

Vspeeds for PA44

Vspeed	KIAS
V _{SO}	55
V _{mc}	56
V _S	57
V _X (sea level)	82
V _{xse}	82
V _{sse}	82
V _Y (sea level)	88
V _{yse}	88
V _{Cruise Climb}	105
V _{LO UP}	109
V _{FE}	111
V _A (Max Gross)	135
V _{LE}	140
V _{NO}	169
V _{NE}	202
V _R (Normal-0° flaps)	75
V _R (Short-0° flaps)	70
V _{normal approach} (full flaps)	80
V _{normal approach} (no flaps)	80
V _{short field approach} (full flaps - 40°)	75

Max. Demonstrated Crosswind Velocity - 17 kts

Max. Side Window Open - 129 KIAS

Max. Ramp Wt. - 3816 lbs/Max. Takeoff Wt. - 3800 lbs

Max. Wt. Baggage Compartment - 200 lbs

Sunrise Aviation

**PIPER SEMINOLE
PA44-180
MANEUVERS GUIDE
REVISION 6
June 2022**



Pre-Maneuver Checklist ("CHAP" checklist)

C = Clearing turns

H = Heading - bug (pick outside reference also)

A = Altitude (see restrictions in ACS)

P = Proper configuration (GUMPS - see maneuver for specifics)

G: Gas (fuel selectors) – On.

U: Undercarriage – As required.

M: Mixture - As required.

P: Props - As required.

S: Switches (fuel pumps / landing light) - As required.

Transfer of Flight Controls

Positive three-step process for exchanging flight controls between pilots:

- When one pilot seeks to have the other pilot take control of the aircraft, he or she will say, "You have the flight controls."
- The second pilot acknowledges immediately by saying, "I have the flight controls."
- The first pilot again says, "You have the flight controls," and visually confirms the exchange.

Pre-Takeoff Brief

If *anything abnormal* happens prior to V_r , I will abort the takeoff by bringing both throttles to idle. If I have an *engine failure* after V_r 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 V_r 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 _____

Accelerate / Stop distance is _____

Any questions?

Operating Notes / Common Errors

GROUND OPERATIONS

- Always provide a taxi brief to Instructor/Examiner prior to taxi, including after landing.

- Do not ride the brakes during taxi. Use idle power as needed to avoid taxiing too fast, or turning off the runway too fast.

TAKEOFFS

- Do not ride the brakes during takeoff.

- Use the brakes correctly at beginning of short field takeoff – aircraft should not be moving until brake release.

- Make timely and correct response to cues of an anomaly or engine failure on takeoff roll.

LANDINGS

- Short Field Landings: Retract flaps after touchdown, and simulate using maximum braking after touchdown. Conduct a Go-Around if approach is not stable or if aim-point will be missed. ACS allows a Go-Around.

- Retracting flaps on normal landings: FAA guidance is to not touch flaps, windows or radios while on roll-out from any landing. The *only* acceptable time to retract flaps while rolling on an active runway is for a short field landing. If you get used to retracting flaps on every landing roll-out, one day you may accidentally raise the gear on rollout by mistake.

ENGINE FAILURES

- Execute the appropriate engine failure checklist. At high altitudes and when introduced to an engine failure of unknown origin, Learners are quick to conduct "the drill" and then shut the engine down before trying to troubleshoot. After the engine is feathered, they mistakenly then begin the troubleshooting checklist. The time to troubleshoot is when the engine is still running, and only if you have the time and altitude to permit. "Fix or feather" decision altitude for training is 3000AGL.

INSTRUMENT APPROACHES

- Do not descend below MDA unless the field is reported in sight.

- Ensure the correct mode is selected for the CDI (VLOC/GPS).

Drag / Speed / Vyse Demo (MEI Syllabus):
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.
As airspeed falls below 100 KIAS - move props slowly full forward.
As airspeed falls below 95 KIAS set left engine to zero thrust (2180 RPM – approx. 12" MP) and right engine to max power.
Maintain 2 degree bank into good engine and ½ ball out.
Pitch for 88 KIAS and note climb performance.
Pitch for 78 KIAS and note climb performance.
Pitch for 98 KIAS and note climb performance.
Set pitch back to 88 KIAS.
Airspeed below 140 KIAS, select gear down, note climb performance.
Airspeed below 111 KIAS, 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/2300 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.
Refer to POH section 3.9j (newer model) for Piper's results.

