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GENERAL

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1.3 NOTATIONS

**WARNING**

Operating procedures or techniques which may result in personal injury or loss of life if not carefully followed or a hazard which may require immediate crew recognition and corrective action.

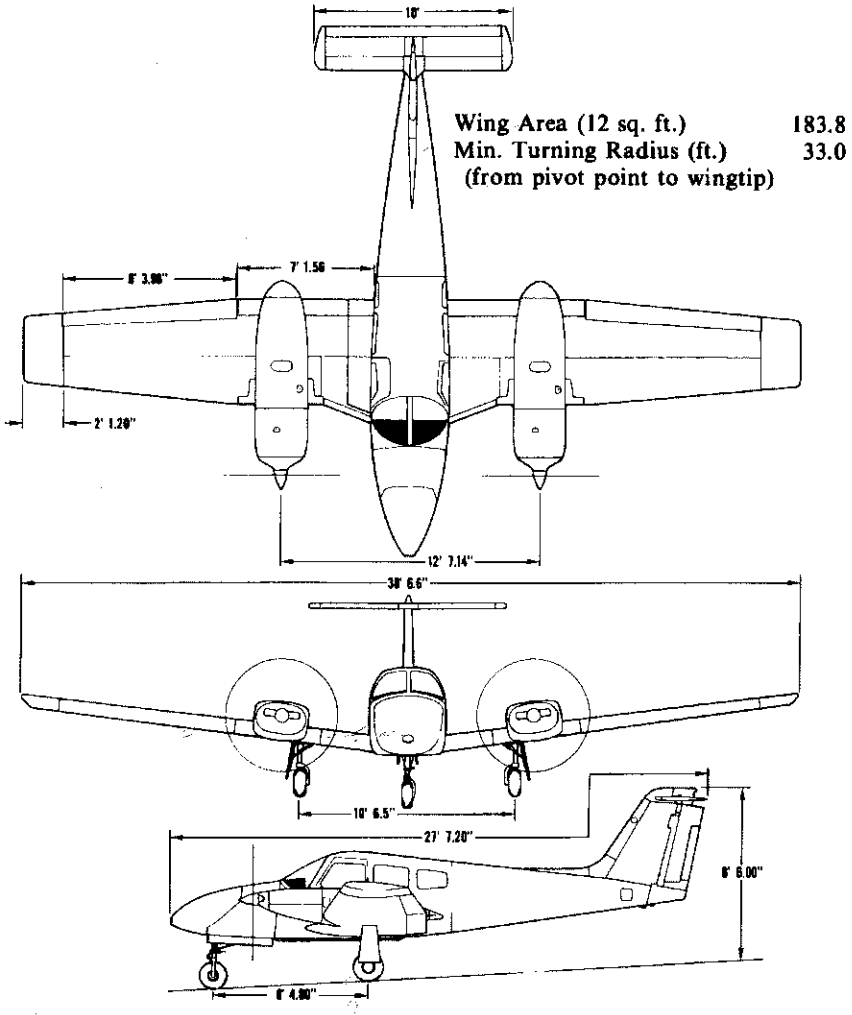
**CAUTION**

*Operating procedures or techniques which may result in damage to equipment if not carefully followed or the need for immediate crew awareness and possible need for future corrective action.*

**NOTE**

Supplemental information or highlights considered of sufficient significance to require emphasizing.

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**THREE VIEW**

Figure 1-1

1.5 ENGINES

- (a) Number of Engines 2
- (b) Engine Manufacturer Lycoming
- (c) Engine Model Number
  - Left IO-360-B1G6
  - Right LIO-360-B1G6
- (d) Rated Horsepower 180
- (e) Rated Speed (RPM) 2700
- (f) Bore (in.) 5.125
- (g) Stroke (in.) 4.375
- (h) Displacement (cu. in.) 361
- (i) Compression Ratio 8.5:1
- (j) Engine Type Fuel Injected, Four Cylinder, Direct Drive,  
Horizontally Opposed, Air Cooled

1.7 PROPELLERS

The installed propellers may be:

Propeller Manufacturer	Hartzell	Hartzell
Blade Model and Description	HC-C2Y(K, R)-2CEUF/ FC7666A-2R (Left)  HC-C2Y(K, R)-2CLEUF/ FC7666A-2R (Right)  Straight Blade	HC-C2YR-2CEUFP/ FC7497 (Left)  HC-C2YR-2CLEUFP/ FJC7497 (Right)  Scimitar Blade
Number of Blades	2	2
Propeller Diameter (inches)	74 (Maximum) 72 (Minimum)	74 (Maximum) 72.5 (Minimum)
Propeller Type	Constant Speed, Hydraulically Actuated, Full Feathering	Constant Speed, Hydraulically Actuated, Full Feathering

