General Airspeed Terminology and Symbols

CAS

Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.

KCAS

Calibrated Airspeed expressed in "Knots."

GS

Ground Speed is the speed of an airplane relative to the ground.

IAS

Indicated Airspeed is the speed of an aircraft as shown on the airspeed indicator when corrected for instrument error. IAS values published in this handbook assume zero instrument error.

KIAS

Indicated Airspeed expressed in "Knots."

M

Mach Number is the ratio of true airspeed to the speed of sound.

TAS

True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude, temperature and compressibility.

V_A
Maneuvering Speed is, the maximum speed at which application of full available aerodynamic control will not overstress the airplane.

V_{FE}
Maximum Flap Extended Speed is the highest speed permissible with wing Flaps in a prescribed extended position.

V_{LE}
Maximum Landing Gear Extended Speed is the maximum speed at which an aircraft can be safely flown with the Landing Gear extended.

V_{LO}
Maximum Landing Gear Operating Speed is the maximum speed at which the Landing Gear can be safely extended or retracted.

V_{MC}
Air minimum control speed is the minimum flight speed at which the airplane is controllable with a bank of not more than 5 degrees when one

engine suddenly becomes inoperative and the remaining engine is operating at takeoff power.

V_{NE} / M_{NE}

Never Exceed Speed or Mach Number is the speed limit that may not be exceeded at any time.

V_{NO}

Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and then only with caution.

V_S

Stalling Speed or the minimum steady flight speed at which the airplane is controllable.

V_{SO}

Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.

V_{SSE}

Intentional One Engine Inoperative Speed is a minimum speed selected by the manufacturer for intentionally rendering one engine inoperative in flight.

V_X

Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.

V_Y

Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.

Meteorological Terminology

ISA

International Standard Atmosphere in which:

- **The air is a dry perfect gas;**
- **The temperature at sea level is 15° Celsius (59° Fahrenheit);**
- **The pressure at sea level is 29.92 inches hg. (1013 mb);**
- **The temperature gradient from sea level to the altitude at which the temperature is -56.5° C (-69.7°F) is -0.00198°C (-0.003566°F) per foot and zero above that altitude.**

OAT

Outside Air Temperature is the free air static temperature, obtained either from inflight temperature indications or ground meteorological sources, adjusted

for instrument error and compressibility effects.

Indicated Pressure Altitude

The number actually read from an altimeter when the barometric sub-scale has been set to 29.92 inches of mercury (1013 millibars).

Pressure Altitude

Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error. In this handbook, altimeter instrument errors are assumed to be zero.

Station Pressure

Actual atmospheric pressure at field elevation.

Wind

The wind velocities recorded as variables on the charts of this handbook are to be understood as the headwind or tailwind components of the reported winds.

Power Terminology

Takeoff Power

Maximum power permissible for takeoff.

Maximum Continuous Power

Maximum power permissible continuously during flight.

Maximum Climb Power

Maximum power permissible during climb.

Maximum Cruise Power

Maximum power permissible during cruise.

Engine Instruments

EGT Gauge

Exhaust Gas Temperature Gauge

Airplane Performance and Flight Planning Terminology

Climb Gradient

The demonstrated ratio of the change in height during a portion of a climb, to the horizontal distance traversed in the same time interval.

Demonstrated Crosswind Velocity (DEMO. X-WIND)

The demonstrated crosswind velocity is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests.

Accelerate-Stop Distance

The distance required to accelerate an airplane to a specified speed and, assuming failure of an engine at the instant that speed is attained, to bring the airplane to a stop.

MEA

Minimum en route IFR altitude.

Route Segment

A part of a route. Each end of that part is identified by either:

1. **a geographical location or**
2. **a point at which a definite radio fix can be established,**

Weight and Balance Terminology

Reference Datum

An imaginary vertical plane from which all horizontal distances are measured for balance purposes.

Station

A location along the airplane fuselage usually given in terms of distance from the reference datum.

Arm

The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.

Moment

The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits.)

Center of Gravity

The point at which an airplane would balance if suspended. Its (C.G.) distance from the reference datum is found by dividing the total moment by the total weight of the airplane.

C.G. Arm

The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.

C.G. Limits

The extreme center of gravity locations within which the airplane must be operated at a given weight.

Usable Fuel

Fuel available for flight planning.

Unusable Fuel

Fuel remaining after a run-out test has been completed in accordance with governmental regulations.

Standard Empty Weight

Weight of a standard airplane including unusable fuel, full operating fluids and full oil.

Basic Empty Weight

Standard empty weight plus optional equipment.

Payload

Weight of occupants, cargo and baggage.

Useful Load

Difference between takeoff weight, or ramp weight if applicable, and basic empty weight.

Maximum Ramp Weight

Maximum weight approved for ground manoeuvre. (it includes weight of start, taxi and rain up fuel.)

Maximum Takeoff Weight

Maximum weight approved for the start of the takeoff run.

Maximum Landing Weight

Maximum weight approved for the landing touchdown.

Maximum Zero Fuel Weight

Maximum weight exclusive of usable fuel.