

MULTI-ENGINE · ADD-ON CLASS RATING

Multi-Engine Quick-Review Guide

Asymmetric thrust changes everything: a second engine that can fail is not "twice the safety," it's a new failure mode with its own aerodynamics, its own decision points, and its own accident record.

MODE 01**5-minute scan**

V_{MC} factors, the identify/verify/feather sequence, the tolerance table.

MODE 02**30-minute review**

Work the diagrams — critical engine, accelerate-stop/go, the V_{MC} demo.

MODE 03**Oral prep**

Answer each DPE prompt before reading the model response.

STANDARD

14 CFR 61.63(c) add-on class rating · Private AMEL Task table (FAA-S-ACS-6C Areas IX E–G, X) · Commercial AMEL Task table (FAA-S-ACS-7B Areas IX E–G, X) — both documents dated November 2023, incorporated by reference into 14 CFR effective 31 MAY 2024

SCOPE

AMEL add-on to an existing Private or Commercial certificate. Distinguishes Private-level AMEL standards from Commercial-level AMEL standards throughout. Complete on its own: V-speeds, aerodynamics, systems, loading, the shared maneuvers at AMEL standards and the engine-out IFR case are all here; the Private and Commercial guides are optional depth.

REFERENCES

FAA standards, regulations and handbooks.

STUDY

Pilot Method · Checkride preparation

How to use this guide

Read the explanation, work the example, then answer the oral question before checking the response. Apply each topic to the airplane you fly. Use its current AFM/POH for speeds, limitations and procedures, and current regulations, charts and weather for flight decisions.

The add-on rating: what actually changes

Multi-engine is a **class rating**, not a new certificate. You already hold Private or Commercial privileges — this rating extends them to a new class of airplane, and that legal structure shapes everything about how the test works.

DIRECT ANSWER

Under **14 CFR 61.63(c)**, adding a class rating (single-engine to multiengine, or vice versa) at a certificate level you already hold requires **logged ground and flight training** from an authorized instructor on the areas of operation for that class, a logbook **endorsement** that you're prepared for the practical test, and passing the practical test. **No additional knowledge test** is required if you already hold an airplane category rating.

14 CFR 61.63(c)

PRIVATE AMEL VS. COMMERCIAL AMEL – SAME AIRPLANE, DIFFERENT STANDARD		
	PRIVATE ADD-ON	COMMERCIAL ADD-ON
Governing Tasks	ACS-6C Area IX Tasks E–G (engine failure by phase) plus Area X Tasks A–D (maneuvering OEI, V _{MC} demo, OEI by instrument reference, instrument approach OEI)	ACS-7B Area IX Tasks E–G plus Area X Tasks A–D — the same seven Task titles , at Commercial standards
Tolerances	Private-width — see page 19	Commercial-width — tighter across the board
Judgment standard	Personal risk	Professional risk — same shift as Commercial single-engine (see Commercial guide page 05)

A Commercial pilot adding AMEL tests at Commercial standards; a Private pilot tests at Private standards. Both ACSs include engine-failure-by-phase tasks IX.E–G and multiengine tasks X.A–D, subject to the applicable rating table. The task names can match while tolerances differ.

ENDORSEMENTS YOU ACTUALLY NEED 61.63(c), 61.31	
61.63(c)	Logbook endorsement that you have received the required training and are prepared for the practical test in the class sought
61.31(e)	Complex endorsement — separate, if the specific multiengine airplane is also complex (most are, but not all)
61.31(f)	High-performance endorsement — separate, if over 200 hp

These are **three separate pieces of paper** that often get earned together but are legally independent. A logbook missing any one of them is a real gap examiners check first.

CHECKRIDE STANDARD

The same multiengine topic may appear at Private and Commercial levels, but the required tolerances are not always identical. Prepare to the ACS for the certificate and rating you seek. Page 19 compares shared maneuvers.

LOGGING, CURRENCY AND THE TEST – THE PAPERWORK QUESTIONS	
Logging PIC in training	An ASEL pilot receiving AMEL instruction logs training received, not sole-manipulator PIC time: 61.51(e)(1)(i) requires the class rating. Lawful solo flight is a separate case under 61.51(e)(1)(ii); it requires the appropriate authorization, including 61.31(d)(2) when applicable.
Currency after the rating	61.57(a)–(b): the three takeoffs and landings are by category and class (and type where applicable) — AMEL passengers need three recent landings in an AMEL; night landings to a full stop. The flight review (61.56) is not class-specific
The practical test	Oral plus flight, from the evaluator's plan of action drawn from the ACS's additional-rating task table: every multiengine-specific Task (IX.E–G, X.A–D) plus a selection of the shared ones. No knowledge test; the 61.39 requirements (endorsement within the preceding two calendar months, logbook, medical or BasicMed as your certificate level requires) all still apply
Instrument privileges	If you hold an instrument-airplane rating, X.C and X.D are flown, or the certificate carries an "Airplane Multiengine VFR Only" limitation until they are — page 19
Not regulatory, still real	Insurance minimums (hours in type, dual required) and a school's checkout are contractual; the examiner does not test them, the rental desk does

14 CFR 61.39, 61.51(e), 61.56, 61.57, 61.63(c); FAA-S-ACS-6C / ACS-7B Appendix (additional rating task table); AC 61-65K

HOW TO USE THIS GUIDE AS A STANDALONE PRODUCT	
Aerodynamics	Pages 02, 03, 04, 05 — the V-speeds, the critical engine, V _{MC} , and control versus performance. Read in that order; everything else assumes them
Decision and performance	Pages 07, 08, 10, 18, 16: takeoff distances, OEI climb, loading and departure planning.
Procedures at concept level	Pages 06, 09 and 11: engine-failure decisions by phase and OEI approaches. Use the AFM/POH for the actual procedures.
Systems	Pages 12, 13, 14 — fuel, electrical, gear; the propeller; ice, turbo, heat, pneumatics
Flight and oral	Pages 15, 17, 19, 20 — the V _{MC} demonstration, instruments on one engine, the shared maneuvers at AMEL standards, and ten scenarios

The Private and Commercial guides are optional depth for airspace, weather, airport operations and the single-engine maneuvers; nothing here requires them.

