



Flight Maneuvers C-150/152

The following is for quick reference only. In all cases, students should refer to and become familiar with the C-150 or C-152 Pilot Information Manuals (PIM) and the appropriate ACS or Practical Test Standards (PTS).

I. Slowflight

1. Clearing turns
2. Pre-maneuver checklist
 - a. Gas on
 - b. Mixture rich for altitude
 - c. Carb heat on
 - d. Mags on
 - e. Master on
 - f. Primer locked
3. Power reduced to 1500-1700 RPM
4. Flaps 10 degrees below 85 kts.
5. Flaps 20 degrees
6. Full Flaps
7. Maintain heading, airspeed ($1.2V_{so}$), and altitude using pitch and power. At no time should the aircraft be stalled

Recovery

1. Full power and carb heat off
2. Flaps to 20 degrees- lower nose slowly
3. Positive rate-flaps to 10 degrees
4. Flaps up
5. Recover to cruise

II. Stalls

- A. Power-off
1. Clearing turns
 2. Pre-maneuver checklist
 3. Power reduced to 1500-1700 RPM
 4. Flaps 10 degrees below 85 kts
 5. Power reduced to 1200 RPM
 6. Flaps 20 degrees
 7. Power idle
 8. Full flaps
 9. When airspeed stabilizes at $1.3 V_{so}$ pick a lower altitude and as aircraft approached 50 ft above target altitude, increase back pressure until stall occurs.

Note: This stall should be done both full and imminent, and in turns both to the left and right.

Recovery:

1. Release back pressure



2. Full power-wings level
3. Flaps to 20 degrees
4. Positive rate (Climb V_x)
5. Flaps to 10 degrees
6. Verify climb V_x
7. Flaps up
8. Recover to cruise

B. Power-on

1. Clearing turns
2. Pre-maneuver checklist
3. Power reduce to 1500 RPM
4. Slow aircraft
5. Reduce power to 1200 RPM
6. AT 60 kts add full power and carb heat off. Establish a climb attitude until stall occurs.

Note: This stall should be done both full and imminent, and in turns both to the left and right.

Recovery:

1. Release back pressure
2. verify full power-wings level
3. Let aircraft accelerate
4. Recover to cruise

C. Accelerated Stall

1. Clearing turns
2. Pre-maneuver checklist
3. Power to 2000 RPM
4. Slow aircraft to 70 kts
5. Enter 45 degrees bank and increase back pressure until stall occurs

Recovery:

1. Release back pressure
2. Full power
3. Level wings
4. Recover to cruise

III. Steep Turns

1. Clearing turns
2. Pre-maneuver checklist
3. Pick reference point
4. Slow aircraft to 90 kts.
5. Establish bank angle
6. Maintain altitude and airspeed
7. Complete on 360 degree turn to the left and one 360 degree turn to the right.



Private pilot: 45 degrees of bank

Commercial pilot: 50 degrees of bank

IV. Takeoffs

A. Normal

1. Line up on the center line
2. Check heading indicator with runway heading
3. Apply full power smoothly
4. Check power stable and airspeed alive
5. At 50 kts. Pitch to a lift off attitude
6. Accelerate to $V_y - 67$ kts.

B. Short Field

1. Line up on center line with as much runway ahead as possible (flaps 10 degrees in a C-152)
2. Hold brakes.
3. Add full power and hold elevator neutral
4. As aircraft approaches $V_x - 54$ kts, increase pitch to hold 54 kts and fly aircraft off the ground
5. Maintain 54 kts until clear of obstacles
6. Accelerate to $V_y 67$ kts Flaps up in Cessna 152.

