



**BE-76 Beechcraft Duchess
Maneuvers Checklist**

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Introduction

Power Settings

This document is intended to introduce to you the standard method of performing maneuvers in Air America's BE-76 Beechcraft Duchess aircraft. Each maneuver has been written to reduce the amount of steps and aid in memorization.

The Beechcraft Duchess has six simple power settings each pilot should remember. They are:

- 1) **Climb Power:** Full Power, 2600 RPM.
- 2) **Normal Cruise:** 23" MP, 2300 RPM.
- 3) **Slow Cruise:** 19" MP, 2300 RPM.
- 4) **Pattern / Landing:** 17" MP, 2300 RPM.
- 5) **Slowing During Clearing Turns:** 12" MP, 2300 RPM.
- 6) **Sustained Single-Engine:** 25" MP, 2500 RPM.

The sustained single-engine power setting is meant to reduce engine wear if practicing single-engine maneuvers and enable you to maintain altitude. If you are unable to maintain altitude at V_{YSE} , use full power and full operating RPM.

While practicing single-engine operations all pilots should monitor engine gauges with increased attention. Consider closing the cowl flap on the inoperative engine and opening the operating engine's cowl flap.

When recovering from single-engine operations, pilots should "scissor" the throttles together. Incrementally add power on the inoperative engine while reducing power on the operative engine. This is meant to allow the engines to slowly warm and cool, respectively.

As always, if the approved Airplane Flight Manual and this Maneuvers Checklist disagree, the procedure in the AFM should be followed in the interest of safety.

Landing Speed Considerations

Note that there are slight differences in the speeds in our procedures and those specified in the Pilot's Operating Handbook. Our speeds are slightly higher in order to add a margin of safety should an engine fail while in the landing phase. Accordingly, when calculating landing distances, you should account for the extra speed needed to come to a complete stop.

Normal / Crosswind Takeoff

Objective: To depart an airport during normal or crosswind conditions with more than adequate clearance of obstacles on departure.

Practical Private Multi Add-On: $V_Y +10/-5$ knots
Test Comm. Multi Add-On: $V_Y \pm 5$ knots
Standards ME Instructor: $V_Y \pm 5$ knots

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed		Liftoff: 71 KIAS Climb: 85 KIAS	

Procedure

1. Visually scan for traffic on final and down the departure end of runway.
2. Taxi into position for takeoff. Position aileron controls for crosswind.
3. Smoothly increase throttles to takeoff power while maintaining directional control. If a crosswind exists, the upwind throttle should be lead slightly.
4. Scan engine instruments, manifold pressure and tachometers.
5. Verify indicated airspeed is functioning.
6. Announce "Engine instruments in the green, Airspeed alive."
7. Maintain enough aileron pressure to keep wings level if a crosswind exists.
8. At 71 KIAS, smoothly pitch up to rotate (*Approximately 3°/second*).
9. Establish climb attitude (*Approximately 10° up*) while accelerating to 85 KIAS.
10. When there is no longer enough runway to land on in the event of an aborted takeoff, Gear UP, and announce "Positive rate, no runway remaining, Gear UP."
11. Crab into the wind if necessary.
12. At 500' AGL, lower nose to check for traffic and accelerate to 100 KIAS.
13. Set 2600 RPM. (*Throttle remains full open*)
14. If staying the pattern: Check for traffic and turn crosswind at 700' AGL. Follow noise abatement procedures if applicable.
15. If exiting the pattern: At 1000' AGL turn fuel pumps off one at a time, complete Climb checklist.

Short Field Takeoff

Objective: To depart an airport during with obstacles on departure demanding a maximum performance takeoff and climbout.

