VII.H. Go-Around/Rejected Landing

References: FAA-H-8083-3; POH/AFM

Objectives  The student should develop knowledge of the elements related to a Go-Around/Rejected Landing. The student will understand the importance of a prompt decision and have the ability to quickly and safely configure the airplane and adjust its attitude to accomplish a go-around. The student will perform the maneuver to the standards prescribed in the PTS.

Key Elements  1. Power
2. Attitude
3. Configuration

Elements  1. Situations When a Go-Around may be Necessary
2. Promptly Deciding to Discontinue a Landing
3. Cardinal Principles of the Procedure
4. Control Pressures
5. During the Climb Out
6. Communication

Schedule  1. Discuss Objectives
2. Review material
3. Development
4. Conclusion

Equipment  1. White board and markers
2. References

IP’s Actions  1. Discuss lesson objectives
2. Present Lecture
3. Ask and Answer Questions
4. Assign homework

SP’s Actions  1. Participate in discussion
2. Take notes
3. Ask and respond to questions

Completion Standards  The student shows the ability to recognize when a go-around is needed and promptly configures the airplane and adjusts its attitude to safely execute the rejected landing.
Introduction:
Attention
Interesting fact or attention grabbing story
There will be times when we have to discontinue a landing and set up for another one. This may be a result of a dangerous situation or may just be necessary to re-establish an approach. Either way, we definitely want to know what we’re doing as we’re getting closer and closer to the ground.

Overview
Review Objectives and Elements/Key ideas

What
A go-around is the discontinuance of a landing approach in order to make another attempt to land under more favorable conditions (it is an alternative to any approach or landing). The go-around is a normal maneuver that may at times be used in an emergency situation. It is warranted whenever landing conditions are not satisfactory and the landing should be abandoned or re-setup.

Why
The need to discontinue a landing may arise at any point in the landing process and the ability to safely discontinue the landing is essential, especially due to the close proximity of the ground.

How:
1. Situations When a Go-Around may be Necessary
   A. There are many factors which can contribute to unsatisfactory landing conditions. Situations such as:
      i. Air traffic control requirements
         a. Low approach only request
         b. Told to go-around due to traffic, obstruction, etc. on the runway
      ii. Unexpected appearance of hazards on the runway
         a. Deer, coyote, etc.
      iii. Overtaking another airplane
      iv. Wind Shear
      v. Wake Turbulence
      vi. Mechanical Failure
         a. Gear Issues
      vii. Unstable Approach
         a. Too low or too high
            • Can’t get established (on glide slope or on centerline)
         b. Airspeed control
         c. Rate of descent
      viii. Whenever safety dictates a go-around
   B. These situations are all examples of reasons to discontinue a landing approach and make another approach under more favorable conditions
   C. CE - Failure to recognize a situation where a go-around/rejected landing is necessary

2. Promptly Deciding to Discontinuing a Landing
   A. The go-around maneuver is not inherently dangerous
      i. It only becomes dangerous when unnecessarily delayed or executed improperly
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B. Delaying the Initiation of a Go-around
   i. Stems from two sources:
      a. Landing Expectancy
         • The anticipatory belief that conditions are not as threatening as they are and that the
           approach will surely be terminated with a safe landing
      b. Pride
         • The mistaken belief that the act of going around is an admission of failure
   C. The earlier we recognize a situation that warrants a go-around, the safer the go-around/rejected landing
      will be
      a. It is therefore, important to make a prompt decision
         • Provide as little time as possible for the airplane to descend and for the situation to magnify
   D. Once you decide to go-around stick to it!
      i. Don’t change your mind and try to land
   E. CE - Hazards of delaying a decision to perform a go-around/rejected landing
      i. Delaying the go-around could result in recovery and a normal, safe landing, but the chance of the
         situation escalating and ending poorly is much higher than during a safe, stabilized approach
      ii. Do not delay the decision to go-around, simply go-around and set up for another landing

3. Cardinal Principles of the Procedure
   A. The improper execution of the go-around procedure stems from a lack of familiarity with the three
      cardinal principles of the procedure
   B. Power
      i. Power is the pilot’s FIRST concern
         a. The instant the pilot decides to go-around, full or maximum takeoff power must be applied
            smoothly and without hesitation
            • Full power must be held until flying speed and controllability are restored
         b. Applying partial power is never appropriate
      ii. Torque Effect and Right Rudder
         a. Increasing power to max will result in left turning tendencies just like during takeoff
            • Anticipate the turning tendencies using right rudder to maintain coordination
         b. CE - Failure to compensate for torque effect
      iii. Inertia
         a. The pilot must be aware of the degree of inertia that must be overcome
            • It takes tremendous power before an airplane settling towards the ground can regain
              sufficient airspeed to become fully controllable and capable of turning/climbing safely
            a. The downward inertia of the airplane must be slowed, stopped, then reversed
            b. Newton’s 1st Law - A body in motion wants to stay in motion (inertia)
      iv. CE - Improper power application
   C. Attitude
      i. Attitude is always critical when close to the ground
         a. Too much nose up or down can create problems
      ii. When adding power, it is very important to keep the nose from pitching up prematurely
         a. An attitude must be maintained that will allow the airplane to build airspeed before any effort is
            made to gain altitude or turn
            • Pitch attitude must slow/stop the descent
            • Airspeed must be built up well above the stall speed
         b. Raising the Nose too Early
            • The natural tendency is to immediately pull the nose up
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a. The pilot must accept that an airplane will not climb until the airspeed has reached a safe speed

