

The Ever-Moving Maneuvering Speed (V_a)

Lt Col Phil Holt, TNWG

Aircraft certified by the FAA under 14 CFR Part 23 have many V speeds. Of those are V_r , V_y , V_x , V_s , V_{fe} , V_{no} and V_{ne} . One of the speeds which manufacturers are required to determine and publish in the POH is the aircraft maneuvering speed, V_a .

In aviation, the maneuvering speed of an aircraft is an aircraft limitation selected by the designer of the aircraft. At speeds close to and faster than the maneuvering speed with full deflection of any flight control surface should not be attempted because of the risk of damage to the aircraft structure.

Maneuvering speed varies with the weight of the aircraft. Manufacturers only provide V_a for the max takeoff weight of the aircraft. So, how does one figure out what the V_a airspeed is when not at the max gross weight of the aircraft?

There is a formula for determining V_a if you are below the max gross weight, however, flying and operating a calculator at the same time is not particularly safe.

A rule of thumb that I use is that for every 10 percent decrease in aircraft weight means that the maneuvering speed decreases by 5 percent. By doing your weight and balance calculations before flight gives you your takeoff weight and your fuel weight.

In the CAP C-182 Standardized Flight Maneuvers Guide!!, Revision 2s, the following maneuvers use V_a as the target airspeed for entering the maneuver: Steep Turns, Chandelles, Lazy Eights, Eights-on- Pylons and Steep Spirals,

The max gross weight for most C-182's is 3110 lbs., with a V_a of 111 KIAS. FLY SAFE!