Practical Test Standards
Private Multi Add-On: $V_x +10/-5$ knots until clear, then $V_Y +10/-5$ knots
Comm. Multi Add-On: $V_x +5/-0$ knots until clear, then $V_Y \pm 5$ knots
ME Instructor: $V_x +5/-0$ knots until clear, then $V_Y \pm 5$ knots

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed		Liftoff: 71 KIAS 50-Ft Speed: 80 KIAS	

Procedure

1. Visually scan for traffic on final and down the departure end of runway.
2. Taxi into position for takeoff utilizing maximum available runway. Position aileron controls for crosswind.
3. Stand on the brakes and increase the power to 20" of Manifold Pressure.
4. Check engine instruments, Manifold Pressure, and Tachometers.
5. Announce "Engine instruments in the green" and release brakes.
6. Quickly increase throttles to takeoff power while maintaining directional control.
7. Scan engine instruments and verify indicated airspeed is functioning.
8. Announce "Engine instruments in the green, Airspeed alive."
9. Maintain enough aileron pressure to keep wings level if a crosswind exists.
10. At 71 KIAS, lift the nosewheel off the runway.
11. Establish climb attitude (*Approx 15° up*).
12. Maintain 80 KIAS until clear of obstacles, then lower the nose slightly to accelerate to 85 KIAS.
13. When there is no longer enough runway to land on in the event of an aborted takeoff, Gear UP, and announce "Positive rate, no runway remaining, Gear UP."
14. Crab into the wind if necessary.
15. At 500' AGL, lower nose to check for traffic and accelerate to 100 KIAS.
16. Set 2600 RPM. (*Throttle remains full open*)
17. If staying the pattern: Check for traffic and turn crosswind at 700' AGL. Follow noise abatement procedures if applicable.
18. If exiting the pattern: At 1000' AGL turn fuel pumps off one at a time, complete Climb checklist.

Normal / Crosswind Landing

Objective: To arrive at an airport and land safely where there is a limited length of runway and/or obstacles on approach.

Practical Private Multi Add-On: $V_{REF} +10/-5$ knots (plus wind factor)
Test Comm. Multi Add-On: $V_{REF} \pm 5$ knots (plus wind factor)
Standards ME Instructor: $V_{REF} \pm 5$ knots (plus wind factor)

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed	85 KIAS	Downwind: 100 KIAS Base: 90 KIAS Final: 85 KIAS	Pattern: 120 KIAS

Procedure

1. Complete the Approach checklist 5 NM prior to entering pattern.
2. Slow to desired pattern entry speed 2 NM prior to entering pattern.
3. Enter the pattern on a 45° downwind entry at least 2 NM from the runway, at pattern altitude. Set power to 17"/2300 RPM.
4. Maintain 1/2 to 3/4 mile separation from the runway and turn downwind. (*Runway should appear about 3/4 up wing*)
5. Abeam your selected point of landing, lower gear handle and leave hand on handle until 3 Green/No Red has been confirmed. Announce "3 Green, No Red."
6. Extend flaps to 10°. Descend at 100 KIAS.
7. 45° from your point of landing, extend flaps to 20° and turn base.
8. Visually clear opposite base and extended final.
9. Set prop levers full forward, complete GUMP check.
10. Visually clear final, runway area, and upwind.
11. Turn final. Set flaps to 35° (*Full Down*).
12. Slow to 85 KIAS, adjusting power if necessary. Complete final GUMP check.
13. At 500' AGL, verify cleared to land.
14. Clearing the fence, begin slowing to touchdown speed, verify 3 Green/No Red, and cleared to land.
15. During flare, reduce throttles to idle (some power may be left on upwind engine in a crosswind), and touch down smoothly.
16. Maintain back pressure and initiate braking after nosewheel has touched down.

Short Field Landing

Objective: To arrive at an airport and land safely where there is a limited length of runway and/or obstacles on approach.