Typical results may be as follows:
78 KIAS: 100 fpm penalty
98 KIAS: 250 fpm penalty
Gear only: 250 fpm penalty
Flaps only: 250 fpm penalty
Gear and Flaps: 450 fpm penalty
Windmilling prop: 550 fpm penalty

Normal Takeoff:

Pre-takeoff check and briefing complete.
Align aircraft with centerline.
Apply full brakes.
Power to 20" Manifold Pressure.
Check engine gauges in green.
Release brakes.
Apply full power.
Check engine gauges still green and call "*Airspeed Alive.*"
75 KIAS rotate.
Accelerate and climb initially at 88 KIAS.
Positive rate of climb with no runway remaining:
Call "*Positive Rate, Airspeed below 109, Gear Up*"
and select gear up.
Confirm gear in transit and gear up.

Short Field Takeoff: No Flaps

Flaps up (*25° flap setting is not authorized for takeoff*)
Pre-takeoff check and briefing complete.
Align aircraft with centerline.
Apply firm brakes (do not allow aircraft to move).
Apply full power.
Check engine gauges in green.
Release brakes.
Check engine gauges still green and call "*Airspeed Alive.*"
70 KIAS - rotate.
Accelerate and climb initially at 82 KIAS.
Positive rate of climb with no runway remaining:
Call "*Positive Rate, Airspeed below 109, Gear Up*"
and select gear up.
Confirm gear in transit and gear up.
Clear of obstacles - accelerate and climb at 88 KIAS.

Aborted Takeoff:

If engine trouble or any other abnormality prior to Vr:

Throttles to idle, callout "*Abort.*"

Maintain runway centerline with rudder and brakes.

Brake as necessary to come to a stop.

500 foot (AGL) Check:

Climb Power: Set 25" MP and 2500 RPM, 88 KIAS.

1000 Foot (AGL) Check:

Fuel pumps off (one at a time, ensuring fuel pressure in green).

Accelerate to cruise climb 105 KIAS (unless obstacles or other factors are present).

Complete Climb Checklist.

Cruise Check:

Power 18-19" MP and 2300 RPM (110 KIAS).

Mixtures leaned.

Landing and recognition lights off.

Check fuel pumps off.

Complete Cruise Checklist.

Descent Check:

Set power to 15" MP and 2300 RPM.

(Avoid manifold settings below 15" MP during descent to prevent shock cooling. Plan your descent in advance.)

Cowl flaps can remain closed.

Establish 500 foot per minute descent rate.

Complete Descent Checklist.

Emergency Descent (Initial COMM, ATP ACS):

Verify at or above 3,000, 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 "*3 green, one in the mirror.*"

M - mixtures set (full rich).

P - props full forward (after throttles idle).

S - switches (fuel pumps and landing lights) on.

Cowl flaps closed.

Pitch for 140 KIAS max (Vle) and bank 30-45 degrees.

Recover 1000' below starting altitude or altitude as specified.

Pitch to level - Power to cruise.

Below 109 KIAS (Vlo-up): Gear up

Perform Cruise Flow & Checklist.

Minimum Controllable Airspeed (V_{mc}) Demo:

Verify at or above 4,500 AGL (must stay above 4000').

Pre-maneuver checklist complete (Fuel selectors ON,
landing light and fuel pumps ON).

Set throttles to 15" MP.

Cowl flap of inoperative (left – simulated critical) engine closed.

Cowl flap of operating engine open.

Idle left engine (to initiate simulated left engine out).

Mixtures full rich.

Props full forward (prior to adding full power).

Throttle full (right engine).

Maintain up to 5 degree bank into good engine and ½ ball
out.

Verify gear up, flaps up.

Pitch for and maintain 88 KIAS.

****Apply necessary aileron and rudder to maintain heading.****

Pitch up at steady rate (lose 1 kt per second) until **first indication**
of a loss of directional control or stall.

RECOVERY

Simultaneously pitch down and reduce throttle.

****Do not reduce rudder pressure until directional control is
regained if directional control was lost.****

Reduce as much power as necessary to regain directional control.

Pitch for and maintain 88 KIAS.

As directional control is regained, apply full throttle on the
operating engine while holding heading.

Do not increase power on the idling engine.

After stabilizing aircraft:

Increase inoperative engine throttle to 15" MP

Decrease operating engine to 20" MP/2300 RPM

When CHT of inoperative engine returns to green arc:

Set throttle to 20" MP/2300 RPM and open cowl flap.