**1.9 FUEL**

**AVGAS ONLY**

- (a) Fuel Capacity (U.S. gal.) (total) 110
- (b) Usable Fuel (U.S. gal.) (total) 108
- (c) Fuel
  - (1) Minimum Octane 100 Green or 100LL Blue Aviation Grade

**1.11 OIL**

- (a) Oil Capacity (U.S. qts.) (per engine) 8
- (b) Oil Specification Refer to latest revision of Lycoming Service Instruction 1014.
- (c) Oil Viscosity per Average Ambient Temperature for Starting.

Average Ambient Temperature	MIL-L-6082B	MIL-L-22851
	Mineral SAE Grade	Ashless Dispersant SAE Grade
All Temperatures	--	15W-50 or 20W-50
Above 80°F	60	60
Above 60°F	50	40 or 50
30°F to 90°F	40	40
0°F to 70°F	30	30, 40 or 20W-40
0°F to 90°F	20W-50	20W-50 or 15W-50
Below 10°F	20	30 or 20W-30

When operating temperatures overlap indicated ranges, use the lighter grade oil.

**NOTE**

Refer to the latest issue of Lycoming Service Instruction 1014 (Lubricating Oil Recommendations) for further information.

**1.13 MAXIMUM WEIGHTS**

(a) Maximum Ramp Weight (lb)	3816
(b) Maximum Takeoff Weight (lb)	3800
(c) Maximum Landing Weight (lb)	3800
(d) Maximum Weight in Baggage Compartment (lb)	200

**1.15 STANDARD AIRPLANE WEIGHTS**

Refer to Figure 6-5 for the Standard Empty Weight and the Useful Load.

**1.17 BAGGAGE SPACE AND ENTRY DIMENSIONS**

(a) Compartment Volume (cu. ft.)	24
(b) Entry Dimensions (in.)	
(1) Entry Width (in.)	22
(2) Entry Height (in.)	20

**1.19 SPECIFIC LOADING**

(a) Wing Loading (lbs. per sq. ft.)	21.1
(b) Power Loading (lbs. per hp)	10.55



**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS**

The Garmin G1000 Integrated Avionics GNSS long range navigation system installed in this airplane is a GPS system with a Satellite Based Augmentation System (SBAS) comprised of two TSO-C145d Class 3 approved Garmin GIA 64Ws, TSO-C146d Class 3 approved Garmin GDU Display Units (1050 and 1054), and two Garmin-approved GA36 GPS/SBAS antennas (one is a GA37 if optional GDL 69 is installed), and GPS software version 5.1 or later approved version. The Garmin GNSS navigation system in this aircraft is installed in accordance with AC 20-138D. When all the equipment is operative, the Garmin G1000 system has two independent GNSS long-range navigation systems. Failure of any of the above equipment or the posting of 'BOTH ON GPS1' or 'BOTH ON GPS2' annunciators indicate only one operational GNSS system.

The Garmin G1000 Integrated Avionics GNSS navigation system as installed in this airplane complies with the requirements of AC 20-138D and has airworthiness approval for navigation using GPS and GPS/SBAS (within the coverage of a Satellite Based Augmentation System complying with ICAO Annex 10) for IFR en-route, terminal area, non-precision approach, and approach procedures with vertical guidance operations.

The Garmin G1000 Integrated Avionics GNSS navigation system as installed in this airplane complies with the equipment, performance, and functional requirements established for the following navigation specifications.

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNAV 10  RNP 10  Oceanic and Remote Areas of Operation (Class II Navigation)	GNSS FDE/RAIM availability must be verified prior to flight. Maximum predicted FDE/RAIM unavailability is 34 minutes. 1  Two GNSS systems required to be operational, (one GNSS system for those routes requiring only one long range navigation system).  No time limit using GNSS as the primary navigation sensor.  Part 91, Part 91 subpart K, 121, 125, and 135 operators require operational approval.	FAA AC 20-138D.  FAA AC 90-105A.  FAA AC 91-70B.  EASA AMC 20-12.	R	A1	The GPS equipment as installed complies with the requirements for GPS primary means of Class II navigation in oceanic and remote airspace without reliance on other long-range navigation systems, when used in conjunction with the G1000 WFDE Prediction program. 1
B-RNAV / RNAV 5 (Europe)	Must have GNSS/ SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1  This does not constitute an operational approval.	FAA AC 20-138D.  FAA AC 90-96A CHG 1.  EASA AMC 20-4A.	R	B2	