Practical Test Standards	Private Multi Add-On:	V _{REF} +10/-5 knots (plus wind factor), within 200 ft. of touchdown point, on centerline, no side drift
	Comm. Multi Add-On:	V _{REF} ±5 knots (plus wind factor), within 100 ft. of touchdown point, on centerline, no side drift
	ME Instructor:	V _{REF} ±5 knots (plus wind factor), within 100 ft. of touchdown point, on centerline, no side drift

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed	80 KIAS	Downwind: 100 KIAS Base: 90 KIAS Final: 80 KIAS	Pattern: 120 KIAS

Procedure

1. Complete the Approach checklist 5 NM prior to entering pattern.
2. Slow to desired pattern entry speed 2 NM prior to entering pattern.
3. Enter the pattern on a 45° downwind entry at least 2 NM from the runway, at pattern altitude. Set power to 17"/2300 RPM.
4. Maintain 1/2 to 3/4 mile separation from the runway and turn downwind. (*Runway should appear about 3/4 up wing*)
5. Abeam your selected point of landing, lower gear handle and leave hand on handle until 3 Green/No Red has been confirmed. Announce "3 Green, No Red."
6. Extend flaps to 10°. Descend at 100 KIAS.
7. 45° from your point of landing, extend flaps to 20° and turn base.
8. Visually clear opposite base and extended final.
9. Set prop levers full forward, complete GUMP check.
10. Visually clear final, runway area, and upwind.
11. Turn final. Set flaps to 35° (*Full Down*).
12. Slow to 80 KIAS by setting Manifold Pressure to 15" or as necessary. Complete final GUMP check.
13. At 500' AGL, verify cleared to land.
14. Clearing the fence/obstacle, begin slowing to touchdown speed, verify 3 Green/No Red and cleared to land.
15. During flare, reduce throttles to idle (some power may be left on upwind engine in a crosswind), and touch down smoothly.
16. Maintain back pressure and initiate maximum braking after nosewheel has touched down.
17. Retract flaps immediately after nosewheel has touched down.

Go-Around / Rejected Landing

Objective: To safely abort a landing and establish climb configuration as quickly as possible.

Practical **Private Multi Add-On:** $V_Y +10/-5$ knots
Test **Comm. Multi Add-On:** $V_Y \pm 5$ knots
Standards **ME Instructor:** $V_Y \pm 5$ knots

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed	85 KIAS		

Procedure

1. Apply full power.
2. Pitch up for V_Y (85 KIAS).
3. Verify props and mixtures full forward.
4. Verify airspeed is in the green arc, Flaps UP.
5. Sidestep to the left or right (*as appropriate*) and announce intentions to CTAF/ATC.

Steep Turns

Objective: To maintain two opposite-direction, level turns while rolling out on entry heading for both turns.

Practical Test Standards
Private Multi Add-On: 45° Bank ±5°, Altitude ±100 ft., Heading ±10°, Airspeed ±10 knots
Comm. Multi Add-On: 50° Bank ±5°, Altitude ±100 ft., Heading ±10°, Airspeed ±10 knots
ME Instructor: 50° Bank ±5°, Altitude ±100 ft., Heading ±10°, Airspeed ±10 knots

Restrictions	Minimum	Optimum	Maximum
Altitude	3000' AGL		
Speed		125 KIAS	

Procedure

1. Perform clearing turns.
2. Set power to 19"/2300 RPM and maintain approximately 125 KIAS.
3. Fly towards reference point and bug heading indicator.
4. Roll left into the turn.
5. Passing 30° of bank, bump power 2" to 21" of Manifold Pressure. Roll trim wheel one turn up if necessary.
6. Maintain altitude by pitching up, maintain coordination with rudder pressure, and monitor VSI, altimeter, heading indicator, and airspeed to coordinate rollout.
7. Using your reference point to lead rollout, reduce power again to 19" MP past 30° of bank and maintain altitude with forward pressure on yoke.
8. Roll out on reference point.
9. Repeat procedure in opposite direction.
10. After rolling out again, return airplane to cruise configuration.

Maneuvering During Slow Flight

Objective: To maneuver the aircraft safely at minimum possible airspeed.

