

SECTION I.

GENERAL

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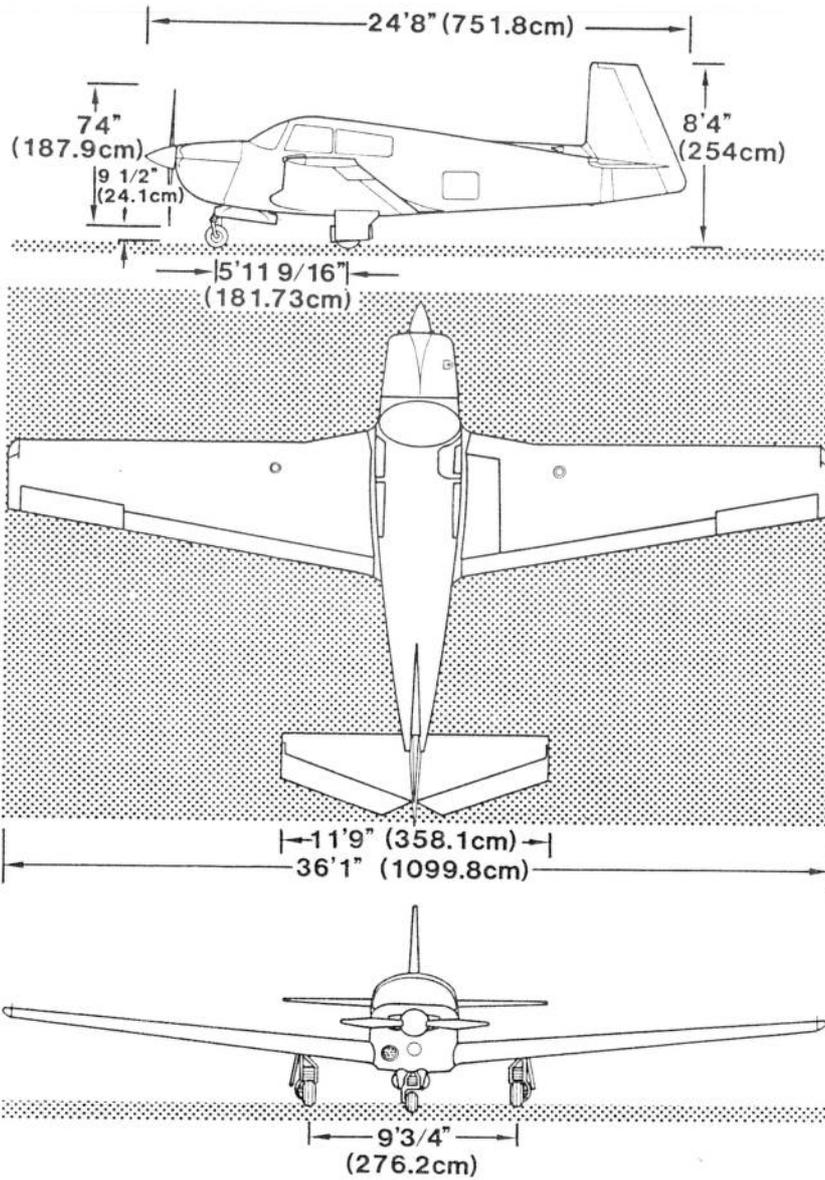
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SECTION I
GENERAL



INTRODUCTION

This Pilot's Operating Handbook contains 10 sections and includes the material required to be furnished to the pilot by CAR Part 3. It also contains supplemental data supplied by Mooney Aircraft Corporation.

Section I contains information of general interest to the pilot. It also contains definitions of the terminology used in this Pilot's Operating Handbook.

DESCRIPTIVE DATA

LANDING GEAR

TYPE: Electrically operated tricycle gear with rubber shock discs, steerable nose wheel, and hydraulic disc brakes.

Wheel Base	5 ft. 11-9/16 in. (181.73 cm)
Wheel Tread	9 ft. 3/4 in. (276.2 cm)
Tire Size:	
Nose	(6 Ply) 5.00 x 5
Main	(6 Ply) 6.00 x 6
Tire Pressure:	
Nose	49 PSI
Main	30 PSI
Min. Turning Radius (No Brakes Applied)	41 ft. (12.5 m)

ENGINE

TYPE: Four-cylinder, horizontally opposed, air cooled, and fuel-injected engine with a wet-sumplubricating system.

