NOTICE

AT THE TIME OF ISSUANCE, THIS INFORMATION MANUAL WAS AN EXACT DUPLICATE OF THE OFFICIAL PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL AND IS TO BE USED FOR GENERAL PURPOSES ONLY.

IT WILL NOT BE KEPT CURRENT AND, THEREFORE, CANNOT BE USED AS A SUBSTITUTE FOR THE OFFICIAL PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL INTENDED FOR OPERATION OF THE AIRPLANE.

THE PILOT'S OPERATING HANDBOOK MUST BE CARRIED IN THE AIRPLANE AND AVAILABLE TO THE PILOT AT ALL TIMES.

Cessna Aircraft Company
Original Issue - 19 December 2012

PERFORMANCE - SPECIFICATIONS
CARGO VERSION

SPEED (KTAS):
- Maximum Cruise at 10,000 Feet . . . . 185 KNOTS
- Maximum Cruise at 20,000 Feet . . . . 175 KNOTS

RANGE: With 2246 pounds usable fuel and fuel allowance for engine start, taxi, takeoff, climb, descent and 45 minutes reserve.

- Max Cruise at 10,000 Feet . . . . Range - 792 NM
  . . . . Time - 4.4 HOURS
- Max Cruise at 18,000 Feet . . . . Range - 985 NM
  . . . . Time - 5.6 HOURS
- Max Range at 10,000 Feet . . . . Range - 918 NM
  . . . . Time - 6.0 HOURS
- Max Range at 18,000 Feet . . . . Range - 1052 NM
  . . . . Time - 6.6 HOURS

RATE OF CLIMB AT SEA LEVEL . . . . 1275 FPM

SERVICE CEILING . . . . 25,000 FEET

MAXIMUM OPERATING ALTITUDE . . . . 25,000 FEET

TAKEOFF PERFORMANCE:
- Ground Roll . . . . 1399 FEET
- Total Distance Over 50 Foot Obstacle . . . . 2160 FEET

LANDING PERFORMANCE:
- Ground Roll . . . . 1004 FEET
- Total Distance Over 50 Foot Obstacle . . . . 1836 FEET

STALL SPEED (KCAS):
- Flaps UP, Power Idle . . . . 78 KNOTS
- Flaps LAND, Power Idle . . . . 61 KNOTS

(Continued Next Page)

PERFORMANCE - SPECIFICATIONS

CARGO VERSION (Continued)

MAXIMUM WEIGHT:
- Ramp. . . . . 8842 POUNDS (4010.7 kg)
- Takeoff . . . . 8807 POUNDS (3994.8 kg)
- Landing . . . . 8500 POUNDS (3855.5 kg)

STANDARD EMPTY WEIGHT. . . . . 4558 POUNDS (2067.5 kg)

MAXIMUM USEFUL LOAD . . . . 4284 POUNDS (1943.2 kg)

WING LOADING . . . . 31.5 lbs/sq. ft.

POWER LOADING . . . . .10.2 lbs/SHP

FUEL CAPACITY. . . . . .335.6 GALLONS (1270.0 l)

OIL CAPACITY . . . . 14 QUARTS (13.2 l)

ENGINE: Pratt & Whitney Canada PT6A-140
Free Turbine Flat Rated at 867 SHP

PROPELLER: Hartzell Propeller Systems
3-bladed, Constant Speed, Full Feathering, Reversible Propeller
Diameter. . . . . 106 Inches (2.7 m)

The above performance figures are based on indicated weights, standard atmospheric conditions, level, hard-surfaced dry runways and no wind. They are calculated values derived from flight tests conducted by Cessna Aircraft Company under carefully documented conditions and will vary with individual airplanes and numerous factors affecting flight performance.

Performance for other operational conditions can be derived by reference to operational data in other sections of this POH/AFM.

PERFORMANCE - SPECIFICATIONS
PASSENGER VERSION

SPEED (KTAS):
Maximum Cruise at 10,000 Feet . . . . 195 KNOTS
Maximum Cruise at 20,000 Feet . . . . 186 KNOTS

RANGE: With 2246 pounds usable fuel and fuel allowance for engine start, taxi, takeoff, climb, descent and 45 minutes reserve.

Max Cruise at 10,000 Feet . . . . Range - 832 NM
. . . . Time - 4.4 HOURS
Max Cruise at 18,000 Feet . . . . Range - 1040 NM
. . . . Time - 5.7 HOURS
Max Range at 10,000 Feet . . . . Range - 973 NM
. . . . Time - 6.0 HOURS
Max Range at 18,000 Feet . . . . Range - 1125 NM
. . . . Time - 6.8 HOURS

RATE OF CLIMB AT SEA LEVEL . . . . 1330 FPM

SERVICE CEILING . . . . 25,000 FEET

MAXIMUM OPERATING ALTITUDE . . . . 25,000 FEET

TAKEOFF PERFORMANCE:
Ground Roll . . . . 1399 FEET
Total Distance Over 50 Foot Obstacle . . . . 2160 FEET

LANDING PERFORMANCE:
Ground Roll . . . . 1039 FEET
Total Distance Over 50 Foot Obstacle . . . . 1871 FEET

STALL SPEED (KCAS):
Flaps UP, Power Idle . . . . 78 KNOTS
Flaps LAND, Power Idle . . . . 61 KNOTS

(Continued Next Page)

PERFORMANCE - SPECIFICATIONS

PASSENGER VERSION (Continued)

MAXIMUM WEIGHT:
- Ramp. . . . . 8842 POUNDS (4010.7 kg)
- Takeoff . . . . 8807 POUNDS (3994.8 kg)
- Landing . . . . 8500 POUNDS (3855.5 kg)

STANDARD EMPTY WEIGHT. . . . . 4805 POUNDS (2179.4 kg)

MAXIMUM USEFUL LOAD . . . . 4037 POUNDS (1831.4 kg)

WING LOADING . . . . 31.5 lbs/sq. ft.

POWER LOADING . . . . .10.2 lbs/SHP

FUEL CAPACITY . . . . .335.6 GALLONS (1270.0 l)

OIL CAPACITY . . . . 14 QUARTS (13.2 l)

ENGINE: Pratt & Whitney Canada PT6A-140
Free Turbine Flat Rated at 867 SHP

PROPELLER: Hartzell Propeller Systems
3-bladed, Constant Speed, Full Feathering, Reversible Propeller
Diameter . . . . .106 INCHES (2.7 m)

The above performance figures are based on indicated weights, standard atmospheric conditions, level, hard-surfaced dry runways and no wind. They are calculated values derived from flight tests conducted by Cessna Aircraft Company under carefully documented conditions and will vary with individual airplanes and numerous factors affecting flight performance.

Performance for other operational conditions can be derived by reference to operational data in other sections of this POH/AFM.

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Cessna
A Textron Company

Information Manual

GRAND CARAVAN EX

Member of GAMA

Cessna Aircraft Company

Model 208B
867 SHP - Garmin G1000
Serials 208B2197 and 208B5000 and On

THIS MANUAL INCORPORATES INFORMATION ISSUED IN THE PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL, ORIGINAL ISSUE, DATED 19 DECEMBER 2012 (PART NUMBER 208BPHCUS-00).

208BIMCUS-00

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SECTION

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GENERAL

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THREE VIEW - NORMAL GROUND ATTITUDE

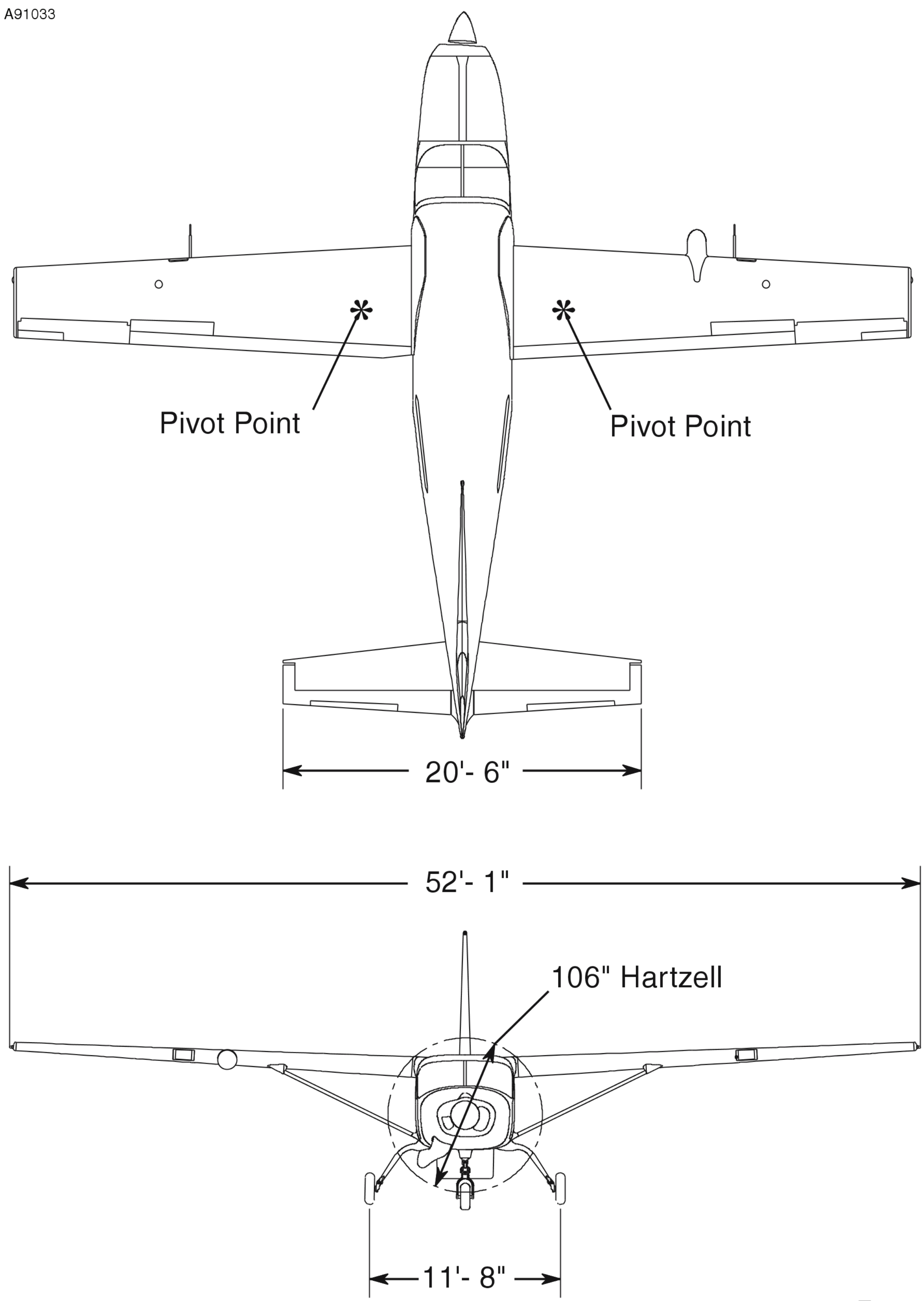
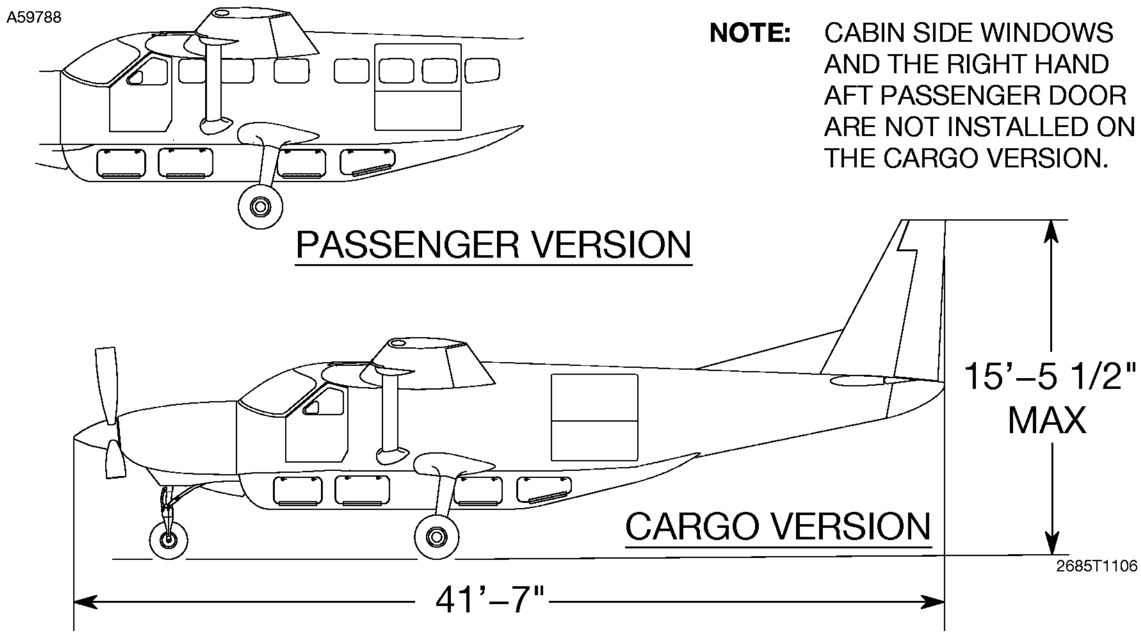


Figure 1-1 (Sheet 1 of 2)

THREE VIEW - NORMAL GROUND ATTITUDE



NOTE

- Normal ground attitude shown is based on standard empty weight, proper inflation of nosewheel and main gear tires and wings level.
- Wing span shown with position/strobe lights installed.
- Maximum height shown with nose gear strut depressed as far as possible.
- Wheel base length is 13 feet - 3.5 inches (4.05 m).
- Wing area is 279.4 square feet (25.9 sq. m).
- Minimum turning radius (*pivot point to outboard wing tip strobe light) is 33 feet - 8 inches (10.3 m).
- Propeller ground clearance varies between 2.5 inches (63 mm) and 14.75 inches (375 mm) depending upon configuration and installed options. Refer to Descriptive Data, Propeller, in this section for complete listing of propeller ground clearances.

Figure 1-1 (Sheet 2)

INTRODUCTION

This POH/AFM contains 9 sections, and includes the material required to be furnished to the pilot by 14 CFR 23. It also contains supplemental data supplied by Cessna Aircraft Company. This POH/AFM constitutes the FAA Approved Airplane Flight Manual.

WARNING

- **This POH/AFM is not intended to be a guide for basic flight instruction or a training manual and should not be used as one. It is not a substitute for adequate and competent flight instruction, pilot skill, and pilot knowledge of current Airworthiness Directives, applicable Federal Aviation Regulations and/or Advisory Circulars.**
- **Assuring the airworthiness of the airplane is the responsibility of the airplane owner or operator. Determining if the airplane is safe for flight is the responsibility of the pilot in command. The pilot is also responsible for adhering to the operating limitations set forth by instrument markings, placards, and this POH/AFM.**

Generally, information in this POH/AFM is applicable to both the cargo version and the passenger version of the Model 208B. Some equipment differences exist between these versions. Specific versions are identified through use of the terms “Cargo Version” and “Passenger Version”. When one of these terms appears in text or on an illustration, the information applies only to that group of airplanes. If no term appears, the information applies to all airplanes.

Section 1 provides basic data and information of general interest. It also contains definitions or explanations of symbols, abbreviations, and terminology commonly used.

DESCRIPTIVE DATA

ENGINE

Number of Engines 1
Engine Manufacturer . . . . Pratt & Whitney Canada, Inc.
Engine Model Number PT6A-140
Engine Type:

Free turbine, two-shaft engine utilizing a compressor section having three axial stages and one centrifugal stage, an annular reverse-flow combustion chamber, a one-stage compressor turbine, a one-stage power turbine, and a single exhaust. The power turbine drives the propeller through a two-stage planetary gearbox at the front of the engine.

Horsepower . . . . Flat rated at 867 SHP

PROPELLER

HARTZELL

Propeller Manufacturer . . . . Hartzell Propeller Inc.
Propeller Model Number HC-B3TN-3AF/T10890CNB-2
Number of Blades 3
Propeller Diameter. . . . . Maximum 106 Inches (2.7 m)
Minimum 104 Inches (2.6 m)

Propeller Type:

Constant-speed, full-feathering, reversible, hydraulically-actuated aluminum propeller, with a feathered blade angle of 78.0° ±1.0°, a low pitch blade angle of 8.5° ±0.2°, and a maximum reverse blade angle of -21° ±0.5° at FS 42.00.

Propeller ground clearance with standard tires and standard length nose gear fork:

With nose tire inflated and strut barrel extended 3.625 inches (92 mm), propeller ground clearance is 11.25 inches (285 mm).

With nose tire deflated and nose strut fully compressed, propeller ground clearance is 2.5 inches (63 mm).

Propeller ground clearance with standard tires and extended length nose gear fork:

With nose tire inflated and strut barrel extended 3.625 inches (92 mm), propeller ground clearance is 14.75 inches (375 mm).

With nose tire deflated and nose strut fully compressed, propeller ground clearance is 5.875 inches (149 mm).

DESCRIPTIVE DATA (Continued)

FUEL

WARNING

USE OF UNAPPROVED FUELS MAY RESULT IN DAMAGE TO THE ENGINE AND FUEL SYSTEM COMPONENTS, RESULTING IN POSSIBLE ENGINE FAILURE.

APPROVED FUEL GRADES:

JET A (ASTM-D1655)	JP-8+100 (MIL-DTL-83133)
JET A-1 (ASTM-D1655)	AN8 (MIL-DTL-83133)
JET No. 3 (GB 6537)	RT (GOST 10227)
JP-5 (MIL-DTL-5624)	RT (GSTU 320.00149943.007)
JP-8 (MIL-DTL-83133)	TS-1 (GOST 10227)

NOTE

Refer to Section 2, Limitations, Fuel Limitations, for more information on Approved Fuels.

(Continued Next Page)

DESCRIPTIVE DATA (Continued)

FUEL (Continued)

APPROVED FUEL ADDITIVES (Optional)

The following fuel system additives may be added to the fuels as noted at the following concentrations. Use of these fuel additives is not required.

NOTE

- MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
- MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.20 percent by volume.
- GOST 8313 (Fluid I), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
- CIS TU6-10-1458 (Fluid I-M), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
- T1301 (SH0396-92), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
- DuPont Stadis 450, Type: Static Dissipator, in a concentration as required to bring fuel up to 300 conductive units, not to exceed 1 Parts Per Million (PPM).
- SOHIO Biobor JF, Type: Biocide, at a concentration not to exceed 20 PPM of elemental boron (270 PPM of total additive).
- Kathon FP, Type: Biocide, at a concentration not to exceed 100 PPM of total additive.
- Refer to Section 8, Airplane Handling, Service and Maintenance, Servicing, Fuel, for additional information and recommended blending instructions for approved fuel additives.

DESCRIPTIVE DATA (Continued)

FUEL (Continued)

FUEL CAPACITY

TOTAL FUEL

Both Tanks and Reservoir: . . . . .339.1 U.S. Gallons (1283 l)
Both Tanks: . . . . .335.6 U.S. Gallons (1270 l)
Each Tank: . . . . .167.8 U.S. Gallons (635 l)

TOTAL USABLE FUEL

Both Tanks ON and Reservoir: . . . . .335.3 U.S. Gallons (1268 l)
Both Tanks ON: .332.0 U.S. Gallons (1256 l)
Single Tank ON: . . . . .165.0 U.S. Gallons (624 l)

TOTAL UNUSABLE FUEL

Both Tanks ON: . . . . .3.6 U.S. Gallons (13 l)
Single Tank ON: . . . . .2.8 U.S. Gallons (10 l)

DESCRIPTIVE DATA (Continued)

OIL

OIL SPECIFICATION

Oil conforming to Pratt & Whitney Engine Service Bulletin No. 1001, and all revisions or supplements thereto, must be used. Refer to Section 8, Airplane Handling, Service and Maintenance, Servicing, Oil, for a listing of approved oils.

OIL CAPACITY

Total: . . . . 14 U.S. QUARTS (13.2 l)
(including filter, cooler, and hoses)
Drain and Refill Quantity:. . . . . 9.5 U.S. QUARTS (9.0 l)
(approximately)

OIL QUANTITY OPERATING RANGE

Fill to within 1.5 quarts of MAX HOT or MAX COLD (as appropriate) on dipstick. Quart marking indicate U.S. quarts low if oil is hot. For example, a dipstick reading of 3 indicates the system is within 2 quarts of MAX if the oil is cold and within 3 quarts of MAX if the oil is hot.

WARNING

Make sure oil dipstick cap is securely latched down. Operating the engine with less than the recommended oil level and with the dipstick cap unlatched will result in excessive oil loss and eventual engine stoppage.

NOTE

To obtain an accurate oil level reading, it is recommended the oil level be checked within 10 minutes after engine shutdown while the oil is hot (MAX HOT marking) or prior to the first flight of the day while the oil is cold (MAX COLD marking). If more than 10 minutes has elapsed since engine shutdown and engine oil is still warm, perform an engine dry motoring run before checking oil level.

DESCRIPTIVE DATA (Continued)

MAXIMUM CERTIFICATED WEIGHTS

Ramp Weight . . . . 8842 POUNDS (4010 kg)
Takeoff Weight . . . . 8807 POUNDS (3994 kg)
Landing Weight . . . . 8500 POUNDS (3855 kg)

CABIN AND ENTRY DIMENSIONS

Refer to Section 6, Weight and Balance, Cabin Internal Dimensions, for detailed dimensions of the cabin interior and entry door openings.

BAGGAGE/CARGO COMPARTMENT AND CARGO DOOR AND ENTRY DIMENSIONS

Refer to Section 6, Weight and Balance, Cabin Internal Dimensions, for detailed dimensions of the baggage/cargo area and cargo door openings.

SPECIFIC LOADINGS

Wing Loading . . . . .31.5 lbs./sq. ft.
Power Loading . . . . 10.2 lbs./SHP

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

GENERAL AIRSPEED TERMINOLOGY AND SYMBOLS

KCAS — **Knots Calibrated Airspeed** is indicated airspeed corrected for position and instrument error and expressed in knots. Knots calibrated airspeed is equal to KTAS in standard atmosphere at sea level.

KIAS — **Knots Indicated Airspeed** is the speed shown on the airspeed indicator and expressed in knots.

KTAS — **Knots True Airspeed** is the airspeed expressed in knots relative to undisturbed air which is KCAS corrected for altitude and temperature.

V_A — **Maneuvering Speed** is the maximum speed at which full or abrupt control movements may be used without overstressing the airframe.

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

V_{MO} — **Maximum Operating Speed** is the speed that may not be deliberately exceeded at any time.

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

V_{SO} — **Stalling Speed or the minimum steady flight speed** is the minimum speed at which the airplane is controllable in the landing configuration at the most forward center of gravity.

V_x — **Best Angle of Climb Speed** is the speed which results in the greatest gain of altitude in a given horizontal distance.

V_Y — **Best Rate of Climb Speed** is the speed which results in the greatest gain in altitude in a given time.

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY
(Continued)

METEOROLOGICAL TERMINOLOGY

OAT	**Outside Air Temperature** is the free air static temperature. It may be expressed in either degrees Celsius (°C) or degrees Fahrenheit (°F).
ISA	**International Standard Atmosphere** is an atmosphere in which: 1. The air is a perfect dry gas. 2. The temperature at sea level is 15°C. 3. The pressure at sea level is 29.92 inches of mercury (in.hg.) (1013.2 mb). The temperature gradient from sea level to the altitude at which the temperature is -56.5°C is -1.98°C per 1000 feet.
Standard Temperature	**Standard Temperature** is 15°C at sea level pressure altitude and decreases by 2°C for each 1000 feet of altitude.
Pressure Altitude	**Pressure Altitude** is the altitude read from an altimeter when the altimeter's barometric scale has been set to 29.92 inches of mercury (1013 mb).

ENGINE POWER TERMINOLOGY

Beta Mode	**Beta Mode** is the engine operational mode in which propeller blade pitch is controlled by the power lever. The beta mode may be used during ground operations only.
Flameout	**Flameout** is the unintentional loss of combustion chamber flame during operation.
Flat Rated	**Flat Rated** denotes constant horsepower over a specific altitude and/or temperature.
Gas Generator RPM (N_g)	**Gas Generator RPM** indicates the percent of gas generator RPM based on a figure of 100% being 37,468 RPM.
GCU	**Generator Control Unit**

(Continued Next Page)

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY
(Continued)

ENGINE POWER TERMINOLOGY (Continued)

Hot Start	**Hot Start** is an engine start, or attempted start, which results in an ITT exceeding 1090°C.
ITT	**Interstage Turbine Temperature**
Maximum Climb Power	**Maximum Climb Power** is the maximum power approved for normal climb. Use of this power setting is limited to climb operations. This power corresponds to that developed at the maximum torque limit, ITT of 825°C or Ng limit, whichever is less. This power corresponds to that shown in Section 5, Performance, Maximum Engine Torque for Climb.
Maximum Rated Power	**Maximum Rated Power** is the maximum power rating not limited by time. Use of this power should be limited to those abnormal circumstances which require maximum airplane performance (i.e., severe icing conditions or windshear downdrafts). This power corresponds to that developed at the maximum torque limit, ITT of 825°C or N_g limit, whichever is less.
N_g	**N_g** signifies gas generator RPM.
Propeller RPM	**Propeller RPM** indicates propeller speed in RPM.
Reverse Thrust	**Reverse Thrust** is the thrust produced when the propeller blades are rotated past flat pitch into the reverse range.
SHP	**SHP** is shaft horsepower and is the power delivered at the propeller shaft. $$SHP = \frac{\text{Propeller RPM x Torque (foot-pounds)}}{5252}$$
Takeoff Power	**Takeoff Power** is the maximum power rating and is limited to a maximum of 5 minutes whenever ITT is greater than 825°C, under normal operation. Use of this power should be limited to normal takeoff operations. This power corresponds to that shown in Section 5, Performance, Maximum Engine Torque For Takeoff.
Torque	**Torque** is a measurement of rotational force exerted by the engine on the propeller.
Windmill	**Windmill** is propeller rotation from airstream inputs.

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY
(Continued)

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

Demonstrated Crosswind Velocity	**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. The value shown is not considered to be limiting.
Usable Fuel	**Usable Fuel** is the fuel available for flight planning.
Unusable Fuel	**Unusable Fuel** is the quantity of fuel that cannot be safely used in flight.
PPH	**Pounds Per Hour** is the amount of fuel consumed per hour.
NM/1000 lbs	**Nautical Miles Per Thousand Pounds of Fuel** is the distance which can be expected per 1000 pounds of fuel consumed at a specific engine power setting and/or flight configuration.
g	**g** is acceleration due to gravity.
Course Datum	**Course Datum** is the compass reference used by the autopilot, along with course deviation, to provide lateral control when tracking a navigation signal.
Land As Soon As Possible	**Land at the nearest suitable airport**. Unless otherwise specified, use Normal Procedures for Approach, Before Landing, and Landing. Extreme situations can require an off airport landing. Primary consideration is safety of occupants.
Land As Soon As Practical	**Land at a suitable airport**. Unless otherwise specified, use Normal Procedures for Approach, Before Landing, and Landing. The primary consideration is the urgency of the emergency or abnormal situation. Continuing to the destination or an alternate with appropriate service facilities can be an option.

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY
(Continued)

AUTOPILOT/FLIGHT DIRECTOR AND AFCS TERMINOLOGY

CAUTION

A thorough understanding of the difference between an autopilot, a flight director, and an AFCS is required before operating any of the components of the Garmin G1000/GFC 700 Flight Control System. Refer to Garmin Cockpit Resource Guide (CRG) for complete operating details.

Autopilot	**Autopilot** is a system which automatically controls attitude and/or flight path of the airplane as directed by the pilot through the system's computer.
Flight Director	**Flight Director** is a system which provides visual recommendations to the pilot to allow him to manually control the airplane attitude and/or flight path in response to his desires as selected through the system's computer.
Automated Flight Control System (AFCS)	**AFCS** applies to the union of autopilot and flight director systems which allows the pilot to manage his flight by observing computed visual recommendations while the autopilot automatically follows these recommendations as selected by the pilot using the system's controls.

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

(Continued)

WEIGHT AND BALANCE TERMINOLOGY

Reference Datum	**Reference Datum** is an imaginary vertical plane from which all horizontal distances are measured for balance purposes.
Station	**Station** is a location along the airplane fuselage given in terms of the distance from the reference datum.
Arm	**Arm** is the horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
Moment	**Moment** is the product of the weight of an item multiplied by its arm. (Moment divided by the constant 1000 is used in this POH/AFM to simplify balance calculations by reducing the number of digits.)
Center of Gravity (C.G.)	**Center of Gravity** is the point at which an airplane, or equipment, 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	**Center of Gravity Arm** is the arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	**Center of Gravity Limits** are the extreme center of gravity locations within which the airplane must be operated at a given weight.
Standard Empty Weight	**Standard Empty Weight** is the weight of a standard airplane, including unusable fuel, full operating fluids and full engine oil.
Basic Empty Weight	**Basic Empty Weight** is the standard empty weight plus the weight of optional equipment.
Useful Load	**Useful Load** is the difference between ramp weight and the basic empty weight.

(Continued Next Page)

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY
(Continued)

WEIGHT AND BALANCE TERMINOLOGY (Continued)

MAC	**Mean Aerodynamic Chord** is a chord of an imaginary rectangular airfoil having the same pitching moments throughout the flight range as that of the actual wing.
Maximum Ramp Weight	**Maximum Ramp Weight** is the maximum weight approved for ground maneuver, and includes the weight of fuel used for start, taxi and runup.
Maximum Takeoff Weight	**Maximum Takeoff Weight** is the maximum weight approved for the start of the takeoff roll.
Maximum Landing Weight	**Maximum Landing Weight** is the maximum weight approved for the landing touchdown.
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.

METRIC/IMPERIAL/U.S. CONVERSION CHARTS

The following charts have been provided to help international operators convert U.S. measurement supplied with the POH/AFM into metric and imperial measurements.

The standard followed for measurement units shown is the National Institute of Standards Technology (NIST), Publication 811, "Guide for the Use of the International System of Units (SI)."

Please refer to the following pages for these charts.

WEIGHT CONVERSIONS

B5719

(Kilograms x 2.205 = Pounds) (Pounds x .454 = Kilograms)

Kilograms into Pounds
Kilogrammes en Livres

kg	0	1	2	3	4	5	6	7	8	9
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
0	– – –	2.205	4.409	6.614	8.819	11.023	13.228	15.432	17.637	19.842
10	22.046	24.251	26.456	28.660	30.865	33.069	35.274	37.479	39.683	41.888
20	44.093	46.297	48.502	50.706	52.911	55.116	57.320	59.525	61.729	63.934
30	66.139	68.343	70.548	72.753	74.957	77.162	79.366	81.571	83.776	85.980
40	88.185	90.390	92.594	94.799	97.003	99.208	101.41	103.62	105.82	108.03
50	110.23	112.44	114.64	116.85	119.05	121.25	123.46	125.66	127.87	130.07
60	132.28	134.48	136.69	138.89	141.10	143.30	145.51	147.71	149.91	152.12
70	154.32	156.53	158.73	160.94	163.14	165.35	167.55	169.76	171.96	174.17
80	176.37	178.57	180.78	182.98	185.19	187.39	189.60	191.80	194.01	196.21
90	198.42	200.62	202.83	205.03	207.24	209.44	211.64	213.85	216.05	218.26
100	220.46	222.67	224.87	227.08	229.28	231.49	233.69	235.90	238.10	240.30

Pounds into Kilograms
Livres en Kilogrammes

lb.	0	1	2	3	4	5	6	7	8	9
	kg	kg	kg	kg	kg	kg	kg	kg	kg	kg
0	– – –	0.454	0.907	1.361	1.814	2.268	2.722	3.175	3.629	4.082
10	4.536	4.990	5.443	5.897	6.350	6.804	7.257	7.711	8.165	8.618
20	9.072	9.525	9.979	10.433	10.886	11.340	11.793	12.247	12.701	13.154
30	13.608	14.061	14.515	14.969	15.422	15.876	16.329	16.783	17.237	17.690
40	18.144	18.597	19.051	19.504	19.958	20.412	20.865	21.319	21.772	22.226
50	22.680	23.133	23.587	24.040	24.494	24.948	25.401	25.855	26.303	26.762
60	27.216	27.669	28.123	28.576	29.030	29.484	29.937	30.391	30.844	31.298
70	31.752	32.205	32.659	33.112	33.566	34.019	34.473	34.927	35.380	35.834
80	36.287	36.741	37.195	37.648	38.102	38.555	39.009	39.463	39.916	40.370
90	40.823	41.277	41.731	42.184	42.638	43.091	43.545	43.999	44.452	44.906
100	45.359	45.813	46.266	46.720	47.174	47.627	48.081	48.534	48.988	49.442

Figure 1-2 (Sheet 1 of 2)

WEIGHT CONVERSIONS

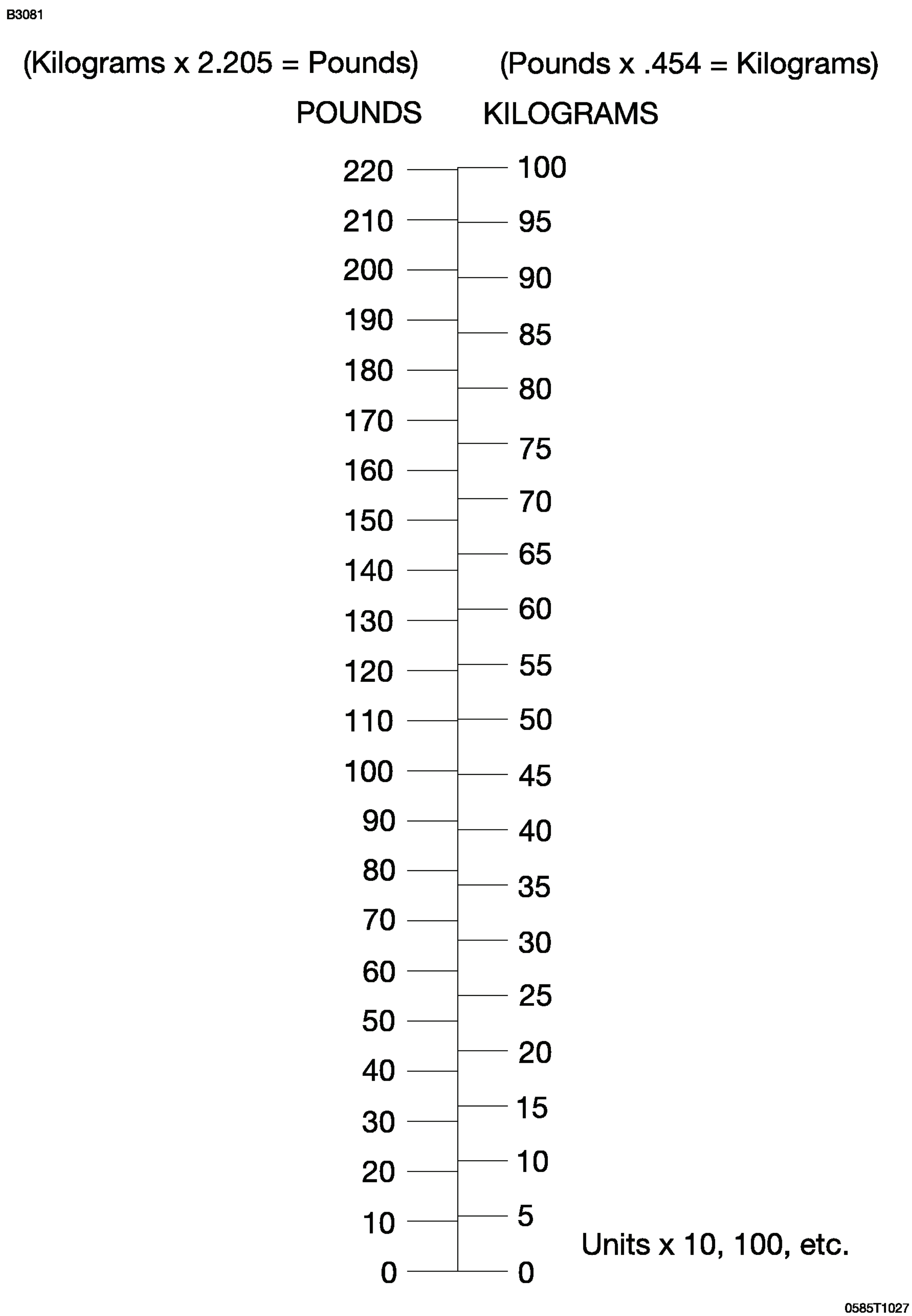


Figure 1-2 (Sheet 2)

LENGTH CONVERSIONS

B5720

(Meters x 3.281 = Feet) (Feet x .305 = Meters)

Meters into Feet
Metres en Pieds

m	0	1	2	3	4	5	6	7	8	9
	feet	feet	feet	feet	feet	feet	feet	feet	feet	feet
0	– – –	3.281	6.562	9.842	13.123	16.404	19.685	22.956	26.247	29.528
10	32.808	36.089	39.370	42.651	45.932	49.212	52.493	55.774	59.055	62.336
20	65.617	68.897	72.178	75.459	78.740	82.021	85.302	88.582	91.863	95.144
30	98.425	101.71	104.99	108.27	111.55	114.83	118.11	121.39	124.67	127.95
40	131.23	134.51	137.79	141.08	144.36	147.64	150.92	154.20	157.48	160.76
50	164.04	167.32	170.60	173.86	177.16	180.45	183.73	187.01	190.29	193.57
60	195.85	200.13	203.41	206.69	209.97	213.25	216.53	219.82	223.10	226.38
70	229.66	232.94	236.22	239.50	242.78	246.06	249.34	252.62	255.90	259.19
80	262.47	265.75	269.03	272.31	275.59	278.87	282.15	285.43	288.71	291.58
90	295.27	298.56	301.84	305.12	308.40	311.68	314.96	318.24	321.52	324.80
100	328.08	331.36	334.64	337.93	341.21	344.49	347.77	351.05	354.33	357.61

Feet into Meters
Pieds en Metres

ft	0	1	2	3	4	5	6	7	8	9
	m	m	m	m	m	m	m	m	m	m
0	– – –	0.305	0.610	0.914	1.219	1.524	1.829	2.134	2.438	2.743
10	3.048	3.353	3.658	3.962	4.267	4.572	4.877	5.182	5.486	5.791
20	6.096	6.401	6.706	7.010	7.315	7.620	7.925	8.230	8.534	8.839
30	9.144	9.449	9.754	10.058	10.363	10.668	10.973	11.278	11.582	11.887
40	12.192	12.497	12.802	13.106	13.411	13.716	14.021	14.326	14.630	14.935
50	15.240	15.545	15.850	16.154	16.459	16.754	17.069	17.374	17.678	17.983
60	18.288	18.593	18.898	19.202	19.507	19.812	20.117	20.422	20.726	21.031
70	21.336	21.641	21.946	22.250	22.555	22.860	23.165	23.470	23.774	24.079
80	24.384	24.689	24.994	25.298	25.603	25.908	26.213	26.518	26.822	27.127
90	27.432	27.737	28.042	28.346	28.651	28.956	29.261	29.566	29.870	30.175
100	30.480	30.785	31.090	31.394	31.699	32.004	32.309	32.614	32.918	33.223

Figure 1-3 (Sheet 1 of 4)

LENGTH CONVERSIONS

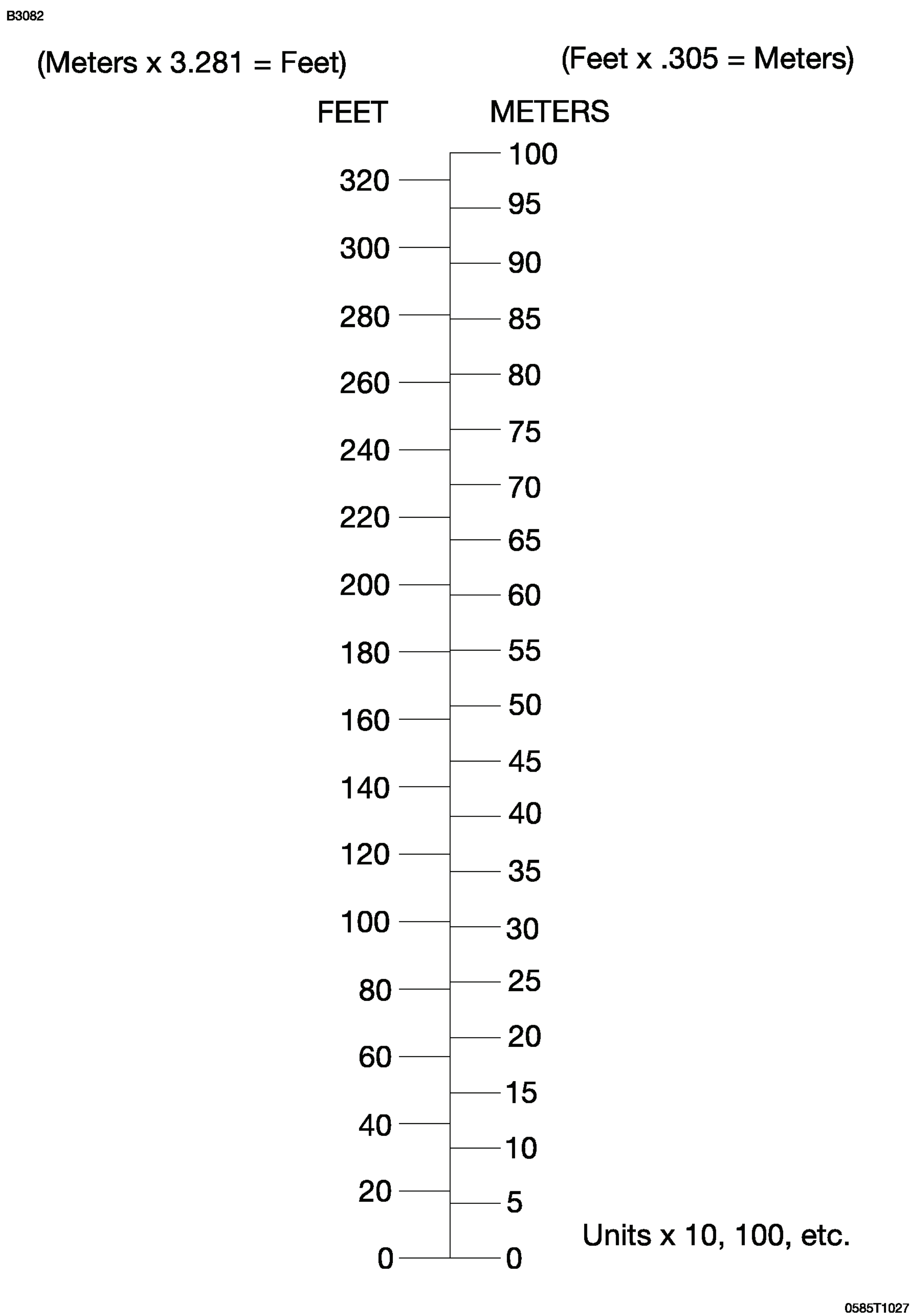


Figure 1-3 (Sheet 2)

LENGTH CONVERSIONS

B5721

(Centimeters x .394 = Inches) (Inches x 2.54 = Centimeters)

Centimeters into Inches
Centimetres en Pouces

cm	0	1	2	3	4	5	6	7	8	9
	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
0	– – –	0.394	0.787	1.181	1.575	1.969	2.362	2.756	3.150	3.543
10	3.937	4.331	4.724	5.118	5.512	5.906	6.299	6.693	7.087	7.480
20	7.874	8.268	8.661	9.055	9.449	9.843	10.236	10.630	11.024	11.417
30	11.811	12.205	12.598	12.992	13.386	13.780	14.173	14.567	14.961	15.354
40	15.748	16.142	16.535	16.929	17.323	17.717	18.110	18.504	18.898	19.291
50	19.685	20.079	20.472	20.866	21.260	21.654	22.047	22.441	22.835	23.228
60	23.622	24.016	24.409	24.803	25.197	25.591	25.984	26.378	26.772	27.164
70	27.559	27.953	28.346	28.740	29.134	29.528	29.921	30.315	30.709	31.102
80	31.496	31.890	32.283	32.677	33.071	33.465	33.858	34.252	34.646	35.039
90	35.433	35.827	36.220	36.614	37.008	37.402	37.795	38.189	38.583	38.976
100	39.370	39.764	40.157	40.551	40.945	41.339	41.732	42.126	42.520	42.913

Inches into Centimeters
Pouces en Centimetres

in.	0	1	2	3	4	5	6	7	8	9
	cm	cm	cm	cm	cm	cm	cm	cm	cm	cm
0	– – –	2.54	5.08	7.62	10.16	12.70	15.24	17.78	20.32	22.96
10	25.40	27.94	30.48	33.02	35.56	38.10	40.64	43.18	45.72	48.26
20	50.80	53.34	55.88	58.42	60.96	63.50	66.04	68.58	71.12	73.66
30	76.20	78.74	81.28	83.82	86.36	88.90	91.44	93.98	96.52	99.06
40	101.60	104.14	106.68	109.22	111.76	114.30	116.84	119.38	121.92	124.46
50	127.00	129.54	132.08	134.62	137.16	139.70	142.24	144.78	147.32	149.86
60	152.40	154.94	157.48	160.02	162.56	165.10	167.64	170.18	172.72	175.26
70	177.80	180.34	182.88	185.42	187.96	190.50	193.04	195.58	198.12	200.66
80	203.20	205.74	208.28	210.82	213.36	215.90	218.44	220.98	223.52	226.06
90	228.60	231.14	233.68	236.22	238.76	241.30	243.84	246.38	248.92	251.46
100	254.00	256.54	259.08	261.62	264.16	266.70	269.24	271.78	274.32	276.86

Figure 1-3 (Sheet 3)

LENGTH CONVERSIONS

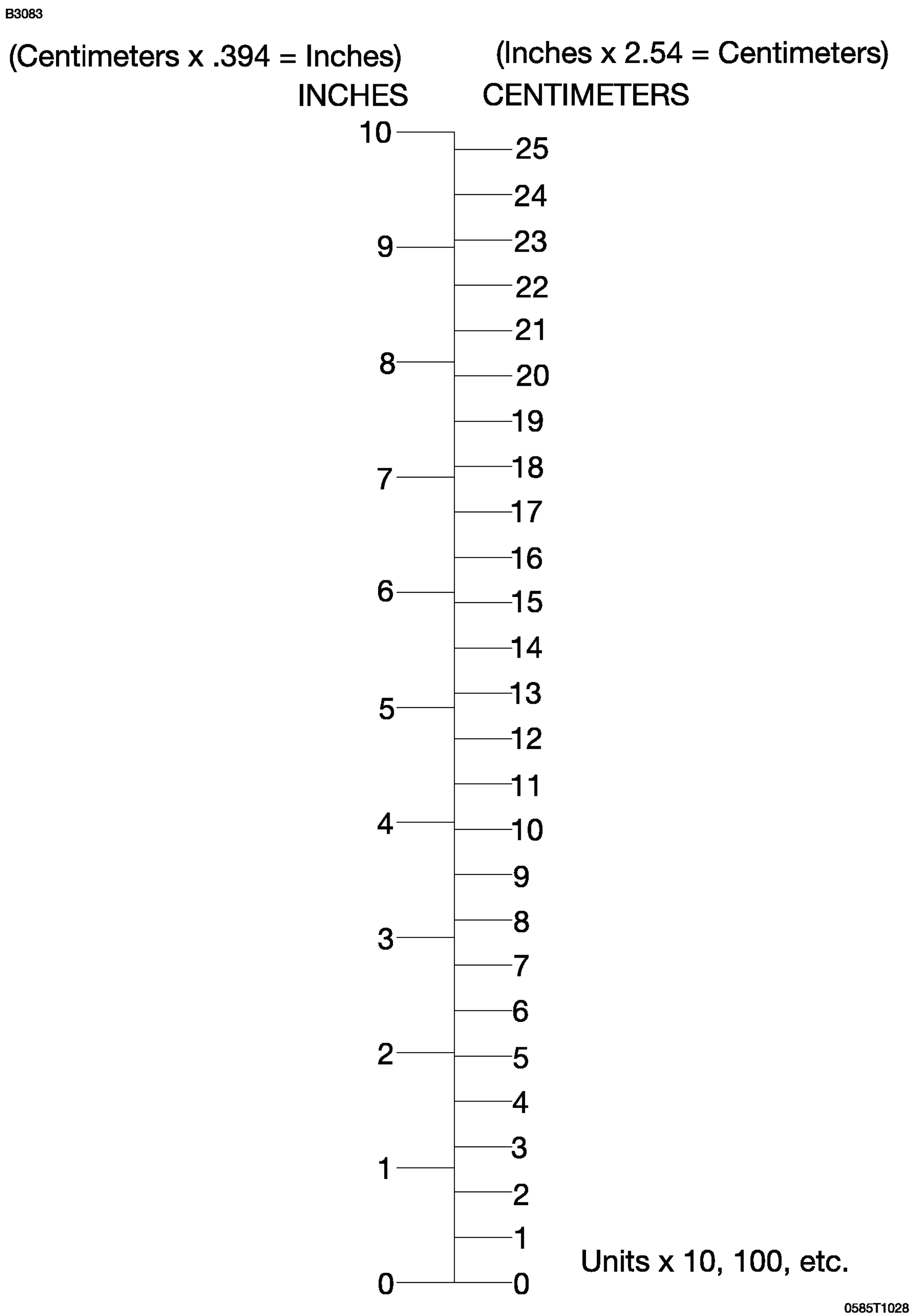


Figure 1-3 (Sheet 4)

DISTANCE CONVERSIONS

B3084

(Statute Miles x 1.609 = Kilometers)
(Statute Miles x .869 = Nautical Miles)
(Nautical Miles x 1.852 = Kilometers)
(Kilometers x .622 = Statute Miles)
(Nautical Miles x 1.15 = Statute Miles)
(Kilometers x .54 = Nautical Miles)

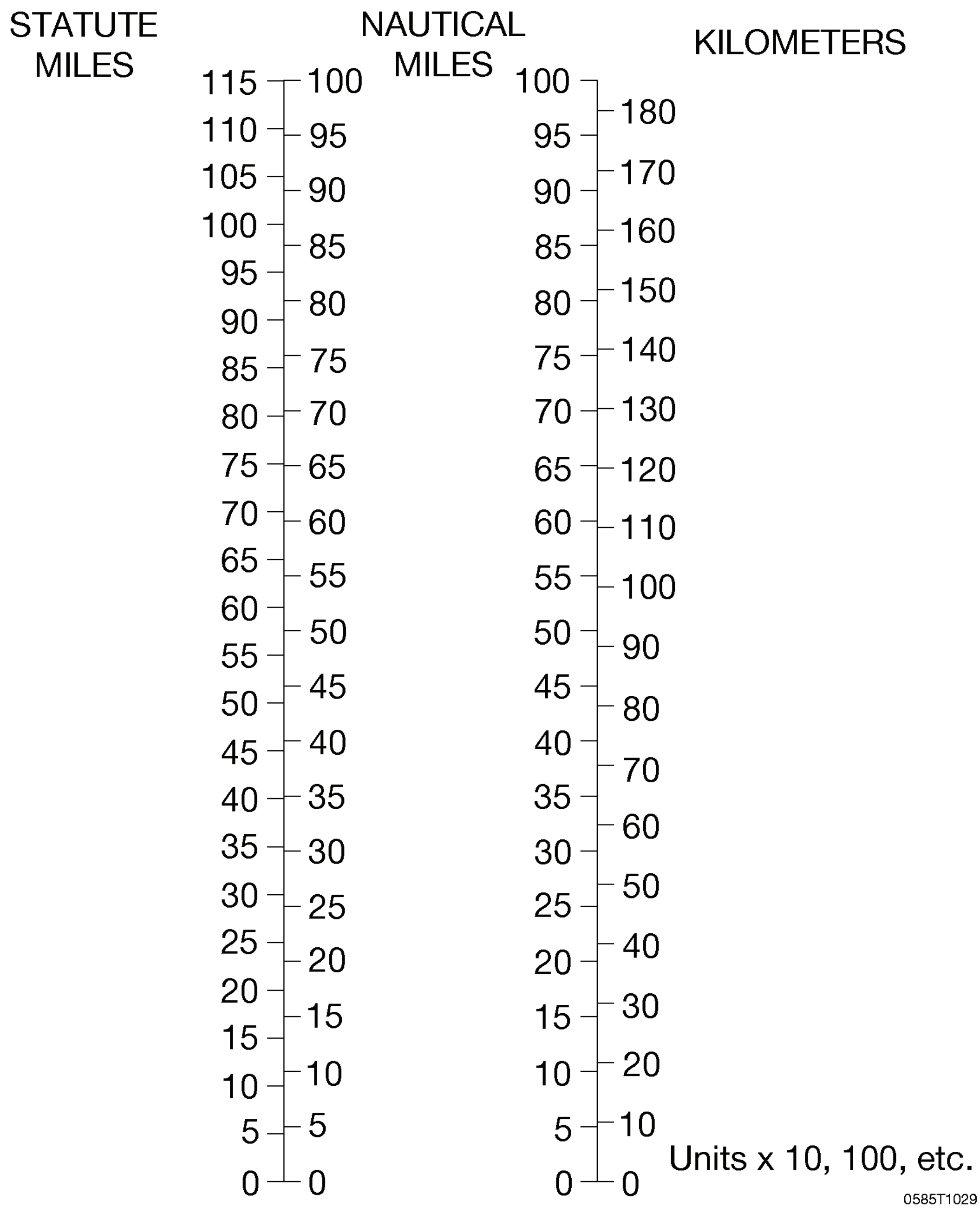


Figure 1-4

VOLUME CONVERSIONS

B5722

(Imperial Gallons x 4.546 = Liters) (Liters x .22 = Imperial Gallons)

Liters into Imperial Gallons
Litres en Gallons Imperial

Lt	0	1	2	3	4	5	6	7	8	9
	IG	IG	IG	IG	IG	IG	IG	IG	IG	IG
0	– – –	0.220	0.440	0.660	0.880	1.100	1.320	1.540	1.760	1.980
10	2.200	2.420	2.640	2.860	3.080	3.300	3.520	3.740	3.960	4.180
20	4.400	4.620	4.840	5.059	5.279	5.499	5.719	5.939	6.159	6.379
30	6.599	6.819	7.039	7.259	7.479	7.699	7.919	8.139	8.359	8.579
40	8.799	9.019	9.239	9.459	9.679	9.899	10.119	10.339	10.559	10.779
50	10.999	11.219	11.439	11.659	11.879	12.099	12.319	12.539	12.759	12.979
60	13.199	13.419	13.639	13.859	14.078	14.298	14.518	14.738	14.958	15.178
70	15.398	15.618	15.838	16.058	16.278	16.498	16.718	16.938	17.158	17.378
80	17.598	17.818	18.038	18.258	18.478	18.698	18.918	19.138	19.358	19.578
90	19.798	20.018	20.238	20.458	20.678	20.898	21.118	21.338	21.558	21.778
100	21.998	22.218	22.438	22.658	22.878	23.098	23.318	23.537	23.757	23.977

Imperial Gallons into Liters
Gallons Imperial en Litres

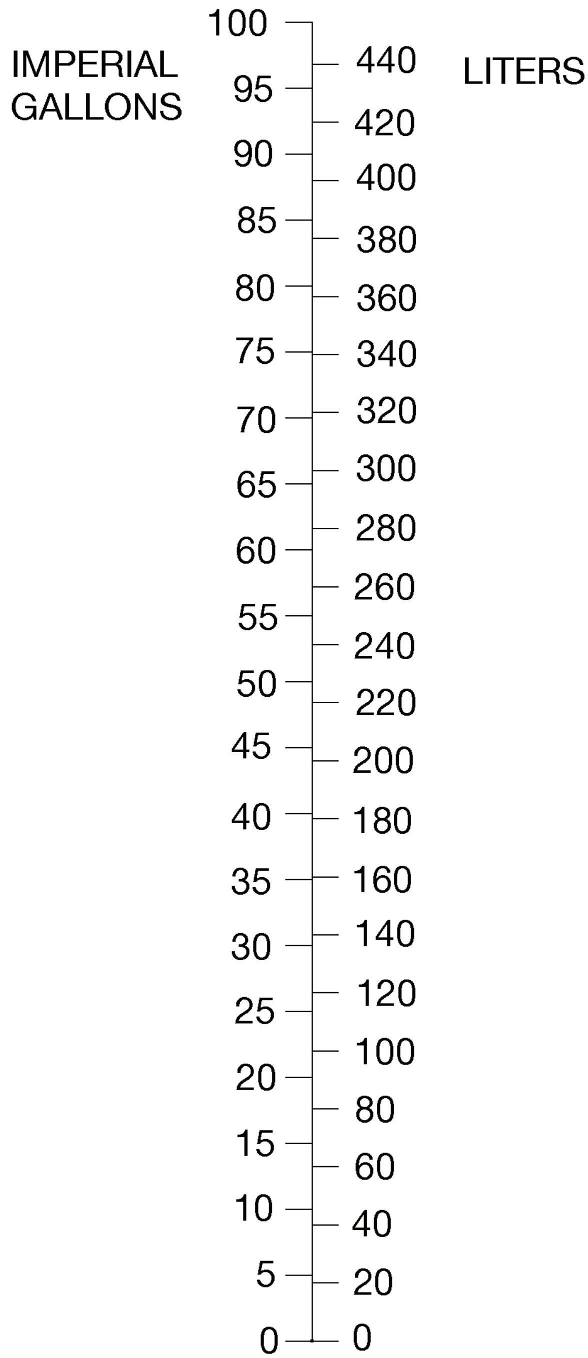
IG	0	1	2	3	4	5	6	7	8	9
	Lt	Lt	Lt	Lt	Lt	Lt	Lt	Lt	Lt	Lt
0	– – –	4.546	9.092	13.638	18.184	22.730	27.276	31.822	36.368	40.914
10	45.460	50.006	54.552	59.097	63.643	68.189	72.735	77.281	81.827	86.373
20	90.919	95.465	100.01	104.56	109.10	113.65	118.20	122.74	127.29	131.83
30	136.38	140.93	145.47	150.02	154.56	159.11	163.66	168.20	172.75	177.29
40	181.84	186.38	190.93	195.48	200.02	204.57	209.11	213.66	218.21	222.75
50	227.30	231.84	236.39	240.94	245.48	250.03	254.57	259.12	263.67	268.21
60	272.76	277.30	281.85	286.40	290.94	295.49	300.03	304.58	309.13	313.67
70	318.22	322.76	327.31	331.86	336.40	340.95	345.49	350.04	354.59	359.13
80	363.68	368.22	372.77	377.32	381.86	386.41	390.95	395.50	400.04	404.59
90	409.14	413.68	418.23	422.77	427.32	431.87	436.41	440.96	445.50	450.05
100	454.60	459.14	463.69	468.23	472.78	477.33	481.87	486.42	490.96	495.51

Figure 1-5 (Sheet 1 of 3)

VOLUME CONVERSIONS

B3085

(Imperial Gallons X 4.546 = Liters)
(Liters X .22 = Imperial Gallons)



Units x 10, 100, etc.

0585T1032

Figure 1-5 (Sheet 2)

VOLUME CONVERSIONS

B3086

(Imperial Gallons x 1.2 = U.S. Gallons)
(U.S. Gallons x .833 = Imperial Gallons)
(U.S. Gallons x 3.785 = Liters)
(Liters x .264 = U.S. Gallons)

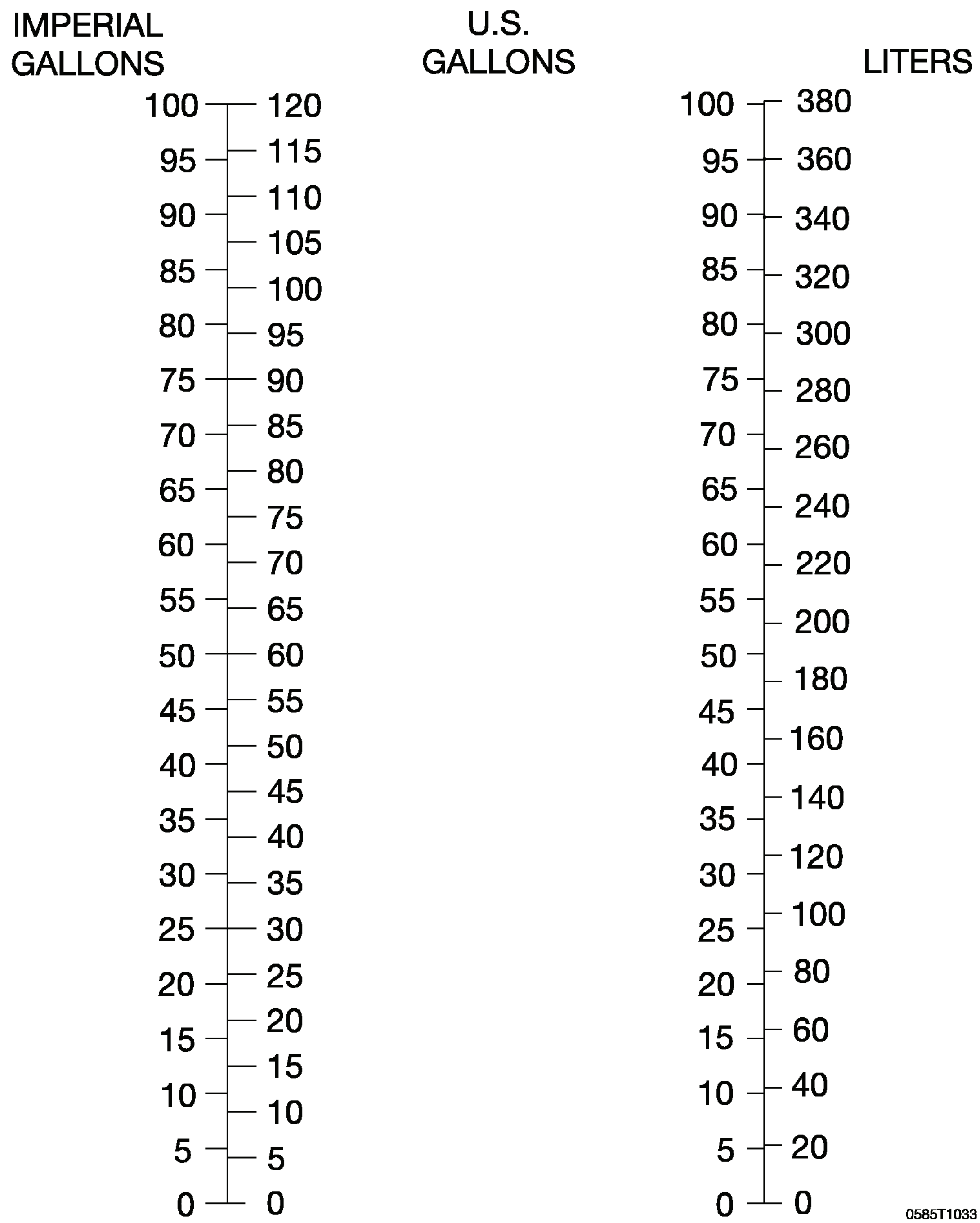
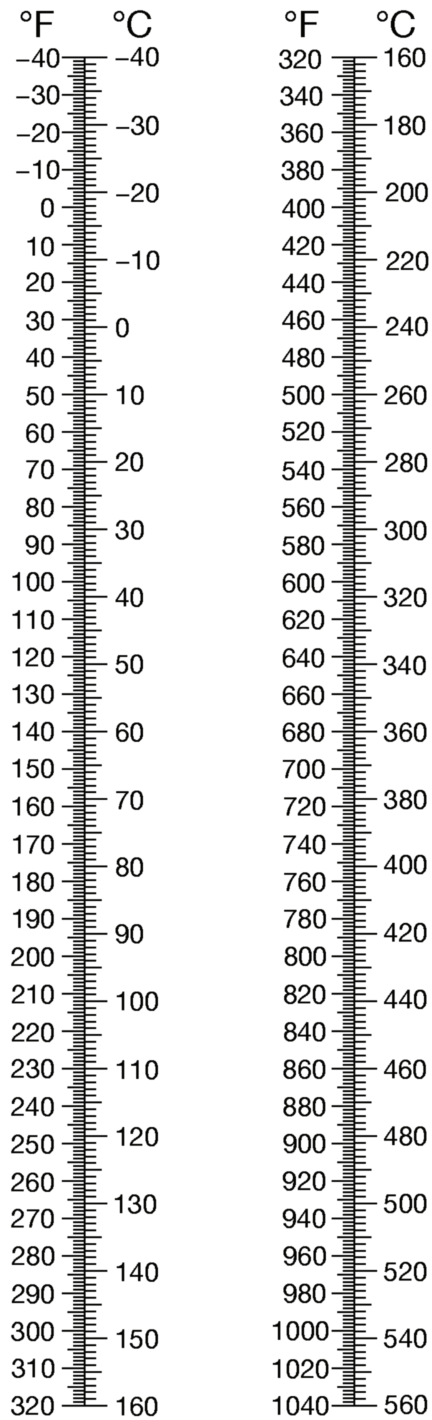


Figure 1-5 (Sheet 3)

TEMPERATURE CONVERSIONS

B3087

(°F − 32) x 5/9 = °C   °C x 9/5 + 32 = °F



0585T1034

Figure 1-6

PRESSURE CONVERSION

HECTOPASCALS TO INCHES OF MERCURY

B3995

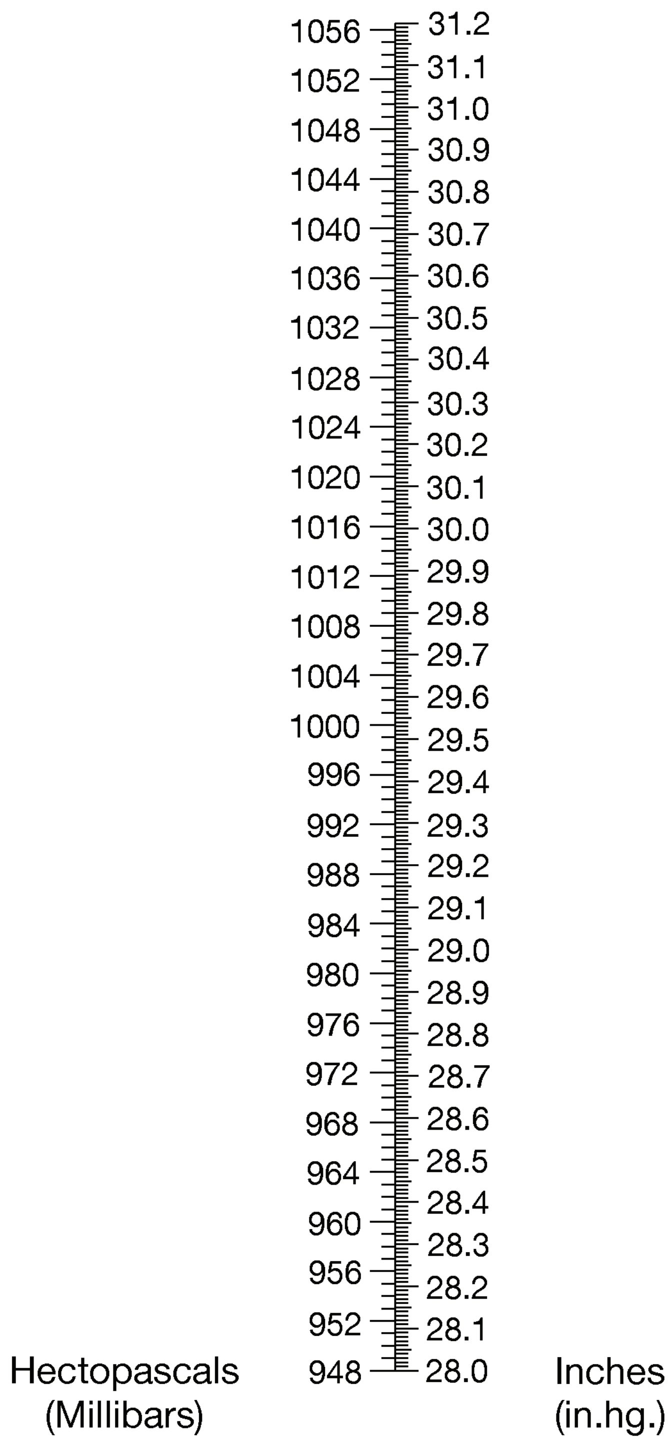


Figure 1-7

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OPERATING LIMITATIONS

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(Continued Next Page)

TABLE OF CONTENTS (Continued)

Page

INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for the safe operation of the airplane, its engine, standard/non-standard systems and standard/non-standard equipment.