iii. Pitch for $V_Y$
   a. As soon as the appropriate climb airspeed and pitch attitude are attained the pilot can climb out
      • Pitch for and climb at $V_Y$ ($V_X$, if necessary)
         a. CE - Failure to maintain recommended airspeeds
      • Trim the airplane
         a. A considerable amount of control pressure can be removed
         b. Quick relieving of the control pressures
            1. Trim more precisely when stabilized
         c. CE - Improper trim procedure

iv. CE - Failure to control pitch attitude
   a. Do not leave the nose pitched down for the descent with full power
      • This will greatly increase the rate of descent
      • Add power, adjust pitch to accelerate to a safe speed, then climb

v. Summary: Increase power to max, when able (safe airspeed), pitch the nose to climb at $V_Y$ (or $V_X$)

D. Configuration
i. Cleaning Up the Airplane
   a. 1st Concern: Landing Flaps
   b. 2nd Concern: Gear (if retractable)
   c. 3rd Concern: Takeoff Flaps

ii. Flaps
   a. In the DA20, after adding full power and establishing a climb attitude, the Landing Flaps should be retracted
      • Going directly to cruise flaps will result in a loss of lift possibly causing the airplane to settle to the ground

iii. Gear
   a. After a positive rate of climb is established the gear can be retracted
      • Only retract after the initial/rough trim has been established and when it is certain the airplane will remain airborne
      • Do not retract the gear in a descent

iv. Retract Takeoff Flaps
   a. After reaching $V_Y$ and at a safe altitude

v. Flaps Before Gear
   a. Two reasons:
      • Full flaps produce more drag than the landing gear
         a. Retracting flaps first, reduces the most drag immediately
      • In the case the airplane should inadvertently touchdown it is desirable to have the gear down and locked

vi. CE - Improper wing flaps or landing gear retraction procedure

4. Control Pressures
A. When takeoff power is applied
i. The airplane’s nose will rise suddenly
   a. It will be necessary to hold forward pressure to maintain straight and level flight and a safe climb attitude
      • The airplane has been trimmed for the approach
         a. The nose is trimmed up due to low power, and low airspeed
ii. The nose will veer to the left
   a. Right rudder pressure will be necessary to counteract P-Factor and Torque
   b. CE - Failure to compensate for torque effect
iii. Trim should be used to relieve adverse control pressures and assist in maintain the proper attitude
   a. Rough trim
      • Airspeed is building, controls effectiveness is increasing- you will have to re-trim
   b. CE - Improper trim procedure

5. During the Climb Out
   A. Maintain a ground track parallel to the extended centerline that allows you to see the runway
      i. Maneuver to the side of the runway/landing area to clear the area and avoid obstructions
         a. Get in a position where you can see the runway
         b. Maintain visual contact to avoid another dangerous situation
            • Especially if the go-around was due to another plane taking off on the runway
      ii. Wind correction is necessary
   B. Remain clear of obstacles/obstructions/other traffic
      i. May have to climb at $V_X$ to avoid obstacles
   C. CE - Failure to maintain proper track during climb-out
   D. CE - Failure to remain well clear of obstructions and other traffic

6. Communication
   A. Once the airplane is under control, then you can communicate with the tower or appropriate facility
      i. Let them know you’re “Going Around”
      ii. Aviate, Navigate, then Communicate
         a. Fly first, then deal with the radios

Common Errors:
  • Failure to recognize a situation where a go-around/rejected landing is necessary
  • Hazards of delaying a decision to perform a go-around/rejected landing
  • Improper power application
  • Failure to control pitch attitude
  • Failure to compensate for torque effect
  • Improper trim procedure
  • Failure to maintain recommended airspeeds
  • Improper wing flaps or landing gear retraction procedure
  • Failure to maintain proper track during climb-out
  • Failure to remain well clear of obstructions and other traffic

Conclusion:
Brief review of the main points
The go-around is a very important maneuver that is essential in an emergency situation. Knowing the procedure to properly perform the maneuver will provide a considerably safer situation. The pilot’s first concern is power, followed by the establishing the correct attitude, and configuration.

PTS Requirements:
To determine that the applicant:
  1. Exhibits instructional knowledge of the elements of a go-around/rejected landing by describing:
     a. Situations where a go-around is necessary.
     b. Importance of making a prompt decision.
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c. Importance of applying takeoff power immediately after the go-around decision is made.
d. Importance of establishing proper pitch attitude.
e. Wing flaps retraction.
f. Use of trim.
g. Landing gear retraction.
h. Proper climb speed.
i. Proper track and obstruction clearance.
j. Use of checklist.

2. Exhibits instructional knowledge of common errors related to a go-around/rejected landing by describing:
   a. Failure to recognize a situation where a go-around/rejected landing is necessary.
   b. Hazards of delaying a decision to go-around/rejected landing.
   c. Improper power application.
   d. Failure to control pitch attitude.
   e. Failure to compensate for torque effect.
   f. Improper trim technique.
   g. Failure to maintain recommended airspeeds.
   h. Improper wing flaps or landing gear retraction procedure.
   i. Failure to maintain proper track during climb-out.
   j. Failure to remain well clear of obstructions and other traffic.

3. Demonstrates and simultaneously explains a go-around/rejected landing from an instructional standpoint.

4. Analyzes and corrects simulated common errors related to a go-around/rejected landing.
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