

## Private pilot maneuvers – 90W

### Slow Flight

1. Clear area
2. Stabilize aircraft – heading, altitude, airspeed
3. Reduce power to 1800 rpm, carb heat – on
4. Set desired flap setting.
5. Slow to min. controllable airspeed (MCAS), red stall warning light on steady (in smooth air).
6. Maintain constant altitude +/- 100', and heading +/- 10 deg.
7. When turning, use mostly rudder, add power to maintain altitude, as required.
8. Practice with no flaps thru full flaps.

### Power off stalls (approach to landing)

1. Start above 2000' agl (3000' agl desired), to always recover above 1500' agl.
2. Steps 1 – 4 above.
3. Stabilize at 65 mph with desired flap setting at constant altitude.
4. Reduce power to 1500 rpm, start a 3 second descent then slowly increase the pitch attitude to maintain altitude until first indications of the stall.
5. Recover by reducing pitch attitude (approx. level), adding full power, carb heat – off, removing the 3<sup>rd</sup> notch of flaps. Slowly increase pitch attitude to an 7 degree climb to minimize altitude loss without entering a secondary stall buffet.
6. Remove 2<sup>nd</sup> notch of flaps at 65 mph and go flaps up at 75 mph, climb at  $V_y - 85$  mph to desired altitude.
7. Practice level and in bank angles up to 20 degrees.

### Power on stalls (departure)

1. Start above 2000' agl (3000' agl desired), to always recover above 1500' agl.
2. Steps in 1 – 4 above.
3. Stabilize at 65 mph with 1 or 2 notches of flaps at constant altitude.
4. Add power to full, carb heat - off and slowly increase the pitch attitude to approx 15 degrees, maintain attitude until first indications of the stall.
5. Recover by reducing pitch attitude (approx. level), slowly increase pitch attitude to an 7 degree climb to minimize altitude loss without entering a secondary stall buffet.
6. Remove 2<sup>nd</sup> notch of flaps at 65 mph and flaps up at 75 mph, climb at  $V_y - 85$  mph to desired altitude.
7. Practice level and in bank angles up to 20 degrees.

### Steep turns, 45 degrees of bank

1. Clear area.
2. Stabilize aircraft – heading, altitude, accelerate to 115 mph, set power to maintain airspeed.
3. Determine desired rollout heading, i.e. 180 / 360 degrees of turn.
4. Roll smoothly into bank adding back pressure as required as aircraft passes 30 degrees of bank to maintain altitude. Add full power to minimize airspeed loss.
5. Start rollout approx. 30-45 degrees prior to desired rollout heading to smoothly rollout on desired heading. Reduce back pressure to prevent climbing when rolling out.
6. Reduce power after aircraft has accelerated to 115 mph. Maintain desired airspeed.

### Engine Failure Emergency procedures

1. Maintain aircraft control, maintain level flight while slowing to best glide speed – 80 mph.
2. IF YOU JUST MADE A CHANGE... i.e. changed fuel tanks, check or undo it.
3. Assess best landing area and turn towards it, determine best approach to landing.
4. Perform “L” check, attempt to restart engine to gain usable power.
5. If able, make “mayday” call.
6. Perform second “L” check turning everything off and opening door prior to landing, if able.
7. Ensure landing in desired area using flaps and forward slips as required.
8. After landing, egress the aircraft, watch for fire, stay away.

### Ground reference maneuvers

1. Clear area for traffic and obstacles.
2. Select forced landing areas, in case of emergency.
3. Fuel Pump on.
4. Descend to 800 – 1000’ agl (approx. 4600’ msl).
5. Track two headings 90 degrees apart to predict wind direction.
6. Rectangular Course (can be done as part of step four).
  - a. Select ground references for rectangle.
  - b. Set up level flight, trimmed for 2500 rpm cruise.
  - c. Fly course using appropriate crab angles to stay over or slightly offset from ref.
7. Turns around a point.
  - a. Select reference point.
  - b. Maneuver upwind to enter circle on a downwind heading.
  - c. Set up level flight, trimmed for 2500 rpm cruise.
  - d. Execute two 360 degree turns around the point at a constant altitude, maintaining a constant radius turn.
8. S-turns across a road.
  - a. Select straight ground reference approximately 90 degrees to wind.
  - b. Set up level flight, trimmed for 2500 rpm cruise.
  - c. Cross reference (road) at 90 degree angle and begin series of level equal radius turns, always intersecting the road at a 90 degree angle (wings momentarily level).

