PHAK Glossary — M

75 entries — every glossary entry under this letter, no curation. Reproduced verbatim from the Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25C (July 2023)), Glossary.

MAA
See maximum authorized altitude.
> FAA definition of **Maximum authorized altitude (MAA)**:
> A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment.

MAC
See mean aerodynamic chord.
> FAA definition of **Mean aerodynamic chord (MAC)**:
> The average distance from the leading edge to the trailing edge of the wing.

Mach number
The ratio of the true airspeed of the aircraft to the speed of sound in the same atmospheric conditions, named in honor of Ernst Mach, late 19th century physicist.

Mach meter
The instrument that displays the ratio of the speed of sound to the true airspeed an aircraft is flying.

Magnetic bearing (MB)
The direction to or from a radio transmitting station measured relative to magnetic north.

Magnetic compass
A device for determining direction measured from magnetic north.

Magnetic dip
A vertical attraction between a compass needle and the magnetic poles. The closer the aircraft is to a pole, the more severe the effect.

Magnetic heading (MH)
The direction an aircraft is pointed with respect to magnetic north.

Magneto
A self-contained, engine-driven unit that supplies electrical current to the spark plugs; completely independent of the airplane's electrical system. Normally there are two magnetos per engine.

Magnus effect
Lifting force produced when a rotating cylinder produces a pressure differential. This is the same effect that makes a baseball curve or a golf ball slice.

Mandatory altitude
An altitude depicted on an instrument approach chart with the altitude value both underscored and overscored. Aircraft are required to maintain altitude at the depicted value.

Mandatory block altitude
An altitude depicted on an instrument approach chart with two underscored and overscored altitude values between which aircraft are required to maintain altitude.

Maneuverability
Ability of an aircraft to change directions along a flight path and withstand the stresses imposed upon it.

Maneuvering speed (VA)
The design maneuvering speed. Operating at or below design maneuvering speed does not provide structural protection against multiple full control inputs in one axis or full control inputs in more than one axis at the same time.

Manifold absolute pressure
The absolute pressure of the fuel/air mixture within the intake manifold, usually indicated in inches of mercury.

MAP
See missed approach point.
> FAA definition of **Missed approach point (MAP)**:
> A point prescribed in each instrument approach at which a missed approach procedure shall be executed if the required visual reference has not been established.

Margin identification
The top and bottom areas on an instrument approach chart that depict information about the procedure, including airport location and procedure identification.

Marker beacon
A low-powered transmitter that directs its signal upward in a small, fan-shaped pattern. Used along the flight path when approaching an airport for landing, marker beacons indicate both aurally and visually when the aircraft is directly over the facility.

Mass
The amount of matter in a body.

Maximum altitude
An altitude depicted on an instrument approach chart with overscored altitude value at which or below aircraft are required to maintain altitude.

Maximum authorized altitude (MAA)
A published altitude representing the maximum usable altitude or flight level for an airspace structure or route segment.

Maximum landing weight
The greatest weight that an airplane normally is allowed to have at landing.

Maximum ramp weight
The total weight of a loaded aircraft, including all fuel. It is greater than the takeoff weight due to the fuel that will be burned during the taxi and runup operations. Ramp weight may also be referred to as taxi weight.

Maximum takeoff weight
The maximum allowable weight for takeoff.

Maximum weight
The maximum authorized weight of the aircraft and all of its equipment as specified in the Type Certificate Data Sheets (TCDS) for the aircraft.

Maximum zero fuel weight (GAMA)
The maximum weight, exclusive of usable fuel.

MB
See magnetic bearing.
> FAA definition of **Magnetic bearing (MB)**:
> The direction to or from a radio transmitting station measured relative to magnetic north.

MCA
See minimum crossing altitude.
> FAA definition of **Minimum crossing altitude (MCA)**:
> The lowest allowed altitude at certain fixes an aircraft must cross when proceeding in the direction of a higher minimum en route altitude (MEA).

MDA
See minimum descent altitude.
> FAA definition of **Minimum descent altitude (MDA)**:
> The lowest altitude (in feet MSL) to which descent is authorized on final approach, or during circle-to-land maneuvering in execution of a nonprecision approach.

MEA
See minimum en route altitude.
> FAA definition of **Minimum en route altitude (MEA)**:
> The lowest published altitude between radio fixes that ensures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes.

Mean aerodynamic chord (MAC)
The average distance from the leading edge to the trailing edge of the wing.

Mean sea level
The average height of the surface of the sea at a particular location for all stages of the tide over a 19-year period.