WARNING

The limitations included in this section and in Section 9 have been approved by the Federal Aviation Administration. Observance of these operating limitations is required by Federal Aviation Regulations.

NOTE

- Operation in countries other than the United States may require observance of other limitations, procedures or performance data.
- Refer to Section 9, Supplements, of this POH/AFM for amended operating limitations, operating procedures, performance data and other necessary information for airplanes equipped with specific options.
- The airspeeds listed in Figure 2-1, Airspeed Limitations, and Figure 2-2, Airspeed Indicator Markings, are based on Airspeed Calibration data shown in Section 5 with the normal static source. If the alternate static source is being used, ample margins should be observed to allow for the airspeed calibration variations between the normal and alternate static sources as shown in Section 5.

The Cessna Model No. 208B is certificated under FAA Type Certificate No. A37CE.

AIRSPEED LIMITATIONS

The airspeed limitations below are based on the maximum gross takeoff weight of 8807 pounds (3994 kg). The maximum operating maneuvering speeds (V_A) and applicable gross weight limitations are shown in Figure 2-1.

AIRSPEED LIMITATIONS

	SPEED	KCAS	KIAS	REMARKS
V_{MO}	Maximum Operating Speed	175	175	Do not exceed this speed in any operation.
V_A	Maneuvering Speed: 8807 Pounds 7500 Pounds 6250 Pounds 5000 Pounds	 148 137 125 112	 148 137 125 112	Do not make full or abrupt control movements above this speed.
V_{FE}	Maximum Flap Extended Speed: UP - TO/APR TO/APR - LAND	 150 125	 150 125	Do not exceed these speeds with the given flap settings.
	Maximum Open Window Speed	175	175	Do not exceed this speed with window open.

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Figure 2-1

AIRSPEED INDICATOR MARKINGS

The airspeed on both the PFD and standby airspeed indicator is indicated with an airspeed tape with colored bands, refer to Section 7, Flight Instruments, for more information on airspeed indication. The indicator markings and their color code significance are shown in Figure 2-2.

AIRSPEED INDICATOR MARKINGS

MARKING	KIAS VALUE OR RANGE	SIGNIFICANCE
Red Band*	20 - 50	Low Airspeed Warning
White Band	50 - 125	Full Flap Operating Range. Lower limit is maximum weight V_{S0} in landing configuration. Upper limit is maximum speed permissible with flaps fully extended.
Green Band	63 - 175	Normal Operating Range. Lower limit is maximum weight V_S at most forward C.G. with flaps retracted. Upper limit is maximum operating speed.
Red Line	175	Maximum speed for all operations.

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* G1000 airspeed indicator only.

Figure 2-2

POWERPLANT LIMITATIONS

ENGINE

Engine Manufacturer . . . . Pratt & Whitney Canada Inc.

Engine Model Number PT6A-140

Engine Operating Limits . . . . Refer to Figure 2-3

Fuel Grade and Approved Fuel Additives . . Refer to Fuel Limitations

OIL SPECIFICATION

Oil conforming to Pratt & Whitney Engine Service Bulletin No. 1001, and all revisions or supplements thereto, must be used. Refer to Section 8, Airplane Handling, Service and Maintenance, Servicing, Oil, for a listing of approved oils.

When adding oil, service the engine with the type and viscosity which is currently being used in the engine.

PROPELLER

Propeller Manufacturer . . . . Hartzell Propeller Inc.
Propeller Model Number HC-B3TN-3AF/T10890CNB-2
Propeller Diameter
Maximum. . . . . 106 Inches (2.7 m)
Minimum . . . . 104 Inches (2.6 m)

Hartzell Propeller Blade Angle at 42-inch Station:

Feathered . . . . 78.0 ± 1.0°
Low Pitch. . . . . 8.5 ± 0.2°
Maximum Reverse . . . . -21 ± 0.5°

(Continued Next Page)

POWERPLANT LIMITATIONS (Continued)

PROPELLER SYSTEM OPERATING LIMITS

An overspeed governor check shall be performed before the first flight of the day, after engine control system maintenance, or if adjustment has been made.

Propeller RPM must be set at 1900 during all instrument approaches.

ENGINE CONTROL OPERATING LIMITS

Flight operation with the POWER Lever set below the IDLE position is prohibited. Such positioning may lead to loss of airplane control or may result in an engine overspeed condition and consequent loss of engine power.

Operation of the EMERGENCY POWER Lever is prohibited with the POWER Lever out of the IDLE position.

ENGINE STARTING CYCLE LIMITS

Using the airplane battery, the starting cycle shall be limited to the following intervals and sequence:

30 seconds ON - 60 seconds OFF,

30 seconds ON - 60 seconds OFF,

30 seconds ON - 30 minutes OFF.

Repeat the above cycle as required.

Using external power, the starting cycle shall be limited to the following intervals and sequence:

20 seconds ON - 120 seconds OFF,

20 seconds ON - 120 seconds OFF,

20 seconds ON - 60 minutes OFF.

Repeat the above cycle as required.

(Continued Next Page)

POWERPLANT LIMITATIONS (Continued)

ENGINE OPERATING LIMITS

POWER SETTING	TRQ FT-LB	MAXIMUM ITT °C	GAS GEN N_g %RPM (2)	PROP RPM	OIL PSI (3)	OIL °C (6)	SHP
Takeoff	(1)	850 (1)	103.7	1900 (11)	85 to 105	32 to 99	867
Maximum Climb	(7)	825	103.7	1900 (11)	85 to 105	32 to 99	867
Maximum Cruise	(8)	805	103.7	1900 (11)	85 to 105	32 to 99	867
Idle	---	700 (9)	55 Min.	---	40 Min.	-40 to 99	---
Maximum Reverse (1 Min. Max.)	2500	850	103.7	1825	85 to 105	32 to 99	867
Transient	2600 (20 Sec. Max.)	905 (20 Sec. Max.)	105.4 (20 Sec. Max.)	2090 (4)	---	32 to 99	---
Starting	---	1090 (2 Sec. Max.)	---	---	200 Max.	-40 Min.	---
Maximum Rated (5)	2397	825	103.7	1900 (11)	85 to 105	32 to 99	867

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Figure 2-3 (Sheet 1 of 2)

POWER PLANT LIMITATIONS (Continued)

ENGINE OPERATING LIMITS (Continued)

NOTE

1. Per Section 5, Performance, Figure 5-8, Maximum Engine Torque for Takeoff. Anytime ITT exceeds 825°C, this power setting is limited to 5 minutes.
2. For every 10°C (18°F) below -30°C (-22°F) ambient temperature, reduce maximum allowable Ng by 2.2%.
3. Normal oil pressure is 85 to 105 PSI at Ng speeds above 72% with oil temperature between 60° and 70°C (140° and 158°F). Oil pressures below 80 PSI are undesirable and should be tolerated only for the completion of the flight, preferably at a reduced power setting. Oil pressures below normal should be reported as an engine discrepancy and should be corrected prior to next flight. Oil pressures below 40 PSI are unsafe and require that either the engine be shut down or a landing be made as soon as possible using the minimum power required to maintain flight.
4. 2090 PROP RPM may be used in an emergency condition, to complete a flight, and may be utilized at all engine ratings.
5. Use of Maximum Rated Power Setting is intended for abnormal situations (e.g., maintain altitude or climb out of severe icing or windshear conditions).
6. Maximum transient oil temperature is 104°C for a maximum of 10 minutes.
7. Per Section 5, Performance, Figures 5-8, Maximum Engine Torque for Climb.
8. Per Section 5, Performance, Figure 5-9, Maximum Cruise Torque.
9. Increase Ng to keep idle ITT within limit.
10. Torque must not exceed 2397 foot-pounds. Full 867 SHP rating is available only at propeller RPM settings of 1900.
11. A transient fluctuation of up to +40 PROP RPM is permitted to account for power setting accuracy and steady state fluctuations. Note: Steady state Max N_p setting is 1900 RPM.

Figure 2-3 (Sheet 2)

POWERPLANT INSTRUMENT MARKINGS

Powerplant instrument markings and their color code significance are shown in Figure 2-3. Operation with indications in the red range is prohibited. Avoid operating with indicators in the yellow range.

INSTRUMENT	RED BAND (WARNING)	YELLOW	GREEN	WHITE	YELLOW	RED BAND (WARNING)
	MINIMUM LIMIT	LOWER CAUTION RANGE	NORMAL OPERATING RANGE		UPPER CAUTION RANGE	MAXIMUM LIMIT
Torque Indicator (TRQ FT-LB) (1)(2)(4)	---	---	0 to 2396 FT-LB	---	---	2397 FT-LB
Interstage Turbine Temperature Indicator (ITT°C) (5)	---	---	(Run Mode) 100 to 825°C (Start Mode) 100 to 870°C	(Run Mode) 0 to 950°C (Start Mode) 0 to 1100°C	(Run Mode) 826 to 849°C	(Run Mode) ≥850°C (Start Mode) 871°C; Red Triangle at 1090°C
Gas Generator Indicator (N_g % RPM) (3)	---	---	55% to 103.6%	0 to 110%	---	≥103.7%
Propeller RPM Indicator (PROP RPM)	---	---	1600 to 1900 RPM	0 to 1599 RPM	---	≥1910 RPM
Fuel Flow Indicator (FFLOW PPH)	---	---	---	0 to 675 PPH	---	---
Oil Pressure Indicator (OIL PSI)	<40 PSI	40 to <85 PSI	85 to 105 PSI	0 to 130 PSI	---	>105 PSI
Oil Temperature Indicator (OIL °C)	<-40°C	-40 to +31°C	32 to 99°C	-50 TO 120°C	100 to 104°C	>104°C

NOTE

1. Incorporates dynamic redline that moves to display maximum allowable torque as a function of OAT and pressure altitude. Takeoff torque is displayed up to 16,000 feet MSL, while climb torque is displayed at 16,000 feet MSL and above.
2. Incorporates blue torque bug that moves to compensate for OAT, pressure altitude and propeller RPM variation.
3. Incorporates red line that moves to compensate for OAT. 100% Ng is 37,468 RPM.
4. Start mode values also valid for OFF mode (red triangle at 1090°C not shown in OFF mode).
5. Start mode is defined as the period between starter engagement and the point where idle Ng RPM reaches 55%.
6. Run mode is defined as anytime idle Ng RPM is above 55%.

Figure 2-4

MISCELLANEOUS INSTRUMENT MARKINGS

Power plant instrument markings and their color significance are shown in Figure 2-5.

INSTRUMENT	RED LINE	YELLOW BAND	GREEN BAND	YELLOW BAND	RED LINE
	MINIMUM LIMIT	LOWER CAUTION RANGE	NORMAL OPERATING	UPPER CAUTION RANGE	MAXIMUM LIMIT
Oxygen Pressure Gage PSI		0 to 300	1550 to 1850		2000
Generator Current GEN AMPS		-10 Amber/ Black Text		>200 Amber/ Black Text	
Standby Alternator Current ALT AMPS		-10 Amber/ Black Text		>75 Amber/ Black Text	
Battery Current BAT AMPS		≤-5 Amber/ Black Text			
Electrical Bus Voltage BUS VOLTS	(OFF Mode) <24.0 ≤24.5 Red Box/ White Text				≥32.1 Red Box/ White Text

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NOTE

1. OFF mode is defined as anytime the engine is not running and the starter has not transitioned to generator mode.

Figure 2-5

PREFLIGHT

Takeoff is prohibited with any frost, ice, snow, or slush adhering to the wings, horizontal stabilizer, vertical stabilizer, control surfaces, propeller blades, and/or engine air inlets.

WARNING

Even small amounts of frost, ice, snow or slush on the wing may adversely change lift and drag. Failure to remove these contaminants will degrade airplane performance and will prevent a safe takeoff and climb.

VISUAL AND TACTILE CHECK

To assure the absence of frost, a tactile check of the wing leading edge and upper surface, as specified in Section 4, Normal Procedures, is required in addition to a visual inspection if the OAT is below 10°C (50°F). During ground icing conditions, takeoff must be accomplished within 5 minutes of completing the tactile check unless the airplane is operated per 14 CFR 135.227(b)(3).

Ground icing conditions are defined as:

1. The OAT is 2°C (36°F) or below and visible moisture is present (i.e. rain, drizzle, sleet, snow, fog, water is present on the wing, etc.), or,
2. The OAT is 5°C (41°F) or below and conditions are conducive to active frost formation (e.g. clear night with a dew point temperature/OAT difference of 3°C (5°F) or less).

Takeoff is prohibited if frost, ice or snow may reasonably be expected to adhere to the airplane between the tactile check and takeoff (e.g. snow near freezing temperature with no deicing/anti-ice fluid application).

WEIGHT LIMITS

Maximum Ramp Weight . . . . .8842 Pounds (4010 kg)
Maximum Takeoff Weight . . . . .8807 Pounds (3994 kg)
Maximum Landing Weight. . . . . .8500 Pounds (3855 kg)

NOTE

Refer to Section 6, Weight and Balance, Figure 6-11, Cabin Internal Loading Arrangements, for recommended loading arrangements.

CENTER OF GRAVITY LIMITS

CENTER OF GRAVITY RANGE

FORWARD WITH OR WITHOUT CARGO POD

185.00 inches (4699 mm) (11.19% MAC) aft of datum at 6500 pounds (2948 kg) or less, with straight line variation to 193.37 inches (4912 mm) (23.80% MAC) aft of datum at 8000 pounds (3628 kg) and straight line variation to 199.15 inches (5059 mm) (32.50% MAC) aft of datum at 8807 pounds (3994 kg).

AFT WITH OR WITHOUT CARGO POD

204.35 inches (5190 mm) (40.33% MAC) aft of datum at all weights up to 8807 pounds (3994 kg).

REFERENCE DATUM

100 inches (2540 mm) forward of front face of firewall.

MEAN AERODYNAMIC CHORD (MAC)

The leading edge of the MAC is 177.57 inches (4510 mm) aft of the datum. The MAC length is 66.40 inches (1686 mm).

MANEUVER LIMITS

This airplane is certificated in the normal category. The normal category is applicable to aircraft intended for non-aerobatic operations. These include any maneuvers incidental to normal flying, stalls (except whip stalls), lazy eights, chandelles, and turns in which the angle of bank is not more than 60°.

Aerobatic maneuvers, including spins, are not approved.

FLIGHT LOAD FACTOR LIMITS

Maximum Takeoff Weight . . . . 8807 Pounds (3394 kg)
*Flaps UP. . . . . +3.8g, -1.52g
*Flaps LAND (All Settings). . . . . +2.4g

*The design load factors are 150% of the above, and in all cases, the structure meets or exceeds design loads.

FLIGHT CREW LIMITS

One pilot required in left seat.

KINDS OF OPERATIONS LIMITS

The Cessna 208B (867 SHP) equipped with the Garmin G1000 is approved for day and night, VFR and IFR operations. The airplane may be approved for flight into known icing conditions when appropriate equipment is installed. The operating limitation placard reflects the limits applicable at the time of Airworthiness Certificate issuance.

The minimum equipment for approved operations required under the Operating Rules are defined by 14 CFR 91 and 14 CFR 135, as applicable.

The following Kinds of Operations Equipment List (KOEL) identifies the systems and equipment upon which type certification for each kind of operation was predicated.

These systems and equipment items must be installed and operable unless:

1. The airplane is approved to be operated in accordance with a current Minimum Equipment List (MEL) issued by the FAA.

Or;

2. An alternate procedure is provided in the basic FAA Approved Airplane Flight Manual for the inoperative state of the listed equipment and all limitations are complied with.

NOTE

The following systems and equipment list does not included all equipment required by the 14 CFR Parts 91 and 135 Operating Requirements. It also does not include components obviously required for the airplane to be airworthy such as wings, primary flight controls, empennage, engine, etc.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION: VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	COMMENTS
PLACARDS AND MARKINGS						
208B 867 SHP - Garmin G1000 POH/AFM	1	1	1	1	N/A	Accessible to pilot in flight.
Garmin G1000 Cockpit Reference Guide	1	1	1	1	N/A	Accessible to pilot in flight.
AIR CONDITIONING						
1. Deck Skin Fans (2)	0	0	0	0	N/A	
2. PFD Fans (2)	0	0	0	0	N/A	
3. MFD Fan (1)	0	0	0	0	N/A	
4. Cockpit Temperature Control System (1)	0	0	0	0	N/A	
5. Cabin Temperature Control System (1)	0	0	0	0	N/A	
6. Ventilation Fans (2)	0	0	0	0	N/A	
7. Air Conditioning System (1)	0	0	0	0	N/A	
8. Cabin Heat Firewall Shutoff System (1)	1	1	1	1	N/A	
COMMUNICATIONS						
1. Communication Systems (VHF) (2)	0*	0*	1*	1*	N/A	* Or as required by operating regulation.
2. Audio Control Panel (Pilot and Copilot) (2)	1	1	1	1	N/A	
3. Static Wicks (23)	10*	10*	10*	10*	N/A	* Refer to Note 1.
4. Hand Microphone (1)	0*	0*	1*	1*	N/A	* Refer to Note 2.

NOTE

1. Outer most wick must be operative.
2. May be inoperative provided headset microphone is operative and used.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION: VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	COMMENTS
ELECTRICAL POWER						
1. DC Generator (1)	1	1	1	1	N/A	
2. DC Generator VOLTS Display (1)	1	1	1	1	N/A	Refer to Note 3.
3. DC Generator AMPS Display (1)	1	1	1	1	N/A	Refer to Note 3.
4. Main Battery (1)	1	1	1	1	N/A	
5. Battery AMPS Display (1)	1	1	1	1	N/A	Refer to Note 3.
6. Battery Temperature Monitoring System (1)	1*	1*	1*	1*	N/A	* Required only with NiCad battery option.
7. Standby Electrical System (1)	0	0	0	0	N/A	
EQUIPMENT AND FURNISHINGS						
1. Passenger Seat Belts	*	*	*	*	N/A	* One per occupied seat.
2. Crewmember Seat Belts (2)	1*	1*	1*	1*	N/A	* Refer to Note 4.
3. Aircraft Emergency Locator Transmitter (ELT) (1)	0	0	0	0	N/A	

NOTE

3. Displayed on MFD as part of the Engine Indication System (EIS).
4. Left side required. Right side may be inoperative if seat is not occupied.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION					COMMENTS
	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	
FIRE PROTECTION						
1. Engine Fire Detection System (1)	1	1	1	1	N/A	
2. Portable Fire Extinguisher (2)	2*	2*	2*	2*	N/A	* Number dependent on type of operations.
FLIGHT CONTROLS						
1. Flap System (1)	0	0	0	0	N/A	
2. Flap Position Indicator (1)	0	0	0	0	N/A	
3. Trim Systems - Elevator, Aileron, Rudder (3)	3	3	3	3	N/A	
4. Trim Position Indicator - Elevator, Aileron, Rudder (3)	0	0	0	0	N/A	May be inoperative provided trims are visually verified in the neutral position prior to takeoff.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION					COMMENTS
	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	
ICE AND RAIN PROTECTION						
1. Heated Lift Detector (Stall Warning) Vane (1)	0	0	1	1	N/A	
2. Alternate Static Source (1)	0	0	1	1	N/A	
3. Pitot/ Static Tube Heat System (Left Side) (1)	0	0	1	1	N/A	
4. Wing Ice Inspection Light (1)	0	0	0	0	N/A	
5. Engine Inertial Separator (1)	0*	0*	0*	0*	N/A	* May be inoperative provided separator doors are secured in the BYPASS position.
6. Heater and Defroster (1)	0	0	0	0	N/A	
7. Cargo Pod (1)	0	0	0	0	N/A	

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION: VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	COMMENTS
INDICATING/ RECORDING SYSTEMS						
1. Stall Warning System (1)	1	1	1	1	N/A	
2. Aural Warning Systems	*	*	*	*	N/A	* All audio warnings must be operational
3. Crew Alerting System Messages	*	*	*	*	N/A	* All CAS messages must be operational
LANDING GEAR						
1. Parking Brake (1)	0	0	0	0	N/A	
LIGHTS						
1. Anti-Collision Light System (Wing Strobes) (2)	0	2	0	2	N/A	
2. Flashing Beacon Light (1)	1	1	1	1	N/A	
3. Position Lights System (1)	0	1	0	1	N/A	
4. Taxi/ Recognition Lights (2)	0	0	0	0	N/A	
5. Landing Lights (2)	0	1*	0	1*	N/A	* May be inoperative provided one taxi light is operative
6. Fasten Seat Belt Sign (1)	1*	1*	1*	1*	N/A	* May be inoperative only if no passengers carried in cabin.
7. Cabin Lights (2)	0	2*	0	2*	N/A	* One light each by cabin door and emergency exit.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION					COMMENTS
	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	
LIGHTS (Continued)						
8. Cockpit and Instrument Lighting System (1)	0	1	0	1	N/A	
9. Wing Ice Detection Light (1)	0	0	0	0	N/A	
NAVIGATION						
1. Primary Flight Display (PFD) (2)	1*	1*	1*	1*	N/A	Refer to Note 5.
2. Multi-Function Display (MFD) (1)	0*	0*	0*	0*	N/A	Refer to Note 6.
3. Air Data Computers (ADC) (2)	1	1	1	1	N/A	
4. Attitude/ Heading Reference System (AHRS) (2)	1	1	1	1	N/A	
5. Standby Airspeed Indicator (1)	0	0	1	1	N/A	

NOTE

5. PFD backlighting is required for day VFR flight if MFD backlighting has failed. Display backup mode must be active so engine indicators are shown.
6. MFD backlighting is required for day VFR flight if PFD backlighting has failed. Display backup mode must be active so flight instruments are shown.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION: VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	COMMENTS
NAVIGATION (Continued)						
6. Standby Attitude Indicator (1)	0	0	1	1	N/A	
7. Standby Altimeter (1)	0	0	1	1	N/A	
8. Magnetic Compass (1)	1	1	1	1	N/A	
9. OAT Indication	1	1	1	1	N/A	
10. ATC Transponder (2)	0*	0*	1*	1*	N/A	* Refer to Note 7.
11. VHF Nav Receivers (2)	0*	0*	1*	1*	N/A	* Refer to Note 7.
12. GPS Receivers (2)	1*	1*	1*	1*	N/A	* Refer to Note 7.
13. Automatic Direction Finder (ADF) (1) (Opt)	0*	0*	0*	0*	N/A	* Refer to Note 7.
14. Distance Measuring Equipment (DME) (1) (Opt)	0*	0*	0*	0*	N/A	* Refer to Note 7.
15. Marker Beacon Receivers (2)	0*	0*	0*	0*	N/A	* Refer to Note 7.
16. TAWS (1) (Opt)	0*	0*	0*	0*	N/A	* Refer to Note 7.
17. Weather Radar (1) (Opt)	0	0	0	0	N/A	
18. XM Datalink Weather (1) (Opt)	0	0	0	0	N/A	
19. TAS (1) (Opt)	0	0	0	0	N/A	

NOTE

7. Or as required by operating regulation.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION					COMMENTS
	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	
OXYGEN						
1. Oxygen System Including Pressure Gage (1)	0*	0*	0*	0*	N/A	* As required by regulation.
2. Passenger Oxygen System	*	*	*	*	N/A	* Refer to Note 8.
3. Crew Oxygen Masks (2)	0*	0*	0*	0*	N/A	* As required by regulation.
VACUUM						
1. Engine-Driven Vacuum Pump (1)	0	0	1	1	N/A	
ENGINE FUEL AND CONTROL						
1. Fuel Boost Pump (1)	1	1	1	1	N/A	
2. Fuel Quantity Indications (2)	2	2	2	2	N/A	Refer to Note 9.
3. Fuel Flow Indication (1)	1*	1*	1*	1*	N/A	Refer to Note 9. * Refer to Note 10.
4. Fuel/ Oil Firewall Shutoff System (1)	1	1	1	1	N/A	
5. Engine-Driven Fuel Pump (1)	1	1	1	1	N/A	

NOTE

8. If any passenger seat is occupied, the number of installed masks must equal the number of passenger seats plus one. If required by regulation.
9. Displayed on MFD as part of the Engine Indication System (EIS).
10. May be inoperative provided both fuel quantity indicators are functional.

(Continued Next Page)

KINDS OF OPERATIONS EQUIPMENT LIST (Continued)

SYSTEM AND/ OR COMPONENT	KIND OF OPERATION					COMMENTS
	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING	
ENGINE FUEL AND CONTROL (Continued)						
6. Dual Igniter System and Indication (1)	1	1	1	1	N/A	Refer to Note 11.
7. Engine Indications (TQ, ITT, Ng,Oil Press, Oil Temp)	1	1	1	1	N/A	Refer to Note 11.
8. Standby Torque Indicator (1)	1	1	1	1	N/A	
9. Dynamic Redline Torque Gage (Altitude and Temperature Compensating)	1	1	1	1	N/A	Refer to Note 11.
10. Dynamic Cyan Bug Torque Gage (Altitude and Temperature Compensating)	1	1	1	1	N/A	Refer to Note 11.
MISCELLANEOUS EQUIPMENT						
1. Passenger Briefing Cards	*	*	*	*	N/A	* One for each occupied passenger seat.

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NOTE

11. Displayed on MFD as part of the Engine Indication System (EIS).

FUEL LIMITATIONS

FUEL CAPACITY

TOTAL FUEL

Both Tanks and Reservoir: . . . . .339.1 U.S. Gallons (1283 l)
Both Tanks: . . . . .335.6 U.S. Gallons (1270 l)
Each Tank: . . . . .167.8 U.S. Gallons (635 l)

TOTAL USABLE FUEL

Both Tanks ON and Reservoir: . . . . .335.3 U.S. Gallons (1268 l)
Both Tanks ON: .332.0 U.S. Gallons (1256 l)
Single Tank ON: .165.0 U.S. Gallons (624 l)

TOTAL UNUSABLE FUEL

Both Tanks ON: . . . . .3.6 U.S. Gallons (13 l)
Single Tank ON: . . . . .2.8 U.S. Gallons (10 l)

Maximum Fuel Imbalance:. . . . . .200 Pounds (90 kg)

NOTE

To achieve full fuel capacity, fill fuel tank to the top of the filler neck. Filling fuel tanks to the bottom of the fuel filler collar (level with flapper valve) allows space for thermal expansion and results in a decrease in fuel capacity of 4.0 U.S. gallons (15 l) per side (8.0 U.S. gallons (30 l) total).

The fuel quantity, fuel used and fuel remaining functions of the G1000 are supplemental information only and must be verified by the pilot.

Continuous uncoordinated flight is prohibited if L FUEL LOW, R FUEL LOW or L-R FUEL LOW annunciator is shown on PFD.

Unusable fuel quantity will continue to increase the longer a significant sideslip is maintained.

Due to possible fuel starvation, maximum full rudder sideslip duration is limited to a maximum of three minutes.

FUEL LIMITATIONS

FUEL GRADE (SPECIFICATION) AND FUEL ADDITIVES

Approved Fuel Grades	Fuel Additives (Refer to notes)	Specification	Minimum Temperature (°C)*	Maximum Temperature (°C)*
Jet A	1, 6, 7, 8	ASTM D1655	-35	57
Jet A-1	1, 6, 7, 8	ASTM D1655	-42	57
Jet No. 3	1, 5	GB 6537	-42	57
JP-5	2, 6, 7, 8	MIL-DTL-5624	-41	57
JP-8	1, 6, 7, 8	MIL-DTL-83133	-42	57
JP-8+100	1, 6, 7, 8	MIL-DTL-83133	-42	57
AN8**	1, 6, 7, 8	MIL-DTL-83133	-53	57
RT	3, 4, 6, 7, 8	GOST 10227	-45	57
RT	3, 4, 6, 7, 8	GSTU 320.00149943.007	-45	57
TS-1	3, 4, 6, 7, 8	GOST 10227	-45	57

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* It is assumed that fuel temperature is the same as Outside Air Temperature (OAT).

** AN8 is JP-8 fuel with a reduced freeze point specified for Antarctic operations.

Figure 2-6 (Sheet 1 of 2)

FUEL LIMITATIONS (Continued)

FUEL GRADE (SPECIFICATION) AND FUEL ADDITIVES (Continued)

APPROVED FUEL ADDITIVES (Optional)

The following fuel system additives may be added to the fuels as noted at the following concentrations. Use of these fuel additives is not required. Refer to Section 8, Airplane Handling, Service and Maintenance, Servicing, Fuel, for additional information and recommended blending instructions for approved fuel additives.

NOTE

1. MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
2. MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.20 percent by volume.
3. GOST 8313 (Fluid I), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
4. CIS TU6-10-1458 (Fluid I-M), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
5. T1301 (SH0396-92), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
6. DuPont Stadis 450, Type: Static Dissipator, in a concentration as required to bring fuel up to 300 conductive units, not to exceed 1 Parts Per Million (PPM).
7. SOHIO Biobor JF, Type: Biocide, at a concentration not to exceed 20 PPM of elemental boron (270 PPM of total additive).
8. Kathon FP, Type: Biocide, at a concentration not to exceed 100 PPM of total additive.

Figure 2-6 (Sheet 2)

MAXIMUM OPERATING ALTITUDE LIMIT

Non-Icing Conditions . . . . 25,000 Feet
Icing Conditions (if equipped) . . . . 20,000 Feet
Any conditions with any ice on the airplane. . . . . 20,000 Feet

OUTSIDE AIR TEMPERATURE LIMITS

Cold Day . . . . -54°C from Sea Level to 25,000 Feet

Hot Day:
Ground Operations. . . . . +42°C from Sea Level to 5000 Feet
ISA +37°C above 5000 Feet
Flight Operations . . . . . ISA +37°C from Sea Level to 25,000 Feet

Refer to Section 5, Performance, Figure 5-5, ISA Conversion and Operating Temperature Limits Chart, for a graphical presentation of the operating air temperature limits.

NOTE

- With both deck skin fans inoperative, ground operations are limited to +42°C for 30 minutes.
- Ground operations up to +38°C are not time limited with both deck skin fans inoperative.

MAXIMUM PASSENGER SEATING LIMITS

In the passenger version, up to 11 seats may be installed. The right front seat may be occupied by either a second crew member or a passenger. When the right front seat is occupied by a passenger, only eight seats in the aft cabin can be occupied.

In the cargo version, a maximum of one seat may be installed to the right of the pilot's seat for a second crew member or a passenger.

Refer to Section 6, Weight and Balance, Figure 6-11, Cabin Internal Loading Arrangements, for approved seat locations.

SYSTEM AND EQUIPMENT LIMITATIONS

FLAP LIMITATIONS

Approved Takeoff Range. . . . . .UP to TO/APR
Approved Landing Range . . . . UP to LAND
Approved Landing Range in Icing Conditions . . . . . . .UP to TO/APR

STANDBY ELECTRIC SYSTEM

When operating the standby electrical system, the maximum electrical load is 75 amps from Sea Level to 21,000 feet. To ensure adequate alternator cooling at higher altitudes, reduce maximum standby electrical system load 5 amps per 1000 feet above 21,000 feet.

AUX AUDIO SYSTEM

Use of the AUX AUDIO entertainment input is prohibited during takeoff and landing.

Use of the AUX AUDIO entertainment audio input and Portable Electronic Devices (PED), such as cellular telephones, games, cassette, CD or MP3 players, is prohibited under IFR unless the operator of the airplane has determined that the use of the Aux Audio System and the connected PED(s) will not cause interference with the navigation or communication system of the airplane.

12V POWER SYSTEM

The 12 Volt Power System is limited to a maximum combined current draw of 10 Amps (120 watts) all locations.

The 12 Volt Power System (12V POWER OUTLET) is not certified for supplying power to flight-critical communications or navigation devices.

Use of the 12 Volt Power System is prohibited during takeoff and landing.

Use of the 12 Volt Power System is prohibited under IFR unless the operator of the airplane has determined that the use of the 12 VDC power supply and connected PED(s) will not cause interference with the navigation or communication systems of the airplane.

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

GENERATOR LIMITATIONS

Maximum generator load limit is a function of Ng, air conditioning and bleed air heat position.

ON GROUND

MAXIMUM GENERATOR LOAD - GROUND OPERATIONS			
AIR CONDITIONING - **OFF,** BLEED AIR HEAT - **ON** or **OFF**		AIR CONDITIONING - **ON,** BLEED AIR HEAT - **OFF**	
Ng	AMPS	Ng	AMPS
55%	65	55%	35
60%	100	60%	90
65%	135	65%	155

IN FLIGHT

MAXIMUM GENERATOR LOAD - FLIGHT OPERATIONS			
AIR CONDITIONING - **OFF,** BLEED AIR HEAT - **ON or OFF**		AIR CONDITIONING - **ON,** BLEED AIR HEAT - **OFF**	
Ng	AMPS	Ng	AMPS
65%	125	65%	125
72%	140	72%	170
≥80%	200	≥80%	200

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS

The current Garmin G1000 Cockpit Reference Guide (CRG) Part Number and System Software Version that must be available to the pilot during flight are displayed on the MFD AUX group, SYSTEM STATUS page.

GPS based IFR enroute, oceanic and terminal navigation is prohibited unless the pilot verifies the currency of the database or verifies each selected waypoint for accuracy by reference to current approved data.

RNAV/GPS instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the G1000 navigation database. The G1000 database must incorporate the current update cycle.

Use of the NAVIGATION MAP page for pilotage navigation is prohibited. The Navigation Map is intended only to enhance situational awareness. Navigation is to be conducted using only current charts, data and authorized navigation facilities.

Navigation using the G1000 is not authorized North of 72° North latitude or South of 70° South latitude due to unsuitability of the magnetic fields near the Earth's poles. In addition, operations are not authorized in the following regions:

1. North of 65° North latitude between longitude 75° W and 120° W (Northern Canada).
2. North of 70° North latitude between longitude 70° W and 128° W (Northern Canada).
3. North of 70° North latitude between longitude 85° E and 114° E (Northern Russia).
4. South of 55° South latitude between longitude 120° E and 165° E (region south of Australia and New Zealand).

(Continued Next Page)

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS (Continued)

Use of the TERRAIN PROXIMITY information for primary terrain avoidance is prohibited. The Terrain Proximity map is intended only to enhance situational awareness. It is the pilot's responsibility to provide terrain clearance at all times. In addition, Terrain Proximity information is not available in locations north of 75° North latitude or South of 60° South latitude due to the absence of terrain data in these geographical areas.

The COM 1/2 (split COM) function of the Audio Panel is not approved for use. During COM 1/2 operation, transmission by one crew member inhibits reception by the other crew member.

Dispatch with GIA1, GIA2, PFD, or MFD cooling advisory message is prohibited.

Verify the torque gage dynamic redline agrees with the values listed in Figure 5-8, Maximum Engine Torque For Takeoff, for current altitude and temperature.

The dynamic redline is a graphical representation of takeoff power below 16,000 feet MSL and Maximum Continuous Power above 16,000 feet MSL as depicted in Section 5, Performance, Figure 5-8, Maximum Engine Torque For Takeoff chart and Figure 5-9 Maximum Engine Torque For Climb. The dynamic redline automatically compensates for altitude and temperature changes and adjusts displayed takeoff torque for inertial separator deployment and bleed air heat switch position. Failure to comply with the dynamic redline indication can result in accelerated engine wear, unscheduled engine maintenance and increased operating costs even though no other published engine limitation has been exceeded.

The maximum cruise torque bug functions of the G1000 engine torque indicator is advisory information only.

All power settings must be verified by the pilot, refer to Section 5, Performance, Figure 5-8, Maximum Engine Torque For Takeoff, Figure 5-9, Maximum Engine Torque For Climb and Figure 5-19, Cruise Performance (with Cargo Pod) or Figure 5-36, Cruise Performance (without Cargo Pod) for the approved engine power settings.

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS (Continued)

OPERATIONAL APPROVALS

The Garmin G1000 GPS receivers are approved under TSO C145c Class 3. The Garmin G1000 system has been demonstrated capable of, and has been shown to meet the accuracy requirements for, the following operations provided it is receiving usable navigation data. These do not constitute operational approvals.

1. Enroute, terminal, non-precision instrument approach operations using GPS and WAAS (including GPS, or GPS, and RNAV approaches), and approach procedures with vertical guidance (including LNAV/VNAV, LNAV + V, and LPV) within the U.S. National Airspace System in accordance with AC 20-138C.
2. As a required Long Range Navigation (LRN) system for use in the following types of airspace when used in conjunction with Garmin WAAS Fault Detection/Exclusion Prediction Program, part number 006-A0154-01 or later approved version:
   a. Oceanic/Remote - RNP-10 (per FAA AC 20-138C, FAA Order 8400-12C, and FAA Order 8900.1). Both GPS receivers are required to be operating and receiving usable signals except for routes requiring only one Long Range Navigation (LRN) sensor.

NOTE

Each display computes an independent navigation solution based on the on-side GPS sensor. However, either display will automatically revert to the cross-side sensor if the on-side sensor fails or if the cross-side sensor is determined to be more accurate. A BOTH ON GPS1 or BOTH ON GPS2 message does not necessarily mean that one GPS has failed. Refer to the MFD AUX-GPS STATUS page to determine the status of the unused GPS.

   b. North Atlantic (NAT) Minimum Navigational Performance Specifications (MNPS) Airspace per AC 91-49 Chg 1 and AC 120-33. Both GPS receivers are required to be operating and receiving usable signals except for routes requiring only one Long Range Navigation sensor.
   c. Enroute and Terminal including RNP5/BRNAV and PRNAV (RNP-1) - In accordance with JAA TGL-10, ACJ 20X4, AC 90-96A, and AC 90-100A, provided the FMS is receiving usable navigation information from one or more GPS receivers.

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS (Continued)

GARMIN GFC 700 AUTOMATED FLIGHT CONTROL SYSTEM (AFCS)

1. The GFC 700 AFCS preflight test must be successfully completed prior to use of the autopilot, flight director or manual electric trim.
2. A pilot, with the seat belt fastened, must occupy the left pilot's seat during all autopilot operations.
3. The autopilot and yaw damper must be off during all takeoff and landings.
4. Autopilot maximum engagement speed . . . . 175 KIAS
   Autopilot minimum engagement speed . . . . 80 KIAS
   Electric Trim maximum operating speed . . . . 175 KIAS
5. The autopilot must be disengaged below 200 feet AGL during approach operations and below 800 feet AGL during all other operations.
6. ILS approaches using the autopilot/flight director are limited to Category I approaches only.
7. Raw data ILS approaches below 400 feet AGL are prohibited.
8. Use of the autopilot is prohibited when the audio panel is inoperative, since the aural alert will not be provided when autopilot is disengaged.
9. When conducting a missed approach, use of the autopilot is prohibited until a rate of climb is established that will meet all altitude requirements of the missed approach procedure.

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS (Continued)

L3 COMMUNICATIONS WX 500 STORMSCOPE (if installed)

Use of the WEATHER MAP (WX-500 Stormscope) for hazardous weather (thunderstorm) penetration is prohibited. LTNG information on the NAVIGATION MAP or WEATHER MAP is approved only as an aid to hazardous weather avoidance, not penetration. The WX-500 Stormscope user's guide should be available to the pilot during flight.

SIRIUS XM WEATHER (if installed)

Use of the XM data link weather information for maneuvering in, near or around areas of hazardous weather is prohibited. Information contained within XM data link weather products may not accurately depict current weather conditions.

Do not use the indicated XM data link weather product age to determine the age of the weather information shown by the XM data link weather product. Due to time delays inherent in gathering and processing weather data for XM data link transmission, the weather information shown by the XM data link weather product may be significantly older than the indicated weather product age.

TRAFFIC ADVISORY SYSTEM (TAS) (if installed)

Use of the TRAFFIC MAP to maneuver the airplane to avoid traffic is prohibited. The Traffic Advisory System (TAS) is intended for advisory use only. TAS is intended only to help the pilot to visually locate traffic. It is the responsibility of the pilot to see and maneuver to avoid traffic.

TAS is unable to detect any intruding aircraft without an operating transponder. TAS can detect and track aircraft with either an ATCRBS (operating in Mode A or C) or Mode S transponders.

ATC procedures and the "see and avoid concept" will continue to be the primary means of aircraft separation. However, if communication is lost with ATC, TAS adds a significant backup for collision avoidance.

SYSTEM AND EQUIPMENT LIMITATIONS (Continued)

G1000 LIMITATIONS (Continued)

TERRAIN AWARENESS AND WARNING SYSTEM (TAWS-B) (if installed)

Use of the Terrain Awareness and Warning System (TAWS-B) to navigate to avoid terrain or obstacles is prohibited. TAWS-B is only approved as an aid to help the pilot to see-and-avoid terrain or obstacles.

TAWS-B must be inhibited when landing at a location not included in the airport database.

Use of TAWS-B is prohibited when operating using the QFE altimeter setting (altimeter indicates 0 feet altitude when the airplane is on the runway).

The pilot is authorized to deviate from the current ATC clearance only to the extent necessary to comply with TAWS-B warnings.

The geographic area of the TAWS-B database must match the geographic area in which the airplane is being operated.

TAWS-B is not available in locations north of 75° North latitude or south of 60° South latitude due to the absence of terrain data in these geographical areas.

OTHER LIMITATIONS

OPTIONAL EQUIPMENT USER'S GUIDE

The pilot is responsible for ensuring the appropriate user's guide(s) for all optional equipment installed in the airplane is accessible to the pilot in flight.

TYPE II, TYPE III OR TYPE IV ANTI-ICE FLUID TAKEOFF LIMITATIONS

FLAP LIMITATIONS

Takeoff Flaps Setting. . . . . UP

AIRSPEED LIMITATIONS

Takeoff Rotation Speed . . . . .83 KIAS

OTHER LIMITATIONS (Continued)

FLIGHT IN KNOWN ICING VISUAL CUES

As Required by AD 96-09-15, Paragraph (a) (1)

WARNING

Severe icing may result from environmental conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in ice build-up on protected surfaces exceeding the capability of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane.

During flight, severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues. If one or more of these visual cues exists, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions.

1. Unusually extensive ice is accreted on the airframe in areas not normally observed to collect ice.
2. Accumulation of ice on the upper or lower surface of the wing aft of the protected area.
3. Heavy ice accumulations on the windshield, or when ice forms aft of the curved sections on the windshield.
4. Ice forms aft of the protected surfaces of the wing struts.

Since the autopilot may mask tactile cues that indicate adverse changes in handling characteristics, use of the autopilot is prohibited when any of the visual cues specified above exist, or when unusual lateral trim requirements or autopilot trim warnings are encountered while the airplane is in icing conditions.

PLACARDS

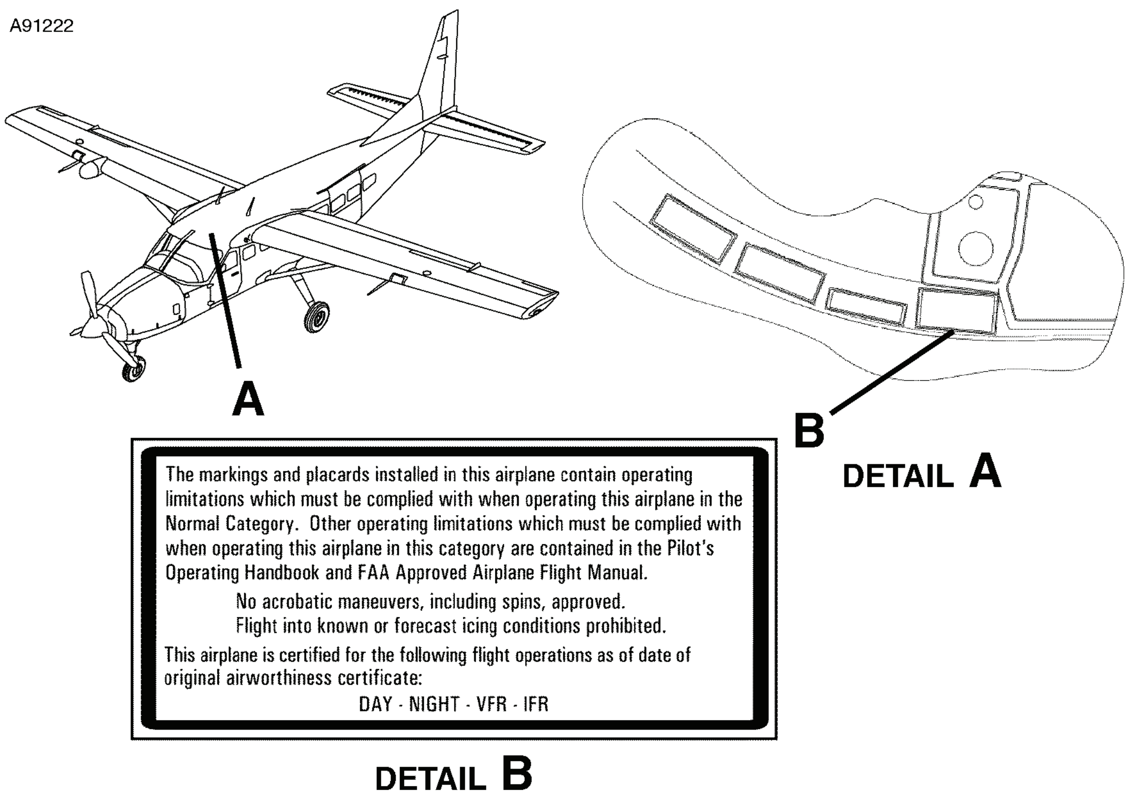
WARNING

The following information must be displayed in the form of composite or individual placards. As a minimum, the exact wording of these placards is required as specified in this section. Placard wording can be from part numbered placards obtained from Cessna Aircraft Company or equivalent placards installed by an approved repair station in accordance with normal maintenance practices/procedures.

INTERIOR PLACARDS

FLIGHT CREW AREA

In full view of the pilot on the sunvisor or windshield trim on airplanes not equipped for flight into known icing:



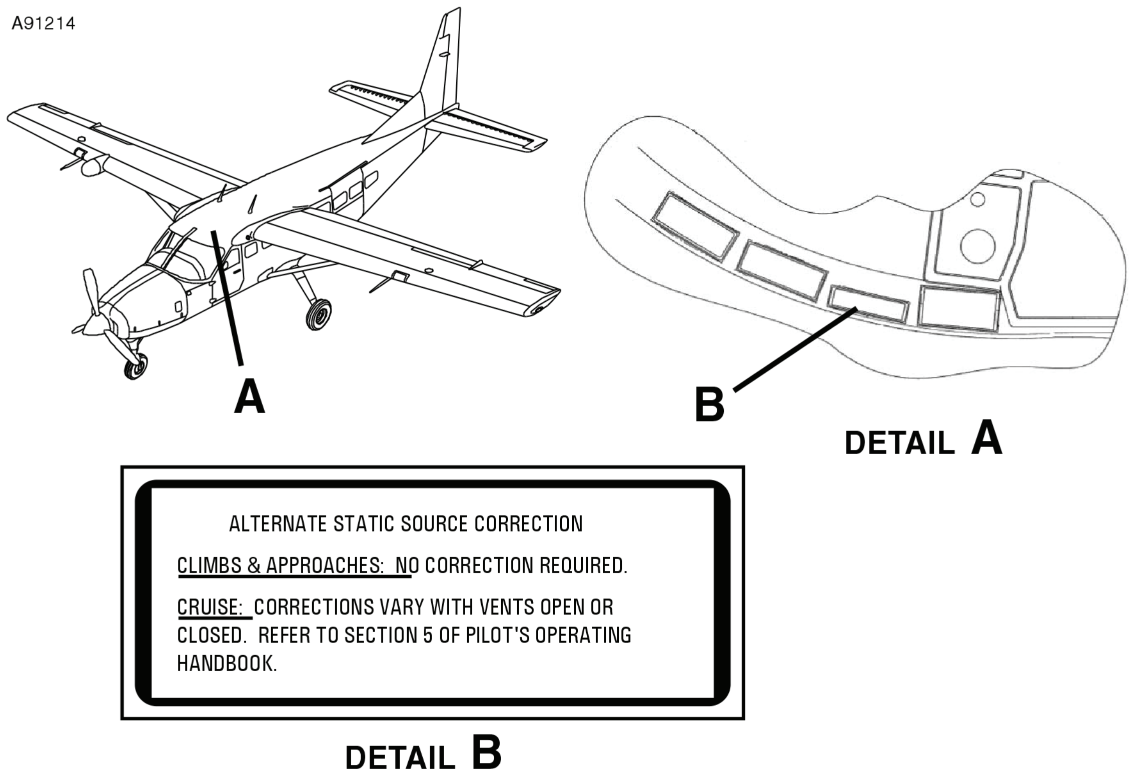
(Continued Next Page)

PLACARDS (Continued)

INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

In full view of the pilot on the sunvisor or windshield trim:



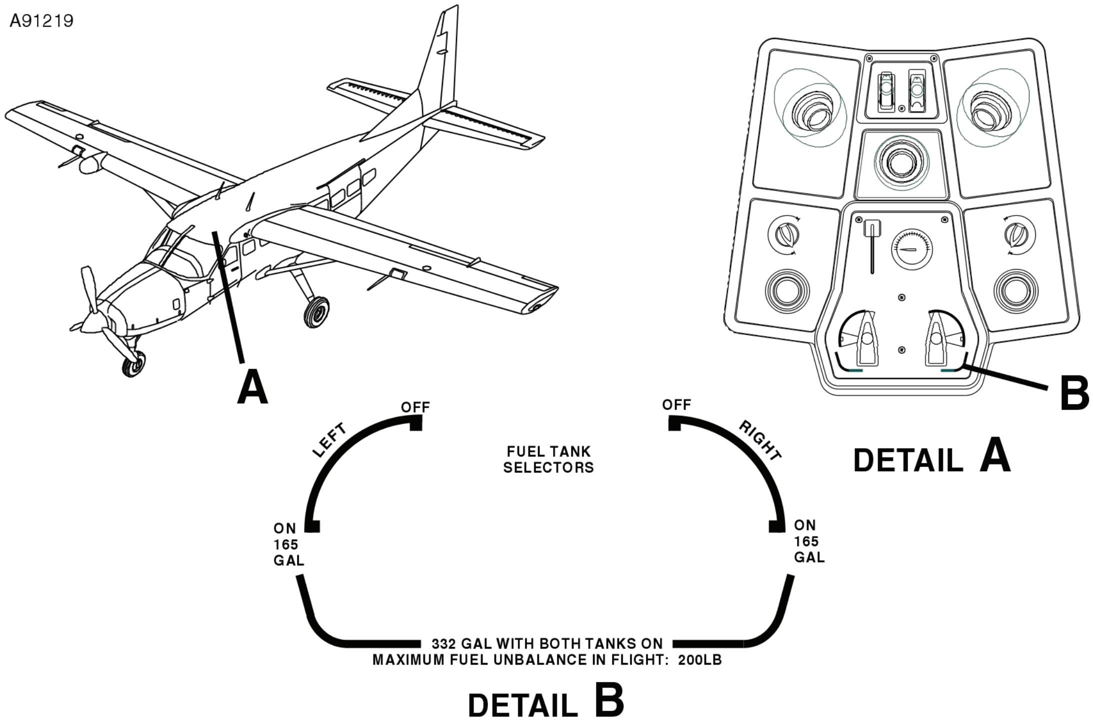
(Continued Next Page)

PLACARDS (Continued)

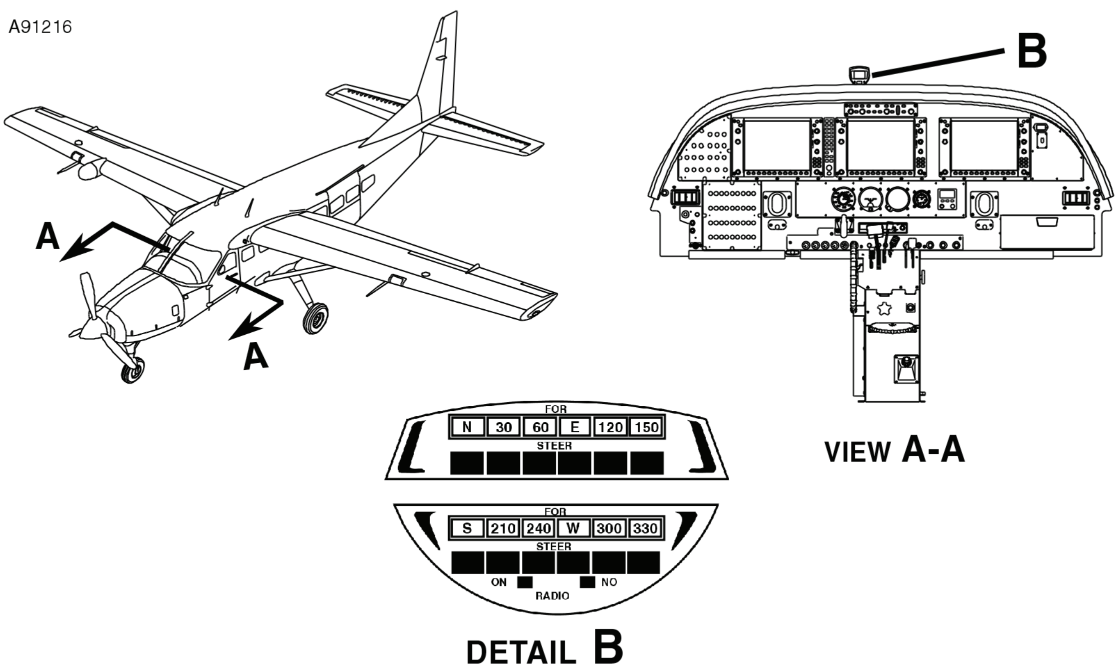
INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

On overhead panel adjacent to fuel tank selectors:



Located on magnetic compass:



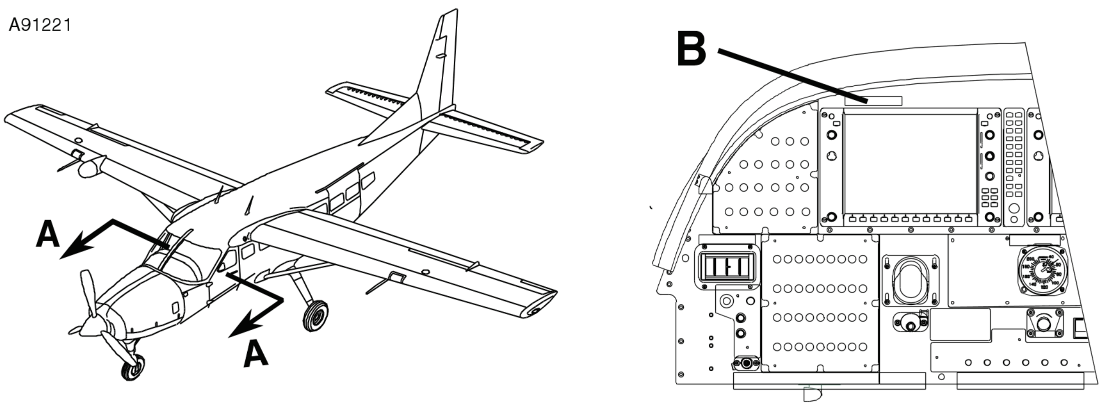
(Continued Next Page)

PLACARDS (Continued)

INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

Above left side PFD:

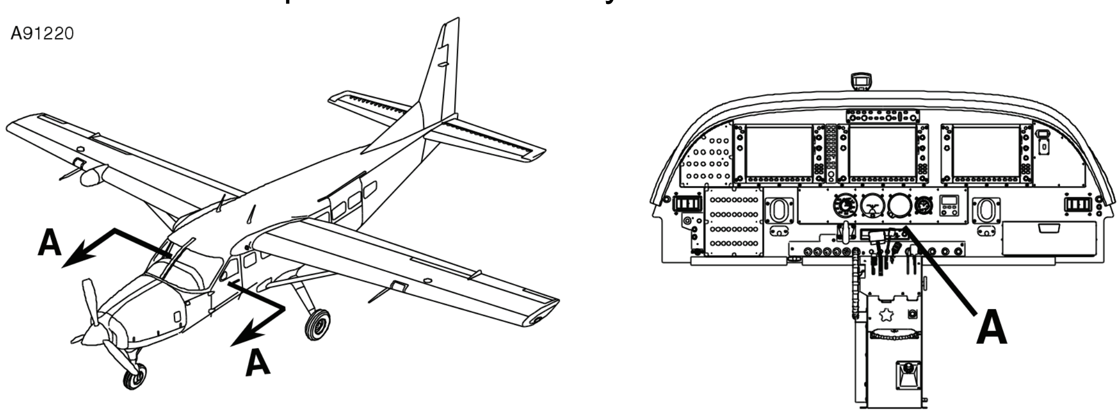


VIEW A-A

MAX WT MANEUVER SPEED 148 KIAS
SEE POH FOR OTHER WEIGHTS

DETAIL B

On instrument panel below standby instruments:



VIEW A-A

DO NOT TAKEOFF WITH ICE/FROST/SNOW ON THE AIRCRAFT.

