

How the Holy Micro's Absolute AoA Prevents Accelerated Stalls in the Base-to-Final Turn?

How to Mitigate Accelerated Stall Risks in High-Bank Maneuvers via Absolute Angle of Attack Lift Reserve Indication and Changing Frequency and Pulse Rates of the Tones?

Why an AoA Indicator is Safer than an Airspeed Indicator during the Turn to Final?

Beyond Airspeed: How the Holy Micro's Absolute AoA Predicts and Prevents Accelerated Stalls.



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Keep It In The Blue - 'On Speed'

The Holy Micro's Absolute AoA indicator is a lifesaver because it ignores airspeed and focuses on the only thing that actually causes a stall: the **Angle of Attack (AoA)**. In a turn, your "Stall Speed" is a moving target, but your **Critical AoA** is fixed.

Here we use our Chevron Presentation as a reference to expand on the above point.

1. The "Blue Donut" (The 1.3 V-stall Sweet Spot)

The Holy Micro system is calibrated so that the **Blue Donut** represents your "on-speed" approach.

- **The Math:** This corresponds to **1.3 times the Stall Speed (V-stall)**.
- **The Reserve:** When you are "in the donut," you have exactly **40% Lift Reserve** remaining.
- **The Benefit:** On the base leg, as long as you see that **Blue Donut**, you know you have a solid safety cushion.

2. The Turn: Why Airspeed Lies to You

In a banked turn, the airplane feels "heavier" due to **G-loading**. To maintain altitude, you must pull back on the yoke, which increases your **Angle of Attack**.

- **Airspeed Indicator:** Might still show 70 knots (your normal approach speed), making you feel safe.
- **Holy Micro AoA:** As you steepen the bank and pull back, the indicator will move **away** from the **Blue Donut** towards the **Red** immediately. It shows you are "spending" your 40% reserve to maintain altitude in the turn.

All the Pilot Operating Handbooks (POH) indicate the Stall Speeds for different Bank Angles. The pilots are expected to remember these numbers during the flight regime. The below table show the Stall Speeds at 0° Bank Angle and 60° Bank Angle for Max Gross Weight, clean config.

Type of Aircraft	Stall Speed at 0° Bank Angle	Stall Speed at 60° Bank Angle	Remarks
Cessna 172	42 KIAS	59 KIAS	Stall Speed at 60° Bank Angle is more than the Approach Speed
Cessna 441	89 KIAS	128 KIAS	Stall Speed at 60° Bank Angle is more than the Approach Speed
Piper Cherokee P28	55 KIAS	75 KIAS	Stall Speed at 60° Bank Angle is more than the Approach Speed
Beechcraft Bonanza A36	62 KIAS	87 KIAS	Stall Speed at 60° Bank Angle is more than the Approach Speed
Cirrus SR22	70 KIAS	99 KIAS	Stall Speed at 60° Bank Angle is more than the Approach Speed

3. Beyond "Red Triangle" (The 1% Reserve)

The **Red Triangle** on the top represents the angle just below the **Critical Angle of Attack**.

- **The Math:** Beyond this angle of attack **Lift Reserve is 0%**.
 - **The Danger:** If you are in a steep base-to-final turn (e.g., 45° or 60° bank) and you pull until the indicator hits the **top Red Triangle**, you will stall—even if your airspeed is well above the "normal" 1-G stall speed. This is an **accelerated stall**.
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Comparison: Level Flight vs. 60° Bank

Assuming you are flying at a constant **75 knots** (your 1.3 V-stall speed):

Flight Condition	Airspeed	Absolute AoA Indication	Absolute AoA Tone	Lift Reserve	Display
Level Flight	75 KIAS	Blue Donut	Solid Tone	40%	
30° Bank	75 KIAS	Top half of Blue Donut and Slanted Red Lines	1600 Hz Tone with Low Pulse Rate	~28%	
45° Bank	75 KIAS	Slanted Red Lines and Solid Red Triangle	1600 Hz Tone with Medium Pulse Rate	~12%	
60° Bank	75 KIAS	Solid Red Triangle	1600 Hz Tone with Very High Pulse Rate	1% (STALL)	

Summary

The Holy Micro's **Absolute AoA** translates complex inverse-square physics into a simple visual: **Keep it in the Blue**. If you see the display moving from the Blue Donut towards the Red during your base-to-final turn, the wing is telling you that your 40% "budget" is disappearing. To **"Keep it in the Blue,"** you must **reduce the Angle of Attack** by relaxing back pressure (pitching down) or **shallowing the bank**. While adding power helps maintain altitude or airspeed, reducing the wing's "load" is the most immediate way to recover your Lift Reserve.

The Absolute AoA provides an instant, "real-time" visual and audio warning that an airspeed indicator—which doesn't know you are banking—simply cannot give.