MEL
See minimum equipment list.
> FAA definition of **Minimum equipment list (MEL)**:
> A list developed for larger aircraft that outlines equipment that can be inoperative for various types of flight including IFR and icing conditions. This list is based on the master minimum equipment list (MMEL) developed by the FAA and must be approved by the FAA for use. It is specific to an individual aircraft make and model.

Meridians
Lines of longitude.

Mesosphere
A layer of the atmosphere directly above the stratosphere.

METAR
See Aviation Routine Weather Report.

FAA definition of **Aviation Routine Weather Report (METAR)**:
Observation of current surface weather reported in a standard international format.

MFD
See multi-function display.
FAA definition of **Multi-function display (MFD)**:
Small screen (CRT or LCD) in an aircraft that can be used to display information to the pilot in numerous configurable ways. Often an MFD will be used in concert with a primary flight display.

MH
See magnetic heading.
FAA definition of **Magnetic heading (MH)**:
The direction an aircraft is pointed with respect to magnetic north.

MHz
Megahertz.

Microburts
A strong downdraft which normally occurs over horizontal distances of 1 NM or less and vertical distances of less than 1,000 feet. In spite of its small horizontal scale, an intense microburst could induce windspeeds greater than 100 knots and downdrafts as strong as 6,000 feet per minute.

Microwave landing system (MLS)
A precision instrument approach system operating in the microwave spectrum which normally consists of an azimuth station, elevation station, and precision distance measuring equipment.

Mileage breakdown
A fix indicating a course change that appears on the chart as an "x" at a break between two segments of a federal airway.

Military operations area (MOA)
Airspace established for the purpose of separating certain military training activities from IFR traffic.

Military training route (MTR)
Airspace of defined vertical and lateral dimensions established for the conduct of military training at airspeeds in excess of 250 knots indicated airspeed (KIAS).

Minimum altitude
An altitude depicted on an instrument approach chart with the altitude value underscored. Aircraft are required to maintain altitude at or above the depicted value.

Minimum crossing altitude (MCA)
The lowest allowed altitude at certain fixes an aircraft must cross when proceeding in the direction of a higher minimum en route altitude (MEA).

Minimum descent altitude (MDA)
The lowest altitude (in feet MSL) to which descent is authorized on final approach, or during circle-to-land maneuvering in execution of a nonprecision approach.

Minimum drag
The point on the total drag curve where the lift-to-drag ratio is the greatest. At this speed, total drag is minimized.

Minimum en route altitude (MEA)
The lowest published altitude between radio fixes that ensures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes.

Minimum equipment list (MEL)
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Minimum obstruction clearance altitude (MOCA)
The lowest published altitude in effect between radio fixes on VOR airways, off-airway routes, or route segments, which meets obstacle clearance requirements for the entire route segment and which ensures acceptable navigational signal coverage only within 25 statute (22 nautical) miles of a VOR.

Minimum reception altitude (MRA)
The lowest altitude at which an airway intersection can be determined.

Minimum safe altitude (MSA)
The minimum altitude depicted on approach charts which provides at least 1,000 feet of obstacle clearance for emergency use within a specified distance from the listed navigation facility.

Minimum vectoring altitude (MVA)
An IFR altitude lower than the minimum en route altitude (MEA) that provides terrain and obstacle clearance.

Minimums section
The area on an IAP chart that displays the lowest altitude and visibility requirements for the approach.

Missed approach
A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing.

Missed approach point (MAP)
A point prescribed in each instrument approach at which a missed approach procedure shall be executed if the required visual reference has not been established.

Mixed ice
A mixture of clear ice and rime ice.

MLS
See microwave landing system.
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MM
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Mode C
Altitude reporting transponder mode.

Moment
The product of the weight of an item multiplied by its arm. Moments are expressed in pound-inches (lb-in). Total moment is the weight of the airplane multiplied by the distance between the datum and the CG.

Moment arm
The distance from a datum to the applied force.

Moment index (or index)
A moment divided by a constant such as 100, 1,000, or 10,000. The purpose of using a moment index is to simplify weight and balance computations of airplanes where heavy items and long arms result in large, unmanageable numbers.

Monocoque
A shell-like fuselage design in which the stressed outer skin is used to support the majority of imposed stresses. Monocoque fuselage design may include bulkheads but not stringers.

Monoplanes
Airplanes with a single set of wings.

Movable slat
A movable auxiliary airfoil on the leading edge of a wing. It is closed in normal flight but extends at high angles of attack. This allows air to continue flowing over the top of the wing and delays airflow separation.

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FAA definition of **Minimum reception altitude (MRA)**:
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See minimum safe altitude.
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MSL
See mean sea level.

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