



NEWS AT THE TOP

March, 2018

Included below is an article courtesy of the AMA regarding lift, angle of attack, and how to recover from a stall. Although old hat to more experienced modelers, this basic knowledge is printed here for many of our newer members:

Angle of attack (AOA) *Written by Scott Stoops*

Let's explore AOA, some common misunderstandings new pilots have about stalls, and some common recovery techniques. Let's start from the beginning.

Wings create lift. They do this primarily by manipulating the AOA. AOA is the difference between the chord line and the flight path or relative wind of a wing. Not unlike sticking your hand out the window of a car with it tilted slightly up, a wing creates down force through both its shape, but primarily, the angle it addresses the oncoming air. This is AOA

Although the basic shape of the airfoil contributes to the efficiency of the wing and its ability to create lift, the primary factor in lift creation is AOA. Based on the design of the wing and airfoil section, there is a maximum AOA at which the wing section will continue to produce lift. Flight beyond that AOA causes the airflow to become extremely turbulent and detach from the upper surface of the wing. This detachment results in a loss of lift, or a stall. The specific stalling AOA is a constant for that particular wing.

Stalls have absolutely nothing to do with a power failure of the motor or engine. In fact, unpowered aircraft such as sailplanes can also stall. Stall is an aerodynamic term that only relates to exceeding the critical AOA.

During normal flight in most types of airplanes, we avoid flying the aircraft at or close to the critical AOA. It is, however, important to be familiar with the stalling characteristics of your model. Learning to stall your model allows a higher level of awareness of the energy state of the airplane with regard to AOA. Practice is the only way to become familiar with and competent at stall and recovery.

For the airplane to stall, an AOA that exceeds the critical AOA must exist. In the case of practicing stalls, the best place to start is from level flight with plenty of recovery altitude. You can intentionally stall the aircraft by increasing the elevator input and holding it in an increasing pitch attitude while reducing the power of the motor.

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Secretary's Report - March 2018 - Meeting Minutes

The meeting was called to order at 7:40 pm. Craig was absent. The minutes from the previous two meetings were read and approved.

Field Report:

Reynolds Field:

Reynolds Field is still closed. The road is wet and in poor condition. Scott submitted a bill of \$5000 for the work that was done.

Hardyston Field: The road at Hardyston is wet. While you can fly there, stay off the road if it is wet.

Membership: There was a roll call. We took in another applicant.

Old Business: The AMA District II Fly In is still on for August 25th and 26th with setup on the 24th. Green Township is alright with the dates. For advertising, we have SCTV, the Mount Olive Chronical and WRNJ.

New Business: When the President is in Bedminster, we cannot fly. Our club is on the list to be vetted as a sanctioned club to fly. The AMA guarantees that if we have the District II Fly In, there will be no loss to our club if the president is in Bedminster and we cannot fly. We also discussed having beer at the Fly In. Probably will not happen.

IMPORTANT!!! Friday, April 13, 2018

There is talk that the next reauthorization bill for the Federal Aviation Administration will eliminate the Special Rule for Model Aircraft – also known as Section 336 – which has allowed AMA to manage our members and fly safely and responsibly, as we have for over 80 years. Losing the Special Rule would be a devastating blow to our hobby.

[Please click here to send a letter to your elected representatives in support of the Special Rule for Model Aircraft.](#)

This is a critical moment to let your elected representatives know the importance of the Special Rule for Model Aircraft and the role of community-based organizations such as AMA. Our community has operated safely for decades – long before the recent advent of drones. Model aviation has played a critical role in the innovations of new technology and encouraging young people to pursue an interest in science and technology fields. More than that, this long-standing hobby has been passed down from generation to generation and is a tradition for many American families.

We need your help to demonstrate the value of the Special Rule for Model Aircraft not only for our community, but everyone. [Please make your voices heard by contacting your elected representatives today.](#)

Sincerely, AMA Government Relations

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As the aircraft exceeds the critical AOA, airflow over the wing will “detach” from the wing’s upper surface, causing some buffeting and usually a pronounced pitching moment toward a nose-down attitude. Most models have a critical AOA of approximately 17°. Recovery is simple, but not instinctive.

With the nose now pointing slightly down (probably below the horizon), you must reduce the up-elevator input to let the wing recover to a flying AOA. This is not instinctive, because in normal flight we would apply up-elevator when the nose is below the horizon to correct for level flight.

In stalled flight, it is critical to allow the wing to start flying again by lowering the AOA even further. Often, simply releasing any elevator input back to neutral is enough to get the recovery started. This reduction in AOA generally coincides with an increase in thrust and, once the wing is no longer stalled, a gentle correction back to level flight.

Stalls in All Attitudes

Now for the confusing part! The previous example was for level, decelerating flight. Stalls occur when the critical AOA is exceeded, which means they can occur in any pitch attitude. A stall can occur when the aircraft is pointing straight up, straight down, inverted, or at any pitch attitude as long as the critical AOA is exceeded. This is generally tied to a large elevator input, but can also occur with small inputs at higher speeds.

A stall can occur at any airspeed (it is not necessarily a slow speed event, but rather, a high AOA event). This can be confusing to new modelers, because the traditional diagrams of the stalling AOA depict an aircraft in level flight as I have explained.

A model can be stalled going straight up in a loop. If the pilot pulls too hard on the elevator control stick (displacing the elevator up), the critical AOA can be exceeded and the wing will stall while the airplane is pointing straight up. The same is true if the pilot pulls too hard on the elevator during the backside of a loop while pointing straight down.

A good indicator that the model’s AOA is near the critical AOA is the position of the elevator. For the AOA to be high, the elevator has to be significantly displaced. So, wings stall at a specific AOA, not at a specific pitch attitude

Take-Away

Although it can be scary to slow your model to the point where you’re uncomfortable with how it is going to perform, learning stalls and stall recovery is critical to becoming a well-rounded RC pilot. Start high, and with a buddy box if necessary. Most importantly, remember that simply releasing the elevator input will often allow the model to recover on its own!

Fly safely, and remember that learning is fun, and fun is what this great hobby is all about.

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Event Schedule for 2018

Monthly Meeting	
January 18, 2018	
February 15, 2018	
March 15, 2018	
April 19, 2018	
May 17, 2018	
June 21, 2018	
July 19, 2018 Hardyston	
August 16, 2018 Reynolds	
September 20, 2018	
October 18, 2018	
November 15, 2018	
December 20, 2018	

***The next club meeting will be
on April 19th at
Andover Senior Center***

Treasurer's Report - February, 2018

January's beginning balance is \$9,492.39. Collections for the month totaled \$8,136.00, represented by: Dues \$5,670, Reynolds Field Assessment \$2,400.00, 50/50 \$26.00, Application fees \$25.00, and a donation of \$15.00. There were no expenses in the month of January. The resulting ending balance is \$17,628.39 defined as follows:

Encumbered for club operations	\$5,736
Reserve for Reynolds Field	\$7,892
Reserve for Events	\$2,000
General Reserve	<u>\$2,000</u>
Total	\$17,628