



BushCat
**Standard
Operating
Procedures
Manual**

The contents listed in this SOPM are to be used for guidance in the performance of flight maneuvers for the BushCat by Sky Ranch in conjunction with the manufacturers approved POH / AFM and the Airplane Flying Handbook (FAA-H-8083-3B). Ultimately, it is at the discretion of the Pilot in Command to determine the safety in the performance of these maneuvers.

Contents

BushCat Maneuvers	2
V-Speeds	2
Pre-Maneuver Checklist.....	2
Normal Takeoff.....	3
Short Field Takeoff.....	4
Soft Field Takeoff	5
Slow Flight Landing And Take Off.....	6
Power - Off Stall	7
Power - On Stall	8
Steep Turns.....	9
Rectangular Course	10
Turns Around A Point.....	11
S-Turns Across A Road	12
Emergency Descent.....	13
Engine Failure In Flight	14
Engine Fire In Flight	15
Normal Approach / Landing	16
Soft Field Landing	17
Short Field Landing	18
Go-Around / Rejected Landing.....	19

BushCat Maneuvers

V-Speeds

Vs0.....	45 MPH
Vs1.....	47 MPH
Vs.....	51 MPH
Vx.....	55 MPH
Vy.....	67 MPH
VFe83 MPH
Vo	81 MPH
Vne	103 MPH
Vg64 MPH
Max Demonstrated Crosswind.....	10 KIAS

Pre-Maneuver Checklist

Prior to each maneuver the “Pre-Maneuver Checklist” should be completed

C: Clearing Turns

H: Heading

A: Altitude

P: Position report and emergency landing location noted

S: Seat Belts and Switches (Fuel Pump and Lights on)

Normal Takeoff

Procedure:

1. Assure that the before take-off checklist is complete
2. Note wind direction
3. Taxi onto the runway, aligning the nosewheel with the centerline and verify the runway of intended takeoff with the heading indicator

Example: When aligned with runway 27 the heading indicator should indicate 270

4. Smoothly apply full throttle.
5. Maintain direction control with the rudders.
5. Verify engine instruments are in the green, the airspeed, and RPM then call out "Engine instruments in the green, airspeed is alive, more than 5200 RPM."
6. Rotate at 55 KIAS
7. Maintain a V_y climb at 67 KIAS.
8. Once more than 200 feet above the runway and obstacles are clear retract the flaps to 0
9. Apply nose up Trim to establish a constant airspeed climb
10. Tap the breaks to eliminate aircraft shaking once in the air
11. At 1000' AGL with an emergency landing location in sight turn the fuel pump off.
12. Set climb power at or below 5500RPM

Note that full power in the climb cannot be used for more than 5 minutes. The maximum continuous power setting is 5500RPM

Short Field Takeoff

Procedure:

1. Assure that the before take-off checklist is complete
2. Taxi onto the runway utilizing all available runway.
3. Apply brakes and come to a full stop on the runway.
4. While applying breaks smoothly apply full throttle and ensure power is more than 5200RPM and engine instrument are indicating green
5. Release the breaks.
6. Ensure airspeed is alive

Use of right rudder will be required to compensate for left turning tendencies.

7. At 55 MPH rotate and set a climb pitch for a V_x climb at 55MPH.
8. Once the airplane has cleared the obstacle, lower the nose, accelerate to 67 KTS, and retract flaps.

During the climb to clear the obstacle at no time should a stall indication be present. If the stall indication does illuminate lower the nose to decrease angle of attack to increase airspeed.

Soft Field Takeoff

Procedure:

1. Ensure the before take-off check list is complete
2. Apply aft elevator to simulate a wet or grassy runway environment
3. Once on the runway apply full throttle smoothly to raise the nose wheel off the ground.
4. Ensure power and engine instruments are normal and the airspeed is alive.
5. The aircraft might enter ground effect before Vr (55 MPH) if so, kept the aircraft in ground and allow it to accelerate to Vr

It is vital in this stage to limit the amount of AFT back pressure to avoid tail strike.

6. Once the plane accelerates to 55 MPH in ground effect rotate and set a climb pitch for Vy (67MPH)
7. At a safe altitude once all obstacles are cleared retract the flaps

Slow Flight Landing And Take Off

Procedure: (minimum altitude 1500AGL)

1. Pre-maneuver checklist complete.
2. Reduce power to 3,000 RPM and apply back pressure to maintain desired altitude

The slower you get the more back pressure you will need to maintain altitude

3. For flaps down Landing configuration
 - a. Below 83 MPH Flaps 17°... 27°

Complete this task in increments and maintain desired altitude and heading during this transition

- b. Slow the airplane down until the airplane reaches 50MPH
- c. Increase throttle (approximately 4,000-4,300 RPM) and set a pitch sight picture and hold attitude.

