



PRP Training – Maneuvers

CIRRUS SR-20 and SR-22

Steep Turns:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing Turns - Two 90 deg turns or a 180 deg turn
3. Set airspeed to 120 KIAS (approximately 60% power and 21" MP)
4. Roll into a coordinated 360 degree (45-degree bank for private/50-degree bank for commercial)
5. Maintain altitude, airspeed, and bank angle through the turn.
6. Roll out on desired heading

Slow Flight:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns
3. Reduce power to approx. 25% / 12" MP
4. Flaps full
5. Bank angle as necessary (no more than 20-degrees)
6. Maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power would result in an approach to stall indication
7. Power as required for level flight or desired climb or descent rate
8. *Recovery: Treat like a go around procedure – TOGA, Power, Pitch, Flaps... Flaps.*
 - a. TOGA button
 - b. Power - Smoothly apply full power
 - c. Pitch to increase airspeed - Reduce angle of attack and level wings in slight climb
 - d. Flaps 50%
 - e. Accelerate to V_Y
 - f. Flaps up after establishing a positive rate of climb and reaching a minimum of 85 knots

Power-Off Stalls:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns
3. Configure the aircraft for a normal approach to land
4. Power to approx. 25% / 12" MP
5. Pitch down to a normal approach attitude – trimmed to 80 KIAS
6. Power Idle, then Smoothly raise the nose to induce a stall – slightly nose high like a flare
7. *Recovery:*
 - a. Reduce angle of attack and level wings
 - b. Smoothly apply full power and right rudder
 - c. Select Flaps 50%
 - d. Recover to two positive climb indications (Altitude increasing and Vertical speed positive)
 - e. 85 knots, flaps up
 - f. Return to a specified altitude, heading, and airspeed

Power-On Stalls:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns

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3. Power to approx. 25% / 12" MP
4. Flaps: 50% below 150 knots
5. Slow to approximately lift-off speed (71-75 knots)
6. At lift-off speed, smoothly increase power to no less than 65% while starting a climb
7. Transition smoothly to a pitch attitude that will induce a stall – airspeed slowly decreasing
8. *Recovery:*
 - a. Reduce angle of attack and level wings
 - b. Smoothly apply full power and right rudder
 - c. Recover to two positive climb indications (altitude increasing + vertical speed positive)
 - d. 85 knots, Flaps up
 - e. Return to a specified attitude, heading, and airspeed

Steep Spirals:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns
3. Select reference point or heading
4. Reduce throttle to idle
5. Adjust aircraft pitch to maintain altitude until glide airspeed is reached
6. Lower nose to maintain glide airspeed over the selected reference point
7. Adjust bank angle as necessary to fly a constant radius over selected reference point (clear the engine every 1,000 feet when headed upwind)
8. Complete a minimum of three 360 degree turns
9. Minimum recovery altitude of 1500 feet AGL (unless over a landing surface and intend to continue to landing)
10. Limit bank angle to less than 60 degree
11. *Technique:* turn towards the side you're sitting to see the target, use ½ mile spacing to keep the turn fairly tight = less altitude loss per turn.

Chandelle:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns
3. Maintain and note heading – Sync the heading bug
4. Establish level flight at 120 KIAS (approx. 60% power and 21" MP)
5. Roll into a coordinated 30-degree level turn
6. Increase pitch at a constant rate to achieve max pitch halfway through the 180-degree turn while simultaneously adding full power
7. At the 90-degree point in the turn, maintain maximum pitch attitude while decreasing angle of bank at a constant rate to roll out wings level 180-degree from starting heading
8. Hold the maximum pitch attitude momentarily at the 180-degree point, then reduce pitch to maintain level flight
9. *Recovery:* Reduce power to normal cruise power setting once aircraft has accelerated as desired
10. *Technique:* at 3000', use appx 15-17 deg nose high, at 4500' use 13-15 deg nose high.

Lazy Eights:

1. Pre-maneuver checklist complete (Fullest tank, boost on, mixture rich, lights, gauges green, ESP)
2. Clearing turns
3. Establish level flight at 120 KIAS (approx. 60% power and 21" MP)

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4. Control the aircraft to achieve the following throughout the maneuver
 - a. At the 45-degree reference, maximum pitch up and approx. 15-degrees of bank
 - b. At the 90-degree reference, maximum bank of 30-degrees with level pitch
 - c. At the 135-degree reference, maximum pitch down and approx. 15-degree bank
 - d. At the 180-degree point, momentary level pitch and bank as the turn direction is changed
5. *Recovery*: Smoothly apply power as necessary to resume normal flight
6. *Technique*: one click of up trim and one click of L/R trim, let the airplane fly the lazy eight, apply enough back stick pressure just to control the airspeed on the last 90 deg of each leg