Perform Cruise Flow & Checklist.

Normal Landing:

Approaching midfield downwind:

Select Gear Down (below 140 KIAS) and then:

GUMPS check (flow):

G – gas (fuel selectors) on.

U – undercarriage down. “*3 green, one in the mirror*”

M – mixtures full rich.

P – props full forward.

S – switches (fuel pumps and landing lights on).

Complete Before Landing Checklist.

Abeam landing point:

Power to 15" MP.

Flaps 10 degrees (below 111 KIAS).

Pitch for 100 KIAS.

Turning base:

GUMPS check.

Flaps 25 degrees.

Pitch for 90 KIAS.

On final:

Flaps 40 degrees.

Pitch for 80 KIAS.

On short final (before threshold):

Verify gear down (3 green).

Short Field Landing:

Same as above except pitch for 75 KIAS on final.

Go Around:

Mixture – Full Forward.

Props - Full Forward.

Throttle - Full Forward.

Pitch - Positive climb attitude.

Flaps - Reduce to 25 degrees, then to 10 degrees.

Pitch for 82 or 88 KIAS as required.

Gear - Confirm positive rate of climb.

When out of usable runway:

Call “*2 positive rates, gear up,*” and select gear up.

Slowly retract remaining flaps.

Cowl Flaps - Open

Single Engine Landing:

Approaching midfield downwind:

GUMPS check (flow):

G – gas (fuel selectors) on.

U – undercarriage - only select gear down when landing assured (usually this will occur abeam landing point upon decision to leave pattern altitude).

M – mixtures full rich.

P – props full forward.

S – switches (fuel pumps and landing lights on).

Complete Single Engine Landing Checklist.

Abeam landing point:

(or upon decision to leave pattern altitude):

Select Gear Down.

verify “3 green and one in the mirror”

Power as required (18” MP recommended).

Pitch for 90-100 KIAS.

Turning base:

GUMPS check.

Flaps 10 degrees.

(below 111 KIAS & when performance allows)

Pitch for 90 KIAS.

On final:

Flaps 25 degrees.

when performance allows (25 degree max)

Pitch for 80 KIAS once established on final.

On short final (before threshold):

Verify gear down (3 green).

**Single Engine Go-around NOT recommended
(and not allowed on training flights).**

Non-Precision Approaches

Normal Procedures:

Approach briefing complete.

Complete Approach Checklist.

Set flaps to 10 degrees (below 111 KIAS) before intercepting final approach course – 100 KIAS.

(Approximately 18” MP/2300 RPM)

Callout: “*Localizer (or Course) Alive.*”

Approx. ½ 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.

Add power (approximately 23” MP) and pitch to maintain MDA and 100 KIAS.

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 90-100 KIAS and flaps UP.

For any Single Engine Approach:

- Don’t get low
- Don’t get slow
- ABSOLUTELY don’t get low and slow

Normal Procedures:

Complete Approach Checklist.

(Approximately 18" MP/2300 RPM)

Callout: “*Glideslope Alive.*”

Select gear down, Callout: “3 *Green.*”

Trim for 100 KIAS and power as required to maintain ~500 ft/min descent for a 3 degree glideslope.

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.”

Same as Normal Procedures except Maintain Airspeed 90-100 KIAS and flaps UP.

Airspeed 110 KIAS (18-19" MP and 2300 RPM).

S - switches (landing lights on).

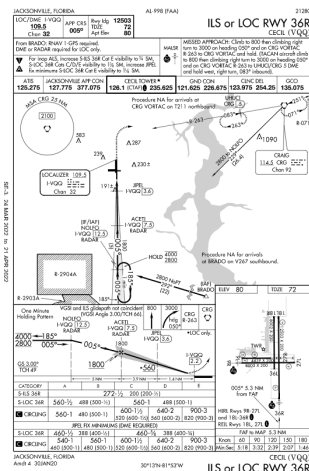
Apply back pressure to maintain altitude and trim to relieve control forces.

Rolling through approximately 30° bank:
add 2-3" MP to maintain airspeed (~22").

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 (Dirty configuration – flaps and gear down):

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL).

Pre-maneuver checklist complete.

Throttles to 15" MP.

GUMPS check:

G - gas (fuel selectors) on.

U - undercarriage down "*3 green, one in the mirror.*"

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights) on.

Flaps (below 111 KIAS) set to 40° in increments.

