



Diamond Star
DA-40
Procedures Guide

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Complex Approaches with Step- Down Altitudes

On approaches with multiple step-down altitudes, the final approach must be monitored to ensure that the descent rates never allow the aircraft to descent below the published altitude.

Approaches without a FAF

When no FAF is depicted on the approach chart use the following method to compute your DDA and altitude to begin the final approach;

- Find the HAT and Initial or Final approach altitude.
- Subtract the FAF Altitude from the HAT
- Divide the Difference by 300 ft per NM
- The answer is your distant to begin the final approach let down.

Example:

HAT=1200 feet

$1200/300=4\text{nm}$

4nm is the point to begin the final let down.

Safety Statement

Myth: *Accidents are unforeseen events that result in unavoidable losses.*

Fact: Accidents are common operational errors, which result in costly losses.

Fact: Accidents are caused and therefore can be prevented.

Falcon Aviation Academy has several primary objectives; (1) provide aircraft rental service to qualified pilots, (2) provide the highest level of training with a reasonable cost to our students, (3) provide employment opportunities to our graduates (4) provide a high degree of safety, regulatory compliance and care in our daily operation. Of these, safety and regulatory compliance are of paramount importance.

Safety in our operation is enhanced through;

- Identification of hazards (risk) to our operation.
- Evaluation of safety hazards.
- Elimination of hazards that have the potential to cause injury or damage to our customers, employees, facilities or property.

The operation of an aircraft and the maintenance of an aircraft require everyone involved to continually evaluate risk.

All persons, either employed or doing business with Falcon Aviation, are encouraged to place safety and risk management as their highest priority. The management of PFC maintains an open door policy to discuss any safety concern at any time.

Therefore, in order to maintain the highest level of safety all of us must participate in this endeavor.

Preflight Inspection

- Become familiar with preflight pattern and accomplish inspection using flow pattern in AFM and/or Falcon AVIATION checklist.
- **NOTE – DO NOT PULL THE ALTHE ALTERNATE AIR HANDLE**

Cockpit Management

- Ensure all loose items in cockpit are secured
- Never place anything on the glare shield of the Diamond Aircraft
- Brief all passengers on use of seatbelts, shoulder harnesses, and emergency procedures
- Organize material and equipment in a logical, efficient flow pattern
- Utilize all appropriate checklists
- Set up all NAVAIDS prior to taxi

Engine Starting

- Engine start should be accomplished “heads-up” (Do and verify)

Taxiing

- Complete taxi checklist prior to aircraft movement
- Apply sufficient power to move the aircraft forward
- Reduce power to **idle** and **gently** test the brakes
- More power is typically required to begin the aircraft movement than is required to sustain a safe taxi speed (brisk walk)
- Adjust power to maintain a safe taxi speed (depending on wind conditions)
- Directional control is accomplished by a combination of rudder and brake control inputs. The nose wheel is NOT controlled by the rudder pedals
- Apply proper crosswind taxi control inputs
- While turning, check the heading indicator for rotation in the direction of the turn (right turn = increasing numbers / left turn = decreasing numbers)
- While turning, check the turn coordinator for deflection in the direction of the turn
- While turning, check that the coordination of the inclinometer (ball) indicates a skid (moves opposite the turn direction)
- Observe all local traffic rules, ATC instruction, and airport markings
- Be alert for airport hazards (moving and parked aircraft and vehicles, etc.)

Appendix One

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Constant Rate non-Precision Approaches

The goal of a constant rate non-precision approach is to maintain a constant rate of descent through the entire approach. Descent rate of 3 degrees are published on most Jeppesen charts and on in the profile section on most NACO charts. An artificial decision point will be created by adding 50 feet to the MDA. The new decision point is called a DDA (Derived Decision Altitude). The DDA is treated just like a DA on a precision approach. Upon reaching the DDA the decision is made to land or conduct the missed approach. There is no need to level off at the MDA. For a stabilized descent a rate will be determined from a chart attached to your procedures manual. Arriving at the DDA with no visual cues or if not in a position for a safe landing, the missed approach will should be executed. If reaching the MAP before the DDA, the missed approach must be executed. During the missed approach, make no turns until reaching the MAP.

Altitude Alerter Settings

Set the MDA in both the autopilot alerter and the G-1000 altitude selector.

Example (GPS RWY 31 FFC)

- If the approach speed is 90kt, the rate of descent will be 450fpm.
- At this rate of descent you will arrive at the DDA of 1330 (MDA + 50) after 3.9nm.
- This will place the aircraft approximately 1 nm from the MAP.
- This will place the aircraft approximately at the visibility requirement for the approach and allow either visual cues or time to execute the missed approach.

Rate of Descent for a 3 degree final slope

<u>Speed</u>	<u>Rate of Descent</u>
90 kts .	450 fpm
100 kts .	500 fpm
110 kts .	550 fpm
120 kts.	600 fpm

Lost Communication

- Troubleshoot
 - Headset
 - Frequency
 - Volume
 - Squelch
 - Push to talk switch
 - Etc...
- Attempt the following
 - Previous frequency
 - New frequency (from charts and publications)
 - ARTCC, FSS, etc...
 - Aircraft relay
- VFR
 - Squawk 7600
 - Land ASAP and call FSS
- IFR
 - Squawk 7600
 - Follow lost communications procedures

Before Takeoff Check

- See Falcon Aviation Academy checklist procedures
- Accomplish engine run up using flow, then return power to 1000 RPM followed by checklist review

NOTE: *Do not cage the attitude gyro. If necessary it may be caged prior to takeoff.*

NOTE: *DO NOT CHECK THE ALTERNATE AIR SOURCE.*

Radio Communications

- Select and use of appropriate radio frequencies and thoroughly understand the use of the audio panel
- Recommended procedures and phraseology for voice communications
 1. Whom you are calling
 2. Your call sign
 3. Position and altitude
 4. State intentions

Example: Falcon Unicom, diamond six five November Alpha, ten miles south of the field, three thousand, five hundred, maneuvering, Falcon.

