

Prior To Takeoff, The Altimeter Should Be Set To Which Altitude Or Altimeter Setting?

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Understanding the correct procedure for setting the altimeter before takeoff is crucial for pilots to ensure safe and accurate altitude awareness. The altimeter is an essential instrument that measures atmospheric pressure to determine the aircraft's altitude above sea level. Proper calibration and setting of the altimeter prior to departure help pilots maintain situational awareness, adhere to air traffic control instructions, and ensure safe navigation through controlled and uncontrolled airspace. In this article, we will explore the importance of setting the altimeter correctly, the differences between altitude and altimeter setting, and the standard procedures pilots follow before takeoff.

What Is an Altimeter and Why Is It Important?

An altimeter is an aviation instrument that measures the altitude of an aircraft relative to a predefined baseline, typically mean sea level. It works by comparing atmospheric pressure readings to a standard pressure setting. Since atmospheric pressure decreases with altitude, the altimeter translates pressure data into altitude readings on its dial or digital display.

Importance of the Altimeter:

- Ensures safe separation from terrain and obstacles.
- Maintains proper altitude during climbs, cruises, and descents.
- Facilitates adherence to air traffic control (ATC) instructions.
- Assists pilots in navigating through different airspace structures.
- Provides critical data during instrument flight rules (IFR) conditions.

Incorrect altimeter settings can lead to dangerous situations such as controlled flight into terrain (CFIT), altitude deviations, or conflicts with other aircraft. Therefore, setting the correct altimeter prior to departure is a fundamental safety procedure.

Understanding Altitude vs. Altimeter Setting

Before delving into the procedures, it is essential to distinguish between

"altitude" and "altimeter setting."

Altitude

- Refers to the vertical height of the aircraft above a specific reference point, usually mean sea level (MSL).
- It is a calculated value based on the pressure and other environmental factors.
- Pilots often describe altitude in terms of "true altitude" or "indicated altitude."

Altimeter Setting

- The barometric pressure value that the pilot sets on the altimeter to calibrate it.
- Usually provided by ATIS (Automatic Terminal Information Service), ATC, or obtained from weather reports.
- Correct setting ensures the altimeter reads accurately relative to local atmospheric conditions.

The key point is that the altimeter setting adjusts the instrument to reflect the local atmospheric pressure at sea level, allowing the pilot to read correct altitude data.

Standard Procedure for Setting the Altimeter Prior to Takeoff

Proper pre-takeoff altimeter setting involves several steps, typically performed during the cockpit preparation phase. The goal is to ensure the altimeter displays the correct altitude relative to the current atmospheric pressure at the departure airport.

Step-by-Step Process

1. Obtain the Current Altimeter Setting:
 - From ATIS, ATC clearance, or weather sources.
 - It is usually expressed as a pressure value in inches of mercury (inHg) or hectopascals (hPa).
2. Set the Altimeter:
 - Turn the aircraft's altimeter knob to input the current local altimeter setting.
 - Ensure the setting is entered accurately to prevent errors.
3. Verify the Altimeter Reading:

- Confirm that the altimeter indicates the airport elevation when the aircraft is on the ground.

- This confirms the instrument is correctly calibrated.

4. Cross-Check with ATIS or ATC:

- During initial communication, verify that your altimeter setting matches the latest available data.

5. Adjust During Taxi if Necessary:

- If the altimeter setting changes en route or if a more recent update is received, update the setting accordingly.

When To Set the Altimeter

Timing is critical for proper altimeter calibration. The general rule is:

- Prior to Taxi:

Set the altimeter to the current local setting obtained from ATIS or ATC.

- Before Takeoff:

Confirm the setting is correct and matches the latest available data.

- During the Flight:

Adjust the altimeter as necessary if ATIS or ATC updates the pressure setting en route.

Important Considerations:

- Do not set the altimeter after takeoff if it was not set correctly on the ground.

- Always confirm the latest pressure setting before departure.

- In mountainous or variable weather conditions, the pressure may change significantly during the flight, requiring updates.

Which Altimeter Setting Should Be Used? Local or Standard?

Pilots must understand which pressure setting to use during different phases of flight.

Local Altimeter Setting

- The current atmospheric pressure at sea level at the departure airport.

- Used for takeoff, initial climb, and enroute navigation.

- Ensures the aircraft's altitude readings are accurate relative to local

conditions.

Standard Pressure (29.92 inHg or 1013 hPa)

- Used primarily during instrument approaches and enroute cruising under IFR.
- When flying above the transition altitude, pilots switch to standard pressure to maintain uniformity across aircraft.

Transition Altitude:

- The altitude at which pilots switch from local pressure setting to standard pressure during ascent.
- Varies by country; e.g., 18,000 ft in the U.S., 5,000 ft in some other regions.

In Summary:

- Use the local altimeter setting prior to takeoff.
- Switch to standard pressure at the transition altitude during climb.
- Reset to local pressure upon descent and approach.

Special Cases and Considerations

- High-Altitude Airports:

The pressure setting might be significantly different from standard, requiring careful attention to ensure proper altitude readings.