DETAIL A

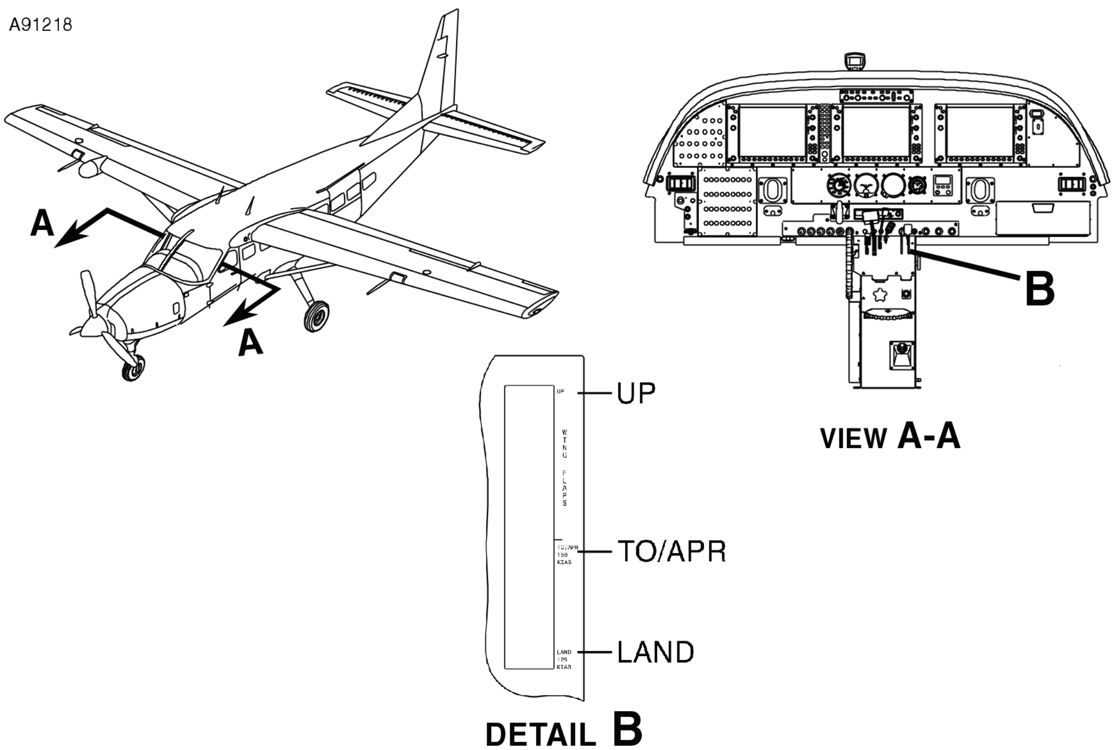
(Continued Next Page)

PLACARDS (Continued)

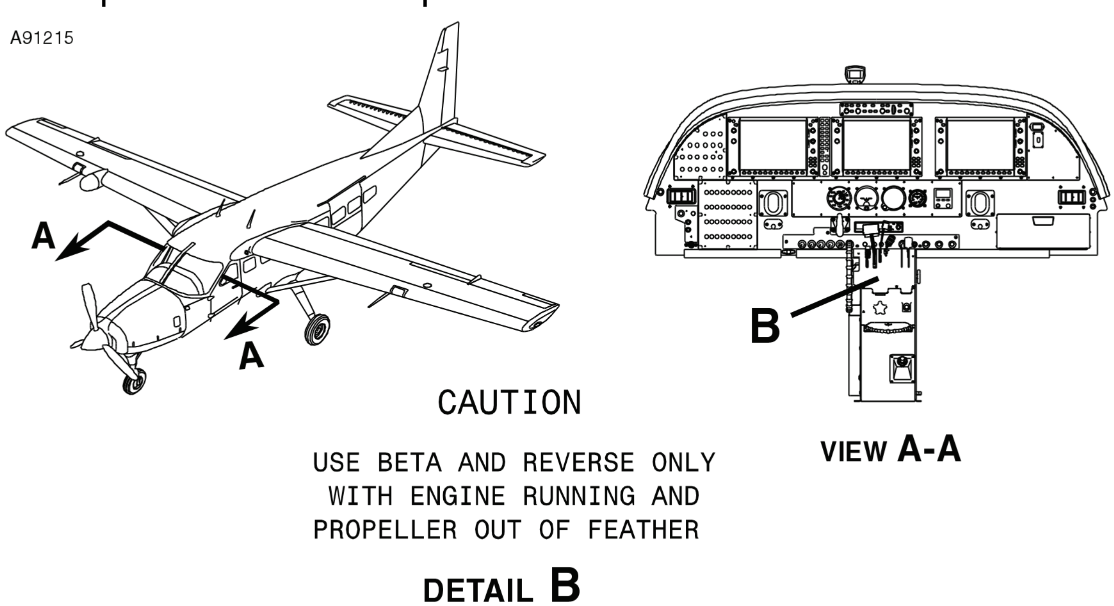
INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

On pedestal adjacent to wing flap position indicator:



On pedestal below the power lever:



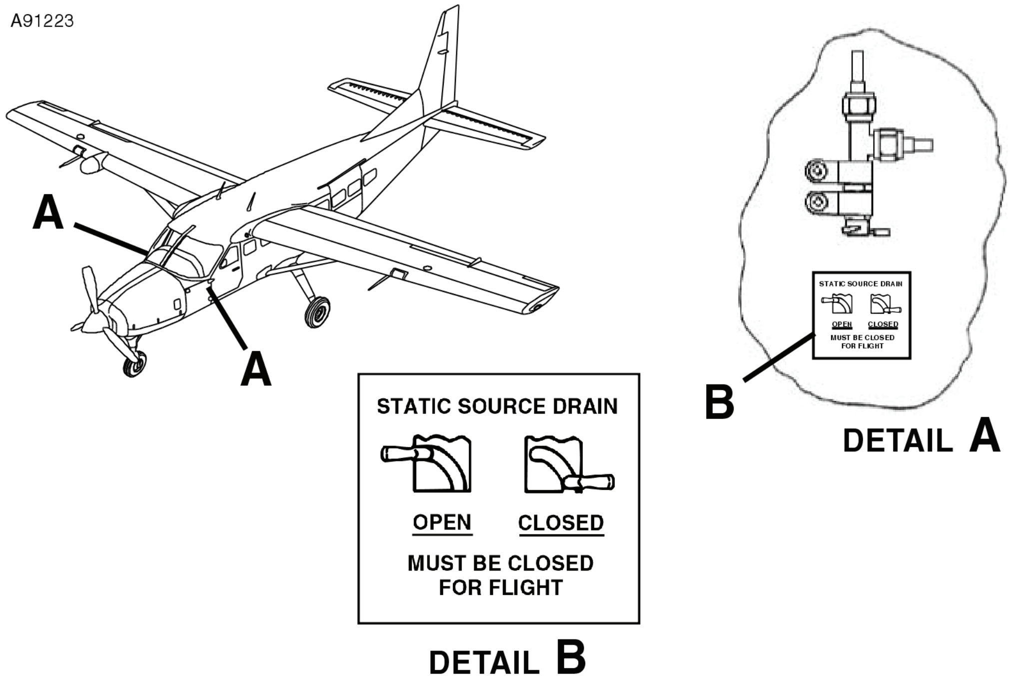
(Continued Next Page)

PLACARDS (Continued)

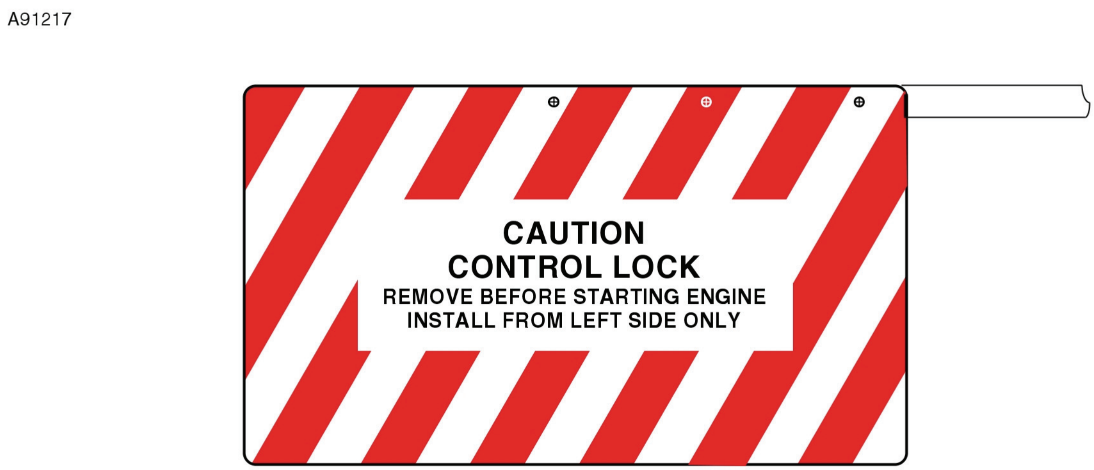
INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

On left and right lower sidewall below and forward of instrument panel:



On the control lock:



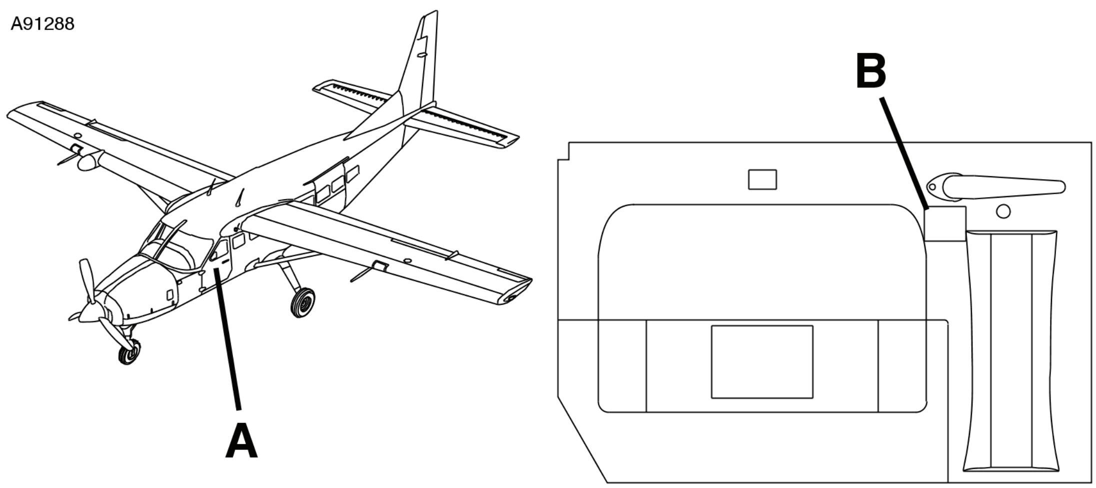
(Continued Next Page)

PLACARDS (Continued)

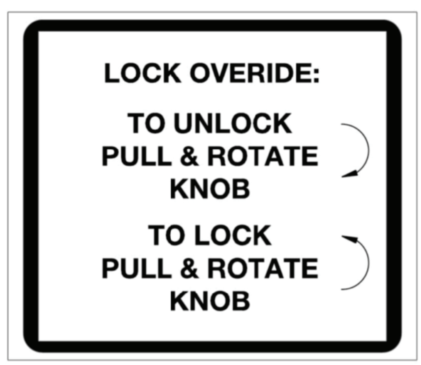
INTERIOR PLACARDS (Continued)

FLIGHT CREW AREA (Continued)

Adjacent to left crew door inside door handle:



DETAIL A



DETAIL B

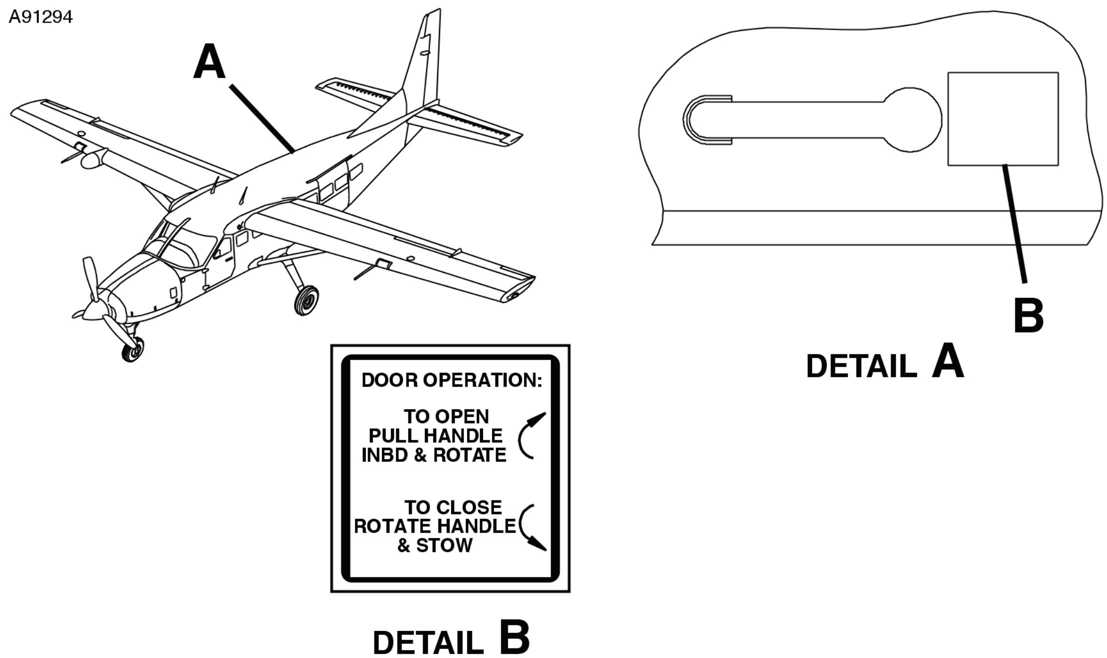
(Continued Next Page)

PLACARDS (Continued)

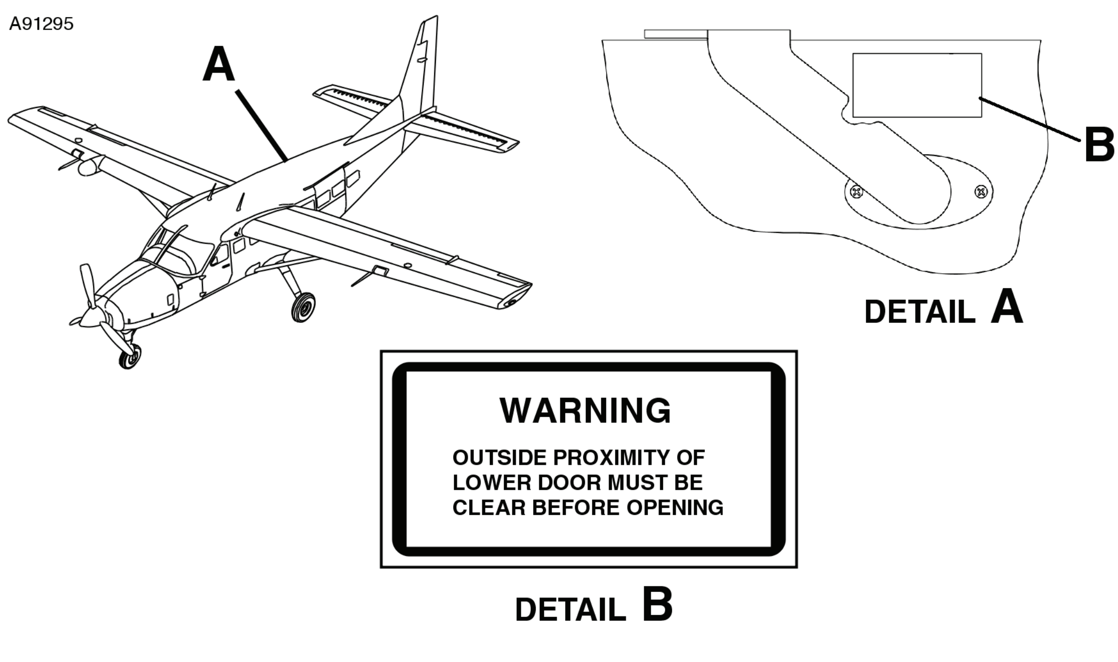
INTERIOR PLACARDS (Continued)

PASSENGER AREA

Adjacent to upper passenger door inside door handle (Passenger version only):



Adjacent to the interior door handle of lower passenger door (Passenger version only):



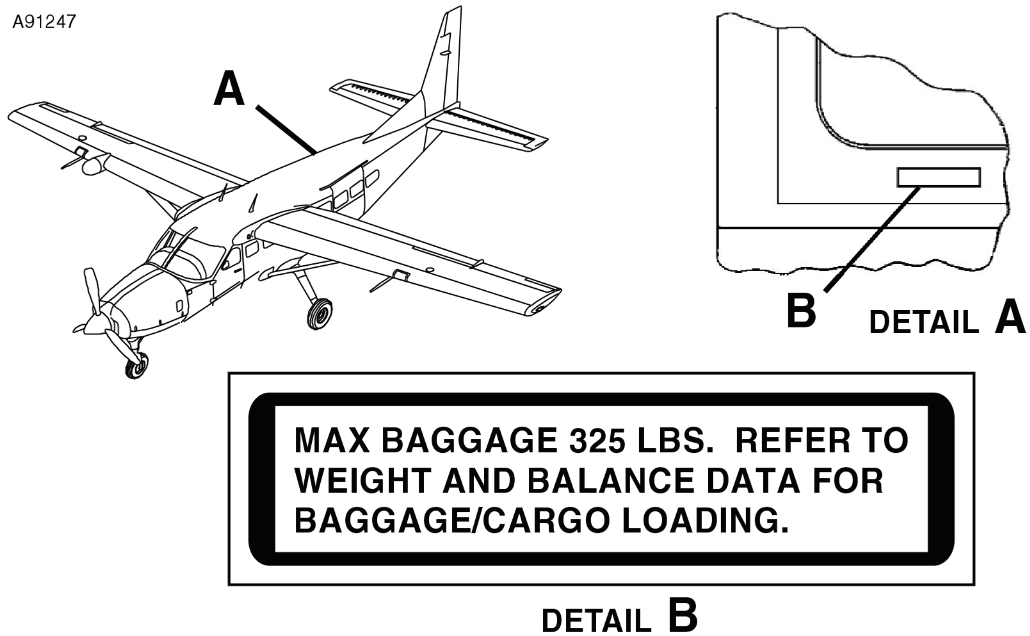
(Continued Next Page)

PLACARDS (Continued)

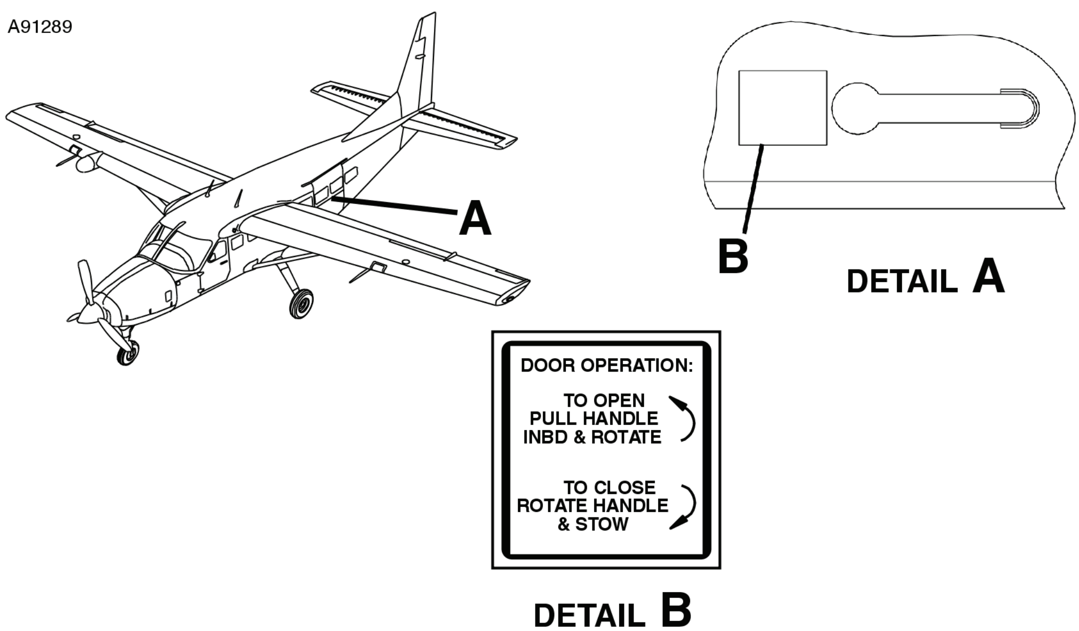
INTERIOR PLACARDS (Continued)

PASSENGER AREA (Continued)

On right sidewall aft of lower passenger door below window trim (Passenger version only):



Adjacent to upper cargo door interior door handle (Passenger version only):



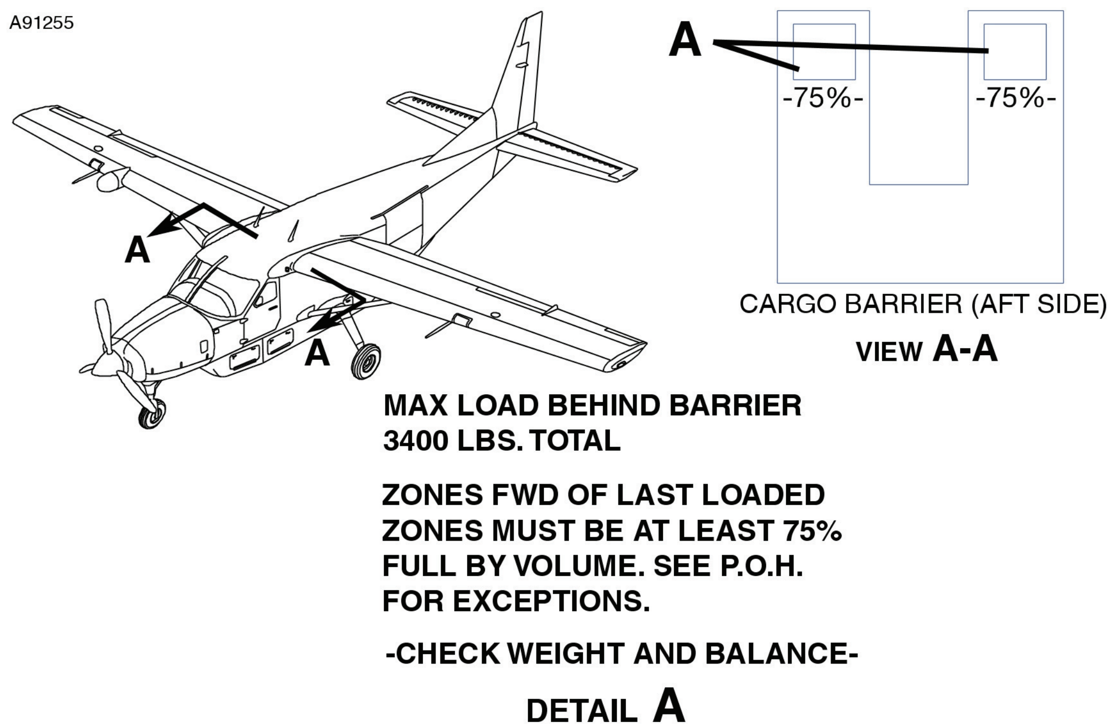
(Continued Next Page)

PLACARDS (Continued)

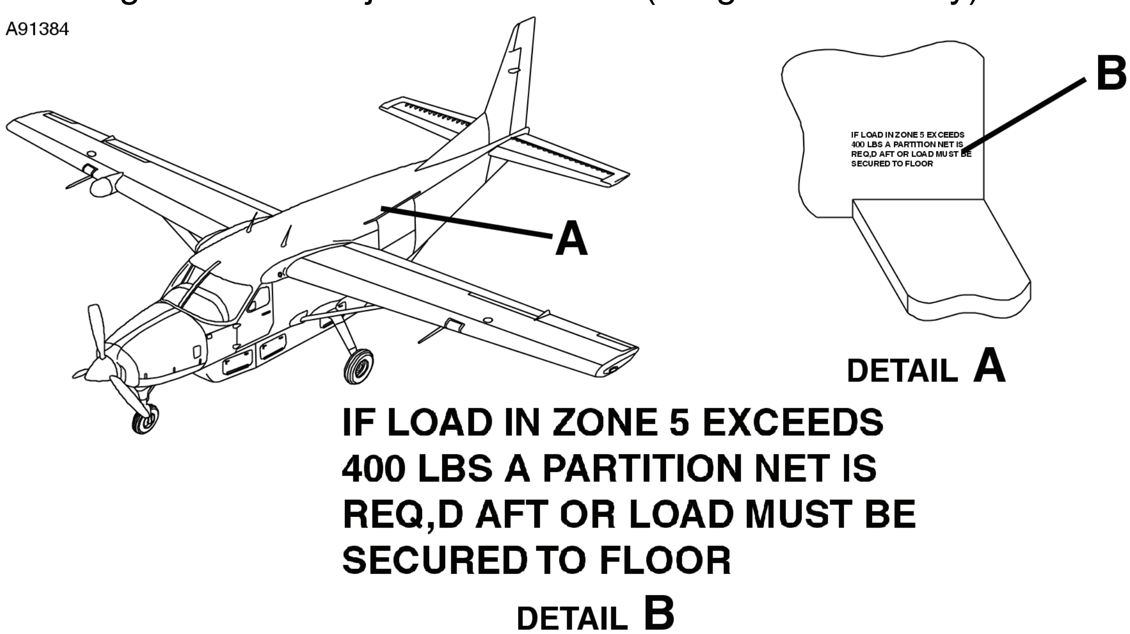
INTERIOR PLACARDS (Continued)

CARGO AREA

On left and right sides of the cargo barrier (Cargo version or Passenger version when cargo barrier is installed):



On right sidewall adjacent to Zone 5 (Cargo version only):



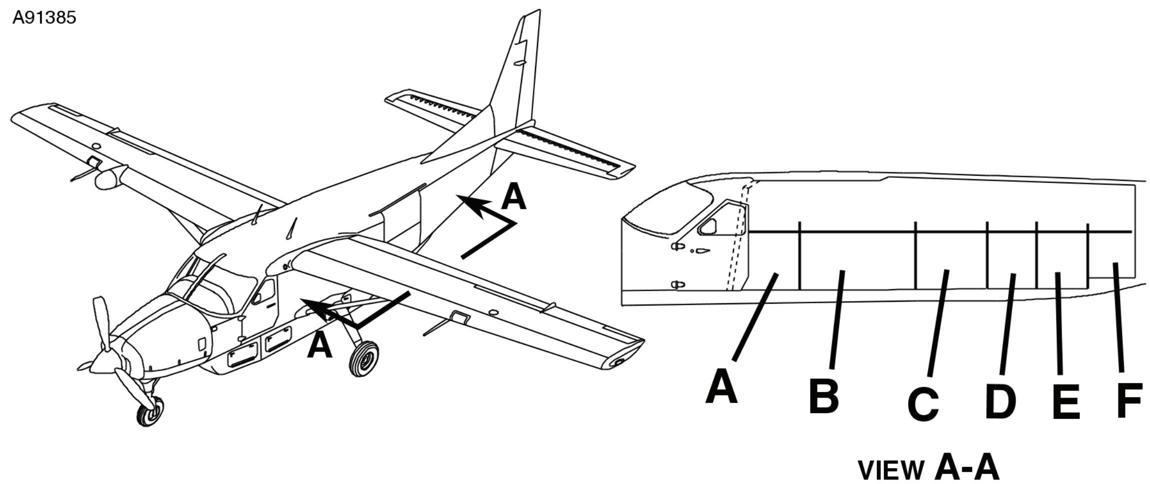
(Continued Next Page)

PLACARDS (Continued)

INTERIOR PLACARDS (Continued)

CARGO AREA (Continued)

On left and right sides of cabin in appropriate zones (Cargo version only):



ZONE
1
MAX LOAD 1780 LBS

DETAIL A

ZONE
2
MAX LOAD 3100 LBS

DETAIL B

ZONE
3
MAX LOAD 1900 LBS

DETAIL C

ZONE
4
MAX LOAD 1380 LBS

DETAIL D

ZONE
5
MAX LOAD 1270 LBS

DETAIL E

ZONE
6
MAX LOAD 320 LBS

DETAIL F

(Continued Next Page)

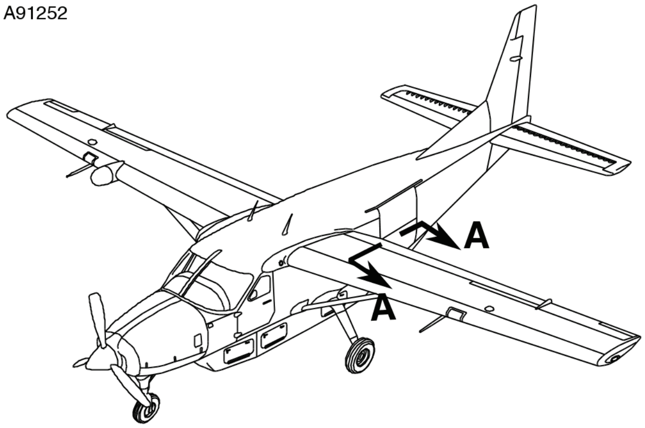
PLACARDS (Continued)

INTERIOR PLACARDS (Continued)

CARGO AREA (Continued)

On inside of lower cargo door (Cargo version only)

A91252



**MAX LOAD BEHIND BARRIER
3400 LBS. TOTAL**

**ZONES FWD OF LAST LOADED
ZONES MUST BE AT LEAST 75%
FULL BY VOLUME. SEE P.O.H.
FOR EXCEPTIONS.**

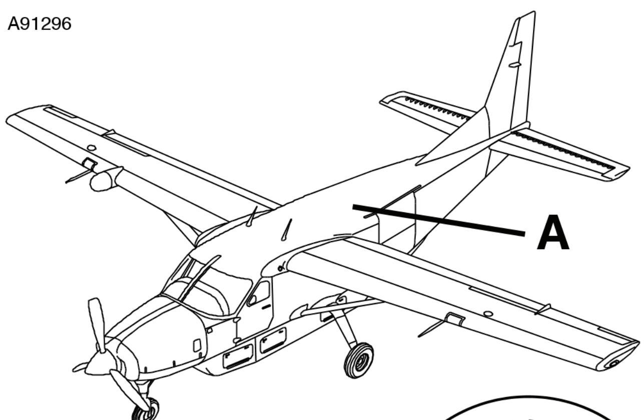
-CHECK WEIGHT AND BALANCE-

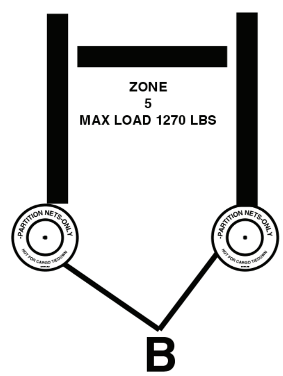
**LOAD MUST BE PROTECTED
FROM SHIFTING - SEE P.O.H.**

VIEW A-A
(LOCATED ON LOWER CARGO DOOR)

At each sidewall and ceiling anchor plate (except heavy duty anchor plates with additional structural support) and at anchor plate at center of lower cargo door (Cargo version only):

A91296





DETAIL A

DETAIL B

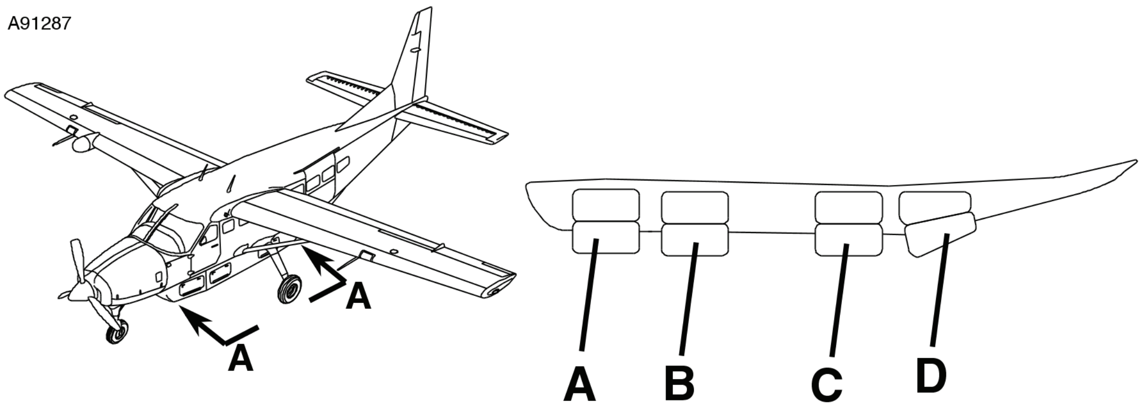
(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS

On inside of cargo pod doors (if installed):

A91287



VIEW A-A

FORWARD COMPARTMENT
MAX. WEIGHT 230 LBS.
MAX FLOOR LOADING
30 LBS PER SQ. FT.
NO SHARP EDGES

DETAIL A

CTR. COMPARTMENT - FWD
MAX. WEIGHT 310 LBS
MAX FLOOR LOADING
30 LBS PER SQ. FT.
NO SHARP EDGES

DETAIL B

CTR. COMPARTMENT - AFT
MAX. WEIGHT 270 LBS
MAX FLOOR LOADING
30 LBS PER SQ. FT.
NO SHARP EDGES

DETAIL C

AFT COMPARTMENT
MAX. WEIGHT 280 LBS
MAX FLOOR LOADING
30 LBS PER SQ. FT.
NO SHARP EDGES

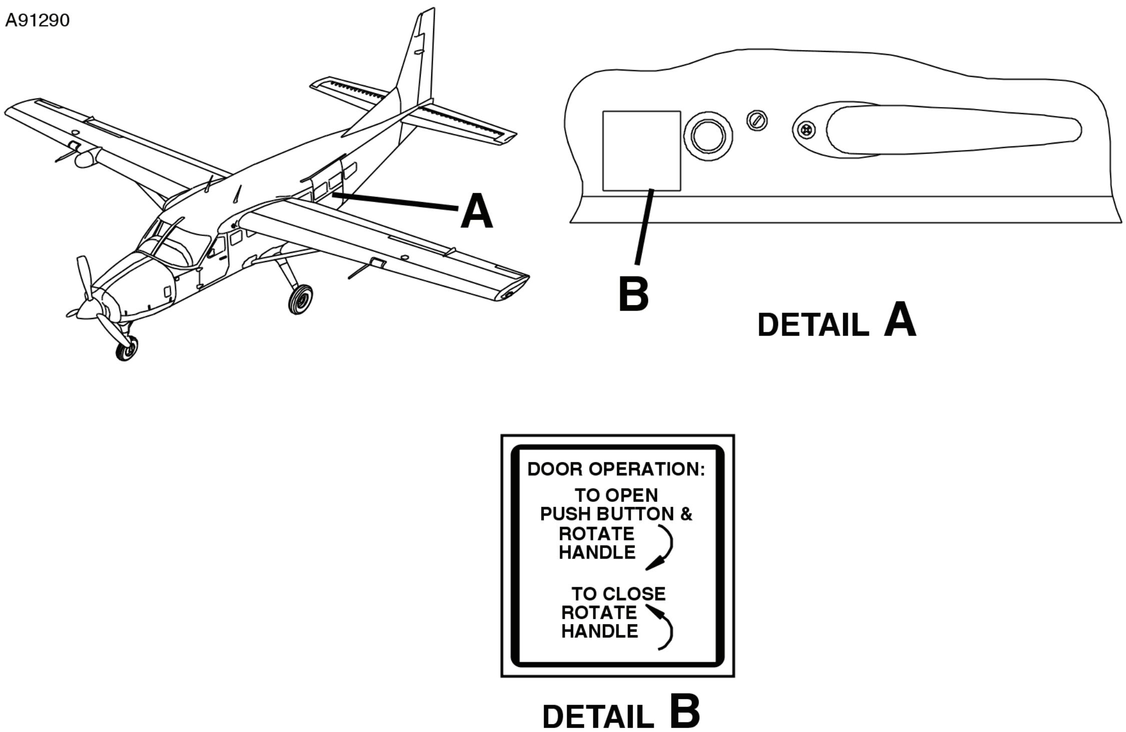
DETAIL D

(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

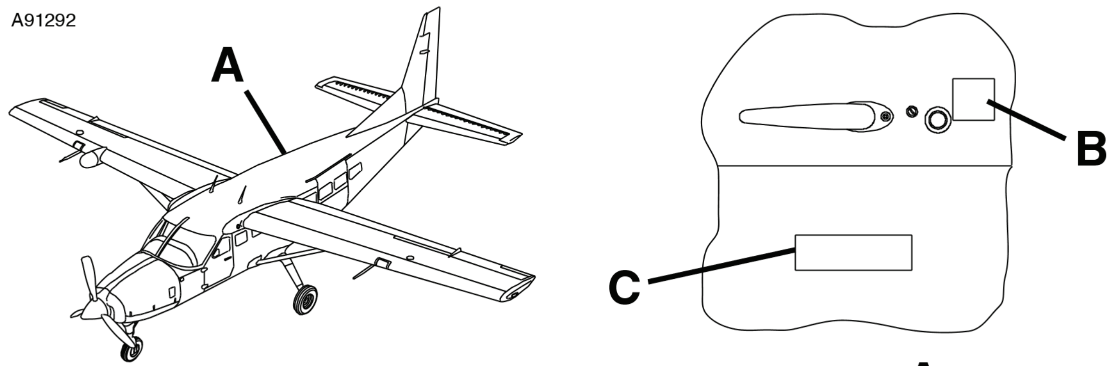
Adjacent to upper cargo door outside pushbutton and door handle (Passenger version only):



(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)



DETAIL A

Adjacent to upper passenger door outside pushbutton and door handle (Passenger version only):

DETAIL B

At center of lower passenger door on outside (Passenger version only):

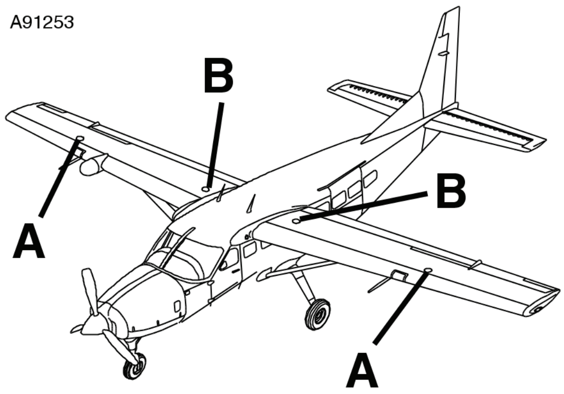
DETAIL C

(Continued Next Page)

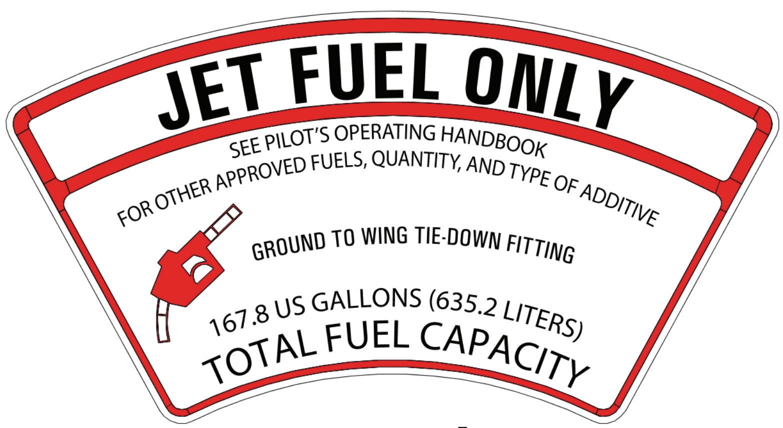
PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

WINGS



Adjacent to each outboard fuel tank filler cap:



DETAIL A

Adjacent to each inboard fuel tank filler cap (when installed):

DETAIL B

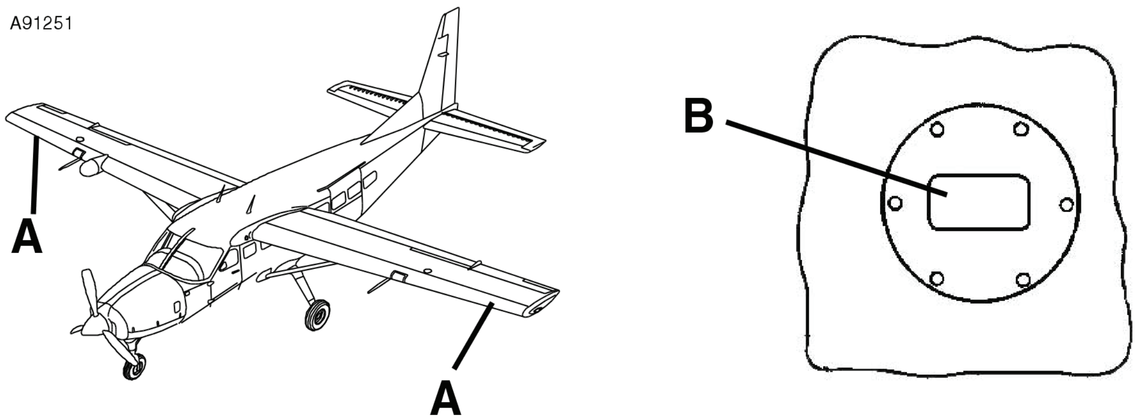
(Continued Next Page)

PLACARDS (Continued)

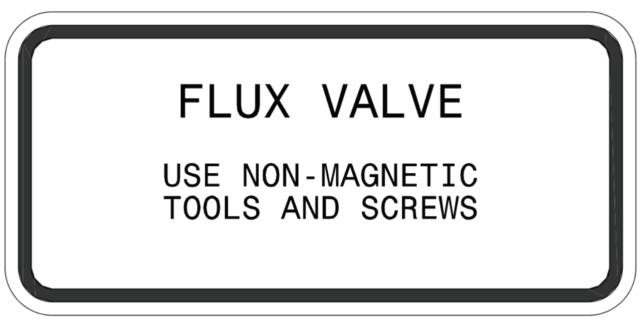
EXTERIOR PLACARDS (Continued)

WINGS (Continued)

On bottom of each wing just forward of aileron:



DETAIL A



DETAIL B

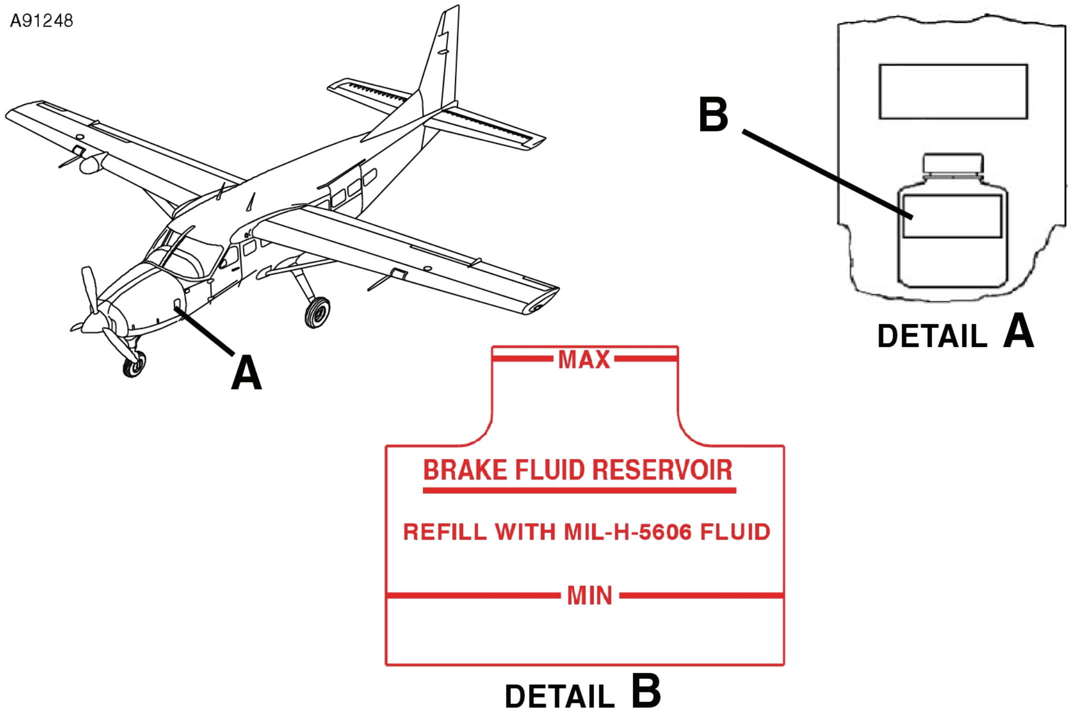
(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

ENGINE COMPARTMENT

On the brake fluid reservoir:



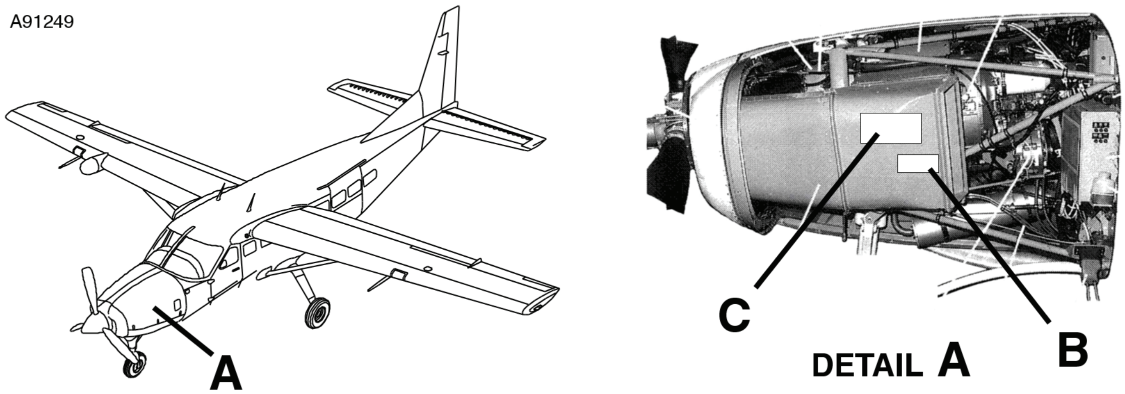
(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

ENGINE COMPARTMENT (Continued)

Adjacent to oil dipstick/filler cap (on inertial separator duct):



ENGINE OIL

TOTAL CAPACITY 14 U.S. QUARTS
DRAIN & FILL 9.5 U.S. QUARTS

TYPE: SEE PILOT'S OPERATING HANDBOOK
FOR APPROVED OILS. DO NOT MIX BRANDS.

SERVICED WITH: ____________

DETAIL B

WARNING

PRESSURIZED OIL TANK

**ENSURE
OIL DIPSTICK
IS SECURE**

DETAIL C

(Continued Next Page)

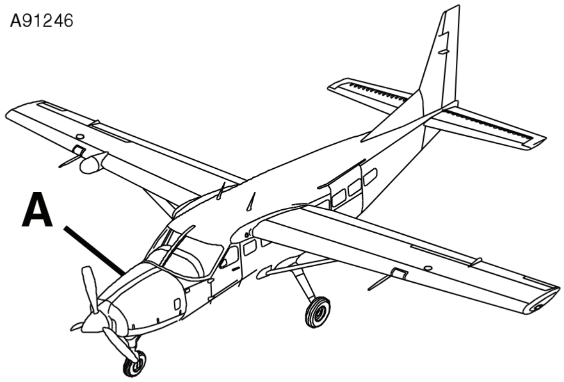
PLACARDS (Continued)

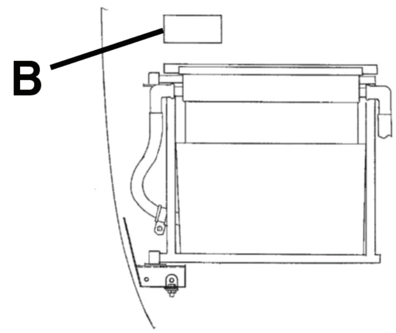
EXTERIOR PLACARDS (Continued)

ENGINE COMPARTMENT (Continued)

On firewall above battery tray:

A91246





DETAIL A

CAUTION 24 VOLTS D.C.

THIS AIRCRAFT IS EQUIPPED WITH
GENERATOR AND A NEGATIVE
GROUND SYSTEM

OBSERVE PROPER POLARITY

REVERSE POLARITY WILL DAMAGE
ELECTRICAL COMPONENTS

DETAIL B

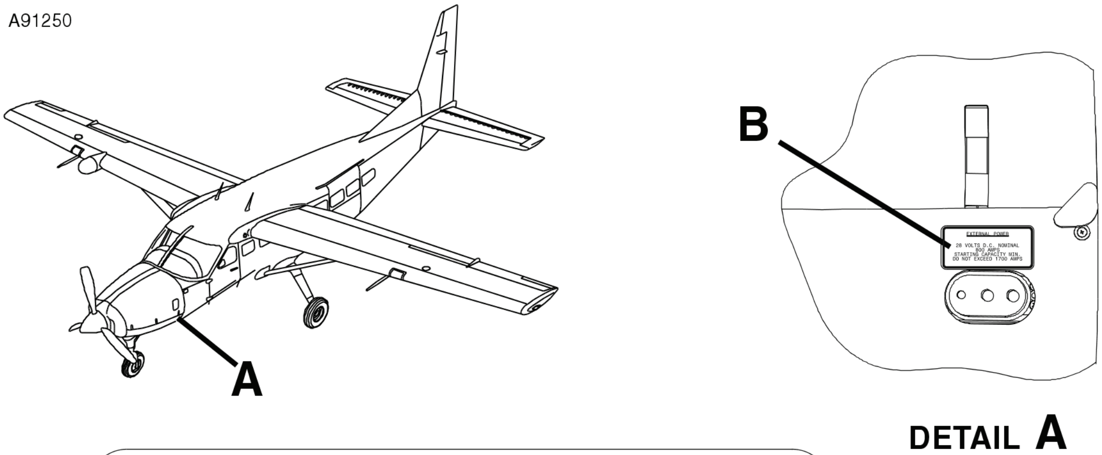
(Continued Next Page)

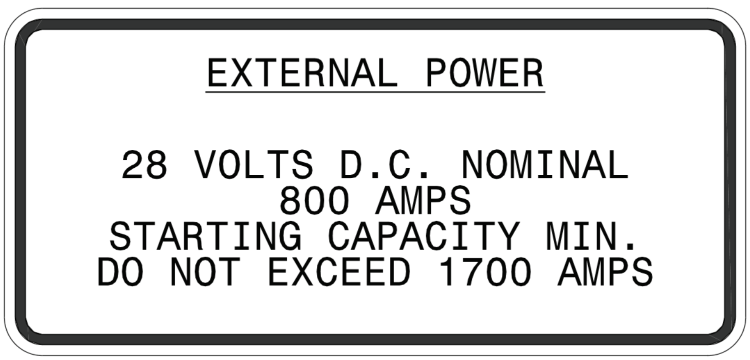
PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

FORWARD FUSELAGE

Above ground service plug receptacle:





DETAIL B

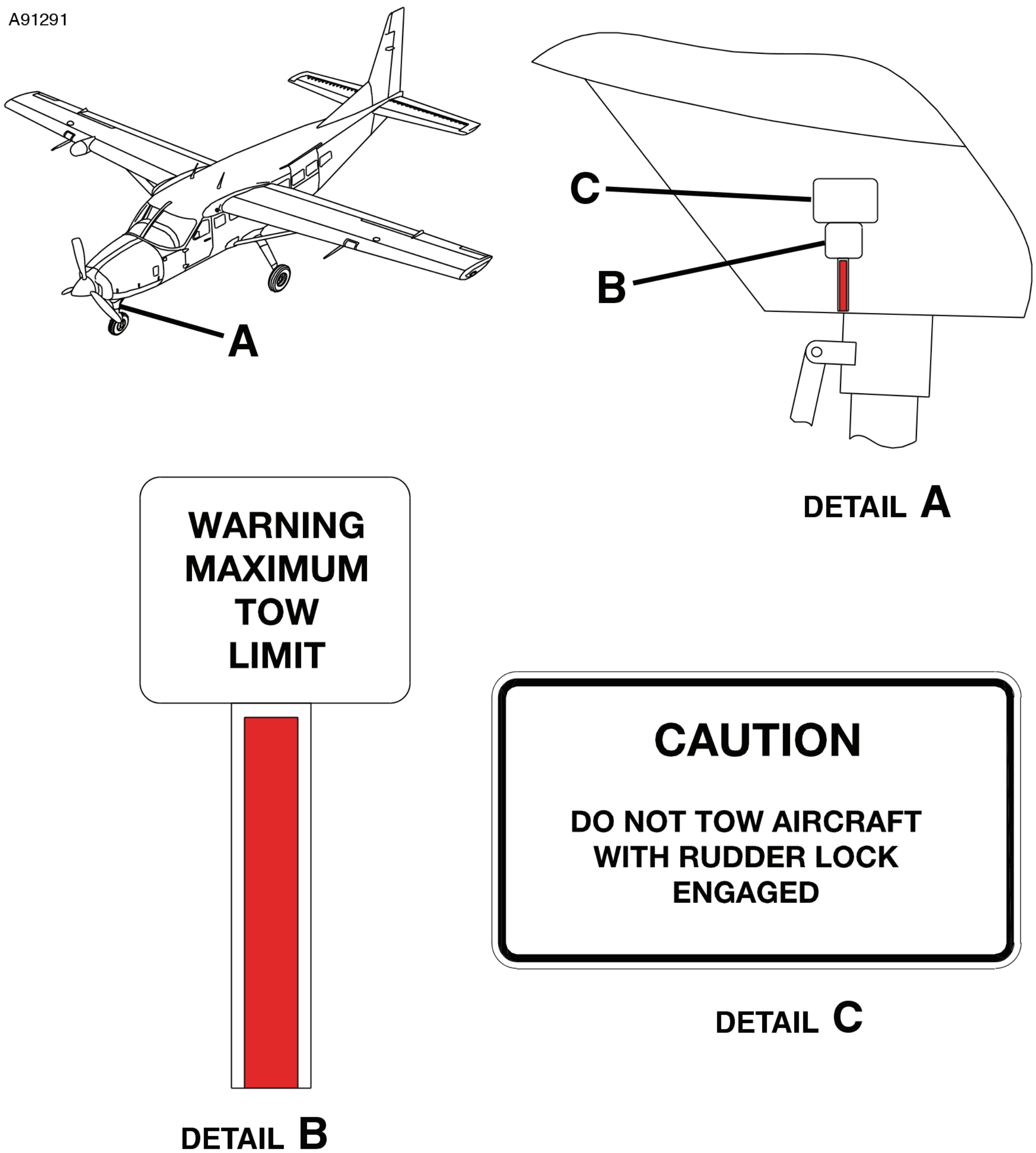
(Continued Next Page)

PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

FORWARD FUSELAGE (Continued)

On each side of nose strut fairing near tow limit marking:



(Continued Next Page)

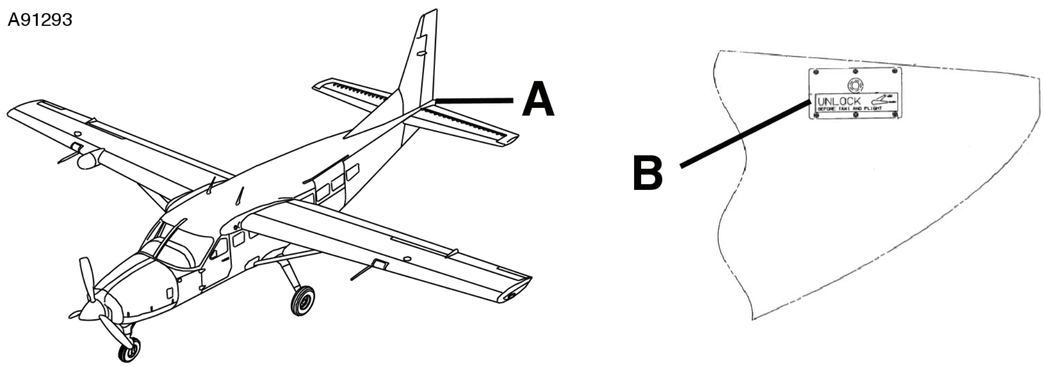
PLACARDS (Continued)

EXTERIOR PLACARDS (Continued)

AFT FUSELAGE

On the left side of the tailcone stinger, affixed to the rudder lock shaft cover plate:

A91293



DETAIL A

DETAIL B

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EMERGENCY PROCEDURES

TABLE OF CONTENTS

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INTRODUCTION

Section 3 provides checklist and amplified procedures for coping with emergencies that may occur. Emergencies caused by airplane or engine malfunctions are extremely rare if proper preflight inspections and maintenance are practiced. Enroute weather emergencies can be minimized or eliminated by careful flight planning and good judgment when unexpected weather is encountered. However, should an emergency arise, the basic guidelines described in this section should be considered and applied as necessary to correct the problem. In any emergency situation, the most important task is continued control of the airplane and maneuver to execute a successful landing.

Emergency procedures associated with optional or supplemental equipment are found in Section 9, Supplements.

WARNING

There is no substitute for correct and complete preflight planning habits and continual review to minimize emergencies. Be thoroughly knowledgeable of hazards and conditions which represent potential dangers. Also be aware of the capabilities and limitations of the airplane.

AIRSPEEDS FOR EMERGENCY OPERATION

ENGINE FAILURE AFTER TAKEOFF

WING FLAPS Handle UP . . . . **100 KIAS**
WING FLAPS Handle LAND . . . . **80 KIAS**

MANEUVERING SPEED

8807 POUNDS (3994 kg) . . . . **148 KIAS**
7500 POUNDS (3401 kg) . . . . **137 KIAS**
6250 POUNDS (2834 kg) . . . . **125 KIAS**
5000 POUNDS (2267 kg) . . . . **112 KIAS**

MAXIMUM GLIDE WITH CARGO POD

8807 POUNDS (3994 kg) . . . . **95 KIAS**
7500 POUNDS (3401 kg) . . . . **87 KIAS**
6250 POUNDS (2834 kg) . . . . **79 KIAS**
5000 POUNDS (2267 kg) . . . . **71 KIAS**

MAXIMUM GLIDE WITHOUT CARGO POD

8807 POUNDS (3994 kg) . . . . **97 KIAS**
7500 POUNDS (3401 kg) . . . . **90 KIAS**
6250 POUNDS (2834 kg) . . . . **82 KIAS**
5000 POUNDS (2267 kg) . . . . **74 KIAS**

PRECAUTIONARY LANDING WITH ENGINE POWER

WING FLAPS Handle LAND . . . . **80 KIAS**

LANDING WITHOUT ENGINE POWER

WING FLAPS Handle UP . . . . **100 KIAS**
WING FLAPS Handle LAND . . . . **80 KIAS**

GENERAL

OPERATING PROCEDURES - GENERAL

The operating procedures contained in this manual have been developed and recommended by Cessna Aircraft Company and are approved for use in the operation of this airplane.

This section contains the emergency and abnormal procedures for your airplane. For your convenience, definitions of these terms are listed in Section I. Operating procedures in this POH/AFM are organized into Emergency, Abnormal and Normal Procedures.

Emergency procedures are generally associated with red annunciators or messages. Some procedures, such as Maximum Glide/Emergency Landing, are not associated with any particular message, but can involve one or more messages. All emergency procedures are organized by appropriate systems and include each red annunciation or message, if applicable, exactly as it appears on the PFD, or MFD. Emergency procedures require immediate pilot recognition and corrective action by the crew. Red annunciators will flash and pressing the WARNING softkey will silence the repeating chime and change the annunciator to steady state.

Some emergency situations require immediate memorized corrective action. These numbered steps are printed in boxes within the emergency procedures and should be accomplished without the aid of the checklist.

Abnormal procedures are general procedures that can be associated with one or more amber annunciations or messages. Some procedures are not associated with any particular annunciation or message, but can involve one or more messages. These procedures are organized by related systems.

An abnormal procedure is one requiring the use of special systems and/or the alternate use of regular systems that will maintain an acceptable level of airworthiness. These procedures require immediate pilot awareness and subsequent crew action may be required. Amber annunciators will initially flash and pressing the CAUTION softkey will change the annunciation to a steady state.

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GENERAL (Continued)

OPERATING PROCEDURES - GENERAL (Continued)

NOTE

- White annunciators provide general information, indicate the need for additional crew awareness and the possible necessity of future pilot action.
- In order to avoid confusion due to multiple messages, at critical times, some annunciator(s) are inhibited when a Line Replaceable Unit (LRU), such as the GEA-71 (Garmin Engine Airframe Computer), has failed.
- Generally, the following Emergency and Abnormal Procedures do not direct the pilot to check/reset circuit breakers. This is considered basic airmanship and can be accomplished at the pilot's discretion.
- Except where specific action is required, these procedures do not specify action when on the ground. Conditions resulting in a red or amber message should be corrected prior to flight. Reasons for white annunciators should be determined prior to flight.
- If a red or amber annunciation occurs in flight, consideration should be given to landing at an airport where corrective maintenance can be performed.

Normal procedures are those recommended for routine day-to-day preflight, flight, and postflight operation and include expanded systems information and procedures. Some checks, as noted in the Limitations Section of this POH/AFM, are required to assure proper system integrity.

The Garmin G1000 Integrated Avionics System monitors most of the airplane systems for faults or failures and displays this information to the crew as annunciation and messages in the Crew Alerting System (CAS) portion of the Primary Flight Display (PFD) in front of each pilot. Some Garmin G1000 faults are also displayed as messages in the Primary Flight Display (PFD) or Multi Function Display (MFD). These messages are listed within the appropriate portion of the Emergency and Abnormal procedures sections of the POH/AFM or appropriate Garmin Cockpit Reference Guide (CRG) for 208 series airplanes.

EMERGENCY PROCEDURES

Procedures in the Emergency Procedures Checklist portion of this section shown in boxes are immediate action items which should be committed to memory.

ENGINE FAILURES

ENGINE FAILURE DURING TAKEOFF ROLL

1. POWER Lever . . . . **BETA RANGE**
2. Brakes. . . . . **APPLY**
3. WING FLAPS Handle . . . . **UP**

IF AIRPLANE CANNOT BE STOPPED ON REMAINING RUNWAY

4. FUEL CONDITION Lever . . . . **CUTOFF**
5. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
6. FUEL TANK SELECTORS . . . . **OFF**
   (aural warning horn will sound)
7. BATTERY Switch . . . . **OFF**

ENGINE FAILURE IMMEDIATELY AFTER TAKEOFF

1. Airspeed . . . . **90 KIAS**
2. PROP RPM Lever. . . . . **FEATHER**
3. WING FLAPS Handle . . . . **AS REQUIRED**
   (TO/APR recommended)
4. FUEL CONDITION Lever . . . . **CUTOFF**
5. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
6. FUEL TANK SELECTORS . . . . **OFF**
   (aural warning horn will sound)
7. BATTERY Switch . . . . **OFF**
8. Cabin Door . . . . **UNLATCH**
9. Land . . . . **STRAIGHT AHEAD**

ENGINE FAILURES

ENGINE FAILURE DURING FLIGHT

1. Airspeed . . . . **95 KIAS**
2. POWER Lever . . . . **IDLE**
3. PROP RPM Lever . . . . **FEATHER**
4. FUEL CONDITION Lever . . . . **CUTOFF**
5. WING FLAPS Handle . . . . **UP**
6. FUEL BOOST Switch . . . . **OFF**
7. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
8. IGNITION Switch. . . . . **NORM**
9. STBY ALT PWR Switch. . . . . **OFF**
10. Electrical Load. . . . . **REDUCE**
    a. AVIONICS STBY PWR Switch . . . . **OFF**
    b. AVIONICS BUS TIE Switch . . . . **OFF**
    c. CABIN Lights Switch. . . . . **OFF**
    d. STROBE Lights Switch. . . . . **OFF**
    e. LDG and TAXI/RECOG Lights Switches. . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

    f. VENT AIR FANS. . . . . **OFF**
    g. AIR CONDITIONING (if installed). . . . . **OFF**
    h. GEN CONT and
       GEN FIELD Circuit Breakers . . . . **OPEN** (pull out)
       (top row, last two breakers on forward end)
    i. RIGHT PITOT HEAT Circuit Breaker . . . . . **OPEN** (pull out)
       (second row, third breaker from aft end)
    j. RDNG LIGHT Circuit Breaker. . . . . **OPEN** (pull out)
       (third row, second breaker from aft end)
    k. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out)
       (AVN BUS 1, second row, sixth breaker from left side)
    l. AVIONICS No. 2 Switch . . . . **OFF**
11. BAT AMPS . . . . **CHECK**
    (verify below 45 amps)
12. Land as soon as possible. (refer to EMERGENCY LANDING WITHOUT ENGINE POWER)

ENGINE FAILURES (Continued)

ENGINE FLAMEOUT DURING FLIGHT

IF GAS GENERATOR SPEED (N_g) IS ABOVE 50%

1. POWER Lever . . . . **IDLE**
2. IGNITION Switch . . . . **ON**

AFTER SATISFACTORY RELIGHT AS EVIDENCED BY NORMAL ITT AND N_g INDICATIONS

3. POWER Lever . . . . **AS DESIRED**
4. IGNITION Switch . . . . **NORM**
   (if cause of flameout has been corrected)

IF GAS GENERATOR SPEED (N_g) IS BELOW 50%

1. FUEL CONDITION Lever. . . . . **CUTOFF**
2. Refer to AIRSTART procedure on following page for engine restart information.