Eights on Pylons

1. Limitations – Limit Bank angle to 40 deg, VMC only.
2. Calculate Pivotal Altitude – $\text{Elevation} + \text{GS (kts)}^2/11.3$, or $\text{GS(mph)}^2/15.0$
3. Pick 2 points 3/4 to 1 NM apart
4. Power for 100 KTS
5. Enter from 45 deg downwind position
6. Cross diagonally between points so as first turn is made into the wind
7. Both GS and pivotal altitude decrease as you turn into the wind
8. If lagging behind – increase descent rate
9. If getting ahead – climb or decrease descent rate
10. Maintain coordinated flight
11. Both GS and pivotal altitude increase as you transition to downwind
12. Roll out when on a diagonal course to the next pylon
13. Maintain wings level during the transition between pylons
14. Begin a turn in the opposite direction around the next pylon

Instrument Approaches: (See PRP Instrument Procedures Document)

1. Load and activate approach in FMS
2. Bring up approach chart on MFD
3. Brief Approach
4. Speed 120 knots in Radar downwind and final, 100 kts at final approach fix
5. Prelanding Checklist (Fuel Fullest Tank, Mixture set, boost pump on, Lights on, Landing Gear down, verify three green) – Accomplish at first level off at or below 3000 feet AGL
6. Flaps 50% and speed 100 knots established prior to Final Approach Fix (FAF)
7. Speed 90-100 knots until missed approach decision point

Landings:

1. Descent Checklist
2. Prelanding Checklist (Fuel Fullest Tank, Mixture set, boost pump on, Lights on, Landing Gear down, verify three green, Brake Pressure good)
3. Seat Belts and Shoulder Harnesses – Advise passengers and crew per 91.107
4. Downwind: Power: approx. 20" (50%) Speed: 100-110 KIAS Flaps: 50% midfield, trim for 100 KIAS
5. Abeam Touchdown Point – Power back slightly, trim for 100 KIAS
6. Base Leg - Power: As necessary; Speed: 90 KIAS; Flaps: 100%
7. Final: Power: as necessary Speed: 80 KIAS
8. Speed over Threshold: 78 KIAS
9. Touchdown: Speed: Just above stall

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CESSNA 172**Steep Turns:**

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 2500' MSL weather allowing (no lower than 1500' AGL)
3. Clearing Turns – Two 90 deg turns or a 180 deg turn
4. Set airspeed to 95 KIAS (110 MPH) (approximately 2300-2400 RPM)
5. Roll into a coordinated 360 degree (45-degree bank for private/50-degree bank for commercial)
6. Maintain altitude, airspeed, and bank angle through the turn.
7. Roll out on desired heading

Slow Flight:

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 2500' MSL weather allowing (no lower than 1500' AGL)
3. Clearing turns - Two 90 deg turns or a 180 deg turn
4. Pull Carb Heat then Reduce power to approx. 1500-1700 RPM
5. Flaps as directed by the instructor/examiner
6. Keep Altitude and trim as the aircraft slows down to desired speed while maintaining heading
7. Bank angle as necessary (no more than 20-degrees)
9. Maintain an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power would result in an approach to stall indication
8. Power as required for level flight or desired climb or descent rate
9. Recovery: Treat like a go around procedure, maintain level flight and current heading

Power-Off Stalls:

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 2500' MSL (no lower than 2000' AGL to stay above 1500' AGL during recovery)
3. Clearing turns - Two 90 deg turns or a 180 deg turn
4. Configure the aircraft for a normal approach to land
5. Pull Carb Heat then Reduce power to approx. 1500-1700 RPM
6. Flaps – extend to desired landing flap configuration and establish normal “on final” speed
7. Pitch and trim for a normal approach attitude and airspeed with power 1000-1500 RPM
8. Power Idle, then Smoothly raise the nose appx 5-7 deg nose high to induce a stall
9. Private Pilot - hold to Full Stall verbalizing impending stall indications (horn, buffet, stall)
10. Commercial Pilot – hold until first indication of stall (normally horn, buffet, or red airspeed)
11. Recovery Procedures:
 - a. Simultaneously:
 1. Reduce angle of attack and level wings
 2. Smoothly apply full power, carb heat in, and right rudder
 3. Select Flaps to 20 degrees
 - b. Recover to two positive climb indications (Altitude increasing and Vertical speed positive)
 - c. 70 knots (80 mph) - flaps up
 - d. Return to a specified altitude, heading, and airspeed

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Power-On Stalls:

