Task V.D: Taxiing

Table of Contents

Lesson Overview

Objective

The student should develop knowledge of the elements related to taxiing an airplane as required in the necessary ACS.

Reference

- FAA-H-8083-3B, Airplane Flying Handbook (Chapter 2)
- AIM (Chapter 4.3)

Key Elements

- Fast walk
- Crosswind corrections
- Taxi diagram

Elements

- Taxiway markings
- How taxiing works
- Taxi clearance
- Brake check
- Taxi check

- Wind corrections
- Avoiding other aircraft and hazards
- Avoiding incursions

Equipment

- White board
- Markers
- References

Schedule

1. Discuss objectives
2. Review material
3. Development
4. Conclusion

Instructor Actions

1. Discuss lesson objectives
2. Present lecture
3. Questions
4. Homework

Student Actions

- Participate in discussion Take notes

Completion Standards

The student can safely maintain positive control of the airplane with the proper crosswind corrections and understands the elements related to taxiing safely and effectively.

Instructor Notes

Attention

Taxiing is one of the basic skills required anywhere you fly. At some airports with many taxiways it can be intimidating and therefore is very important to understand how to safely and efficiently taxi an airplane.

Overview

Review Objectives and Elements/Key ideas

What

Taxiing is the controlled movement of the airplane under its own power while on the ground.

Why

Since the airplane is moved by its own power between the parking area and runway, the pilot must thoroughly understand and be proficient in taxi procedures.

Lesson Details

Taxiway markings

Used to help the pilot transition from the parking area to the runway.

- Continuous yellow centerline stripe
- Edge markings
  - Continuous line—the shoulder is not intended for use by an airplane.
  - Dashed marking—the airplane may use that portion of the pavement.
- Holding position markers
- Hold short lines—do not cross until cleared to.
- Four yellow lines—two solid and two dashed. Hold on solid lines side.

How taxiing works

Steer with rudder pedals and brakes.

- Apply rudder toward the desired turn.
- Use brakes as necessary to assist in turning.
- Hold rudder until just short of the point where the turn is to be stopped, then release pressure or apply opposite rudder to maintain centerline track.
- Use brakes to stop, slow, or assist in turning—apply brakes smoothly and evenly. Do not ride the brakes while taxiing—slow the airplane with the throttle.

CE—improper use of brakes.

Control speed with power and brake pressure.

- Power first, then brakes.
- Taxi at the speed of a fast walk—for safety and positive control; be able to stop and turn when desired.
- More power needed to get the airplane moving than to keep it moving—reduce power after you start moving.
- Stop with the nosewheel straight to prevent side load and to make moving again easy.
- Taxiing too fast can be dangerous—may cause ground loops, accidents, obstructions, loss of control, etc.

CE—taxiing too fast.

Taxi clearance

Obtain approval before moving onto the movement area while the tower is in operation.

Clearance required prior to crossing any runway (including inactive and closed runways)

ATC will specify:

- The runway or the point to taxi to.
- Taxi instructions.
- Hold short instructions or runway crossing clearances if the route will cross a runway.

Read back:

- The runway assignment.
- Any clearance to enter a specific runway.
- Any instruction to hold short of a specific runway or line up and wait instructions.

Before taxiing, make sure the instructions make sense, and contact ground if they don't. Repeat all clearances back and understand airport signs and markings.

CE—failure to comply with airport/taxiway surface marking, signals, and ATC clearances or instructions.

Brake check

Begin moving forward with gradual power, reduce the power to idle when rolling, and apply the brakes to ensure they work.

If brakes operation is uncertain, shut down the airplane.

Taxi check

While taxiing, check that

- The attitude indicator does not indicate more than 5° of pitch or bank.
- The turn and slip indicator shows the wings moving with the turn and the ball moving against the turn and that the inclinometer is full of fluid.
- The magnetic compass and heading indicator are moving toward known headings and the magnetic compass has no cracks, leaks, or bubbles.

Wind corrections

Taxiing downwind will usually require less engine power after the initial ground roll begins. To avoid overheating the brakes, keep engine power at a minimum and only apply them occasionally. Wind corrections will minimize weathervaning and provide easier steering.

When taxiing with a quartering headwind, hold the elevator NEUTRAL and turn the ailerons into the headwind.

- Keep upwind aileron UP to reduce effect of lifting action (upwind wing may be lifted).

When taxiing with a quartering tailwind, hold the elevator DOWN and turn the ailerons to dive away from the tailwind.

- Keep upwind aileron DOWN.
- Keep elevator DOWN to reduce the tendency of the wind to nose the airplane over.

Use the heading indicator to visualize the wind in relation to the airplane and position the controls accordingly.

CE—improper positioning of flight controls for various wind corrections.

Avoiding other aircraft and hazards

- Maintain awareness of the location and movement of all other aircraft and vehicles. Visually scan the area, constantly looking for traffic/hazards.
- Monitor the appropriate frequency (Ground).
- Right-of-way rules apply. Maintain adequate spacing.
- Don’t create hazards—make sure the wings will clear other airplanes, and be aware of propeller blast.
- Taxi at the appropriate speed—fast walk.
- Use yellow taxiway centerlines if available.
- Slow down before turning and avoid sharp, high speed turns, which place loads on the gear and can result in a swerve or ground loop.

Avoiding incursions

- Always use a taxi diagram.
- Read back all runway/taxiway crossing and hold instructions using proper phraseology and good discipline.
- Review NOTAMs and airport layouts prior to taxi, before landing, and while taxiing as needed.
- Be familiar with airport markings.
- Request a progressive taxi from ATC if unsure of route and write down complex instructions.
- Make sure aircraft position and taxi lights are used when moving.
- When landing, clear the runway in a timely fashion.

CE—failure to comply with airport/taxiway surface marking, signals, and ATC clearances or instructions.

Light gun signals

If a radio malfunctions, call ATC to request authorization to depart without two-way radio communications. If authorized, monitor a frequency and/or watch for light gun signals.

□□ Common errors □□

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- Improper use of brakes.
- Improper positioning of flight controls for various wind conditions.
- Hazards of taxiing too fast.
- Failure to comply with airport/taxiway surface markings, signals, and ATC clearances or instructions.

Conclusion

Requirements for safe taxiing include positive control of the aircraft, the ability to recognize potential hazards in time to avoid them, and the ability to stop or turn where and when desired without undue reliance on the brakes. Also, be aware of other traffic and its movement, write down and read back all clearances, and maintain the proper crosswind correction.

ACS Requirements

To determine that the applicant:

1. Exhibits instructional knowledge of the elements of landplane taxiing by describing:
    a. Proper brake check and correct use of brakes.
    b. Compliance with airport/taxiway surface marking, signals, and ATC clearances or instructions.
    c. How to control direction and speed.
    d. Flight control positioning for various wind conditions.
    e. Procedures used to avoid other aircraft and hazards.
    f. Runway incursion avoidance procedures.
    g. Procedures for eliminating pilot distractions.
    h. Use of taxi chart during taxi.
    i. Airport, taxiway, and runway position situational awareness.
    j. Additional taxiing operations concerns at a non-towered airport.
2. Exhibits instructional knowledge of common errors related to landplane taxiing by describing:
    a. Improper use of brakes.

b. Improper positioning of the flight controls for various wind conditions.
c. Hazards of taxiing too fast.
d. Hazards associated with failure to comply with airport/taxiway surface marking, signals, and ATC clearances or instructions.
e. Hazards of becoming distracted while taxiing.
f. Hazards associated with failing to adhere to sterile cockpit procedures.

3. Demonstrates and simultaneously explains landplane taxiing from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to landplane taxiing