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNP 4 Oceanic and Remote Areas of Operation (Class II Navigation)	GNSS FDE/RAIM availability must be verified prior to flight. Maximum predicted FDE/RAIM unavailability is 25 minutes. 1  Two operational long-range nav systems required, (or one navigation system and one GNSS sensor for those routes requiring only one long-range navigation sensor).  No time limit using GNSS as the primary navigation sensor.  Part 91, Part 91 subpart K, 121, 125, and 135 operators require operational approval.	FAA AC 20-138D.  FAA AC 90-105A.  FAA AC 91-70B.	R	L1	The GPS equipment as installed complies with the requirements for GPS primary means of Class II navigation in oceanic and remote airspace without reliance on other long-range navigation systems, when used in conjunction with the G1000 WFDE Prediction program. 1

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNAV 2	<p>Must have GNSS/SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1</p> <p>The GNSS RNAV system is installed and meets the performance and functional requirements of AC 90-100A CHG 2.</p> <p>In accordance with AC 90-100A, CHG 2, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-100A CHG 2 are authorized to fly RNAV 2 procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-100A CHG 2.</p>	R	C2	Includes RNAV Q and T routes.

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNAV 1	<p>Must have GNSS/SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1</p> <p>The GNSS RNAV system is installed and meets the performance and functional requirements of AC 90-100A CHG 2.</p> <p>In accordance with AC 90-100A, CHG 2, Part 91 operators (except subpart K) following the aircraft and training guidance in AC 90-100A CHG 2 are authorized to fly RNAV 1 procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-100A CHG 2.</p>	R	D2	Includes RNAV terminal departure and arrival procedures.

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
P-RNAV (Europe)	<p>GNSS receiver is required for takeoff in P-RNAV airspace.</p> <p>Must have GNSS/ SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight.</p> <p>This does not constitute an operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-96A CHG 1.</p> <p>JAA TGL10 Rev 1.</p>	R	D2	<p>ICAO flight plan code for P-RNAV no longer exists.</p> <p>P-RNAV utilizes RNAV 1 flight plan codes.</p>
RNP 1	<p>Procedures containing Radius-to-Fix (RF) legs are not authorized.</p> <p>Must have GNSS/ SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1</p> <p>In accordance with AC 90-105A, Part 91 operators (except subpart K), following the aircraft and training guidance in AC 90-105A are authorized to fly RNP 1 procedures.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-105A.</p>	R	O2	<p>Includes RNP terminal departure and arrival procedures.</p>

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNP 1 (continued)	Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.	(continued)	(cont.)	(cont.)	(continued)
RNP APCH LNAV minima	<p>Procedures containing Radius-to-Fix (RF) legs are not authorized.</p> <p>Must have GNSS/SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1</p> <p>All instrument approach procedures that are retrieved from the current navigation database are authorized.</p> <p>In accordance with AC 90-105A, Part 91 operators (except subpart K), following the aircraft and training guidance in AC 90-105A are authorized to fly RNP APCH LNAV minima procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-105A.</p> <p>EASA AMC 20-27A.</p>	R	S1	Includes non-precision approaches based on conventional navigation aids with "or GPS" in the title and area navigation approaches titled "GPS", "RNAV (GPS)", and "RNAV (GNSS)".

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNP APCH LNAV/VNAV minima	<p>Procedures containing Radius-to-Fix (RF) legs are not authorized.</p> <p>Must have GNSS/SBAS capability and availability or GNSS RAIM/FDE availability must be verified prior to flight. Maximum predicted RAIM/ FDE unavailability is 5 minutes. 1</p> <p>All instrument approach procedures that are retrieved from the current navigation database are authorized.</p> <p>In accordance with AC 90-105A, Part 91 operators (except subpart K), following the aircraft and training guidance in AC 90-105A are authorized to fly RNP APCH LNAV/VNAV minima procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p> <p>This aircraft is not authorized to perform Barometric Based Vertical Guidance (baro-VNAV) approaches in the EASA airspace system.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-105A.</p> <p>EASA AMC 20-27A with CM-AS-002.</p>	R	S2	<p>Includes area navigation approaches titled "RNAV (GPS)" and "RNAV (GNSS)."</p> <p>Vertical guidance is based on GPS/SBAS when within SBAS coverage and by baro-VNAV when outside SBAS coverage, or when SBAS has been pilot disabled for approaches with 'WAAS VNAV NA'.</p> <p>The aircraft complies with the criteria of AMC 20-27 for RNP approaches to LNAV/ VNAV minima, with the exception that VNAV is based on SBAS/GNSS geometric altitude when SBAS/GNSS is available and authorized</p>