AIRSTART

STARTER ASSIST

1. BATTERY Switch . . . . **ON**
2. AVIONICS No. 1 Switch . . . . **ON**
3. Electrical Load. . . . . **REDUCE**
   a. STBY ALT PWR Switch . . . . **OFF**
   b. AVIONICS No. 2 Switch . . . . **OFF**

NOTE

With AVIONICS No. 2 switch in the OFF position, the dynamic redline will become fixed at 2397 FT-LB regardless of temperature or altitude changes. The cruise torque bug will become inoperative and will not be shown on the EIS torque indicator.

   c. IGNITION Switch . . . . **NORM**
   d. Circuit Breakers . . . . **CLOSE** (push in)
   e. Left LIGHTS Panel Switches (9 total) . . . . **OFF**
   f. POWER OUTLET Switch(es) . . . . **OFF**
   g. VENT AIR FANS. . . . . **OFF**
   h. AIR CONDITIONING (if installed). . . . . **OFF**
   i. TEMP Control Knob . . . . **CLOSED** (rotate FULL counterclockwise)
   j. BLEED AIR HEAT Switch . . . . **OFF**
4. INERTIAL SEPARATOR . . . . **NORMAL** (push in)
5. EMERGENCY POWER Lever. **NORMAL**
6. POWER Lever. . . . . **IDLE**
7. PROP RPM Lever . . . . **MIN**
8. FUEL CONDITION Lever . . . . **CUTOFF**
9. FUEL/OIL SHUTOFF Knob . . . . **ON** (push in)
10. FUEL TANK SELECTORS . . . . **BOTH ON**

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AIRSTART (Continued)

STARTER ASSIST (Continued)

11. FUEL BOOST Switch . . . . **ON**
12. Altitude . . . . **20,000 FEET MAXIMUM**
13. STARTER Switch . . . . **START and OBSERVE**
    a. IGNITION ON Annunciator. . . . . **CHECK** (verify annunciator is shown)
    b. OIL PSI Indicator . . . . **CHECK** (OIL PSI indicated and rising)
    c. N_g Indicator . . . . **12% RPM** (minimum)
14. FUEL CONDITION Lever . . . . **LOW IDLE and OBSERVE**
    a. FFLOW PPH Indicator . . . . **90-140 PPH**
    b. ITT Indicator . . . . **MONITOR** (1090°C maximum)
    c. N_g Indicator . . . . **55% RPM** (minimum)
15. STARTER Switch . . . . **OFF**
16. IGNITION Switch . . . . **ON** (if in heavy precipitation or fuel tanks near empty)
17. FUEL BOOST Switch . . . . **NORM** (unless it cycles on and off; then leave ON)
18. FUEL CONDITION Lever . . . . **HIGH IDLE**
19. PROP RPM Lever. . . . . **SET**
20. POWER Lever . . . . **SET**
21. STBY ALT PWR Switch . . . . **ON**
22. AVIONICS No. 2 Switch . . . . **ON**
23. Electrical Equipment. . . . . **AS REQUIRED**

FORCED LANDINGS

EMERGENCY LANDING WITHOUT ENGINE POWER

1. Seats, Seat Belts, Shoulder Harnesses . . . . **SECURE**
2. Loose Objects . . . . **SECURE**
3. Airspeed: . . . . **100 KIAS - WING FLAPS UP**
   80 KIAS - WING FLAPS LAND
4. POWER Lever. . . . . **IDLE**
5. PROP RPM Lever . . . . **FEATHER**
6. FUEL CONDITION Lever . . . . **CUTOFF**
7. FUEL BOOST Switch . . . . **OFF**
8. IGNITION Switch. . . . . **NORM**
9. STBY ALT PWR Switch. . . . . **OFF**
10. Nonessential Equipment . . . . **OFF**
11. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
12. FUEL TANK SELECTORS . . . . **OFF**
    (aural warning horn will sound)
13. WING FLAPS Handle . . . . **AS REQUIRED**
    (LAND recommended)
14. Crew Doors . . . . **UNLATCH PRIOR TO TOUCHDOWN**
15. GENERATOR Switch . . . . **TRIP**
16. BATTERY Switch . . . . **OFF**
    (when landing is assured)
17. Touchdown . . . . **SLIGHTLY TAIL LOW**
18. Brakes . . . . **APPLY HEAVILY**

FORCED LANDINGS (Continued)

PRECAUTIONARY LANDING WITH ENGINE POWER

1. Seats, Seat Belts, Shoulder Harnesses . . . . **SECURE**
2. Loose Objects. . . . . **SECURE**
3. WING FLAPS Handle . . . . **TO/APR**
4. Airspeed . . . . **90 KIAS**
5. Selected Field. . . . . **FLY OVER**
   (noting terrain and obstructions)
6. Nonessential Equipment. . . . . **OFF**
   (except BATTERY, GENERATOR and STBY ALT PWR)
7. WING FLAPS Handle . . . . **LAND**
   (on final approach)
8. Airspeed . . . . **80 KIAS**
9. Crew Doors. . . . . **UNLATCH PRIOR TO TOUCHDOWN**
10. STBY ALT PWR Switch . . . . **OFF**
11. GENERATOR Switch . . . . **TRIP**
12. BATTERY Switch . . . . **OFF**
13. Touchdown . . . . **SLIGHTLY TAIL LOW**
14. POWER Lever . . . . **BETA RANGE**
15. FUEL CONDITION Lever . . . . **CUTOFF**
16. Brakes. . . . . **APPLY HEAVILY**

FORCED LANDINGS (Continued)

DITCHING

1. Radio . . . . **TRANSMIT MAYDAY** (on 121.5 MHz)
   (give location, intentions and SQUAWK 7700)
2. Heavy Objects in Cabin . . . . **SECURE OR JETTISON**
   (if passenger is available to assist)
3. Seats, Seat Belts, Shoulder Harnesses . . . . **SECURE**
4. WING FLAPS Handle . . . . **LAND**
5. POWER. . . . **ESTABLISH 300 FT/MIN DESCENT AT 80 KIAS**
6. Approach
   a. High Winds, Heavy Seas . . . . **INTO THE WIND**
   b. Light Winds, Heavy Swells . . . . . **PARALLEL TO SWELLS**
7. Cabin Doors . . . . **UNLATCH**
8. Face . . . . **CUSHION AT TOUCHDOWN**
   (with folded coat or similar object)
9. Touchdown . . . . **LEVEL ATTITUDE AT ESTABLISHED RATE OF DESCENT**
10. ELT . . . . **ACTIVATE**
11. Airplane . . . . **EVACUATE THROUGH CABIN DOORS**

NOTE

If necessary, open vent window and flood cabin to equalize pressure so doors can be opened.

12. Life Vests and Raft . . **INFLATE WHEN CLEAR OF AIRPLANE**

WARNING

The airplane has not been flight tested in actual ditchings, thus the above recommended procedure is based entirely on the best judgment of Cessna Aircraft Company.

SMOKE AND FIRE

RED ENGINE FIRE ANNUNCIATOR COMES ON DURING START ON GROUND

1. FUEL CONDITION Lever. . . . . **CUTOFF**
2. FUEL BOOST Switch. . . . . **OFF**
3. STARTER Switch . . . . **MOTOR**

WARNING

It is possible to have an engine fire without an accompanying ENGINE FIRE annunciation.

CAUTION

Do not exceed the starting cycle limitations. Refer to Section 2, Limitations, Engine Starting Cycle Limits.

4. STARTER Switch . . . . **OFF**
5. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
6. BATTERY Switch . . . . **OFF**
7. Airplane. . . . . **EVACUATE**
8. Fire . . . . **EXTINGUISH**

CABIN FIRE DURING GROUND OPERATIONS

1. POWER Lever. . . . . **IDLE**
2. Brakes . . . . **AS REQUIRED**
3. PROP RPM Lever. . . . . **FEATHER**
4. FUEL CONDITION Lever . . . . **CUTOFF**
5. BATTERY Switch . . . . **OFF**
6. Airplane. . . . . **EVACUATE**
7. Fire . . . . **EXTINGUISH**

SMOKE AND FIRE (Continued)

RED ENGINE FIRE ANNUNCIATOR COMES ON IN FLIGHT

1. POWER Lever. . . . . **IDLE**
2. PROP RPM Lever . . . . **FEATHER**
3. FUEL CONDITION Lever . . . . **CUTOFF**
4. FUEL/OIL SHUTOFF Knob. **PULL OFF**
5. CABIN HEAT FIREWALL SHUTOFF Knob. . . . . **PULL OFF**
6. Vents . . . . **CHECK**
   a. Forward Side Air VENT Knobs . . . . **CLOSE (push in)**
   b. Overhead Air Vents. . . . . **OPEN**
   c. VENT AIR Control Knobs . . . . **OPEN/FAN POSITION**
   d. AIR CONDITIONING Switch (if installed) . . . . **OFF**
7. WING FLAPS Handle . . . . **TO/APR - LAND**
8. Airspeed . . . . **80 - 85 KIAS**
9. Forced Landing . . . . **EXECUTE**
   (refer to EMERGENCY LANDING WITHOUT ENGINE POWER)

SMOKE AND FIRE (Continued)

ELECTRICAL FIRE IN FLIGHT

1. STBY ALT PWR Switch . . . . **OFF**
2. GENERATOR Switch . . . . **TRIP**
3. BATTERY Switch . . . . **OFF**

WARNING

- **Without electrical power all electrically operated flight and engine indications, fuel boost pump, EIS annunciators, WING FLAPS Handle and all navigation and communications systems will be inoperative.**
- **All standby instruments, including torque indicator and vacuum-driven standby attitude indicator, will be operative.**

4. Vents . . . . **CLOSED** (to avoid drafts)
   a. Forward Side Air VENT Knobs . . . . **CLOSE (push in)**
   b. Overhead Air Vents . . . . **CLOSE**
   c. VENT AIR Control Knobs . . . . **CLOSE**
   d. AIR CONDITIONING Switch (if installed) . . . . **OFF**
5. TEMP Control Knob . . . . **CLOSED** (rotate FULL counterclockwise)
6. BLEED AIR HEAT Switch . . . . **OFF**
7. Fire Extinguisher . . . . **ACTIVATE**

WARNING

Occupants should use oxygen masks (if installed) until smoke clears. After discharging an extinguisher within a closed cabin, ventilate the cabin.

8. AVIONICS No. 1 and No. 2 Power Switches . . . . **OFF**

WARNING

With AVIONICS No. 1 and No. 2 OFF, use standby flight instruments.

9. All Other Electrical Switches . . . . **OFF**

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SMOKE AND FIRE (Continued)

ELECTRICAL FIRE IN FLIGHT (Continued)

IF FIRE HAS NOT BEEN EXTINGUISHED

10. Forced Landing . . . . **EXECUTE**
(refer to FORCED LANDINGS CHECKLIST)

IF FIRE HAS BEEN EXTINGUISHED AND ELECTRICAL POWER IS NECESSARY FOR CONTINUED FLIGHT TO NEAREST SUITABLE AIRPORT OR LANDING AREA

10. BATTERY Switch . . . . **ON**
11. GENERATOR Switch . . . . **RESET**
12. STBY ALT PWR Switch. . . . . **ON**
13. Circuit Breakers. . . . . **CHECK IN**
(for faulty circuit; do not reset)
14. AVIONICS No. 1 and No. 2 Switches . . . . **ON**
15. Electrical Switches . . . . **ON**
Slowly turn switches on one at a time, while monitoring current draw until faulty circuit is identified.
16. Vents . . . . **OPEN**
(when sure that fire is completely extinguished)
    a. Forward Side Air VENT Knobs . . . . **PULL ON**
    b. Overhead Air Vents. . . . . **OPEN**
    c. VENT AIR Control Knobs . . . . **OPEN/FAN POSITION**
    d. AIR CONDITIONING Switch (if installed) . . . . **OFF**
17. BLEED AIR HEAT Switch . . . . **ON** (as desired)
18. TEMP Control Knob . . . . **ADJUST**
(rotate clockwise)
19. Land airplane as soon as possible to inspect for damage.

WARNING

The fire extinguishing substance is toxic, and fumes must not be inhaled for extended periods. After discharging the extinguisher, the cabin must be ventilated. If oxygen is available, put masks on and start oxygen flow.

SMOKE AND FIRE (Continued)

CABIN FIRE

1. STBY ALT PWR Switch . . . . **OFF**
2. GENERATOR Switch . . . . **TRIP**
3. BATTERY Switch . . . . **OFF**

WARNING

- **Without electrical power all electrically operated flight and engine indications, fuel boost pump, EIS annunciators, WING FLAPS Handle and all navigation and communications systems will be inoperative.**
- **All standby instruments, including torque indicator and vacuum-driven standby attitude indicator, will be operative.**

4. Vents . . . . **CLOSED** (to avoid drafts)
   a. Forward Side Air VENT Knobs . . . . **CLOSE (push in)**
   b. Overhead Air Vents . . . . **CLOSE**
   c. VENT AIR Control Knobs . . . . **CLOSE**
   d. AIR CONDITIONING Switch (if installed) . . . . **OFF**
5. TEMP Control Knob . . . . **CLOSED** (rotate FULL counterclockwise)
6. BLEED AIR HEAT Switch . . . . **OFF**
7. Fire Extinguisher . . . . **ACTIVATE**

WARNING

Occupants should use oxygen masks (if installed) until smoke clears. After discharging an extinguisher within a closed cabin, ventilate the cabin.

8. Land airplane as soon as possible to inspect for damage.

SMOKE AND FIRE (Continued)

WING FIRE

1. PITOT/STATIC HEAT Switch . . . . **OFF**
2. STALL HEAT Switch . . . . **OFF**
3. STROBE Lights Switch . . . . **OFF**
4. NAV Lights Switch . . . . **OFF**
5. LDG and TAXI/ RECOG Lights Switches . . . . **OFF**
6. LEFT FUEL QTY Circuit Breakers . . . . **OPEN** (pull out)
(second row, third breaker from forward end)
7. RIGHT FUEL QTY Circuit Breakers . . . . **OPEN** (pull out)
(third row, third breaker from forward end)
8. RADAR R/T Circuit Breaker (if installed) . . . . . **OPEN** (pull out)
(AVN BUS 1, second row, sixth breaker from left side)
9. VENT AIR Control Knobs . . . . **CLOSE**
10. AIR CONDITIONING Switch (if installed) . . . . **OFF**

WARNING

Perform a sideslip as required to keep flames away from the fuel tank and cabin.

11. Land as soon as possible.

EMERGENCY DESCENT

SMOOTH AIR

1. Seats, Seat Belts, Shoulder Harnesses . . . . **SECURE**
2. POWER Lever . . . . **IDLE**
3. PROP RPM Lever. . . . . **MAX** (full forward)
4. WING FLAPS . . . . **UP**
5. Airspeed . . . . **175 KIAS**

ROUGH AIR

1. Seats, Seat Belts, Shoulder Harnesses . . . . **SECURE**
2. POWER Lever . . . . **IDLE**
3. PROP RPM Lever. . . . . **MAX** (full forward)
4. WING FLAPS . . . . **UP**
5. Weights and Airspeed:
   - 8807 Pounds . . . . **148 KIAS**
   - 7500 Pounds . . . . **137 KIAS**
   - 6250 Pounds . . . . **125 KIAS**
   - 5000 Pounds . . . . **112 KIAS**

ICE AND RAIN PROTECTION

THE FOLLOWING WEATHER CONDITIONS CAN BE CONDUCIVE TO SEVERE IN-FLIGHT ICING - As Required by AD 96-09-15, Paragraph (a) (2):

1. Visible rain at temperatures below 0°C (32°F) ambient air temperature.
2. Droplets that splash or splatter on impact at temperatures below 0°C (32°F) ambient air temperature.

PROCEDURES FOR EXITING THE SEVERE ICING ENVIRONMENT - As Required by AD 96-09-15, Paragraph (a) (2):

These procedures are applicable to all flight phases from takeoff to landing. Monitor the ambient air temperature. While severe icing can form at temperatures as cold as -18°C (0°F), increased vigilance is warranted at temperatures around freezing with visible moisture present. If the visual cues specified in Section 2, Limitations for identifying severe icing conditions are observed, accomplish the following:

1. Immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the severe icing conditions in order to avoid extended exposure to flight conditions more severe than those for which the airplane has been certificated.
2. Avoid abrupt and excessive maneuvering that can exacerbate control difficulties.
3. Do not engage the autopilot.
4. If the autopilot is engaged, hold the control wheel firmly and disengage the autopilot.
5. If an unusual roll response or uncommanded roll control movement is observed, reduce the angle-of-attack.
6. If the flaps are extended, do not retract them until the airframe is clear of ice.
7. Report these weather conditions to Air Traffic Control.

ICE AND RAIN PROTECTION (Continued)

INADVERTENT ICING ENCOUNTER

1. IGNITION Switch . . . . **ON**
2. INERTIAL SEPARATOR . . . . **BYPASS**
   (rotate counterclockwise and PULL out)
3. PITOT/STATIC HEAT Switch . . . . **ON**
4. STALL HEAT Switch . . . . **ON**

IF ABOVE 20,000 FEET

5. Airspeed . . . . **160 KIAS MAX**
6. Altitude . . . . **DESCEND TO 20,000 FEET OR BELOW**
   (as soon as practical)
7. Turn back or change altitude to obtain an outside air temperature that is less conducive to icing.
8. IGNITION Switch . . . . **OFF**
   (after 5 minutes operation)
9. BLEED AIR HEAT Switch . . . . **ON**
10. TEMP Control Knob . . . . **MAX HEAT**
    (rotate clockwise)
11. FWD CABIN HEAT Control Knob . . . . **PUSH** (full in)
12. DEFROST Control Knob. . . . . **PULL** (full out)
    (to obtain maximum windshield defroster effectiveness)
13. PROP RPM Lever. . . . . **1900 RPM**
    (to minimize ice build-up)

CAUTION

- If excessive vibration is noted, momentarily reduce propeller RPM to 1600 with the PROP RPM Lever, then rapidly move the control full forward. Cycling the PROP RPM flexes the propeller blades and high RPM increases centrifugal force, causing ice to shed more readily.
- If the INERTIAL SEPARATOR is set to BYPASS at any point due to suspected or actual icing conditions, do not return it to NORMAL until the inertial separator door has been visually inspected and verified free of ice and ice protection fluid.

(Continued Next Page)

ICE AND RAIN PROTECTION (Continued)

INADVERTENT ICING ENCOUNTER (Continued)

14. Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable off airport landing site.
15. With an ice accumulation of 0.25 inch (6.35 mm) or more on the wing leading edges, be prepared for significantly higher power requirements, higher approach and stall speeds, and a longer landing roll.
16. If necessary, set up a forward slip for visibility through the left portion of the windshield during the landing approach.
17. Use approach speed of 120 KIAS with WING FLAPS set at TO/APR. With ice suspected on the airframe, or operating at 5°C (41°F) or less in visible moisture, do not extend WING FLAPS beyond TO/APR for landing.
18. Landing Distance. . . . . . **MULTIPLY POH/AFM DISTANCE BY**
    2.2 - FLAPS UP
    2.1 - FLAPS TO/APR
19. Minimum Approach Airspeed . . . . **AT OR ABOVE**
    120 KIAS - Flaps UP
    110 KIAS - Flaps TO/APR

WARNING

With heavy ice accumulations on the horizontal stabilizer leading edge, do not extend flaps while enroute or holding. When landing is assured, select the minimum flap setting required, not to exceed TO/APR, and maintain extra airspeed consistent with available field length. Do not retract the flaps once they have been extended, unless required for go-around. Then retract flaps in increments while maintaining 5 to 10 knots extra airspeed.

20. Land on the main wheels first, avoiding a slow and high flare.
21. Missed approaches should be avoided whenever possible because of severely reduced climb capability. However, if a go-around is mandatory, make the decision much earlier in the approach than normal. Apply takeoff power and maintain 95 to 110 KIAS while retracting the flaps slowly in increments.

ENGINE MALFUNCTIONS

RED OIL PRESS LOW ANNUNCIATOR COMES ON

1. OIL PSI Indication. . . . . **MONITOR**

CAUTION

If oil pressure indications confirm warning annunciator, proceed in accordance with ENGINE FAILURE checklists, or at the discretion of the pilot and consistent with safety, continue engine operation in preparation for an emergency landing as soon as possible.

UNCOMMANDED ENGINE POWER REDUCTION TO IDLE

1. POWER Lever . . . . **IDLE**
2. EMERGENCY POWER Lever . . **SET POWER AS REQUIRED**
   (maintain 65% N_g minimum during flight)

Amber EMERG PWR LVR annunciator will come on once EMERGENCY POWER lever is moved out of NORMAL.

CAUTION

- The EMERGENCY POWER lever overrides normal fuel control functions and results in the direct operation of the fuel metering valve. Utilize slow and smooth movement of the EMERGENCY POWER lever to avoid engine surges, and/or exceeding ITT, N_g and torque limits.
- MAXIMUM RATED power may not be achievable at all temperatures and altitudes when using the EMERGENCY POWER lever.

RED EMERG PWR LVR ANNUNCIATOR COMES ON PRIOR TO OR DURING ENGINE START

1. EMERGENCY POWER Lever . . . . **CHECK**
   (verify lever in NORMAL position)

FUEL SYSTEM

RED RSVR FUEL LOW ANNUNCIATOR COMES ON

1. FUEL TANK SELECTORS . . . . **BOTH ON**
2. IGNITION Switch. . . . . **ON**
3. FUEL BOOST Switch . . . . **ON**

IF RED RSVR FUEL LOW ANNUNCIATOR REMAINS ON WITH USABLE FUEL IN WING TANKS

4. Engine Indicating System . . . . **MONITOR**

WARNING

Watch for signs of fuel starvation and/or amber FUEL PRESS LOW annunciation.

5. Land as soon as possible and determine cause of the red RSVR FUEL LOW annunciation.

IF RED RSVR FUEL LOW ANNUNCIATOR REMAINS ON AND AMBER FUEL PRESS LOW ANNUNCIATOR COMES ON

6. Land as soon as possible. (refer to EMERGENCY LANDING WITHOUT ENGINE POWER)

IF RED RSVR FUEL LOW ANNUNCIATOR GOES OFF WITH USABLE FUEL IN WING TANKS

4. FUEL QTY Indicators . . . . .CHECK
(maximum fuel imbalance 200 pounds)
5. Engine Indicating System . . . . **MONITOR**
6. Ignition Switch . . . . **NORM**
7. Fuel BOOST Switch . . . . **NORM**
8. Continue flight as planned.

FUEL SYSTEM (Continued)

RED FUEL SELECT OFF ANNUNCIATOR COMES ON DURING ENGINE START AND AURAL WARNING HORNS SOUND

1. FUEL TANK SELECTORS . . . . **BOTH ON**

IF RED FUEL SELECT OFF ANNUNCIATOR REMAINS ON

2. Determine cause and repair before next flight.

IF RED FUEL SELECT OFF ANNUNCIATOR GOES OFF AND AURAL WARNING HORNS SILENCED

2. Continue with engine start procedure.

RED FUEL SELECT OFF AND AMBER L, R, OR L-R FUEL LOW ANNUNCIATORS COME ON

1. FUEL TANK SELECTORS . . . . **BOTH ON**
2. Fuel Balance. . . . . **MONITOR**
(maximum 200 pounds imbalance)

RED FUEL SELECT OFF ANNUNCIATOR COMES ON DURING FLIGHT AND AURAL WARNING HORN SOUNDS

1. FUEL TANK SELECTORS . . . . **BOTH ON**
2. Fuel Balance. . . . . **MONITOR**
(maximum 200 pounds imbalance)

FUEL SYSTEM (Continued)

RED FUEL SELECT OFF ANNUNCIATOR COMES ON PRIOR TO ENGINE START AND AURAL WARNING HORNS NOT SOUNDING

1. START CONT Circuit Breaker. . . . . **CLOSE** (push in)
   (top row, third breaker from forward end)
2. FUEL SEL WARN Circuit Breaker. . . . . **CLOSE** (push in)
   (second row, first breaker from forward end)

NOTE

When the START CONT or FUEL SEL WARN Circuit Breakers are in the open position, the FUEL SELECT OFF annunciator will come on and aural warning horns will not sound.

CAUTION

Do not close (reset) circuit breakers more than once and only after a 2 minute cool off period.

IF RED FUEL SELECT OFF ANNUNCIATOR REMAINS ON

3. Determine cause and repair before next flight.

IF RED FUEL SELECT OFF ANNUNCIATOR GOES OFF

3. Continue with engine start procedure.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

RED VOLTAGE HIGH ANNUNCIATOR COMES ON

1. BUS VOLTS . . . . **CHECK**

   If BUS VOLTS increases above 32.5, expect generator to trip offline automatically. BUS VOLTS indication will turn red/white at 32.1 volts to give advanced warning of an automatic trip.

IF GENERATOR AUTOMATICALLY TRIPS OFFLINE WITH BUS VOLTS ABOVE 32.5

2. GEN CONT and
   GEN FIELD Circuit Breakers **CLOSE** (push in)
   (top row, first and second breakers from forward end)
3. GENERATOR Switch . . . . **RESET**

IF GENERATOR OUTPUT RESUMES

4. BUS VOLTS and GEN AMPS. . . . . **MONITOR**

IF GENERATOR TRIPS OFFLINE AGAIN WITH BUS VOLTS ABOVE 32.5

5. GENERATOR Switch . . . . **TRIP**
6. AVIONICS BUS TIE Switch . . . . **ON**
7. AVIONICS STBY PWR Switch . . . . **ON**
8. AVIONICS NO. 1 and NO. 2 Switches . . . . **OFF**
9. Electrical Load . . . . **REDUCE**
   a. CABIN Lights Switch . . . . **OFF**
   b. POWER OUTLET Switch(es). . . . . **OFF**
   c. BCN Lights Switch . . . . **OFF**
   d. LDG and TAXI/ RECOG Light Switches. . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

(Continued Next Page)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

RED VOLTAGE HIGH ANNUNCIATOR COMES ON (Continued)

9. Electrical Load . . . . **REDUCE** (Continued)
   - e. VENT AIR FANS . . . . **OFF**
   - f. AIR CONDITIONING (if installed) . . . . **OFF**
   - g. GEN CONT and GEN FIELD Circuit Breakers . . . . **OPEN** (pull out) (top row, last two breakers on forward end)
   - h. RDNG LIGHT Circuit Breaker . . . . **OPEN** (pull out) (third row, second breaker from aft end)
   - i. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out) (AVN BUS 1, second row, sixth breaker from left side)
   - j. HF RCVR and HF AMP Circuit Breakers **OPEN** (pull out) (AVN BUS 2, second row, fifth and sixth breakers from left side)
   - k. ALT AMPS . . . . **VERIFY BELOW 75 AMPS** (continue shedding if not below 75 amps)
10. Flight . . . . **CONTINUE**

NOTE

With standby alternator powering the electrical system, the flight can continue to destination airport with the GENERATOR OFF annunciator shown. Monitor ALT AMPS load using ENGINE SYSTEM page.

(Continued Next Page)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

RED VOLTAGE HIGH ANNUNCIATOR COMES ON (Continued)

IF GENERATOR DOES NOT AUTOMATICALLY TRIP OFFLINE WITH BUS VOLTS ABOVE 32.5

2. GENERATOR Switch . . . . **TRIP**
3. AVIONICS BUS TIE Switch . . . . **ON**
4. AVIONICS STBY PWR Switch . . . . **ON**
5. AVIONICS NO. 1 and NO. 2 Switches . . . . **OFF**
6. Electrical Load . . . . **REDUCE**
   a. CABIN Lights Switch . . . . **OFF**
   b. POWER OUTLET Switch(es). . . . . **OFF**
   c. BCN Lights Switch . . . . **OFF**
   d. LDG and TAXI/ RECOG Light Switches. . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

   e. VENT AIR FANS . . . . **OFF**
   f. AIR CONDITIONING (if installed) . . . . **OFF**
   g. GEN CONT and GEN FIELD Circuit Breakers . . . . **OPEN** (pull out) (top row, last two breakers on forward end)
   h. RDNG LIGHT Circuit Breaker . . . . **OPEN** (pull out) (third row, second breaker from aft end)
   i. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out) (AVN BUS 1, second row, sixth breaker from left side)
   j. HF RCVR and HF AMP Circuit Breakers **OPEN** (pull out) (AVN BUS 2, second row, fifth and sixth breakers from left side)
   k. ALT AMPS . . . . **VERIFY BELOW 75 AMPS** (continue shedding if not below 75 amps)

11. Flight. . . . . **CONTINUE**

NOTE

With Standby Alternator powering the electrical system, the flight can continue to destination airport with the GENERATOR OFF annunciator shown. Monitor ALT AMPS load using ENGINE SYSTEM page.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

RED VOLTAGE LOW ANNUNCIATOR COMES ON

1. BUS VOLTS . . . . **CHECK**

CAUTION

A red VOLTAGE LOW annunciation followed by a open (tripped) BUS 1, BUS 2 or STBY PWR circuit breaker can indicate a feeder fault that has isolated itself. Do not close (reset) the open breaker. The red VOLTAGE LOW annunciation should go off after circuit breaker opens.

2. STBY ALT PWR . . . . **VERIFY ON**

IF BUS VOLTS IS LESS THAN 24.5 WITH GENERATOR OFF AND STBY PWR INOP ANNUNCIATORS ON

3. GEN CONT and
   GEN FIELD Circuit Breakers. . . . . **CLOSE** (push in)
   (top row, last two breakers on forward end)
4. GENERATOR Switch . . . . **RESET**
5. STBY ALT PWR Switch. . . . . **OFF; THEN ON**

IF BUS VOLTS IS STILL LESS THAN 24.5

6. GENERATOR Switch . . . . **TRIP**
7. STBY ALT PWR Switch. . . . . **OFF**
8. Electrical Load. . . . . **REDUCE**
   a. AVIONICS STBY PWR Switch . . . . **OFF**
   b. AVIONICS BUS TIE Switch . . . . **OFF**
   c. CABIN Lights . . . . **OFF**
   d. BCN Lights . . . . **OFF**
   e. LDG and TAXI/RECOG Lights . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

(Continued Next Page)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

RED VOLTAGE LOW ANNUNCIATOR COMES ON (Continued)

8. Electrical Load . . . . **REDUCE** (Continued)
   f. VENT AIR FANS . . . . **OFF**
   g. AIR CONDITIONING (if installed) . . . . **OFF**
   h. TEMP Control Knob . . . . **ADJUST**

CAUTION

When BUS VOLTS drops below 23.0 the bleed air valve will fail to the open position. Rotate the TEMP control knob counterclockwise as necessary to control cabin temperature.

   i. GEN CONT and
      GEN FIELD Circuit Breakers . . . . **OPEN** (pull out)
      (top row, last two breakers on forward end)
   j. RIGHT PITOT HEAT Circuit Breaker . . . . . **OPEN** (pull out)
      (second row, third breaker from aft end)
   k. RDNG LIGHT Circuit Breaker . . . . **OPEN** (pull out)
      (third row, second breaker from aft end)
   l. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out)
      (AVN BUS 1, second row, sixth breaker from left side)
   m. AVIONICS No. 2 Switch . . . . **OFF**

NOTE

With AVIONICS No. 2 switch in the OFF position, the dynamic redline will become fixed at 2397 FT-LB regardless of temperature or altitude changes. The cruise torque bug will become inoperative and will not be shown on the EIS torque indicator.

9. BAT AMPS . . . . **CHECK**
   (verify below 45 amps)
10. Land as soon as possible. (refer to FORCED LANDINGS procedures)

AUTOPILOT OR ELECTRIC TRIM FAILURE

RED PTRM MESSAGE COMES ON

1. Control Wheel . . . . **GRASP FIRMLY**
(regain control of airplane)
2. AP/TRIM DISC Button. . . . . **PRESS**
(high elevator control forces possible)
3. ELEVATOR TRIM . . . . **ADJUST MANUALLY**
(as necessary)

NOTE

Actuate each half of the pilot and copilot manual electric pitch trim switches separately to make sure trim does not actuate with only one half switch.

IF RED PTRM MESSAGE REMAINS ON

4. Autopilot . . . . **DO NOT RE-ENGAGE**
5. A/P CONT Circuit Breaker. . . . . **OPEN** (pull out)
(AVN BUS 1, second row, third breaker from left side)

WARNING

Following an autopilot, autotrim or manual electric trim system malfunction, do not engage the autopilot until the cause of the malfunction has been corrected.

IF RED PTRM MESSAGE GOES OFF

4. Continue flight as planned without the use of the autopilot.

WARNING

Following an autopilot, autotrim or manual electric trim system malfunction, do not engage the autopilot until the cause of the malfunction has been corrected.

AUTOPILOT OR ELECTRIC TRIM FAILURE (Continued)

RED AFCS OR YAW MESSAGE COMES ON

1. A/P CONT Circuit Breaker . . . . **CLOSE** (push in)
   (AVN BUS 1, second row, third breaker from left side)

IF RED AFCS OR YAW MESSAGE REMAINS ON

2. Continue flight as planned without the use of the autopilot.

WARNING

Following an autopilot, autotrim or manual electric trim system malfunction, do not engage the autopilot until the cause of the malfunction has been corrected.

AMPLIFIED EMERGENCY PROCEDURES

ENGINE FAILURE

If an engine failure occurs during the takeoff roll, the most important thing to do is stop the airplane on the remaining runway. Those extra items on the checklist will provide added safety after a failure of this type.

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after takeoff. Feathering the propeller substantially reduces drag, thereby providing increased glide distance. In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstructions. Altitude and airspeed are seldom sufficient to execute a 180° gliding turn necessary to return to the runway. The checklist procedures assume that adequate time exists to secure the fuel and electrical systems prior to touchdown.

After an engine failure in flight, the best glide speed, as shown in Figure 3-1, should be established as quickly as possible. Propeller feathering is dependent on existing circumstances and is at the discretion of the pilot. On the other hand, to obtain the maximum glide, the propeller must be feathered.

While gliding toward a suitable landing area, an effort should be made to identify the cause of the power loss. An engine failure might be identified by abnormal temperatures, mechanical noises or high vibration levels in conjunction with the power loss. An engine failure will be noticed by a drop in ITT, N_g and torque limits.

CAUTION

Do not attempt to restart an engine that is definitely known to have failed.

(Continued Next Page)

ENGINE FAILURE (Continued)

A flameout can result from the engine running out of fuel, or by unstable engine operation. Unstable engine operation such as a compressor surge, possible due to a bleed valve malfunction, can be identifiable by an audible popping noise just before flameout. Once the fuel supply has been restored to the engine or cause of unstable engine operation eliminated, the engine can be restarted.

The best airstart technique is to initiate the restart procedure immediately after a engine failure occurs, provided the pilot is certain that the engine failure was not the result of some malfunction that might make it hazardous to attempt a restart.

Regardless of airspeed or altitude, there is always the possibility that the engine can restart successfully just as soon as the IGNITION is switched ON. In an emergency, turn the IGNITION switch ON just as soon as possible after engine failure, provided the N_g speed has not dropped below 50%. Under these circumstances, it is not necessary to shut off the fuel or feather the propeller. The POWER lever, however, should be set to the IDLE position.

CAUTION

The pilot should determine the reason for power loss before attempting an airstart.

If a engine failure has occurred and the N_g speed has dropped below 50%, the FUEL CONDITION lever should be moved to the CUTOFF position before an airstart is attempted.

Propeller feathering is dependent on circumstances and is at the discretion of the pilot. However, if engine OIL PSI drops below 15 PSI, the propeller should be feathered.

(Continued Next Page)

ENGINE FAILURE (Continued)

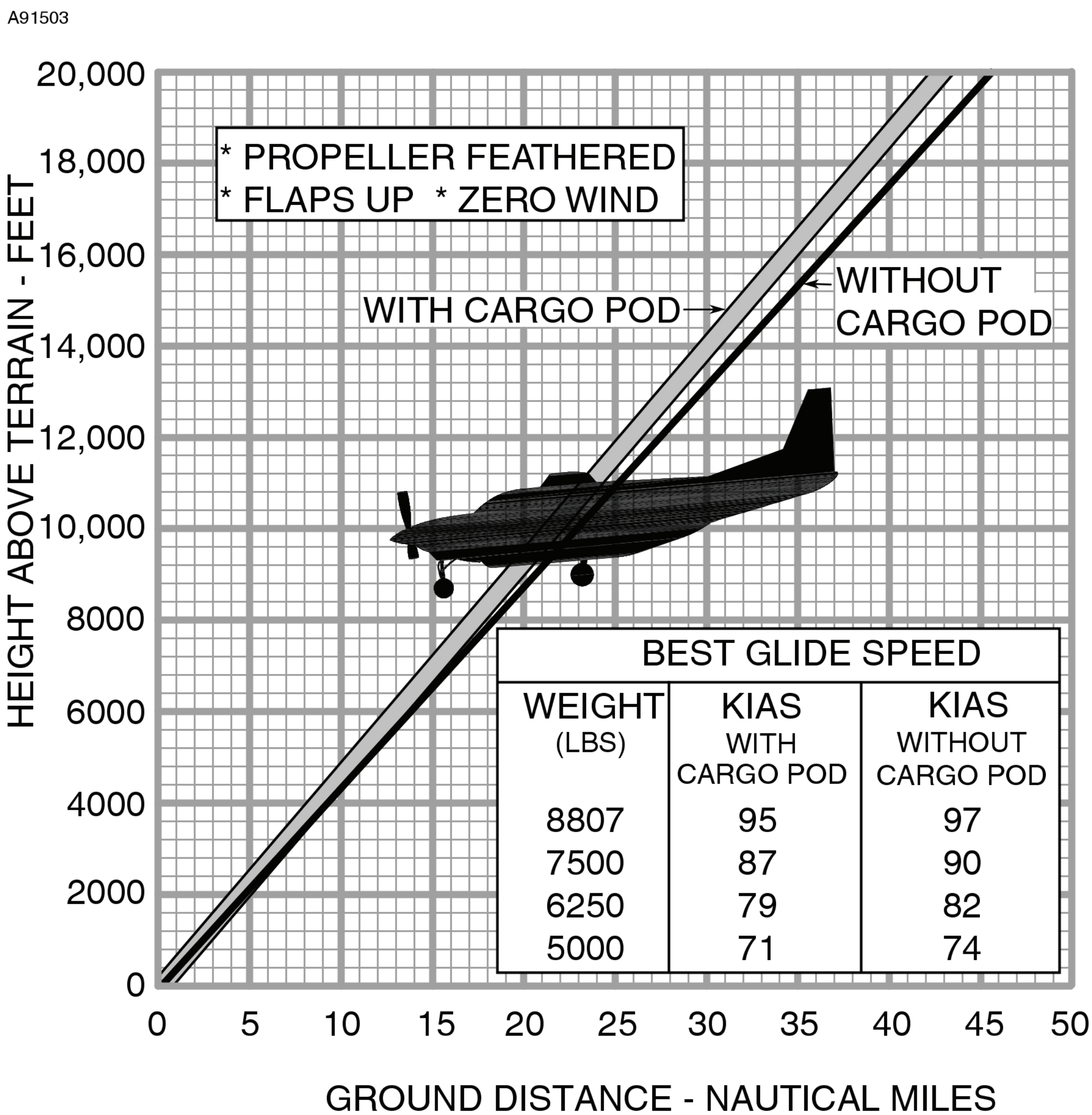
If an airstart is to be attempted, follow the AIRSTART checklist procedures. Successful airstarts with starter assist can be achieved at all airspeeds normally flown and up to an altitude of 14,000 feet. However, above 14,000 feet, or with the N_g speed below 10%, starting temperatures tend to be higher and caution is required.

CAUTION

- The FUEL CONDITION lever can be moved momentarily to CUTOFF and then back to LOW IDLE if overtemperature tendencies are encountered. This reduces the flow of fuel to the combustion chamber.
- If a rise in N_g and ITT are not indicated within 10 seconds, place FUEL CONDITION lever to CUTOFF and abort start. Refer to ENGINE FAILURE DURING FLIGHT and EMERGENCY LANDING WITHOUT ENGINE POWER.

If the engine starter is inoperative, refer to EMERGENCY LANDING WITHOUT ENGINE POWER.

MAXIMUM GLIDE



BEST GLIDE SPEED		
WEIGHT (LBS)	KIAS WITH CARGO POD	KIAS WITHOUT CARGO POD
8807	95	97
7500	87	90
6250	79	82
5000	71	74

Figure 3-1

FORCED LANDINGS

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for off-airport landing. Refer to EMERGENCY LANDING WITHOUT ENGINE POWER checklist procedures.

Before attempting an off-airport landing with engine power available, one should fly over the landing area at a safe but low altitude to inspect the terrain for obstructions and surface conditions. Refer to PRECAUTIONARY LANDING WITH ENGINE POWER checklist procedures.

The overhead FUEL TANK SELECTORS control shutoff valves at the wing fuel tank outlets. To minimize the possibility of a fire, these FUEL TANK SELECTORS can be set to the OFF position during the final phase of an approach to an off-airport landing. With the FUEL TANK SELECTORS turned OFF, there is adequate fuel in the fuel reservoir for 3 minutes of maximum continuous power operation or approximately 9 minutes idle power operation. A aural warning horn will sound with both FUEL TANK SELECTORS turned OFF. If the noise of the warning horn is too distracting, it can be silenced by opening the START CONT circuit breaker by pulling out on the collar.

WARNING

If the precautionary landing is aborted, turn the FUEL TANK SELECTORS to the ON position after initiating the balked landing.

DITCHING

Prepare for ditching by securing or jettisoning heavy objects located in the baggage area and collect folded coats for protection of occupants' faces at touchdown. Transmit Mayday message on 121.5 MHz giving location, intentions and squawk 7700. Avoid a landing flare because of difficulty in judging height over a water surface.

LANDING WITHOUT ELEVATOR CONTROL

Using POWER lever and ELEVATOR TRIM control, trim for approximately 500 FPM descent with WING FLAPS set to TO/APR and airspeed at 85 KIAS. Then control the glide angle by adjusting the POWER lever. If required, make small trim changes to maintain approximately 85 KIAS as power is adjusted during the approach.

The landing flare can be accomplished by a gentle power reduction accompanied by nose up trim. At forward C.G. loadings, it may be necessary to make a small power increase in the final flare stage to bring the nose up and prevent touchdown on the nosewheel first. After touchdown, set the POWER lever to IDLE.

SMOKE AND FIRE

In the event a fire is encountered, the following information will be helpful in dealing with the emergency as quickly and safely as possible.

The Preflight Checklist, located in Section 4 of this POH, is provided to aid the pilot in detecting conditions which could contribute to an airplane fire. As a fire requires a combustible material, oxygen and a source of ignition, close preflight inspection should be given to the engine compartment and the underside of the wing and fuselage. Leaks in the fuel or oil systems can lead to a ground or in-flight fire.

WARNING

Flight should not be attempted with known fuel or oil leaks. The presence of fuel or unusual oil stains can be an indication of system leaks and should be corrected prior to flight.

(Continued Next Page)

SMOKE AND FIRE (Continued)

Probable causes of an engine fire are a malfunction of the fuel control unit and improper starting procedures. Improper procedures such as starting with the EMERGENCY POWER lever out of NORMAL position or introducing fuel into the engine when N_g is below 10% RPM will cause a hot start, which can result in an engine fire. In the event that this occurs, refer to ENGINE FIRE DURING START ON GROUND checklist.

If an airplane fire is discovered on the ground or during takeoff, but prior to committed flight, the airplane should be stopped and evacuated as soon as practical.

Engine fires originating in flight must be controlled as quickly as possible in an attempt to prevent major structural damage. Immediately pull out on the FUEL/OIL SHUTOFF control knob and shut down the engine. Close the CABIN HEAT FIREWALL SHUTOFF control and forward side air vents to avoid drawing fire into the cabin, open the overhead air vents, set WING FLAPS to LAND and reduce airspeed to 80-85 KIAS. This provides a positive cabin pressure in relation to the engine compartment. An engine restart should not be attempted.

An open cockpit side window produces a low pressure in the cabin. To avoid drawing the fire into the cabin, the cockpit side window should be kept closed.

A fire or smoke in the cabin should be controlled by identifying and shutting down the faulty system. Smoke can be removed by opening the cabin ventilation controls. When the smoke is intense, the pilot can choose to expel the smoke through the cockpit side window. The cockpit side window should be closed immediately if the fire becomes more intense when the vent window is opened.

The initial indication of an electrical fire is usually the odor of burning insulation. In the event that this occurs, refer to ELECTRICAL FIRE IN FLIGHT checklist.

EMERGENCY OPERATION IN CLOUDS

If the vacuum pump fails in flight, the standby attitude indicator will not be accurate. The pilot must then rely on the attitude and heading information (from the AHRS) shown on the PFD indicators. With valid HDG or GPS/NAV inputs, autopilot operation will not be affected.

If a single AHRS unit fails in flight (red X's shown through the PFD attitude and heading indicators), the pilot must rely on the cross-side AHRS for attitude and heading information.

The autopilot will not operate if a single AHRS unit fails. The pilot must manually fly the airplane with cross-side AHRS input. Refer to Section 7, Airplane and Systems Description, for additional details on autopilot operations.

The following instructions assume a dual AHRS failure and that the pilot is not very proficient at instrument flying and is flying the airplane without the autopilot engaged.

EMERGENCY OPERATION IN CLOUDS (Continued)

EXECUTING A 180° TURN IN CLOUDS (DUAL AHRS FAILURE)

Upon inadvertently entering the clouds, an immediate turn to reverse course and return to VFR conditions should be made as follows:

DUAL AHRS FAILURE

1. Note the non-stabilized magnetic compass heading.
2. Set rudder trim to the neutral position.
3. Using the standby attitude indicator, initiate a 15° bank left turn. Keep feet off rudder pedals. Maintain altitude and 15° bank angle. Continue the turn for 60 seconds, then roll back to level flight.
4. When the compass card becomes sufficiently stable, check the accuracy of the turn by verifying that the compass heading approximates the reciprocal of the original heading.
5. If necessary, adjust the heading by keeping the wings level and using the rudder to make skidding turns (the compass will read more accurately) to complete the course reversal.
6. Maintain altitude and airspeed by cautious application of elevator control. Keep the roll pointer and index aligned and steer only with rudder.

EMERGENCY OPERATION IN CLOUDS (Continued)

EMERGENCY DESCENT THROUGH CLOUDS (DUAL AHRS FAILURE)

When returning to VFR flight after a 180° turn is not practical, a descent through the clouds to VFR conditions below can be appropriate. If possible, obtain an ATC clearance for an emergency descent through the clouds.

DUAL AHRS FAILURE

Choose an easterly or westerly heading to minimize non-stabilized magnetic compass card sensitivity. Occasionally check the compass heading and make minor corrections to hold an approximate course. The autopilot will not operate if the AHRS unit fails. The pilot must manually fly the airplane without AHRS input.

Before descending into the clouds, prepare for a stabilized descent as follows:

1. Set rudder trim to neutral position.
2. Turn PITOT HEAT switch to the ON position.
3. Set power for a 500 to 800 feet per minute rate of descent.
4. Set the elevator trim for a stabilized descent at 115 KIAS.
5. Use the standby attitude indicator roll pointer and index to keep wings level.
6. Check trend of compass card movement and make cautious corrections with rudder to stop the turn.
7. Upon breaking out of clouds, resume normal cruising flight.

EMERGENCY OPERATION IN CLOUDS (Continued)

RECOVERY FROM SPIRAL DIVE IN THE CLOUDS (DUAL AHRS FAILURE)

DUAL AHRS FAILURE

If a spiral is entered while in the clouds, continue as follows:

1. Retard POWER lever to idle position.
2. Remove feet from rudder pedals.
3. Stop turn by carefully leveling the wings using aileron control to align the roll index and roll pointer of the standby attitude indicator.
4. Cautiously apply elevator back pressure to slowly reduce the airspeed to 115 KIAS.
5. Adjust the elevator trim control to maintain an 115 KIAS glide.
6. Set rudder trim to neutral position.
7. Use aileron control to maintain wings level (keep roll pointer and index aligned) and constant heading.
8. Resume EMERGENCY DESCENT THROUGH THE CLOUDS procedure.
9. Upon breaking out of clouds, resume normal cruising flight.

SPINS

Intentional spins are prohibited in this airplane. Should an inadvertent spin occur, the following recovery technique can be used.

1. RETARD POWER LEVER TO IDLE POSITION.
2. PLACE AILERONS IN NEUTRAL POSITION.
3. APPLY AND **HOLD** FULL RUDDER OPPOSITE TO THE DIRECTION OF ROTATION.
4. IMMEDIATELY **AFTER** THE RUDDER REACHES THE STOP, MOVE THE CONTROL WHEEL **BRISKLY** FORWARD FAR ENOUGH TO BREAK THE STALL. Full down elevator will be required at aft center of gravity loadings to assure optimum recoveries.
5. **HOLD** THESE CONTROL INPUTS UNTIL ROTATION STOPS. Premature relaxation of the control inputs may extend the recovery.
6. AS ROTATION STOPS, NEUTRALIZE RUDDER AND MAKE A SMOOTH RECOVERY FROM THE RESULTING DIVE.

NOTE

If the rate of the spin makes determining the direction of rotation difficult, the magenta turn rate indicator at the top of the HSI compass card will show the rate and direction of the turn. The HSI compass card will rotate in the opposite direction. Hold opposite rudder to the turn vector direction.

ENGINE MALFUNCTIONS

LOSS OF OIL PRESSURE

The complete loss of oil pressure, as evidenced by the red OIL PRESS LOW annunciator and confirmed by the OIL PSI indicator reading, implies that the pilot will eventually lose control of the propeller as the propeller springs and counterweights drive the propeller blades into feather and eventual engine stoppage. Therefore, if the pilot decides to continue to operate the engine after loss of oil pressure, engine and propeller operation should be closely monitored for indication of the onset of propeller feathering or engine seizure. The ENGINE FAILURE DURING FLIGHT checklist should be completed at that time.

Operation of the engine at a reduced power setting, preferably at the minimum power required for the desired flight regime, will generally prolong the time to loss of engine/propeller thrust.

Operation of the engine with the OIL PSI indicator in the yellow band range is not considered critical, but is a cause for concern and should be allowed only for the completion of the flight. Continued monitoring of the OIL PSI indicator will provide an early indication of dropping oil pressure due to insufficient oil supply or a malfunctioning oil pump, and will give the pilot additional time to divert to a suitable emergency landing area with the engine operating.

ENGINE MALFUNCTIONS (Continued)

UNCOMMANDED ENGINE POWER REDUCTION TO IDLE

A malfunction in the pneumatic or governor sections of the fuel control unit can cause engine power to decrease to minimum flow idle. Symptoms of this type failure would be an ITT indication in the typical idle range of 500°C to 600°C, N_g of 48% or above (increases with altitude), and no engine response to POWER lever movement. If this type of malfunction has occurred, the EMERGENCY POWER lever (fuel control manual override) can be used to restore engine power. To use the manual override system, set the POWER lever to IDLE position and move the EMERGENCY POWER lever forward of IDLE and advance as required.

CAUTION

When using the fuel control manual override system, engine response can be more rapid than when using the POWER lever. Utilize slow and smooth movement of the EMERGENCY POWER lever to avoid engine surges, and/or exceeding ITT, N_g, and torque limits.

NOTE

- When using EMERGENCY POWER lever, monitor N_g% RPM when reducing power near idle, to keep it from decreasing below 65% in flight.
- The EMERGENCY POWER lever can have a dead band, such that no engine response is observed during the initial forward travel from the IDLE position.

EMERGENCY POWER LEVER NOT STOWED

The red EMERG PWR LVR annunciator was designed to alert the pilot of the EMERGENCY POWER Lever position prior to and during the engine start sequence. If the EMERGENCY POWER Lever is moved from the NORMAL position at any time with the engine running, an amber annunciator will be shown.

FUEL SYSTEM MALFUNCTION

INADVERTENT FUEL FLOW INTERRUPTION

Fuel flows by gravity from the wing fuel tanks, through two fuel tank shutoff valves at the inboard end of each wing tank, and on to the fuel reservoir which is located under the center cabin floorboard. After engine start, the main ejector pump, located in the reservoir, provides fuel to the engine-driven fuel pump at approximately 10 PSI.

If the main ejector pump should malfunction, a pressure switch will activate the amber FUEL PRESS LOW annunciator as well as turn on the auxiliary boost pump, anytime the FUEL BOOST Switch is in the NORM position and fuel pressure drops below approximately 2.5 PSI.

Anytime the level of fuel in the fuel reservoir drops to approximately one half full, the red RSVR FUEL LOW annunciator will come on. If this occurs, the pilot should immediately verify that both FUEL TANK SELECTORS, located in the overhead panel, are in the ON position and set the IGNITION and FUEL BOOST Switches to the ON position.

WARNING

There is only enough fuel in the reservoir for approximately 1.5 minutes of engine operation at maximum continuous power after the red RSVR FUEL LOW annunciator comes on.

If the FUEL TANK SELECTORS have been left in the OFF position, turning both valves ON will quickly fill the fuel reservoir and the red RSVR FUEL LOW annunciator will go off. Once the cause of the RSVR FUEL LOW condition has been determined and corrected (annunciator will go off), the IGNITION and FUEL BOOST Switches can be returned to their NORM positions.

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FUEL SYSTEM MALFUNCTION

INADVERTENT FUEL FLOW INTERRUPTION (Continued)

The fuel selector off warning system notifies the pilot if both FUEL TANK SELECTORS are in the OFF position before engine start, if either FUEL TANK SELECTOR is OFF during engine start, or if one FUEL TANK SELECTOR is OFF and the fuel level in the tank being used drops below approximately 25 gallons. The warning system includes a red FUEL SELECT OFF annunciator and two aural warning horns. If the FUEL SEL WARN circuit breaker has opened or the START CONT circuit breaker has been opened or pulled (possibly for ground maintenance), the red FUEL SELECT OFF annunciator will come on even with both FUEL TANK SELECTORS in the ON position. This annunciation serves as a warning to the pilot that the fuel selector off warning system has been deactivated. Refer to Section 7, Airplane and System Descriptions, Fuel Systems, for more information on the fuel selector off warning system.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

GENERATOR OR MAIN BUS MALFUNCTIONS

Illumination of the red VOLTAGE LOW annunciator is a warning that the power distribution bus voltage is low enough to start discharging the battery. Monitor the BUS VOLTS reading to verify the low bus voltage condition. A low or 0 (zero) reading of the GEN AMPS indicator confirms that the charge is insufficient or generator output current is 0 (zero). If the amber GENERATOR OFF annunciator comes on, it indicates that the generator contactor has disconnected the generator from the power distribution bus. The most likely causes of a generator trip (disconnection) are line surges, open circuit breakers or accidental switch operation. In these cases, follow the AMBER GENERATOR OFF ANNUNCIATOR COMES ON checklist procedures to restore generator operation.

The airplane is equipped with two starter contactors. One is used for starts using external power and the other for battery starts. If either contactor does not open after reaching approximately 46% N_g, the amber STARTER ON annunciator will remain on. In most cases when this occurs, the generator will not transfer over to the generator mode, and the amber GENERATOR OFF annunciator will remain on. Under these conditions, it will be necessary to shutdown the engine using the Normal Checklist procedures and correct the malfunction prior to next flight.

(Continued Next Page)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

GENERATOR OR MAIN BUS MALFUNCTIONS (Continued)

Illumination of the amber GENERATOR AMPS annunciator indicates 1 of 2 conditions:

1. The current load on the generator is above its rated value for that flight condition. The pilot should reduce the electrical load, or change flight conditions.
2. The reverse current protection of the ACU has failed. If the GEN AMPS indicator is below -10 amps, the pilot should disconnect the generator from the electrical system by setting the GENERATOR switch to the TRIP position.

The electrical power distribution system consists of a primary power distribution bus in the engine compartment which receives power from the battery and the generator, and two (No. 1 and No. 2) main power buses located in the circuit breaker panel. The main buses are each connected to the power distribution bus by three feeder cables. Each feeder cable is protected by a fuse link and a circuit breaker. This multiple feeder system provides automatic isolation of a feeder cable ground fault. If one of the three 30-amp feeder circuit breakers on either bus opens, it should be assumed that a feeder cable ground fault has been isolated, and attempted resetting of these breakers prior to troubleshooting is not recommended. The electrical load on the affected bus should be maintained below the remaining 60-ampere capacity.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

LOSS OF ELECTRICAL POWER

The design of the electrical power system, due to the self-exciting feature of the generator and the multiple protected busing system, minimizes the possibility of a complete electrical power loss. However, a fault to ground on the generator or one of the battery cables can be identified by one or more of the following: the amber GENERATOR OFF annunciator coming on, sudden dimming of lights, contactor chattering, open circuit breaker(s), or arching noises. Monitoring the GEN AMPS, ALT AMPS, BAT AMPS, and BUS VOLTS indicators on the ELECTRICAL section of the EIS Systems page will provide further information concerning the location of the fault, or the system affected by the fault. In the event of the above indications, the portion of the system containing the fault should be isolated. Following the checklist procedures for AMBER GENERATOR OFF ANNUNCIATOR COMES ON should result in restoration of electrical power to the distribution buses. The electrical section of the EIS Systems page should be monitored to make sure that ground fault currents have been shutoff and the capacity of the remaining power source(s) is not exceeded.

CAUTION

With the loss of electrical power the bleed air valve will fail to the open position. Rotate the TEMP control knob counterclockwise to as necessary to control cabin temperature.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

PARTIAL AVIONICS POWER FAILURE

Avionics power is supplied to No. 1 and No. 2 avionics buses from the power distribution bus in the engine compartment through separate protected feeder cables. In the event of a single feeder cable failure, both avionics buses can be connected to the remaining feeder by setting the AVIONICS BUS TIE switch to the ON position. If a ground fault has occurred on one feeder, it will be necessary to verify the AVIONICS No.1 or No. 2 switch, associated with the faulted feeder, is in the OFF position before the AVIONICS BUS TIE switch will restore power to both avionics buses. The maximum avionics load with one feeder should be limited to 30 amperes, the maximum crosstie load is limited to 20 amps. All nonessential avionics equipment should be turned off.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

STANDBY ELECTRICAL SYSTEM MALFUNCTIONS

An operational check of the standby electrical system is performed by following the Normal Procedures, Before Takeoff Checklist. With the generator supplying the electrical load and the STBY ALT PWR switch ON, neither the white STBY PWR ON or amber STBY PWR INOP annunciators should be shown and the ALT AMPS indicator should show 0 amps.

If the amber STBY PWR INOP annunciator is shown, it indicates that the standby alternator has no output. If a line voltage surge or temporary condition has tripped the Alternator Control Unit (ACU) offline, then cycling the STBY ALT PWR switch to OFF, then back ON, will reset the ACU and restore standby alternator power.

If the standby electrical system is carrying more than 10 amps of the electrical load, the white STBY PWR ON annunciator will be shown and the ALT AMPS indicator will indicate the amount of current being supplied by the standby electrical system.

To attempt to restore main power, refer to AMBER GENERATOR OFF ANNUNCIATOR COMES ON procedure. If this attempt is successful, the standby electrical system will revert to its normal no-load condition and the amber STBY PWR ON annunciator will not be shown. If main electrical power cannot be restored, reduce nonessential loads as necessary to remain within the 75-amp capability of the standby electrical system. Loads in excess of this capability will be indicated by an amber ALTNR AMPS annunciation.

If the reverse current protection of the ACU fails, an amber ALTNR AMPS annunciator will come on when reverse current is less than -8 amps. The pilot should disconnect the standby alternator by positioning the STBY ALT PWR switch to OFF.

EMERGENCY EXITS

Use of the crew entry doors, the passenger entry doors, and the cargo doors for emergency ground egress from the Standard 208B is illustrated in Figure 3-2, Emergency Exits Diagram. Emergency ground egress from the 208B Cargomaster is accomplished by exiting the airplane through the left and right crew entry doors as shown in Figure 3-2.

WARNING

- **Do not attempt to exit the 208B Cargomaster through the cargo doors. Since the inside of the upper door has no handle, exit from the airplane through these doors is not possible.**
- **When exiting the airplane, avoid the propeller area.**

EMERGENCY EXITS (TYPICAL)

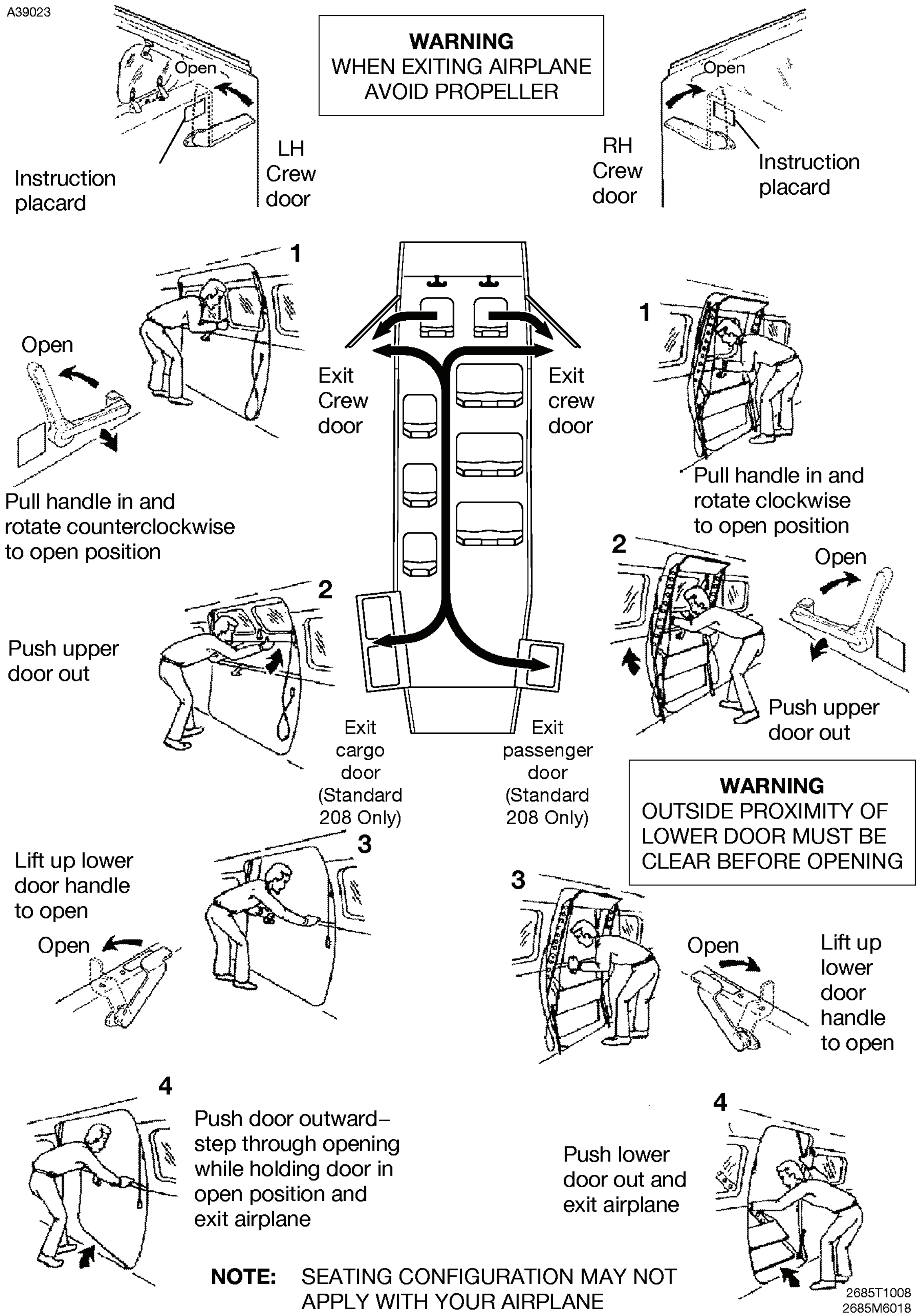

Figure 3-2

ABNORMAL PROCEDURES

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ABNORMAL LANDING

LANDING WITH A FLAT MAIN TIRE

1. Airplane. . . . . **FLY**
   (as desired to lighten fuel load)
2. FUEL TANK SELECTORS . . . . **RIGHT or LEFT**

NOTE

Set fuel tank selector on side with flat tire to lighten fuel load. Maximum fuel imbalance is 200 pounds.

3. Approach . . . . **NORMAL**
4. WING FLAPS . . . . **LAND**
5. Touchdown . . . . **INFLATED TIRE FIRST**
   (hold airplane off flat tire as long as possible with aileron control)
6. Directional Control . . . . **MAINTAIN**
   (using brake on wheel with inflated tire as required)

LANDING WITH A FLAT NOSE TIRE

1. Passengers and Baggage . . . . **MOVE AFT** (if practical)
   (remain within approved C.G. envelope)
2. Approach . . . . **NORMAL**
3. WING FLAPS . . . . **LAND**
4. Touchdown . . . . **NOSE HIGH**
   (hold nosewheel off ground as long as possible during roll)
5. Brakes. . . . . **MINIMUM NECESSARY**

AVIONICS/AUTOPILOT

AMBER ←AIL OR AIL→ INDICATION COMES ON

1. Control Wheel . . . . **GRIP FIRMLY**
2. AP/TRIM DISC Button. . . . . **PRESS**
(high aileron control forces possible)

NOTE

The yaw damper does not need to be disconnected for this procedure. Therefore it is permissible to use the left half of either manual electric pitch trim switch or one press of the AP button on the autopilot mode control panel to disconnect the autopilot.

3. AILERON TRIM. . . . . **RETRIM**
4. Autopilot . . . . **ENGAGE** (as desired)

AMBER ↑ELE OR ↓ELE INDICATION COMES ON

1. Control Wheel . . . . **GRIP FIRMLY**
2. AP/TRIM DISC Button. . . . . **PRESS**
(high elevator control forces possible)

NOTE

The yaw damper does not need to be disconnected for this procedure. Therefore it is permissible to use the left half of either manual electric pitch trim switch or one press of the AP button on the autopilot mode control panel to disconnect the autopilot.

3. Elevator Trim Switch . . . . **AS REQUIRED**
4. Autopilot . . . . **ENGAGE** (as desired)

AMBER ←RUD OR RUD→ INDICATION COMES ON

1. Rudder Pedals . . . . **HOLD FIRMLY**
2. AP/TRIM DISC Button. . . . . **PRESS**
(high rudder control forces possible)
3. RUD TRIM. . . . . **AS REQUIRED**
4. Autopilot and Yaw Damper . . . . **ENGAGE** (as desired)

AVIONICS/AUTOPILOT (Continued)

AMBER ALT MISCOMP MESSAGE COMES ON

NOTE

White TORQUE GAGE annunciator will be shown.

1. Altimeter Settings . . . . **CHECK and SET**
   (verify both pilot and copilot have the correct (baro) altimeter setting)
2. PITOT/STATIC HEAT Switch . . . . **CHECK ON**
   (if clouds or visible moisture present)

IF AMBER ALT MISCOMP MESSAGE REMAINS ON

3. Pilot and Copilot Altitude. . . . . **COMPARE**
   (with standby altimeter)

WARNING

The standby altimeter uses the same static sources as the pilot's side air data computer (ADC1). Do not use standby altimeter as sole source in determining correct altitude.

IF COPILOT PFD AND STANDBY ALTIMETER AGREE (PILOT PFD DIFFERS)

4. SENSOR Softkey (pilot PFD) . . . . **PRESS**
5. ADC2 Softkey . . . . **PRESS**
6. PFD ADI Displays . . . . **CONFIRM**
   (amber BOTH ON ADC2 shown on both PFDs)

IF PILOT PFD AND STANDBY ALTIMETER AGREE (COPILOT PFD DIFFERS)

3. Autopilot . . . . **DISENGAGE** (altitude hold mode)
4. ALT STATIC AIR Control Knob . . . . **PULL ON**

NOTE

The alternate static source is connected to the pilot's PFD and standby instruments only. Refer to Section 5, Performance, Figure 5-1 (Sheet 2), Airspeed Calibration, Alternate Static Source correction chart and Figure 5-2, Altimeter Correction, Alternate Static Source correction chart for airspeed and altimeter corrections.

