

PIPER SENECA PA34-200 MANEUVERS GUIDE REVISION 2 SEPTEMBER 2020



Normal Takeoff:

Pretakeoff check and briefing complete Align aircraft with centerline Apply full brakes Power to 2000 RPM Check engine gauges in green Release brakes Apply full power Check engine gauges still green and call *"Airspeed Alive"* 85 MPH call *"rotate"* Accelerate and climb initially at 105 MPH Vy Positive rate of climb with no runway remaining: Call *"Positive Rate, Airspeed below 150, Gear Up"* and select gear up. Confirm gear in transit and gear up.

Shortfield Takeoff: No Flaps

(Sunrise does not authorize 25° flap setting for takeoff during training)

Pretakeoff check and briefing complete Align aircraft with centerline Apply full brakes Apply full power Check engine gauges in green Release brakes Check engine gauges still green and call "Airspeed Alive" 80 MPH call "rotate" Accelerate and climb initially at 85 MPH Positive rate of climb with no runway remaining: Call "Positive Rate, Airspeed below 150, Gear *Up*" and select gear up. Confirm gear in transit and gear up. Climb at Vx 90 MPH until clear of obstacles When clear of obstacles, climb at Vy 105 MPH

This page intentionally left blank

Vspeed	MPH
V _{so}	67
V _{mc}	80
Vs	73
V _{X (sea level)}	90
V _{Y (sea level)}	105
V _{Cruise Climb}	120
V _{LO UP}	125
V _{FE}	125
V _{A (Max Gross)}	146
V _{LE}	150
V _{NO}	190
V _{NE}	217
V _{R (Normal-0° flaps)}	85
V _{R (Short-0° flaps)}	80
V _{normal approach}	05
(full flaps)	22
V _{normal approach}	100
(no flaps)	100
Vshort field approach (full flaps - 40°)	87

Max. Demonstrated Crosswind Velocity - 15 kts Max. Takeoff Wt. - 4200 lbs

Aborted Takeoff:

If engine trouble or any other abnormality is experienced prior to Vr: Throttles to idle, callout "*Abort*" Maintain runway centerline as best as possible with rudder and brakes Brake as necessary to come to a stop

500 foot (AGL) Check:

Climb Power: Set 25" MP and 2500 RPM, 105 MPH

1000 Foot (AGL) Check:

Landing lights and Recognition Lights (if installed) off Fuel pumps off (one at a time, ensuring fuel pressure remains in green) Accelerate to cruise climb 120 MPH unless obstacles or other factors are present Complete Climb Checklist

Cruise Check:

Power 18-19" MP and 2400 RPM (120 MPH) Mixtures leaned Ensure fuel pumps and landing/recog. lights off Complete Cruise Checklist

Descent Check:

Set power to 15-18" MP and 2400 RPM (Avoid manifold settings below 15" MP during descent to prevent shock cooling. Plan your descent in advance!) Cowl flaps closed

Establish 500 foot per minute descent rate Complete Descent Checklist

Normal Landing:

Approaching midfield downwind

GUMPS check (flow)

G – gas (fuel selectors) on

- U undercarriage down below 150 MPH "3 green, one in the mirror"
- M mixtures rich (set)
- P props full forward smoothly
- S switches (fuel pumps and landing lights) on

Abeam landing point: Power to 15" MP 10 degrees of flaps below 125 MPH Pitch for 115 MPH

Complete Before Landing Checklist

On base leg: Pitch for 110 MPH 25 degrees of flaps Verify gear down (3 green)

On final:

Pitch for 95 MPH 40 degrees of flaps Verify gear down (3 green) Verify props full forward (if not already)

On short final (threshold): Verify gear down (3 green)

Short Field Landing:

Same as above except pitch for 87 MPH on final

Multi Engine Take-Off Brief:

"If anything abnormal happens prior to Vr, I will abort the takeoff by bring ing both power levers to idle. If I have an engine failure after Vr and there is still runway left to land on, I will reduce power and land on the available runway. If I have an engine failure after Vr and there is no runway left to land on, I will maintain aircraft control and execute single-engine emergency procedures.