- Weather Changes:

Rapid changes in atmospheric pressure may necessitate updating the altimeter setting during flight.

- Unusual Altimeter Settings:

Some regions or weather systems may have unusual pressure readings, and pilots should be vigilant.

- Instrument Failures:

If the altimeter is suspected to be malfunctioning, pilots should rely on other navigation data or request assistance from ATC.

Summary and Best Practices

To summarize, the key points for setting the altimeter prior to takeoff are:

- Obtain the current local altimeter setting from ATIS, ATC, or weather reports.
- Set the aircraft's altimeter to this value before taxiing.
- Verify that the altimeter reads the airport elevation on the ground.
- Make updates if new pressure information becomes available before

departure.

- Use the local setting for initial climb and enroute navigation, switching to standard pressure at the designated transition altitude.

Best Practices Include:

- Double-check the setting during cockpit preparation.
- Cross-verify with ATIS or ATC before departure.
- Be vigilant for updates during flight.
- Remember that correct altimeter setting is vital for safety and compliance with regulations.

Conclusion

Prior to takeoff, the altimeter should be set to the current local altimeter setting provided by ATIS, ATC, or other reliable weather sources. This ensures that the aircraft's altitude readings are accurate relative to sea level, facilitating safe navigation, proper separation from terrain, and compliance with air traffic control instructions. Understanding the distinction between altitude and altimeter setting, and knowing when and how to adjust the instrument, forms a fundamental part of pilot training and safety procedures. Proper pre-takeoff altimeter calibration is a simple yet critical step that contributes significantly to aviation safety and operational efficiency.

Frequently Asked Questions

Prior to takeoff, to which altitude or altimeter setting should the altimeter be set?

The altimeter should be set to the latest reported altimeter setting provided by ATIS, ATC, or the local weather station, typically the station elevation or current station pressure setting.

Why is it important to set the altimeter to the correct setting before takeoff?

Setting the correct altimeter ensures accurate altitude readings, which are critical for obstacle clearance, maintaining assigned altitude, and ensuring safe separation from other aircraft.

Should the altimeter be set to the airport's

elevation or the current local pressure setting prior to takeoff?

The altimeter should be set to the current local pressure setting (altimeter setting) provided by ATIS or ATC, not the airport elevation, to ensure proper altitude reading during flight.

What is the standard procedure for setting the altimeter before departure?

Pilots typically obtain the latest altimeter setting from ATIS or ATC before taxiing and set the aircraft's altimeter accordingly prior to takeoff.

How often should the altimeter be checked or re-set during a flight?

The altimeter should be re-checked and re-set when passing through different weather reporting stations or when ATC advises, especially during altitude changes or when transitioning between regions.

What is the significance of setting the altimeter to the station pressure rather than airport elevation?

Setting it to station pressure ensures the altimeter provides true altitude above mean sea level, which is essential for safe navigation and obstacle clearance.

In what circumstances might a pilot need to adjust the altimeter setting just prior to takeoff?

If there is a change in weather conditions or updated pressure readings from ATIS or ATC, pilots should adjust the altimeter setting accordingly to maintain accurate altitude information.

What is the recommended altimeter setting for takeoff at a controlled airport?

The recommended setting is the current reported altimeter pressure from ATIS or ATC, which reflects the local atmospheric pressure for accurate altitude measurement.

Can setting the altimeter incorrectly affect flight safety during takeoff?

Yes, incorrect altimeter settings can lead to altitude deviations, potential obstacle collisions, or airspace violations, compromising safety during

critical phases like takeoff.

Additional Resources

Prior To Takeoff, The Altimeter Should Be Set To Which Altitude Or Altimeter Setting?

Understanding the correct procedure for setting the altimeter prior to takeoff is a fundamental aspect of safe and efficient aviation operations. The altimeter setting directly influences a pilot's ability to accurately determine altitude above mean sea level (MSL) and maintain safe separation from terrain and other aircraft. Properly configuring the altimeter ensures situational awareness, compliance with regulations, and smooth navigation during the critical phases of flight. This article explores the essential considerations, procedures, and best practices associated with setting the altimeter prior to takeoff.

Understanding the Altimeter and Its Importance

The altimeter is an essential instrument in an aircraft's cockpit, providing the pilot with vital altitude information. It operates based on the ambient air pressure, which varies with altitude. The core principle behind the altimeter is that atmospheric pressure decreases as altitude increases, allowing the device to translate pressure readings into altitude measurements.

Key Features of the Altimeter:

- Measures altitude above sea level
- Requires correct calibration and setting
- Sensitive to atmospheric pressure changes

Why Accurate Altimeter Setting Matters:

- Ensures proper terrain clearance
- Maintains safe separation from other aircraft
- Enables accurate navigation
- Complies with air traffic control instructions
- Prevents controlled flight into terrain (CFIT)

Sources of Altimeter Settings

Before setting the altimeter for takeoff, pilots rely on various sources for

the current altimeter setting:

1. ATIS (Automatic Terminal Information Service)

- Provides the latest weather information, including altimeter setting
- Usually broadcast periodically and available via radio
- Useful in busy terminal areas

2. ATC (Air Traffic Control) Clearance

- Provides specific altimeter settings during initial contact or as instructed
- Ensures uniformity across aircraft in the vicinity

3. ATIS/AWOS/ASOS Reports

- Automated weather observation systems provide continuous updates
- Useful for cross-checking altimeter settings

4. Pre-Flight Weather Briefing

- Includes current altimeter data, especially for cross-country planning

Standard Procedure for Setting the Altimeter Prior to Takeoff

Proper configuration of the altimeter is a critical step in pre-flight planning. The general procedure involves setting the altimeter to the current local altimeter setting obtained from ATIS, ATC, or other reliable sources before commencing the takeoff roll.