Right rudder will be needed to counteract the plane's left turning tendency

Remember in slow flight that altitude is controlled by power and pitch is controlled by airspeed.

4. For flaps up ("clean") configuration
 - a. slow the airplane down to 55MPH
 - b. Increase power (approximately 3700-4,100 RPM) to maintain a constant airspeed and altitude
5. To recover from slow flight. Apply full power and maintain heading and altitude by lowering pitch and trim if used.
6. Recovery from the dirty configuration
 - a. Apply full throttle and retract from flaps 17° to flaps 27° in increments
7. Once recovered reduce throttle to maintain straight and level flight at cruise speed.

Power - Off Stall

Procedure: (Minimum 1500 AGL)

1. Pre- maneuver checklist
2. Reduce Power to 300 RPM and apply back pressure to maintain altitude.
3. Once Below 83 MPH apply flaps full in increments to slow the airplane down.

Elevator back pressure will be needed to maintain altitude.

4. Once at 65 MPH (Final Approach Speed) simulate a descent to landing for 100'- 200'.
5. Once the simulated decent is complete reduce power to idle and maintain a level flight altitude until the airplane stalls.
6. Once the airplane stalls
 - a. Elevator Forward and Coordinate with use of Rudder
 - b. apply full throttle
 - c. maintain level pitch attitude
 - d. retract flaps to 17
 - e. Initiate a climb

Do not use aileron to correct for a turning stall. Only use rudder to recover from a turn.

7. Once above 60 MPH begin to climb at Vy retract flaps to 0.
8. Climb to the initial altitude you selected prior to completing this maneuver

It is vital during the entry and recovery process of a stall to maintain coordination and never use ailerons. The use of ailerons could induce a Spin. Use Rudder and Elevator control inputs only.

11. Upon completion of the maneuver set trim and power for cruise flight.

Power - On Stall

Procedure:

1. Perform the Pre-Maneuver Checklist
2. Flaps 17
3. Select an altitude that will allow recovery from the maneuver no lower than 1500' AGL.
4. Reduce Power to 3,000 RPM and slow the Airplane down to 55 MPH
5. Once at 55 MPH apply 3,700 RPM and over pitch the aircraft
Right Rudder will be needed to maintain heading due to Left turning tendencies
6. Slowly pitch up induce to stall
7. Once the stall occurs pitch down by releasing back pressure off the yoke and decrease the angle of attack, apply full power, and maintain level pitch to regain airspeed.
8. Once reaching a safe speed begin to establish a Vy climb at 67MPH. Climb to initial entry altitude.

It is vital during a stall to maintain coordination and never use ailerons. The use of ailerons could induce a Spin. Use Rudder and Elevator pressure only.

8. Upon completion of the maneuver set trim and power for cruise flight.

Steep Turns

Procedure:

1. Perform Pre-Maneuver Checklist.
2. Set the throttle to 4,500- 4,700 RPM
3. Enter the maneuver at 75 MPH.
4. Slowly enter a coordinated 45° degree bank in the direction previously cleared.

During the turn once passing 30 degrees apply 200-400 RPM (5,000 RPM) and back pressure and to maintain altitude

5. Divide attention between aircraft control, coordination, and outside reference

The use of rudder is important to maintain Coronation during the turn

6. Around 30 Degrees from your desired heading slowly reduce the bank using opposite ailerion and pitch the nose down to maintain altitude and increase airspeed.
7. Once rolled out on your entry heading. Reduce power and trim for straight and level flight.

Complete one turn to the left and one turn to the right for the maneuver

Rectangular Course

Procedure: (1,000 AGL)

1. Perform Pre- Maneuver Checklist.
2. Determine the direction of the wind.
3. Select a rectangular area from which an emergency landing can be made if necessary.
4. Enter the maneuver at (75-80 MPH / 4,000-4,500 RPM), 45° to the downwind.
5. Maintain a uniform distance around the reference area approximately .5NM away (about half-way up the wing strut).
6. Maintain a constant radius around the rectangular course in putting bank correcting for wind drift
7. After one full lap is completed exit the maneuver on a 45° from the downwind.
8. After the maneuver is complete set trim and power for cruise flight.

Turns Around A Point

Procedure: (1,000 AGL)

1. Perform Pre-Maneuver Checklist.
2. Determine the direction of the wind.
3. Select a reference point from which an emergency landing can be made if necessary.
4. Enter at 75-80 MPH in the downwind toward the reference point.
5. Begin turning abeam the reference point.
Bank should not exceed 45°.
6. Maintain a constant radius around the point by correcting for wind drift.
7. Exit the maneuver on the entry heading after completing two turns around your point
8. After the maneuver is complete set trim and power for cruise flight.