**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNP APCH LP minima	<p>Procedures containing Radius-to-Fix (RF) Legs are not authorized.</p> <p>All instrument approach procedures that are retrieved from the current navigation database are authorized.</p> <p>In accordance with AC 90-107, Part 91 operators (except subpart K), following the operational considerations and training guidance in AC 90-107 are authorized to fly RNP APCH LP minima procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-107.</p>	N/A	N/A	<p>Includes area navigation approaches titled "RNAV (GPS)" and "RNAV (GNSS)".</p> <p>GNSS/SBAS capability and availability is required for LP procedures.</p>

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
RNP APCH LPV minima	<p>Procedures containing Radius-to-Fix (RF) Legs are not authorized.</p> <p>All instrument approach procedures that are retrieved from the current navigation database are authorized.</p> <p>In accordance with AC 90-107, Part 91 operators (except subpart K), following the aircraft and training guidance in AC 90-107 are authorized to fly RNP APCH LPV minima procedures.</p> <p>Part 91 subpart K, 121, 125, 129, and 135 operators require operational approval.</p>	<p>FAA AC 20-138D.</p> <p>FAA AC 90-107.</p> <p>EASA AMC 20-28.</p>	B	N/A	<p>Includes area navigation approaches titled "RNAV (GPS)" and "RNAV (GNSS)."</p> <p>GNSS/SBAS capability and availability is required for LPV procedures.</p>
RNP AR APCH					Not Authorized.

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

Navigation Specification	Operational Requirements/ Authorizations	Reference Documents	ICAO Flight Plan Code		Notes
			Item 10a Code	Item 18 PBN/	
Advanced RNP See Notes for specific Advanced RNP functions.	This does not constitute an operational approval.	FAA AC 20-138D.	N/A	N/A	<p><u>RNAV Holding:</u> Supported.</p> <p><u>RF Legs:</u> Not supported.</p> <p><u>Parallel Offsets:</u> Supported.</p> <p><u>Higher Continuity:</u> Supported when both GIA 64 GPS/SBAS receivers are operating and providing GPS navigation guidance.</p> <p><u>Scalable RNP:</u> Not supported.</p> <p><u>Fixed Radius Transitions (PRT):</u> Not supported.</p> <p><u>Time of Arrival Control (TOAC):</u> Not supported.</p>

**1.21 G1000 GNSS (GPS/SBAS) NAVIGATION SYSTEM EQUIPMENT APPROVALS (continued)**

1. FDE/RAIM availability worldwide can be determined via the following:
  - Using the Garmin RAIM/Fault Detection and Exclusion Prediction Tool available on the Garmin website [fly.garmin.com](http://fly.garmin.com).

Also, within the United States:

- Via the FAA's RAIM Service Availability Prediction Tool (SAPT) website: <http://sapt.faa.gov>.
- Contacting a Flight Service Station (not DUATS) to obtain non-precision approach RAIM.

Also, within Europe:

- Europe's AUGER GPS RAIM Prediction Tool at <http://augur.ecacnav.com/augur/app/home>.

Verification of FDE/RAIM availability is not necessary if SBAS coverage is confirmed to be available along the entire route of flight.

Garmin International holds an FAA Type 2 Letter of Acceptance (LOA) in accordance with AC 20-153A for database integrity, quality, and database management practices for the Navigation database. Flight crews and operators can view the LOA status at [FlyGarmin.com](http://FlyGarmin.com) then select "Type 2 LOA Status".

Navigation information is referenced to the WGS-84 reference system.

**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY**

The following definitions are of symbols, abbreviations and terminology used throughout the handbook and those which may be of added operational significance to the pilot.

(a) General Airspeed Terminology and Symbols

CAS	Calibrated Airspeed means the indicated speed of an airplane, 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 airspeed of an airplane 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.
TAS	True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude, temperature and compressibility.
KTAS	True Airspeed expressed in Knots.
Vo	Maximum Operating Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.