Normal Takeoff and Climb

SET UP

- Make certain runway and final approach are clear
- Line up on the runway centerline and align the nose wheel
- Select a reference point straight out for maintaining the runway centerline

PERFORMANCE

1. Gradually apply full power
 - Hand must remain on the throttle during takeoff
 - Check RPM
 - Check engine gauges
2. Announce “airspeed alive”
3. Rotate at V_R (59 KIAS)
4. Set proper pitch for V_Y after liftoff (70 KIAS, flaps T/O)
5. Trim to relieve control pressures
6. Clear of obstacles:
 - Begin pitching for 80 KIAS
 - Retract flaps
7. Maintain straight track over the extended runway centerline
8. 500' AGL:
 - Complete CLIMB CHECK (Flow pattern)
9. Depart the traffic pattern using AIM recommended procedures
10. Refer to checklist when clear of traffic pattern

CLIMB (500' AGL)

(Do by Flow pattern, then checklist when clear of traffic pattern)

Throttle	Full
Prop	2400 RPM
Fuel Pump	Off
Cruise Climb	90 KIAS
Lights	As Required
Engine Gauges	Green

Missed Approach

PERFORMANCE

- Full power
- Establish positive rate of climb
- Notify ATC
- Follow missed approach instructions (published or assigned)

Holding

SET UP

- Determine entry
- Review headings and proper timing (published or assigned)
- Slow to 90 KIAS before reaching the holding fix

PERFORMANCE

- At the holding fix
- 5 T's
- After completing entry and crossing the fix
 - Turn outbound
 - Start time abeam the fix or wings level, whichever occurs last
- After time is up
 - Turn inbound
 - Start time wings level or course interception whichever occurs first
 - Adjust outbound leg time so inbound leg equals one minute

Straight in Landing

SET UP

- Runway in sight
- Position for landing using normal maneuvers at a normal descent rate
- Landing checklist complete

PERFORMANCE

- Reduce power to 10" MP
- Flaps to T/O
- White arc
- Flaps LNDG
- Slow to 70 – 75 KIAS

Circle to Land

SET UP

- Runway in sight
- Landing checklist complete

PERFORMANCE

- At or above MDA, maintain 90 KIAS
- Enter downwind for appropriate runway
 - *Follow local procedures if possible, see A/FD*

Abeam touchdown point

- Maintain altitude
- Flaps T/O

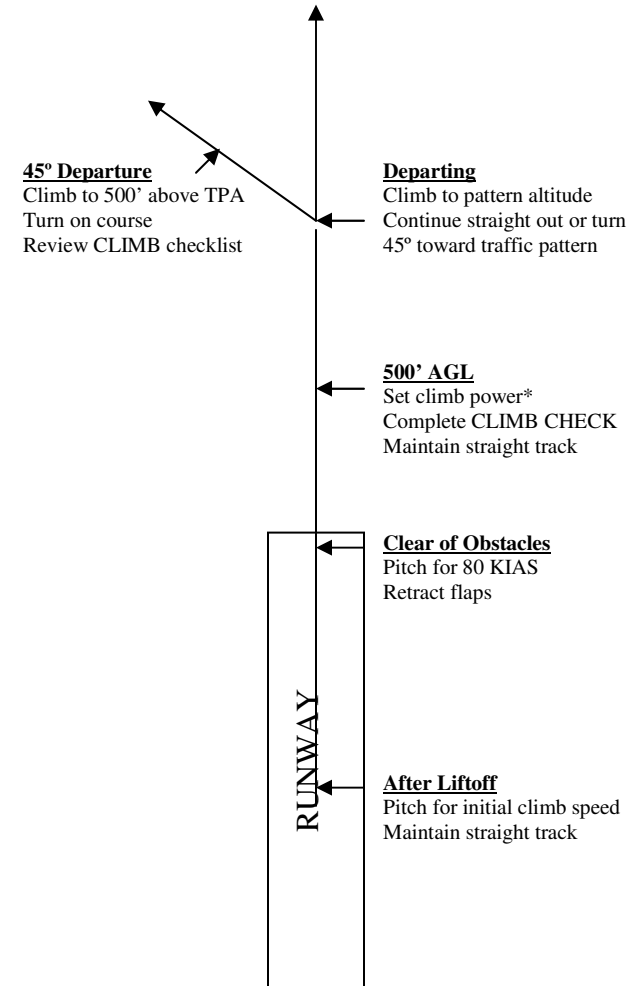
30° from touchdown point

- Turn base leg (max bank 30°)
- Flaps LDG
- Slow to 80 KIAS,
- Adjust pitch to continue descent

Final approach

- Turn final (max bank 30°)
- Adjust power to maintain 70 – 75 KIAS
- Maintain a straight track to the runway centerline
- Use pitch and power adjustments to maintain proper glide path

Takeoff and Climb Profile



Normal Approach and Landing

SET UP

- Determine active runway
- Review traffic pattern entry procedures
- Enter pattern 45° to the downwind leg
- Complete LANDING checklist at mid-field

APPROACH

Abeam touchdown point

1. Reduce throttle to 12" MP
2. Maintain altitude
3. Flaps T/O below 108 KIAS
4. Slow to 90 KIAS
5. Descend at 90 KIAS, 500 fpm

45° from touchdown point

6. Turn base leg (max bank 30°)
7. Flaps LDG
8. Slow to 80 KIAS,
9. Adjust pitch to continue descent

Final approach (500' AGL)

10. Turn final (max bank 30°)
11. Adjust power to maintain 70 – 75 KIAS
12. Maintain a straight track to the runway centerline
13. Use pitch and power adjustments to maintain proper glide path

Round-out and Touchdown

14. Begin flare at appropriate altitude
 - a. **NOTE:** *Be cautious about starting flare too high which could result in bouncing the airplane or stalling above the runway and damaging the landing gear.*
15. Allow the airplane to descend gradually
16. Simultaneously increase back pressure
 - a. Increase back pressure at a rate that will allow the airplane to descend and ultimately touchdown with the nose slightly high.
 - b. **(CAUTION: Watch for excessive nose high attitude to avoid striking the tail)**
17. Touchdown main wheels first