Number of Engines	1
Model (Lycoming)	IO-360-A3B6D
Recommended TBO	1800 Hrs.
Rated HP @ 2700 RPM	200 BHP @ Sea Level

Bore	5.125 in. (13.02 cm)
Stroke	4.375 in. (11.11 cm)
Displacement	361.0 Cu. In. (5915.7 cc)
Compression Ratio	8.7:1
Fuel Injector, Bendix	RSA-5-AD1
Magnetos, Bendix	D4LN 2021 or D4LN 3021

PROPELLER

TYPE: Constant-speed, hydraulically controlled propeller with a single-acting governor.

Number	1
Model (McCauley)*	B2D34C214/90DHB-16E*
Diameter	74 in. max. (187.9 cm. max.)* 73 in. min. (185.4 cm min.)*
Number of Blades	2
Blade Angle @ 30 In. Sta.:	
Low	$13.9^{\circ} \pm .2^{\circ} *$
High	$33^{\circ} \pm .5^{\circ} *$

NOTE

No cutoff allowed on propeller when de-ice boots are installed.

FUEL

Total Fuel Capacity	66.5 U.S. Gal. (251.8 liters)(55.4 Imp. Gal)
Usable Fuel Capacity	64 U.S. Gal (242.4 liters)(53.3 Imp. Gal)

Minimum Fuel Octane Rating & Color

<u>Grade</u>	<u>Color</u>
100	Green
100 LL	Blue

OIL

Oil Capacity (6 QTS MIN for flight) (5.68 liters)	8 QTS. (7.57 liters)
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Oil grades, specifications and changing recommendations are contained in Section VIII.

*OPTION: Hartzell, HC-C2YK-1BF/F7666A-3Q
Dia.: 73 Inches
Blade Angle: Low $14.1^{\circ} \pm .1$
High 29.3° to 31.3°

MAXIMUM CERTIFICATED WEIGHTS

Maximum Loading (unless limited by loading envelope):

Gross Weight	2740 LBS. (1243.0 Kg)
Baggage Area	120 LBS. (54.4 Kg)
Hat Rack	10 LBS. (4.54 Kg)
Cargo (Rear Seat Folded Down)	340 LBS. (154.2 Kg)

STANDARD AIRPLANE WEIGHTS

Basic Empty Weight See Page 1-8
Useful Load - Varies with installed equipment.
See Weight & Balance Section (VI) for specific
airplane weight (page 6-5).

CABIN & ENTRY DIMENSIONS

Cabin Width (Max)	43.5 In. (110.5 cm)
Cabin Length (Max)	114 In. (290 cm)
Cabin Height (Max)	44.5 In. (113 cm)
Entry Width (Min)	29.0 In. (73.4 cm)
Entry Height (Min)	35.0 In. (88.9 cm)

BAGGAGE SPACE AND ENTRY DIMENSIONS

Baggage Area	24" x 35" x 35" H (17 cu. ft.) 60.9 x 88.9 x 88.9 cm. (476 m3)
Hat Rack	30" W x 19" D x 12" H (Max.) (2.6 cu. ft.) 76.2 x 48.2 x 30.5 cm. (0.73 m3)
Cargo Area (with rear seats folded down)	37" W x 47" L x 33" H (33 cu. ft.) (Average Dimensions) (.924 m3)
Baggage Door Opening	
Above Ground (Sill)	46" (116.8 cm)
Entry Width	17" (43.2 cm)
Entry Height	20.5" (52.1 cm)

SPECIFIC LOADINGS

Wing Loading @ G. W. 16.4 LBS/Sq. Ft. (80.07 Kg/m²)
Power Loading @ G. W. 13.7 LBS/HP. (6.21 Kg/HP)

IDENTIFICATION PLATE

All correspondence regarding your airplane should include the Serial Number as depicted on the identification plate. The identification plate is located on the left hand side, aft end of the tail cone, below the horizontal stabilizer leading edge. The aircraft Serial Number and type certificate are shown.

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SYMBOLS, ABBREVIATIONS & TERMINOLOGY

GENERAL AIRSPEED TERMINOLOGY & SYMBOLS

- GS Ground Speed is the speed of an airplane relative to the ground.
- KCAS Knots 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.
- KIAS Knots Indicated Airspeed is the speed of an aircraft as shown on its airspeed indicator. IAS values published in this handbook assume zero instrument error.
- KTAS Knots True Airspeed is the airspeed of an airplane relative to undisturbed air.
- 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_{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_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 with gear and flaps up.