**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)**

V <sub>FE</sub>	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V <sub>LE</sub>	Maximum Landing Gear Extended Speed is the maximum speed at which an airplane can be safely flown with the landing gear extended.
V <sub>LO</sub>	Maximum Landing Gear Operating Speed is the maximum speed at which the landing gear can be safely extended or retracted.
V <sub>MCA</sub>	Air Minimum Control Speed is the minimum flight speed at which the airplane is directionally controllable as determined in accordance with Federal Aviation Regulations. Airplane certification conditions include one engine becoming inoperative and windmilling, not more than a 5° bank towards the operative engine, takeoff power on operative engine, landing gear up, flaps in takeoff position, and most rearward C.G.
V <sub>NE</sub>	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V <sub>NO</sub>	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and then only with caution.
V <sub>S</sub>	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V <sub>SO</sub>	Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.

1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)

VSSE	Intentional One Engine Inoperative Speed is a minimum speed selected by the manufacturer for intentionally rendering one engine inoperative in flight for pilot training.
Vx	Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
Vy	Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.
(b) Meteorological Terminology	
IMC	Instrument Meteorological Conditions.
ISA	International Standard Atmosphere in which: <ol style="list-style-type: none"><li>(1) The air is a dry perfect gas;</li><li>(2) The temperature at sea level is 15° Celsius (59° Fahrenheit);</li><li>(3) The pressure at sea level is 29.92 in. Hg (1013.2 mb)</li><li>(4) The temperature gradient from sea level to the altitude at which the temperature is -56.5°C (-69.7°F) is -0.00198°C (-0.003564°F) per foot and zero above that altitude.</li></ol>
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 subscale has been set to 29.92 in. Hg (1013.2 mb).

**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)**

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.
(c) 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.
(d) Engine Instruments	
EGT	Exhaust Gas Temperature
MAP	Manifold Pressure
RPM	Propeller Speed (revolutions per minute)
FFLOW	Fuel Flow
CHT	Cylinder Head Temperature
(e) Airplane Performance and Flight Planning Terminology	
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.



**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)**

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	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.
Route Segment	A part of a route. Each end of that part is identified by (1) a geographical location or (2) a point at which a definite radio fix can be established.

**(f) Weight and Balance Terminology**

A.O.D.	Aft of Datum.
Arm	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
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.
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.
Datum	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.

**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)**

Basic Empty Weight	Standard empty weight plus optional equipment.
Maximum Landing Weight	Maximum weight approved for the landing touchdown.
Maximum Ramp Weight	Maximum weight approved for ground maneuver. (It includes weight of start, taxi and run-up fuel).
Maximum Takeoff Weight	Maximum weight approved for the start of the takeoff run.
Maximum Zero Fuel Weight	Maximum weight exclusive of usable fuel.
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.)
Payload	Weight of occupants, cargo and baggage.
Standard Empty Weight	Weight of a standard airplane including unusable fuel, full operating fluids and full oil.
Station	A location along the airplane fuselage usually given in terms of distance in inches from the reference datum.
Unusable Fuel	Fuel remaining after a runout test has been completed in accordance with governmental regulations.
Usable Fuel	Fuel available for flight planning.
Useful Load	Difference between takeoff weight, or ramp weight if applicable, and basic empty weight.

**1.23 SYMBOLS, ABBREVIATIONS AND TERMINOLOGY (continued)**

(g) Avionics System Abbreviations/Terminology

<b>1</b>	Refers to pilot's side (AHRS1, ADC1, GPS1)
<b>2</b>	Refers to co-pilot's side (AHRS2, ADC2, GPS2)
<b>ADC</b>	Air Data Computer
<b>ADS-B</b>	Automatic Dependent Surveillance - Broadcast
<b>AFCS</b>	Automatic Flight Control System
<b>AHRS</b>	Attitude and Heading Reference System
<b>CAS</b>	Crew Alerting System
<b>EBD</b>	Evolution Backup Display (Aspen standby instrument)
<b>EIS</b>	Engine Indication System
<b>FDE</b>	Fault Detection and Exclusion
<b>FOB</b>	Fuel On Board
<b>GDL</b>	Garmin Data Link
<b>GDU</b>	Garmin Display Unit
<b>GEA</b>	Garmin Engine/Airframe Processing Unit
<b>GFC</b>	Garmin Flight Control System
<b>GIA</b>	Garmin Integrated Avionics Unit
<b>GMA</b>	Garmin Audio Panel
<b>GMU</b>	Garmin Magnetometer Unit
<b>GPS</b>	Global Positioning System
<b>GRS</b>	Garmin AHRS
<b>GTX</b>	Garmin Transponder
<b>MFD</b>	Multi-Function Display
<b>PFD</b>	Primary Flight Display
<b>PFT</b>	Preflight Test
<b>SBAS</b>	Satellite-Based Augmentation System
<b>TAWS</b>	Terrain Awareness and Warning System
<b>WAAS</b>	Wide Area Augmentation System