Roll-out

18. Gradually increase back pressure to keep the nose wheel off the runway
19. Maintain directional control on the runway centerline
 - a. Use brakes sparingly and only if necessary

NOTE: *For windy conditions add ½ of steady wind factor to approach speed.*

Ex. Wind 310 @ 10 gusting to 20, increase approach speed 5 KIAS

LANDING

Mixture	Rich
Prop	Full Fwd
Fuel Pump	On
Flaps	As required
Lights	As required

Precision Approach

SET UP

- Complete approach briefing
- Identify all NAVAID's
- Test and activate marker beacon receiver on Lo sensitivity
- Complete DESCENT CHECK at top of descent
- Review all published approach altitudes, minimums, and times

PERFORMANCE

Procedure Turn

- Cross the IAF at the assigned altitude
- 5 T's
- After 2 min. turn to published heading on procedure turn barb
- Wings level, start time
- After 1 min. turn inbound as specified
- Intercept inbound course

Approach Course Inbound to FAF (Vectored approach)

- After established inbound, descend as published if necessary
- Maintain 90 KIAS
- Determine wind correction angle
 - **NOTE:** *Outside the FAF, corrections should be made using 5° heading changes at not more than 10° of bank*
- 1 - 2 miles from FAF
- Complete LANDING CHECK
- Review DA/DH and time for the approach
 - *Review LOC minimums in case of glide slope failure*

FAF to MAP

- 5 T's
- At glide slope intercept
- Descend at 90 KIAS, 450 FPM
- Maintain course centerline and glide slope
 - *Maintain glide slope using pitch and power changes as required*
 - Ex. Below glide slope, on speed
 - *Add power and pitch up slightly to decrease vertical descent rate*
- Descend to DA/DH on glide slope

Non-Precision Approach (Off-field FAF)

SET UP

- Complete approach briefing
- Identify all NAVAID's
- Calculate VDP
- Complete DESCENT CHECK at top of descent
- Review all published approach altitudes, minimums, and times

PERFORMANCE

Procedure Turn

- Cross the IAF at the assigned altitude
- 5 T's
 - Time 2 min
 - Turn Outbound course
 - Tune Inbound course
 - Throttle Set for 90 KIAS
 - Talk ATC, if requested
- After 2 min. turn to published heading on procedure turn barb
- Wings level, start time
- After 1 min. turn inbound as specified
- Intercept inbound course

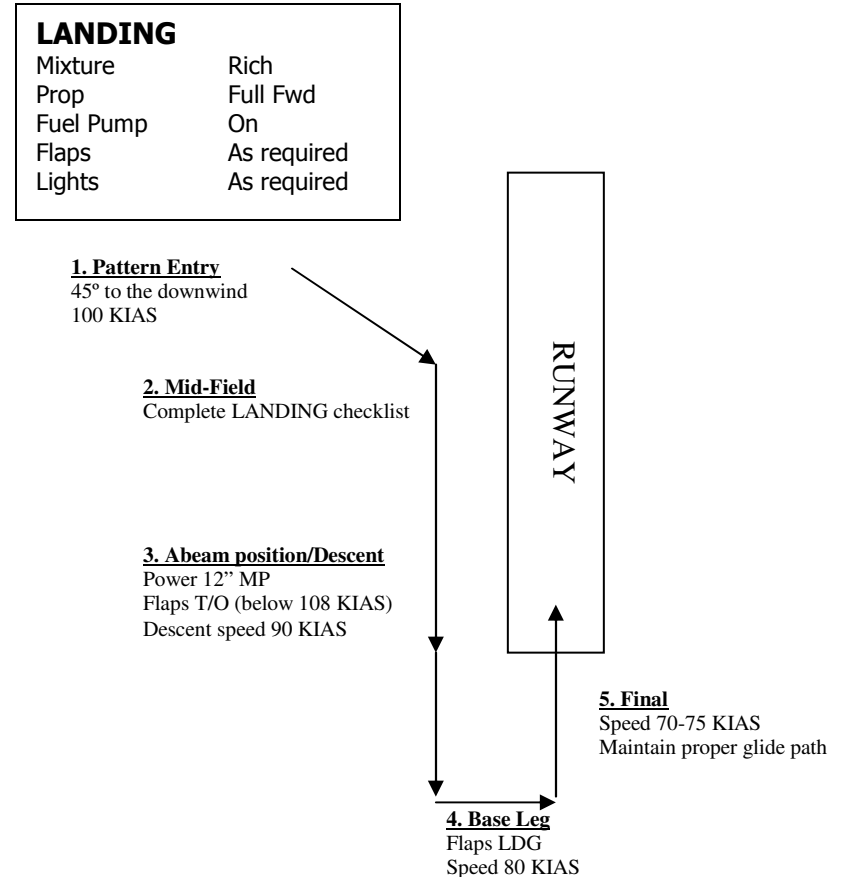
Approach Course Inbound to FAF (Vectored Approach)

- After established inbound, descend as published if necessary
- Maintain 90 KIAS
- Determine wind correction angle
 - NOTE: *Outside the FAF, corrections should be made using 5° heading changes at not more than 10° of bank*
- 1 - 2 miles from FAF
- Complete LANDING CHECK
- Review MDA, VDP, and time for the approach

FAF to MAP

- 5 T's
- Descend at 90 KIAS, 700 FPM
- Maintain course centerline
 - NOTE: *Inside the FAF, corrections should be made using 2° heading changes at not more than 10° of bank*
- Level off at MDA

Approach and Landing Profile



Crosswind Takeoff and Climb

NOTE: *During preflight inspection verify that maximum crosswind component of the aircraft and pilot limitations will not be exceeded (if solo or rental).*

SET UP

- Check that the runway and final approach are clear
- Align the aircraft with the runway centerline and properly straighten the nose wheel
- Turn the control stick fully into the wind

