Standard Maneuver Comparison

# Cessna 172 *vs* Pipistrel Alpha Trainer


PIPISTREL

Pipistrel Alpha Trainer

Cessna

Cessna 172S

# Basic Description

| System | Pipistrel Alpha Trainer | Cessna 172S |
|---|---|---|
| **Configuration** | High Wing (34’5”), 2 Seats, T-Tail, Composite | High Wing (36’1”), 4 seats, Aluminum body |
| **Weights** | MTOW 1212lbs \| 240lbs per seat (440lbs both seats) \| 22lbs baggage | MTOW 2550lbs \| 120lbs baggage |
| **Range & Ceiling** | 3h @ 5300rpm (6000ft), + 30min VFR reserve \| Ceiling 18,000ft | Between 4-5h at 75% power (8500ft) |
| **Powerplant** | ROTAX 912UL, 2 carbs, 80hp @ 5800 (5min max), 2 Ignition Modules | Lycoming IO-360, fuel injected, 180hp @ 2700rpm, 2 magnetos |
| **Oil** | Dry-sump, 3 quartz, engine-driven pump, burp before measuring | Wet-sump, 5-8 quartz, engine-driven pump |
| **Cooling** | Air and Liquid cooled (cylinder heads). CT max 248F, not CHT. | Air cooled. CHT max 500F |
| **Fuel** | Single tank 12.7gal usable, engine-driven pump +electric aux pump | Dual tank 53gal usable, gravity-fed with engine-driven pump + electric aux |
| **Propeller** | Pipistrel, 2 blades fix pitch, wooden, 65” diameter | McCauley, 2 blades fix pitch, metal, 76” diameter |
| **Cabin Air** | Single lever for warm air. Cold air through vents in the windows | Dual lever for warm air. Cold air through 4 vents |
| **Anti-Icing** | None | Pitot-heat, Window defrosting |
| **Control Surfaces** | Stick, Rods, Flaperons (0/1/2), Air-Brakes, Elevator Trim (electric) | Yoke, Pulleys, differential/frise ailerons. Elevator Trim (manual) |
| **Landing Gear** | Tricycle w/ Steering nose wheel and 2 main wheels | Tricycle w/ Steering nose wheel and 2 main wheels |
| **Brakes** | Hand brake, both main wheels (single disc each) | Differential braking, single disc each main wheel |
| **Electrical** | 12V DC system (Generator 14V, 20.5A), 12.4Ah Lithium battery | 28V DC system (Generator 28V, 60A), 24V battery 8Ah |
| **Avionics** | G3X Touch, G5, 507 AP interface, GNX375 Nav, 2 radios + 1 VLOC | G1000 |
| **Airspeeds (KIAS)** | Vne 130, Vno 104, Va 92, Vfe 70/60, Vs 49, Vso 42, Vr 45, Vy 76, Vx 58 | Vne 163, Vno 129, Va 90/105, Vfe 110/85, Vs 48, Vso 40, Vr 55, Vy 74, Vx 62 |

# Power OFF – Stall Recovery

PPL CPL

ACS: Heading **±10º** | Bank **±10º (PPL), ±5º (CPL)**
Recovered altitude >1,500 AGL; Turning stalls: ≤20º

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Find heading reference and bug
3. Power **Idle** (maintain altitude)
4. Below **70kts** → **Flaps 1**
5. Below **60kts** → **Flaps 2 (ensure air-brakes OFF)**
6. Descent at **55 kts**
7. Slight nose up to induce a stall
8. Verbally acknowledge stall signals – Horn, Buffet, Stall
9. At Stall (or indication) → reduce AOA, full power, **Flaps 1**
10. Hold stick pressure to avoid nose up (secondary stall)
11. Increase pitch and climb (Vx or Vy)
12. When airspeed above **60 kts** and **Positive Rate** → **Flaps 0**
13. Return to specified altitude, heading and airspeed
14. Cruise checklist

## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Find heading reference and bug
3. Power **1500 RPM** (maintain altitude)
4. Below **110kts** → **Flaps 10**
5. Below **85kts** → **Flaps 20** then **Flaps 30**
6. Below **70kts** → **Power Idle** and Descent at **65 kts**
7. Slight nose up to induce a stall
8. Verbally acknowledge stall signals – Horn, Buffet, Stall
9. At Stall (or indication) → reduce AOA, full power, **Flaps 20**
10. Hold yoke pressure to avoid nose up (secondary stall)
11. Increase pitch and climb (Vx or Vy)
12. When airspeed above **60 kts** → **Flaps 10**
13. When positive rate of climb → **Flaps 0**
14. Return to specified altitude, heading and airspeed
15. Cruise checklist

# Power ON – Stall Recovery

PPL CPL

ACS: Heading **±10º** | Bank **±10º**
Recovered altitude >1,500 AGL; Turning stalls: ≤20º

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Find heading reference and bug
3. Power **Idle** (maintain altitude)
4. Clean configuration
5. At **50kts** → Increase Pitch and apply Full Power **(<5500rpm)**
6. Hold Pitch about **25º** up and maintain Coordination
7. Verbally acknowledge stall signals – Horn, Buffet, Stall
8. At Stall (or indication) → reduce AOA, level the wings
   - *If a wing drop, use ruder ("step on the higher wing")*
9. After recovery → Increase pitch and climb (Vx or Vy)
10. Return to specified altitude, heading and airspeed
11. Cruise checklist

## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Find heading reference and bug
3. Power **1500 RPM** (maintain altitude)
4. Clean configuration
5. At **60kts** → Increase Pitch and apply Full Power
6. Hold Pitch about **25º** up and maintain Coordination
7. Verbally acknowledge stall signals – Horn, Buffet, Stall
8. At Stall (or indication) → reduce AOA, level the wings
   - *If a wing drop, use ruder ("step on the higher wing")*
9. After recovery → Increase pitch and climb (Vx or Vy)
10. Return to specified altitude, heading and airspeed
11. Cruise checklist

# Slow Flight

PPL CPL

ACS: PPL → Airsp **+10/-0 kts** | Alt **±100'** | Hdg **±10º** | Bank **±5º**
CPL → Airsp **+5/-0 kts** | Alt **±50'** | Hdg **±5º** | Bank **±5º**

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Find heading reference and bug (heading and altitude)
3. Power **Idle** (maintain altitude)
4. Below **70kts** → **Flaps 1**
5. Below **60kts** → **Flaps 2 (ensure air-brakes OFF)**
6. Below **45kts** → start increasing power (**~3200 RPM**)
7. First indication of stall → Note Min Speed (usually **35-40kts**)
8. Maintain airspeed just above the stall horn
9. Maintain power between **3200-3300 RPM** to maintain Altitude
10. Trim the airplane
11. Level flight, climbs, turns, descents (all w/o stall warnings)
12. Recover → Max power, Maintain Altitude, Reduce Flaps
13. At desired airspeed → power to Cruise and cruise checklist

## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Find heading reference and bug (heading and altitude)
3. Power **1500 RPM** (maintain altitude)
4. Below **110kts** → **Flaps 10**
5. Below **85kts** → **Flaps 20** then **Flaps 30**
6. Below **60kts** → start increasing power (**~1800 RPM**)
7. First indication of stall → Note Min Speed (usually **50kts**)
8. Maintain airspeed just above imminent stall
9. Increase power to **2000 RPM** to maintain Altitude
10. Trim the airplane
11. Level flight, climbs, turns, descents (all w/o stall warnings)
12. Recover → Max power, Maintain Altitude, Reduce Flaps
13. At desired airspeed → power to Cruise and cruise checklist

# Steep Turns

PPL CPL

ACS: Airsp **±10kts** | Alt **±100'** | Hdg **±10º** | Bank **±45º (50º CPL) ±5º**
Recovered altitude >1,500 AGL

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Find heading reference and bug (heading and altitude)
3. Slow to **85kts** (below Va*), Power **4500-4800 RPM**
4. Cruise checklist
5. 360º turn at 45/50º bank – add back pressure
6. Add a little power to maintain airspeed
7. Roll out ½ bank angle prior to entry heading
8. Look for traffic and perform same turn on the other side
9. Cruise checklist