C. Soft Field

1. Taxi with 10 degrees flaps and hold full back elevator (do not use brakes)
2. Line up on the center line
3. Add full power and hold elevator full back (do not drag tail)
4. As aircraft lifts off lower nose into ground effect.
5. As aircraft accelerates to climb speed climb out at $V_y - 67$ kts.
6. After obtaining a safe altitude retract flaps slowly

D. Crosswind

1. Line up on center line
2. Check heading indicator with the runway heading.
3. Apply full aileron into wind
4. Smoothly apply full power.
5. Hold aileron into wind, roll on upwind wheel (rudder as needed)
6. Hold aileron into wind
7. Level wings crab into wind pitch for $V_x - 54$ kts until clear of obstacle
8. Pitch for $V_y - 67$



V. Landings

A. Normal

1. Enter traffic pattern at appropriate altitude
2. Pre-landing checklist
3. Abeam landing point reduce power to 1500 rpm
4. Below 85 kts 10 degrees of flaps
5. Maintain 70 kts
6. Turn base (crab for wind)
7. Reduce airspeed to 65 kts
8. Flaps 20 degrees
9. Turn final
10. When landing is assured full flaps
11. Maintain 55 kts.

B. Short Field

1. Enter traffic pattern at appropriate altitude
2. Pre-landing checklist
3. Abeam the landing point reduce power to 1800-2000 RPM
4. Below 85 kts 10 degrees of flaps
5. Maintain 70 kts
6. Turn base (Crab for wind)
7. Reduce airspeed to 65 kts
8. Flaps 20 degrees
9. Turn final
10. Full flaps
11. Maintain 52 kts
12. After touchdown maximum braking

C. Soft Field

1. Enter traffic pattern at appropriate altitude
2. Pre-landing checklist
3. Abeam landing point reduce power to 1500-1700 RPM
4. Below 85 kts 10 degrees of flaps
5. Maintain 70 kts
6. Turn base (Crab for wind)
7. Reduce airspeed to 65 kts
8. Flaps 20 degrees
9. Turn final
10. When landing is assured full flaps
11. Maintain 52 kts
12. At 1000- 12000 Rpm prior to touchdown maintain nose high attitude until nose wheel touches down.



C. Crosswind

1. Enter traffic pattern at appropriate altitude (crab for wind)
2. Pre-landing checklist
3. Abeam landing point reduce power to 1800-2000 RPM
4. Below 85 kts 10 degrees flaps
5. Maintain 70 kts
6. Turn base (crab for wind)
7. Reduce airspeed to 65 kts
8. 20 degrees flaps and trim
9. turn final (crab for wind), align with runway wing low approach: Upwind aileron opposite rudder
10. Wing low round out. Upwind aileron opposite rudder
11. Wing low touch down, directional control with rudder and allow airspeed to decrease increase aileron input to compensate for wind.

VI. Emergencies

A. Go Arounds

1. Add full power/ carb heat off
2. Maintain aircraft control
3. Flaps 20 degrees
4. Pitch to $V_x - 55$ kts
5. Maintain climb attitude
6. Flaps 10 degrees
7. Pitch to 67 kts
8. Flaps up

B. Landings

1. Maintain 60 kts
2. Pick a field- determine approach
3. Gas on
4. Mixture rich
5. Throttle 1 inch
6. Carb heat on
7. Mags on both
8. Primer locked
9. Master on
10. Try to restart
11. If no restart, fuel off
12. Mixture full lean
13. Throttle idle
14. Mags off
15. Transmit 121.5 MHz
16. Flaps appropriate for landing
17. Master off when flaps down
18. Door open before touchdown



VII. Turn Around A Point

1. Clearing turns
2. Pre-landing checklist
3. Pick a point
4. Pick a nearby field in case of emergency
5. Enter at 800 AGL, downwind, and at 90 kts
6. When at 90 degree point, roll into the maximum bank
7. Keep ground track equal distance from the point by varying bank (decreasing)
8. Use proper crab into the wind
9. When at the 180 degree point roll into the minimum bank
10. Keep ground track equal distance from the point by varying bank (increasing)
11. Complete two turns
12. Exit on the downwind.