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AVIONICS/AUTOPILOT (Continued)

AMBER ALT MISCOMP MESSAGE COMES ON (Continued)

IF PILOT PFD AND STANDBY ALTIMETER AGREE (COPILOT PFD STILL DIFFERS)

5. Compare indicated altitude to GPS altitude on MFD AUX-GPS STATUS page to aid in determining which primary system is most accurate.

NOTE

- When comparing indicated altitude to GPS altitude, deviations from standard temperature or pressure can cause indicated altitude to deviate from GPS altitude. These errors are largest at high altitude and can amount to over 2,500 feet under some conditions. However, below 10,000 feet with the correct local altimeter setting set, GPS altitude will usually be within 600 feet or better of the correct indicated altitude. Use the following guidelines to help estimate correct altitude for non-standard conditions:
- Temperatures WARMER than standard can cause GPS altitude to read HIGHER than indicated altitude.
- Pressures LOWER than standard can cause GPS altitude to read HIGHER than indicated altitude.

IF ABLE TO IDENTIFY ACCURATE ALTITUDE SOURCE

5. Use SENSOR reversion to select most accurate ADC on both PFDs.
6. Land as soon as practical.

AVIONICS/AUTOPILOT (Continued)

AMBER ALT MISCOMP MESSAGE COMES ON (Continued)

IF UNABLE TO IDENTIFY ACCURATE ALTITUDE SOURCE

5. Land as soon as practical. Consider diversion to visual conditions.
6. Maintain altitudes based on **LOWEST** indicated altitude.
7. ATC. . . . . **ADVISE** (of inability to verify correct altitude)
8. If unable to descend into visual conditions, plan ILS approach with course intercept well outside the Final Approach Fix (FAF).
9. Once glideslope is captured, determine most accurate altitude source when crossing FAF.
10. Reference ILS Decision Height to most accurate altimeter based on FAF crossing.

WARNING

TAWS alerts are based on GPS altitude and position information and are independent of ADC data. If a TAWS alert is received, it should be considered valid and appropriate terrain avoidance action should be taken.

IF AMBER ALT MISCOMP MESSAGE GOES OFF

3. Continue flight as planned.

AVIONICS/AUTOPILOT (Continued)

AMBER IAS MISCOMP MESSAGE COMES ON

1. Pilot and Copilot Airspeed . . . . **COMPARE**
(with standby airspeed indicator)
2. PITOT/STATIC HEAT Switch. . . . . **CHECK ON**
(if clouds or visible moisture present)

WARNING

The standby airspeed indicator uses the same pitot-static sources as the pilot's side air data computer (ADC1). Do not use standby airspeed indicator as sole source in determining correct airspeed.

IF COPILOT PFD AND STANDBY AIRSPEED AGREE (PILOT PFD DIFFERS)

3. SENSOR Softkey (Pilot PFD) . . . . **PRESS**
4. ADC2 Softkey . . . . **PRESS**
5. PFD ADI Displays . . . . **CONFIRM**
(amber BOTH ON ADC2 shown on both PFDs)

IF PILOT PFD AND STANDBY AIRSPEED AGREE (COPILOT PFD DIFFERS)

3. Pilot and Copilot Altitude . . . . **COMPARE**

IF ALTITUDES AGREE

4. Airspeed . . . . **120 KIAS MINIMUM** (on slowest indicator)
5. Monitor all three airspeed indicators during changes in power setting or altitude to determine which indicators are inaccurate. Indications of inaccurate airspeed include:
   a. No change in indicated airspeed when power changed and altitude maintained.
   b. Indicated airspeed increases when climbing or decreases when descending.
6. Use SENSOR reversion to select most accurate ADC on the affected PFD.
7. Airspeed . . . . **RESUME NORMAL SPEEDS**

IF ALTITUDES DO NOT AGREE

4. Refer to AMBER ALT MISCOMP MESSAGE COMES ON procedure to determine most accurate ADC.

AVIONICS/AUTOPILOT (Continued)

AMBER PIT, ROL OR HDG MISCOMP MESSAGE COMES ON

This message is displayed when the G1000 detects a difference between the pilot's and copilot's attitude or heading information (displayed in the upper right of the PFD). Refer to Garmin G1000 Cockpit Reference Guide for additional information.

AMBER PIT OR ROL MISCOMP INDICATION

1. Refer to standby attitude indicator to determine which AHRS is providing the most accurate data.
2. Use SENSOR reversion to select the most accurate AHRS on the affected PFD.

AMBER HDG MISCOMP INDICATION

1. Refer to magnetic compass to determine which AHRS is providing the most accurate heading information.
2. Use SENSOR reversion to select the most accurate AHRS on the affected PFD.

NOTE

Operation of the air conditioner may cause compass deviation of more than 10 degrees. The air conditioning system switch must be turned OFF prior to referencing the magnetic compass heading.

WHITE TORQUE GAGE ANNUNCIATOR COMES ON

Indicates when there is an ALT MISCOMP message, red "X" through the OAT, Altitude, Airspeed and Vertical Speed indicators on PFD1 or a 5°C temperature difference between OAT's on PFD1 and PFD2.

1. Power Settings . . . . **CHECK**

NOTE

With a white TORQUE GAGE annunciation, the dynamic redline will become fixed at 2397 FT-LB regardless of temperature or altitude changes. The cruise torque bug will become inoperative and will not be shown on the EIS torque indicator. Refer to Section 5, Performance, for the appropriate power settings.

AVIONICS/AUTOPILOT (Continued)

DISPLAY UNIT FAILURE

This is indicated by a complete loss of image on a display. If only individual elements of the display are failed, refer to appropriate procedures for the individual failures.

IF PILOT'S PFD FAILED

1. DISPLAY BACKUP Button . . . . **PRESS** (if required)
   Flight and EICAS information will be displayed on the MFD. EIS information will not be displayed on copilot's PFD.

NOTE

The PFD CDI SYNC and BARO SYNC settings must be ON to allow the copilot's PFD controls to affect settings on the MFD. These settings are accessible using the PFD MENU button.

2. Flight Director . . . . **TRANSFER**
   (Press XFR button to operating PFD)
3. FD/AUTOPILOT Modes . . . . . . **RESELECT and REENGAGE**
   (as required)
4. Transponder . . . . **SWITCH**
   (to operating transponder)
5. COM and NAV Radios. . . . . **SWITCH**
   (to operating COM and NAV radios)
6. PFD Controls. . . . . **USE OPERATING PFD**
   (for required data entry (Com, Nav, Baro setting, etc.))

IF MFD FAILED

1. DISPLAY BACKUP Button . . . . **PRESS**
   (EIS information will be displayed only on pilot's PFD)

IF COPILOT'S PFD FAILED

No action is necessary. Normal operation on pilot's PFD and MFD will not be affected by loss of copilot's PFD.

AVIONICS/AUTOPILOT (Continued)

DR OR LOI INDICATION COMES ON HSI INDICATOR

IF ALTERNATE NAVIGATION SOURCES (ILS, LOC, VOR, DME, ADF) ARE AVAILABLE

1. Navigation. . . . . **USE ALTERNATE SOURCES**

IF NO ALTERNATE NAVIGATION SOURCES ARE AVAILABLE

Dead Reckoning (DR) Mode active when airplane more than 30 NM from destination airport.

1. Navigation. . . . . **USE DR MODE**
   (use airplane symbol and magenta course line on map display)

WARNING

- **All information normally derived from GPS turns amber. All of this information will become more inaccurate over time.**
- **TAWS will be inoperative.**

NOTE

- DR mode uses heading, airspeed, and the last known GPS position to estimate the airplane's current position.
- All maps with an airplane symbol show a ghosted airplane and a DR label.

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AVIONICS/AUTOPILOT (Continued)

DR OR LOI INDICATION COMES ON HSI INDICATOR (Continued)

Loss Of Integrity (LOI) Mode active when airplane is within 30 NM of destination airport. Distance calculated from the previous GPS or DR position.

1. Navigation . . . . **FLY**
   Towards known visual conditions or available terminal navigation sources. Use ATC or other information sources as possible.

NOTE

- All information derived from GPS or DR is removed from displays.
- The airplane symbol is removed from all maps. The map will remain centered at the last known position. NO GPS POSITION shown in center of map.
- TAWS will be inoperative.

AUDIO PANEL FAILURE

Audio panel failure may be indicated by a GMA FAIL message or the inability to communicate using the audio panel. This failure may also be accompanied by the loss of some aural warnings such as Altitude Alert, Autopilot Disconnect, TAWS, and Traffic alerts.

1. AUDIO 1 Circuit Breaker . . . . **OPEN** (pull out)
   (AVN BUS 1, second row, first breaker from left side)
2. COM Radio . . . . **USE COM1 FOR COMMUNICATION**

NOTE

In the event of an audio panel failure, a fail-safe circuit connects the pilot's headset directly to the COM 1 radio. The speakers will be inoperative.

AVIONICS/AUTOPILOT (Continued)

LOSS OF RADIO TUNING FUNCTIONS

1. COM Frequency Toggle Button
   (affected PFD) . . . . **PRESS AND HOLD**
   (for 2 seconds)

NOTE

This procedure will tune the active COM field to the emergency frequency 121.5. Certain failures of the tuning system will automatically tune 121.5 without pilot action.

TRANSPONDER FAILURE

1. TRANSPONDER . . . . **SELECT OPPOSITE**
   a. PFD XPDR Softkey . . . . **PRESS**
   b. XPDR1 or XPDR2 Softkey . . . . **PRESS**
   (to select opposite transponder)
2. XPDR1 or XPDR2 Circuit Breaker (affected side) . . . . . . **OPEN**
   (pull out)

NOTE

The second transponder is an option on the 208B.

AVIONICS/AUTOPILOT (Continued)

RED X ON PFD AIRSPEED, ALTITUDE, AND/OR VERTICAL SPEED INDICATORS

This indicates a loss of valid air data system information to the respective system.

IF BOTH SIDES

1. Airspeed and Attitude . . . . **MONITOR**
   (using standby instruments)
2. Land as soon as practical.

IF ONE SIDE ONLY

1. Affected PFD SENSOR Softkey . . . . **PRESS**
2. Affected PFD ADC1 or ADC2 Softkey . . . . **SELECT**
   (opposite side ADC)
3. PFD ADI Displays . . . . **CONFIRM**
   (amber BOTH ON ADC1 or ADC2 shown on both PFDs)

AVIONICS/AUTOPILOT (Continued)

ATTITUDE FAIL AND/OR RED X OVER HEADING DISPLAY ON PFD

IF BOTH SIDES

1. Attitude . . . . **MONITOR**
   (using standby attitude gyro)

NOTE

Turn off air conditioner to reference magnetic compass.

2. Heading . . . . **MONITOR**
   (using magnetic compass)
3. Land as soon as practical.

NOTE

- The autopilot will disconnect and may not be reengaged.
- Reference the GPS track on MFD/PFD map to improve situational awareness. GPS will continue to display correct GPS based map, position, and track.
- Air conditioner will affect the magnetic compass.

IF ONE SIDE ONLY

1. Standby Attitude Gyro. . . . . **MONITOR**
2. Affected PFD SENSOR Softkey . . . . **PRESS**
3. Affected PFD AHRS1 or AHRS2 Softkey . . . . **SELECT**
   (opposite side AHRS)
4. PFD ADI Displays. . . . . **CONFIRM**
   (amber BOTH ON AHRS1 or AHRS2 shown on both PFDs)

NOTE

The autopilot will disconnect and may not be reengaged.

AVIONICS/AUTOPILOT (Continued)

LOSS OF NAVIGATION DATA (LATERAL DEVIATION BAR NOT PRESENT AND/OR GLIDESLOPE INDEX CLEARS)

This indicates a loss of data from the selected NAV source. Refer to Garmin G1000 Cockpit Reference Guide for additional information.

1. Opposite NAV Source . . . . **SELECT**
2. PFD HSI Displays . . . . **CONFIRM OPPOSITE** (LOC1/LOC2 or VOR1/VOR2 shown on both PFDs)

INACCURATE OVERSPEED WARNING

Indicated by overspeed warning tone sounding when airspeed is below the limit speed.

1. AIRSPEED . . . . **CROSS CHECK** (with opposite PFD)
2. AIRSPEED . . . . **REDUCE** (as required)

IF BOTH AIRSPEEDS INDICATE BELOW V_{MO} AND TONE STILL SOUNDS

3. AIRSPEED WARN Circuit Breaker . . . . **OPEN** (pull out) (fifth row, third breaker from forward end)
4. Land as soon as practical.

IF AIRSPEEDS DO NOT AGREE

3. Refer to IAS MISCOMP procedure.

AVIONICS/AUTOPILOT (Continued)

INACCURATE FLIGHT DIRECTOR DISPLAY

Indicated by one or both flight directors commanding attitude contrary to intended flight path.

1. AP/TRIM DISC Button . . . . **PRESS**
2. Attitude . . . . **CROSS CHECK BOTH PFDs** (with the standby attitude indicator)
3. Flight Director Modes . . . . **RESELECT** (as desired)

NOTE

If continued use of the flight director is desired, it is recommended that only basic modes (i.e., ROL and PIT) be selected initially. If this proves satisfactory, HDG and ALT may then be selected. Make sure navigation systems are set up correctly prior to attempting to engage NAV mode.

4. Autopilot . . . . **ENGAGE AS DESIRED** (if flight director commands are appropriate)

ATTITUDE AND HEADING REFERENCE SYSTEM (AHRS) FAILURE

AMBER BOTH ON AHRS1 OR AHRS2 MESSAGE COMES ON

1. PFD SENSOR Softkey . . . . **PRESS**
   (displaying data from opposite side AHRS)
2. PFD AHRS1 or AHRS2 Softkey . . . . **SELECT ON-SIDE AHRS**
   (AHRS1 for Pilot PFD, AHRS2 for Copilot PFD)
3. PFD Displays. . . . . **CONFIRM**
   (amber BOTH ON AHRS1 or AHRS2 message goes off both PFDs and no red X on PFD 1 or PFD 2 attitude indicator)

AMBER BOTH ON GPS1 OR GPS2 MESSAGE COMES ON

1. GPS Status . . . . **CHECK**
   a. Select MFD . . . . **AUX-GPS STATUS PAGE**
   b. Select GPS1 then GPS2 softkeys and verify sufficient satellite reception.

AMBER USING AHRS1 OR AHRS2 MESSAGE COMES ON

1. Pilot's PFD SENSOR Softkey . . . . **PRESS**
2. PFD AHRS1 Softkey . . . . **PRESS**
3. PFD Displays. . . . . **CONFIRM**
   (amber BOTH ON AHRS1 message shown on both PFDs)
4. Copilot's PFD SENSOR Softkey . . . . **PRESS**
5. PFD AHRS2 Softkey . . . . **PRESS**
6. PFD Displays. . . . . **CONFIRM**
   (amber BOTH ON AHRS2 message shown on both PFDs)
7. PFD Displays. . . . . **CONFIRM**
   (amber BOTH ON AHRS1 or AHRS2 message goes off on both PFDs)

AIR DATA SYSTEM FAILURE

AMBER BOTH ON ADC1 OR ADC2 MESSAGE COMES ON

1. PFD SENSOR Softkey . . . . **PRESS**
   (displaying data from opposite side ADC)
2. PFD ADC1 or ADC2 Softkey . . . . **SELECT ON-SIDE ADC**
   (ADC1 for Pilot PFD, ADC2 for copilot PFD)
3. PFD Displays . . . . **CONFIRM**
   (amber BOTH ON ADC1 or ADC2 message goes off of both PFDs and no red X on PFD 1 or PFD 2 airspeed indicator)

AMBER USING ADC1 OR ADC2 MESSAGE COMES ON

1. Pilot's PFD SENSOR Softkey. . . . . **PRESS**
2. PFD ADC1 Softkey. . . . . **PRESS**
3. PFD Displays . . . . **CONFIRM**
   (amber BOTH ON ADC1 message shown on both PFDs)
4. Copilot's PFD SENSOR Softkey. . . . . **PRESS**
5. PFD ADC2 Softkey. . . . . **PRESS**
6. PFD Displays . . . . **CONFIRM**
   (amber BOTH ON ADC2 message shown on both PFDs)
7. PFD Displays . . . . **CONFIRM**
   (amber BOTH ON ADC1 or ADC2 message goes off on both PFDs)

AVIONICS FAN FAILURE

WHITE MFD FAN FAIL MESSAGE COMES ON

1. DECK SKIN FAN Circuit Breaker . . . . **CLOSE** (push in)
(fourth row, last breaker on forward end)

WHITE PFD1 FAN FAIL MESSAGE COMES ON

1. DECK SKIN FAN Circuit Breaker . . . . **CLOSE** (push in)
(fourth row, last breaker on forward end)

WHITE PFD2 FAN FAIL MESSAGE COMES ON

1. DECK SKIN FAN Circuit Breaker . . . . **CLOSE** (push in)
(fourth row, last breaker on forward end)

DOORS

AMBER DOOR UNLATCHED ANNUNCIATOR COMES ON IN FLIGHT

1. Airspeed . . . . **MAINTAIN LESS THAN 100 KIAS**
2. WING FLAPS . . . . **LAND**

NOTE

Wing downwash with flaps extended will move the doors near their normally closed position.

3. If available or practical, have a second crew member go aft to close and latch door.

IF DOOR STILL OPEN AND ANNUNCIATOR REMAINS ON

4. SEAT BELT Light Switch . . . . **ON**
5. NO SMOKE Light Switch. . . . . **ON**
6. Approach and Landing . . . . **NORMAL**

IF DOOR CLOSED AND ANNUNCIATOR GOES OFF

4. Continue flight as planned.

DOORS (Continued)

LOWER HALF OF PASSENGER AIRSTAIR DOOR OPEN

1. Airspeed . . . . **MAINTAIN LESS THAN 100 KIAS**
2. Flight Controls. . . . . **MANEUVER** (for return for landing)
3. WING FLAPS . . . . **LAND**
4. Approach . . . . **NORMAL**
5. Landing. . . . . **SLIGHTLY TAIL LOW** (avoid nose high flare)

RIGHT OR LEFT CREW DOOR OPENS

1. Airspeed . . . . **MAINTAIN LESS THAN 125 KIAS**
2. Door . . . . **PULL CLOSED and LATCH**

CARGO POD DOOR(S) OPEN

1. Airspeed . . . . **MAINTAIN LESS THAN 125 KIAS**
2. Land . . . . **AS SOON AS PRACTICAL**
   a. Approach . . . . **NORMAL**
   b. Landing . . . . **AVOID A NOSE HIGH FLARE**

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

AMBER GENERATOR OFF ANNUNCIATOR COMES ON

1. BUS VOLTS and GEN AMPS . . . . **CHECK and MONITOR**
2. STBY ALT PWR Switch. . . . . **VERIFY ON**

IF BUS VOLTS LESS THAN 28.5

3. GEN AMPS . . . . **CHECK**

IF GEN AMPS IS 0

a. GEN CONT and
GEN FIELD Circuit Breakers **CLOSE** (push in)
(top row, first and second breakers from forward end)
b. GENERATOR Switch . . . . **RESET**

IF GENERATOR OUTPUT RESUMES

c. BUS VOLTS and GEN AMPS. . . . . **MONITOR**

IF GENERATOR TRIPS OFFLINE AGAIN WITH BUS VOLTS ABOVE 32.5

d. GENERATOR Switch . . . . **TRIP**
e. AVIONICS BUS TIE Switch . . . . **ON**
f. AVIONICS STBY PWR Switch . . . . **ON**
g. AVIONICS NO. 1 and NO. 2 Switches . . . . **OFF**
h. Electrical Load . . . . **REDUCE**
(1) CABIN Lights Switch . . . . **OFF**
(2) POWER OUTLET Switch(es) . . . . **OFF**
(3) BCN Lights Switch. . . . . **OFF**
(4) LDG and TAXI/ RECOG Light Switches . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

(Continued Next Page)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

AMBER GENERATOR OFF ANNUNCIATOR COMES ON (Continued)

h. Electrical Load . . . . **REDUCE** (Continued)
   (5) VENT AIR FANS. . . . . **OFF**
   (6) AIR CONDITIONING (if installed). . . . . **OFF**
   (7) GEN CONT and
   GEN FIELD Circuit Breakers . . . . **OPEN** (pull out)
   (top row, last two breakers on forward end)
   (8) RDNG LIGHT Circuit Breaker. . . . . . . **OPEN** (pull out)
   (third row, second breaker from aft end)
   (9) RADAR R/T Circuit Breaker . . . . **OPEN** (pull out)
   (AVN BUS 1, second row, sixth breaker from left side)
   (10) HF RCVR and
   HF AMP Circuit Breakers **OPEN** (pull out)
   (AVN BUS 2, second row, fifth and sixth breakers from left side)
   (11) ALT AMPS . . . . **VERIFY BELOW 75 AMPS**
   (continue shedding if not below 75 amps)

i. Flight . . . . **CONTINUE**

NOTE

With standby alternator powering the electrical system, the flight can continue to destination airport with the amber GENERATOR OFF annunciator shown. Monitor ALT AMPS load using ENGINE SYSTEM page.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

AMBER STARTER ON ANNUNCIATOR COMES ON AFTER ENGINE START

1. BATTERY Switch . . . . **OFF**
2. External Power Unit . . . . **OFF, then DISENGAGE**
3. FUEL CONDITION Lever . . . . **CUTOFF**
4. Engine Shutdown . . . . **COMPLETE**

AMBER GENERATOR AMPS ANNUNCIATOR COMES ON

1. GEN AMPS . . . . **CHECK**

IF GEN AMPS INDICATION ABOVE 200

2. Electrical Load. . . . . **REDUCE**

AMBER ALTNR AMPS ANNUNCIATOR COMES ON

1. ALT AMPS. . . . . **CHECK**

IF ALT AMPS INDICATION ABOVE 75

2. Electrical Load. . . . . **REDUCE**

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

AMBER STBY PWR INOP ANNUNCIATOR COMES ON

1. STBY ALT PWR Switch . . . . **CHECK ON**

IF AMBER STBY PWR INOP ANNUNCIATOR REMAINS ON

2. STBY ALT PWR Switch . . . . **OFF, THEN ON**

NOTE

If amber STBY PWR INOP annunciator remains on, the alternator system may still be operational. A bus voltage surge may have temporarily tripped the Alternator Control Unit (ACU) offline. The ACU can be restored by cycling the STBY ALT PWR Switch.

IF AMBER STBY PWR INOP ANNUNCIATOR STILL REMAINS ON

3. STBY ALT PWR Switch . . . . **OFF**
4. Continue flight using generator power only. Avoid icing conditions.

IF AMBER STBY PWR INOP ANNUNCIATOR GOES OFF AFTER CYCLING STANDBY POWER SWITCH

3. Continue flight as planned.

IF AMBER STBY PWR INOP ANNUNCIATOR GOES OFF

2. Continue flight as planned.

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

WHITE STBY PWR ON ANNUNCIATOR COMES ON WITH FUEL CONDITION LEVER SET AT LOW IDLE

1. FUEL CONDITION Lever . . . . **HIGH IDLE**

NOTE

- During ground operations with CONDITION lever at LOW IDLE, it is possible that a generator underspeed condition may occur allowing the standby alternator to automatically assist with the electrical load. In this case advance the CONDITION lever to HIGH IDLE to increase engine speed and bring the generator online.
- The Standby Alternator Power may have automatically turned on due to a failure of another system. Address any Red or Amber annunciations that are present.

ENGINE

AMBER CHIP DETECT ANNUNCIATOR COMES ON

1. Engine Indicating System . . . . **CHECK PARAMETERS**
(verify within normal operating range)

IF ENGINE INDICATIONS ARE OUTSIDE NORMAL OPERATING RANGE

2. Reduce power and monitor engine parameters.
3. Land as soon as possible. (refer to ENGINE FAILURE DURING FLIGHT and EMERGENCY LANDING WITHOUT ENGINE POWER)

IF ENGINE INDICATIONS ARE WITHIN NORMAL OPERATING RANGE

2. Continue flight as planned while monitoring engine parameters.
3. Have system inspected by qualified personnel before next flight.

WHITE IGNITION ON ANNUNCIATOR COMES ON

1. IGNITION Switch . . . . **CHECK**

IF CONDITIONS DO NOT WARRANT ITS USE

2. IGNITION Switch . . . . **NORM**

AMBER EMERG PWR LVR ANNUNCIATOR COMES ON DURING FLIGHT

1. EMERGENCY POWER Lever . . . . **CHECK**
(verify lever in NORMAL position)

FLIGHT CONTROLS

ASYMMETRIC FLAP EXTENSION OR SUDDEN FLAP RETRACTION ON ONE SIDE

1. Aileron and Rudder Controls . . . . **APPLY** (to stop roll)
2. WING FLAPS . . . . **UP**
3. Airspeed . . . . **SLOW to 100 KIAS** (or less)

IF BOTH FLAPS RETRACT TO A SYMMETRICAL SETTING

4. Plan a FLAPS UP landing.
5. Increase approved approach speed at 50 feet by 15 KIAS.
6. Increase published landing distance by 40%.

NOTE

Refer to Section 5, Performance, Figure 5-26 or Figure 5-43, Short Field Landing Distance tables.

IF BOTH FLAPS CANNOT BE RETRACTED TO A SYMMETRICAL SETTING

4. Land as soon as practical.
5. Maintain a minimum airspeed of 90 KIAS on the approach and avoid a nose high flare on landing.

FLIGHT CONTROLS (Continued)

FLAPS FAIL TO EXTEND OR RETRACT

1. FLAP MOTOR Circuit Breaker . . . . **CLOSE** (push in)
   (fifth row, fourth breaker from forward end)
2. STBY FLAP MOTOR Circuit Breaker . . . . **CLOSE** (push in)
   (bottom row, fourth breaker from forward end)

IF FLAPS STILL FAIL TO EXTEND OR RETRACT

3. Right STBY FLAP MOTOR Switch
   a. Switch Guard . . . . **MOVE**
      (breaking safety wire)
   b. Switch. . . . . **STBY**
4. Left STBY FLAP MOTOR Switch
   a. Switch Guard . . . . **MOVE**
      (breaking safety wire)
   b. Switch. . . . . **UP or DOWN**
      (hold switch UP or DOWN until flaps reach desired position, release switch before flaps reach full up or full down travel.)

CAUTION

With the standby flap system in use, limit switches which normally shut off the primary flap motor when reaching the flap travel limits are electrically inactivated. Therefore, the pilot must release the standby flap motor up/down switch before the flaps reach their travel limit to prevent overloading and damage to the flap system.

5. Right STBY FLAP MOTOR Switch . . . . **LEAVE IN STBY**
   (until maintenance action can be accomplished)

IF FLAPS EXTEND OR RETRACT NORMALLY

3. Continue flight as planned.

FUEL

AMBER FUEL BOOST ON ANNUNCIATOR COMES ON

1. FUEL BOOST Switch . . . . **CHECK ON**

IF CONDITIONS DO NOT WARRANT ITS USE

2. FUEL BOOST Switch . . . . **NORM**

AMBER FUEL PRESS LOW ANNUNCIATOR COMES ON

1. FUEL TANK SELECTORS . . . . **BOTH ON**
2. FUEL BOOST Switch. . . . . **ON**
3. IGNITION Switch. . . . . **ON**

IF AMBER FUEL PRESS LOW AND AMBER FUEL BOOST ON ANNUNCIATORS REMAIN ON

4. Engine Indicating System . . . . **MONITOR**

WARNING

Watch for signs of fuel starvation.

5. Land as soon as possible.

IF AMBER FUEL PRESS LOW ANNUNCIATOR GOES OFF

4. FUEL QTY Indicators . . . . .CHECK
(maximum fuel imbalance 200 pounds)

WARNING

Carefully monitor fuel quantity and cabin odor for evidence of a fuel leak.

5. Land as soon as practical and determine cause for motive flow failure before next flight.

AMBER L, R, OR L-R FUEL LOW ANNUNCIATOR COMES ON

1. FUEL TANK SELECTORS . . . . **BOTH ON**
2. FUEL QTY Indicators . . . . **CHECK**
(maximum fuel imbalance 200 pounds)

ICE AND RAIN PROTECTION

AMBER L, R OR L-R P/S HEAT ANNUNCIATOR COMES ON

1. LEFT PITOT HEAT and
   RIGHT PITOT HEAT Circuit Breakers . . . . . . **CLOSE** (push in)
   (first and second row, third breaker from forward end)
2. Icing Conditions . . . . **EXIT AS SOON AS POSSIBLE**

IF ICE BEGINS TO FORM NEAR THE STATIC PORT OF THE LEFT PITOT/STATIC TUBE (FROM COMPENSATION RING TO AFT END OF TUBE) OR AMBER IAS MISCOMP AND/OR AMBER ALT MISCOMP MESSAGES COME ON PILOT'S PFDS

3. Pilot and Copilot Airspeed . . . . **COMPARE**
   (with standby airspeed indicator)

WARNING

The standby airspeed indicator uses the same pitot-static sources as the pilot’s side air data computer (ADC1). Do not use standby airspeed indicator as sole source in determining correct airspeed.

4. Autopilot ALT Mode . . . . **PRESS**
   (disengage altitude hold mode)
5. ALT STATIC AIR Control Knob . . . . **PULL ON**

NOTE

The alternate static source is connected to the pilot’s PFD and standby instruments only. Refer to Section 5, Performance, Figure 5-1 (Sheet 2), Airspeed Calibration, Alternate Static Source correction chart and Figure 5-2, Altimeter Correction, Alternate Static Source correction chart for airspeed and altimeter corrections.

IF STANDBY AIRSPEED AND COPILOT PFD AGREE (PILOT PFD DIFFERS)

6. SENSOR Softkey (Pilot PFD). . . . . **PRESS**
7. ADC2 Softkey . . . . **PRESS**
8. PFD ADI Displays. . . . . **CONFIRM**
   (amber BOTH ON ADC2 is displayed on both PFDs)

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ICE AND RAIN PROTECTION (Continued)

AMBER L, R OR L-R P/S HEAT ANNUNCIATOR COMES ON (Continued)

IF ICE BEGINS TO FORM NEAR THE PITOT PORT (FORWARD END) OF THE PITOT/ STATIC TUBE

IF PILOT PFD AND STANDBY AIRSPEED AGREE (COPILOT PFD DIFFERS)

3. Pilot and Copilot Altitude . . . . **COMPARE**

IF ALTITUDES AGREE

a. Airspeed . . . . **120 KIAS MINIMUM** (on slowest indicator)
b. Monitor all three airspeed indicators during changes in power setting or altitude to determine which indicators are inaccurate. Indications of inaccurate airspeed include:
   (1) No change in indicated airspeed when power changed and altitude maintained.
   (2) Indicated airspeed increases when climbing or decreases when descending.
c. Use SENSOR REVERSION to select most accurate ADC on the affected PFD.
d. Airspeed . . . . **RESUME NORMAL SPEEDS**

IF ALTITUDES DO NOT AGREE AND AMBER ALT MISCOMP MESSAGE COMES ON

a. Altimeter Settings . . . . **VERIFY** (both pilot and copilot have the correct altimeter setting)

IF ANNUNCIATION DOES NOT CLEAR

b. Pilot and Copilot Altitude. . . . . **COMPARE** (with standby altimeter)

WARNING

The standby altimeter uses the same static sources as the pilot's side air data computer (ADC1). Do not use standby altimeter as sole source in determining correct altitude.

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ICE AND RAIN PROTECTION (Continued)

AMBER L, R OR L-R P/S HEAT ANNUNCIATOR COMES ON (Continued)

IF COPILOT PFD AND STANDBY ALTIMETER AGREE (PILOT PFD DIFFERS)

c. SENSOR Softkey (Pilot PFD). . . . . **PRESS**
d. ADC2 Softkey. . . . . **PRESS**
e. PFD ADI Displays . . . . **CONFIRM**
(amber BOTH ON ADC2 is displayed on both PFDs)

IF PILOT PFD AND STANDBY ALTIMETER AGREE (COPILOT PFD DIFFERS)

c. Autopilot ALT Mode . . . . **PRESS**
(disengage altitude hold mode)
d. ALT STATIC AIR Control Knob. . . . . **PULL ON**

NOTE

The alternate static source is connected to the pilot's PFD and standby instruments only. Refer to Section 5, Performance, Figure 5-1 (Sheet 2), Airspeed Calibration, Alternate Static Source correction chart and Figure 5-2, Altimeter Correction, Alternate Static Source correction chart for airspeed and altimeter corrections.

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ICE AND RAIN PROTECTION (Continued)

AMBER L, R OR L-R P/S HEAT ANNUNCIATOR COMES ON (Continued)

IF PILOT PFD AND STANDBY ALTIMETER AGREE (COPILOT PFD STILL DIFFERS)

e. Compare indicated altitude to GPS altitude on MFD AUX-GPS STATUS page to aid in determining which primary system is most accurate.

- When comparing indicated altitude to GPS altitude, deviations from standard temperature or pressure can cause indicated altitude to deviate from GPS altitude. These errors are largest at high altitude and can amount to over 2500 feet under some conditions. However, below 10,000 feet with the correct local altimeter setting set, GPS altitude will usually be within 600 feet or better of the correct indicated altitude. Use the following guidelines to help estimate correct altitude for nonstandard conditions:

- Temperatures WARMER than standard can cause GPS altitude to read HIGHER than indicated altitude.

- Pressures LOWER than standard can cause GPS altitude to read HIGHER than indicated altitude.

IF ABLE TO IDENTIFY ACCURATE ALTITUDE SOURCE

f. Use SENSOR reversion to select most accurate ADC on both PFDs.
g. Land as soon as practical.

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ICE AND RAIN PROTECTION (Continued)

AMBER L, R OR L-R P/S HEAT ANNUNCIATOR COMES ON (Continued)

IF UNABLE TO IDENTIFY ACCURATE ALTITUDE SOURCE

f. Land as soon as practical. Consider diversion to visual conditions.
g. Maintain altitudes based on LOWEST indicated altitude.
h. ATC . . . . **ADVISE** (of inability to verify correct altitude)
i. If unable to descend into visual conditions, plan ILS approach with course intercept well outside the Final Approach Fix (FAF).
j. Once glideslope is captured, determine most accurate altitude source when crossing FAF.
k. Reference ILS Decision Height to most accurate altimeter based on FAF crossing.

WARNING

TAWS alerts are based on GPS altitude and position information and are independent of ADC data. If a TAWS alert is received, it should be considered valid and appropriate terrain avoidance action should be taken.

ICE AND RAIN PROTECTION (Continued)

AMBER STALL HEAT ANNUNCIATOR COMES ON

IF ICE IS OBSERVED FORMING ON THE STALL WARNING VANE OR ITS MOUNTING PLATE

1. STALL WARN Circuit Breaker . . . . **CLOSE** (push in) (verify circuit breaker is in)

WARNING

With continued ice buildup, expect no stall warning horn during slow speed operation. The autopilot will not automatically disconnect during a stall without the stall warning vane working properly.

2. Airspeed . . . . **MONITOR**

NOTE

Do not rely on the stall warning system. Use approach speed of 120 KIAS with WING FLAPS set at TO/APR. With ice suspected on the airframe, or operating at 5°C (41°F) or less in visible moisture, do not extend WING FLAPS beyond TO/APR for landing.

3. Icing Conditions . . . . **EXIT AS SOON AS POSSIBLE**

AMPLIFIED ABNORMAL PROCEDURES

ELEVATOR MISTRIM

Indicates a mistrim of the elevator while the autopilot is engaged. The autopilot will normally trim automatically as required. However, during rapid acceleration, deceleration, or configuration changes, momentary illumination of this message may occur accompanied by minor fluctuations in the flight path. If the autopilot is disconnected while this message is displayed, high elevator control forces are possible.

ALTITUDE MISCOMPARE

This message is displayed when the G1000 detects a difference of 200 feet or greater between the pilot's and copilot's altitude information (displayed in the upper right of the PFD). Refer to Garmin G1000 Cockpit Reference Guide for additional information.

AIRSPEED MISCOMPARE

This message is displayed when the G1000 detects a difference of 7 KIAS or greater between the pilot's and copilot's airspeed information (10 KIAS difference during takeoff or landing roll). Refer to Garmin G1000 Cockpit Reference Guide for additional information.

DUAL GPS FAILURE

When both GPS receivers are inoperative, the G1000 system will enter one of two modes: Dead Reckoning mode (DR) or Loss Of Integrity mode (LOI). The mode is indicated on the HSI by an amber DR or LOI. Which mode is active depends on the distance from the destination airport in the active flight plan.

TRANSPONDER FAILURE

Transponder failure may be indicated by a red "X" across the transponder display or failure of the transponder to accept codes or mode changes from the PFD.

ATTITUDE FAIL AND/OR HDG

This message indicates a loss of pitch, roll, and/or heading information from AHRS. Refer to Garmin G1000 Cockpit Reference Guide for additional information. Interference from GPS repeaters operating inside nearby hangars can cause an intermittent loss of attitude and heading displays while the airplane is on the ground. This is usually accompanied by a BOTH ON GPS1 or GPS2 message. Moving the airplane more than 100 yards away from the source of the interference should alleviate the condition.

BOTH ON ADC1 OR ADC2

This message is displayed on both PFDs and indicates that both pilot's and copilot's PFDs are displaying data from the same Air Data Computer. Normally the pilot's side displays ADC1 and the copilot's side displays ADC 2. Refer to Garmin G1000 Cockpit Reference Guide for additional information.

BOTH ON AHRS 1 OR AHRS2

This message is displayed on both PFDs and indicates that both pilot's and copilot's PFDs are displaying data from the same Attitude Heading Reference System. Normally the pilot's side displays AHRS 1 and the copilot's side displays AHRS 2. Refer to Garmin G1000 Cockpit Reference Guide for additional information.

USING ADC1 OR ADC2

This message is displayed on both PFDs and indicates that both PFDs are displaying data from the opposite side Air Data Computer. Normally the pilot's side displays ADC1 and the copilot's side displays ADC2. Refer to Garmin G1000 Cockpit Reference Guide for additional information.

USING AHRS1 OR AHRS2

This message is displayed on both PFDs and indicates that both PFDs are displaying data from the opposite side Attitude Heading Reference System (AHRS). Normally the pilot's side displays AHRS1 and the copilot's side displays AHRS2. Refer to Garmin G1000 Cockpit Reference Guide for additional information.

MULTI-FUNCTION DISPLAY FAN FAILED

An overheat condition may arise in the associated display. In this case, screen brightness will be reduced automatically by 50% to lower internal temperature. Use reversionary capabilities, if necessary.

PRIMARY FLIGHT DISPLAY 1 FAN FAILED

An overheat condition may arise in the associated display. In this case, screen brightness will be reduced automatically by 50% to lower internal temperature. Use reversionary capabilities, if necessary.

PRIMARY FLIGHT DISPLAY 2 FAN FAILED

An overheat condition may arise in the associated display. In this case, screen brightness will be reduced automatically by 50% to lower internal temperature. Use reversionary capabilities, if necessary.

INADVERTENT OPENING OF AIRPLANE DOORS IN FLIGHT

If any of the airplane doors should inadvertently open in flight, the airplane should be slowed to 125 KIAS or less to reduce buffeting of the doors. If the upper cargo door is open, slow to 100 KIAS or less and lower flaps to LAND so that wing downwash will move the door towards its normally closed position. Closing the upper cargo door, or upper half of the passenger door on the Standard 208B, can be accomplished after airspeed has been reduced by pulling the door forcefully closed and latching the door. If the door cannot be closed in flight, a landing should be made as soon as practical in accordance with the checklist procedures. On Cargo Versions, an open cargo door cannot be closed in flight since the inside of the upper door has no handle.

If any cargo pod doors inadvertently open in flight, the airplane should be slowed to 125 KIAS or less and landed as soon as practical. During the landing, avoid a nose-high flare to prevent dragging an open rear cargo pod door on the runway.

NORMAL PROCEDURES

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INTRODUCTION

Section 4 provides procedures and amplified instructions for normal operations using standard equipment. Normal procedures associated with optional systems can be found in Section 9, Supplements.

WARNING

There is no substitute for proper and complete preflight planning habits and their continual review in minimizing emergencies. Become knowledgeable of hazards and conditions which represent potential dangers, and be aware of the capabilities and limitations of the airplane.

AIRSPEEDS FOR NORMAL OPERATION

Unless otherwise noted, the following speeds are based on a maximum takeoff weight of 8807 pounds (3994 kg) and landing weight of 8500 pounds (3855 kg) and may be used for any lesser weight. However, to achieve the performance specified in Section 5 for takeoff distance, climb performance, and landing distance, the speed appropriate to the particular weight must be used.

TAKEOFF

Normal Climb, FLAPS TO/APR . . . . **90-100 KIAS**
Short Field Takeoff, FLAPS TO/APR, Speed at 50 Feet . . . **86 KIAS**
Type II, Type III or Type IV
Anti-ice Fluid Takeoff (FLAPS UP). . . . . **83 KIAS**

ENROUTE CLIMB, FLAPS UP

Cruise Climb . . . . **110-120 KIAS**
Best Rate of Climb, Sea Level to 3000 Feet . . . . **108 KIAS**
Best Rate of Climb, 20,000 Feet . . . . **92 KIAS**
Best Angle of Climb, Sea Level to 20,000 Feet. . . . . **86 KIAS**

LANDING APPROACH

Normal Approach, FLAPS UP . . . . **100-115 KIAS**
Normal Approach, FLAPS LAND. . . . . **75-85 KIAS**
Short Field Approach, FLAPS LAND . . . . **78 KIAS**

BALKED LANDING

Takeoff Power, FLAPS TO/APR. . . . . **80 KIAS**

MAXIMUM RECOMMENDED TURBULENT AIR PENETRATION SPEED

8807 POUNDS (3994 kg) . . . . **148 KIAS**
7500 POUNDS (3401 kg) . . . . **137 KIAS**
6250 POUNDS (2834 kg) . . . . **125 KIAS**
5000 POUNDS (2267 kg) . . . . **112 KIAS**

MAXIMUM DEMONSTRATED CROSSWIND VELOCITY

Takeoff or Landing . . . . **20 KNOTS**

PREFLIGHT INSPECTION WARNINGS

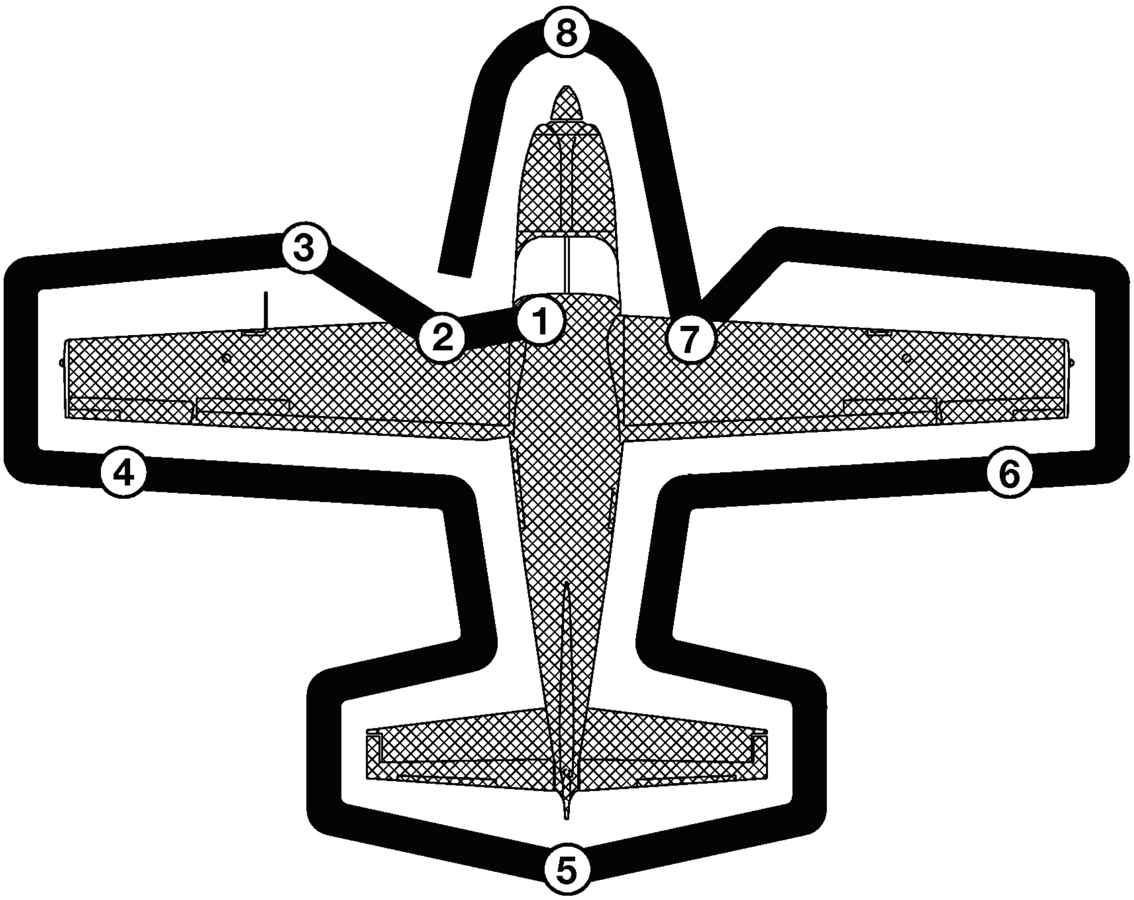
WARNING

- **Visually check airplane for general condition during walk-around inspection and remove any inlet, exit or exhaust covers. If cargo pod is installed, check its installation for security during the walk-around inspection. Use of a ladder will be necessary to gain access to the wing for visual checks, refueling operations, checks of the stall warning and pitot heat, and to reach outboard fuel tank sump drains.**
- **It is the pilot's responsibility to make sure that the airplane's fuel supply is clean before flight. Any traces of solid contaminants such as rust, sand, pebbles, dirt, microbes, and bacterial growth or liquid contamination resulting from water, improper fuel type, or additives that are not compatible with the fuel or fuel system components must be considered hazardous. Carefully sample fuel from all fuel drain locations during each preflight inspection and after every refueling.**
- **It is essential in cold weather to remove even the smallest accumulations of frost, ice, snow, or slush from the wing, tail, control surfaces, propeller blades, and engine air inlets. Exercise caution to avoid distorting the vortex generators on horizontal stabilizer while deicing. To assure complete removal of contamination, conduct a visual and tactile inspection of all critical surfaces. Also, make sure the control surfaces contain no internal accumulations of ice or debris. If these requirements are not performed, airplane performance will be degraded to a point where a safe takeoff and climb may not be possible.**
- **Prior to any flight in known or forecast icing conditions, check that PITOT/STATIC tube(s) and STALL warning heaters are warm to touch after turning PITOT/STATIC and STALL HEAT switches ON for 30 seconds, then OFF. Make sure the pitot covers are removed prior to turning PITOT/STATIC HEAT ON.**
- **If a night flight is planned, check operation of all lights, and make sure a flashlight is available and properly stowed.**

NORMAL PROCEDURES

PREFLIGHT INSPECTION

A39131



NOTE

Visually check airplane for general condition during walk-around inspection. Airplane should be parked in a normal ground attitude, refer to Figure 1-1, to make sure that fuel drain valves allow for accurate sampling. In cold weather, remove even small accumulations of frost, ice or snow from wing, tail and control surfaces. Also, make sure that control surfaces contain no internal accumulations of ice or debris. Prior to flight, check that pitot heater is warm to touch within 30 seconds with battery and pitot heat switches on. If a night flight is planned, check operation of all lights, verify all LED landing/taxi light bulbs are operational and make sure a flashlight is available.

Figure 4-1

PREFLIGHT INSPECTION (Continued)

① CABIN

1. Pitot/Static Tube Covers . . . . **REMOVE**
   (check for pitot blockage)
2. Pilot's Operating Handbook . . . . **ACCESSIBLE TO PILOT**
3. Garmin G1000 CRG . . . . **ACCESSIBLE TO PILOT**
4. Control Locks . . . . **REMOVE**
   (disengage RUDDER LOCK)
5. Airplane Weight and Balance . . . . **CHECKED**
6. PARKING BRAKE. . . . . **SET**
   (depress brake pedals and pull handle out)
7. All Switches . . . . **OFF**
8. Circuit Breakers . . . . **CLOSE**
   (push in)
9. ALT STATIC AIR Control Knob . . . . **OFF**
   (push in)
10. INERTIAL SEPARATOR . . . . **NORMAL**
    (push in)
11. STBY FLAP MOTOR Switch . . . . **GUARDED NORM**
12. OXYGEN SUPPLY PRESSURE (if installed) . . . . **CHECK**
13. Oxygen Masks (if installed). . . . . **CHECK AVAILABLE**
14. FUEL TANK SELECTORS . . . . **BOTH ON**
    (feel against stop)
15. VENT AIR FANS. . . . . **OFF**
16. AIR CONDITIONING Switch (if installed) . . . . **OFF**
17. TEMP Control Knob . . . . **CLOSED**
    (rotate FULL counterclockwise)
18. BLEED AIR HEAT Switch . . . . **OFF**
    (down)
19. EMERGENCY POWER Lever . . . . **NORMAL**
20. TRIM Controls. . . . . **SET**
21. FUEL/OIL SHUTOFF Knob . . . . **CHECK**
    (verify FULL in)
22. CABIN HEAT FIREWALL SHUTOFF Knob . . . . **CHECK**
    (push in)

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

① CABIN (Continued)

23. BATTERY Switch . . . . **ON**
24. Avionics Fans . . . . **CHECK**
    (verify deck skin fans are heard and check airflow from each fan)
25. AVIONICS No. 1 Switch . . . . **ON**
26. PFD 1 . . . . **CHECK**
    (verify PFD 1 comes on)
27. AVIONICS No. 2 Switch . . . . **ON**
28. PFD 2 and MFD . . . . **CHECK**
    (verify PFD 2 and MFD come on)
29. FUEL QTY. . . . . **CHECK QUANTITY**
30. ENGINE Softkey . . . . **SELECT SYSTEM**
31. SYSTEM Softkey. . . . . **RST FUEL**
    (if desired)

NOTE

Reset fuel totalizer if desired. Select ENGINE Softkey to return to main page.

32. WING FLAPS Handle . . . . **LAND**
33. PITOT/STATIC and
    STALL HEAT Switches . . . . **ON FOR 30 SECONDS; THEN OFF**
34. AVIONICS No. 1 and No. 2 Power Switches. . . . . **OFF**
35. BATTERY Switch . . . . **OFF**

PREFLIGHT INSPECTION (Continued)

② LEFT SIDE

1. Wing Light . . . . **CHECK**
   (verify condition)
2. Fuel Reservoir Quick Drain Valve (located on bottom of fuselage or left side of cargo pod) . . . . **DRAIN**

   Drain at least a cupful of fuel (using sampler cup) from each sump location to check for water, sediment, and proper fuel grade before each flight and after each refueling. If water is observed, take further samples until clear. Take repeated samples from **all** fuel drain points until **all** contamination has been removed. Refer to Section 7, Airplane and System Description, Fuel System Schematic for drain locations. If contaminants are still present, refer to WARNING below and do not fly airplane.

NOTE

Collect all sampled fuel in a safe container. Dispose of the sampled fuel so that it does not cause a nuisance, hazard or damage to the environment.

WARNING

If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight.

3. Main Landing Gear . . . . **CHECK**
   (check condition of gear and brakes)
4. Main Wheel Tire . . . . **CHECK**
   (proper inflation and general condition (weather checks, tread depth and wear, etc.))

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

② LEFT SIDE (Continued)

5. Inboard Fuel Tank Sump and
   External Sump Quick-Drain Valves . . . . **DRAIN**

   Drain at least a cupful of fuel (using sampler cup) from each sump location to check for water, sediment, and proper fuel grade before each flight and after each refueling. If water is observed, take further samples until clear. Take repeated samples from **all** fuel drain points until **all** contamination has been removed. Refer to Section 7, Airplane and System Description, Fuel System Schematic for drain locations. If contaminants are still present, refer to WARNING below and do not fly airplane.

NOTE

Collect all sampled fuel in a safe container. Dispose of the sampled fuel so that it does not cause a nuisance, hazard or damage to the environment.

WARNING

If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight.

PREFLIGHT INSPECTION (Continued)

③ LEFT WING Leading Edge

WARNING

- **It is essential in cold weather to remove even the smallest accumulations of frost, ice, snow, or slush from the wing and control surfaces. To assure complete removal of contamination, conduct a visual and tactile inspection up to two feet behind the protected surfaces at one location along the wing span as a minimum. Also, make sure the control surfaces contain no internal accumulations of ice or debris. If these requirements are not performed, airplane performance will be degraded to a point where a safe takeoff and climb may not be possible.**
- **Prior to any flight in known or forecast icing conditions, check that PITOT/STATIC tube(s) and STALL warning heaters are warm to touch after turning PITOT/STATIC and STALL HEAT switches ON for 30 seconds, then OFF. Make sure the pitot covers are removed prior to turning PITOT/ STATIC HEAT ON.**

1. Wing Tiedown . . . . **DISCONNECT**
2. Stall Warning Vane . . . . **CHECK**
   (verify freedom of movement and warm to the touch)

NOTE

Make sure elevator control is off the forward stop in order to check audible warning.

3. Pitot/Static Tube . . . . **CHECK**
   (verify security, openings for stoppage and warmth)
4. Landing and Taxi/Recognition Lights . . . . **CHECK**
   (condition and cleanliness of cover)

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

③ LEFT WING Leading Edge (Continued)

5. Fuel Quantity . . . . **VISUALLY CHECK**
   Refer to Figure 4-2, Measured Fuel Depth vs. Fuel Quantity chart in this section.
6. Fuel Filler Cap . . . . **SECURE**
7. Outboard Fuel Tank
   Sump Quick-Drain Valve . . . . **DRAIN**
   Drain at least a cupful of fuel (using sampler cup) from each sump location to check for water, sediment, and proper fuel grade before each flight and after each refueling. If water is observed, take further samples until clear. Take repeated samples from **all** fuel drain points until **all** contamination has been removed. Refer to Section 7, Airplane and System Description, Fuel System Schematic for drain locations. If contaminants are still present, refer to WARNING below and do not fly airplane.

NOTE

Collect all sampled fuel in a safe container. Dispose of the sampled fuel so that it does not cause a nuisance, hazard or damage to the environment.

WARNING

If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight.

8. Nav and Strobe Lights . . . . **CHECK**
   (verify condition and cleanliness)

PREFLIGHT INSPECTION (Continued)

MEASURED FUEL DEPTH VS. FUEL QUANTITY

Universal XL Fuel Gage	Fuel Quantity	
Gage Scale	Gallons	Pounds
0.50	87.4	585
0.75	91.1	610
1.00	94.7	634
1.25	98.2	658
1.50	101.8	682
1.75	105.2	705
2.00	108.6	727
2.25	111.9	750
2.50	115.1	771
2.75	118.3	793
3.00	121.5	814
3.25	124.5	834
3.50	127.5	855
3.75	130.5	874
4.00	133.4	894
4.25	136.2	912
4.50	138.9	931
4.75	141.6	949
5.00	144.3	966
5.25	146.8	984
5.50	149.3	1000
5.75	151.8	1017
6.00	154.1	1033
6.25	156.5	1048
6.50	158.7	1063
6.75	160.9	1078
7.00	163.0	1092
7.25	165.0	1106

Generic Fuel Gage-Inches	Fuel Quantity	
Inches	Gallons	Pounds
0.50	88.4	592
0.75	92.6	621
1.00	96.7	648
1.25	100.8	675
1.50	104.7	702
1.75	108.6	727
2.00	112.4	753
2.25	116.1	778
2.50	119.7	802
2.75	123.2	826
3.00	126.7	849
3.25	130.1	871
3.50	133.4	894
3.75	136.6	915
4.00	139.7	936
4.25	142.8	956
4.50	145.7	976
4.75	148.6	996
5.00	151.4	1015
5.25	154.1	1033
5.50	156.8	1050
5.75	159.3	1068
6.00	161.8	1084
6.33	165.0	1105

Figure 4-2

PREFLIGHT INSPECTION (Continued)

④ LEFT WING Trailing Edge

1. Fuel Tank Vent Opening . . . . **CHECK**
   (verify opening is clear)
2. Aileron and Servo Tab . . . . **CHECK**
   (verify condition and security)
3. Static Wicks (4 total) . . . . **CHECK**
   (verify condition)
4. Spoiler . . . . **CHECK**
   (verify condition and security)
5. Flap Leading Edge Vortex Generators . . . . **CHECK**
   (verify condition and security)
6. Flap . . . . **CHECK**
   (verify condition and security)

PREFLIGHT INSPECTION (Continued)

⑤ EMPENNAGE

WARNING

It is essential in cold weather to remove even the smallest accumulations of frost, ice, snow, or slush from the tail and control surfaces. Exercise caution to avoid distorting the vortex generators on horizontal stabilizer while deicing. To assure complete removal of contamination, conduct a visual and tactile inspection of all critical surfaces. Also, make sure the control surfaces contain no internal accumulations of ice or debris. If these requirements are not performed, airplane performance will be degraded to a point where a safe takeoff and climb may not be possible.

1. Baggage . . . . **CHECK SECURE** (through cargo door)
2. Cargo Door . . . . **CLOSED and LATCHED**
3. Horizontal Stabilizer Leading Edge. . . . . **CHECK**

   Verify condition, security, and verify 18 vortex generators on the upper side of each horizontal stabilizer.
4. Control Surfaces and Elevator Trim Tabs . . . . **CHECK**

   Verify condition, security, freedom of movement and tab position.
5. Static Wicks (14 total) . . . . **CHECK**

   Verify condition and security; verify 4 static wicks per elevator half, 5 on the rudder, and 1 on the stinger.
6. Rudder Gust Lock. . . . . **UNLOCK**
7. Tail Tiedown . . . . **DISCONNECT**
8. Oxygen Filler Door (if installed) . . . . **SECURE**
9. Passenger Entry Door (if installed). . . . . **CHECK** (closed and latched)

PREFLIGHT INSPECTION (Continued)

⑥ RIGHT WING Trailing Edge

1. Flap . . . . **CHECK**
   (verify condition and security)
2. Spoiler . . . . **CHECK**
   (verify condition and security)
3. Flap Leading Edge Vortex Generators . . . . **CHECK**
   (verify condition and security)
4. Aileron and Trim Tab . . . . **CHECK**
   (verify condition and security)
5. Static Wicks (4 total) . . . . **CHECK**
   (verify condition)
6. Fuel Tank Vent . . . . **CHECK**
   (verify opening is clear)

⑦ RIGHT WING Leading Edge

WARNING

- **It is essential in cold weather to remove even the smallest accumulations of frost, ice, snow, or slush from the wing and control surfaces. To assure complete removal of contamination, conduct a visual and tactile inspection up to two feet behind the protected surfaces at one location along the wing span as a minimum. Also, make sure the control surfaces contain no internal accumulations of ice or debris. If these requirements are not performed, airplane performance will be degraded to a point where a safe takeoff and climb may not be possible.**
- **Prior to any flight in known or forecast icing conditions, check that PITOT/STATIC tube(s) and STALL warning heaters are warm to touch after turning PITOT/STATIC and STALL HEAT switches ON for 30 seconds, then OFF. Make sure the pitot covers are removed prior to turning PITOT/STATIC HEAT ON.**

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

⑦ RIGHT WING Leading Edge (Continued)

1. Nav and Strobe Lights . . . . **CHECK**
   (verify condition and cleanliness)
2. Fuel Quantity . . . . **VISUALLY CHECK**
   Refer to Figure 4-2, Measured Fuel Depth vs. Fuel Quantity chart in this section.
3. Fuel Filler Cap . . . . **SECURE**
4. Outboard Fuel Tank Sump Quick-Drain Valve . . . . **DRAIN**
   (if airplane parked with one wing low on a sloping ramp)
   Drain at least a cupful of fuel (using sampler cup) from each sump location to check for water, sediment, and proper fuel grade before each flight and after each refueling. If water is observed, take further samples until clear. Take repeated samples from **all** fuel drain points until **all** contamination has been removed. Refer to Section 7, Airplane and System Description, Fuel System Schematic for drain locations. If contaminants are still present, refer to WARNING below and do not fly airplane.

NOTE

Collect all sampled fuel in a safe container. Dispose of the sampled fuel so that it does not cause a nuisance, hazard or damage to the environment.

WARNING

If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight.

5. Landing and Taxi/ Recognition Lights . . . . **CHECK**
   (condition and cleanliness of cover)

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

⑦ RIGHT WING Leading Edge (Continued)

6. Pitot/Static Tube . . . . **CHECK**
   (verify security, openings for stoppage and warmth)
7. Radome (if installed) . . . . **CHECK**
   (verify condition and security)
8. Wing Tiedown . . . . **DISCONNECT**
9. Inboard Fuel Tank Sump and
   External Sump Quick-Drain Valves . . . . **DRAIN**
   Drain at least a cupful of fuel (using sampler cup) from each sump location to check for water, sediment, and proper fuel grade before each flight and after each refueling. If water is observed, take further samples until clear. Take repeated samples from **all** fuel drain points until **all** contamination has been removed. Refer to Section 7, Airplane and System Description, Fuel System Schematic for drain locations. If contaminants are still present, refer to WARNING below and do not fly airplane.

NOTE

Collect all sampled fuel in a safe container. Dispose of the sampled fuel so that it does not cause a nuisance, hazard or damage to the environment.

WARNING

If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight.

10. Main Landing Gear . . . . **CHECK**
    (check condition of gear and brakes)
11. Main Wheel Tire . . . . **CHECK**
    (proper inflation and general condition (weather checks, tread depth and wear, etc.))

PREFLIGHT INSPECTION (Continued)

⑧ NOSE

WARNING

It is essential in cold weather to remove even the smallest accumulations of frost, ice, snow, or slush from the propeller blades and spinner, and the air inlets (starter/generator, oil cooler and engine inlets). To assure complete removal of contamination, conduct a visual and tactile inspection of all critical surfaces. If these requirements are not performed, airplane performance will be degraded to a point where a safe takeoff and climb may not be possible.

1. Right Crew Door . . . . **CHECK**
   (closed and latched)
2. Exhaust Cover (if installed). . . . . **REMOVE**
3. Cowling . . . . **OPEN**
   (right side of upper cowling for access and check condition and security)
4. Engine (right side). . . . . **CHECK**
   (verify general condition, security, fuel and oil leakage and damage to any components)

WARNING

Avoid touching the output connectors or coupling nuts or ignition excitor with bare hands.

5. Battery . . . . **CHECK**
   (verify condition and power cables security)
6. Fuel Filter Bypass Pop-Up Pin . . . . **CHECK**
7. Ignitor Box. . . . . **CHECK**
   (condition and security)
8. Exhaust System . . . . **CHECK**
   (verify condition, security, cracks, distortion and damage)

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

⑧ NOSE (Continued)

9. Cowling . . . . **CLOSE and LATCH** (right side)
10. Propeller Anchor . . . . **REMOVE**
11. Air Inlet Covers . . . . **REMOVE**
12. Air Inlets . . . . **CHECK**
    Check starter/generator blast tube opening and oil cooler inlet (right) and engine induction air inlet (left) for condition, restrictions, and debris.
13. Propeller . . . . **CHECK**
    Inspect blades for nicks, gouges, looseness of material, erosion and cracks. Also, inspect blades for lightning strike (darkened area near tips), boots for security, condition and evidence of grease and oil leaks.
14. Propeller Spinner. . . . . **CHECK** (verify condition and security)
15. Nosewheel Strut and Tire . . . . **CHECK**
    Check condition, red over-travel indicator block and cable intact (not fallen into view), and proper inflation of tire.
16. Air Conditioning Louvers (if installed) . . . . **CHECK** (clear of obstructions)
17. Cowling . . . . **OPEN**
    (left side of upper cowling for access and check condition and security)
18. Engine (left side) . . . . **CHECK**
    (verify general condition, security, fuel, no oil leakage, and no damage to any components)
19. INERTIAL SEPARATOR Bypass Outlet . . . . **CHECK CLOSED** (verify duct free of debris)

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

⑧ **NOSE** (Continued)

20. Engine Oil:
    a. Oil Level Sight Glass . . . . **CHECK**
    (verify oil level within green band range)
    b. Dipstick/Filler Cap . . . . **SECURE**
    Fill to within 1 1/2 quarts of MAX HOT or MAX COLD (as appropriate) on dipstick. Markings indicate U.S. quarts low if oil is hot.

WARNING

Make sure the oil dipstick cap is securely latched down. Operating the engine with less than the recommended oil level and with the dipstick cap unlatched will result in excessive oil loss and eventual engine stoppage.