* Va is 92kts at Max Gross, but performing it at 85kts allows extra cushion in case student inadvertently gain speed (remains in the green arc)

## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Find heading reference and bug (heading and altitude)
3. Slow to **95kts** (below Va), Power **2100 RPM**
4. Cruise checklist
5. 360º turn at 45/50º bank – add back pressure
6. Add a little power to maintain airspeed (**~100 RPM**)
7. Roll out ½ bank angle prior to entry heading
8. Look for traffic and perform same turn on the other side
9. Cruise checklist

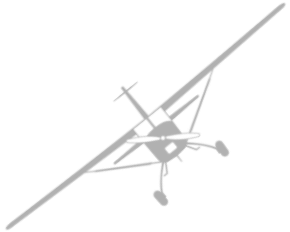
# Accelerated Stalls

CPL

Recovered altitude >3,000 AGL

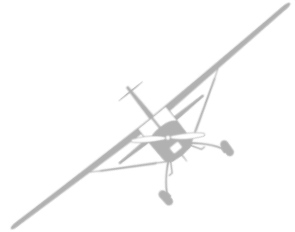
## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Slow to **80kts and set Trim to neutral**
3. Clean configuration
4. Enter a **45º** coordinated bank turn
5. Power Idle + Smooth elevator back pressure to induce stall
6. Recover at first indication of an impending stall
   - *Reduce AOA, level the wings*
7. After recovery → Increase power, pitch and climb (Vx or Vy)
8. Return to specified altitude, heading and airspeed
9. Cruise checklist



## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Slow to **80kts**
3. Clean configuration
4. Enter a **45º** coordinated bank turn
5. Power Idle + Elevator back pressure to induce stall
6. Recover at first indication of an impending stall
   - *Reduce AOA, level the wings*
7. After recovery → Increase pitch and climb (Vx or Vy)
8. Return to specified altitude, heading and airspeed
9. Cruise checklist



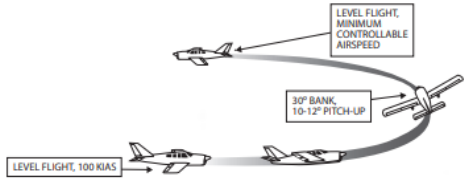
# Chandelle

CPL

ACS: Airspeed **Just above stall** | Heading **±10º (rollout 180º)**
Recovered altitude >1,500 AGL

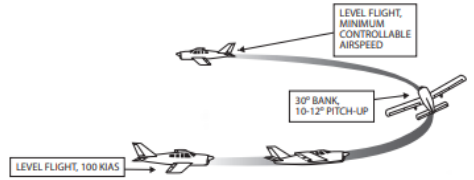
## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Clean configuration
3. **100kts** (**5300 RPM**) → Maintain altitude
4. Reference point off wing (inside the turn) → Bug heading
5. Enter a **30º** bank → Full Power once reached 30º
6. Gradually add pitch to **15º** until the 90º point
7. Past the 90º point:
   - Maintain pitch (keep adding back pressure)
   - Gradually reduce bank (wings level at the 180º point)
8. Maintain airspeed just above stall (no descent)
9. Recover → pitch for cruise, gain airspeed, maintain altitude
10. Cruise checklist




## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Clean configuration
3. **105kts** (**2300 RPM**) → Maintain altitude
4. Reference point off wing (inside the turn) → Bug heading
5. Enter a **30º** bank → Full Power once reached 30º
6. Gradually add pitch to **15º** until the 90º point
7. Past the 90º point:
   - Maintain pitch (keep adding back pressure)
   - Gradually reduce bank (wings level at the 180º point)
8. Maintain airspeed just above stall (no descent)
9. Recover → pitch for cruise, gain airspeed, maintain altitude
10. Cruise checklist