Takeoff Ground Roll distance is _____ Takeoff distance over 50' is _____ Single engine ROC is _____ Any questions? "

Non-Precision Approaches

Normal Procedures: Approach briefing complete Set flaps to 10 degrees before intercepting final approach course – 120 mph. Approx. 18" MP/2400 RPM Callout: "Localizer (or Course) Alive" Complete Approach Checklist Approx. ¹/₂ mile prior to FAF (or established On Final if no FAF) Select Gear Down, Callout: "3 green" At FAF: Complete "5 Ts": Turn, Time, Twist, Throttle, Talk GUMPS Check (flow) **Complete Before Landing Checklist** Set power as required to maintain 700 to 1000 ft/min descent to the MDA Approx. 15" MP/props full forward Add power (approx.. 23" MP) and pitch to maintain MDA and 110 mph Callouts: "1000 Feet to Minimums", "500 Feet to Minimums", "100 Feet to Minimums" "Minimums", "Runway in Sight, Landing" or "Missed Approach" Single-Engine Procedures (changes only noted below):

Arrive At Final Approach Fix at 105-110 mph
Gear Up and flaps UP
Trim for 105-110 mph
Power as required to maintain 700 to 1000 ft/ min descent to the MDA and then to maintain level flight at 110 mph
Gear Down prior to leaving MDA
Complete Before Landing Checklist after selecting gear down. **Single Engine Landing:** Approaching midfield downwind: GUMPS check (flow) G – gas (fuel selectors) on U – undercarriage. Select gear down only when landing assured. Usually this will occur upon leaving pattern altitude or MDA. M – mixtures rich (set) P – props full forward S – switches (fuel pumps and landing lights on Abeam landing point or upon decision to leave pattern altitude or MDA: Power as required Pitch for 105 MPH Select Gear Down – verify "3 green and one in the mirror" **Complete Before Landing Checklist** On base leg: Pitch for 105 MPH Select 10 degrees of flaps when performance allows Verify gear down (3 green) On final: Pitch for 105 MPH once established on final Select 25 degrees of flaps *when performance allows* (25 degree max.) Verify gear down (3 green)

Verify prop forward (if not already)

On short final (threshold): Verify gear down (3 green)

Go Around:

Mixture – Full Forward (set) Props - Full Forward Throttle - Full Forward Pitch - Positive climb attitude Flaps - Reduce to 25 degrees Pitch for 105 MPH Gear - Confirm Positive Rate of Climb and when out of usable runway call *"positive rate, gear up",* and select gear up Slowly retract remaining flaps Pitch for 105 MPH as required Cowl Flaps - Open as required

Transfer of Flight Controls

Pilot Flying (PF) Transfers to (PNF)

 a. PF "You have the flight controls"
 b. PNF "I have the flight controls"
 c. Old PF "You have the flight controls"
 i. Relinquish the Controls

 The PF should never be in doubt
 A visual check should be made that the transfer was successful

Training Note

During single-engine approaches where the aircraft must maintain altitude such as at MDA, the decision whether to leave the gear up or place it down depends on aircraft performance. Due to typically high density altitudes and the resultant poor single engine performance in Florida, we recommend leaving the gear UP in the training environment. Pilots are encouraged to make their own performance calculations and determine in real-world situations whether to leave the gear up or down.

Precision Approaches (ILS and WAAS GPS)

Normal Procedures: Approach briefing complete Set flaps to 10 degrees before intercepting final approach course -120 mph. Approx. 18" MP/2400 RPM Callout: "Localizer (or Course) Alive" Complete Approach Checklist, Callout: "Approach Briefing Complete" Callout: "Glideslope Alive" One dot deflection on Glideslope: Select gear down, Callout: "3 Green" Timer set at FAF as appropriate Trim for 110 mph and power as required to maintain 500 ft/min descent for a 3 degree approach angle (glideslope) GUMPS Check (flow) Complete Before Landing Checklist Callouts: "1000 Feet to Minimums", "500 Feet to Minimums", "100 Feet to Minimums" "Minimums", "Runway in Sight, Landing" or "Missed Approach"

Single-Engine Procedures:

Same as Normal Procedures except Maintain Airspeed 105-120 mph and flaps UP.

When circling is anticipated, gear should stay up until leaving MDA.

Complete Before Landing Checklist after selecting gear down.

See TRAINING NOTE next page.

Pre-Maneuver Checklist

- "CHAP" checklist
- C = Clearing turns
- H = Heading bug (pick outside ref too)
- A = Altitude (see restrictions in ACS)
- P = Proper configuration (GUMPS)
 - G: Gas selectors– On
 - U: Undercarraige- As required
 - M: Mixture—As required
 - P: Props—As required
 - S: Switches (fuel pumps / landing lt)-On

Steep Turns:

Verify at or above 3,000 AGL Pre-maneuver CHAP checklist complete Set 20" MP and 2400 RPM (airspeed approx. 120 MPH) Initiate 50° bank to the left (commercial pilot) or 45° bank (private pilot) Rolling through approximately 30° bank, add 1-2" MP to maintain airspeed Turn for 360 degrees Initiate roll-out approx. 20-25° prior to point Reduce pitch and power to maintain altitude and airspeed during roll-out Start turn in opposite direction and repeat above (or as directed by examiner for private pilot) Perform Cruise Flow & Checklist