PERFORMANCE

1. Gradually apply full power
 - Hand must remain on the throttle during takeoff
 - Check RPM
 - Check engine gauges
2. Announce “airspeed alive”
3. As aircraft accelerates, gradually reduce aileron deflection
 - Light braking may be used for directional control **ONLY** if necessary
4. Establish a positive liftoff by rotating at a slightly higher than normal speed (61 KIAS)
5. Establish an attitude that will result in V_Y (70 KIAS) at full throttle
6. At a safe altitude above the runway:
 - Establish a crab into the wind to correct for drift
 - Maintain crab angle by heading control, coordinate with rudder
7. Clear of obstacles:
 - Begin pitching for 80 KIAS
 - Retract flaps
8. Trim to relieve control pressures
9. Maintain straight track over the extended runway centerline
10. 500' AGL:
 - Complete CLIMB CHECK (Flow pattern)
11. Depart the traffic pattern using AIM recommended procedures
12. Refer to checklist when clear of traffic pattern

Chart Briefing and Approach Set-Up

Pre-Briefing Setup

- Weather/ATIS
- Arrival Plan
- Frequencies

Heading View

- Approach procedure ID
- Primary NAVAID
- Approach course
- Runway length
- Touchdown Zone and Airport elevation
- Approach light systems
- Missed approach instructions
- ATIS, AWOS, ASOS
- ATC frequencies
- Airport CTAF/Unicom

Plan view

- MSA
- Feeder routes
- NAVAID's – primary and secondary
- Courses and headings
- Terrain and obstructions
- Procedure turn – if applicable

Profile view

- Descent procedure
- Altitudes
- Minimums
- DA/MDA
- VDP if non-precision
- Missed approach point

Airport View

- Airport lighting
- Final approach path
- Taxiway diagram

Required Call-outs

- Final Approach fix inbound
- Time/Distance to MAP
- 1000' AGL
- 500' AGL
- 200' above minimums
- 100' above minimums
- Minimums
- Ground Contact
- Lights
- Runway

Crosswind Approach and Landing

SET UP

- Determine active runway, wind direction, and speed
- Review traffic pattern entry procedures
- Enter pattern 45° to the downwind leg
- Determine crab angle required to maintain a parallel course to the runway
- Complete LANDING checklist at mid-field

Approach

- Follow items 1 – 9 for Normal Approach and Landing
- On base leg it may be necessary to crab slightly to maintain a perpendicular course to the runway

Final approach (500' AGL)

10. Turn final (max bank 30°)
11. Establish crab angle that will maintain track on the runway centerline
12. Adjust power to maintain 70 – 75 KIAS
13. Use pitch and power adjustments to maintain proper glide path

Round-out and Touchdown

14. When landing is assured, align the nose with the runway
15. Counteract with drift by banking slightly into the wind
16. Begin flare at appropriate altitude, maintaining proper crosswind correction inputs
 - **NOTE:** *Be cautious about starting flare too high which could result in bouncing the airplane or stalling above the runway and damaging the landing gear.*
17. Allow the airplane to descend gradually
 - Keep the nose aligned with the runway
 - Counteract drift by maintaining bank into the wind
18. Simultaneously increase back pressure
 - Increase back pressure at a rate that will allow the airplane to descend and ultimately touchdown with the nose slightly high.
 - **CAUTION: Watch for excessive nose high attitude to avoid striking the tail**
19. Touchdown main wheels first
 - As the airplane touches down, the upwind main should touchdown first, followed by the other.

Roll-out

20. Gradually increase back pressure to keep the nose wheel off the runway
21. As airspeed decreases, increase aileron deflection
22. Maintain directional control on the runway centerline
 - Use brakes sparingly and only if necessary

NOTE: *For windy conditions add ½ of steady wind factor to approach speed.
Ex. Wind 310 @ 10 gusting to 20, increase approach speed 5 KIAS*

Short-Field Takeoff and Climb

SET UP

- Check that the runway and final approach are clear
 - Position aircraft using all available runway
 - Align with the runway centerline
-

PERFORMANCE

1. Hold brakes firmly
 - Avoid creeping
2. Apply full power
 - Hand must remain on the throttle during takeoff
 - Check RPM
 - Check engine gauges
3. Release brakes
4. Announce "airspeed alive"
5. Rotate at V_R (59 KIAS)
6. Pitch for 66 KIAS
7. Climb at 66 KIAS until clear of obstacles
8. Clear of obstacles:
 - Pitch for 80 KIAS
 - Retract flaps
9. Trim to relieve control pressures
10. Maintain straight track over the extended runway centerline
11. 500' AGL:
 - Complete CLIMB CHECK
12. Depart the traffic pattern using AIM recommended procedures
13. Complete checklists when clear of traffic pattern

After Landing

- Clear the runway
- Make appropriate radio calls
- Use after landing flow pattern, confirm with checklist (traffic permitting)

Parking and Securing

- Throttle to 1000 RPM
- Use shutdown flow pattern, confirm with checklist
- Secure aircraft by tying down securely and installing gust lock, Stall Warning plug, and pitot mast cover
- Leave the aircraft clean

Diversion

NOTE: *Reasons to divert – low fuel, poor weather, airport closed, fatigue, illness, change of route*

1. Know your present location and alternate possibilities at all times
2. Divert in a timely manner
3. Confirm present position using a sectional
4. Select an appropriate alternate airport and estimate a heading
5. Note time and turn to new heading
6. Use plotter and draw a new course line
7. Adjust current heading for true course
8. Use pilotage to confirm course
9. Compute new groundspeed, arrival time, and fuel consumption to the alternate

Lost Procedures

- Keep heading constant if you believe you may be lost
- DO NOT PANIC
- Reconfirm all available data: NAVAIDS, heading, landmarks, etc.
- Check DG with MAG compass
- STEPS TO TAKE WHEN LOST
 - Recognize disorientation as soon as possible
 - Continue to fly original heading and watch for identifiable landmark
 - Select a positive course of action to follow, knowing that other possibilities may still need be considered
 - Attempt to identify your position using NAVAIDS
 - If possible and desirable fly to a NAVAID
 - Use pilotage and dead reckoning to a known landmark (coast or highway)
 - If you encounter marginal weather, turn 180 degrees and retrace route
 - 5 C's
 - Climb
 - Conserve
 - Communicate
 - Confess
 - Comply
 - ASK FOR HELP!!!!
- Use flight following
- Contact ATC and ask for vectors if within 50 nm of FFC
- If necessary use emergency frequency 121.5