VIII. S-Turns Along A Road

1. Clearing Turns
2. Pre-maneuver checklist
3. Pick a road that is perpendicular to the wind
4. Pick a nearby field in case of emergency
5. Enter at 800 AGL, downwind, and at 90 kts
6. When over the road roll into a steep bank
7. Keep ground track equal distance from the point by varying bank (decreasing)
8. Plan to cross the road wings level and perpendicular to it
9. When over the road, roll into a shallow bank, in the opposite direction
10. Keep ground track equal distance from the point by varying bank (increasing)
11. Complete two "S" s
12. Exit on the downwind

1. Rectangular course

2. Clearing turns
3. Pre-maneuver checklist
4. Pick a field with straight boundaries with the longest part parallel with the wind
5. Pick a nearby field in case of emergency
6. Enter at 800 AGL, 45 degrees to downwind, and at 90 kts.
7. Keep ground track equal distance from the boundary
8. When abeam the crosswind boundary roll into enough bank to fly a symmetrical arc to the boundary
9. Keep ground track equal distance from the boundary
10. Make a turn at each corner
11. Keep ground track equal distance from the boundary
12. Exit on the downwind



13. Eights Around Pylons

1. Clearing turns
2. Pre-maneuver checklist
3. Pick two points that lie across a line perpendicular to the wind
4. Pick a nearby field in case of emergency
5. Enter at 800 AGL downwind between the pylons and at 90 kts
6. Keep ground track equal distance from the first pylons by varying bank angle
7. Cross between the pylons and begin in the opposite direction
8. Keep ground track equal distance from the second pylon by varying bank angle
9. Exit downwind between the pylons

14. Gliding Spiral

1. Clearing turns
2. Pre-maneuver checklist
3. Power idle
4. Pick a field for emergency landing
5. Slow to 60 kts
6. Begin spiral over the upwind end of the field
7. Bank must be 45-55 degrees on the steepest side
8. Perform emergency checklist
9. Roll out on downwind at 1,000 AGL or a little higher
10. Make traffic pattern approach for the field
11. Final approach should go no lower than 500 AGL

15. Chandelles

1. Clearing turns
2. Pre-maneuver checklist
3. Cruise airspeed and power
4. Begin maneuver at 95 kts
5. Roll into 30 degree bank
6. Begin increasing pitch at a constant rate at 45 degrees of turn add full power
7. At 90 degree of turn, maintain pitch and decrease bank at a constant rate
8. At 180 degree of turn, airspeed should be within 5kts of a stall
9. Recover to straight and level with no altitude loss

16. Lazy Eights

1. Clearing turns
2. Pre-maneuver checklist
3. Cruise airspeed and power
4. Begin maneuver at 95 kts
5. Begin a climbing turn so the highest pitch will occur at 45 degrees of turn



6. Begin to increase bank to 30 degrees and allow pitch to transition through the horizon at 90 degree of turn
7. Begin decreasing bank so that at 135 degrees of turn 15 degrees bank and lowest pitch
8. Begin decreasing bank and pitch to straight and level at 180 degrees of turn
9. Roll into the opposite direction and repeat steps 5-8

17. Eights On Pylons

1. Clearing turns
2. Pre-maneuver checklist
3. Select two point (pylons) and the ground perpendicular to the wind
4. Select a nearby field in case of emergency
5. Enter at "pivotal altitude" of 1500 feet MSL 45 degrees downwind, crab into wind between the pylons at 90 kts
6. Enter bank desired, distance for pivotal altitude, (steep), maintain pylon off wingtip by use of pitch and bank angle.
7. Cross between the pylons and begin in the opposite direction.
8. Enter bank desired. Distance for pivotal altitude,(steep), maintain pylon off wingtip by use of pitch and bank angle.
9. Exit downwind between the pylons

XV. Steep Spirals

1. Clearing turns
2. Pre-maneuver checklist
3. Carb heat on, power to idle
4. Select a field for emergency landing
5. Slow to 70 kts
6. Begin spirals over the upwind end of the field
7. Bank must be 50-55 degrees on downwind side
8. Perform emergency checklist
9. Roll out smoothly and coordinated at 1,000 ft AGL or slightly higher
10. Make traffic pattern approach for the field
11. Final no lower than 500 ft AGL.