Practical Test Standards

Private Multi Add-On:	Bank $\pm 10^\circ$, Altitude ± 100 feet, Heading $\pm 10^\circ$, Airspeed $+10/-0$ kts
Comm. Multi Add-On:	Bank $\pm 5^\circ$, Altitude ± 50 feet, Heading $\pm 10^\circ$, Airspeed $+5/-0$ knots
ME Instructor:	Bank $\pm 5^\circ$, Altitude ± 50 feet, Heading $\pm 10^\circ$, Airspeed $+5/-0$ knots

Restrictions	Minimum	Optimum	Maximum
Altitude	3000' AGL		
Speed	65 KIAS		

Procedure

1. Set power to 15"/2300 RPM.
2. Perform clearing turns.
3. Reduce power to 10" Manifold Pressure. Maintain altitude.
4. Below 100 KIAS: Prop Levers Full Forward.
 - a. If performing maneuver in dirty configuration: Gear DOWN, flaps to 35°.
5. At first sign of approaching stall (buffet, horn, or airspeed indicator), add power to maintain level flight at altitude.
6. Pitch to maintain airspeed, add or reduce power to maintain altitude.
7. Maintain coordinated flight, add slight power during turns.
8. Recover:
 - a. Add full power.
 - b. Positive rate, Gear UP.
 - c. In Green Arc: Flaps UP.
 - d. After 85 KIAS, establish climb configuration.
 - e. Establish Cruise configuration. Complete Cruise checklist.

Power On Stall

Objective: To demonstrate recovery from a stall in the takeoff configuration.

Practical Test Standards
Private Multi Add-On: Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 10^\circ$, V_Y before Flaps 0°
Comm. Multi Add-On: Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 10^\circ$, V_Y before Flaps 0°
ME Instructor: Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 10^\circ$, V_Y before Flaps 0°

Restrictions	Minimum	Optimum	Maximum
Altitude	3000' AGL		
Speed			

Procedure

1. Set power to 15"/2300 RPM.
2. Perform clearing turns.
3. Reduce power to 10" Manifold Pressure. Maintain altitude.
4. Below 100 KIAS: Prop Levers Full Forward.
5. At 71 KIAS, set power to 20" Manifold Pressure.
6. Pitch up to stalling airspeed (*Max* 20°).
7. At first sign of stall (*buffet or horn*), add Full Power and pitch down. Maintain coordination and level the wings.
8. Pitch for V_Y .
9. Recovery:
 - a. Pitch for level flight.
 - b. Establish cruise configuration.
 - c. Complete cruise checklist.

Power Off Stall

Objective: To demonstrate recovery from a stall in the landing configuration.

Practical Test Standards

Private Multi Add-On:	Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 10^\circ$, V_Y before Flaps 0°
Comm. Multi Add-On:	Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 5^\circ$, V_Y before Flaps 0°
ME Instructor:	Heading $\pm 10^\circ$, Bank not to exceed $20^\circ \pm 5^\circ$, V_Y before Flaps 0°

Restrictions	Minimum	Optimum	Maximum
Altitude	3000' AGL		
Speed			

Procedure

1. Set power to 15"/2300 RPM.
2. Perform clearing turns.
3. Below 100 KIAS: Prop Levers Full Forward.
4. Extend Gear, flaps to 35° .
5. At 85 KIAS, begin descent for no more than 200'.
6. Reduce power to idle and pitch up to simulate over-rotation on flare.
7. At first sign of stall (*buffet or horn*), add Full Power and pitch down. Maintain coordination and level the wings.
8. Above V_{SO} , Retract flaps to 10° and pitch for V_Y .
9. Positive rate, Gear UP.
10. Retract flaps to 0° after V_Y .
11. Establish Cruise configuration. Complete Cruise checklist.

Engine Failure After Liftoff (Simulated)

Objective: To demonstrate a successful engine-failure procedure after liftoff.