DPE ORAL

You passed your multiengine add-on last month, Private level. Your friend wants a ride tonight. Legal?

STRONG FIRST ANSWER

Only if I have three night takeoffs and landings to a full stop in a multiengine airplane in the last 90 days — the currency is by category and class. The checkride landings count if they were at night, which they usually are not; otherwise I go and do three first, alone.

One engine inoperative: control versus performance, the bank angle, and the drag ladder

Two separate problems arrive together when an engine fails. One is answered with the feet and a few degrees of bank; the other is answered by weight, altitude and what is hanging in the wind.

DIRECT ANSWER – THE TWO PROBLEMS

Control: can the rudder and a small bank hold the airplane straight against asymmetric thrust? That is V_{MC} 's question, and it gets *easier* as power on the good engine falls. **Performance:** is there any excess thrust left to climb? That is V_{YSE} 's question, and it gets *harder* as weight, density altitude and drag rise. A pilot can be in control and descending, or (at low speed) climbing briefly and about to lose control. The oral tests whether you keep the two apart.

FAA-H-8083-3C Ch. 13; ACS CA.X.A.K1-K3

BANK TOWARD THE OPERATING ENGINE • A FEW DEGREES

Wings level, ball centred

The fuselage is sideslipping toward the dead engine: the rudder must hold the yaw *and* fight the sideslip's weathervaning. Large rudder deflection, large drag, highest V_{MC} of the three cases

Bank toward operating engine; ball 1/3–1/2 width toward it.

A small bank with the ball toward the operating engine reduces sideslip and drag. AFH: typically 1½–2½° bank; follow aircraft guidance. Without specific guidance, about 2° is the starting recommendation.

More bank is not always better

Extra bank beyond zero sideslip adds drag. Up to 5° is permitted in VMC certification testing, not a best-climb target. AFH examples show VMC rising more than 3 kt per degree as bank is reduced below 5°, and nearly 20 kt at wings level. These are not performance guarantees for your airplane.

FAA-H-8083-3C Ch. 13 (zero sideslip); §23.149 (historical) – 5° limit

CHECKRIDE TRAP "Step on the ball" after an engine failure. Centring the ball on one engine produces a sideslip toward the dead engine — more drag and a higher minimum control speed. The correct reference is bank toward the good engine with the ball slightly deflected toward it: "raise the dead" and let the ball sit one-third to one-half width toward the live side.

THE DRAG LADDER – WHAT EACH ITEM COSTS IN THE ORDER YOU CAN REMOVE IT

ITEM	EFFECT ON SINGLE-ENGINE CLIMB
Windmilling propeller	The largest single drag item — the disc is being driven by the airflow. Feathering it is worth more climb than any other action; page 06 explains the sequence's safety logic
Landing gear	Large — typically several hundred feet per minute in light twins; the AFM's single-engine climb chart is gear up
Flaps	Large beyond the takeoff setting; full flaps on one engine usually mean a descent regardless of technique — the single-engine approach problem on page 11
Sideslip • excess bank	Moderate but pure waste — free to remove with the right bank and ball position (left column)
Cowl flaps • open doors • ice	Small individually, cumulative; ice also raises stall speed and changes the V_{MC} /stall relationship unpredictably
Speed off V_{YSE}	Either direction costs climb; slower also erodes the control margin — the AFH's "blue line" discipline exists because both curves punish the same mistake

FAA-H-8083-3C Ch. 13; AFM/POH single-engine performance section (numbers are the airplane's)

THE V_{MC} –STALL CROSSOVER – THE ALTITUDE QUESTION

Indicated stall speed stays roughly constant with altitude; V_{MC} falls as the good engine loses power. At some density altitude the two meet, and above it the airplane **stalls before it loses directional control**. That is why the V_{MC} demonstration's recovery trigger is "loss of directional control *or* stall indication, whichever first" (page 15), why it is flown at a safe altitude, and why a stall with asymmetric power — one wing stalling into a yaw already present — is a spin entry. Turbocharged twins hold takeoff power to their critical altitude, so their crossover is higher and the loss-of-control case persists further up.

FAA-H-8083-3C Ch. 13; ACS CA.X.B.K1-K2

DPE ORAL

An engine fails in cruise at 9,000 ft on a hot day and the airplane will not hold altitude at blue line. What are you doing wrong?

STRONG FIRST ANSWER

Possibly nothing — I may be above the single-engine service ceiling for today's weight and density altitude. I confirm the drag ladder is clean: prop feathered, gear and flaps up, zero-sideslip bank and ball, cowl flap as the AFM says, exactly blue line. Then I accept a drift-down at V_{YSE} toward the altitude the airplane can hold and turn toward the nearest suitable airport while I still have altitude to spend.