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 2000' MSL weather allowing (no lower than 1500' AGL)
3. Clearing turns - Two 90 deg turns or a 180 deg turn
4. Pull Carb Heat, and set Power appx 1500-1700
5. Slow Aircraft to appx 70 KIAS, (80 MPH)
6. Extend flaps to 10 deg if desired (optional for short/soft field takeoff simulation)
7. At desired speed, smoothly increase power to no less than 65% (appx 2300 RPM)
8. Transition smoothly to a pitch attitude that will induce a stall (appx 15 deg up)
9. Private Pilot - hold to Full Stall verbalizing impending stall indications (horn, buffet, stall)
10. Commercial Pilot – hold until first indication of stall (normally horn, buffet, or red airspeed)
11. Recovery Procedures:
 - a. Simultaneously:
 1. Reduce angle of attack and level wings
 2. Smoothly apply full power, carb heat in, and right rudder
 - b. Recover to two positive climb indications (Altitude increasing and Vertical speed positive)
 - c. 70 knots (80 mph) - flaps up
 - d. Return to a specified altitude, heading, and airspeed

Steep Spirals:

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 5000 feet AGL
3. Clearing turns - Two 90 deg turns or a 180 deg turn
4. Select reference point
5. Reduce throttle to idle
6. Adjust aircraft pitch to maintain altitude until glide airspeed is reached
7. Lower nose to maintain glide airspeed over the selected reference point
8. Adjust bank angle as necessary to fly a constant radius over selected reference point (clear the engine every 1,000 feet when headed upwind)
9. Complete a minimum of three 360 degree turns
10. Minimum recovery altitude of 1500 feet AGL (unless over a landing surface and intend to continue to landing)
11. Limit bank angle to less than 60 degree
12. *Technique:* turn towards the side you're sitting to see the target, use ½ mile spacing to keep the turn fairly tight = less altitude loss per turn.

Chandelle:

1. Pre-maneuver checklist complete (mixture rich, gauges green)
2. Altitude – at least 2000' MSL weather allowing (no lower than 1500' AGL)
3. Clearing turns - Two 90 deg turns or a 180 deg turn
4. Maintain and note heading – Sync the heading bug
5. Establish level flight at 95 KIAS (110 MPH) (approx. 2300-2400 RPM)
6. Roll into a coordinated 30-degree level turn
7. Increase pitch at a constant rate to achieve max pitch halfway through the 180-degree turn
 - a. while simultaneously adding full power
8. At the 90-degree point in the turn, maintain maximum pitch attitude while decreasing angle of

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- a. bank at a constant rate to roll out wings level 180-degree from starting heading
- 9. Hold the maximum pitch attitude momentarily at the 180-degree point, then reduce pitch to
 - a. maintain level flight
- 10. *Recovery:* Reduce power to normal cruise power setting once aircraft has accelerated as desired
- 11. *Technique:* at 3000', use appx 15-17 deg nose high, at 4500' use 13-15 deg nose high.

Lazy Eights:

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- 3. Clearing turns - Two 90 deg turns or a 180 deg turn
- 4. Establish level flight at 95 KIAS (110 MPH) (approx.. 2300-2400 rpm)
- 5. Control the aircraft to achieve the following throughout the maneuver
 - a. At the 45-degree reference, maximum pitch up and approx. 15-degrees of bank
 - b. At the 90-degree reference, maximum bank of 30-degrees with level pitch
 - c. At the 135-degree reference, maximum pitch down and approx. 15-degree bank
 - d. At the 180-degree point, momentary level pitch and bank as the turn direction is changed
- 6. *Recovery:* Smoothly apply power as necessary to resume normal flight
- 7. *Technique:* one click of up trim and one click of L/R trim, let the airplane fly the lazy eight, apply enough back stick pressure just to control the airspeed on the last 90 deg of each leg

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- 1. Limitations – Limit Bank angle 40 deg, VMC only.
- 2. Calculate Pivotal Altitude – $\text{Elevation} + \text{GS (kts)}^2/11.3$, or $\text{GS(mph)}^2/15.0$
- 3. Pick 2 points 3/4 to 1 NM apart
- 4. Power for 90 KTS (100 MPH)
- 5. Enter from crosswind position
- 6. Cross diagonally between points so as first turn is made into the wind
- 7. Both GS and pivotal altitude decrease as you turn into the wind
- 8. If lagging behind – increase descent rate
- 9. If getting ahead – climb or decrease descent rate
- 10. Maintain coordinated flight
- 11. Both GS and pivotal altitude increase as you transition to downwind
- 12. Roll out when on a diagonal course to the next pylon
- 13. Maintain wings level during the transition between pylons
- 14. Begin a turn in the opposite direction around the next pylon

Instrument Approaches:

- 1. Load and activate approach on GTN 650
- 2. Brief Approach Plate using IPAD
- 3. IAF Speed < 100 KTS / < 115 MPH
- 4. When 1-2 NM from FAF or 1 dot below the GS/GP
 - Slow <85 KTS
 - Apply 10 deg Flaps
 - Set Appx 2000 RPM for 75 KTS
- 5. At GP/GS Intercept

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Set Final Approach Speed = 75 KTS (Appx 1500-1600 RPM)

6. At Missed Approach Point

Power Full, Carb Heat In, Pitch for Climb Attitude, Flaps Retract, execute Missed Approach

7. No flap configuration changes below 500 feet AGL