

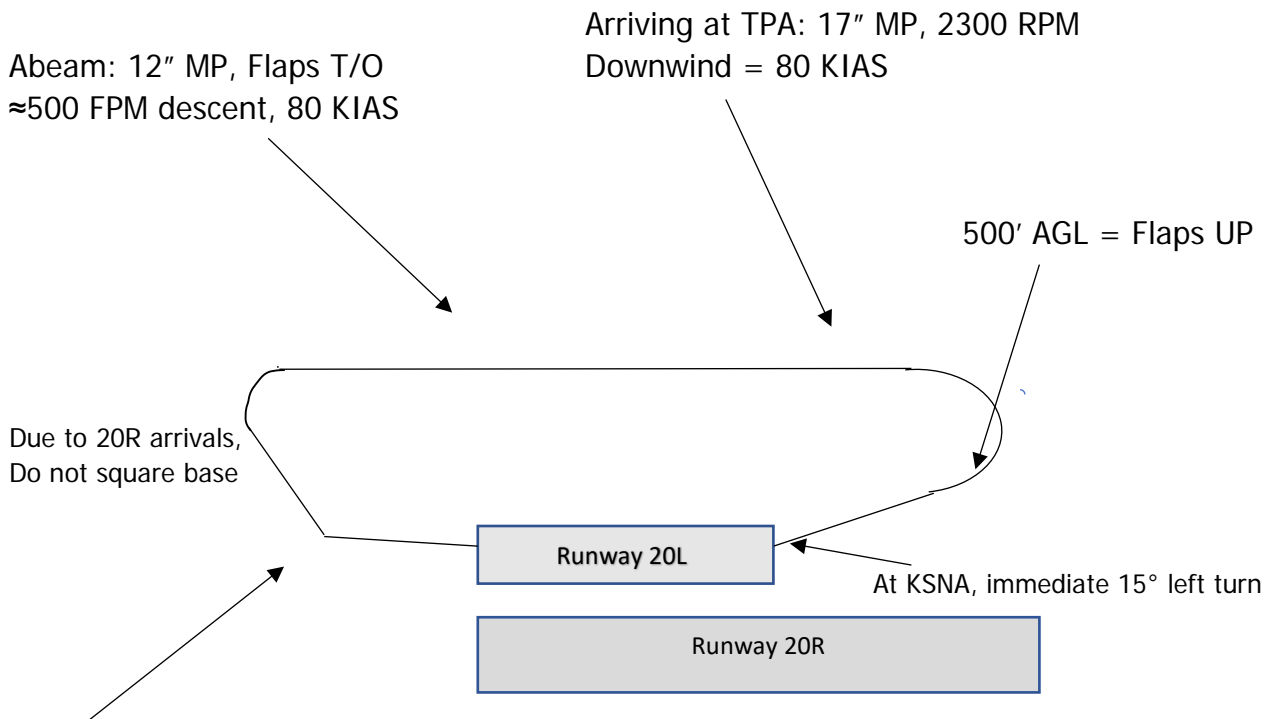
Pitch & Power Table

Phase	Airspeed	Configuration	MP/RPM	Pitch
Initial Climb	70 KIAS	Flaps T/O	Wide-Open/High RPM	+7°
Cruise Climb	80-85	Flaps UP	Wide-Open/2400	
Normal Cruise	≈130 KIAS	lean to ≈ 9.2 GPH	23"/2300	
Cruise Descent	120 KIAS	Flaps UP	16"/2300	
Holding & Vectors to Final	95 KIAS	Flaps UP	19"/2300	+2.5°
Approach (3.0°) (500 FPM)	90 KIAS	T/O Flaps	14"/2300	-4°
Final Approach	70 KIAS	LDG Flaps/High RPM	16"/High RPM	

Takeoff Procedure

Prior to crossing hold short line (Cleared for takeoff or line-up and wait)	<ul style="list-style-type: none"> • Verify correct runway by available means (Signage, and/or markings) • Clear approach area • Before Takeoff Checklist below the line (fuel pump, mixture, lights)
Lined up with center line	<ul style="list-style-type: none"> • Heading check - Verify alignment with Runway
Beginning of takeoff roll	<ul style="list-style-type: none"> • Smoothly advance throttle to full in about 2 seconds
Aircraft accelerates to Vr	<ul style="list-style-type: none"> • Pitch up smoothly to 7° nose up
500' AGL	<ul style="list-style-type: none"> • Flaps UP (no less than 70 KIAS when flaps UP selected)
1000' AGL	<ul style="list-style-type: none"> • Prop back to 2400 RPM (keep throttle wide-open) • Fuel Pump Off • Landing light off (as desired) • Airspeed as appropriate (80+ KIAS is preferred for engine cooling and visibility) • After takeoff checklist, when able