C150 Limitations Chart

AIRSPED LIMITATIONS

Airspeed limitations and their operational significance are shown in figure 2-1.

| | SPEED | KCAS | KIAS | REMARKS |
|-----------------|-----------------------------------------------------------------|----------------|----------------|----------------------------------------------------------------------------|
| V _{NE} | Never Exceed Speed | 141 | 141 | Do not exceed this speed in any operation. |
| V _{NO} | Maximum Structural Cruising Speed | 104 | 107 | Do not exceed this speed except in smooth air, and then only with caution. |
| V _A | Maneuvering Speed: 1600 Pounds 1450 Pounds 1300 Pounds | 95 90 85 | 97 93 88 | Do not make full or abrupt control movements above this speed. |
| V _{FE} | Maximum Flap Extended Speed | 89 | 85 | Do not exceed this speed with flaps down. |
| | Maximum Window Open Speed | 141 | 141 | Do not exceed this speed with windows open. |

Figure 2-1. Airspeed Limitations

SECTION 2
LIMITATIONS

CESSNA
MODEL 150M

AIRSPED INDICATOR MARKINGS

Airspeed indicator markings and their color code significance are shown in figure 2-2.

| MARKING | KIAS VALUE OR RANGE | SIGNIFICANCE |
|------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| White Arc | 42 - 85 | Full Flap Operating Range. Lower limit is maximum weight V _{SO} in landing configuration. Upper limit is maximum speed permissible with flaps extended. |
| Green Arc | 47 - 107 | Normal Operating Range. Lower limit is maximum weight V _S at most forward C.G. with flaps retracted. Upper limit is maximum structural cruising speed. |
| Yellow Arc | 107 - 141 | Operations must be conducted with caution and only in smooth air. |
| Red Line | 141 | Maximum speed for all operations. |

Figure 2-2. Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Engine Manufacturer: Teledyne Continental.

Engine Model Number: O-200-A

Engine Operating Limits for Takeoff and Continuous Operations:

Maximum Power: 100 BHP.

Maximum Engine Speed: 2750 RPM.

NOTE

The static RPM range at full throttle (carburetor heat off and full rich mixture) is 2460 to 2560 RPM.

C152 Limitations for N115SS

AIRSPPEED LIMITATIONS

Airspeed limitations and their operational significance are shown in figure 2-1.

| | SPEED | KCAS | KIAS | REMARKS |
|-----|-----------------------------------------------------------------|-----------------|-----------------|----------------------------------------------------------------------------|
| VNE | Never Exceed Speed | 145 | 149 | Do not exceed this speed in any operation. |
| VNO | Maximum Structural Cruising Speed | 108 | 111 | Do not exceed this speed except in smooth air, and then only with caution. |
| VA | Maneuvering Speed: 1670 Pounds 1500 Pounds 1350 Pounds | 101 96 91 | 104 98 93 | Do not make full or abrupt control movements above this speed. |
| VFE | Maximum Flap Extended Speed | 87 | 85 | Do not exceed this speed with flaps down. |
| | Maximum Window Open Speed | 145 | 149 | Do not exceed this speed with windows open. |

Figure 2-1. Airspeed Limitations

SECTION 2
LIMITATIONS

CESSNA
MODEL 152

AIRSPPEED INDICATOR MARKINGS

Airspeed indicator markings and their color code significance are shown in figure 2-2.

| MARKING | KIAS VALUE OR RANGE | SIGNIFICANCE |
|------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| White Arc | 35 - 85 | Full Flap Operating Range. Lower limit is maximum weight V_{SO} in landing configuration. Upper limit is maximum speed permissible with flaps extended. |
| Green Arc | 40 - 111 | Normal Operating Range. Lower limit is maximum weight V_S at most forward C.G. with flaps retracted. Upper limit is maximum structural cruising speed. |
| Yellow Arc | 111 - 149 | Operations must be conducted with caution and only in smooth air. |
| Red Line | 149 | Maximum speed for all operations. |

Figure 2-2. Airspeed Indicator Markings

POWER PLANT LIMITATIONS

Engine Manufacturer: Avco Lycoming.
 Engine Model Number: O-235-L2C.
 Engine Operating Limits for Takeoff and Continuous Operations:
 Maximum Power: 110 BHP.
 Maximum Engine Speed: 2550 RPM.

NOTE

The static RPM range at full throttle (carburetor heat off and mixture leaned to maximum RPM) is 2280 to 2380 RPM.