S-Turns Across A Road

Procedure: (1,000 AGL)

1. Perform the Pre-Maneuver Checklist
2. Determine the wind direction
3. Select a reference line that is perpendicular to the wind from which an emergency landing can be made if necessary.
4. Enter the maneuver at 75-80 MPH on the downwind.
5. Once abeam turn back towards the reference line.
6. Vary the bank and pitch as necessary to maintain a constant radius and altitude from the reference line
Bank should not exceed 45°.
7. Once 180° from entry heading and abeam reference line level wings and begin turning in the opposite direction from entry.
8. Repeat Steps 6-8 in the opposite direction.
9. After the maneuver is complete set trim and power for cruise flight.

Emergency Descent

Procedure: (Recover by 1500 AGL)

1. Perform Pre-Maneuver Checklist.
2. Brief passengers on the descent.
3. Reduce power to idle
4. Lower the pitch attitude while simultaneously rolling into a 45° into the direction of a suitable emergency landing site 90° from entry heading.
5. Adjust pitch to maintain 103 MPH in smooth air and 83 MPH in rough air.

During the descent perform S- turns to clear the area as you are descending.

6. Approaching target altitude, begin to level off slowly increasing pitch to reduce rate of descent.
7. At target altitude, adjust pitch to maintain level flight.
8. After the maneuver is complete set trim and power for cruise flight

Engine Failure In Flight

1. Pitch for Best Glide Speed 64 MPH
2. Select an Emergency Landings location

If altitude and time permit perform the engine trouble shoot checklist

3. Fuel Pump on
4. Fuel Selector on
5. Fuel Quantity check
6. Magnetos on
7. Starter Engage

If the Engine cannot be restarted prepare for a power out landing

8. ELT on
9. Transponder 7700
10. Inform ATC
11. Armrest up for quick egress
12. Flaps as Required

Engine Fire In Flight

1. Fuel Selector Off
2. Mags Off
3. Throttle Closed
4. Fuel Pump Off
5. Emergency Decent

***Initiate an Emergency Decent until the fire is extinguished then prepare for a power out landing.
Do not attempt to restart the engine***

Normal Approach / Landing

Procedure:

1. Complete the descent and Pre-Landing check list
2. Once established in the downwind reduce power (approx. 4,500 RPM), and pitch as needed to achieve 75- 80 MPH while maintaining altitude.
3. Abeam the point of intended landing reduce power to 3500 RPM and pitch as needed achieve 70 KIAS and set flaps 17°.

Descent rate should be approximately 500 ft/min.

4. Approximately 45° from the intended landing point turn for the base leg establishing 70 MPH
5. Visually clear the final approach area and turn for final.
6. Once established on final for the runway of intended landing slow the aircraft to 65 MPH and introduce flaps 27°.

Add ½ the gust factor to the final approach if required.

Ex. Winds are 090 at 10 KTS gusting 15 KTS the gust factor would be 5 KTS. Half of 5 is approximately 3 KTS. The final approach speed would be 63 KIAS.

7. Once landing is assured, reduce power to idle and continue a flare to touchdown.
8. Once landed hold the nose gear off the runway with back-pressure to minimize use of brakes.
9. Once the nose wheel is on the ground, gently apply brakes while simultaneously maintaining runway centerline.

Soft Field Landing

Procedure:

1. Complete descent and arrival checklists
2. Follow the normal approach procedure until the final approach segment.
3. On the final approach segment approach at 65 MPH and flaps 27.
4. Once entering ground effect add approximately 100 RPM.

During the soft field landing there will be an excessive period of ground effect occurring that is ok

5. Once the main wheels touch down hold nose off the ground until the nose can no longer be held off the ground and slowly reduce the power to idle.
6. Full aft elevator should be used during the landing roll.
7. Slowly reduce the throttle to idle

Short Field Landing

Procedure:

1. Complete descent and arrival checklists.
2. Pick a landing point in the first $\frac{1}{3}$ of the runway.
3. Follow the normal approach procedure.
4. On short final try to maintain 56 MPH to limit the amount of flare
5. Upon touchdown apply max braking and apply full back pressure on the elevator for aerodynamic braking.

Shot field landings should be hard but never unsafe. If you feel that you are too slow or will miss your touch down point, GO Around

Go-Around / Rejected Landing

Procedure:

1. Once decided to perform a go around promptly perform the following tasks in order:
 - a. Smoothly apply power
 - b. Establish a Climb attitude at 55 MPH
 - c. Retract the flaps to 17
2. Retract the flaps in increments

It is important to retract the flaps in increments as your stall speed will drastically increase with less flaps

3. Once a positive rate of climb is established incrementally retract the remaining flaps.