Maintain approximately 65 KIAS, 17-19" MP.

(stall horn plus 5-10 kts - stall horn should not be heard once stabilized)

RECOVERY

Simultaneously add full power, reduce pitch (Nose to horizon).

Set **flaps** to 25 degrees (Continue to pitch for level flight).

Set **flaps** to 10 degrees.

Gear up (below 109kts).

Remaining **flaps** up (below 111kts).

Maintain level flight (maintain altitude) through recovery.

Perform Cruise Flow & Checklist.



Accelerated Stall:

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL, and AFH recommends >5000AGL).

Pre-maneuver checklist complete.

Set throttles to 15" MP.

GUMPS check:

G - gas (fuel selectors) on.

U – Undercarriage up.

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights) on.

Pitch to maintain altitude.

As airspeed decreases to 88 KIAS, enter a coordinated 45 degree bank in either direction while smoothly increasing back pressure to maintain altitude and adjusting ailerons so as not to exceed 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” (stall warning or buffeting) stall condition (commercial). Announce the imminent stall.

RECOVERY

Simultaneously add full power, pitch nose to horizon, and level the wings.

Establish climb at 88 KIAS (or 82 KIAS as required/requested).

Return to initial altitude, heading and airspeed (or as specified).

Perform Cruise Flow & Checklist.

Power-ON Stall

(Takeoff Configuration – Gear Down & Flaps up)

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL).

Pre-maneuver checklist complete.

Set throttles to 15" MP.

GUMPS check:

G - gas (fuel selectors) on.

U – undercarriage down “*3 green, one in the mirror.*”

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights) on.

Pitch for 75 KIAS.

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.

Leave flaps at 0.

Pitch for 88 KIAS (or 82 KIAS as required/requested).

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

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

Perform Cruise Flow & Checklist.

Slow Flight (Clean configuration):

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL).

Pre-maneuver checklist complete.

Set Throttles to 12" MP.

GUMPS Check:

G - gas (fuel selectors) on.

U - undercarriage up.

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights on).

Slow to and maintain approximately 70 KIAS, 15”-17" MP.

(stall horn plus 5-10 kts - stall horn should not be heard once stabilized)

RECOVERY

Simultaneously add full power and reduce pitch (nose to horizon).

Pitch for and maintain level flight (maintain altitude).

Perform Cruise Flow & Checklist.

Power-OFF Stall:

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL).

Pre-maneuver checklist complete.

Set throttles to 15" MP.

GUMPS check:

G - gas (fuel selectors) on.

U - undercarriage down “3 green, one in the mirror.”

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights) on.

Flaps set to 40 degrees in increments below 111 KIAS.

Maintain 80 KIAS in a descent for approximately 100ft.

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 **flaps** 10 degrees.

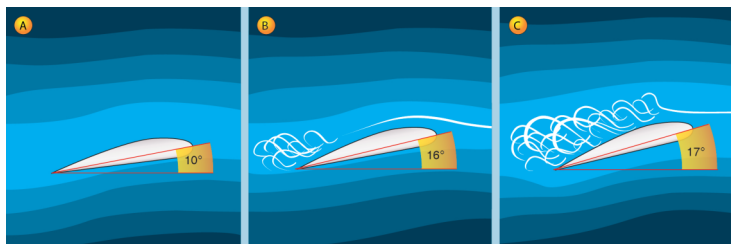
Pitch for 88 KIAS (or 82 KIAS as appropriate/requested).

Positive rate of climb Call “*Positive Rate, Airspeed below 109, Gear Up*” and select **gear** up. Confirm gear in transit and gear up.

Retract remaining **flaps**.

Maintain 88 KIAS until reaching initial altitude or altitude, heading and airspeed as specified, and level off.

Perform Cruise Flow & Checklist.



Power-ON Stall

(Departure Configuration – Gear & Flaps Up):

Verify at or above 3,500 AGL (ACS requires maneuver to be completed >3000 AGL).

Pre-maneuver checklist complete.

Set throttles to 12" MP.

GUMPS check:

G - gas (fuel selectors) on.

U – undercarriage up.

M - mixtures set (full rich).

P - props full forward.

S - switches (fuel pumps and landing lights) on.

Pitch for 75 KIAS.

Increase Power to 20" MP.

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, pitch nose to horizon.

Leave flaps at 0.

Establish climb at 88 KIAS (or 82 KIAS as required/requested).

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.