Slow flight (clean configuration):

Verify at or above 3,000 AGL Pre-maneuver CHAP checklist complete Set Throttles to 12" MP GUMPS Check G - gas (fuel selectors) on U - undercarriage up M - mixtures set (appropriately leaned) P - props full forward S - switches (fuel pumps and landing lights on) Slow to and maintain an airspeed 5-10 MPH above stall horn, stall horn should not be heard once stabilized Approx. 15"-17" MP to maintain Slow Flight

RECOVERY

Simultaneously add full power and reduce pitch (nose to horizon) Pitch for and maintain level flight

Perform Cruise Flow & Checklist

Drag/Speed/Vyse Demo: Demonstrating the Effects of Various Airspeeds and Configurations During Engine Inoperative Performance

Verify altitude at or above 4,000 Pre-maneuver checklist complete Select reference point and heading Set throttles to 15" MP Props- smoothly advance full foward As airspeed falls below 105 mph set left engine to zero thrust (approx. 12" MP) and right engine to max power Maintain 2 degree bank into good engine and ¹/₂ ball out Pitch for 105 mph and note climb performance Pitch for 95 mph and note climb performance Pitch for 115 mph and note climb performance Set pitch back to 105 mph Select gear down, note climb performance Extend flaps smoothly and in increments to 40 degrees, note climb performance Select gear up, note climb performance with just the flaps down Retract Flaps to zero smoothly and in increments Set throttle to idle on the left engine (windmilling prop) and note climb performance **RECOVERY** to cruise: Set throttle on left engine to 15" MP and the right engine to 20" MP/2400 RPM. Allow cylinder head temps to reach the green arc before going back to cruise power. It has been our experience that the windmilling prop is the greatest single drag producer.

> *Typical results may be as follows:* 95 mph: 100 fpm penalty 105 mph: 250 fpm penalty Gear only: 250 fpm penalty Flaps only: 250 fpm penalty Gear and Flaps: 450 fpm penalty Windmilling prop: 550 fpm penalty

Vmc Demo (continued):

RECOVERY to cruise:

Increase inoperative engine throttle to 15" MP Decrease operating engine to 20" MP/2400 RPM When CHT of inoperative engine returns to green arc: Set throttle to 20" MP/2400 RPM and open cowl flap if required.

Return to normal cruise

Slow flight (dirty configuration – flaps and gear down):

Verify at or above 3,000 AGL Pre-maneuver checklist complete Throttles to 15" MP **GUMPS** check G - gas (fuel selectors) on U - undercarriage down below 150, three green, no red, one in the mirror M - mixtures set (appropriately leaned) P - props full forward S - switches (fuel pumps and landing lights) on Flaps set to 40° incrementally At stall horn, note airspeed and accelerate 5-10 MPH to maintain that speed. Stall horn should not be on once stabilized. Typically 17-19" MP to maintain airspeed

RECOVERY

Simultaneously add full power, reduce pitch (nose to horizon) Set flaps to 25 degrees Pitch for level flight Set flaps to 10 degrees Gear up (below 125 mph) then remaining flaps up Maintain level flight

Perform Cruise Flow & Checklist

Power off stall: Verify at or above 3,500 AGL (recover no lower than 3000') Pre-maneuver checklist complete Set throttles to 15" MP **GUMPS** check G - gas (fuel selectors) on U - undercarriage down below 150, three green, no red, one in the mirror M - mixtures set (appropriately leaned) P - props full forward smoothly S - switches (fuel pumps and landing lights) on Flaps set to 40 degrees incrementally At 95 mph, lower nose and descend approx. 100 ft Reduce Power to idle slowly Pitch up until reaching first indication of stall, horn, buffeting or full stall as directed by the examiner. Private pilot applicants must do full stall.