Short Field Approach and Landing

SET UP

- Determine active runway
- Review traffic pattern entry procedures
- Enter pattern 45° to the downwind leg
- Complete LANDING checklist at mid-field

APPROACH

- Follow items 1 – 9 for Normal Approach and Landing
- Final approach (500' AGL)
10. Turn final (max bank 30°)
 11. Adjust power to maintain 70 – 75 KIAS
 12. Maintain a straight track to the runway centerline
 13. Use pitch and power adjustments to maintain proper glide path
 14. Landing assured, slow to 67 KIAS

Round-out and Touchdown

15. Begin flare at appropriate altitude
 - **NOTE:** *Be cautious about starting flare too high which could result in bouncing the airplane or stalling above the runway and damaging the landing gear.*
 16. Allow the airplane to descend gradually
 17. Simultaneously increase back pressure
 - Increase back pressure at a rate that will allow the airplane to descend and ultimately touchdown with the nose slightly high.
 - **(CAUTION: Watch for excessive nose high attitude to avoid striking the tail)**
 18. Touchdown main wheels first
- Roll-out
19. After touchdown, retract flaps to CRUISE
 20. Simulate full braking
 21. Maintain directional control on the runway centerline

Emergency Approach and Landing

NOTE: *To be practiced with instructor only. IP will run throttle up to 1700 RPM every 30 seconds to clear the engine.*

PERFORMANCE

1. Convert excess speed to distance or altitude
2. Establish best glide (73 KIAS)
3. Trim
4. Determine wind direction and land into the wind if possible
5. Select a landing area within gliding range
6. Develop an approach plan
7. Turn towards to intended landing area
8. If altitude is high spiral down over a key point abeam the landing site
9. Time permitting, complete RESTART IN FLIGHT CHECKLIST
10. Use flow pattern first, verifying with appropriate checklist
11. If engine cannot be restarted, perform EMERGENCY LANDING checklist using flow pattern (do and verify)
12. Squawk 7700
13. Tune radio to 121.5 and announce position and intentions

RESTART IN FLIGHT

PROP WINDMILLING

Airspeed	80KIAS
Fuel selector	Fullest tank
Mixture	Rich
Fuel pump	On
Ignition Switch	Both
Alternate Air	Open

PROP STOPPED

Airspeed	80KIAS
Fuel selector	Left or Right
Mixture	Rich
Fuel pump	On
Alternate air	Open
Ignition	Start

IF NO RESTART

Electrical Equip	Off
Avionics master	Off
Master switch	On
Ignition	Start

EMERGENCY LANDING

Airspeed	73 KIAS
Fuel Tank Selector	Off
Flaps (<i>field assured</i>)	LDG
Ignition Switch	Off
Master Switch	Off

Cross Country Flight Planning

- Plot Course (Departure to destination)
 1. Airspace
 2. Terrain
 3. Maximum elevation figures (MEF)
 4. Type of airport
 5. Navigation aids
 6. Radar services
 7. Weather reporting capabilities
 8. Checkpoints
- Weather
 1. METAR
 2. TAF
 3. 12/24 hour prognostic charts
 4. SIGMET, AIRMET, Convective SIGMET
 5. Weather depiction chart
 6. Weather briefing (1-800-WX-BRIEF)
 7. NOTAM
 8. Go/No Go Decision
- Aircraft performance (POH)
 1. Climb chart
 2. Cruise Chart
 3. TAS
 4. Takeoff and landing distances
 5. Weight and balance
 6. Go/No Go Decision
- Flight Log
 1. True course
 2. Wind correction angle
 3. True heading
 4. Magnetic variation
 5. Magnetic heading
 6. Compass deviation
 7. Groundspeed
 8. Times
 9. Fuel
 10. Airport info
 11. Frequencies
- Flight Plan
 1. FSS
 2. Go/No Go Decision

180° Power Off Accuracy Approach

NOTE: During this maneuver do not use speeds slower than those published in the aircraft POH. Attempting to stretch the glide with a slower speed could result in a stall with no option for a go around.

SET UP

- Set up abeam a point of intended landing at 1000' AGL
- Decide where you want to land
- Complete LANDING checklist mid-field

PERFORMANCE

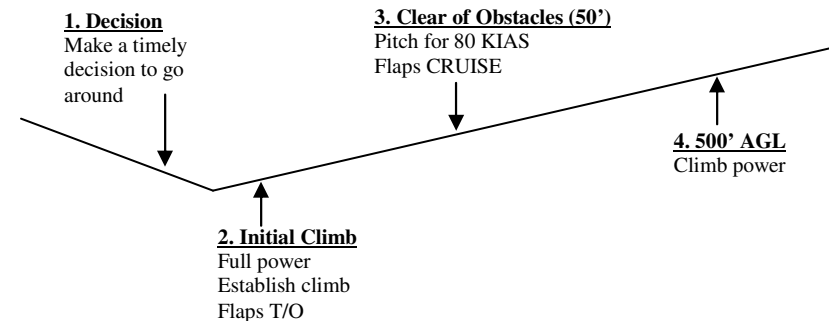
1. Close throttle
2. Flaps T/O
3. Establish best glide (73 KIAS)
4. Trim
5. Develop an approach plan
6. Lose about 100' – 200' on downwind
7. Turn base at not more than ½ mile from the intended landing area
8. Turn final not more than ½ mile out at about 500' AGL
9. Use flaps as required
10. Touchdown as slow as possible in a full stall attitude on the point of intended landing
11. Hold yoke fully back to keep nose-wheel off the ground as long as possible

Go Around / Rejected Landing

NOTE: Make a timely decision to discontinue an approach at any time a safe landing is in question. This includes, being too high or low, too fast or slow, or at any time when a landing cannot be made within the first third of the runway.