21. Electrical Power Box Circuit Breakers and Diodes . . . . **CHECK**
    (verify all circuit breakers, including standby alternators are IN and diodes are clear)
22. Standby Alternator and Belt . . . . **CHECK**
    (verify condition and security)
23. Air Conditioning (if installed):
    a. Compressor . . . . **CHECK**
    (verify condition and security)
    b. Drive Belt . . . . **CHECK**
    (verify condition and tension)
    c. Hoses . . . . **CHECK**
    Check hoses for evidence of damage or leaks from compressor to the condenser and evaporators.
    d. Condenser Inlet/Outlet . . . . **CHECK**
    (lower left side of cowling)
    (check installation, condition and blockage)
24. Brake Fluid Reservoir . . . . **CHECK**
    (fluid level and cap secured)
25. Cowling . . . . **CLOSE and LATCH**
    (left side)
26. Oil Breather Drain Can . . . . **DRAIN**
    (until empty)
27. External Power Receptacle . . . . **CHECK**
    (condition and security)

BEFORE STARTING ENGINE

1. Preflight Inspection . . . . **COMPLETE**
   (verify weight and balance is checked and tail stand is removed and stowed)
2. All Key Locking Cabin Doors. . . . . **UNLOCKED**
   (except cargo configured airplanes)
   Cargo door can be locked if no passengers occupy cargo area of airplane.
3. Passenger Briefing . . . . **COMPLETE**
4. Cabin Doors . . . . **LATCHED**
   (check aft doors)
5. Left Crew Door Lock Override Knob and
   Right Crew Door Inside Lock . . . . **UNLOCKED**
6. PARKING BRAKE . . . . **SET**
   (depress brake pedals and pull handle out)
7. Control Lock . . . . **REMOVE**
8. Seats, Seat Belts and
   Shoulder Harnesses. . . . . **ADJUST and SECURE**
   (crew seat lock indicator pin(s) extended)

WARNING

Failure to correctly use seat belts and shoulder harnesses could result in serious or fatal injury in the event of an accident.

9. Switches . . . . **OFF**
10. IGNITION Switch. . . . . **NORM**
11. Circuit Breakers. . . . . **CHECK IN**
12. FUEL TANK SELECTORS . . . . **BOTH ON**
13. VENT AIR FANS . . . . **OFF**
14. AIR CONDITIONING Switch (if installed) . . . . **OFF**

(Continued Next Page)

BEFORE STARTING ENGINE (Continued)

15. TEMP Control Knob . . . . **CLOSED**
    (rotate FULL counterclockwise)
16. BLEED AIR HEAT Switch . . . . **OFF**
    (down)

CAUTION

Leaving the BLEED AIR HEAT Switch ON and the TEMP control knob fully OPEN can result in a hot start or abnormal acceleration to idle.

17. CABIN HEAT MIXING AIR Control Knob . . . . **FLT-PUSH**
18. EMERGENCY POWER Lever . . . . **NORMAL**
19. POWER Lever . . . . **IDLE**
20. PROP RPM Lever. . . . . **MAX**
    (full forward)
21. FUEL CONDITION Lever . . . . **CUTOFF**
22. FUEL/OIL SHUTOFF Knob . . . . **CHECK**
    (verify FULL in)
23. BATTERY Switch . . . . **ON**
24. WING FLAPS Handle . . . . **UP**
25. SEAT BELT Switches (if installed) . . . . **ON**
    (or as required/desired)
26. NO SMOKE Light Switch (if installed). . . . . **ON**
    (or as required/desired)
27. TEST SWITCH . . . . **CHECK**
    a. FIRE DETECT Switch . . . . **PUSH UP**
       (verify red ENGINE FIRE annunciator is shown)
    b. FUEL SELECT OFF Switch . . . . **PUSH DN**
       (verify red FUEL SELECT OFF annunciator is shown)

STARTING ENGINE (With Battery)

1. BATTERY Switch . . . . **ON**
2. BCN Light Switch . . . . **ON**
3. AVIONICS No. 1 Switch . . . . **ON**
4. Engine Indicating System . . . . **CHECK PARAMETERS** (verify no red X's)
5. BUS VOLTS . . . . **CHECK** (24 volts minimum)
6. EMERGENCY POWER Lever. **NORMAL** (full aft position)
7. Red EMERG PWR LVR Annunciator . . . . **CHECK** (verify annunciator is not shown)

CAUTION

Make sure that the EMERGENCY POWER lever is in the NORMAL (full aft) position or an over-temperature condition will result during engine start.

8. Propeller Area . . . . **CLEAR**
   (verify that all people and equipment are at a safe distance from the propeller)
9. FUEL BOOST Switch . . . . **ON**
   a. Amber FUEL BOOST ON Annunciator. . . . . **CHECK** (verify annunciator is shown)
   b. Amber FUEL PRESS LOW Annunciator . . . . **CHECK** (verify annunciator is not shown)
   c. FFLOW PPH . . . . **CHECK** (verify 0 fuel flow PPH indicated)
10. STARTER Switch . . . . **START**
    a. White IGNITION ON Annunciator. . . . . **CHECK** (verify annunciator is shown)
    b. OIL PSI . . . . **CHECK** (verify oil pressure indicated)
    c. N_g . . . . **STABLE** (12% minimum)

(Continued Next Page)

STARTING ENGINE (With Battery) (Continued)

11. FUEL CONDITION Lever . . . . **LOW IDLE**
    a. FFLOW PPH . . . . **CHECK** (90 to 140 PPH)
    b. ITT . . . . **MONITOR** (1090°C maximum, limited to 2 seconds)

CAUTION

- If ITT climbs rapidly towards 1090°C, be prepared to return the FUEL CONDITION lever to CUTOFF position.
- Under hot OAT and/or high ground elevation conditions, idle ITT can exceed maximum idle ITT limitation of 700°C. Increase N_g and/or reduce accessory load to maintain ITT within limits.

    c. N_g . . . . **55% MINIMUM**

12. STARTER Switch . . . . **OFF**
13. Amber STARTER ON Annunciator . . . . **CHECK** (verify annunciator is not shown)
14. Engine Indicating System . . . . **CHECK PARAMETERS** (verify all parameters in normal range)
15. GEN AMPS. . . . . **CHECK LOAD**
16. Amber GENERATOR OFF Annunciator . . . . **CHECK** (verify annunciator is not shown)
17. BAT AMPS . . . . **CHECK** (verify charge shown (positive))
18. FUEL BOOST Switch . . . . **NORM**
19. Amber FUEL BOOST ON Annunciator. . . . . **CHECK** (verify annunciator is not shown)
20. AVIONICS No. 2 Switch . . . . **ON**

NOTE

With AVIONICS No. 2 Switch ON, verify white TORQUE GAGE annunciator is not shown and the dynamic redline agrees with the values listed in Figure 5-8, Maximum Engine Torque For Takeoff, for current altitude and temperature.

21. NAV Lights Switch . . . . **ON**
22. Cabin Heating, Ventilating and Defrosting Controls . . . . **AS DESIRED**

STARTING ENGINE (With External Power)

CAUTION

The external power unit must be rated at 24.0 - 28.0 Volt with a minimum output of 800 amps and a maximum output of 1700 amps.

1. BATTERY Switch . . . . **ON**
2. AVIONICS No. 1 Switch . . . . **ON**
3. Engine Indication System . . . . **CHECK PARAMETERS** (verify no red X's)
4. EXTERNAL POWER Switch . . . . **OFF**
5. BUS VOLTS . . . . **CHECK** (verify 20 VOLTS minimum shown)
6. AVIONICS No. 1 Switch . . . . **OFF**
7. BATTERY Switch . . . . **OFF**
8. External Power Unit. . . . . **ENGAGE; then ON**
9. EXTERNAL POWER Switch . . . . **BUS**

CAUTION

Make sure the EMERGENCY POWER lever is in the NORMAL position or an over-temperature condition will result during engine start.

10. BATTERY Switch . . . . **ON**
11. BCN Light Switch . . . . **ON**
12. AVIONICS No. 1 Switch . . . . **ON**
13. BUS VOLTS . . . . **CHECK** (verify 24.0 to 28.5 volts shown)
14. EXTERNAL POWER Switch . . . . **STARTER**
15. EMERGENCY POWER Lever. . . . . **NORMAL**
16. Red EMERG PWR LVR Annunciator . . . . **CHECK** (verify annunciator is not shown)
17. Propeller Area . . . . **CLEAR** (verify that all people and equipment are at a safe distance from the propeller)

(Continued Next Page)

STARTING ENGINE (With External Power) (Continued)

18. FUEL BOOST Switch . . . . **ON**
    a. Amber FUEL BOOST ON Annunciator . . . . **CHECK**
       (verify annunciator is shown)
    b. Amber FUEL PRESS LOW Annunciator . . . . **CHECK**
       (verify annunciator is not shown)
    c. FFLOW PPH . . . . **CHECK**
       (verify 0 fuel flow PPH indicated)

CAUTION

If the external power unit drops off the line, initiate engine shutdown.

19. STARTER Switch . . . . **START**
    a. White IGNITION ON Annunciator . . . . **CHECK**
       (verify annunciator is shown)
    b. OIL PSI. . . . . **CHECK**
       (verify oil pressure indicated)
    c. N_g . . . . **STABLE**
       (12% minimum)
20. FUEL CONDITION Lever . . . . **LOW IDLE**
    a. FFLOW PPH . . . . **CHECK**
       (90 to 140 PPH)
    b. ITT . . . . **MONITOR**
       (1090°C maximum, limited to 2 seconds)

CAUTION

- If ITT climbs rapidly towards 1090°C, be prepared to return the FUEL CONDITION lever to CUTOFF position.
- Under hot OAT and/or high ground elevation conditions, idle ITT can exceed maximum idle ITT limitation of 700°C. Increase N_g and/or reduce accessory load to maintain ITT within limits.

    c. N_g . . . . **55% MINIMUM**

(Continued Next Page)

STARTING ENGINE (With External Power) (Continued)

21. STARTER Switch . . . . **OFF**
22. Amber STARTER ON Annunciator . . . . **CHECK**
    (verify annunciator is not shown)
23. Engine Indicating System . . . . **CHECK PARAMETERS**
    (verify all parameters in normal range)
24. EXTERNAL POWER Switch . . . . **OFF**
25. External Power Unit. . . . . **OFF, then DISENGAGE**
26. GEN AMPS . . . . **CHECK LOAD**
27. Amber GENERATOR Off Annunciator . . . . **CHECK**
    (verify annunciator is not shown)
28. BAT AMPS . . . . **CHECK**
    (verify charge shown (positive))
29. FUEL BOOST Switch . . . . **NORM**
30. Amber FUEL BOOST ON Annunciator . . . . **CHECK**
    (verify annunciator is not shown)
31. AVIONICS No. 2 Switch . . . . **ON**

NOTE

With AVIONICS No. 2 Switch ON, verify white TORQUE GAGE annunciator is not shown and the dynamic redline agrees with the values listed in Figure 5-8, Maximum Engine Torque For Takeoff, for current altitude and temperature.

32. NAV Lights Switch . . . . **ON**
33. Cabin Heating, Ventilating
    and Defrosting Controls . . . . **AS DESIRED**

TAXIING

1. Brakes . . . . **CHECK**

NOTE

Propeller BETA range can be used during taxi with minimum blade erosion up to the point where N_g increases (against beta range spring) to control taxi speed and improve brake life.

2. Flight Instruments . . . . **CHECK**

BEFORE TAKEOFF

1. PARKING BRAKE. . . . . **SET**
   (depress brake pedals and pull handle out)
2. Seats, Seat Belts and
   Shoulder Harnesses . . . . **CHECK SECURE**

WARNING

Failure to correctly use seat belts and shoulder harnesses can result in serious or fatal injury in the event of an accident.

3. Flight Controls. . . . . **FREE and CORRECT**
4. Flight Instruments . . . . **CHECK**
5. Altimeters:
   a. PFD 1 and PFD 2 (BARO) . . . . **SET**
   b. Standby Altimeter . . . . **SET**
6. ALT SEL . . . . **SET**
7. Standby Flight Instruments . . . . **CHECK**
8. FUEL BOOST Switch . . . . **NORM**
9. FUEL TANK SELECTORS . . . . **BOTH ON**
10. FUEL QTY . . . . **CHECK**
11. FUEL/OIL SHUTOFF Knob . . . . **CHECK**
    (verify FULL in)
12. ELEVATOR, AILERON, and RUD TRIM Controls . . . . . . **3 SET**
    (for takeoff)
13. POWER Lever . . . . **400 FT-LB**
    a. BUS VOLTS . . . . **CHECK**
       (verify 28.5 volts minimum)
    b. INERTIAL SEPARATOR. . . . . **CHECK**
       Turn control counterclockwise, pull to BYPASS position and check torque drop; move control back to NORMAL position and check that original torque is regained.
    c. Engine Indicating System. . . . . **CHECK**
       (verify oil temp 32 - 99°C for takeoff)

(Continued Next Page)

BEFORE TAKEOFF (Continued)

14. Overspeed Governor. . . . . **CHECK**
    (first flight of the day and after maintenance)
    a. PROP RPM Lever. . . . . **MAX**
       (full forward)
    b. OVERSPEED GOVERNOR
       TEST Button . . . . **PRESS and HOLD**
    c. POWER Lever . . . . **ADVANCE**
       (propeller RPM stabilize at 1750 ±60 RPM)

NOTE

Smoothly advance the POWER lever to allow propeller RPM to stabilize. Rapid movement of the POWER lever will cause the propeller to surge.

    d. POWER Lever . . . . **IDLE**
    e. OVERSPEED GOVERNOR TEST Button . . . . . **RELEASE**
15. Quadrant Friction Lock . . . . **ADJUST**
16. Standby Power . . . . **CHECK**
    (first flight of the day)
    a. ENGINE Softkey. **SELECT SYSTEM**
    b. STBY ALT PWR Switch . . . . **ON**
    c. GEN AMPS. . . . . **LOAD**
       (to approximately 30 amps)

NOTE

Generator load can be increased by turning the TAXI/ RECOG Lights ON. Do not exceed 60 amps total load.

    d. ALT AMPS . . . . **CHECK**
       (alternator output near zero)
    e. GENERATOR Switch . . . . **TRIP**
    f. ALT AMPS . . . . **CHECK**
       (verify load)

(Continued Next Page)

BEFORE TAKEOFF (Continued)

16. Standby Power . . . . **CHECK** (Continued)
    g. BUS VOLTS . . . . **CHECK**
    (for alternator output and voltage approximately one volt less than with generator ON)

NOTE

A fully charged battery will carry part of the electrical load when initially switching from generator to standby alternator power because of the generator's higher voltage regulation.

    h. White STBY PWR ON Annunciator . . . . **CHECK**
    (verify annunciator is shown)
    i. Amber GENERATOR OFF Annunciator. . . . . **CHECK**
    (verify annunciator is shown)
    j. GENERATOR Switch . . . . **RESET**
    k. Amber GENERATOR OFF Annunciator. . . . . **CHECK**
    (verify annunciator is not shown)
    l. White STBY PWR ON Annunciator . . . . **CHECK**
    (verify annunciator is not shown)
    m. STBY ALT PWR Switch . . . . **OFF**
    n. Amber STBY PWR INOP Annunciator. . . . . **CHECK**
    (verify annunciator is shown)
    o. STBY ALT PWR Switch . . . . **ON**
17. Manual Electric Pitch Trim (MEPT). . . . . **CHECK and SET**
    (first flight of the day and after maintenance)
    a. Push both sides of trim switch TRIM DOWN (verify correct trim wheel and pointer movement). Press AP DISC/TRIM INTER button (verify trim wheel stops moving).
    b. Push both sides of trim switch TRIM UP (verify correct trim wheel and pointer movement). Press AP DISC/TRIM INTER button (verify trim wheel stops moving).
    c. Verify pilot's trim switch command overrides copilot's trim switch command.
    d. Set trim as required within T.O. band.
18. Ice Protection . . . . **AS REQUIRED**
    a. PITOT/STATIC HEAT Switch . . . . **ON**
    (when OAT is below 5°C (41°F) and in visible moisture)
    b. STALL HEAT Switch. . . . . **ON**
    (when OAT is below 5°C (41°F) and in visible moisture)

(Continued Next Page)

BEFORE TAKEOFF (Continued)

19. INERTIAL SEPARATOR . . . . **SET**
    (position INERTIAL SEPARATOR to NORMAL or BYPASS as conditions warrant)
20. Avionics and Radar . . . . **SET FOR DEPARTURE**
21. Nav Source . . . . **SET FOR DEPARTURE**
22. XPDR . . . . **SET**
23. STROBE Lights Switch . . . . **ON**
24. Annunciators . . . . **CHECK**
    (verify no annunciators are shown)
25. WING FLAPS Handle . . . . **SET FOR TAKEOFF**
    (set WING FLAPS to UP or TO/APR for desired takeoff performance)
26. CABIN HEAT MIXING AIR Control . . . . **FLT-PUSH**
27. Crew Vent Window . . . . **CLOSED and LATCHED**
28. Brakes . . . . **RELEASE**
29. FUEL CONDITION Lever . . . . **HIGH IDLE**

WARNING

- **When ground icing conditions are present, a pre-takeoff visual and tactile check should be conducted by the pilot in command within five minutes of takeoff, preferably just prior to taxiing onto the active runway.**
- **Takeoff is prohibited with any frost, ice, snow, or slush adhering to the wings, tail, control surfaces, propeller blades, or engine air inlets.**
- **Even small amounts of frost, ice, snow, or slush on the wing can adversely change lift and drag. Failure to remove these contaminants will degrade airplane performance to a point where a safe takeoff and climb may not be possible.**
- **Make sure that the anti-ice fluid (if applied) is still protecting the airplane.**

TAKEOFF

NORMAL TAKEOFF

1. WING FLAPS Handle . . . . **UP or TO/APR**
   (TO/APR recommended)
2. POWER Lever . . . . **SET FOR TAKEOFF**
   (observe Takeoff ITT and N_g limits)
3. Annunciators. . . . . **CHECK**
   (verify no annunciators are shown)
4. Rotate . . . . **70-75 KIAS**
5. Airspeed . . . . **85-95 KIAS**
6. WING FLAPS Handle . . . . **RETRACT to UP**
   (after reaching 95 KIAS)

SHORT FIELD TAKEOFF

1. WING FLAPS Handle . . . . **TO/APR**
2. Brakes. . . . . **APPLY**
3. POWER Lever . . . . **SET FOR TAKEOFF**
   (observe Takeoff ITT and N_g limits)
4. Annunciators. . . . . **CHECK**
   (verify no annunciators are shown)
5. Brakes. . . . . **RELEASE**
6. Rotate . . . . **74 KIAS**
7. Airspeed . . . . **86 KIAS**
   (until all obstacles are cleared)
   Refer to Section 5, Performance, Figure 5-10 or Figure 5-27, Short Field Takeoff Distance for speeds at reduced weights.
8. WING FLAPS Handle . . . . **RETRACT to UP**
   (after reaching 95 KIAS)

TAKEOFF (Continued)

TYPE II, TYPE III OR TYPE IV ANTI-ICE FLUID TAKEOFF

1. WING FLAPS Handle . . . . **UP**
2. Power Lever . . . . **SET FOR TAKEOFF**
   (observe Takeoff ITT and N_g limits)
3. Annunciators . . . . **CHECK**
   (verify no annunciators are shown)
4. Rotate . . . . **83 KIAS**
5. Airspeed . . . . **104 KIAS**

ENROUTE CLIMB

CRUISE CLIMB

1. Ice Protection . . . . **AS REQUIRED**
   a. PITOT/STATIC HEAT Switch . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
   b. STALL HEAT Switch. . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
2. INERTIAL SEPARATOR . . . . **SET**
   (position INERTIAL SEPARATOR to NORMAL or BYPASS as conditions warrant)
3. Airspeed . . . . **110-120 KIAS**
4. PROP RPM Lever. . . . . **1600-1900 RPM**

NOTE

To achieve maximum flat rated horsepower, PROP RPM lever must be set at 1900 RPM.

5. POWER Lever . . . . **SET FOR CLIMB**
   (observe Maximum Climb Torque, ITT and N_g limits)

   Refer to Section 5, Performance, Figure 5-9, Maximum Engine Torque for Climb for approved engine power settings.

CAUTION

For every 10°C (18°F) below -30°C (-22°F) ambient temperature, reduce maximum allowable N_g by 2.2%. The Garmin G1000 incorporates a temperature compensating N_g redline.

ENROUTE CLIMB (Continued)

MAXIMUM PERFORMANCE CLIMB

1. Ice Protection . . . . **AS REQUIRED**
   a. PITOT/STATIC HEAT Switch . . . . **ON**
   (when OAT is below 5°C (41°F) and in visible moisture)
   b. STALL HEAT Switch . . . . **ON**
   (when OAT is below 5°C (41°F) and in visible moisture)
2. INERTIAL SEPARATOR . . . . **SET**
   (position INERTIAL SEPARATOR to NORMAL or BYPASS as conditions warrant)
3. Airspeed . . . . **108 KIAS** (from sea level to 3000 feet)
   decreasing to **92 KIAS** (at 20,000 feet)
4. PROP RPM Lever . . . . **1900 RPM**
5. POWER Lever. . . . . **SET FOR CLIMB**
   (observe Maximum Climb Torque, ITT and N_g limits)

   Refer to Section 5, Performance, Figure 5-9, Maximum Engine Torque for Climb for approved engine power settings.

CAUTION

For every 10°C (18°F) below -30°C (-22°F) ambient temperature, reduce maximum allowable N_g by 2.2%. The Garmin G1000 incorporates a temperature compensating N_g redline.

CRUISE

1. Ice Protection . . . . **AS REQUIRED**
   a. PITOT/STATIC HEAT Switch . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
   b. STALL HEAT Switch. . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
2. INERTIAL SEPARATOR . . . . **SET**
   (position INERTIAL SEPARATOR to NORMAL or BYPASS as conditions warrant)
3. PROP RPM Lever. . . . . **1600 to 1900 RPM**
4. POWER Lever . . . . **SET**
   (observe Maximum Cruise Torque, ITT and N_g limits)

   Refer to Section 5, Performance, Figure 5-19 or Figure 5-36, Cruise Performance and/or Figure 5-20 or Figure 5-37, Cruise Maximum Torque for approved engine power settings.
5. Fuel Balance. . . . . **CHECK**
   (maximum fuel imbalance 200 pounds)

CAUTION

For every 10°C (18°F) below -30°C (-22°F) ambient temperature, reduce maximum allowable N_g by 2.2%. The Garmin G1000 incorporates a temperature compensating N_g redline.

DESCENT

1. Ice Protection . . . . **AS REQUIRED**
   a. PITOT/STATIC HEAT Switch . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
   b. STALL HEAT Switch . . . . **ON**
      (when OAT is below 5°C (41°F) and in visible moisture)
2. INERTIAL SEPARATOR . . . . **SET**
   (position INERTIAL SEPARATOR to NORMAL or BYPASS as conditions warrant)
3. SEAT BELT Light Switch (if installed) . . . . **ON**
4. NO SMOKE Light Switch (if installed) . . . . **ON**
5. Altimeters . . . . **SET**
6. NAV Source . . . . **SELECT**

NOTE

The overspeed warning horn and MAXSPD annunciation will activate when either PFD1 or PFD2 airspeed reaches greater than 175 KIAS. In addition, the overspeed warning horn and MAXSPD annunciation may appear prior to 175 KIAS if the airplane is accelerating at a rate that will rapidly exceed V_{MO}.

7. POWER Lever. . . . . **AS REQUIRED**

CAUTION

Set PROP RPM Lever at 1900 RPM prior to beginning any instrument approach procedure.

BEFORE LANDING

NOTE

Refer to Section 5, Performance, Figure 5-26 or Figure 5-43, Short Field Landing Distance charts for anticipated ground roll and total distance requirements.

1. Seats, Seat Belts and Shoulder Harnesses . . . . **SECURE**

WARNING

Failure to correctly use seat belts and shoulder harnesses could result in serious or fatal injury in the event of an accident.

2. FUEL TANK SELECTORS . . . . **BOTH ON**
3. FUEL CONDITION Lever . . . . **HIGH IDLE**
4. PROP RPM Lever. . . . . **MAX** (full forward)
5. Radar . . . . **AS REQUIRED**
6. AP/YD . . . . **OFF** (before 200 feet AGL on approach or 800 feet AGL)
7. WING FLAPS Handle . . . . **SET**

LANDING

NORMAL LANDING

1. WING FLAPS Handle . . . . **LAND**
2. Airspeed . . . . **75-85 KIAS**
3. Touchdown . . . . **MAIN WHEELS FIRST**
4. POWER Lever. . . . . **BETA RANGE AFTER TOUCHDOWN**
5. Brakes . . . . **APPLY**

SHORT FIELD LANDING

1. WING FLAPS Handle . . . . **LAND**
2. Airspeed . . . . **78 KIAS**
   Refer to Section 5, Performance, Figure 5-26 or Figure 5-43, Short Field Landing Distance for speeds at reduced weights.
3. POWER Lever. . . . . **REDUCE to IDLE**
   (after clearing obstacles)
4. Touchdown . . . . **MAIN WHEELS FIRST**
5. POWER Lever. . . . . **BETA RANGE AFTER TOUCHDOWN**
6. Brakes . . . . **MAXIMUM**
   (while holding elevator control full aft)
7. WING FLAPS Handle . . . . **UP**
   (for maximum brake effectiveness)

BALKED LANDING

1. POWER Lever. . . . . **ADVANCE**
   (for takeoff power)
2. WING FLAPS Handle . . . . **RETRACT to TO/APR**
3. Airspeed . . . . **80 KIAS MINIMUM**
   (until obstacles are cleared)
4. ELEVATOR TRIM . . . . **RETRIM**
5. WING FLAPS Handle . . . . **RETRACT**
   (after reaching safe altitude and airspeed)
6. ELEVATOR TRIM . . . . **RETRIM**

AFTER LANDING

1. WING FLAPS Handle . . . . **UP**
2. Ice Protection . . . . **OFF**
   a. PITOT/STATIC HEAT Switch . . . . **OFF**
   b. STALL HEAT Switch. . . . . **OFF**
3. STBY ALT PWR Switch . . . . **OFF**
4. Amber STBY PWR INOP Annunciator . . . . **CHECK**
   (verify annunciator is shown)
5. STROBE Lights Switch. . . . . **OFF**
6. LDG and TAXI/RECOG Lights Switches . . . . **SET**
7. FUEL CONDITION Lever . . . . **LOW IDLE**
   (when clear of the runway)

CAUTION

If the FUEL CONDITION lever is moved past the LOW IDLE position and the engine N_g falls below 55%, moving the lever back to the LOW IDLE position can cause an ITT over-temperature condition. If the engine has started to shutdown in this situation, allow the engine to complete its shutdown sequence, and proceed to do a normal engine start using the STARTING ENGINE checklist.

SHUTDOWN AND SECURING AIRPLANE

1. PARKING BRAKE . . . . **SET**
   (depress brake pedals and pull handle out)
2. BLEED AIR HEAT Switch . . . . **OFF**
3. TEMP Control Knob . . . . **CLOSED**
   (rotate FULL counterclockwise)
4. VENT AIR FANS . . . . **OFF**
5. AIR CONDITIONING Switch (if installed) . . . . **OFF**
6. POWER Lever. . . . . **IDLE**
7. ITT. . . . . **STABILIZED**
   (at minimum temperature for one minute)
8. PROP RPM Lever . . . . **FEATHER**
9. FUEL CONDITION Lever . . . . **CUTOFF**
10. LIGHTS . . . . **OFF**
11. FUEL BOOST Switch . . . . **OFF**
12. N_g Indication . . . . **CHECK**

NOTE

Verify engine is spooling down properly and N_g indication is below 10% prior to setting the AVIONICS No. 1 switch to OFF. Engine indications will not be shown after AVIONICS No. 1 switch is positioned to OFF.

13. AVIONICS No. 1 and No. 2 Switches . . . . **OFF**
14. BATTERY Switch . . . . **OFF**
15. Control Lock . . . . **INSTALL**
16. OXYGEN Supply Control Lever (if installed). . . . . **OFF**
17. FUEL TANK SELECTORS . . . . **LEFT OFF or RIGHT OFF**
    Turn high wing tank off if parked on a sloping surface to prevent crossfeeding.
18. Tiedowns and Chocks . . . . **AS REQUIRED**
19. External Covers. . . . . **INSTALL**
20. Oil Breather Drain Can . . . . **DRAIN**
    (until empty)

NOTE

Possible delays of subsequent flights, or even missed flights, are often eliminated by routinely conducting a brief postflight inspection. Usually, a visual check of the airplane for condition, security, leakage, and tire inflation will alert the operator to potential problems, and is therefore recommended.

AMPLIFIED NORMAL PROCEDURES

PREFLIGHT INSPECTION

The preflight inspection, described in Figure 4-1 and adjacent checklist, is recommended. If the airplane has been in extended storage, has had recent major maintenance, or has been operated from rough or unprepared surfaces, a more extensive exterior inspection is recommended.

WARNING

Flights at night and in cold weather involve a careful check of other specific areas discussed in this section.

Before every flight, check the condition of main and nose landing gear tires. Keep tires inflated to the pressure specified in Section 8, Airplane Handling, Service And Maintenance. Examine tire sidewalls for patterns of shallow cracks called weather checks. These cracks are evidence of tire deterioration caused by age, improper storage, or prolonged exposure to weather. Check the tread of the tire for depth, wear, and cuts. Replace the tire if fibers are visible.

After major maintenance has been performed, the flight controls and trim tabs should be double-checked for free and correct movement and security. The security of all inspection plates on the airplane should be checked following periodic inspections.

If the airplane has been kept in a crowded hangar, it should be checked for dents and scratches on wings, fuselage, and tail surfaces, damage to navigation, strobe lights, and avionics antennas. Check for damage to the nosewheel steering system, the result of exceeding nosewheel turning limits while towing.

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PREFLIGHT INSPECTION (Continued)

Outside storage for long periods may result in dust and dirt accumulation in the engine air inlet and exhaust areas, water and obstructions in airspeed system lines, water contaminants in fuel tanks, and insect/bird/rodent nests in any opening. If any water is detected in the fuel system, the inboard fuel tank sump and external sump quick-drain valves and fuel reservoir quick-drain valve should all be thoroughly drained until there is no evidence of water or sediment contamination. If the airplane is parked with one wing low on a sloping ramp, draining of the outboard fuel tank sump quick-drain valves (if installed) is also recommended. Repeated samples should then be taken at **all** quick drain points until **all** contamination has been removed. If, after repeated sampling, evidence of contamination still exists, the fuel tanks should be completely drained and the fuel system cleaned.

If any water is suspected in the static source system, open both static source drain valves and thoroughly drain all water from the system.

WARNING

If the static source drain valves are opened, assure both valves are completely closed before flight.

If the airplane has been stored outside in windy or gusty areas, or tied down adjacent to taxiing airplanes, special attention should be paid to control surface stops, hinges, and brackets to detect the presence of potential wind damage.

If the airplane has been operated from unimproved runways, muddy fields or in snow or slush, check the propeller for nicks and stone damage. Operation from a gravel or cinder field will require extra attention to propeller tips and abrasion on leading edges of the horizontal tail. Stone damage to the propeller can seriously reduce the fatigue life of the blades.

(Continued Next Page)

PREFLIGHT INSPECTION (Continued)

Airplanes that are operated from rough fields, especially at high altitudes, are subjected to abnormal landing gear abuse. Frequently check all components of the landing gear, shock strut, tires, and brakes. If the shock strut is insufficiently extended, undue landing and taxi loads will be subjected to the airplane structure.

To prevent loss of fuel in flight, make sure the fuel tank filler caps are tightly sealed after any fuel system check or servicing. Fuel system vents should also be inspected for obstructions, ice or water, especially after exposure to cold, wet weather.

The interior inspection will vary according to the planned flight and the optional equipment installed. Prior to high-altitude flights, it is important to check the condition and quantity of oxygen face masks and hose assemblies. The oxygen supply system (if installed) should be functionally checked to ensure that it is in working order and that an adequate oxygen supply for the trip intended, by noting the oxygen pressure gage reading, and referring to Section 9, Supplement 6, Figure S6-2 or S6-3, Oxygen Duration Chart.

BEFORE STARTING ENGINE

WARNING

- **It is the responsibility of the pilot in command to make sure that the airplane is correctly loaded within the weight and center of gravity limits prior to takeoff.**
- **Failure to correctly use seat belts and shoulder harnesses could result in serious or fatal injury in the event of an accident.**

The Before Starting Engine checklist procedures should be followed closely to assure a satisfactory engine start. Most of the checklist items are self-explanatory. Those items that may require further explanation are noted in the following discussion.

When setting electrical switches prior to engine start, only those lighting switches that are necessary for a night-time engine start should be turned on. All other switches, including exterior lights, ventilation fans, air conditioning (if installed) switches, should be turned off. The BLEED AIR HEAT Switch should be OFF and the TEMP control knob fully CLOSED to prevent excessive compressor bleed during the engine start. Also, the STBY ALT PWR switch should be OFF during engine starts.

CAUTION

Leaving the BLEED AIR HEAT Switch ON and the TEMP control knob fully OPEN can result in a hot start or abnormal acceleration to idle.

The GENERATOR switch is spring-loaded to the ON position. When the STARTER switch is placed in the START or MOTOR position, the Generator Control Unit (GCU) opens the generator contactor. When the STARTER switch is returned to the OFF position after an engine start, the GCU closes the generator contactor, thereby placing the generator on-line.

(Continued Next Page)

BEFORE STARTING ENGINE (Continued)

The IGNITION switch is left in the NORM position for engine starting with the starter motor. In this position, the igniters are energized when the STARTER switch is placed in the START position. Ignition is automatically terminated when the STARTER switch is turned OFF.

CAUTION

It is especially important to verify that the EMERGENCY POWER lever is in the NORMAL position (aft of the IDLE gate) during engine starts. With the EMERGENCY POWER lever forward of this gate, excessive quantities of fuel will be discharged through the fuel nozzles when the FUEL CONDITION lever is moved to the LOW IDLE position and a hot start will result.

Before starting the engine, the POWER lever is placed at the IDLE position (against the BETA gate), the PROP RPM lever is moved to the MAX position (full forward), and the FUEL CONDITION lever is stowed in the CUTOFF position.

CAUTION

The propeller reversing linkage can be damaged if the POWER lever is moved aft of the IDLE position when the engine is not running and the propeller is feathered.

STARTING ENGINE

The starting engine checklist procedures should be followed closely to assure a satisfactory engine start. With the FUEL CONDITION lever in the CUTOFF position, move the STARTER switch to the START position; verify that the amber STARTER ON and white IGNITION ON annunciators are shown. Next, check for a positive indication of engine oil pressure. After N_g stabilizes (minimum of 12%), move the FUEL CONDITION lever to the LOW IDLE position and verify fuel flow in the general range of 90 to 140 PPH. After the engine starts and during acceleration to idle (approximately 55% N_g), monitor ITT and N_g. Maximum ITT during engine start is 1090°C, limited to 2 seconds. Typically, the ITT during start is well below this maximum value. After the engine has stabilized at idle, the amber STARTER ON annunciator should not be shown. If this annunciator remains ON, it indicates the starter has not been automatically disengaged during the engine starting sequence due to a failed speed sensor.

CAUTION

> If no ITT rise is observed within 10 seconds after moving the FUEL CONDITION lever to the LOW IDLE position, or ITT rapidly approaches 1090°C, move the FUEL CONDITION lever to CUTOFF and perform the ENGINE CLEARING PROCEDURE in this section.

After the engine reaches stabilized idle (55% N_g or above), return the STARTER switch to the OFF position. With a cold engine or after making a battery start (high initial generator load into battery), it may be necessary to advance the POWER lever slightly ahead of the IDLE detent to maintain a minimum idle of 55% N_g. To assure maintaining the minimum N_g and ITT within limits, advance the POWER lever to obtain approximately 55% N_g before turning the STARTER switch OFF (the generator contactor closes when the STARTER switch is turned OFF).

CAUTION

> Under hot OAT and/or high ground elevation conditions, idle ITT can exceed maximum idle ITT limitation of 700°C. Increase N_g and/or reduce accessory load to maintain ITT within limits.

(Continued Next Page)

STARTING ENGINE (Continued)

NOTE

If the amber STARTER ON annunciator fails to go out after the STARTER switch has been moved to the OFF position, the start contactor can be closed and the generator will not function. Perform an engine shutdown.

Engine starts can be made with airplane battery power or with an External Power Unit (EPU). However, it is recommended that an EPU be used when the ambient air temperature is less than -18°C (0°F). Refer to Cold Weather Operation in this section when ambient temperature is below -18°C (0°F).

CAUTION

- In the event the external power unit drops off-line during engine start, a loss of electrical power to the starter will result which could cause a hot start. Should a loss of external power occur, immediately place the FUEL CONDITION lever to CUTOFF, monitor ITT, and make sure the engine is shutting down. Turn the EXTERNAL POWER switch OFF and place the STARTER switch to the MOTOR position to aid in reducing ITT if necessary.
- When an external power unit is used, make sure the unit is negatively grounded and regulated to 28 volts DC with a capability of providing a minimum of 800 amperes during the starting cycle. External power units with output exceeding 1700 amperes shall not be used.

Before engine starting with the airplane battery, check the BUS VOLTS for a minimum of 24 volts. Monitor ITT during each engine start to guard against a hot start. The operator must be ready to immediately abort the start if ITT exceeds 1090°C or is rapidly approaching this limit. Usually, hot starts are not a problem if the normal starting procedures are followed.

(Continued Next Page)

STARTING ENGINE (Continued)

CAUTION

A minimum battery voltage of 24 volts is not always an indication that the battery is near full charge or in good condition. Therefore, if gas generator acceleration in the initial part of the start is less than normally observed, return the FUEL CONDITION lever to CUTOFF and discontinue the start. Recharge the battery or use an external power unit before attempting another start.

If the starter accelerates the gas generator rapidly above 20%, suspect gear train decouple. Do not continue start. Rapid acceleration through 35% N_g suggests a start on the secondary nozzles. Anticipate a hot start.

After an aborted start for whatever reason, it is essential before the next start attempt to allow adequate time to drain off unburned fuel. Failure to drain all residual fuel from the engine could lead to a hot start, a hot streak leading to hot section damage, or the torching of burning fuel from engine exhaust on the next successful ignition.

A dry motoring, within starter limitations after confirming that all fuel drainage has stopped, will ensure that no fuel is trapped before the next start.

ENGINE CLEARING PROCEDURES (DRY MOTORING RUN)

The following procedure is used to clear an engine at any time when it is deemed necessary to remove internally trapped fuel and vapor, or if there is evidence of a fire within the engine. Air passing through the engine serves to purge fuel, vapor, or fire from the combustion section, gas generator turbine, power turbine, and exhaust system.

1. FUEL CONDITION Lever . . . . **CUTOFF**
2. IGNITION Switch . . . . **NORM**
3. BATTERY Switch . . . . **ON**
   (to supply current for the starter motor)
4. AVIONICS No. 1 Switch . . . . **ON**
5. FUEL/OIL SHUTOFF Knob . . . . **CHECK**
   (verify FULL in)
6. FUEL BOOST Switch . . . . **OFF**

WARNING

If fire is suspected, leave the FUEL BOOST switch OFF, otherwise turn it ON to provide lubrication for the engine-driven fuel pump elements.

7. STARTER Switch . . . . **MOTOR**

CAUTION

- Do not exceed the starting cycle limitations; refer to Section 2, Limitations, Powerplant Limitations.
- Should a fire persist, as indicated by sustained ITT, close the FUEL/OIL SHUTOFF Knob and continue motoring the engine.

8. STARTER Switch . . . . **OFF**
9. FUEL BOOST Switch . . . . **OFF**
10. AVIONICS No. 1 Switch . . . . **OFF**
11. FUEL/OIL SHUTOFF Knob . . . . **PULL OFF**
12. BATTERY Switch . . . . **OFF**

Allow the required cooling period for the starter before any further starting operation is attempted.

ENGINE IGNITION PROCEDURES

For most operations, the IGNITION switch is left in the NORM position. With the switch in this position, ignition is on only when the STARTER switch is in the START position.

NOTE

The use of ignition for extended periods of time will reduce ignition system component life.

The IGNITION switch should be turned ON to provide continuous ignition under the following conditions:

1. Operation on wet or contaminated runways.
2. Flight in heavy precipitation.
3. Flight in moderate or greater turbulence.
4. During inadvertent icing encounters prior to the INERTIAL SEPARATOR being selected to BYPASS.
5. When near fuel exhaustion as indicated by Red RSVR FUEL LOW annunciator.

Refer to Section 7, Airplane and System Description, Engine Ignition System, for further details regarding the ignition system.

ENGINE INERTIAL SEPARATOR PROCEDURES

An INERTIAL SEPARATOR system is built into the engine air inlet duct to prevent ice buildups on the compressor inlet screen. The INERTIAL SEPARATOR control should be moved to the BYPASS position prior to running the engine during ground or flight operation in visible moisture (clouds, rain, snow or ice crystals) with an OAT of 5°C (41°F) or less.

The BYPASS mode can also be used for ground operations or takeoffs with dusty, sandy field conditions to minimize ingestion of foreign particles into the compressor. Refer to Section 5, Performance, for performance losses associated with the INERTIAL SEPARATOR in the BYPASS mode.

The NORMAL mode is used for all other operating conditions, since it provides substantial inlet ram recovery. This results in more efficient engine operation and higher critical altitude for a particular power setting.

Do not return the INERTIAL SEPARATOR to NORMAL until after engine shutdown and inspection if icing conditions are encountered.

Refer to Section 7, Airplane and System Description, Engine Air Induction System for further details regarding the INERTIAL SEPARATOR.

TAXIING

POWER lever BETA range can be used during taxi to control taxi speed and improve brake life. A leaf spring is installed in the control quadrant which the POWER lever contacts and provides the pilot with a noticeable “feel”. With the POWER lever moved to this position in the BETA range, the propeller is near zero thrust in a static, 55% idle condition. Besides acting as a zero thrust reference during taxi, this POWER lever position (lever against spring) is used after landing to minimize brake wear. POWER lever movement further aft of the BETA range will result in increased engine power and reverse thrust from the propeller blades.

CAUTION

- The use of reverse thrust should be minimized, especially on unprepared surfaces, to minimize propeller blade erosion and possible damage.
- Do not leave the POWER lever in the BETA range for extended periods (greater than 30 seconds) when parked with a right crosswind to avoid damage to the cargo pod.

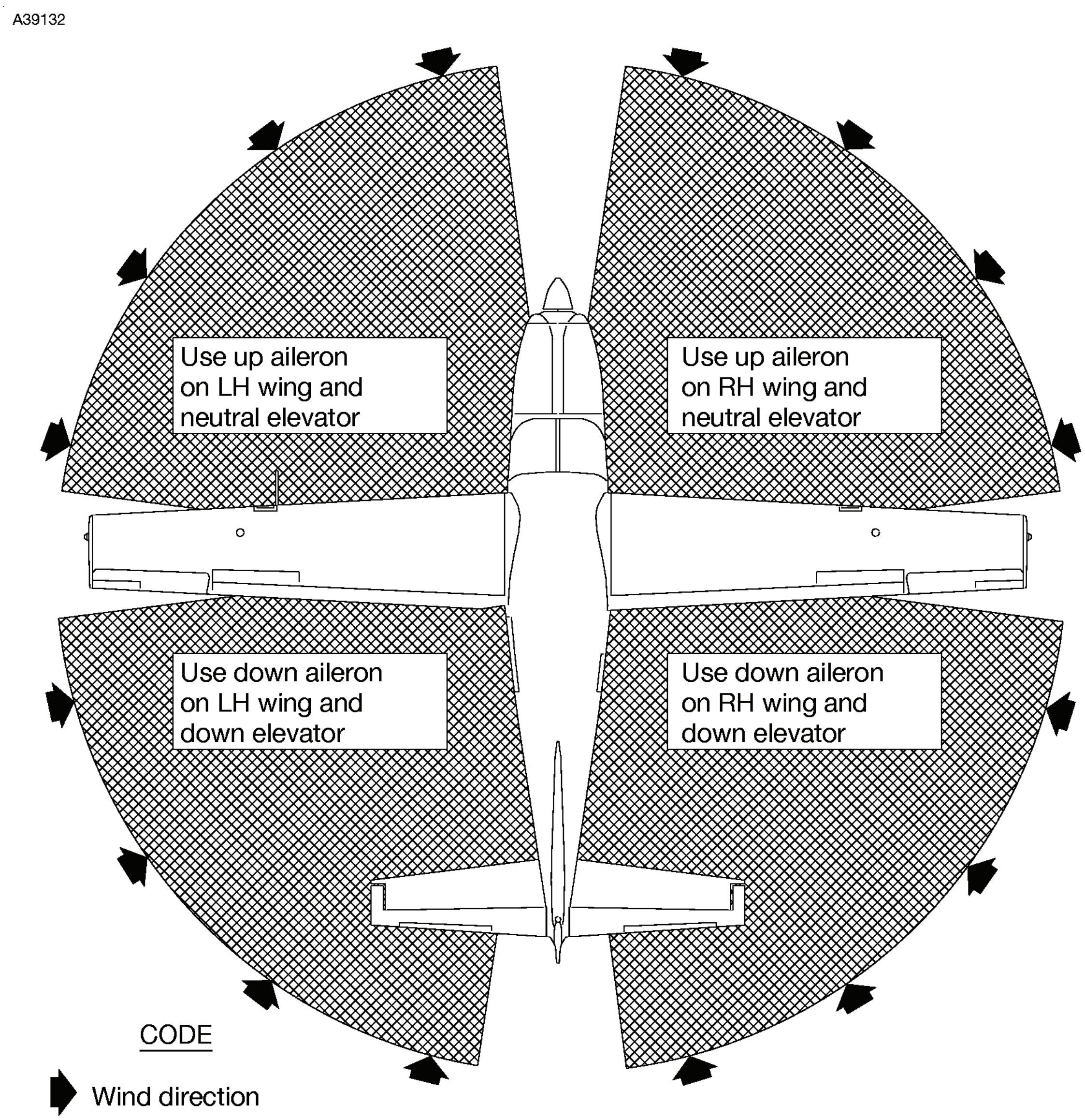
NOTE

During low-speed taxi with a strong tailwind, or when stopped with a strong tailwind, a moderate vibration can occur as a result of reverse airflow through the propeller disk with the blades at a positive pitch angle. This vibration can be significantly reduced by placing the POWER lever in the BETA range, or it can be eliminated by turning the airplane into the wind.

Refer to Figure 4-3, Taxiing Diagram, for additional taxiing instructions.

TAXIING (Continued)

TAXIING DIAGRAM



NOTE

Strong quartering tail winds require caution. Avoid sudden bursts of power and sharp braking when the airplane is in this attitude. Use the steerable nosewheel and rudder to maintain direction.

Figure 4-3

BEFORE TAKEOFF

The FUEL TANK SELECTORS are normally both ON for takeoff and all flight operations. However, one side can be turned OFF as required to balance the fuel load.

WARNING

- **Do not exceed 200 pounds fuel imbalance in flight.**
- **To obtain accurate fuel quantity indicator readings, verify the airplane is parked in a laterally level condition; or, if in flight, make sure the airplane is in a coordinated and stabilized condition.**

When checking the INERTIAL SEPARATOR with engine power set at 400 foot-pounds, it is typical to see an approximate 30 FT-LB drop in torque when the T-handle is pulled to the BYPASS position. This torque drop will vary some with wind conditions during static check.

A neutral index mark is added to the pedestal cover which corresponds to the zero degree trim tab position. As loadings vary towards the forward C.G. limit or aft C.G. limit, elevator trim settings towards the nose up and nose down ends of this takeoff range, respectively, will provide comfortable control wheel forces during takeoff and initial climb.

Prior to takeoff, the FUEL CONDITION lever is moved forward to the HIGH IDLE position (approximately 65% N_g) to remain in this position until after landing. The higher gas generator idle speed for flight provides faster engine acceleration when adding power (from an idle condition) on approach or for a balked landing go-around.

TAKEOFF

POWER SETTING

Refer to Section 5, Performance, Maximum Engine Torque for Takeoff chart to determine the torque corresponding to the surface altitude and OAT conditions. This torque should be obtainable without exceeding 850°C ITT or 103.7% N_g.

Takeoff roll is most smoothly initiated by gradually advancing the POWER Lever until propeller RPM nears 1900. Smoothly release the brakes and continue advancing the POWER Lever until the takeoff torque is reached.

NOTE

As airspeed increases during takeoff, an increase in torque at a fixed POWER lever position is normal and need not be reduced provided the torque limit (2397 FT-LB) is not exceeded.

WING FLAP SETTINGS

A WING FLAPS setting of TO/APR is recommended for all takeoffs unless a very strong crosswind exists at which time WING FLAPS UP may be preferred. Use of WING FLAPS TO/APR provides for a lower liftoff speed, as well as a reduction in ground roll and total distance over an obstacle compared to takeoff with WING FLAPS UP.

Flap settings greater than TO/APR are not approved for takeoff.

TAKEOFF (Continued)

SHORT FIELD TAKEOFF

If an obstruction dictates the use of a steep climb angle after liftoff, accelerate to and climb at an obstacle clearance speed of 86 KIAS with WING FLAPS set at TO/APR. Takeoff performance data is shown in Section 5 based on this speed and configuration.

NOTE

The 86 KIAS obstacle clearance speed is a recommended safe speed under all conditions, including turbulence and complete engine failure. The actual V_X speed with FLAPS TO/APR is 76 KIAS at maximum takeoff weight as noted in Section 5, Performance, Climb Gradient - Takeoff Flap Setting - Flaps TO/APR chart.

After clearing the obstacle, and reaching a safe altitude, the flaps can be retracted slowly as the airplane accelerates to the normal climb airspeed.

Minimum ground roll takeoffs are accomplished by using TO/APR Flaps, lifting the nosewheel off the ground as soon as practical and leaving the ground in a slightly tail-low attitude. However, after liftoff the airplane should be leveled immediately to accelerate to a safe climb airspeed.

TYPE II, TYPE III OR TYPE IV ANTI-ICE FLUID TAKEOFF

When Type II, Type III or Type IV anti-ice fluid is applied to the airplane, a rotation speed of 83 KIAS with WING FLAPS UP is required. Use of WING FLAPS UP allows the airplane to accelerate to a higher rotation speed without any liftoff tendencies, which is required for the Type II, Type III or Type IV anti-ice fluid to be effective. Takeoff performance data shown in Section 5 of the POH is based on this speed and configuration.

TAKEOFF (Continued)

CROSSWIND TAKEOFF

Takeoffs into strong crosswinds normally are performed with FLAPS TO/APR. With the ailerons partially deflected into the wind, the airplane is accelerated to a speed higher than normal, and then rotated to prevent settling back to the runway. When clear of the ground, make a coordinated turn into the wind to correct for drift. The use of FLAPS UP will improve directional control, but will also increase the takeoff distance.

ENROUTE CLIMB

Normally, maximum climb power is maintained during the climb to cruise altitude. Adjust the POWER lever as required to prevent exceeding maximum climb torque, maximum climb ITT of 825°C, or maximum climb N_g of 103.7%, whichever occurs first.

At lower altitudes and cool outside air temperatures (below approximately 6000 feet), the engine will reach the torque limit before reaching the ITT or N_g limit. As the climb progresses and the torque is maintained by POWER lever advancement, the ITT and N_g will increase until an altitude is reached where ITT or N_g will dictate POWER lever positioning. When operating near the ITT limit, advance POWER lever slowly to allow the current ITT to be indicated. The rate of power (and temperature) increase of the engine is greater than the response rate of the ITT indicating system; therefore, a rapid POWER lever advance could allow an over-temperature condition to exist momentarily in the engine before the over-temperature would be indicated.

For maximum performance climb, the best rate-of-climb airspeed should be used with 1900 RPM and maximum climb power. This speed is 108 KIAS from sea level to 3000 feet, decreasing to 92 KIAS at 20,000 feet.

(Continued Next Page)

ENROUTE CLIMB (Continued)

If climb requirements do not necessitate a maximum performance climb, a POWER lever setting that will result in an ITT of 785 °C throughout the climb may be desirable over setting the POWER lever per Figure 5-9 Maximum Engine Torque For Climb chart located in Section 5 of the POH.

For improved visibility over the nose, a cruise climb airspeed of 115 - 125 KIAS may be desirable at altitudes up to approximately 12,000 feet. Adjust the POWER lever per Figure 5-9, Maximum Engine Torque for Climb chart located in Section 5 of the POH with the PROP RPM set at 1900 to prevent exceeding the maximum allowable shaft horsepower for the ambient conditions. After Climb Torque is set, PROP RPM can be reduced in accordance with the following table for improved passenger comfort.

Under no circumstances should the following limitations be exceeded:

1. The MAX TORQUE for the corresponding PROP RPM
2. A maximum climb ITT of 825°C
3. A maximum N_g of 103.7%

PROP RPM	MAX TORQUE
1900	2397 FT-LB
1800	2397 FT-LB
1700	2397 FT-LB
1600	2397 FT-LB

NOTE

To achieve maximum flat rated horsepower, PROP RPM lever must be set at 1900 RPM.

If an obstruction dictates the use of a steep climb angle, climb with FLAPS UP and maximum continuous power at 85 KIAS.

CRUISE

Normal cruise is performed using any desired power setting up to the maximum cruise power (observe ITT, torque, and N_g cruise limits). Do not exceed the maximum cruise torque or 805°C ITT shown in Section 5, Performance, Figure 5-19 or Figure 5-36, Cruise Performance or Figure 5-20 or Figure 5-37, Cruise Maximum Torque for the particular altitude and temperature. Normally, a new engine will exhibit an ITT below 775°C when set to the maximum cruise torque.

The Sample Cruise Performance Chart, Figure 4-4, illustrates the advantage of higher altitude on both true airspeed and nautical miles per 1000 pounds of fuel. In addition, the beneficial effect of lower cruise power on nautical miles per 1000 pounds of fuel at a given altitude can be observed. Cruise Performance Charts are provided in Section 5 to assist in selecting an efficient altitude based on available winds aloft information for a given trip. The selection of cruise altitude on the basis of the most favorable wind conditions and the use of low power settings are significant factors that should be considered to reduce fuel consumption.

The INERTIAL SEPARATOR should be set to BYPASS mode and PITOT/STATIC and STALL HEAT switches should be ON anytime the OAT is below 5°C (41°F) and in visible moisture.

(Continued Next Page)

CRUISE (Continued)

SAMPLE CRUISE PERFORMANCE CHART

PARAMETERS:
Standard Conditions
1900 RPM
Zero Wind

ALTITUDE (Feet)	Maximum Cruise Power		Maximum Range Power	
	KTAS	NM/1000 LBS	KTAS	NM/1000 LBS
5000	188	404	159	444
10000	195	446	162	502
15000	192	508	164	560
20000	187	581	171	606

(WITHOUT CARGO POD)

ALTITUDE (Feet)	Maximum Cruise Power		Maximum Range Power	
	KTAS	NM/1000 LBS	KTAS	NM/1000 LBS
5000	184	373	152	419
10000	185	424	157	476
15000	182	483	157	525
20000	176	548	164	567

(WITH CARGO POD)

Figure 4-4
(Continued Next Page)

CRUISE (Continued)

These optional systems are designed to prevent ice formation, rather than removing it after it has formed. Even if the airplane is equipped with the “Flight Into Known Icing” option, accumulation of some airframe ice is unavoidable; this will increase airplane weight and drag and decrease airspeed and general airplane performance. It is always wise to avoid icing conditions, if practical.

Fuel quantity should be monitored to maintain a balanced fuel condition. Normally, both FUEL TANK SELECTORS are set to the ON position and will feed fuel equally from each tank to the fuel reservoir. If a fuel imbalance condition approaching 200 pounds does occur, the FUEL TANK SELECTOR for the tank with less fuel should be turned OFF until the fuel quantity is balanced. With one FUEL TANK SELECTOR OFF and fuel remaining in the tank being used is less than approximately 170 lbs (25 gallons), the FUEL SELECT OFF annunciator will come ON and a warning horn will sound.

WARNING

Turn IGNITION ON when flying in heavy precipitation or icing conditions. Refer to Engine Ignition Procedures in this section for additional information on use of ignition.

CAUTION

Prolonged zero or negative "G" maneuvers will starve the engine oil pump and result in engine damage.

Supplemental oxygen should be used by all occupants when cruising above 12,500 feet. It is often advisable to use oxygen at altitudes lower than 12,500 feet under conditions of night flying, fatigue, or periods of physiological or emotional disturbances. Also, the habitual and excessive use of tobacco or alcohol will usually necessitate the use of oxygen at less than 10,000 feet.

(Continued Next Page)

CRUISE (Continued)

WARNING

- **Operation up to the maximum allowable operating altitude is predicated on the availability and use of supplemental oxygen above 12,500 feet as specified by operating rules.**
- **Smoking is prohibited when using oxygen. Oil, grease, soap, lipstick, lip balm, and other fatty materials constitute a serious fire hazard when in contact with oxygen. Be sure hands and clothing are oil-free before handling oxygen equipment.**

STALLS

Stall characteristics are conventional and aural warning is provided by a stall warning horn which sounds between 5 and 10 knots above the stall in all configurations.

Idle-power stall speeds at maximum weight for both forward and aft C.G. are presented in Section 5.

NOTE

Practice of stalls should be done conservatively and with sufficient altitude for a safe recovery.

LANDING

NORMAL LANDING

Normal landing approaches can be made with power-on or idle power with any flap setting desired and the PROP RPM lever set at 1900. Use of FLAPS LAND is normally preferred to minimize touchdown speed and subsequent need for braking. For a given flap setting, surface winds and turbulence are usually the primary factors in determining the most comfortable approach speed.

Actual touchdown should be made with idle power and on the main wheels first, just slightly above stall speed. The nosewheel is then gently lowered to the runway, the POWER lever repositioned to the BETA range, and brakes applied as required. When clear of the runway, reposition the FUEL CONDITION lever from HIGH IDLE to LOW IDLE. This will reduce cabin and exterior noise levels as well as reduce braking requirements when the POWER lever is positioned ahead of the REVERSE range. Landings on rough or soft fields are accomplished in a similar manner except that the nosewheel is lowered to the runway at a lower speed to prevent excessive nose gear loads.

NOTE

The use of BETA range after touchdown is recommended to reduce brake wear. Generally, the POWER lever can be moved aft of the IDLE gate until it contacts a spring in the control quadrant without substantial propeller erosion from loose debris on the runway or taxiway.

LANDING (Continued)

SHORT FIELD LANDING

For short field landings, make a power approach at 78 KIAS with the PROP RPM lever at MAX (full forward) and with FLAPS LAND. After all approach obstacles are cleared, reduce power to idle. Maintain 78 KIAS approach speed by lowering the nose of the airplane. Touchdown should be made with the POWER lever at IDLE, and on the main wheels first. Immediately after touchdown, lower the nose gear, reposition the POWER lever against the spring in the BETA range, and apply heavy braking as required.

For maximum brake effectiveness after all three wheels are on the ground, hold full nose up elevator and apply maximum possible brake pressure without sliding the tires.

CAUTION

To minimize propeller blade erosion or possible propeller blade damage, reverse thrust should be used only when necessary to shorten the ground roll. Bringing the propeller out of reverse before decelerating through approximately 25 knots will minimize propeller erosion.

LANDING (Continued)

CROSSWIND LANDING

For crosswind approaches, either the wing-low, crab or combination method can be used. A flap setting between TO/APR and LAND is recommended. Use a minimum flap setting for the field length. After touchdown, lower the nosewheel and maintain control. Maintain a straight course using the steerable nosewheel, ailerons, and occasional braking if necessary.

BALKED LANDING

In a balked landing (go-around) climb, the wing flap setting should be reduced to TO/APR after takeoff power is applied. After all obstacles are cleared and a safe altitude and airspeed are obtained, the WING FLAPS should be retracted to the UP position.

AFTER SHUTDOWN

If dusty conditions exist or if the last flight of the day has been completed, install engine inlet covers to protect the engine from debris. The covers can be installed after the engine has cooled (ITT indicator showing “off scale” temperature). Secure the propeller to prevent windmilling since no oil pressure is available for engine lubrication when the engine is not running.

COLD WEATHER OPERATION

Special consideration should be given to the operation of the airplane fuel system during the winter season or prior to any flight in cold temperatures. Proper preflight draining of the fuel system is especially important and will eliminate any free water accumulation. The use of an additive is not required for anti-ice protection. Refer to Section 8 for information on the proper use of optional fuel additives.

Cold weather often causes conditions which require special care prior to flight. Operating the elevator and aileron trim tabs through their full travel in both directions will assure smooth operation by reducing any stiffness in these systems caused by the cold weather effects on system lubrication. Even small accumulations of frost, ice, snow or slush must be removed, particularly from wing, tail and all control surfaces to assure satisfactory flight performance and handling. Also, control surfaces must be free of any internal accumulations of ice or snow.

The use of an external pre-heater reduces wear and abuse to the engine and the electrical system. Pre-heat will lower the viscosity of the oil trapped in the oil cooler, prior to starting in extremely cold temperatures.

Use of an External Power Unit is recommended when ambient temperatures are below -18°C (0°F). Make sure that oil temperature is in the green band (32°C to 99°C) prior to takeoff to ensure sufficient temperature for the oil to fuel heat exchanger to function properly.

If snow or slush covers the takeoff surface, allowance must be made for takeoff distances which will be increasingly extended as the snow or slush depth increases. The depth and consistency of this cover can, in fact, prevent takeoff in many instances.

HIGH ALTITUDE OPERATION

At altitudes above 20,000 feet, a compressor surge can be experienced if engine power is rapidly re-applied immediately after a power reduction. This characteristic is not detrimental to the engine and can be eliminated completely by turning the BLEED AIR HEAT switch ON and adjusting the TEMP HOT control knob to the mid-point setting.

ENGINE COMPRESSOR STALLS

An engine compressor stall can be noted by a single or multiple loud popping noise from the engine compartment. This situation can be resolved by reducing the engine power to a point where the “popping” discontinues, and slowly advancing the POWER lever to the necessary setting for continued flight. The use of BLEED AIR HEAT can also help eliminate engine compressor stalls if this situation is encountered.

NOISE CHARACTERISTICS

The noise levels for the Model 208B Caravan EX, equipped with the PT6A-140 engine are 84.1 dB(A). These levels were established using test data obtained and analyzed under procedures of 14 CFR 36, Amendment 28 and the equivalent procedures of International Civil Aviation Organization (ICAO) Annex 16, Volume I, Sixth Edition, Amendment 10. This airplane complies with Appendix G noise limits of 14 CFR 36 and Chapter 10 noise limits of ICAO Annex 16.

Noise levels were obtained at a maximum weight of 8807 pounds (3994 kg) with flaps set at TO/APR up to 50 feet, then a climb with flaps UP at a speed of 108 KIAS and maximum power at 1900 RPM and 2397 FT LB. No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are, or should be, acceptable or unacceptable for operation at, into, or out of, any airport.

The following procedures are suggested to minimize the effect of airplane noise on the public:

1. Pilots operating airplanes under VFR over outdoor assemblies of persons, recreational and park areas, and other noise sensitive areas should make every effort to fly not less than 2000 feet above the surface, weather permitting, even though flight at a lower level can be consistent with the provisions of government regulations.
2. During departure from or approach to an airport, climb after takeoff and descent for landing should be made so as to avoid prolonged flight at low altitude near noise-sensitive areas.

NOTE

The above recommended procedures do not apply where they would conflict with Air Traffic Control clearances or instructions, or where, in the pilot's judgment, an altitude of less than 2000 feet is necessary to adequately exercise the duty to see and avoid other airplanes.

PERFORMANCE

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AIRPLANES WITH CARGO POD

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AIRPLANES WITH CARGO POD INSTALLED (Continued)

AIRPLANES WITHOUT CARGO POD

INTRODUCTION

Performance data charts on the following pages are presented so that you may know what to expect from the airplane under various conditions, and also, to facilitate the planning of flights in detail and with reasonable accuracy. The data in the charts has been computed from actual flight tests using average piloting techniques and an airplane and engine in good condition and equipped with a Hartzell propeller.

WARNING

To make sure that performance in this section can be duplicated, the airplane and engine must be maintained in good condition. Pilot proficiency and proper preflight planning using data necessary for all flight phases is also required to assure expected performance with ample margins of safety.

It should be noted that the performance information presented in the range and endurance profile charts allows for 45 minutes reserve fuel at the specified cruise power and altitude. Some indeterminate variables such as engine and propeller condition, and air turbulence may account for variations of 10% or more in range and endurance. Therefore, it is important to utilize all available information to estimate the fuel required for the particular flight.

