the airplane slows to ~ stall speed
12. **Touchdown:** Reduce **power to idle**, transition the weight of the airplane from the wings to the wheels.
  - a. Touchdown with mains first and hold nose off with back elevator.



### Common errors:

1. Not establishing the correct airspeeds for downwind, base, and final segments. **(Not trimming appropriately)**
2. Failure to consider the effect of wind/ touching down in crab
3. Improper procedure in use of power, wing flaps, and trim:
4. Inappropriate removal of hand from throttle
5. If short field over an obstacle: when clear of obstacle, reducing power -> possible stall; diving for runway -> excessive airspeed and floating.
6. Not using flaps as necessary to control speed and rate of descent.
7. **Rounding out too late:** A hard landing followed by a bounce and a stall and another hard landing.
8. **Rounding out too high:** Loss of airspeed followed by a high sink rate and a hard landing.
9. **Ballooning:** caused by misjudging the rate of descent and over-controlling.
10. **Floating:** excessive airspeed on final.
11. Over-controlling with rudder.
12. Not using aerodynamic braking
13. Excessive use of brakes (Skidding tires)

### Evaluations/ Standards:

14. Considers the wind conditions, landing surface, obstructions, and selects the most suitable touchdown point.
15. Establishes the recommended approach and landing configuration and airspeed; adjusts pitch attitude and power. Maint stable approach.
16. Makes smooth, timely, and correct control application during the round-out and touchdown.
17. Touches down **+100ft (Commercial) +200ft (Private)** beyond a specified point, and with airplane's longitudinal axis aligned with landing surface.
18. Apply breaks as necessary to stop in the shortest distance (Safely).