METEOROLOGICAL TERMINOLOGY

- AGL Above ground level.
- Density Altitude Altitude as determined by pressure altitude and existing ambient temperature. In standard atmosphere (ISA) density and pressure altitude are equal. For a given pressure altitude, the higher the temperature, the higher the density altitude.
- Indicated Pressure Altitude The number actually read from an altimeter when and only when, the barometric subscale has been set to 29.92 inches of mercury.
- ISA International Standard Atmosphere assumes that (1) The air is a dry perfect gas; (2) The temperature at sea level is 15° Celcius; (3) The pressure at sea level is 29.92 inches Hg; (4) The temperature gradient from sea level to the altitude at which the temperature is -56.5°C is -0.00198°C per foot.
- OAT Outside Air Temperature is the free air static temperature, obtained either from inflight temperature indications or ground meteorological sources. It is expressed in degrees Celcius (previously Centigrade).
- Pressure Altitude Pressure altitude 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.

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ENGINE POWER TERMINOLOGY

BHP	<u>Brake Horsepower</u> is the power developed by the engine.
MCP	<u>Maximum Continuous Power</u> is the maximum power which can be developed continuously.
MP	<u>Manifold Pressure</u> is a pressure measured in the engine's induction system and is expressed in inches of mercury (Hg).
RPM	<u>Revolutions Per Minute</u> is engine speed.

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

Demonstrated Crosswind Velocity	<u>Demonstrated Crosswind Velocity</u> is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests. The value shown is not considered to be limiting.
g	g is the acceleration due to gravity.
Service Ceiling	<u>Service ceiling</u> is the maximum altitude where the aircraft has the capability of climbing at the rate of 100 ft/min.

WEIGHT AND BALANCE TERMINOLOGY

Arm	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
Basic Empty Weight	The basic empty weight of an aircraft is the actual weight of the airplane and includes all operating equipment (including optional equipment) that has a fixed location and is actually installed in the aircraft. It includes the weight of the unusable fuel and full oil.
Center of Gravity (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.

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C. G. Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C. G. in Percent MAC	Center of Gravity expressed in percent of mean aerodynamic chord.
C. G. Limits	The extreme center of gravity locations within which the airplane must be operated at a given weight.
M. A. C.	Mean Aerodynamic Chord.
Maximum Weight	The maximum weight is the maximum authorized weight of the aircraft and its contents as listed in the aircraft specifications.
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.)
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.
Tare	Tare is the weight of chocks, blocks, stands, etc. used when weighing an airplane, and is included in the scale readings. Tare is deducted from the scale reading to obtain the actual (net) airplane weight.
Unusable Fuel	Fuel remaining after a runout test has been completed in accordance with governmental regulations.
Usable Fuel	Fuel available for airplane propulsion.
Useful Load	The useful load is the basic empty weight subtracted from the maximum weight of the aircraft. This load consists of the pilot, crew if applicable, fuel, passengers and baggage.

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MEASUREMENT CONVERSION TABLES

LENGTH	
U. S. Customary Unit	Metric Equivalents
1 inch	2.54 centimeters
1 foot	0.3048 meter
1 yard	0.9144 meter
1 mile (statute, land)	1.609 kilometers
1 mile (nautical, international)	1.852 kilometers

AREA	
U. S. Customary Unit	Metric Equivalents
1 square inch	6.4516 sq. centimeters
1 square foot	929.030 sq. centimeters
1 square yard	0.836 sq. meter

VOLUME OR CAPACITY	
U. S. Customary Unit	Metric Equivalents
1 cubic inch	16.387 cubic centimeters
1 cubic foot	0.028 cubic meter
1 cubic yard	0.765 cubic meter

U. S. Customary Liquid Measure	Metric Equivalents
1 fluid ounce	29.573 milliliters
1 pint	0.473 liter
1 quart	0.946 liter
1 gallon	3.785 liters

U. S. Customary Dry Measure	Metric Equivalents
1 pint	0.551 liter
1 quart	1.101 liters

MEASUREMENT CONVERSION TABLES (CONT.)

VOLUME OR CAPACITY (CONT.)		
British Imperial Liquid and Dry Measure	U.S. Equivalents	Metric Equivalents
1 fluid ounce	0.961 U.S. fluid ounce, 1.734 cubic inches	28.412 milli- liters
1 pint	1.032 U.S. dry pints, 1.201 U.S. liquid pints, 34.678 cubic inches	568.26 milli- liters
1 quart	1.032 U.S. dry quarts 1.201 U.S. liquid quarts, 69.354 cubic inches	1.136 liters
1 gallon	1.201 U.S. 277.420 cubic inches	4.546 liters

WEIGHT	
U.S Customary Unit (Avoirdupois)	Metric Equivalents
1 grain	64.79891 milligrams
1 dram	1.772 grams
1 ounce	28.350
1 pound	453.59237 grams