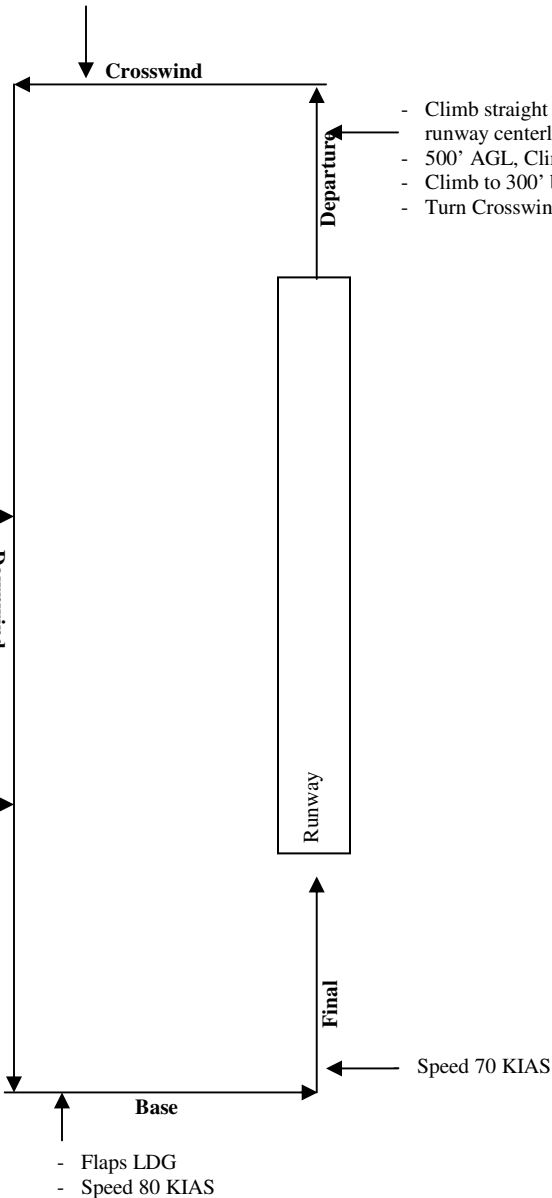
1. Gradually apply full power
2. Adjust attitude to stop descent and begin a slightly positive rate of climb (200 – 300 fpm)
3. Retract flaps to T/O
4. Establish pitch attitude to achieve 66 KIAS
5. Clear of obstacles
 - Pitch for 80 KIAS
 - Retract flaps to CRUISE
 - Make appropriate radio announcement
6. Set climb power at 500' AGL
7. Maintain a straight track along runway centerline
 - If a go around is executed due to other departing traffic, climb to the right of the departing aircraft (left, if right traffic pattern turns) until well clear and communicate intentions.

Go Around / Rejected Landing



Traffic Pattern Profile

- Continue climb at 80 KIAS
- Level off at TPA
- Set power (20" MP, 2400 RPM)



- Climb straight out on runway centerline
- 500' AGL, Climb checklist
- Climb to 300' below TPA
- Turn Crosswind

- At mid-field
- Landing checklist

- Abeam the numbers
- Power to 12"MP
 - Flaps T/O
 - Descend 90 KIAS

Speed 70 KIAS

- Flaps LDG
- Speed 80 KIAS

Eights on Pylons

SET UP

- Determine a suitable landing area in the event of an emergency
- Determine Pivotal Altitude (approximately 885' AGL)
- Find two pylons approximately 1/2 - 1 mile apart

PERFORMANCE

1. Pre-maneuver check
2. Set Prop 2400 RPM and 20" MP
3. Clear the area
4. Slow to 100 KIAS
5. Enter the pattern crosswind
6. Position the aircraft at a distance from the pylon that will allow a 30° to 40° bank throughout the maneuver
7. Abeam the first pylon place the wingtip on the pylon
8. Keep the reference point on the pylon by changing altitude ONLY
 - Keep the aircraft coordinated
 - DO NOT CHEAT WITH RUDDER!!
 - As GS increases, Pivotal Altitude increases
 - AS GS decreases, Pivotal altitude decreases
9. Wings level for 3 – 5 seconds
10. Roll on to the opposite pylon and repeat

NOTES:

- *Figure a pivotal Altitude {TAS²/11.3 = Approximate Pivotal Altitude}*
- *Abeam the pylon begin your turn into the wind*
- *As g/s slows, pivotal altitude will be lower*
- *As g/s increases, pivotal altitude will be higher*
- *The first part of your turn will be steeper because of a high Ground Speed*
- *IF THE REFERENCE LINE MOVES FWD OF THE PYLON, **PULL UP***
- *IF THE REFERENCE LINE MOVES AFT OF THE PYLON, **GO DOWN***

Lazy Eights

SET UP

Pre-maneuver

- Practice Area & Emg Field at 3500' MSL
 - Pre-maneuver check
 - Set 20" MP & 2400 RPM
 - Clear the area of other aircraft
 - Slow to 100 KIAS
 - Choose a 90° ground reference & set heading bug
-

PERFORMANCE

0° - 45° Point

1. Gradually begin to pitch up
2. Simultaneously begin banking the aircraft *slowly*
3. Maximum pitch up should be achieved at the 45° point (about 10°)
4. Time the roll to achieve approximately 15° bank at 45° point

45° - 90° Point

5. Hold back pressure and allow the nose to gradually fall forward
6. Continue to increase bank slowly to 30°
7. Level pitch should be attained at the 90° point
8. Time the roll to achieve 30° bank at 90° point

90° - 135° Point

9. Gradually release some back pressure and allow the nose to continue to fall through the horizon
10. Simultaneously begin to roll out bank
11. Max pitch down should be at the 135° point
12. Time the roll to achieve approximately 15° bank at 135° point

135° - 180° Point

13. Apply gradual back pressure to raise the nose to the horizon by the 180° point
14. Continue to roll out bank to reach wings level
15. After wings level for 1 or 2 seconds, repeat in opposite direction

NOTES:

- *Start and finish at the same altitude*
- *If the nose is falling too fast and the speed is building too fast keep the bank in longer (roll out very slowly at the end.)*
- *If the nose is falling too slowly and speed is not building fast enough, lengthen the roll out time to lengthen the time in the turn.*