Practical	Private Multi Add-On:	Heading $\pm 10^\circ$, Airspeed ± 5 knots
Test	Comm. Multi Add-On:	Heading $\pm 10^\circ$, Airspeed ± 5 knots
Standards	ME Instructor:	Heading $\pm 10^\circ$, Airspeed ± 5 knots

Restrictions	Minimum	Optimum	Maximum
Altitude	500' AGL		
Speed	85 KIAS	85 KIAS	

Procedure

1. Maintain Directional Control of the aircraft.
2. Maintain V_{XSE} or V_{YSE} as appropriate.
3. Establish Zero-Sideslip.
 - a. Sufficient yaw into operating engine.
 - b. 2° - 3° of bank into operating engine.
 - c. Ball $\frac{1}{2}$ length towards operating engine.
4. Verify Maximum Thrust:
 - a. Mixtures full forward.
 - b. Prop Levers full forward.
 - c. Throttles full forward.
5. Verify flaps up.
6. Verify gear up.
7. Identify inoperative engine ("*Dead foot, dead engine*").
8. Verify inoperative engine by reducing throttle on suspected engine.
9. Simulate feather on inoperative engine by moving prop control to feather detent (*half travel back*). Instructor will set Zero Thrust (*8" MP*).
10. Clear of obstacles, maintain V_{YSE} .
11. Simulate declaring emergency, return for landing.

V_{MC} Demonstration

Objective: To demonstrate the aircraft's behavior during simulated V_{MC} conditions. The instructor will block the rudder in order to induce V_{MC} conditions before stalling speed. See notes at end of procedure.

Practical Test Standards

Private Multi Add-On:	Heading ±20°, Recover to V _{YSE} +10/-5 knots
Comm. Multi Add-On:	Heading ±20°, Recover to V _{YSE} ±5 knots
ME Instructor:	Heading ±20°, Recover to V _{YSE} ±5 knots

Restrictions	Minimum	Optimum	Maximum
Altitude	5000' AGL		
Speed	70 KIAS		

Procedure

1. Set power to 15"/2300 RPM.
2. Perform clearing turns.
3. Below 100 KIAS, set prop levers full forward.
4. Stabilize the aircraft at 85 KIAS and maintain altitude.
5. Cowl flaps open.
6. Reduce power on simulated inoperative engine. Engine should remain windmilling.
7. Set full power on operating engine.
8. Establish zero sideslip.
9. Begin pitching up and slowing 1 knot per second.
10. Use rudder pressure to counteract yawing tendency.
11. At 75 KIAS, instructor will block the rudder to maintain safe margin from stall speed.
12. Initiate recovery at the first sign of uncontrolled roll, stall horn, stall buffet, or stall airspeed:
 - a. Reduce power on operating engine quickly to regain control.
 - b. Maintain maximum available rudder pressure.
 - c. Lower nose to regain airspeed.
 - d. As airspeed increases, increase power on available engine.
 - e. With sufficient airspeed, maintain V_{YSE} and full power on operating engine.
13. Increase power on inoperative engine and return to cruise configuration.
14. Complete cruise checklist.

Notes: In addition to blocking rudder, bank into inoperative engine may be used to raise V_{MC} significantly above stall speed.

Precision Approach, Single-Engine

Objective: To safely execute a precision instrument approach procedure with one engine inoperative.

Practical Test Standards

Private Multi Add-On:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale
Comm. Multi Add-On:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale
ME Instructor:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed	85 KIAS		

Procedure

1. At FAF, Gear DOWN.
2. Set 17" MP, 2300 RPM or more if needed.
3. Maintain 100 KIAS, or if unable to maintain glidescope use V_{YSE} .
4. Complete GUMP check by 500' AGL, verify cleared to land.
 - a. Use maximum of 20° flaps.

Non-Precision Approach, Single-Engine

Objective: To safely execute a non-precision instrument approach procedure with one engine inoperative.

Practical Test Standards

Private Multi Add-On:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale
Comm. Multi Add-On:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale
ME Instructor:	Altitude $\pm 100'$, Airspeed ± 10 knots, Heading $\pm 10^\circ$, CDI $\frac{3}{4}$ scale

Restrictions	Minimum	Optimum	Maximum
Altitude			
Speed	85 KIAS		

Procedure

1. At FAF, Gear should remain UP.
2. Set 17" MP, 2300 RPM or more if needed.
3. Maintain 100 KIAS, or if unable to maintain altitude use V_{YSE} .
4. When runway is in site, Gear DOWN.
5. Complete GUMP check by 500' AGL, verify cleared to land.
 - a. Use maximum of 20° flaps.