

XIII.D. Emergency Descent

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

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| Objectives | The student should develop knowledge of the elements related to an emergency descent, when the descent is required, and the proper procedure when performing the maneuver. The student will have the ability to perform the maneuver as required in the PTS. |
| Key Elements | <ol style="list-style-type: none">1. Configuration2. Airspeed and Load3. Recovery |
| Elements | <ol style="list-style-type: none">1. General2. The Maneuver |
| Schedule | <ol style="list-style-type: none">1. Discuss Objectives2. Review material3. Development4. Conclusion |
| Equipment | <ol style="list-style-type: none">1. White board and markers2. References |
| IP's Actions | <ol style="list-style-type: none">1. Discuss lesson objectives2. Present Lecture3. Ask and Answer Questions4. Assign homework |
| SP's Actions | <ol style="list-style-type: none">1. Participate in discussion2. Take notes3. Ask and respond to questions |
| Completion Standards | The student understands the situations which necessitate an emergency descent and can properly perform the maneuver with a smooth, controlled recovery. |

Instructors Notes:

Introduction:

Attention

Interesting fact or attention grabbing story

This maneuver is a lot of fun to practice, partly because there is not a lot too it, but also because the airplane is put in a very nose low attitude and is descending very fast. You're dive bombing the ground.

Overview

Review Objectives and Elements/Key ideas

What

An emergency descent is a maneuver for descending as rapidly as possible to a lower altitude or to the ground for an emergency landing.

Why

The need for this maneuver may result from an uncontrollable fire, a sudden loss of cabin pressurization, or any other situation demanding an immediate and rapid descent.

How:

1. General

- A. Objective
 - i. To descend as rapidly as possible, within the structural limitations of the airplane
- B. Situations
 - i. Fire, smoke, loss of cabin pressurization, any other situation demanding (medical, injury, etc.)
 - ii. **CE** - The consequences of failing to identify reason for executing an emergency descent
 - a. If a emergency descent is necessary and not executed the situation can become very dangerous
 - A fire can grow and spread
 - In the case of decompression, symptoms of hypoxia can begin to set it
- C. Follow the procedures outlined in the Emergency Procedures section of the POH
 - i. None in the DA20 POH

2. The Maneuver

- A. Prior to the Maneuver
 - i. Clear the Area visually
 - a. **CE** - Improper use of clearing procedures for initiating the emergency descent
 - Clear the area (below too) and broadcast intentions to alert other aircraft
 - ii. Announce intentions to alert aircraft in the area
 - iii. Pre-Maneuver Checklist: Fuel Pump ON, Mixture RICH, Lights ON, Gauges GREEN
 - iv. **CE** - Improper use of the prescribed emergency checklist to verify accomplishment of procedures for initiating the emergency descent
 - a. If the airplane is not configured correctly, the rate of descent may be lacking and the airplane could be structurally damaged
- B. Procedure
 - i. Reduce power to idle
 - ii. Extend the flaps and gear as required by the manufacturer
 - a. This provides maximum drag to make the descent as rapidly as possible, without excessive airspeed

XIII.D. Emergency Descent

- iii. A radio call announcing descent intentions is appropriate to alert other traffic
 - iv. Put the nose down to maintain the maximum allowable airspeed based on the situation
 - a. Nose down pitch is approximately 12° , but may be adjusted based on the configuration
 - b. This speed may vary depending on flaps used and in turbulent conditions
 - Never exceed V_{NE} or V_{FE} and always maintain positive control of the airplane
 - v. Begin a 90° left turn with 45° of bank
 - a. This turn acts as a clearing turn (below and to each side) and gets the airplane off the airway
 - b. The turn is made to the left because faster traffic passes on the right (right of way rules)
 - c. The 45° bank puts positive load on the aircraft (countering the negative load from the descent)
 - vi. Maintain the airspeed until close to the desired altitude
- C. Leveling Off (This is the most difficult part)
- i. The recovery should be a slow and smooth, and initiated at an altitude ensuring a safe recovery
 - a. Level off when 10% of the rate of descent from the desired altitude
 - EX: If descending at 1500 fpm, level off 150' above the desired altitude
 - ii. Power will need to be increased back to cruise power
 - iii. Once straight and level, return the airplane to a normal configuration (flaps, gear, etc. are retracted)
 - iv. Re-trim the aircraft and adjust/lean the mixture as necessary
 - v. **CE** - Improper procedures for recovering from an emergency descent
 - a. Recovery requires a transition between flight phases that can be dangerous
 - Be sure to make a smooth recovery to avoid exceeding the airplane's critical load factor

Common Errors:

- The consequences of failing to identify reason for executing an emergency descent
- Improper use of the prescribed emergency checklist to verify accomplishment of procedures for initiating the emergency descent
- Improper use of clearing procedures for initiating the emergency descent
- Improper procedures for recovering from an emergency descent

Conclusion:

Brief review of the main points

An emergency descent is used in a situation where altitude must be lost quickly in order to make a landing as soon as possible. If possible, the manufacturer's procedures should be followed. The airplane is put into a configuration which will allow for the maximum descent rate. Recovery should be smooth and controlled as straight and level cruise flight is reestablished.

PTS Requirements:

To determine that the applicant exhibits instructional knowledge of the elements related to emergency descents appropriate to the airplane being flown by:

1. Exhibiting instructional knowledge of the elements related to an emergency descent by describing:
 - a. Situations that require an emergency descent.
 - b. Proper use of the prescribed emergency checklist to verify accomplishment of procedures before initiating and during the emergency descent.
 - c. Proper use of clearing procedures before initiating and during the emergency descent.
 - d. Procedures for recovering from an emergency descent.
 - e. Manufacturer's procedures.
2. Exhibits instructional knowledge of common errors related to an emergency descent by describing:
 - a. The consequences of failing to identify reason for executing an emergency descent.

XIII.D. Emergency Descent

- b. Improper use of the prescribed emergency checklist to verify accomplishment of procedures for initiating the emergency descent.
 - c. Improper use of clearing procedures for initiating the emergency descent.
 - d. Improper procedures for recovering from an emergency descent.
3. Demonstrates and simultaneously explains emergency descents from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to emergency descents.