### **SHORT FIELD T/O with Obstacle**

Prior to take off – set flaps 25 deg (2<sup>nd</sup> notch)  
Use all available runway.  
Hold brakes – Advance to Full Throttle  
-- Check for max. RPM (lean if required)  
Release brakes – accelerate with **neutral stabilator**  
Accel to 55 mph, rotate into ground effect.  
Accel to and climb at 74 mph until obstacle is cleared.  
Slowly retract flaps to 1<sup>st</sup> notch and accel to 85 mph  
Retract remaining flaps and climb at desired airspeed.

### **SHORT FIELD T/O -- NO Obstacle**

Prior to take off – set flaps 25 deg (2<sup>nd</sup> notch)  
Use all available runway.  
Hold brakes – Advance to Full Throttle  
-- Check for max. RPM (lean if required)  
Release brakes – accelerate with **neutral stabilator**  
Accel to 55-60 mph, rotate into ground effect.  
Accel to and climb at 65 and normal accel and cleanup to climb at 85 mph.  
Slowly retract flaps and climb at desired airspeed.

### **SOFT FIELD T/O with Obstacle**

Prior to takeoff – set flaps 25 deg (2<sup>nd</sup> notch)  
Use back pressure as necessary to keep nose wheel up.  
Advance to Full Throttle, DO NOT STOP on soft surface  
-- Check for max. RPM (lean if required)  
Accel with back pressure to get airborne into ground effect at slowest possible airspeed (45).  
Accel in ground effect to climb at 74 mph until obstacle is cleared.  
Slowly retract flaps to 1<sup>st</sup> notch and accel to 85 mph  
Retract remaining flaps and climb at desired airspeed.

### **SOFT FIELD T/O with no Obstacle**

Prior to takeoff – set flaps 25 deg (2<sup>nd</sup> notch)  
Use back pressure as necessary to keep nose wheel up.  
Advance to Full Throttle, DO NOT STOP on soft surface  
-- Check for max. RPM (lean if required)  
Accel with back pressure to get airborne into ground effect at slowest possible airspeed, 47 mph.  
Accel in ground effect to climb at 85 mph .  
Slowly retract flaps and climb at desired airspeed.

### **SHORT FIELD Landing with Obstacle**

Abeam numbers:

THROTTLE -- 1800 rpm, slow to 85 mph

CARB HEAT -- full hot

FLAPS -- 2 notches, 85mph

TURN BASE—when obstacle is behind wing, add 3<sup>rd</sup> notch of flaps, 75 mph

SHORT FINAL-- 67 mph\*, Aim 500 ft beyond threshold

Touch Down on 1000 foot markers:

Dump flaps, full braking and back elevator pressure

\*Adjust air speed as needed for winds

### **SHORT FIELD Landing - NO Obstacle**

Abeam numbers:

THROTTLE -- 1800 rpm, Slow to 85 mph

CARB HEAT -- full hot

FLAPS—2 notches, 85mph

TURN BASE -- when numbers 45 deg behind wing, add 3<sup>rd</sup> notch of flaps, 75 mph

SHORT FINAL—67\* mph, Aim at 3<sup>rd</sup> arrow (500 ft before runway)

Touch Down on Threshold:

Dump flaps, full braking and back elevator pressure

\*Adjust airspeed as needed for winds

### **SOFT FIELD Landing with Obstacle**

Abeam numbers:

THROTTLE -- 1800 rpm, Slow to 85 mph,

CARB HEAT -- full hot

FLAPS – 2 notches, 85mph

TURN BASE-- when numbers behind wing, add 3<sup>rd</sup> notch of flaps, 75 mph

SHORT FINAL—67\* mph, Aim 500 ft beyond threshold

Use power to fly it onto the runway. Hold nose wheel off as plane slows. Yoke back for aerodynamic braking

\*Adjust air speed as needed for winds

### **SOFT FIELD Landing- NO Obstacle**

Abeam numbers:

THROTTLE -- 1700 rpm, Slow to 85 mph,

CARB HEAT -- full hot

FLAPS – 2 notches, 85mph

TURN BASE-- when numbers 45 deg behind wing, add 3<sup>rd</sup> notch of flaps, 75 mph

SHORT FINAL—67\* mph, Aim at 3<sup>rd</sup> arrow (500 ft before runway)

Use power to fly it onto the runway. Hold nose wheel off as plane slows. Yoke back for aerodynamic braking

\*Adjust airspeed as needed for winds