Notes have been provided on various graphs and tables to approximate performance with the INERTIAL SEPARATOR in BYPASS and/or cabin heat on. The effect will vary, depending upon airspeed, temperature, and altitude. At lower altitudes, where operation on the torque limit is possible, the effect of the inertial separator will be less, depending upon how much power can be recovered after the separator vanes have been extended.

In some cases, performance charts in this section include data for temperatures which are outside of the ISA Conversion and Operating Temperature Limits chart. This data has been included to aid in interpolation.

USE OF PERFORMANCE CHARTS

Performance data is presented in tabular or graphical form to illustrate the effect of different variables. Sufficiently detailed information is provided in the tables so that conservative values can be selected and used to determine the particular performance figure with reasonable accuracy.

SAMPLE PROBLEM

The following sample flight problem utilizes information from the various charts to determine the predicted performance data for a typical flight of an airplane equipped with a cargo pod. A similar calculation can be made for an airplane without a cargo pod using charts identified as appropriate for this configuration. Assume the following information has already been determined:

AIRPLANE CONFIGURATION	(CARGO POD INSTALLED)
Takeoff weight	8600 Pounds
Usable fuel	2246 Pounds

TAKEOFF CONDITIONS:

Field pressure altitude	3500 Feet
Temperature	16°C (8°C Above Standard)
Wind component along runway	12 Knot Headwind
Field length	4000 Feet (Paved, Level, Dry Runway)

CRUISE CONDITIONS:

Total distance	650 Nautical Miles
Pressure altitude	11,500 Feet
Temperature	8°C
Expected wind enroute	10 Knot Headwind

LANDING CONDITIONS:

Field pressure altitude	1500 Feet
Temperature	25°C
Wind component along runway	12 Knot Headwind
Field length	3000 Feet (Paved, Level, Dry Runway)

SAMPLE PROBLEM (Continued)

TAKEOFF

The Takeoff Distance chart should be consulted, keeping in mind that distances shown are based on the short field technique. Conservative distances can be established by reading the chart at the next higher value of weight, altitude and temperature. For example, in this particular sample problem, the takeoff distance information presented for a weight of 8807 pounds (3994 kg), pressure altitude of 4000 feet and a temperature of 20°C should be used and results in the following:

Ground roll	1965 Feet
Total distance to clear a 50-foot obstacle	3010 Feet

These distances are well within the available takeoff field length. However, a correction for the effect of wind may be made based on information presented in the note section of the takeoff chart. The correction for a 12 knot headwind is:

$$\frac{12\text{ Knots}}{11\text{ Knots}} \times 10\% = 11\%\text{ Decrease}$$

This results in the following takeoff distances, corrected for a 12 knot headwind:

Ground roll, zero wind	1965 Feet
Decrease in ground roll (1965 feet X 11%)	-216 Feet
Corrected ground roll	1749 Feet
Total distance to clear a 50-foot obstacle, zero wind	3010 Feet
Decrease in total distance (3010 feet X 11%)	-331 Feet
Corrected total distance to clear 50-foot obstacle	2679 Feet

(Continued Next Page)

SAMPLE PROBLEM (Continued)

TAKEOFF (Continued)

The Maximum Engine Torque For Takeoff chart should be consulted for takeoff power setting. For the above ambient conditions, the power setting is:

Takeoff Torque	2397 FT-LB

The Maximum Engine Torque For Climb chart should be consulted for climb power setting from field elevation to cruise altitude. For the above ambient conditions, the power setting is:

Field Elevation Maximum Climb Torque	2189 FT-LB
Cruise Altitude Maximum Climb Torque	1713 FT-LB

SAMPLE PROBLEM (Continued)

CRUISE

The cruising altitude should be selected based on a consideration of trip length, winds aloft, and the airplane's performance. A cruising altitude and the expected wind enroute have been given for this sample problem. However, the power setting selection for cruise must be determined based on several considerations.

These include the cruise performance characteristics presented in the Cruise Performance, Cruise Maximum Torque charts, Fuel and Time Required, and the Range and Endurance Profile charts.

The Range Profile chart shows range at maximum cruise power and also at maximum range power. For this sample problem, maximum cruise power and 1900 RPM will be used.

The Cruise Performance chart for 12,000 feet pressure altitude is entered using 10°C temperature. These values most nearly correspond to the planned altitude and expected temperature conditions. The torque setting for maximum cruise power is 1517 FT-LB torque at 1900 RPM which results in the following:

True Airspeed	173 Knots
Cruise Fuel Flow	364 PPH

SAMPLE PROBLEM (Continued)

FUEL REQUIRED

The total fuel requirement for the flight may be estimated using the performance information in the Time, Fuel, and Distance to Climb chart, Cruise Performance chart, and Time, Fuel, and Distance to Descend chart or in the Fuel and Time Required (Maximum Cruise Power) chart and Fuel and Time Required (Maximum Range Power) chart. The longer detailed method will be used for this sample problem, but the use of Fuel and Time Required (Maximum Cruise Power) or Fuel and Time Required (Maximum Range Power) charts will provide the desired information for most flight planning purposes.

START UP, TAXI AND TAKEOFF

The fuel required for a standard start up, taxi and takeoff is approximately 35 pounds. Additional fuel will be required for extended taxi and hold times and must be accounted for during preflight planning.

CLIMB

For this sample problem, the Time, Fuel, And Distance To Climb - Maximum Rate Climb chart may be used to determined the time, fuel and distance required for a maximum rate of climb for a weight of 8807 pounds and a temperature 20°C above standard. The difference between the values shown in the table for 4000 feet and 12,000 feet result in the following:

Time:	11 Minutes
Fuel:	77 Pounds
Distance:	22 Nautical Miles

(Continued Next Page)

SAMPLE PROBLEM (Continued)

FUEL REQUIRED (Continued)

DESCENT

Similarly, the Time, Fuel, And Distance For Cruise Descent chart shows that a descent from 12,000 feet to Sea Level results in the following:

Time:	15 Minutes
Fuel:	77 Pounds
Distance:	43 Nautical Miles

The distances shown on the climb and descent charts are for zero wind. A correction for the effect of wind may be made as follows:

Distance during climb with no wind:	22 Nautical Miles
Decrease in distance due to wind:	
(11/60 x 10 knots headwind)	- 2 Nautical Miles
Corrected distance to climb:	20 Nautical Miles

Similarly, the distance for descent may be corrected for the effect of wind and results in the following.

Distance during descent with no wind:	43 Nautical Miles
Decrease in distance due to wind:	
(15/60 x 10 knots headwind)	- 3 Nautical Miles
Corrected distance during descent:	40 Nautical Miles

(Continued Next Page)

SAMPLE PROBLEM (Continued)

FUEL REQUIRED (Continued)

CRUISE

The cruise distance is then determined by subtracting the distance during climb and distance during descent from the total distance.

Total distance:	650 Nautical Miles
Distance during climb:	- 20 Nautical Miles
Distance during descent:	- 40 Nautical Miles
Cruise distance:	590 Nautical Miles

With an expected 10 knot headwind, the ground speed for cruise is predicted to be:

173 Knots
-10 Knots
163 Knots

Therefore, the time required for the cruise portion of the trip is:

$$\frac{590 \text{ Nautical Miles}}{163 \text{ Knots}} = 3.6 \text{ Hours}$$

The fuel required for cruise is:

3.6 hours X 364 pounds/hour = 1311 Pounds

A 45-minute reserve requires:

$$\frac{45}{60} \times 364 \text{ pounds/hour} = 273 \text{ Pounds}$$

(Continued Next Page)

SAMPLE PROBLEM (Continued)

FUEL REQUIRED (Continued)

The total estimated fuel required is as follows:

Engine start, taxi, and takeoff	35 Pounds
Climb	+77 Pounds
Cruise	+1311 Pounds
Descent	+77 Pounds
Reserve	+ 273 Pounds
Total Fuel Required	1773 Pounds

Once the flight is underway, ground speed checks will provide a more accurate basis for estimating the time enroute and the corresponding fuel required to complete the trip with ample reserve.

LANDING

A procedure similar to takeoff should be used for estimating the landing distance at the destination airport. The estimated landing weight is as follows:

Takeoff weight	8600 Pounds
Fuel required for climb, cruise, and descent	-1773 Pounds
Landing weight	6827 Pounds

The Short Field Landing Distance chart presents landing distance information for the short field technique. The landing distances for a weight of 7000 pounds and corresponding to 2000 feet pressure altitude and a temperature of 30°C should be used and are as follows:

Ground roll	935 Feet
Total distance to clear a 50-foot obstacle	1740 Feet

A correction for the effect of wind may be made based on information presented in the note section of the landing chart, using the same procedure as outlined for takeoff.

AIRSPEED CALIBRATION
NORMAL STATIC SOURCE

CONDITIONS:
8807 Pounds
Power required for level flight or maximum rated RPM dive.

Flaps UP								
KIAS	---	80	100	120	140	160	175	---
KCAS	---	85	100	120	140	160	175	---
Flaps TO/APR								
KIAS	75	85	90	95	100	125	150	---
KCAS	78	86	91	96	100	125	150	---
Flaps LAND								
KIAS	65	70	80	90	100	110	125	---
KCAS	69	72	80	90	101	111	126	---

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NOTE

Where airspeed values have been replaced by dashes, the airspeed would be either below stall speed at maximum weight or above the maximum approved operating limit speed for the condition.

Figure 5-1 (Sheet 1 of 2)

AIRSPEED CALIBRATION
ALTERNATE STATIC SOURCE

CONDITIONS:
8807 Pounds
Power required for level flight or maximum rated RPM dive.
Refer to Sheet 1 for appropriate notes applicable to this chart.

VENTS CLOSED

Flaps UP							
NORMAL KIAS	80	100	120	140	160	175	---
ALTERNATE KIAS	86	103	123	144	165	180	---
Flaps TO/APR							
NORMAL KIAS	70	80	100	120	140	150	---
ALTERNATE KIAS	75	84	104	125	146	156	---
Flaps LAND							
NORMAL KIAS	60	70	80	90	100	110	125
ALTERNATE KIAS	65	73	83	94	105	116	132

VENTS OPEN

Flaps UP							
NORMAL KIAS	80	100	120	140	160	175	---
ALTERNATE KIAS	82	99	119	140	160	176	---
Flaps TO/APR							
NORMAL KIAS	70	80	100	120	140	150	---
ALTERNATE KIAS	71	80	100	121	142	152	---
Flaps LAND							
NORMAL KIAS	60	70	80	90	100	110	125
ALTERNATE KIAS	61	70	79	90	101	112	128

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Figure 5-1 (Sheet 2)

ALTIMETER CORRECTION
ALTERNATE STATIC SOURCE

VENTS CLOSED

Condition	Correction to be Added - Feet KIAS					
	80	90	100	120	140	160
Flaps UP						
Sea Level	---	15	20	40	55	80
10,000 FT	---	20	30	50	75	---
20,000 FT	---	25	40	70	---	---
Flaps TO/APR						
Sea Level	25	25	30	50	70	---
10,000 FT	20	30	45	70	75	---
Flaps LAND						
Sea Level	15	25	35	60	---	---
10,000 FT	20	35	50	85	---	---

VENTS OPEN

Condition	Correction to be Added - Feet KIAS					
	80	90	100	120	140	160
Flaps UP						
Sea Level	---	-15	-10	-10	5	10
10,000 FT	---	-20	-20	-15	10	---
20,000 FT	---	-30	-25	-15	---	---
Flaps TO/APR						
Sea Level	-20	-10	-5	5	20	---
10,000 FT	-25	-15	-10	10	5	---
Flaps LAND						
Sea Level	-15	-10	0	20	---	---
10,000 FT	-20	-10	0	25	---	---

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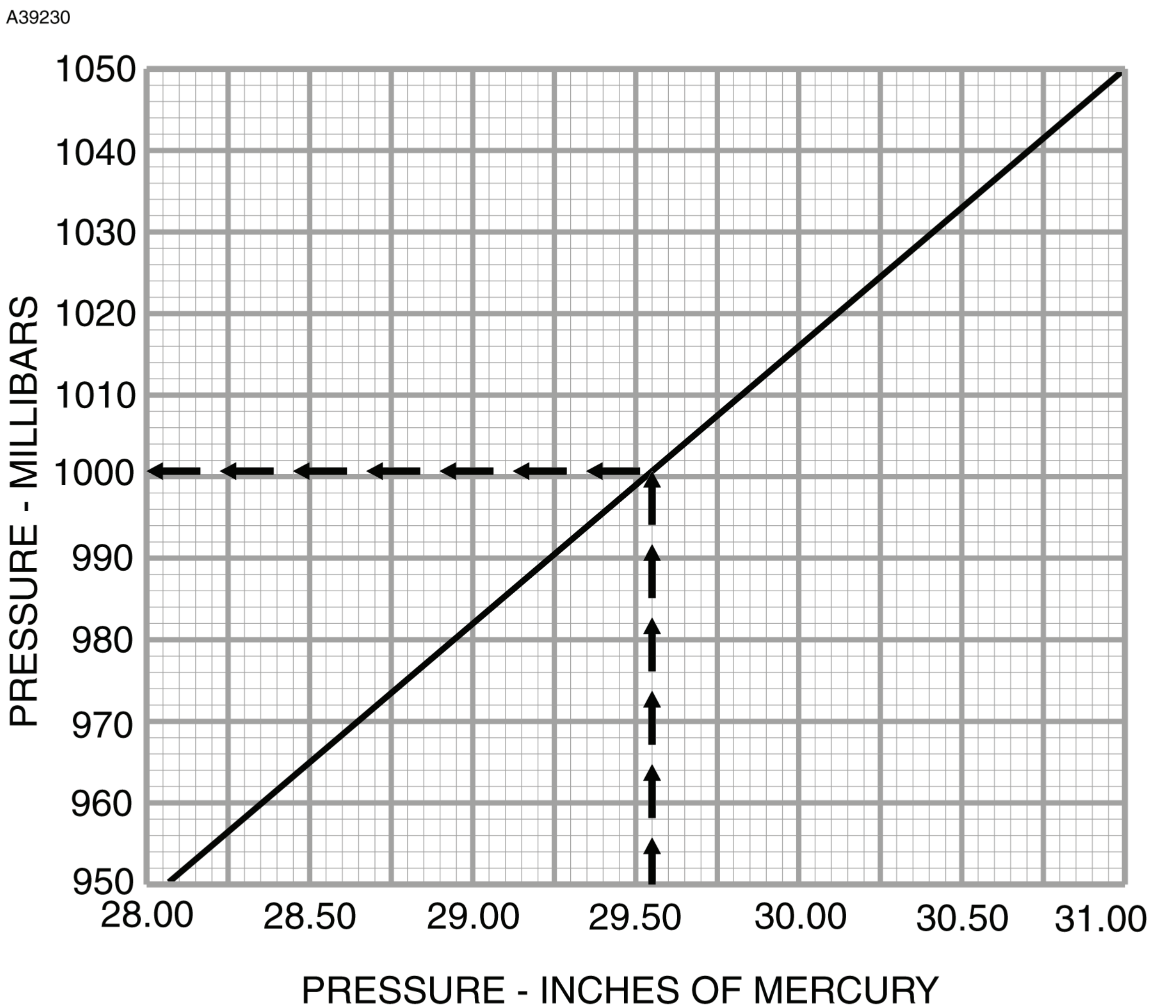
NOTE

1. Add correction to desired altitude to obtain indicated altitude to fly.
2. Where altimeter correction values have been replaced by dashes, the correction is unnecessary because of conditions in which airpseed is not attainable in level flight.

Figure 5-2

PRESSURE CONVERSION



Example:
Pressure = 29.55 inches of mercury
Pressure = 1000.6 millibars.

Figure 5-3

TEMPERATURE CONVERSION CHART

A39231

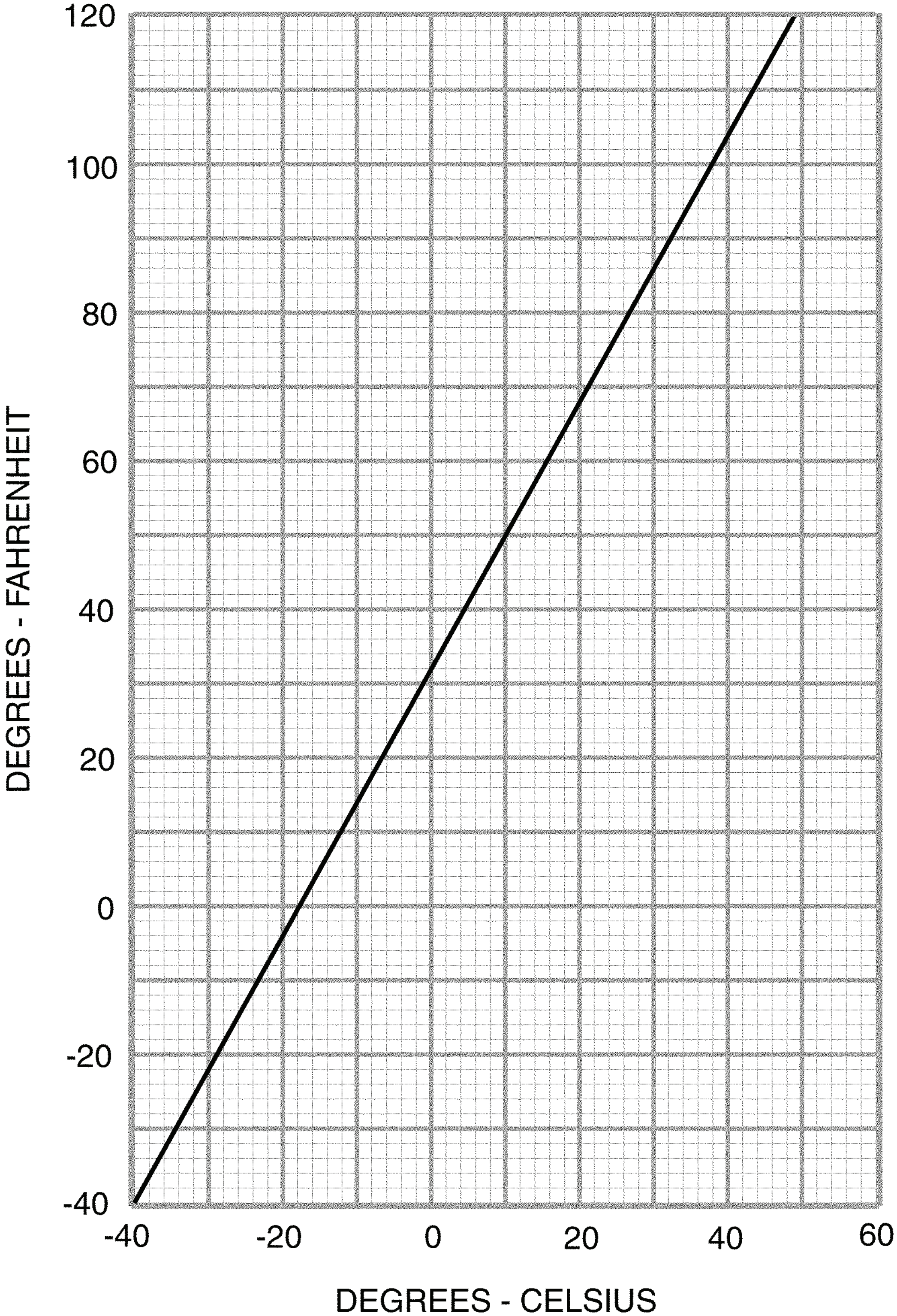
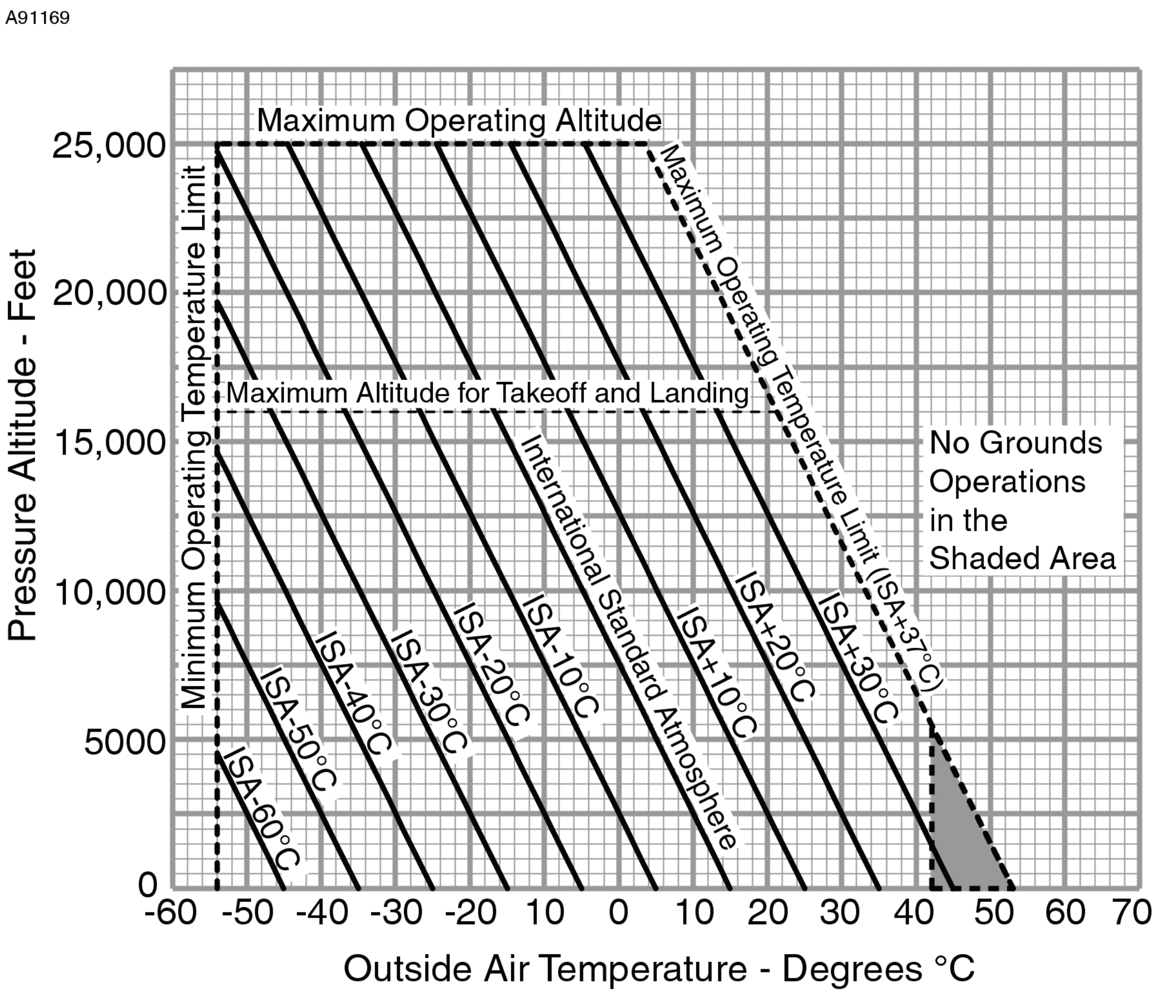


Figure 5-4

ISA CONVERSION AND OPERATING TEMPERATURE LIMITS



CAUTION

Do not operate in shaded area of chart.

Figure 5-5

STALL SPEEDS

CONDITIONS:
8807 Pounds
POWER Lever **IDLE**
FUEL CONDITION Lever **HIGH IDLE**

MOST REARWARD CENTER OF GRAVITY

Flap Setting	Angle of Bank							
	0°		30°		45°		60°	
	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	63	78	68	84	75	93	89	110
TO/APR	56	66	60	71	66	78	78	93
LAND	48	60	52	64	57	71	68	85

MOST FORWARD CENTER OF GRAVITY

Flap Setting	Angle of Bank							
	0°		30°		45°		60°	
	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
UP	63	78	68	84	75	93	89	110
TO/APR	57	67	61	72	68	80	81	95
LAND	50	61	54	66	59	73	71	86

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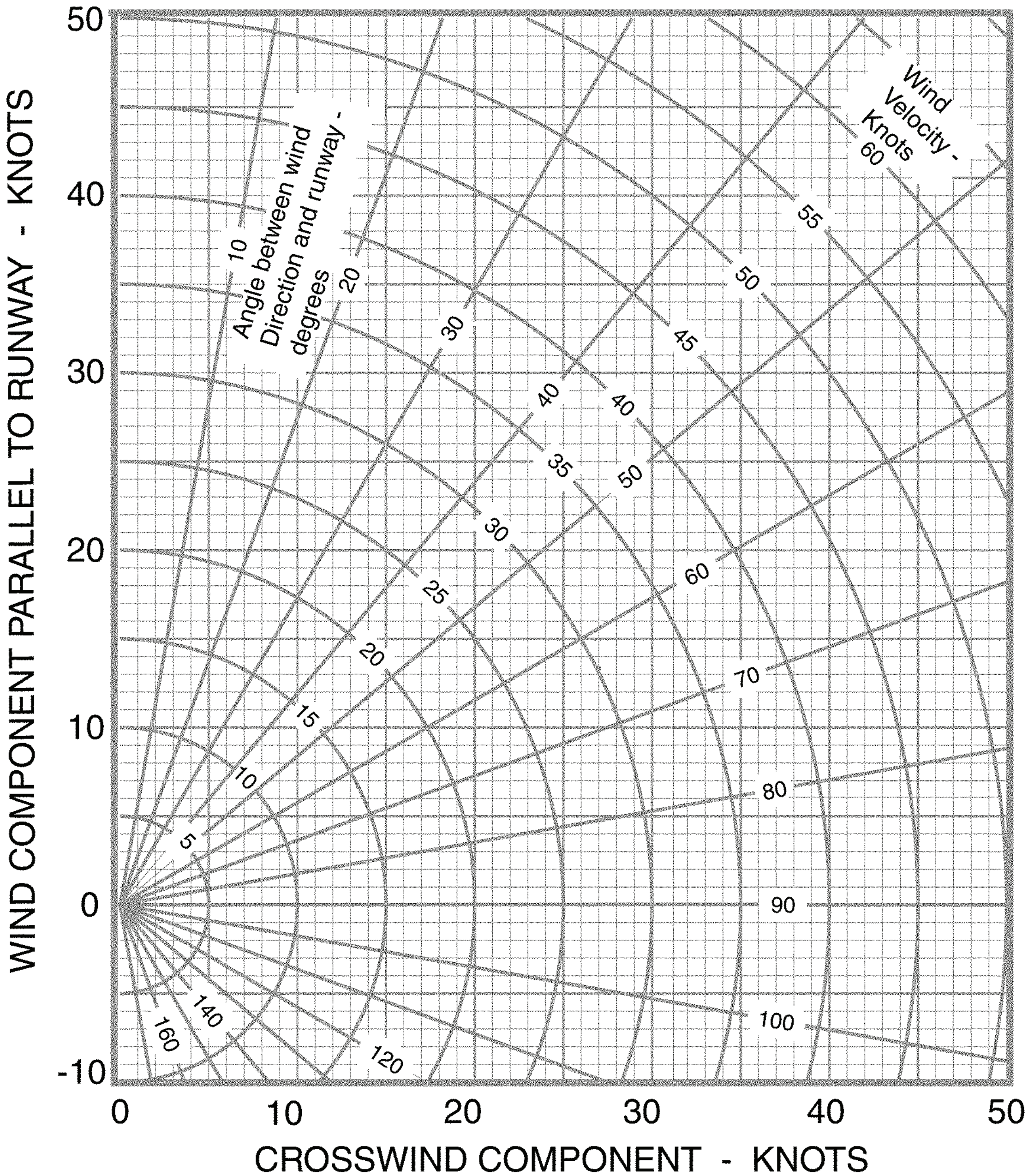
NOTE

1. Altitude loss during a stall recovery may be as much as 300 feet from a wings-level stall, and even greater from a turning stall.
2. KIAS values are approximate.

Figure 5-6

WIND COMPONENTS

A39233



NOTE

Maximum demonstrated crosswind velocity is 20 knots (not a limitation).

Figure 5-7

MAXIMUM ENGINE TORQUE FOR TAKEOFF

CONDITIONS:
- 1900 RPM
- 60 KIAS
- INERTIAL SEPARATOR - **NORMAL**

A91171

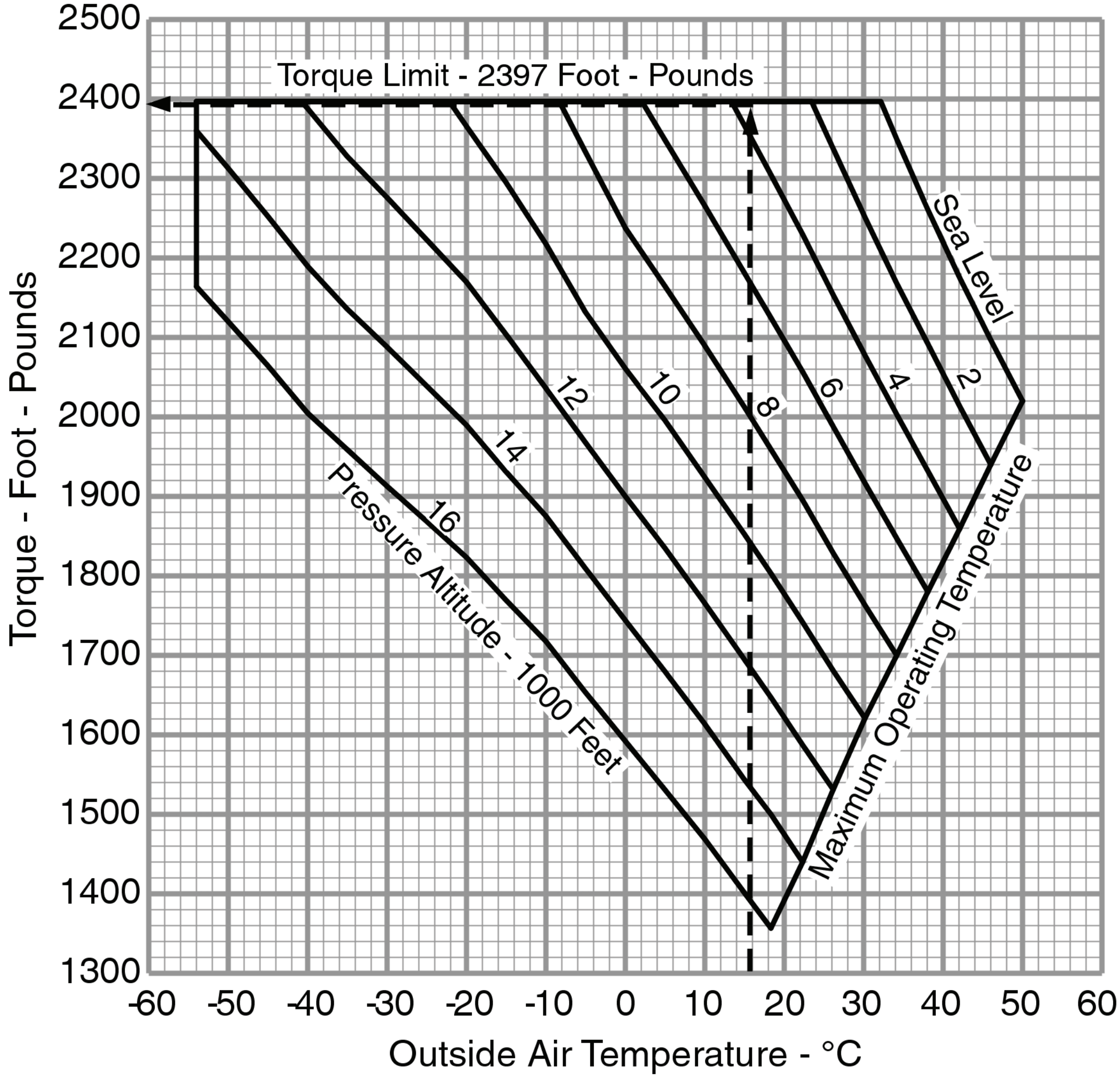


Figure 5-8 (Sheet 1 of 2)

MAXIMUM ENGINE TORQUE FOR TAKEOFF

NOTE

1. Torque increases approximately 30 FT-LB from 0 to 60 KIAS.
2. Torque on this chart shall be achieved without exceeding 850°C ITT or 103.7 percent N_g. When the ITT exceeds 825°C, this power setting is time limited to 5 minutes.
3. With the inertial separator in BYPASS, where altitude and temperature do not permit 2397 FT-LB for takeoff, decrease torque setting by 85 FT-LB.
4. With the cabin heater ON, where altitude and temperature do not permit 2397 FT-LB for takeoff, decrease torque setting by 75 FT-LB.

Figure 5-8 (Sheet 2

MAXIMUM ENGINE TORQUE FOR CLIMB

CONDITIONS:

1900 RPM

V_y KIAS

INERTIAL SEPARATOR **NORMAL**

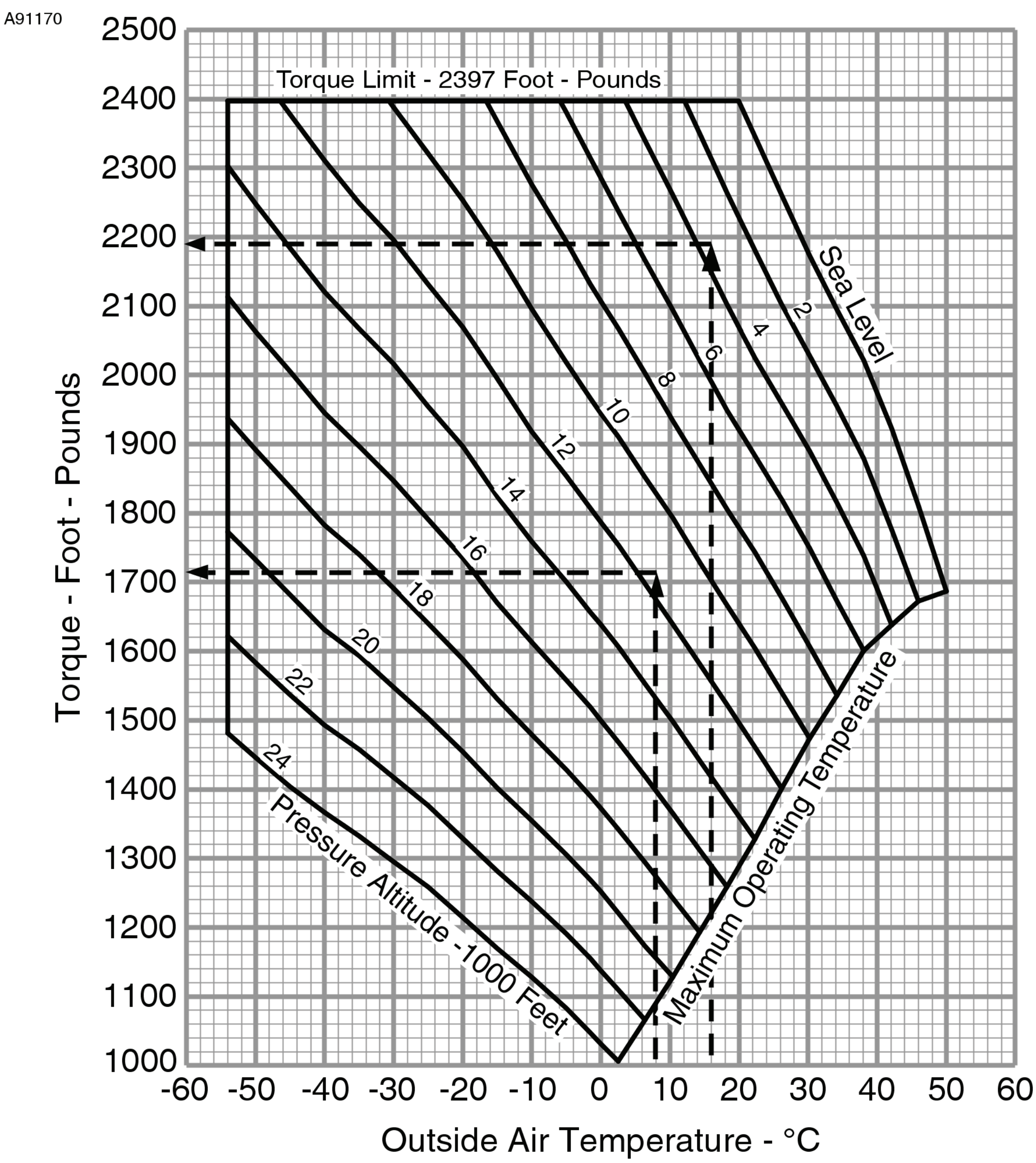


Figure 5-9 (Sheet 1 of 2)

MAXIMUM ENGINE TORQUE FOR CLIMB

NOTE

1. Torque on this chart shall be achieved without exceeding 825°C ITT or 103.7 percent N_g.
2. With the inertial separator in BYPASS, decrease torque setting by 115 FT-LB.
3. With the cabin heater ON, decrease torque setting by 85 FT-LB.

Figure 5-9 Sheet 2

CARGO POD INSTALLED
SHORT FIELD TAKEOFF DISTANCE

NOTE

The following general information is applicable to all SHORT FIELD TAKEOFF DISTANCE Charts.

1. Use short field takeoff technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwind up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 15% of the "Ground Roll" figure.
4. With takeoff power set below the torque limit (2397 foot-pounds), increase distances (both ground roll and total distance) by 3% for INERTIAL SEPARATOR in BYPASS and increase ground roll by 5% and total distance by 10% for CABIN HEAT ON.
5. Where distance values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those distances which are included but the operation slightly exceeds the temperature limit are provided for interpolation purposes only.
6. For operation above 40°C and below the operating temperature limits, increase distances at 40°C by 20%.

Figure 5-10 (Sheet 1 of 5)

CARGO POD INSTALLED
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 74 KIAS
8807 Pounds: Speed at 50 Feet: 86 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1185	1855	1270	1970	1355	2095
2000	1350	2095	1450	2230	1545	2375
4000	1545	2375	1660	2530	1775	2700
6000	1775	2705	1910	2895	2120	3245
8000	2050	3110	2305	3540	2605	4060
10,000	2500	3850	2850	4455	3230	5155
12,000	3105	4885	3545	5690	4085	6710

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1445	2225	1535	2360	1730	2675
2000	1650	2525	1835	2820	2105	3285
4000	1965	3010	2245	3495	2585	4115
6000	2410	3745	2765	4395	3215	5260
8000	2975	4730	3450	5640	4045	6870
10,000	3720	6095	4370	7410	---	---
12,000	4790	8140	---	---	---	---

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Figure 5-10 (Sheet 2)

CARGO POD INSTALLED
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps TO/APR
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 71 KIAS
8300 Pounds: Speed at 50 Feet: 83 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1020	1595	1090	1695	1165	1800
2000	1165	1800	1245	1915	1330	2035
4000	1330	2035	1425	2175	1525	2315
6000	1530	2320	1640	2480	1820	2765
8000	1765	2655	1980	3005	2230	3430
10,000	2145	3260	2435	3755	2750	4310
12,000	2650	4105	3015	4745	3440	5540

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1245	1910	1325	2025	1485	2290
2000	1420	2165	1575	2415	1800	2795
4000	1690	2570	1920	2960	2205	3455
6000	2060	3170	2355	3690	2725	4370
8000	2535	3965	2925	4680	3405	5625
10,000	3155	5050	3665	6055	---	---
12,000	4000	6635	---	---	---	---

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Figure 5-10 (Sheet 3)

CARGO POD INSTALLED
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 68 KIAS

7800 Pounds: Speed at 50 Feet: 80 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	875	1365	930	1450	995	1540
2000	995	1535	1065	1635	1135	1740
4000	1135	1740	1220	1855	1305	1975
6000	1305	1975	1400	2110	1550	2350
8000	1505	2260	1685	2545	1895	2880
10,000	1825	2750	2065	3150	2325	3595
12,000	2250	3435	2545	3945	2895	4565

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1060	1630	1130	1730	1265	1945
2000	1215	1845	1345	2055	1530	2365
4000	1440	2185	1630	2505	1865	2900
6000	1750	2675	1995	3085	2295	3620
8000	2145	3310	2460	3875	2850	4600
10,000	2655	4175	3070	4950	---	---
12,000	3340	5405	---	---	---	---

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Figure 5-10 (Sheet 4)

CARGO POD INSTALLED
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**

Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind

Refer to Sheet 1 for appropriate notes applicable to this chart.

7300 Pounds:

Lift Off: 65 KIAS
Speed at 50 Feet: 76 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	745	1160	795	1230	845	1305
2000	845	1305	900	1385	965	1475
4000	960	1470	1030	1570	1105	1670
6000	1105	1670	1185	1785	1310	1980
8000	1275	1910	1425	2145	1595	2415
10,000	1545	2315	1735	2630	1950	2980
12,000	1890	2855	2135	3265	2415	3745

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	900	1385	955	1465	1070	1645
2000	1025	1565	1135	1735	1290	1985
4000	1215	1845	1375	2105	1565	2425
6000	1475	2245	1675	2575	1920	2990
8000	1800	2755	2055	3190	2370	3750
10,000	2220	3435	2550	4030	---	---
12,000	2770	4390	---	---	---	---

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Figure 5-10 (Sheet 5)

CARGO POD INSTALLED
FLAPS UP TAKEOFF DISTANCE

NOTE

The following general information is applicable to all FLAPS UP TAKEOFF DISTANCE Charts.

1. Use Type II, Type III, or Type IV anti-ice fluid takeoff technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 15% of the "Ground Roll" figure.
4. With takeoff power set below the torque limit (2397 foot-pounds), increase distances (both ground roll and total distance) by 3% for INERTIAL SEPARATOR in BYPASS and increase ground roll by 5% and total distance by 10% for CABIN HEAT ON.

Figure 5-11 (Sheet 1 of 3)

CARGO POD INSTALLED
FLAPS UP TAKEOFF DISTANCE

CONDITIONS:
Flaps **UP**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**

Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind

Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 83 KIAS
8807 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1520	2410	1625	2575	1735	2750	1845	2925
2000	1720	2730	1845	2925	1970	3125	2100	3330
4000	1960	3110	2100	3330	2245	3565	2395	3805
6000	2235	3550	2400	3815	2580	4095	2880	4605
8000	2575	4085	2780	4400	3140	5035	3580	5840
10,000	3000	4740	3410	5480	3925	6455	4495	7610
12,000	3755	6090	4290	7125	4950	8480	5750	10255

Lift Off: 83 KIAS
8300 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1420	2245	1520	2405	1620	2560	1725	2730
2000	1610	2545	1725	2725	1840	2910	1960	3105
4000	1830	2900	1960	3105	2095	3320	2240	3545
6000	2090	3310	2240	3555	2410	3810	2685	4285
8000	2405	3805	2595	4095	2930	4680	3335	5420
10,000	2800	4410	3185	5090	3655	5985	4185	7035
12,000	3500	5650	3995	6595	4605	7830	5340	9430

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Figure 5-11 (Sheet 2)

CARGO POD INSTALLED
FLAPS UP TAKEOFF DISTANCE

CONDITIONS:
Flaps **UP**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

7800 Pounds:
Lift Off: 83 KIAS
Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1325	2090	1420	2235	1510	2385	1610	2540
2000	1500	2370	1610	2535	1715	2705	1830	2885
4000	1710	2695	1830	2885	1955	3085	2085	3295
6000	1945	3075	2090	3300	2245	3540	2500	3975
8000	2240	3535	2415	3800	2730	4340	3100	5015
10,000	2605	4095	2960	4715	3400	5535	3885	6495
12,000	3255	5230	3710	6095	4270	7215	4945	8660

7300 Pounds:
Lift Off: 83 KIAS
Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1230	1940	1320	2070	1405	2210	1495	2350
2000	1395	2195	1495	2350	1595	2505	1700	2670
4000	1585	2495	1700	2670	1815	2855	1935	3050
6000	1810	2845	1940	3055	2085	3275	2320	3675
8000	2080	3270	2240	3515	2530	4010	2875	4625
10,000	2415	3785	2745	4355	3145	5100	3590	5970
12,000	3015	4825	3435	5610	3945	6630	4560	7930

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Figure 5-11 (Sheet 3)

CARGO POD INSTALLED
RATE OF CLIMB - TAKEOFF FLAP SETTING
FLAPS TO/APR

CONDITIONS:
Takeoff Power
1900 RPM

INERTIAL SEPARATOR - **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	100	1230	1205	1185	1165	1035
	2000	99	1210	1185	1165	1135	905
	4000	99	1190	1165	1135	1045	770
	6000	99	1170	1135	1105	905	640
	8000	97	1140	1105	995	770	---
	10,000	95	1110	1070	855	640	---
	12,000	93	1075	925	725	510	---
8300	Sea Level	97	1335	1310	1290	1270	1145
	2000	96	1315	1290	1270	1245	1005
	4000	96	1295	1270	1245	1150	870
	6000	96	1275	1245	1215	1005	735
	8000	94	1245	1215	1095	870	---
	10,000	92	1215	1175	955	735	---
	12,000	90	1180	1025	820	600	---
7800	Sea Level	93	1450	1425	1405	1385	1255
	2000	93	1430	1405	1385	1365	1120
	4000	93	1410	1385	1360	1265	980
	6000	92	1385	1360	1335	1115	840
	8000	91	1355	1330	1210	975	---
	10,000	89	1325	1290	1060	835	---
	12,000	87	1295	1130	920	695	---
7300	Sea Level	90	1575	1555	1530	1510	1375
	2000	90	1555	1530	1505	1485	1235
	4000	89	1530	1505	1485	1390	1095
	6000	89	1510	1485	1460	1240	950
	8000	88	1480	1450	1335	1090	---
	10,000	86	1445	1410	1180	945	---
	12,000	84	1410	1250	1035	800	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 80 FPM for INERTIAL SEPARATOR set in BYPASS and 75 FPM for CABIN HEAT ON.
3. Where climb gradient values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those climb gradients which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-12

CARGO POD INSTALLED
CLIMB GRADIENT - TAKEOFF FLAP SETTING

FLAPS TO/APR

CONDITIONS:
Takeoff Power
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb Gradient - Feet/Nautical Mile (FT/NM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	76	935	880	830	785	685
	2000	77	885	835	785	745	585
	4000	77	840	790	740	660	490
	6000	78	795	745	695	560	405
	8000	78	750	695	605	465	---
	10,000	78	700	645	505	380	---
	12,000	78	655	540	420	295	---
8300	Sea Level	73	1040	975	925	875	765
	2000	74	985	925	875	830	665
	4000	74	930	875	830	740	560
	6000	75	885	830	780	635	470
	8000	75	835	780	680	535	---
	10,000	75	785	725	575	440	---
	12,000	75	735	615	485	355	---
7800	Sea Level	70	1155	1090	1030	975	860
	2000	71	1095	1030	975	925	750
	4000	71	1040	980	925	830	645
	6000	72	985	925	875	715	540
	8000	72	930	875	765	610	---
	10,000	72	880	815	655	510	---
	12,000	72	825	695	555	415	---
7300	Sea Level	67	1285	1215	1150	1090	965
	2000	67	1225	1155	1090	1035	845
	4000	68	1160	1095	1035	930	735
	6000	68	1100	1035	975	815	625
	8000	68	1045	980	865	700	---
	10,000	68	985	915	745	590	---
	12,000	68	930	790	640	490	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 40 FT/NM for INERTIAL SEPARATOR set in BYPASS and 45 FT/NM for CABIN HEAT ON.
3. Where climb gradient values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those climb gradients which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-13

CARGO POD INSTALLED
MAXIMUM RATE OF CLIMB
FLAPS UP

CONDITIONS:
1900 RPM
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	108	1335	1315	1290	1270	960
	4000	105	1295	1270	1245	1000	700
	8000	102	1245	1215	995	740	445
	12,000	99	1120	940	720	480	195
	16,000	96	825	655	455	225	---
	20,000	92	545	385	205	---	---
	24,000	87	285	140	---	---	---
8300	Sea Level	104	1445	1425	1405	1380	1065
	4000	102	1410	1380	1355	1100	800
	8000	99	1355	1325	1100	840	535
	12,000	96	1220	1040	815	570	280
	16,000	92	920	745	540	305	---
	20,000	88	635	475	285	---	---
	24,000	83	365	220	---	---	---
7800	Sea Level	101	1565	1545	1530	1505	1175
	4000	98	1520	1505	1475	1215	905
	8000	96	1470	1440	1210	945	635
	12,000	92	1335	1145	920	665	365
	16,000	88	1020	845	635	390	110
	20,000	84	730	565	370	140	---
	24,000	79	455	300	115	---	---
7300	Sea Level	98	1695	1675	1660	1635	1300
	4000	95	1650	1630	1610	1335	1020
	8000	92	1595	1570	1330	1055	735
	12,000	88	1455	1260	1030	770	460
	16,000	84	1130	950	740	490	195
	20,000	79	830	665	465	230	---
	24,000	74	550	395	205	---	---

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. With climb power set below the torque limit, decrese rate of climb by 90 FPM for INERTIAL SEPARATOR set in BYPASS and 90 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-14

CARGO POD INSTALLED
CLIMB GRADIENT - TAKEOFF

FLAPS UP

CONDITIONS:
Takeoff Power
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb Gradient - Feet/Nautical Mile (FT/NM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	78	950	900	855	805	610
	2000	78	905	855	810	700	520
	4000	78	860	810	765	600	430
	6000	79	815	765	675	510	350
	8000	79	770	720	575	430	---
	10,000	80	725	625	485	345	---
	12,000	80	645	525	395	265	---
8300	Sea Level	73	1050	995	945	895	690
	2000	74	1000	950	900	785	590
	4000	74	955	900	850	680	495
	6000	75	905	850	755	580	410
	8000	75	860	805	650	490	---
	10,000	75	810	700	555	405	---
	12,000	76	720	595	460	320	---
7800	Sea Level	68	1165	1105	1050	990	775
	2000	69	1110	1050	1000	875	670
	4000	69	1060	1000	950	765	570
	6000	70	1005	950	845	660	475
	8000	70	960	895	730	565	---
	10,000	70	905	785	625	470	---
	12,000	71	805	670	530	380	---
7300	Sea Level	63	1295	1225	1165	1100	875
	2000	64	1235	1170	1110	980	765
	4000	64	1175	1115	1055	865	655
	6000	64	1120	1060	950	750	550
	8000	65	1065	1005	825	645	---
	10,000	65	1010	880	710	545	---
	12,000	66	905	760	605	450	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 50 FT/NM for INERTIAL SEPARATOR set in BYPASS and 65 FT/NM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-15

CARGO POD INSTALLED
CRUISE CLIMB

FLAPS UP - 115 KIAS

CONDITIONS:
1900 RPM
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Rate of Climb - Feet Per Minute (FPM)				
		-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	1330	1305	1280	1260	930
	2000	1310	1280	1260	1110	790
	4000	1285	1260	1225	960	640
	6000	1260	1230	1120	820	495
	8000	1235	1200	960	675	---
	10,000	1200	1070	805	530	---
	12,000	1115	900	645	370	---
8300	Sea Level	1445	1415	1395	1370	1025
	2000	1420	1395	1370	1215	875
	4000	1400	1370	1340	1060	720
	6000	1375	1340	1230	910	565
	8000	1345	1310	1060	755	---
	10,000	1315	1175	895	605	---
	12,000	1220	995	725	435	---
7800	Sea Level	1570	1540	1515	1495	1125
	2000	1545	1520	1495	1330	970
	4000	1520	1495	1460	1165	805
	6000	1500	1465	1345	1005	645
	8000	1470	1430	1165	845	---
	10,000	1435	1290	995	685	---
	12,000	1340	1100	815	510	---
7300	Sea Level	1705	1680	1655	1630	1240
	2000	1685	1655	1630	1460	1075
	4000	1660	1635	1600	1285	900
	6000	1635	1600	1475	1115	730
	8000	1605	1570	1285	945	---
	10,000	1570	1415	1100	775	---
	12,000	1470	1215	915	590	---

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. With climb power set below the torque limit, decrese rate of climb by 125 FPM for INERTIAL SEPARATOR set in BYPASS and 90 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-16

CARGO POD INSTALLED
RATE OF CLIMB
BALKED LANDING - FLAPS LAND

CONDITIONS:
Takeoff Power
1900 RPM

INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KCAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8500	Sea Level	83	1120	1100	1075	1055	935
	2000	82	1100	1075	1050	1020	815
	4000	81	1070	1045	1015	930	695
	6000	80	1045	1015	980	805	580
	8000	79	1015	980	875	685	---
	10,000	78	980	935	750	565	---
	12,000	77	940	800	630	445	---
8000	Sea Level	82	1225	1205	1180	1160	1040
	2000	81	1205	1180	1155	1125	915
	4000	80	1175	1150	1125	1035	790
	6000	79	1150	1120	1085	900	670
	8000	78	1120	1085	975	775	---
	10,000	77	1085	1035	845	655	---
	12,000	76	1045	900	720	530	---
7500	Sea Level	81	1345	1320	1300	1280	1150
	2000	80	1320	1295	1275	1245	1020
	4000	79	1295	1270	1245	1145	890
	6000	78	1265	1240	1205	1010	765
	8000	77	1235	1205	1090	880	---
	10,000	75	1205	1155	950	750	---
	12,000	74	1160	1010	825	620	---
7000	Sea Level	80	1475	1455	1430	1410	1280
	2000	79	1450	1425	1405	1380	1140
	4000	78	1425	1400	1375	1275	1005
	6000	77	1395	1370	1335	1130	875
	8000	75	1365	1335	1215	995	---
	10,000	74	1335	1280	1070	860	---
	12,000	73	1290	1130	935	725	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 65 FPM for INERTIAL SEPARATOR set in BYPASS and 70 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-17

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CARGO POD INSTALLED
TIME, FUEL, AND DISTANCE TO CLIMB
MAXIMUM RATE OF CLIMB

CONDITIONS:
Flaps **UP**
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb From Sea Level								
			20°C Below Standard			Standard Temperature			20°C Above Standard		
			Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM
8807	Sea Level	108	0	0	0	0	0	0	0	0	0
	4000	105	3	29	6	3	30	6	4	35	8
	8000	102	6	57	12	7	61	13	9	71	18
	12,000	99	10	88	18	11	94	22	15	112	30
	16,000	96	15	123	27	17	133	33	23	161	47
	20,000	92	20	164	39	25	180	50	36	229	74
	24,000	88	29	218	57	38	248	77	65	367	140
8300	Sea Level	104	0	0	0	0	0	0	0	0	0
	4000	102	3	26	5	3	27	5	4	31	7
	8000	99	6	52	10	6	56	11	8	64	15
	12,000	96	9	81	16	10	86	19	14	99	26
	16,000	92	13	112	24	15	119	29	20	141	40
	20,000	88	18	148	34	22	159	42	30	194	60
	24,000	83	26	194	49	32	213	64	48	279	100
7800	Sea Level	101	0	0	0	0	0	0	0	0	0
	4000	99	3	24	4	3	25	5	4	28	6
	8000	96	5	48	9	6	51	10	7	57	13
	12,000	93	8	74	14	10	78	17	12	89	22
	16,000	89	12	103	21	14	108	25	18	124	34
	20,000	84	17	135	30	20	142	37	26	168	50
	24,000	79	23	173	42	28	186	53	39	229	78
7300	Sea Level	98	0	0	0	0	0	0	0	0	0
	4000	95	3	22	4	3	23	4	3	25	5
	8000	92	5	44	8	5	46	9	7	52	12
	12,000	88	8	68	13	9	71	15	11	80	19
	16,000	84	11	94	19	13	98	22	16	110	29
	20,000	79	15	123	26	18	128	32	23	146	42
	24,000	74	21	156	36	25	164	45	33	193	62

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. Add 35 pounds of fuel for engine start, taxi, and takeoff allowance.
3. With INERTIAL SEPARATOR set in BYPASS, increase time, fuel, and distance numbers by 5% for each 1000 feet of climb and for CABIN HEAT ON, increase time, fuel, and distance numbers by 9% for each 2000 feet of climb.

Figure 5-18 (Sheet 1 of 2)

CARGO POD INSTALLED
TIME, FUEL, AND DISTANCE TO CLIMB
CRUISE CLIMB - 115 KIAS

CONDITIONS:
Flaps **UP**
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb From Sea Level								
		20°C Below Standard			Standard Temperature			20°C Above Standard		
		Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM
8807	Sea Level	0	0	0	0	0	0	0	0	0
	2000	2	14	3	2	15	3	2	18	4
	4000	3	29	6	3	30	7	4	36	9
	6000	5	43	9	5	46	10	7	55	14
	8000	7	58	13	7	62	14	10	75	20
	10,000	8	73	16	9	79	19	13	97	28
	12,000	10	89	21	12	98	25	17	122	36
8300	Sea Level	0	0	0	0	0	0	0	0	0
	2000	2	13	3	2	14	3	2	16	4
	4000	3	26	6	3	28	6	4	33	8
	6000	4	40	9	5	42	9	6	50	13
	8000	6	53	12	7	57	13	9	68	18
	10,000	8	67	15	9	72	18	12	87	25
	12,000	9	81	19	11	89	23	15	109	33
7800	Sea Level	0	0	0	0	0	0	0	0	0
	2000	1	12	3	1	13	3	2	15	4
	4000	3	24	5	3	25	6	4	30	7
	6000	4	36	8	4	38	9	6	45	12
	8000	6	48	11	6	52	12	8	61	17
	10,000	7	61	14	8	66	16	10	79	22
	12,000	9	75	17	10	81	21	13	98	29
7300	Sea Level	0	0	0	0	0	0	0	0	0
	2000	1	11	2	1	12	3	2	13	3
	4000	3	22	5	3	23	5	3	27	7
	6000	4	33	7	4	35	8	5	41	11
	8000	5	44	10	5	47	11	7	55	15
	10,000	6	56	13	7	60	15	9	71	20
	12,000	8	68	16	9	73	19	12	88	26

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. Add 35 pounds of fuel for engine start, taxi, and takeoff allowance.
3. With INERTIAL SEPARATOR set in BYPASS, increase time, fuel, and distance numbers by 5% for each 1000 feet of climb and for CABIN HEAT ON, increase time, fuel, and distance numbers by 4% for each 1000 feet of climb.

Figure 5-18 (Sheet 2)

CARGO POD INSTALLED
CRUISE PERFORMANCE

NOTE

The following general information is applicable to all CRUISE PERFORMANCE Charts.

1. The highest torque shown for each temperature and RPM corresponds to maximum allowable cruise power. Do not exceed this torque, 805°C ITT, or 103.7% Ng, whichever occurs first.

2. The lowest torque shown for each temperature and RPM corresponds to the recommended torque setting for best range in zero wind conditions.

3. With the INERTIAL SEPARATOR in BYPASS and power set below the torque limit (2397 foot-pounds), decrease the maximum cruise torque by 185 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 60 pounds per hour (PPH) higher.

4. With the CABIN HEAT ON and power set below the torque limit (2397 foot-pounds), decrease maximum cruise torque by 95 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 15 PPH higher.

