

TUNING OF HIGH SPEED PROTECTIONS



Definitions

If an aircraft flies beyond VMO & MMO it is far from being in a danger zone. Aircraft are tested to be free from any controllability and structural issues (flutter in particular) up to VD & MD (Dive Speed and Dive Mach), which are the design speeds for the maneuvering envelope. Airbus aircraft are fitted with a hard high speed protection as per regulation, which allows for a reduction of the margin between VMO & VD. For a given VMO, a reduction of VD results in load reduction and this results in significant weight saving.

Purpose of the Flight Tests

The purpose of the test is to ensure that VD & MD will not be exceeded during specific sizing maneuvers, including the “FAA dive” and “JAA dive” in particular. The tests are performed in normal law once the flight domain of the test aircraft has been fully opened. These tests validate the reduced margin between VMO and VD, which is important for the structural design of the aircraft.

Application to Line Operations

It remains important to avoid exceeding VMO/MMO in operation, however the high speed protection tuning test should give confidence to flight crews that nothing adverse will happen if VMO/MMO is inadvertently exceeded (i.e. no loss of control and no structural damage). The relevant operational procedures should be applied without any over reaction and the flight crew should also keep the auto-pilot engaged.

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