RECOVERY

Simultaneously add full power, pitch nose to horizon
Set flaps to 25 degrees, then 10 degrees
Pitch for 105 mph
Positive rate of climb Call *"Positive Rate, Air-speed below 125, Gear Up"* and select gear up.
Confirm gear in transit and gear up.
Retract remaining flaps
Maintain 105 mph until reaching initial altitude or altitude, heading and airspeed as specified
Level off

Perform Cruise Flow & Checklist

Vmc Demo:

Verify at or above 4,500 AGL (must stay above 4000' AGL) Pre-maneuver checklist complete Set throttles to 15" MP Set cowl flap of inoperative (critical) engine closed (non-standard to prevent shock cooling) Set cowl flap of operating engine open Idle one engine (typically left engine but PA34 does not have a critical engine) Mixtures Set (appropriately leaned) Props Full Forward (prior to adding full power) Throttle Full operating engine (maintain up to 5 degree bank into good engine and $\frac{1}{2}$ ball out) Verify Gear Up Verify Flaps Up Pitch for and maintain 105 mph ***Apply necessary aileron and rudder to maintain heading*** Pitch up until first indication of a loss of directional control or stall (pitch for losing 1 mph per second)

RECOVERY:

Simultaneously pitch down and reduce throttle
Do not reduce rudder pressure until directional control is regained if control was lost
Reduce as much power as necessary to regain directional control
Pitch for and maintain 105 mph
As directional control is regained, apply power to full throttle on the operating engine while holding heading. Do not increase power on the idling engine!
(continued next page)

Emergency descent:

Verify at or above 3,000 AGL Recover no lower than 1,500 AGL Pre-maneuver checklist complete Clearing turns - look out below! Set throttles to idle **GUMPS** check G - gas (fuel selectors) on U – Undercarriage down below 150, three green, no red, one in the mirror. Callout "3 green." M - mixtures set (appropriately leaned) P - props full forward (after throttles idle) S - switches (fuel pumps and landing lights) on cowl flaps closed Pitch for 150 mph max (Vle) Bank 30-45 degrees Recover 1000' below starting altitude or altitude as specified by the examiner. Pitch to level - Power to cruise Gear up - Below 125 mph

Perform Cruise Flow & Checklist

Power on stall:

(Departure Configuration – Gear & Flaps Up): Verify at or above 3,000 AGL Pre-maneuver checklist complete Set throttles to 12" MAP **GUMPS** check G - gas (fuel selectors) on U – Undercarriage Up M - mixtures set (appropriately leaned) P - props full forward smoothly S - switches (fuel pumps and landing lights) on Slow to 95 mph Increase Power to 20" MP, stabilize @ 95 mph climb Pitch up until reaching the first indication of stall, horn, buffeting or full stall as directed by examiner. Private pilot students must do full stall. RECOVERY Simultaneously add full power and pitch nose down to horizon

Establish climb at 105 mph

Positive rate of climb, verify gear and flaps up Above initial altitude, level off, or at altitude, heading and airspeed as specified

Perform Cruise Flow & Checklist

Power on stall (Takeoff Configuration – Gear Down & Flaps as specified):

Verify at or above 3,000 AGL

Pre-maneuver checklist complete

Set throttles to 15" MP

GUMPS check

- G gas (fuel selectors) on
- U Undercarriage down below 150, three green, no red, one in the mirror. Callout "3 green."
- M mixtures set (appropriately leaned)
- P props full forward smoothly

S - switches (fuel pumps and landing lights) on

Pitch for 105 mph

Increase Power to 20" MP

Pitch up until reaching first indication of stall, horn, buffeting or full stall as directed by the examiner. Private pilot applicants must do full stall.

RECOVERY

Simultaneously add full power, pitch nose to horizon.

Set flaps to 25 degrees (or leave at 0 or 10 degrees if already set)

Pitch for 105 mph

Positive rate of climb, Call "*Positive Rate, Gear Up*" and select gear up. Confirm gear in transit and gear up.

Retract remaining flaps

Above initial altitude level off or at altitude, airspeed and configuration as requested

Perform Cruise Flow & Checklist

Accelerated stall: Verify at or above 3,000 AGL Pre-maneuver checklist complete Set throttles to 15" MP GUMPS check G - gas (fuel selectors) on U – Undercarriage Up M - mixtures set (appropriately leaned) P - props full forward smoothly S - switches (fuel pumps and landing lights) on Pitch to maintain altitude As airspeed decreases to 105 mph, enter a coordinated 45 degree bank in either direction while smoothly increasing back pressure to maintain altitude and adjusting ailerons so as not to ex-

ceed a 45 degree bank angle.

Establishing the bank quickly (but smoothly and with coordinated inputs of aileron and rudder) will ensure completing the stall in about 90 degrees of turn

Pitch up until reaching the "onset" (buffeting) stall condition (commercial). Announce the imminent stall.

RECOVERY

Simultaneously add full power and pitch nose down to horizon

Establish climb at 105 mph

Positive rate of climb, verify gear and flaps up

Above initial altitude, level off, or at altitude,

heading and airspeed as specified

Perform Cruise Flow & Checklist