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Slow Flight

SET UP

- Find practice area where terrain is appropriate for maneuvering with an available emergency landing area
- Perform the maneuver no lower than 1500 AGL (Use 3500 MSL)

PERFORMANCE

1. Reduce throttle to 12" MP
2. Clear the area
3. Pre-maneuver check
4. Below 108 KIAS
 - Flaps T/O
5. White arc (91 KIAS)
 - Flaps LDG
6. Trim to relieve control pressures
7. Slow to bottom of the white arc (49 KIAS)
8. Maintain directional control using outside visual references
9. Practice gentle climbs, descents, and turns at constant airspeed

PRE-MANEUVER CHECK

Mixture	Fwd
Prop	Fwd
Fuel pump	On

RECOVERY

1. Gradually apply full power
2. Lower nose to maintain altitude
3. Retract flaps to T/O
4. Maintain level altitude
5. Approaching 73 KIAS, retract flaps to CRUISE
6. Approaching cruise airspeed, trim as necessary
7. Complete CRUISE checklist

Chandelle

SET UP

Pre-maneuver

- Practice Area & Emg Field at 3500' MSL
- Pre-maneuver check
- Set 20" MP & 2400 RPM
- Clear the area of other aircraft
- Slow to 100 KIAS
- Choose a 90° reference point and set heading bug

PERFORMANCE

0° to 90° Point

1. Roll into a coordinated, level 30° banked turn
2. Begin pitching up gradually to reach maximum pitch up (about 12°) at the 90° point
3. Simultaneously add full throttle
4. Maintain coordinated 30° bank

90° to 180° Point

5. Gradually roll out bank to reach wings level at the 180° point
6. Maintain max pitch up (12°) by continuously applying additional back pressure as necessary
7. Time roll out to reach MCA at the 180° point

180° Point

8. Note altitude
9. Gradually lower nose to maintain altitude +/- 50'
10. Return to cruise flight

NOTES:

- If airspeed **decreases rapidly** after 90° position stay in bank longer to finish turn quicker
- If airspeed **decreases slowly** after 90° position start roll out sooner to lengthen turn time.
- **Pitch must remain constant** throughout the second half of the turn.

Steep Spiral

NOTE: *The Steep Spiral requires a minimum of three full turns. It will be important to choose both a ground reference point and set the heading bug to properly account for the number of turns as well as meet the PTS performance objectives.*

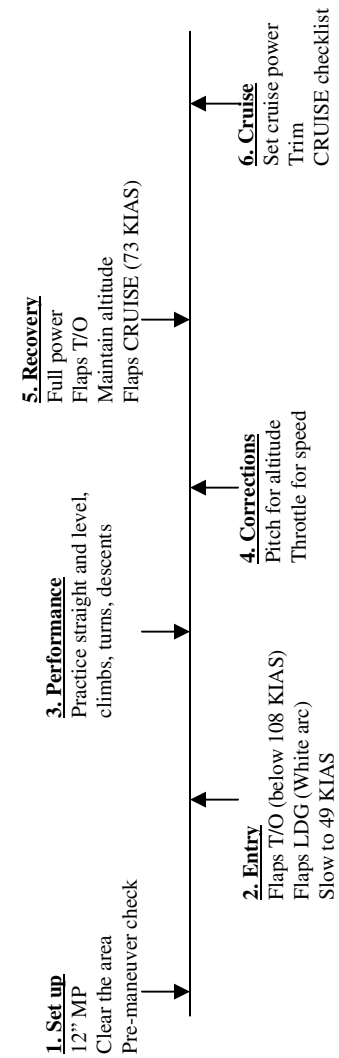
SET UP

- Position airplane over a specified point on or near a landing runway at 4000' AGL
- Enter maneuver downwind

PERFORMANCE

1. Clear the area
2. Reduce power to idle
3. Trim to 73 KIAS
4. Enter a 45° - 50° bank
5. Maintain a constant radius around the selected point by varying bank according to groundspeed
 - Increasing GS = increasing bank
 - Decreasing GS = decreasing bank
6. Clear the engine every 30 seconds by increasing the throttle to 1700 RPM and then return to idle

Slow Flight Profile



Power-off Stalls

NOTE: Stalls should be practiced from both straight flight and turns.
Use a maximum of 15° of bank when performing turning stalls.
Maintain coordination at all times. **Turning stalls are prohibited without a PFC instructor.**

SET UP

- Find practice area where terrain is appropriate for maneuvering with an available emergency landing area
- Perform the maneuver no lower than 1500' AGL (Use 3500' MSL)

