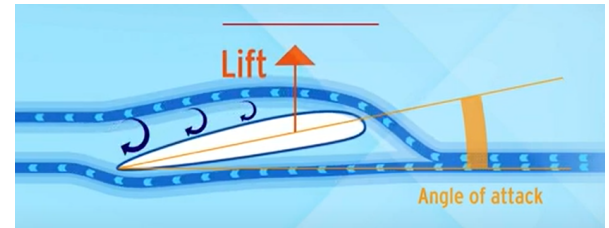


STALL TESTS



Definitions

The lift coefficient increases with the Angle Of Attack (AOA), up to a point where any further increase of the AOA will cause the lift required for level flight to be lost. This is known as a stall. For each configuration, the Stall appears at a given AOA which is a function of the Mach Number only.

As the AOA increases close to the stall, the airflow over the wing becomes turbulent. The flight crew may sense this as buffeting, which may become severe enough to deter them from further increasing the AOA until a full stall. In such cases, the AOA at the onset of this deterrent buffet will be defined as the stall.

Purpose of the Flight Tests

The purpose of the stall tests is to determine the stall AOA value and the V_{s1g} (stall speed at 1g), which is the minimum speed at which the aircraft can maintain level flight, as a function of the Mach Number for each configuration. The purpose of the test is to also assess the aircraft behavior when approaching the stall. It allows to determine the following:

- Safe flight envelope for operations with sufficient margin before reaching the stall and any undesired aircraft behavior (e.g. pitch up or roll-off).
- The various AOA values to be set for the Alpha Protection (Alpha Max, Alpha Prot & Alpha Floor).

The Stall speed is a very important parameter used for performance calculations at take-off and landing in particular.

Application to Line Operations

Hundreds of stalls are performed during development and certification of an aircraft. Recovery from a stall is immediate if the procedure is correctly applied. This should give confidence and encourage flight crews to immediately apply the stall recovery procedure whenever any stall indication appears.

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