# Lazy Eights

CPL

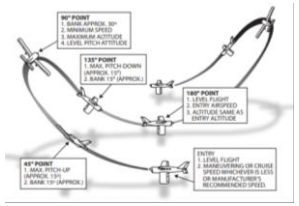
ACS: At the 180º points: Airsp **±10kts** | Alt **±100'** | Hdg **±10º**
Recovered altitude >1,500 AGL | Max bank 30º

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Clean configuration
3. **90kts** (**4800 RPM**) → Maintain altitude
4. Reference point off wing (inside the turn) → Bug hdg & alt

**Climb (~300ft)**

5. Bank **~10º** (slowly increase) increasing Pitch (slowly)
6. 45º Point – MAX PITCH (**~15º**)
   - *Reduce Pitch, Continue increasing Bank*
7. 90º Point – LEVEL PITCH, MAX BANK (**30º**)
   - *Apply rudder, let the nose drop*



**Descent (~300ft)**

8. 135º Point – MAX PITCH DOWN (**~10º**), hold it/grab it
   - *Reduce bank slowly – Appr altitude, begin pitching level*
9. 180º Point – level flight, entry altitude and airspeed

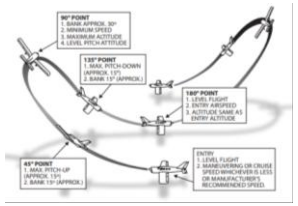
10. Repeat opposite direction (Cruise checklist when done)

## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Clean configuration
3. **105kts** (**2300 RPM**) → Maintain altitude
4. Reference point off wing (inside the turn) → Bug hdg & alt

**Climb (~300ft)**

5. Bank **~5º** (slowly increase) increasing Pitch (slowly)
6. 45º Point – MAX PITCH (**~20º**)
   - *Reduce Pitch, Continue increasing Bank*
7. 90º Point – LEVEL PITCH, MAX BANK (**30º**)
   - *Apply rudder, let the nose drop*



**Descent (~300ft)**

8. 135º Point – MAX PITCH DOWN (**~10º**), hold it/grab it
   - *Reduce bank slowly – Appr altitude, begin pitching level*
9. 180º Point – level flight, entry altitude and airspeed

10. Repeat opposite direction (Cruise checklist when done)

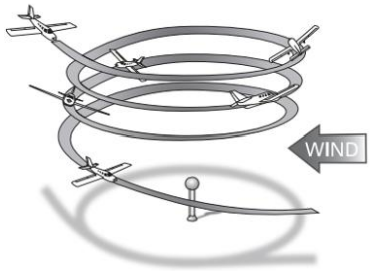
# Steep Spiral

CPL

ACS: Airspeed **±10kts** | Heading **±10º**
Recovered altitude >1,500 AGL | 3 full turns | Max bank 60º

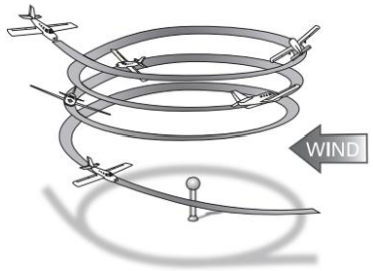
## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Clean configuration
3. Chose visual reference point
4. Stablish on downwind and bug heading
5. When abeam touchdown point → Power idle
6. Maintain best glide speed
7. 3 constant radius turn → Clear engine after each turn
8. Recover – roll out at specific heading
9. Cruise checklist




## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Clean configuration
3. Chose visual reference point
4. Stablish on downwind and bug heading
5. When abeam touchdown point → Power idle
6. Maintain best glide speed
7. 3 constant radius turn → Clear engine after each turn
8. Recover – roll out at specific heading
9. Cruise checklist



# Eights on Pylons

CPL

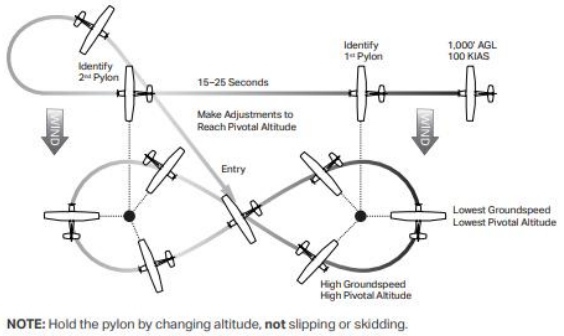
ACS: Altitude Pivotal (**~GS²/11.3**) | Bank **<40º**

