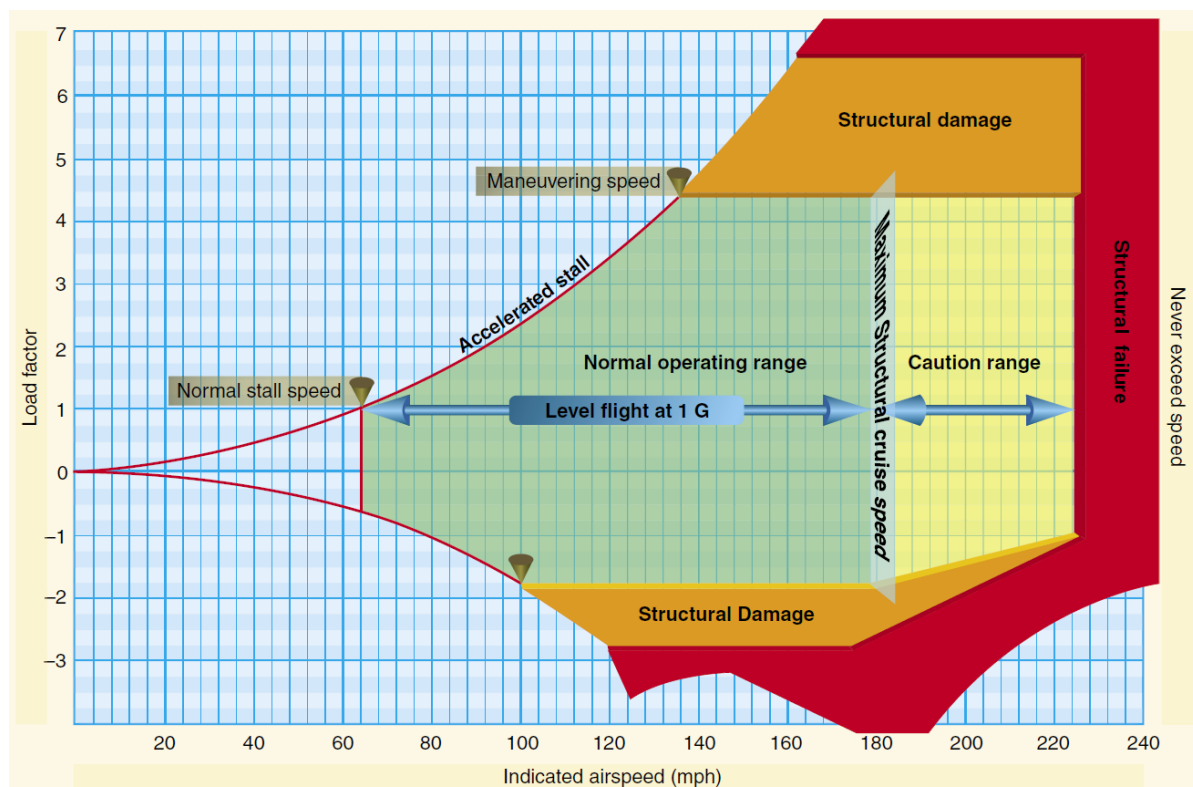


The Risks of Maneuvering Speed Myths – Part 2

Part 1 started an outline of this recent article was in Avweb:

"It turns out that our early training on maneuvering speed was badly over-simplified. The truth is that you can't move all the controls to the stop and it isn't the same as gust penetration speed. Here's the unvarnished truth about V_A ."

Part 23 Regulations



The airworthiness design regulations certainly require an aircraft to be strong enough to cater for the application of full control deflection up to V_A but NOT:

- Full control deflection followed by full opposite control deflection, NOR
- Full deflection of two or more controls

Perhaps this new and better definition of V_A , which can be found in a recent USA FAA Special Airworthiness Information Bulletin, number CE-11-17, should be widely publicised by CASA.

"The Design Maneuvering Speed (V_A) is the speed below which you can move a single flight control, one time, to its full deflection, for one axis of airplane rotation only (pitch, roll or yaw), in smooth air, without risk of damage to the airplane."

This definition is not even close to what so many pilots learned long ago. Being an aeronautical engineer I knew that FAR 23 specified a minimum value of V_A for the designer then made provision for a lower V_A to be used. The designer could also select a higher V_A . Having worked in this field I naturally knew the correct, detailed definitions and limitations so when I started teaching aerobatics I provided the correct information to my students. Also, being the owner of a Decathlon, I had to make sure that its pilots knew and understood it.

Va, What Is It Good For?

“First and foremost, it is a speed which an aircraft designer chooses and uses to calculate aircraft structural strength and to comply with regulatory requirements.

.....

Finally, we need to understand that V_A is a variable speed which decreases as aircraft weight decreases. Most manuals list only one speed for V_A , but buried in the fine print there will be a note stating the listed speed is only valid when the aircraft is at gross weight.”

“If you are going to fly at the edge of the aircraft's velocity and load envelope, on purpose or not, it behooves you to dig a little deeper and go beyond the basic information you learned long ago.”

Essential advice for an aerobatic pilot.

Read more at <http://www.avweb.com/news/features/The-Risks-of-Maneuvering-Speed-Myths222680-1.html>

After dangerously, incorrectly describing V_A , CASA's CAAP 155-1, Aerobatics, goes on to make this useless statement:

“Full control deflection of any flight control should be avoided above this speed.”

Next time we'll explore this statement and have a have a look at the maximum speed at which two controls can be deflected to their maximum. Later we will look at an actual flight envelope.