Steps for Setting the Altimeter

1. Obtain the current altimeter setting from ATIS, ATC, or weather reports.
2. Adjust the altimeter knob (barometric pressure setting) in the cockpit to match this value.
3. Verify the setting against the latest available data.
4. Check the altimeter reading after setting to ensure it aligns with expected values.

Note: The altimeter should be set to the current local altimeter setting, not a forecast or a previous value, to ensure accuracy during takeoff and initial

climb.

Altitude or Altimeter Setting: Which Should Be Used?

The question often arises: prior to takeoff, should the altimeter be set to a specific altitude or the current altimeter setting? The clear answer is that the altimeter should be set to the current local altimeter setting rather than a fixed altitude.

Why Set to the Current Altimeter Setting?

- The altimeter setting adjusts the instrument to match the current atmospheric pressure at the airport.
- This calibration ensures that the altitude readings are accurate at the time of takeoff.
- It accounts for local pressure variations due to weather systems.

What About Setting to a Specific Altitude?

- Setting to a fixed altitude (e.g., a known elevation) is not standard practice before takeoff.
- Such a setting is typically used for calibration purposes or specific procedures during flight.

Impact of Incorrect Altimeter Settings

Incorrectly setting the altimeter can lead to dangerous situations, including:

- Underrating altitude: believing the aircraft is lower than it actually is, risking terrain or obstacle collision.
- Overrating altitude: believing the aircraft is higher than it is, which could cause insufficient separation from terrain or other aircraft.
- Miscommunication with ATC: leading to confusion and potential traffic conflicts.

Common consequences include:

- Controlled Flight Into Terrain (CFIT)
- Loss of situational awareness

- Non-compliance with ATC instructions
- Potential for accidents or incidents

Special Considerations During Takeoff

While the general rule is to set the altimeter to the current local pressure setting, some specific considerations apply:

1. Wind and Weather Changes

- Winds and weather can cause the altimeter setting to change rapidly; therefore, pilots should check for updates just before takeoff.
- Many airports broadcast updated altimeter settings regularly.

2. Transition to Standard Pressure (29.92 inHg or 1013 hPa)

- When climbing through transition altitude or during cruise at higher altitudes, pilots switch to standard pressure.
- Prior to takeoff, the focus remains on local altimeter setting.

3. Transition from Ground to Flight

- During taxi, the altimeter is set to the current local setting.
- Before takeoff, pilots verify the setting matches the latest data.

Procedural Best Practices and Regulations

Adherence to regulations and standard operating procedures is critical:

- FAA Regulations: In the United States, FAA Advisory Circular 91-75B emphasizes the importance of setting the altimeter to the current local altimeter setting before takeoff.
- ICAO Standards: International standards also require pilots to set the altimeter to the current local pressure setting.
- Company Policies: Many airline and flight school procedures mandate verifying and setting the altimeter during pre-flight checks.

Advantages of Following Proper Procedures:

- Ensures accurate altitude awareness
- Enhances safety margins
- Promotes compliance with regulations
- Facilitates effective communication with ATC

Advantages and Disadvantages of Setting the Altimeter Correctly

Pros:

- Accurate altitude measurement ensures safe terrain clearance.
- Maintains proper separation from other aircraft.
- Ensures compliance with ATC instructions.
- Reduces risk of CFIT accidents.
- Improves overall situational awareness during critical phases.

Cons/Challenges:

- Rapid changes in weather can require frequent updates.
- Human error in reading or setting the altimeter.
- Instrument malfunction or calibration errors.
- In busy or complex airspace, miscommunication can occur if procedures are not followed.

Summary and Best Practices

In summary, prior to takeoff, the altimeter should be set to the current local altimeter setting obtained from reliable sources such as ATIS, ATC, or weather reports. This practice ensures that the aircraft's altitude readings are accurate, supporting safe navigation and obstacle avoidance.

Best practices include:

- Always verify the latest altimeter setting before starting the takeoff roll.
- Cross-check the setting with multiple sources if possible.
- Update the altimeter setting immediately if weather conditions change.
- Confirm the setting visually on the instrument and verbally with ATC if instructed.

By diligently setting the altimeter to the correct current pressure, pilots uphold safety standards, enhance situational awareness, and ensure smooth operations during the critical phase of takeoff.

In conclusion, the correct practice before takeoff is to set the aircraft's altimeter to the current local altimeter setting, not a fixed altitude. This simple yet vital step plays a key role in maintaining safety, accuracy, and compliance throughout the flight.

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