## *Pipistrel Alpha Trainer*

1. Clearing turns (2x 90º)
2. Clean configuration
3. Select 2 Pylons
4. Airspeed **90kts**, Altitude **700' AGL**
5. Bug Heading and enter 45º Downwind
6. Maintain pylon at the wingtip
   - Pylon ahead → Dive
   - Pylon behind → Climb
7. Straight level for 3-5s, then begin turn to the next pylon
8. Exit maneuver on the entry heading
8. Cruise checklist

| GS | Height |
|---|---|
| 90 kts | 700 AGL |
| 95 kts | 800 AGL |
| 100 kts | 900 AGL |

Pivot Alt (AGL) = GS²/11.3

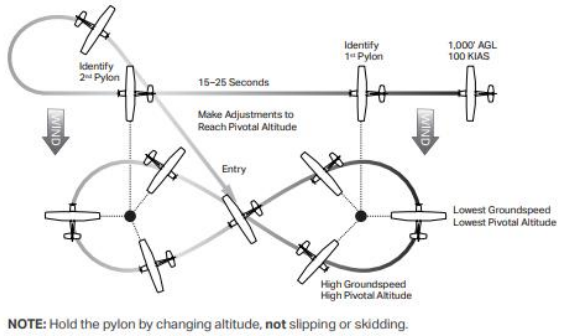



## *Cessna 172S*

1. Clearing turns (2x 90º)
2. Clean configuration
3. Select 2 Pylons
4. Airspeed **95kts**, Altitude **800' AGL**
5. Bug Heading and enter 45º Downwind
6. Maintain pylon at the wingtip
   - Pylon ahead → Dive
   - Pylon behind → Climb
7. Straight level for 3-5s, then begin turn to the next pylon
8. Exit maneuver on the entry heading
8. Cruise checklist

| GS | Height |
|---|---|
| 90 kts | 700 AGL |
| 95 kts | 800 AGL |
| 100 kts | 900 AGL |

Pivot Alt (AGL) = GS²/11.3



# Power Off 180

CPL

ACS: Landing Point **-0 ft / +200 ft**

## *Pipistrel Alpha Trainer*

1. Stablish on downwind at ~90kts
2. When abeam touchdown point → power to idle (smoothly)
3. Maintain TPA until **70kts**, then descent
4. **100ft** below TPA, turn base
5. Assess options
   - Square Base vs Diagonal to Final
   - Flap Settings
   - Forward Slip
   - Air brakes
6. Approach speed 55kts (w/ Flaps) or 65kts (clean)
7. Aim rotation about:
   1. **3 stripes** before landing point if no airbrakes
   2. **1-2 stripes** before landing point if using airbrakes
8. NOTE: The above can change significantly depending on wind conditions

## *Cessna 172S*

1. Stablish on downwind at ~90kts
2. When abeam touchdown point → power to idle (smoothly)
3. Maintain TPA until **75kts**, then descent
4. **100ft** below TPA, turn base
5. Assess options
   - Square Base vs Diagonal to Final
   - Flap Settings
   - Forward Slip
6. Approach speed 65kts (w/ Flaps) or 75kts (clean)
7. Aim rotation about **2-3 stripes** before landing point

# Pipistrel – Airspeed vs Engine RPM

The airspeeds below were measured in level flight at 3500ft, clean configuration, altimeter setting 30.41” and 1C OAT. These numbers ARE NOT validated by the manufacturer, NOT a recommendation from WestFlying and are NOT a result of extensive test flights. They should only be used for educational purposes.

- 5300 RPM ➔ 97 KIAS
- 5000 RPM ➔ 92 KIAS
- 4800 RPM ➔ 90 KIAS
- 4500 RPM ➔ 80 KIAS
- 4200 RPM ➔ 76 KIAS
- 4000 RPM ➔ 72 KIAS
- 3800 RPM ➔ 70 KIAS