

V_{MC} DEMONSTRATION

OBJECTIVE

To teach the multi engine student pilot the knowledge of the elements related to V_{MC} by explaining the causes of loss of directional controls at airspeeds less than V_{MC}, the factors affecting V_{MC} and the safe recovery procedures.

COMPLETION STANDARDS

1. Configures the airplane at V_{SSE}/V_{YSE}, as appropriate -
 - a. Landing gear retracted.
 - b. Flaps set for takeoff.
 - c. Cowl flaps set for takeoff.
 - d. Trim set for takeoff.
 - e. Propellers set for high RPM.
 - f. Power on critical engine reduced to idle.
 - g. Power on operating engine set to takeoff or maximum available power.
2. Establishes a single-engine climb attitude with the airspeed at approximately 10 knots above V_{SSE}.
3. Establishes a bank toward the operating engine, as required for best performance and controllability.
4. Increases the pitch attitude slowly to reduce the airspeed at approximately 1 knot per second while applying rudder pressure to maintain directional control until full rudder is applied.
5. Recognizes indications of loss of directional control, stall warning or buffet.

DESCRIPTION

The airplane is maneuvered to demonstrate the effects on a aircraft as it approaches V_{MC} and an engine is suddenly made inoperative.

PROCEDURE

1. Initiate maneuver so that it will be completed above at least 3000 feet AGL.
2. Preforming clearing turns.
- 3 Set the mixtures to the takeoff position.
4. Reduce power to a setting that will allow deceleration to the desired airspeed.
5. Extend the flaps to the takeoff position below V_{FE}.

6. Position the cowl flaps to the takeoff setting.
7. Set the propeller controls to full RPM.
8. Adjust power to maintain V_{YSE} and pitch attitude to maintain altitude. Adjust trim settings to the takeoff position.
9. Reduce power slowly on the critical engine to idle.
10. Increase power slowly to avoid a large yawing moment on the operating engine to the takeoff setting.
11. Adjust the pitch attitude to a single engine climb attitude and establish a bank toward the operating engine (up to 5°) for best performance.
12. Reduce airspeed slowly (approximately 1 knot per second) using the elevator while controlling heading with the rudder.
13. Recognize the indications for loss of directional control (or stall indications) and simultaneously reduce the power on the operating engine and reduce the angle of attack as necessary to regain directional control and airspeed.
14. Upon recovering airplane control, set the power on the operating engine to maximum allowable and adjust the pitch attitude to achieve V_{YSE} with minimum altitude loss.
15. When the maneuver is complete -
 - a. Increase power on critical engine. One technique is to increase the power on the idle engine and at the same time, decrease the power on the full power engine. This will reduce the large yawing moment with big power changes. Once throttles are even, then increase power on both throttles to full power.
 - b. Retract the flaps.
16. Resume normal cruise.

Notes: The instructor/examiner may block the rudder with his/her foot in order to safely demonstrate V_{MC} . Stalls should never be allowed.

References

Private Pilot Practical Test Standards FAA-S-8081-14A, pg. 2-33.
Commercial Pilot Practical Test Standards FAA-S-8081-12B, pg. 2-34.
Airplane Flying Handbook FAA-H-8083-3, pg. 12-21 ⇨ 12-31
Pilot Operating Handbook/Approved Flight Manual.

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