Traffic Pattern



Final = Flaps LDG, 70 KIAS, ≈16" MP; Red (mixture), Blue (prop full forward), White (lights, fuel pump)

Short-Field Takeoff

- Use all available runway
- Line-up on center line (roll a few feet forward to make sure nose is straight)
- Hold Brakes
- Apply full throttle
- Upon reaching full throttle, release brakes
- Rotate at 59 KIAS
- Pitch for V_x (66 KIAS - about 9° nose up) until clear of obstacles
- Then, lower nose to 7° nose up and resume normal climb

Soft-Field Takeoff

- Stick all the way back entering runway (keep weight off nosewheel and out of mud!)
- No braking
- Smoothly apply full power
- Apply rudder to maintain center line
- As the nose lifts off, release some back pressure but keep the nose wheel in the air
- Main wheels will come off the ground before Vr (about 45-50 KIAS)
- In ground effect, level pitch to accelerate to Vx
- At Vx, release forward pressure and climb out

Short-Field Landing

- On final, pick aiming point \approx 200 ft in front of touchdown spot
- Keep aiming point stable in window (if point moves up, getting low & vice-versa)
- Slow to 65 KIAS short final (to reduce float)
- Profile is otherwise same as normal landing

Slow Flight

- Clearing Turns
- Nose on reference point, HDG bug centered
- Fuel Pump ON
- Power 13" MP
- 2400 RPM
- Slow to get stall warning horn
- At horn, pitch down slightly until horn silent
- Pitch for airspeed & power to maintain altitude - about 20" MP
- Maintain airspeed within -0/+5 KIAS of airspeed horn went silent
- Bank no greater than 15 degrees in turns

To recover:

Max Power

Pitch to maintain altitude

Flaps T/O

Flaps UP (above 70 KIAS)

Establish cruise pitch & power

Power-Off Stalls

- Clearing Turns
- Nose on reference point, HDG bug centered
- Fuel Pump ON
- 2400 RPM
- Flaps T/O, then LDG
- Establish 70 KIAS Descent (Final Approach – 16" MP)
- Power Idle
- Pitch to maintain altitude (slowly pitch to about 10 degrees nose up)
- Identify the stall warning ("there's the stall horn")

To Recover: (Comm – recover at 1st of horn or buffet; PVT – full stall)

Pitch down (about 5 degrees)

Max Power

Pitch up through the horizon

Flaps T/O (bring flaps to T/O coming up through horizon)

Pitch for climb at Vy (70 KIAS)

Flaps Up at safe altitude

Establish cruise pitch and power

Power-On Stalls

- Clearing Turns
- Nose on reference point, HDG bug centered
- Flaps UP (or T/O as indicated by CFI or examiner)
- Fuel Pump ON
- 13" MP
- Slow to 65 KIAS
- At 65 KIAS, Max Power (full throttle/2400 RPM)
- Pitch up to stall (about 20 degrees nose up)
- Identify the stall warning ("there's the stall horn")

To Recover: (Comm – recover at 1st of horn or buffet; PVT – full stall)

Pitch to 2.5° above horizon

Climb out at Vy (70 KIAS) to safe altitude

Establish cruise pitch and power

Accelerated Stall (Comm Only)

- Clearing Turns
- Fuel Pump ON
- Slow to 75 KIAS, then 15" MP to maintain
- Enter a steep turn – (Add back pressure on stick to keep the nose up!)

Recover at 1st of horn or buffet:

Nose Down

Max Power

Wings Level

Climb out at Vy (70 KIAS) to safe altitude

Establish cruise pitch and power

Steep Turns

- Clearing Turns
- Nose on reference point, HDG bug centered
- Slow to <Va (about 100 KIAS)
- 21" MP/2400 RPM
- Enter 50-degree bank steep turn (PPL – 45 degrees)
- Roll out on reference point and repeat in other direction

Emergency Descent

- Power idle
- 30-45 degree bank
- ~12-15 degree nose down

To Recover (200' above target altitude):

Wings Level

Nose Up (gently)

Power as needed

Establish cruise pitch and power

Ground Reference Maneuvers (Eights on Pylons, Turns around a Point, S-Turns)

95 KIAS

2400 RPM

≈18" MP

Chandelles & Lazy Eights

95 KIAS
2400 RPM
≈18" MP

Steep Spirals

73 KIAS (Vg)
2400 RPM
Idle Power

Emergency Approach (Simulated Engine Failure)

AVIATE: Pitch for best glide (73 KIAS)

NAVIGATE: Pick your off-field runway (including direction of landing)
Fly directly to the "key point" (downwind abeam)

If possible: Troubleshoot (flow and checklist)

COMMUNICATE – Advise ATC/121.5, squawk 7700

Extend Flaps, electrical off

If possible: Emergency landing checklist