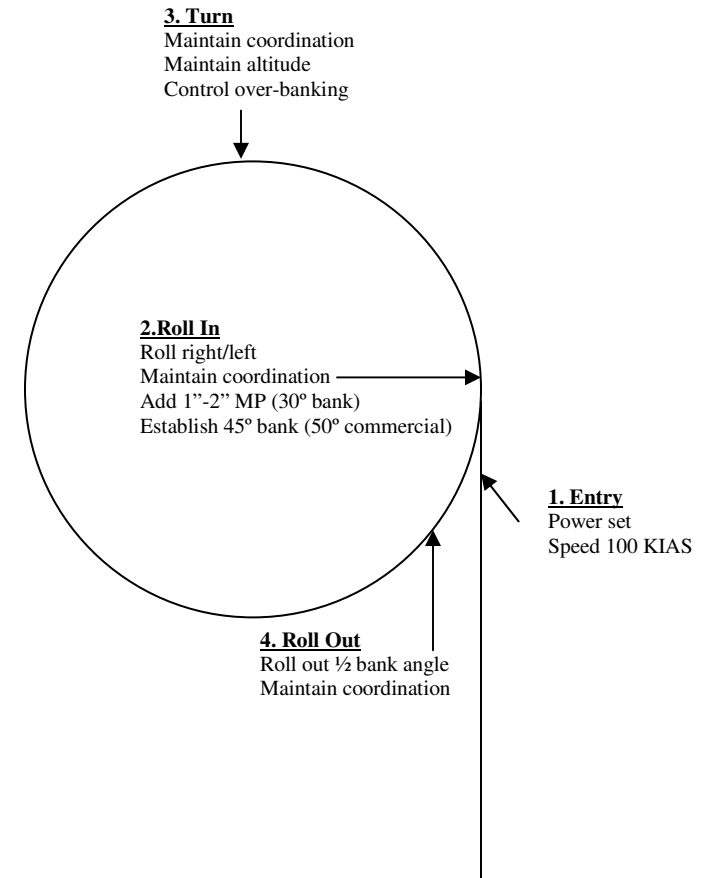
PERFORMANCE

1. Reduce throttle to 12" MP
2. Clear the area
3. Pre-maneuver check
4. Below 108 KIAS
 - Flaps T/O
5. White arc (91 KIAS)
 - Flaps LDG
6. Stabilize the aircraft in a descent at approach speed (67 KIAS)
7. After descending 200', reduce power to idle
8. Simulate landing flare
 - Add 15° bank if performing turning stalls
 - Maintain coordination at all times
9. Recognize and announce symptoms of approaching stall
 - Airspeed and noise level decrease
 - High nose attitude
 - Flight controls are less effective and feel "mushy"
 - Stall warning horn activates
 - Aerodynamic buffeting

RECOVERY

1. Lower nose to the horizon
2. Gradually apply full power
3. Level the wings using coordinated rudder and aileron
4. Retract flaps to T/O
5. Establish a shallow climb (100 – 200 FPM)
6. At positive rate of climb and approaching 73 KIAS
 - Retract flaps to CRUISE
7. Set climb power
8. Climb at 80 KIAS to initial altitude
9. Complete both CLIMB and CRUISE checklists after leveling off

Steep Turn Profile



Steep Turns

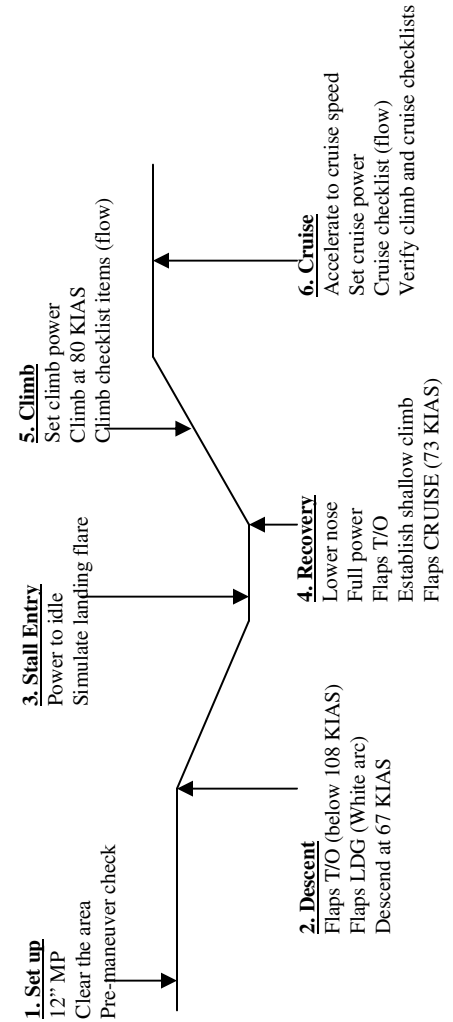
SET UP

- Find practice area where terrain is appropriate for maneuvering with an available emergency landing area
- Perform maneuver no lower than 1500' AGL (Use 3500' MSL)

PERFORMANCE

1. Set power to 20" MP, 2400 RPM
 - Starting speed 100 KIAS
2. Clear the area
3. Select a heading or reference point for rollout (set heading bug)
4. From straight and level coordinate aileron and rudder to roll into a 45 degree bank (50 degrees for commercial)
5. Add a small amount of power (1" or 2" MP) as you roll through 30 degrees of bank
6. Maintain altitude and airspeed
 - Select a reference line on the horizon to assist with maintaining altitude and bank angle
 - Maintain bank angle with aileron, coordinate with rudder
 - Apply opposite aileron to counter over-banking tendency
7. Anticipate rollout by half the angle of bank (20 - 25 degrees)
8. Roll out using coordinated aileron and rudder pressures to straight and level flight
9. Repeat in the other direction
10. Exit at the point of entry at the same altitude and airspeed at which the maneuver was started
11. Adjust power to 100 KIAS

Power Off Stall Profile



Power-On Stalls

NOTE: Stalls should be practiced from both straight flight and turns. Use a maximum of 15° of bank when performing turning stalls. Maintain coordination at all times. **Turning stalls are prohibited without a PFC instructor.** The power on stall may cause one wing to be more stalled than the other (usually due to uncoordinated flight) causing the wing to drop. Use coordinated rudder and aileron inputs to level the wings.

SET UP

- Find practice area where terrain is appropriate for maneuvering with an available emergency landing area
- Perform the maneuver no lower than 1500 AGL (Use 3500 MSL)

PERFORMANCE

1. Set power to 12" MAP
2. Clear the area
3. Pre-maneuver check
4. Below 108 KIAS
 - Flaps T/O
5. Slow to V_R (59 KIAS)
6. Simultaneously pitch up and increase throttle to 20" MAP
7. Recognize and announce symptoms of approaching stall
 - Airspeed and noise level decrease
 - High nose attitude
 - Flight controls are less effective and feel "mushy"
 - Stall warning horn activates
 - Aerodynamic buffeting

RECOVERY

1. Release enough back pressure to break the stall
2. Simultaneously apply full power
3. Establish a shallow climb (100 – 200 FPM)
4. At positive rate of climb and approaching 73 KIAS
5. Retract flaps to CRUISE
6. Set climb power
 - **NOTE:** This stall may not cause any loss of altitude. In this case, lower the nose to maintain altitude and set cruise power, and refer to CRUISE checklist.
7. Climb at 80 KIAS to initial altitude
8. Complete both CLIMB and CRUISE checklists after leveling off

Power On Stall Profile