Figure 5-19 (Sheet 1 of 11)

CARGO POD INSTALLED CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 2000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
46	1417	402	155	1558	406	156	1681	411	155
	1415	402	155	1495	396	154	1525	386	149
40	1584	426	162	1737	431	163	1857	435	162
	1420	399	154	1495	393	153	1515	380	147
30	1847	463	172	2013	468	172	2109	470	169
	1700	440	166	1900	450	168	2000	451	165
	1500	408	157	1700	420	160	1800	419	158
	1415	394	153	1450	382	149	1515	375	146
20	2070	497	178	2233	499	177	2309	501	173
	1900	467	172	2100	477	173	2200	480	170
	1700	435	164	1900	445	166	2000	444	164
	1500	403	155	1700	415	159	1800	412	156
	1420	390	152	1450	377	148	1515	369	145
10	2176	510	180	2371	516	180	2397	508	174
	2000	479	174	2200	487	175	2200	471	168
	1600	414	158	1800	425	161	1800	405	155
	1420	385	150	1430	370	145	1520	365	144
0	2137	498	177	2327	502	177	2397	498	172
	2000	474	172	2200	482	173	2200	461	167
	1600	409	156	1800	420	159	1800	400	153
	1430	382	149	1420	364	143	1500	358	142
-10	2099	486	173	2281	489	173	2397	487	170
	1900	452	166	2100	460	168	2200	454	165
	1500	389	150	1700	400	154	1800	395	152
	1445	380	148	1420	359	142	1490	351	140
-20	2061	474	170	2236	477	170	2397	480	168
	1900	447	164	2100	455	166	2200	448	163
	1500	384	148	1700	395	152	1800	389	150
	1470	380	147	1425	355	140	1470	344	137
-30	2021	462	167	2190	464	167	2397	472	166
	1900	442	162	2000	435	161	2200	441	161
	1500	380	146	1600	376	146	1800	384	148
	1485	378	146	1425	351	139	1450	337	135
-40	1989	452	163	2145	452	163	2353	457	163
	1800	422	156	2000	429	158	2000	406	153
	1600	390	149	1800	399	152	1800	379	147
	1525	379	145	1430	347	137	1440	331	133
-50	1953	442	160	2101	440	160	2300	444	160
	1800	417	154	1900	409	153	1900	387	148
	1600	386	146	1700	380	146	1700	361	141
	1545	377	144	1450	345	136	1430	325	131
-54	1940	438	158	2083	435	158	2278	438	158
	1800	415	153	1900	408	152	1900	384	147
	1600	384	145	1700	378	145	1700	359	140
	1540	375	143	1455	344	136	1425	323	130

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Figure 5-19 (Sheet 2)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 4000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
42	1408	388	158	1551	393	159	1663	397	157
	1390	385	157	1445	376	154	1455	364	147
40	1468	397	160	1610	401	161	1724	405	160
	1405	386	157	1445	375	153	1460	363	147
30	1729	434	171	1880	438	171	1966	440	168
	1600	413	165	1700	410	164	1800	411	161
	1400	381	155	1500	379	155	1600	380	153
	1390	380	155	1440	370	152	1465	359	147
20	1919	462	177	2069	464	176	2140	466	172
	1800	441	172	1900	435	170	2000	439	167
	1600	408	164	1700	405	162	1800	404	160
	1400	376	154	1500	374	153	1600	373	151
	1390	375	153	1420	362	150	1470	353	145
10	2133	495	182	2288	497	181	2336	498	176
	2000	471	178	2100	463	175	2200	469	172
	1800	436	170	1900	430	168	2000	431	166
	1600	404	162	1700	400	161	1800	397	158
	1400	372	152	1500	370	152	1600	368	150
	1390	370	152	1405	356	147	1460	347	144
0	2209	503	183	2397	509	183	2397	500	176
	2100	483	179	2200	474	177	2200	459	170
	1900	449	172	2000	442	170	2000	422	164
	1700	415	164	1800	410	163	1800	391	157
	1400	368	151	1400	351	146	1465	343	143
-10	2167	490	180	2363	496	180	2397	488	174
	2000	461	174	2200	469	175	2200	450	168
	1600	394	158	1800	405	161	1800	386	155
	1400	364	149	1405	347	144	1440	335	140
-20	2128	478	176	2316	483	176	2397	477	172
	2000	456	172	2000	432	166	2200	442	167
	1600	390	156	1600	371	152	1800	380	153
	1415	361	148	1390	340	142	1435	330	139
-30	2089	467	173	2267	469	173	2397	469	170
	1900	435	166	2100	443	168	2200	435	165
	1500	370	150	1700	380	154	1800	375	152
	1420	358	146	1405	338	141	1410	323	136
-40	2053	455	169	2217	456	169	2397	460	168
	1900	430	164	2100	438	165	2200	428	162
	1700	397	156	1900	407	159	2000	399	156
	1500	365	148	1700	376	152	1800	370	150
	1440	356	145	1395	333	139	1415	319	134
-50	2013	444	165	2169	443	165	2382	450	165
	1900	425	161	2000	417	160	2200	423	160
	1700	393	154	1800	387	153	2000	394	154
	1500	361	146	1600	357	146	1800	365	148
	1465	356	144	1400	329	137	1415	314	133
-54	1998	440	164	2150	439	164	2360	444	164
	1800	407	157	2000	415	159	2000	392	154
	1600	375	149	1800	385	153	1800	363	147
	1485	357	144	1400	327	136	1395	310	131

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Figure 5-19 (Sheet 3)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 6000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
38	1401	375	160	1536	379	161	1636	383	159
	1395	374	160	1435	363	156	1450	353	149
30	1600	404	169	1739	407	169	1818	409	165
	1400	371	159	1600	385	163	1700	388	161
	1370	366	157	1440	360	155	1455	349	149
20	1775	430	175	1914	432	174	1981	433	170
	1600	399	167	1800	412	170	1800	398	163
	1375	363	156	1440	356	154	1450	343	147
10	1969	459	181	2112	461	180	2157	462	175
	1800	429	174	2000	441	176	2000	429	169
	1600	395	166	1800	407	168	1800	391	162
	1360	357	154	1410	348	151	1480	341	148
0	2184	492	186	2326	494	185	2342	494	179
	2000	460	180	2200	470	181	2200	461	174
	1800	425	172	2000	435	174	2000	421	167
	1600	390	164	1800	403	167	1800	384	160
	1360	352	152	1400	342	149	1460	334	145
-10	2244	498	186	2397	498	185	2397	496	179
	2100	472	181	2200	464	179	2200	451	172
	1900	437	174	2000	431	172	2000	413	166
	1500	370	157	1600	367	157	1600	350	150
	1375	351	151	1390	336	147	1450	328	144
-20	2200	484	183	2397	492	183	2397	483	176
	2000	450	176	2200	458	177	2200	441	170
	1800	416	168	2000	426	170	2000	406	164
	1400	350	151	1600	362	155	1600	345	149
	1355	343	148	1385	331	145	1450	323	142
-30	2158	472	179	2348	478	179	2397	470	174
	2000	445	174	2200	453	175	2200	433	168
	1800	411	166	2000	421	168	2000	399	162
	1400	346	149	1600	358	153	1600	340	147
	1355	339	147	1375	326	143	1440	318	140
-40	2121	461	175	2298	464	175	2397	461	172
	2000	440	171	2100	432	169	2200	426	166
	1800	407	164	1900	400	163	2000	393	160
	1400	342	147	1500	339	147	1600	336	145
	1375	338	146	1370	321	141	1420	311	138
-50	2082	449	172	2246	450	172	2397	450	170
	1900	419	165	2100	427	167	2200	418	164
	1500	354	149	1700	365	153	1800	359	151
	1390	336	144	1370	317	139	1400	305	135
-54	2066	445	170	2225	445	170	2397	447	169
	1900	417	164	2100	425	166	2200	416	163
	1500	352	149	1700	363	152	1800	357	150
	1405	337	144	1370	315	138	1405	303	135

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Figure 5-19 (Sheet 4)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 8000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
34	1368	360	161	1495	363	162	1588	367	159
				1440	354	159	1460	345	152
30	1463	373	166	1596	377	166	1668	379	162
	1365	357	160	1425	350	157	1460	343	152
20	1639	400	173	1767	402	172	1828	403	168
	1500	375	166	1600	373	165	1700	378	162
	1355	352	158	1420	345	156	1440	334	150
10	1810	425	179	1942	427	178	1984	428	172
	1500	371	165	1600	369	163	1600	353	156
	1355	347	157	1410	339	154	1470	333	150
0	2011	457	185	2140	457	183	2156	458	177
	1900	437	180	2000	431	178	2000	422	171
	1500	367	163	1600	364	162	1600	347	155
	1345	342	155	1395	333	152	1470	328	149
-10	2206	488	189	2331	489	187	2316	489	180
	2100	468	186	2200	461	183	2200	458	176
	1900	432	178	2000	426	176	2000	413	169
	1500	363	161	1600	360	160	1600	343	154
	1330	336	152	1380	327	149	1450	321	146
-20	2278	496	190	2397	492	187	2397	497	181
	2100	463	184	2200	455	181	2200	446	174
	1900	427	176	2000	421	174	2000	405	168
	1500	359	159	1600	356	158	1600	339	152
	1335	332	151	1355	319	146	1440	315	144
-30	2236	483	186	2397	485	185	2397	481	179
	2100	458	181	2200	450	179	2200	435	172
	1900	423	174	2000	416	172	2000	398	166
	1500	355	157	1600	352	157	1600	334	150
	1335	328	149	1365	317	146	1430	310	143
-40	2195	470	182	2379	475	182	2397	467	176
	2000	436	175	2200	445	177	2200	426	170
	1800	401	168	2000	411	170	2000	391	164
	1400	335	150	1600	348	155	1600	329	148
	1335	325	147	1355	311	143	1400	301	140
-50	2155	458	178	2326	461	178	2397	456	174
	2000	431	173	2200	440	174	2200	417	168
	1800	397	166	2000	407	168	2000	384	162
	1600	364	157	1600	344	153	1600	325	147
	1320	319	144	1335	305	141	1395	297	138
-54	2140	454	176	2304	455	176	2397	451	173
	2000	429	172	2100	421	170	2200	413	167
	1800	395	165	1900	389	163	2000	382	161
	1600	362	157	1700	358	156	1600	323	146
	1325	318	144	1345	304	140	1385	294	137

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Figure 5-19 (Sheet 5)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 10,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
30	1335	345	162	1456	348	162	1528	350	158
				1415	341	160	1450	336	154
20	1512	371	171	1629	373	170	1684	374	165
	1400	351	164	1500	351	163	1500	339	156
	1340	341	161	1420	338	159	1440	328	152
10	1658	393	176	1780	395	175	1821	396	170
	1500	365	168	1600	363	167	1700	370	164
	1335	336	159	1395	329	156	1440	323	151
0	1844	422	182	1966	424	181	1981	424	175
	1700	396	176	1800	392	174	1800	383	167
	1500	361	167	1600	359	165	1600	344	158
	1335	332	157	1385	324	154	1445	318	150
-10	2027	452	188	2143	453	185	2130	452	178
	1900	428	183	2000	423	180	2000	418	173
	1700	392	174	1600	355	163	1800	375	165
	1310	325	155	1365	317	152	1430	311	148
-20	2199	477	192	2310	478	189	2271	477	181
	2000	442	184	2200	455	185	2100	432	175
	1800	405	177	2000	418	178	1900	386	168
	1600	371	168	1600	351	162	1700	351	159
	1305	320	153	1360	312	150	1425	306	146
-30	2318	495	193	2397	487	189	2397	497	183
	2200	472	189	2200	449	183	2200	445	177
	2000	437	182	2000	413	176	2000	399	169
	1600	367	166	1600	347	160	1800	363	162
	1300	316	151	1345	307	148	1420	302	145
-40	2276	481	189	2396	478	187	2396	478	181
	2100	449	183	2200	442	181	2200	432	174
	1900	414	176	2000	408	174	2000	391	167
	1500	346	159	1600	343	158	1800	356	160
	1275	309	147	1330	301	145	1400	295	143
-50	2233	467	185	2396	476	185	2397	463	178
	2100	443	181	2200	437	178	2200	422	172
	1900	410	173	2000	403	172	2000	382	165
	1700	375	166	1800	370	164	1800	350	158
	1500	342	157	1600	339	156	1600	320	150
	1265	303	145	1315	295	142	1385	289	140
-54	2218	463	183	2385	472	183	2397	458	177
	2100	441	179	2200	435	178	2200	417	171
	1900	408	172	2000	402	171	2000	379	164
	1500	341	156	1600	338	155	1600	319	149
	1250	300	143	1310	293	141	1375	286	139

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Figure 5-19 (Sheet 6)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 12,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
26	1280	327	161	1385	330	160	1445	331	156
				1385	329	160	1415	325	154
20	1373	342	166	1481	344	165	1533	345	160
	1315	331	162	1385	327	160	1410	321	153
10	1517	364	173	1629	365	172	1666	366	166
	1400	343	166	1500	342	165	1500	332	157
	1300	325	160	1390	323	159	1395	312	151
0	1675	388	179	1789	389	178	1807	390	171
	1500	357	170	1600	355	169	1700	365	166
	1300	322	158	1400	321	158	1500	326	156
	1280	318	157	1360	315	155	1410	308	151
-10	1847	415	185	1955	416	183	1946	416	175
	1700	388	178	1800	385	176	1800	379	169
	1500	353	169	1600	351	167	1600	337	160
	1265	312	155	1340	308	153	1395	302	149
-20	2009	440	189	2111	440	187	2078	440	179
	1900	421	185	2000	417	182	1900	393	172
	1500	349	167	1600	347	165	1500	315	153
	1260	308	153	1315	301	150	1395	297	147
-30	2177	472	193	2269	474	190	2238	475	182
	2000	434	187	2100	430	184	2100	433	177
	1600	362	170	1700	359	168	1700	345	161
	1245	302	151	1300	295	148	1385	292	146
-40	2343	519	196	2397	515	192	2397	519	185
	2200	477	191	2200	445	185	2200	445	179
	2000	429	184	2000	409	178	2000	398	171
	1600	359	168	1600	339	162	1600	322	155
	1230	296	148	1290	290	146	1380	287	144
-50	2321	509	192	2397	505	189	2397	506	183
	2200	474	188	2200	439	183	2200	432	176
	2000	424	181	2000	403	176	2000	389	169
	1600	356	165	1600	336	160	1600	318	153
	1215	290	145	1270	283	143	1355	280	141
-54	2307	504	190	2397	503	188	2397	501	182
	2200	473	187	2200	438	182	2200	423	175
	2000	423	180	2000	401	175	2000	385	168
	1600	354	164	1600	334	159	1600	316	152
	1210	288	144	1265	281	142	1345	277	140

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Figure 5-19 (Sheet 7)

CARGO POD INSTALLED
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 14,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
22	1211	309	158	1308	311	157	1361	312	152
15	1315	325	165	1417	327	164	1461	328	158
	1270	317	162	1335	313	159	1350	306	151
10	1385	336	169	1488	337	168	1522	338	161
	1265	314	161	1345	312	159	1360	305	151
0	1521	357	175	1625	358	174	1645	358	167
	1400	335	168	1500	335	167	1500	326	159
	1255	309	159	1340	307	157	1345	296	149
-10	1680	382	182	1780	382	179	1775	382	172
	1500	349	172	1600	347	171	1600	340	163
	1250	305	157	1325	301	155	1360	293	149
-20	1829	405	186	1925	405	184	1897	405	176
	1700	381	181	1800	379	178	1700	353	167
	1500	345	171	1600	344	169	1500	314	156
	1230	298	154	1305	294	152	1355	288	148
-30	1988	433	191	2074	435	188	2042	435	180
	1800	395	183	1900	393	181	1900	394	174
	1600	359	174	1500	323	162	1700	345	165
	1220	293	152	1260	284	148	1350	283	146
-40	2141	477	194	2206	478	190	2193	478	183
	2000	435	188	2100	435	186	2000	405	176
	1800	392	180	1900	390	178	1800	358	167
	1600	356	171	1500	320	160	1600	322	158
	1210	288	150	1260	280	147	1345	278	145
-50	2285	511	196	2324	511	192	2331	511	185
	2100	462	189	2200	466	187	2200	468	181
	1900	404	182	2000	401	180	2000	395	173
	1500	335	164	1600	334	163	1600	316	156
	1200	283	147	1245	275	144	1335	272	143
-54	2344	525	196	2376	525	192	2386	524	186
	2200	487	191	2200	465	186	2200	462	180
	1800	384	177	2000	400	179	2000	389	173
	1400	317	158	1600	330	163	1600	311	156
	1190	281	146	1245	273	144	1320	269	141

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Figure 5-19 (Sheet 8)

CARGO POD INSTALLED
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 16,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
18	1147	292	154	1238	293	153	1283	294	146
10	1258	309	163	1352	310	162	1385	311	155
				1340	308	161	1365	306	153
0	1382	328	171	1477	329	169	1497	330	162
	1245	303	161	1345	304	160	1355	298	152
-10	1526	350	178	1620	351	175	1618	351	167
	1400	328	170	1500	328	169	1500	323	160
	1220	296	158	1335	300	159	1345	289	150
-20	1662	372	183	1751	373	180	1728	372	172
	1500	342	174	1600	342	173	1600	338	165
	1300	306	162	1400	307	161	1400	294	153
	1235	295	158	1310	291	155	1355	286	150
-30	1813	397	188	1892	398	185	1859	398	176
	1700	375	183	1700	357	176	1700	354	169
	1500	338	173	1500	321	165	1500	307	158
	1210	287	154	1300	287	154	1350	280	148
-40	1950	437	191	2015	439	188	2002	439	180
	1800	391	185	1900	393	183	1800	369	171
	1600	353	175	1700	353	174	1600	323	162
	1205	283	152	1265	278	150	1340	274	147
-50	2085	469	193	2125	470	189	2128	469	183
	1900	419	186	2000	424	185	2000	426	178
	1700	366	178	1800	364	176	1800	359	169
	1500	333	168	1600	331	167	1600	317	160
	1190	277	149	1240	271	147	1330	269	145
-54	2141	482	194	2170	482	190	2180	482	184
	2000	445	189	2000	423	184	2000	420	177
	1800	389	181	1800	364	175	1800	353	168
	1400	312	162	1600	328	166	1600	312	159
	1170	273	147	1225	267	145	1330	268	144

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Figure 5-19 (Sheet 9)

CARGO POD INSTALLED
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 18,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
10	1137	283	155	1223	285	153	1254	285	143
-5	1315	311	169	1403	312	166	1414	312	158
	1270	303	165	1320	296	161	1340	295	152
-10	1383	321	172	1470	322	170	1471	322	161
	1255	298	163	1330	296	161	1335	290	151
-20	1507	342	179	1590	342	176	1572	341	167
	1235	292	161	1320	290	159	1335	282	150
-30	1646	363	184	1723	364	181	1690	364	172
	1500	336	176	1600	338	175	1500	313	161
	1215	285	158	1295	282	156	1335	278	150
-40	1773	399	188	1836	401	184	1821	402	177
	1600	352	179	1500	316	167	1700	354	171
	1205	280	155	1280	277	154	1325	271	148
-50	1900	430	191	1939	431	187	1939	430	180
	1700	375	182	1800	380	181	1800	380	173
	1500	329	172	1600	330	171	1600	321	163
	1190	274	153	1255	270	151	1330	267	147
-54	1952	443	191	1981	443	188	1988	442	181
	1800	403	185	1800	379	180	1800	376	172
	1400	310	165	1600	326	170	1600	316	163
	1175	271	151	1250	267	149	1335	265	147

CRUISE PRESSURE ALTITUDE 20,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
-15	1309	304	170	1386	305	167	1381	304	156
	1270	296	167	1320	290	161	1330	291	152
-20	1367	314	173	1442	314	170	1427	313	160
	1255	292	165	1325	289	161	1325	285	151
-30	1490	332	180	1562	333	176	1531	333	166
	1235	285	162	1315	284	160	1320	276	150
-40	1607	364	184	1669	366	180	1652	366	172
	1205	277	158	1295	277	157	1325	272	150
-50	1727	394	187	1766	395	183	1763	394	176
	1400	308	170	1600	335	175	1600	333	167
	1195	272	156	1285	271	155	1320	264	148
-54	1775	405	188	1805	405	184	1809	405	177
	1400	307	169	1500	310	168	1500	301	160
	1190	270	155	1265	267	153	1320	263	148

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Figure 5-19 (Sheet 10)

CARGO POD INSTALLED
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 22,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
-20	1234	287	166	1303	287	162	1290	286	148
				1285	283	160			
-25	1285	294	170	1353	294	166	1334	293	153
	1260	289	167	1305	284	162	1330	292	153
-30	1342	303	173	1409	303	170	1382	303	158
	1260	288	167	1325	285	163	1325	286	152
-40	1453	332	179	1512	333	175	1493	333	165
	1225	278	162	1315	279	161	1310	273	150
-50	1566	360	183	1605	361	179	1599	360	170
	1400	313	173	1400	292	166	1400	289	157
	1235	276	162	1300	273	159	1295	264	148
-54	1611	371	185	1641	371	180	1642	371	172
	1500	341	178	1500	321	172	1500	319	163
	1225	273	160	1300	271	159	1295	261	148

CRUISE PRESSURE ALTITUDE 24,000 FEET

CONDITIONS:
8600 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
-30	1209	276	167	1271	277	162	1247	276	147
				1265	276	162			
-40	1312	301	174	1367	302	170	1346	303	158
	1225	276	167	1285	274	163	1265	272	149
-50	1418	329	179	1456	329	175	1447	329	165
	1300	296	171	1300	276	163	1300	272	153
	1210	270	164	1265	266	160	1285	266	151
-54	1458	338	181	1489	339	176	1486	338	167
	1300	295	170	1300	274	162	1300	268	152
	1195	265	162	1260	263	159	1290	264	151

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Figure 5-19 (Sheet 11)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

NOTE

The following general information is applicable to all CRUISE MAXIMUM TORQUE Charts.

1. The highest torque shown for each temperature and RPM corresponds to maximum allowable cruise power. Do not exceed this torque, 805°C ITT, or 103.7% Ng, whichever occurs first.

2. With the INERTIAL SEPARATOR in BYPASS and power set below the torque limit (2397 foot-pounds), decrease the maximum cruise torque by 185 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 60 pounds per hour (PPH) higher.

3. With the CABIN HEAT ON and power set below the torque limit (2397 foot-pounds), decrease maximum cruise torque by 95 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 15 PPH higher.

4. Where torque values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those torque values which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-20 (Sheet 1 of 7)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 1000 Feet			Pressure Altitude 2000 Feet			Pressure Altitude 3000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
50	1369	1508	1638	1318	1452	1577	1268	1397	1517
45	1498	1645	1773	1442	1585	1707	1388	1525	1644
40	1644	1803	1927	1584	1737	1857	1525	1672	1787
35	1780	1945	2064	1723	1882	1996	1663	1816	1926
30	1910	2082	2185	1847	2013	2109	1787	1945	2036
25	2036	2198	2289	1960	2117	2204	1890	2041	2124
20	2150	2319	2397	2070	2233	2309	1993	2149	2225
15	2160	2350	2397	2186	2353	2397	2104	2265	2328
10	2140	2330	2397	2176	2371	2397	2215	2377	2397
5	2122	2307	2397	2155	2348	2397	2192	2389	2397
0	2104	2285	2397	2137	2327	2397	2171	2367	2397
-5	2085	2264	2397	2118	2304	2397	2151	2345	2397
-10	2066	2242	2397	2099	2281	2397	2134	2321	2397
-15	2047	2219	2397	2080	2258	2397	2114	2298	2397
-20	2027	2197	2397	2061	2236	2397	2095	2274	2397
-25	2010	2175	2388	2041	2213	2397	2075	2251	2397
-30	1993	2154	2363	2021	2190	2397	2055	2227	2397
-35	1977	2133	2338	2005	2167	2379	2036	2203	2397
-40	1959	2111	2313	1989	2145	2353	2018	2179	2394
-45	1943	2089	2286	1971	2123	2327	2000	2156	2368
-50	1927	2067	2260	1953	2101	2300	1983	2135	2341
-54	1912	2049	2239	1940	2083	2278	1967	2116	2319

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Figure 5-20 (Sheet 2)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp ℃	Pressure Altitude 4000 Feet			Pressure Altitude 5000 Feet			Pressure Altitude 6000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
45	1336	1468	1582	1284	1411	1521	1231	1353	1458
40	1468	1610	1724	1411	1553	1656	1354	1486	1584
35	1601	1748	1854	1540	1682	1784	1473	1610	1708
30	1729	1880	1966	1674	1816	1897	1600	1739	1818
25	1825	1970	2051	1762	1902	1978	1694	1829	1901
20	1919	2069	2140	1846	1991	2061	1775	1914	1981
15	2025	2180	2240	1948	2097	2155	1869	2012	2068
10	2133	2288	2336	2052	2201	2247	1969	2112	2157
5	2232	2397	2397	2159	2309	2342	2073	2217	2249
0	2209	2397	2397	2251	2397	2397	2184	2326	2342
-5	2188	2385	2397	2227	2397	2397	2269	2397	2397
-10	2167	2363	2397	2206	2397	2397	2244	2397	2397
-15	2148	2339	2397	2184	2380	2397	2222	2397	2397
-20	2128	2316	2397	2163	2356	2397	2200	2397	2397
-25	2109	2291	2397	2142	2332	2397	2178	2373	2397
-30	2089	2267	2397	2123	2308	2397	2158	2348	2397
-35	2071	2242	2397	2105	2283	2397	2140	2323	2397
-40	2053	2217	2397	2086	2258	2397	2121	2298	2397
-45	2032	2193	2397	2067	2233	2397	2102	2272	2399
-50	2013	2169	2382	2048	2207	2397	2082	2246	2397
-54	1998	2150	2360	2032	2187	2397	2066	2225	2397

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Figure 5-20 (Sheet 3)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 7000 Feet			Pressure Altitude 8000 Feet			Pressure Altitude 9000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
40	1293	1419	1517	1238	1359	1454	1186	1302	1393
35	1410	1542	1636	1350	1477	1566	1293	1414	1502
30	1529	1662	1742	1463	1596	1668	1399	1526	1598
25	1628	1757	1826	1561	1686	1752	1494	1614	1677
20	1706	1840	1903	1639	1767	1828	1574	1697	1755
15	1791	1927	1984	1718	1851	1903	1650	1777	1827
10	1889	2026	2070	1810	1942	1984	1733	1860	1901
5	1989	2127	2158	1907	2040	2070	1827	1955	1984
0	2093	2231	2247	2011	2140	2156	1925	2052	2067
-5	2199	2335	2334	2109	2239	2238	2022	2148	2150
-10	2286	2397	2397	2206	2331	2316	2115	2236	2221
-15	2262	2397	2397	2301	2397	2392	2203	2323	2295
-20	2239	2397	2397	2278	2397	2397	2296	2397	2371
-25	2216	2397	2397	2255	2397	2397	2298	2397	2397
-30	2196	2389	2397	2236	2397	2397	2276	2397	2396
-35	2177	2364	2397	2216	2397	2397	2256	2397	2396
-40	2157	2338	2397	2195	2379	2397	2235	2397	2397
-45	2138	2312	2397	2175	2353	2397	2213	2395	2397
-50	2118	2285	2397	2155	2326	2397	2192	2368	2397
-54	2102	2264	2397	2140	2304	2397	2179	2346	2397

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Figure 5-20 (Sheet 4)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 10,000 Feet			Pressure Altitude 11,000 Feet			Pressure Altitude 12,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
30	1339	1460	1531	1272	1388	1461	1207	1318	1392
25	1432	1545	1606	1363	1473	1533	1298	1399	1461
20	1512	1629	1684	1441	1554	1608	1373	1481	1533
15	1584	1705	1753	1515	1631	1678	1448	1560	1605
10	1658	1780	1821	1586	1703	1742	1517	1629	1666
5	1749	1872	1901	1668	1785	1815	1590	1703	1732
0	1844	1966	1981	1758	1877	1893	1675	1789	1807
-5	1938	2059	2060	1848	1965	1968	1762	1874	1880
-10	2027	2143	2130	1936	2048	2037	1847	1955	1946
-15	2116	2224	2200	2020	2130	2104	1931	2034	2012
-20	2199	2310	2271	2103	2209	2173	2009	2111	2078
-25	2295	2397	2362	2193	2296	2258	2095	2194	2156
-30	2318	2397	2397	2276	2371	2340	2177	2269	2238
-35	2297	2397	2395	2341	2397	2397	2255	2339	2319
-40	2276	2396	2396	2319	2397	2397	2343	2397	2397
-45	2255	2397	2397	2298	2396	2397	2341	2397	2396
-50	2233	2396	2397	2277	2396	2397	2321	2397	2397
-54	2218	2385	2397	2263	2396	2396	2307	2397	2397

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Figure 5-20 (Sheet 5)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 13,000 Feet			Pressure Altitude 14,000 Feet			Pressure Altitude 15,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
25	1235	1336	1392	1174	1270	1326	1115	1207	1261
20	1309	1411	1462	1244	1342	1392	1182	1277	1325
15	1382	1489	1533	1315	1417	1461	1251	1349	1392
10	1450	1557	1593	1385	1488	1522	1322	1420	1455
5	1517	1623	1655	1449	1551	1582	1383	1483	1510
0	1597	1704	1727	1521	1625	1645	1448	1548	1569
-5	1680	1787	1795	1600	1704	1713	1524	1624	1634
-10	1761	1866	1859	1680	1780	1775	1601	1698	1695
-15	1840	1942	1922	1754	1852	1836	1671	1766	1752
-20	1918	2016	1986	1829	1925	1897	1744	1836	1811
-25	2000	2096	2058	1909	2001	1963	1820	1910	1874
-30	2081	2170	2138	1988	2074	2042	1899	1982	1950
-35	2154	2237	2216	2058	2139	2118	1964	2044	2022
-40	2240	2306	2293	2141	2206	2193	2044	2110	2096
-45	2313	2366	2363	2211	2264	2260	2113	2165	2160
-50	2367	2397	2397	2285	2324	2331	2184	2223	2228
-54	2353	2397	2397	2344	2376	2386	2241	2271	2281

Temp °C	Pressure Altitude 16,000 Feet			Pressure Altitude 17,000 Feet			Pressure Altitude 18,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
20	1125	1215	1261	1069	1155	1199	1016	1097	1396
15	1190	1284	1324	1132	1221	1260	1076	1160	1197
10	1258	1352	1385	1196	1286	1319	1137	1223	1254
5	1320	1415	1441	1258	1349	1375	1198	1284	1309
0	1382	1477	1497	1318	1409	1429	1256	1343	1362
-5	1452	1547	1558	1382	1473	1484	1315	1403	1414
-10	1526	1620	1618	1453	1544	1543	1383	1470	1471
-15	1593	1684	1673	1518	1606	1596	1446	1530	1522
-20	1662	1751	1728	1584	1669	1648	1507	1590	1572
-25	1734	1821	1788	1652	1736	1706	1574	1654	1626
-30	1813	1892	1859	1728	1806	1774	1646	1723	1690
-35	1875	1952	1929	1789	1863	1840	1706	1778	1754
-40	1950	2015	2002	1860	1924	1911	1773	1836	1821
-45	2018	2070	2063	1927	1978	1970	1839	1889	1880
-50	2085	2125	2128	1991	2030	2031	1900	1939	1939
-54	2141	2170	2180	2045	2074	2082	1952	1981	1988

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Figure 5-20 (Sheet 6)

CARGO POD INSTALLED
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 19,000 Feet			Pressure Altitude 20,000 Feet			Pressure Altitude 21,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
-5	1253	1336	1348	1193	1272	1283	1133	1209	1219
-10	1315	1398	1401	1249	1327	1333	1187	1264	1269
-15	1377	1457	1450	1309	1386	1381	1244	1318	1313
-20	1436	1515	1498	1367	1442	1427	1299	1371	1358
-25	1497	1574	1549	1424	1498	1475	1353	1424	1403
-30	1567	1641	1609	1490	1562	1531	1415	1484	1455
-35	1626	1695	1670	1549	1615	1590	1474	1537	1512
-40	1689	1751	1735	1607	1669	1652	1528	1589	1572
-45	1753	1803	1793	1670	1719	1709	1591	1639	1627
-50	1812	1851	1850	1727	1766	1763	1645	1684	1680
-54	1862	1892	1897	1775	1805	1809	1691	1722	1724

Temp °C	Pressure Altitude 22,000 Feet			Pressure Altitude 23,000 Feet			Pressure Altitude 24,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
-15	1180	1251	1247	1122	1191	1186	1065	1129	1116
-20	1234	1303	1290	1173	1240	1228	1112	1175	1160
-25	1285	1353	1334	1222	1287	1269	1159	1222	1204
-30	1342	1409	1382	1275	1339	1315	1210	1272	1248
-35	1401	1463	1435	1333	1392	1365	1264	1323	1294
-40	1453	1512	1493	1383	1440	1421	1313	1368	1347
-45	1515	1562	1549	1442	1489	1476	1369	1417	1402
-50	1566	1605	1599	1492	1530	1524	1419	1456	1448
-54	1611	1641	1642	1534	1565	1564	1459	1489	1488

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Figure 5-20 (Sheet 7)

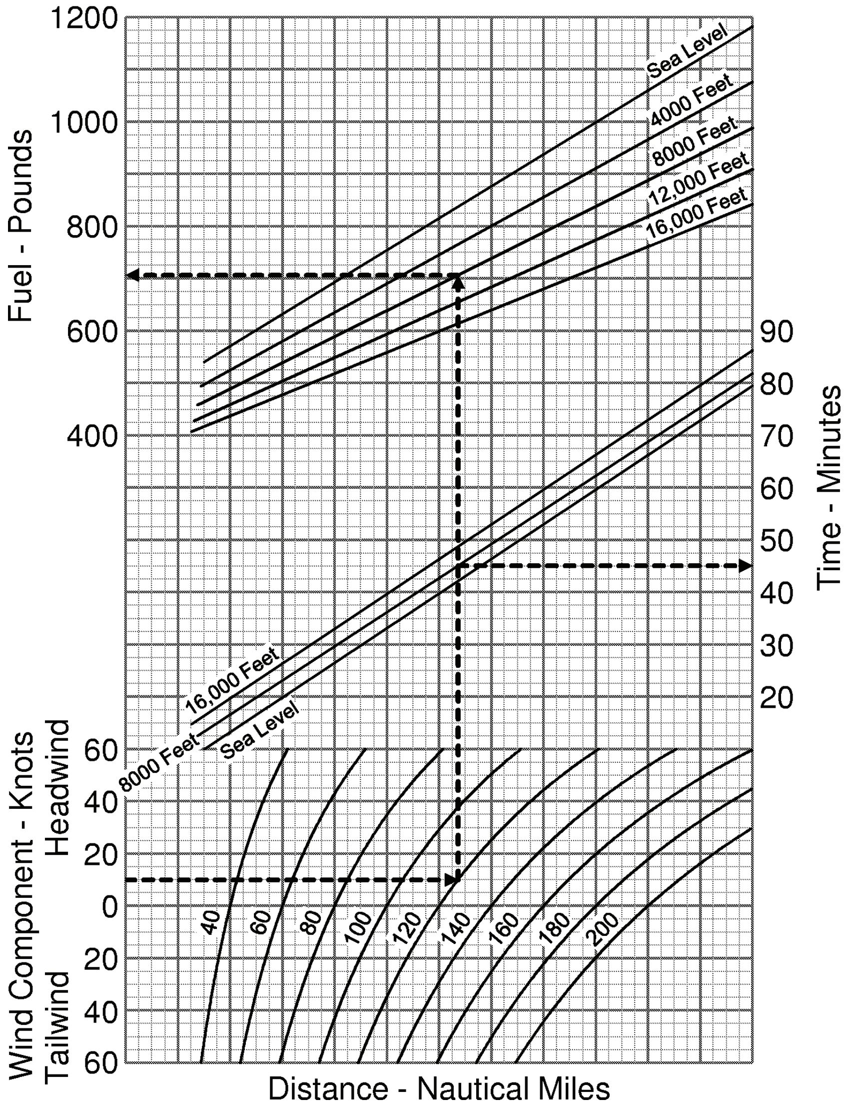
CARGO POD INSTALLED

FUEL AND TIME REQUIRED

MAXIMUM CRUISE POWER

(40-200 Nautical Miles)

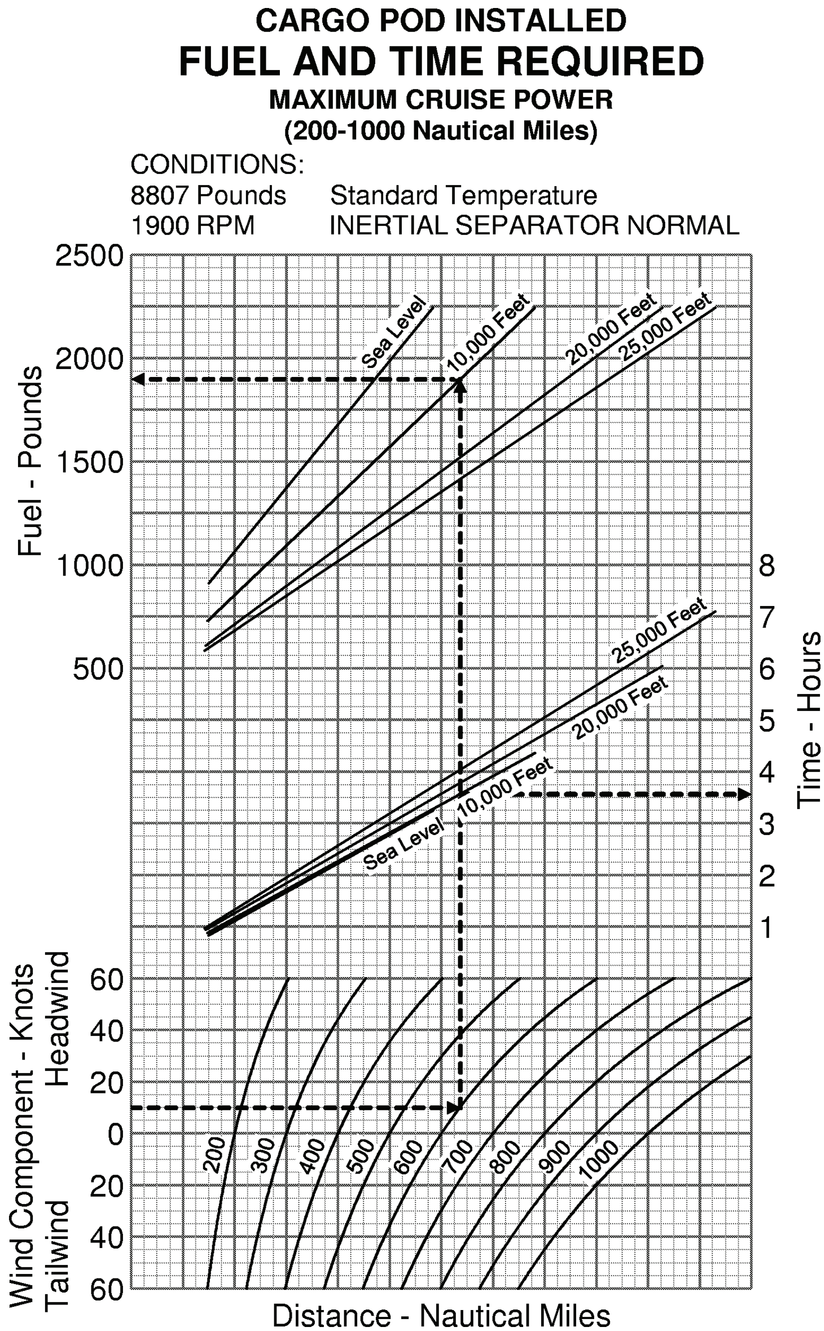
CONDITIONS:
8807 Pounds Standard Temperature
1900 RPM INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 8% or CABIN HEAT ON, increase time by 4%.

Figure 5-21 (Sheet 1 of 2)



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 11% and fuel by 4%, or CABIN HEAT ON, increase time by 8% and fuel by 4%.

Figure 5-21 (Sheet 2)

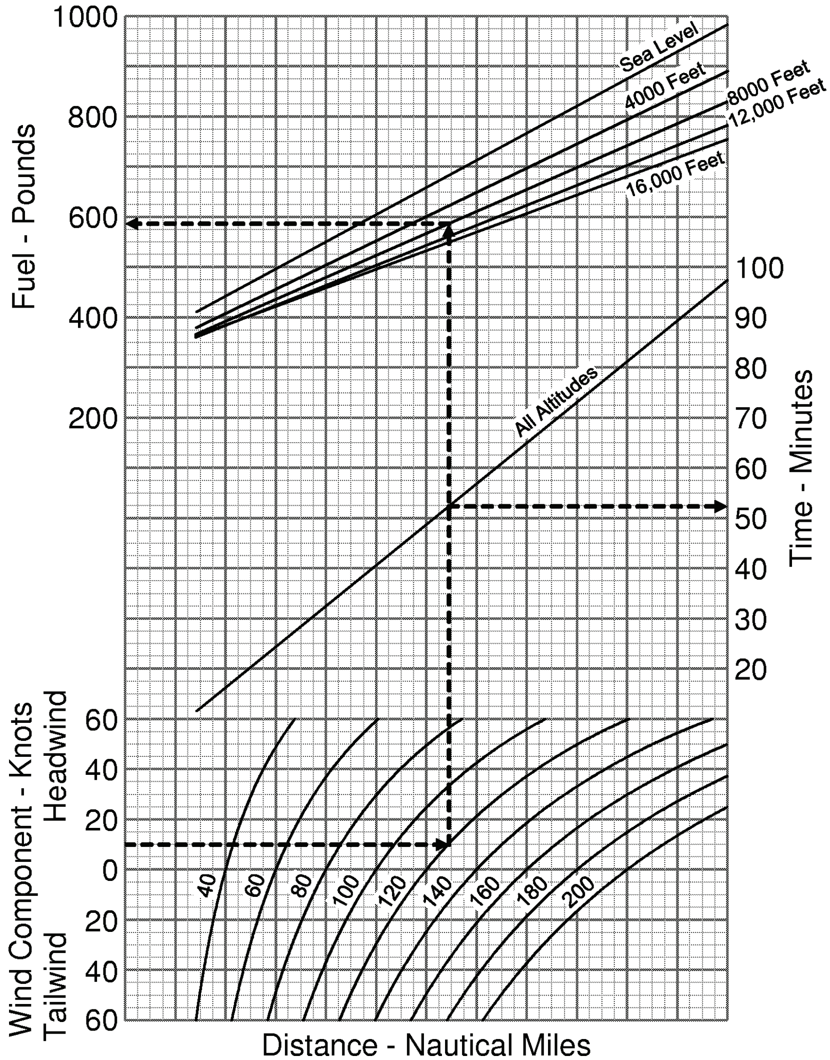
CARGO POD INSTALLED

FUEL AND TIME REQUIRED

MAXIMUM RANGE POWER

(40-200 Nautical Miles)

CONDITIONS:
8807 Pounds Standard Temperature
1900 RPM INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 5% and fuel by 2%, or CABIN HEAT ON, increase time by 5% and fuel by 2%.

Figure 5-22 (Sheet 1 of 2)

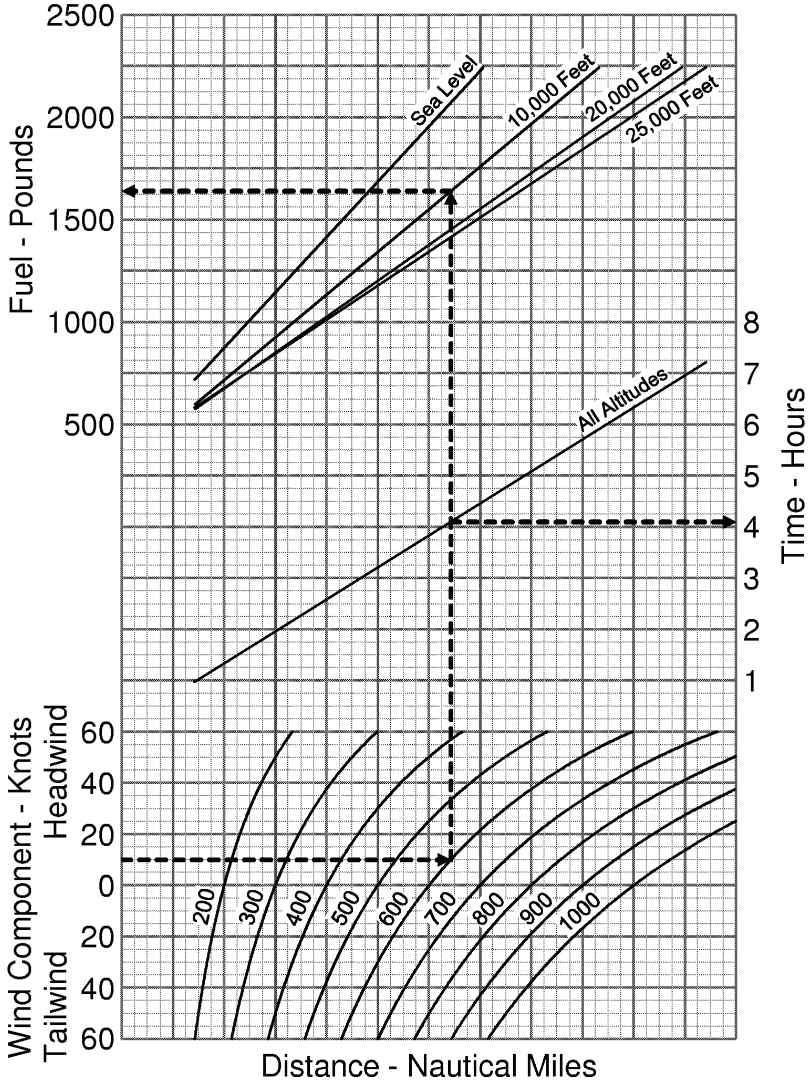
CARGO POD INSTALLED

FUEL AND TIME REQUIRED

MAXIMUM RANGE POWER

(200-1000 Nautical Miles)

CONDITIONS:
8807 Pounds   Standard Temperature
1900 RPM   INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 3% and fuel by 4%, or CABIN HEAT ON, increase time by 2% and fuel by 3%.

Figure 5-22 (Sheet 2)

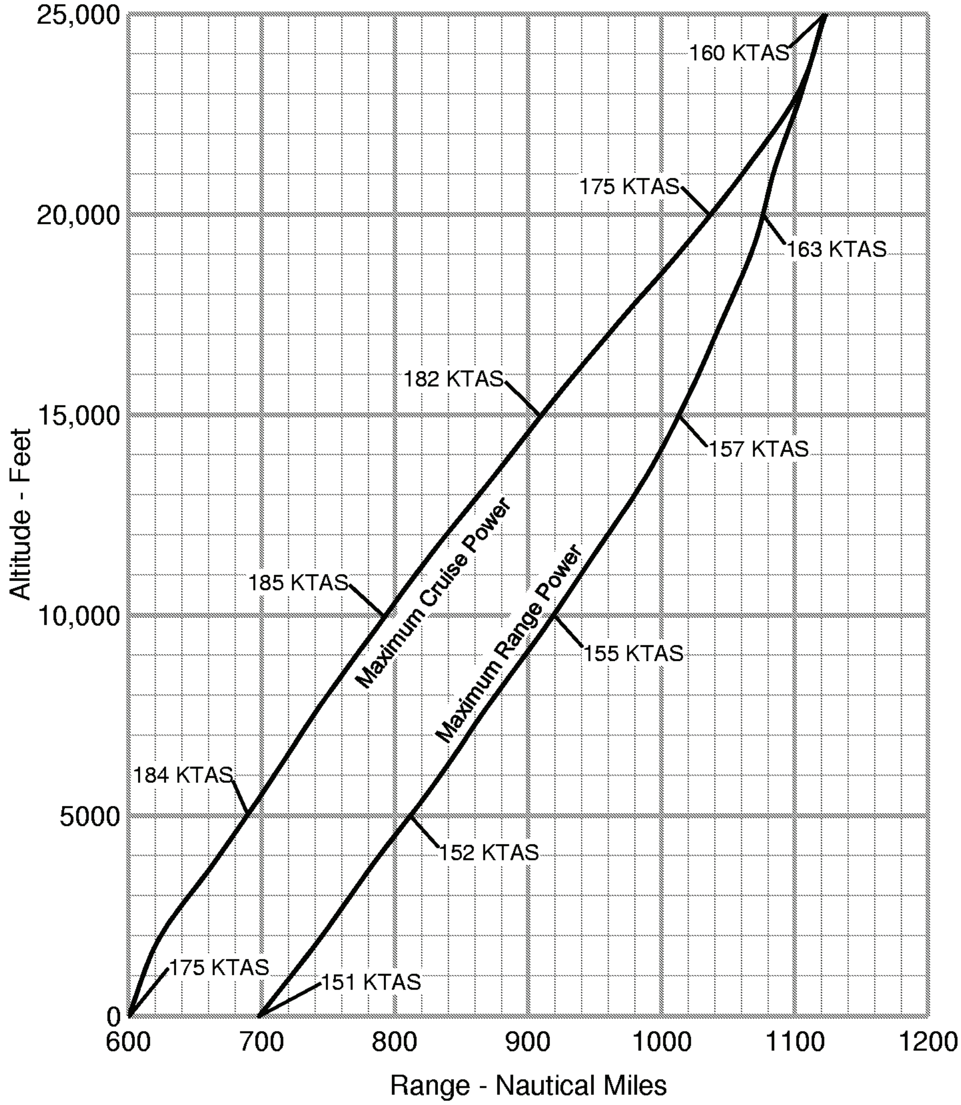
CARGO POD INSTALLED

RANGE PROFILE

45 MINUTE RESERVE

2246 POUNDS USABLE FUEL

CONDITIONS:
8807 Pounds
1900 RPM
Standard Temperature
INERTIAL SEPARATOR NORMAL
Zero Wind



NOTE

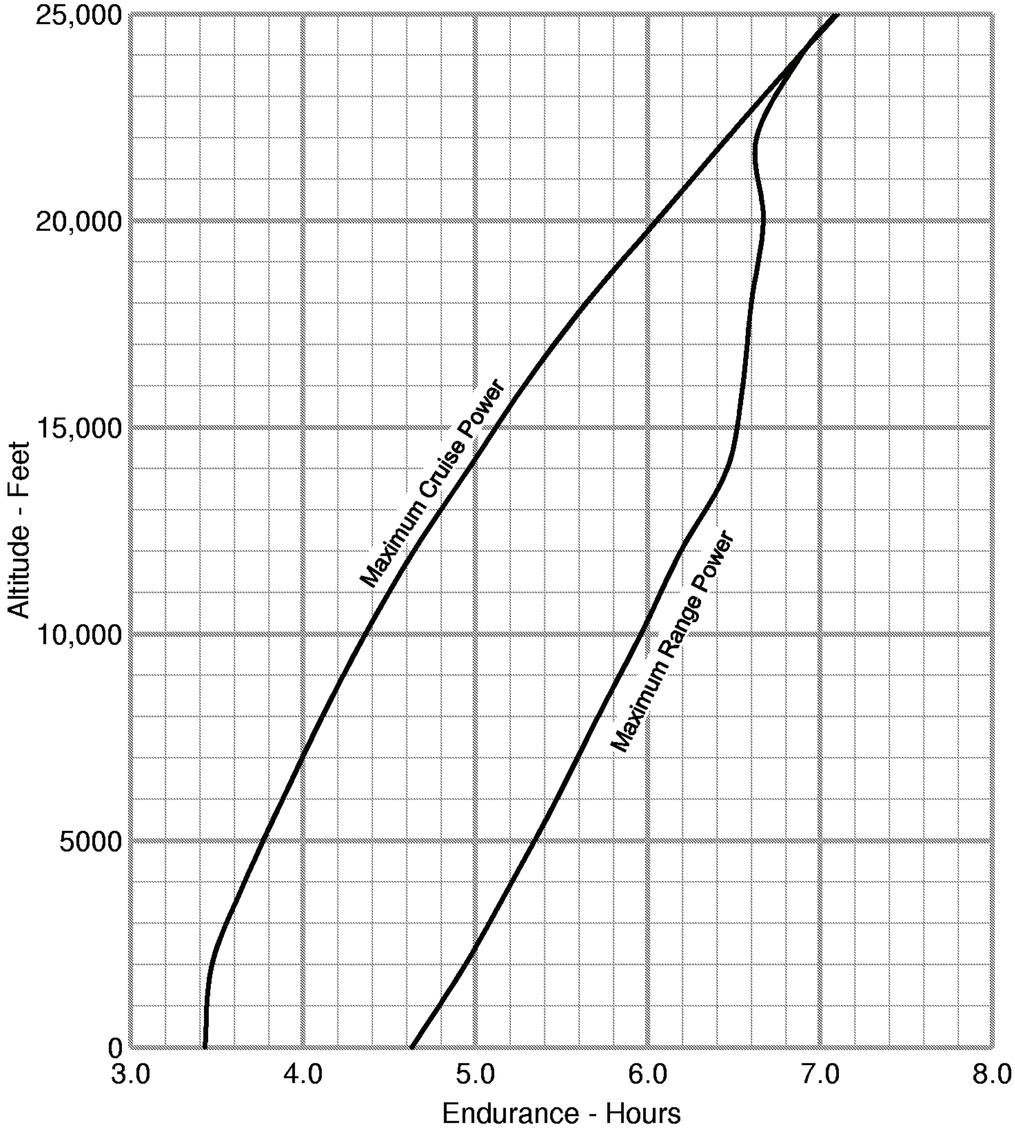
1. This chart allows for the fuel used for engine start, taxi, takeoff, climb and descent. The time during a maximum climb and the time during descent are included.

2. With INERTIAL SEPARATOR in BYPASS, decrease range by 3%, or with CABIN HEAT ON, decrease range by 3%.

Figure 5-23

CARGO POD INSTALLED
ENDURANCE PROFILE
45 MINUTE RESERVE
2246 POUNDS USABLE FUEL

CONDITIONS:
8807 Pounds | Standard Temperature
1900 RPM | INERTIAL SEPARATOR NORMAL



NOTE

1. This chart allows for the fuel used for engine start, taxi, takeoff, climb and descent. The time during a maximum climb and the time during descent are included.

2. With INERTIAL SEPARATOR in BYPASS, decrease endurance by 2%, or with CABIN HEAT ON, decrease endurance by 3%.

Figure 5-24

CARGO POD INSTALLED
TIME, FUEL, AND DISTANCE TO DESCEND

CONDITIONS:
Flaps **UP**
Zero Wind
8807 Pounds
1900 RPM
140 KIAS Above 16,000 Feet
160 KIAS Below 16,000 Feet
Power Set for 800 Feet per Minute Rate of Descent

Pressure Altitude Feet	Descent to Sea Level		
	Time Minutes	Fuel Pounds	Dist NM
24,000	30	139	91
20,000	25	120	75
16,000	20	101	59
12,000	15	77	43
8000	10	52	28
4000	5	27	14
Sea Level	0	0	0

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Figure 5-25

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CARGO POD INSTALLED SHORT FIELD LANDING DISTANCE

NOTE

The following general information is applicable to all SHORT FIELD LANDING DISTANCE Charts.

1. Use short field landing technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwind up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 40% of the "Ground Roll" figure.
4. If a landing with flaps UP is necessary, increase the approach speed by 15 KIAS and allow for 40% longer distances.
5. Use of maximum reverse thrust after touchdown reduces ground roll distance by approximately 10%.
6. Where distance values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those distances which are included but the operation slightly exceeds the temperature limit are provided for interpolation purposes only.

Figure 5-26 (Sheet 1 of 5)

CARGO POD INSTALLED
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

8500 Pounds: Speed at 50 Feet: 78 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	915	1715	950	1765	985	1810
2000	985	1810	1025	1865	1060	1915
4000	1060	1915	1100	1970	1140	2025
6000	1145	2030	1185	2090	1230	2150
8000	1235	2150	1280	2215	1325	2280
10,000	1330	2285	1380	2355	1435	2420
12,000	1440	2430	1495	2500	1550	2575

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1020	1860	1055	1910	1090	1955
2000	1100	1965	1135	2020	1175	2070
4000	1180	2080	1225	2135	1265	2190
6000	1275	2205	1315	2265	1360	2325
8000	1375	2340	1420	2405	---	---
10,000	1485	2485	1535	2555	---	---
12,000	1605	2645	---	---	---	---

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Figure 5-26 (Sheet 2)

CARGO POD INSTALLED
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

8000 Pounds: Speed at 50 Feet: 75 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	865	1640	895	1685	930	1730
2000	930	1730	965	1780	1000	1830
4000	1000	1830	1035	1885	1075	1935
6000	1075	1940	1115	1995	1160	2050
8000	1160	2055	1205	2115	1250	2175
10,000	1255	2180	1300	2245	1350	2310
12,000	1355	2320	1405	2385	1460	2455

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	960	1780	995	1825	1025	1870
2000	1035	1880	1070	1930	1105	1975
4000	1110	1990	1150	2040	1190	2095
6000	1200	2105	1240	2160	1280	2220
8000	1295	2235	1335	2295	---	---
10,000	1395	2375	1445	2435	---	---
12,000	1510	2525	---	---	---	---

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Figure 5-26 (Sheet 3)

CARGO POD INSTALLED
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

7500 Pounds: Speed at 50 Feet: 73 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	810	1560	840	1605	870	1645
2000	870	1645	905	1695	935	1740
4000	940	1740	975	1790	1010	1840
6000	1010	1845	1050	1895	1085	1950
8000	1090	1955	1130	2010	1175	2065
10,000	1175	2075	1220	2135	1265	2195
12,000	1270	2200	1320	2270	1370	2335

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	900	1690	935	1735	965	1780
2000	970	1785	1005	1835	1035	1880
4000	1045	1890	1080	1940	1115	1990
6000	1125	2005	1165	2055	1200	2110
8000	1215	2125	1255	2180	---	---
10,000	1310	2255	1355	2315	---	---
12,000	1415	2395	---	---	---	---

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Figure 5-26 (Sheet 4)

CARGO POD INSTALLED
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

7000 Pounds: Speed at 50 Feet: 71 KIAS

Pressure Altitude Feet	-10°C Grnd Roll Feet	-10°C Total Dist To Clear 50 Foot Obst	0°C Grnd Roll Feet	0°C Total Dist To Clear 50 Foot Obst	10°C Grnd Roll Feet	10°C Total Dist To Clear 50 Foot Obst
Sea Level	755	1485	785	1525	810	1565
2000	810	1565	840	1610	875	1655
4000	875	1655	905	1700	940	1745
6000	940	1750	975	1800	1015	1850
8000	1015	1855	1055	1905	1090	1960
10,000	1095	1965	1140	2025	1180	2080
12,000	1185	2090	1230	2150	1275	2210

Pressure Altitude Feet	20°C Grnd Roll Feet	20°C Total Dist To Clear 50 Foot Obst	30°C Grnd Roll Feet	30°C Total Dist To Clear 50 Foot Obst	40°C Grnd Roll Feet	40°C Total Dist To Clear 50 Foot Obst
Sea Level	840	1605	870	1645	900	1690
2000	905	1695	935	1740	965	1785
4000	975	1795	1005	1840	1040	1885
6000	1050	1900	1085	1950	1120	2000
8000	1130	2015	1170	2065	---	---
10,000	1220	2135	1265	2195	---	---
12,000	1320	2270	---	---	---	---

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Figure 5-26 (Sheet 5)

WITHOUT CARGO POD
SHORT FIELD TAKEOFF DISTANCE

NOTE

The following general information is applicable to all SHORT FIELD TAKEOFF DISTANCE Charts.

1. Use short field takeoff technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwind up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 15% of the "Ground Roll" figure.
4. With takeoff power set below the torque limit (2397 foot-pounds), increase distances (both ground roll and total distance) by 3% for INERTIAL SEPARATOR in BYPASS and increase ground roll by 5% and total distance by 10% for CABIN HEAT ON.
5. Where distance values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those distances which are included but the operation slightly exceeds the temperature limit are provided for interpolation purposes only.
6. For operation above 40°C and below the operating temperature limits, increase distances at 40°C by 20%.

Figure 5-27 (Sheet 1 of 5)

NOTE

Figures 5-27 thru 5-43 apply to airplanes configured WITHOUT a cargo pod.

WITHOUT CARGO POD
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

8807 Pounds:
Lift Off: 74 KIAS
Speed at 50 Feet: 86 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1185	1855	1270	1970	1355	2095
2000	1350	2095	1450	2230	1545	2375
4000	1545	2375	1660	2530	1775	2700
6000	1775	2705	1910	2895	2120	3245
8000	2050	3110	2305	3540	2605	4060
10,000	2500	3850	2850	4455	3230	5155
12,000	3105	4885	3545	5690	4085	6710

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1445	2225	1535	2360	1730	2675
2000	1650	2525	1835	2820	2105	3285
4000	1965	3010	2245	3495	2585	4115
6000	2410	3745	2765	4395	3215	5260
8000	2975	4730	3450	5640	4045	6870
10,000	3720	6095	4370	7410	---	---
12,000	4790	8140	---	---	---	---

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Figure 5-27 (Sheet 2)

WITHOUT CARGO POD
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**

Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind

Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 71 KIAS

8300 Pounds: Speed at 50 Feet: 83 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1020	1595	1090	1695	1165	1800
2000	1165	1800	1245	1915	1330	2035
4000	1330	2035	1425	2175	1525	2315
6000	1530	2320	1640	2480	1820	2765
8000	1765	2655	1980	3005	2230	3430
10,000	2145	3260	2435	3755	2750	4310
12,000	2650	4105	3015	4745	3440	5540

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1245	1910	1325	2025	1485	2290
2000	1420	2165	1575	2415	1800	2795
4000	1690	2570	1920	2960	2205	3455
6000	2060	3170	2355	3690	2725	4370
8000	2535	3965	2925	4680	3405	5625
10,000	3155	5050	3665	6055	---	---
12,000	4000	6635	---	---	---	---

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Figure 5-27 (Sheet 3)

WITHOUT CARGO POD
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**

Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind

Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 68 KIAS

7800 Pounds: Speed at 50 Feet: 80 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	875	1365	930	1450	995	1540
2000	995	1535	1065	1635	1135	1740
4000	1135	1740	1220	1855	1305	1975
6000	1305	1975	1400	2110	1550	2350
8000	1505	2260	1685	2545	1895	2880
10,000	1825	2750	2065	3150	2325	3595
12,000	2250	3435	2545	3945	2895	4565

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1060	1630	1130	1730	1265	1945
2000	1215	1845	1345	2055	1530	2365
4000	1440	2185	1630	2505	1865	2900
6000	1750	2675	1995	3085	2295	3620
8000	2145	3310	2460	3875	2850	4600
10,000	2655	4175	3070	4950	---	---
12,000	3340	5405	---	---	---	---

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Figure 5-27 (Sheet 4)

WITHOUT CARGO POD
SHORT FIELD TAKEOFF DISTANCE

CONDITIONS:
Flaps **TO/APR**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 65 KIAS
7300 Pounds: Speed at 50 Feet: 76 KIAS

Pressure Altitude Feet	-10°C Grnd Roll Feet	-10°C Total Dist To Clear 50 Foot Obst	0°C Grnd Roll Feet	0°C Total Dist To Clear 50 Foot Obst	10°C Grnd Roll Feet	10°C Total Dist To Clear 50 Foot Obst
Sea Level	745	1160	795	1230	845	1305
2000	845	1305	900	1385	965	1475
4000	960	1470	1030	1570	1105	1670
6000	1105	1670	1185	1785	1310	1980
8000	1275	1910	1425	2145	1595	2415
10,000	1545	2315	1735	2630	1950	2980
12,000	1890	2855	2135	3265	2415	3745

Pressure Altitude Feet	20°C Grnd Roll Feet	20°C Total Dist To Clear 50 Foot Obst	30°C Grnd Roll Feet	30°C Total Dist To Clear 50 Foot Obst	40°C Grnd Roll Feet	40°C Total Dist To Clear 50 Foot Obst
Sea Level	900	1385	955	1465	1070	1645
2000	1025	1565	1135	1735	1290	1985
4000	1215	1845	1375	2105	1565	2425
6000	1475	2245	1675	2575	1920	2990
8000	1800	2755	2055	3190	2370	3750
10,000	2220	3435	2550	4030	---	---
12,000	2770	4390	---	---	---	---

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Figure 5-27 (Sheet 5)

WITHOUT CARGO POD
FLAPS UP TAKEOFF DISTANCE

NOTE

The following general information is applicable to all FLAPS UP TAKEOFF DISTANCE Charts.

1. Use Type II, Type III, or Type IV anti-ice fluid takeoff technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 15% of the "Ground Roll" figure.
4. With takeoff power set below the torque limit (2397 foot-pounds), increase distances (both ground roll and total distance) by 3% for INERTIAL SEPARATOR in BYPASS and increase ground roll by 5% and total distance by 10% for CABIN HEAT ON.

Figure 5-28 (Sheet 1 of 3)

WITHOUT CARGO POD
FLAPS UP TAKEOFF DISTANCE

CONDITIONS:
Flaps **UP**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 83 KIAS
8807 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1520	2410	1625	2575	1735	2750	1845	2925
2000	1720	2730	1845	2925	1970	3125	2100	3330
4000	1960	3110	2100	3330	2245	3565	2395	3805
6000	2235	3550	2400	3815	2580	4095	2880	4605
8000	2575	4085	2780	4400	3140	5035	3580	5840
10,000	3000	4740	3410	5480	3925	6455	4495	7610
12,000	3755	6090	4290	7125	4950	8480	5750	10255

Lift Off: 83 KIAS
8300 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1420	2245	1520	2405	1620	2560	1725	2730
2000	1610	2545	1725	2725	1840	2910	1960	3105
4000	1830	2900	1960	3105	2095	3320	2240	3545
6000	2090	3310	2240	3555	2410	3810	2685	4285
8000	2405	3805	2595	4095	2930	4680	3335	5420
10,000	2800	4410	3185	5090	3655	5985	4185	7035
12,000	3500	5650	3995	6595	4605	7830	5340	9430

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Figure 5-28 (Sheet 2)

WITHOUT CARGO POD
FLAPS UP TAKEOFF DISTANCE

CONDITIONS:
Flaps **UP**
1900 RPM
CABIN HEAT **OFF**
INERTIAL SEPARATOR **NORMAL**
Torque Set Per Figure 5-8
Paved, Level, Dry Runway
Zero Wind
Refer to Sheet 1 for appropriate notes applicable to this chart.

Lift Off: 83 KIAS
7800 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1325	2090	1420	2235	1510	2385	1610	2540
2000	1500	2370	1610	2535	1715	2705	1830	2885
4000	1710	2695	1830	2885	1955	3085	2085	3295
6000	1945	3075	2090	3300	2245	3540	2500	3975
8000	2240	3535	2415	3800	2730	4340	3100	5015
10,000	2605	4095	2960	4715	3400	5535	3885	6495
12,000	3255	5230	3710	6095	4270	7215	4945	8660

Lift Off: 83 KIAS
7300 Pounds: Speed at 50 Feet: 104 KIAS

Pressure Altitude Feet	-20°C		-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1230	1940	1320	2070	1405	2210	1495	2350
2000	1395	2195	1495	2350	1595	2505	1700	2670
4000	1585	2495	1700	2670	1815	2855	1935	3050
6000	1810	2845	1940	3055	2085	3275	2320	3675
8000	2080	3270	2240	3515	2530	4010	2875	4625
10,000	2415	3785	2745	4355	3145	5100	3590	5970
12,000	3015	4825	3435	5610	3945	6630	4560	7930

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Figure 5-28 (Sheet 3)

WITHOUT CARGO POD
RATE OF CLIMB - TAKEOFF FLAP SETTING

FLAPS TO/APR

CONDITIONS:
Takeoff Power
1900 RPM

INERTIAL SEPARATOR - **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	100	1270	1250	1230	1210	1085
	2000	99	1250	1230	1210	1185	955
	4000	99	1235	1210	1180	1090	820
	6000	99	1215	1180	1155	955	695
	8000	97	1185	1150	1040	820	---
	10,000	95	1150	1120	905	690	---
	12,000	93	1120	970	770	555	---
8300	Sea Level	97	1375	1355	1335	1315	1190
	2000	96	1355	1335	1315	1295	1055
	4000	96	1335	1315	1290	1200	920
	6000	96	1315	1290	1260	1055	790
	8000	94	1290	1260	1145	920	---
	10,000	92	1260	1220	1000	785	---
	12,000	90	1220	1070	865	650	---
7800	Sea Level	93	1490	1465	1445	1430	1300
	2000	93	1470	1445	1425	1410	1165
	4000	93	1450	1425	1405	1315	1025
	6000	92	1430	1405	1380	1165	890
	8000	91	1400	1375	1255	1020	---
	10,000	89	1370	1330	1105	885	---
	12,000	87	1335	1175	965	745	---
7300	Sea Level	90	1610	1595	1570	1550	1420
	2000	90	1595	1570	1550	1530	1280
	4000	89	1575	1550	1530	1435	1140
	6000	89	1550	1525	1505	1285	1000
	8000	88	1520	1495	1375	1135	---
	10,000	86	1485	1450	1225	990	---
	12,000	84	1450	1290	1075	845	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 80 FPM for INERTIAL SEPARATOR set in BYPASS and 80 FPM for CABIN HEAT ON.
3. Where climb gradient values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those climb gradients which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-29

WITHOUT CARGO POD
CLIMB GRADIENT - TAKEOFF FLAP SETTING
FLAPS TO/APR

CONDITIONS:
Takeoff Power
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb Gradient - Feet/Nautical Mile (FT/NM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	76	950	895	850	805	705
	2000	77	905	850	805	760	605
	4000	77	855	805	760	675	510
	6000	78	810	760	715	575	420
	8000	78	765	715	620	485	---
	10,000	78	720	665	525	400	---
	12,000	78	675	560	440	315	---
8300	Sea Level	73	1055	995	940	895	785
	2000	74	1005	945	895	845	685
	4000	74	950	895	845	760	580
	6000	75	900	850	800	650	485
	8000	75	855	800	700	550	---
	10,000	75	805	740	595	460	---
	12,000	75	755	630	500	370	---
7800	Sea Level	70	1175	1105	1045	995	875
	2000	71	1115	1050	995	940	765
	4000	71	1060	995	940	850	660
	6000	72	1005	945	890	735	560
	8000	72	950	895	785	630	---
	10,000	72	900	830	675	530	---
	12,000	72	845	715	575	435	---
7300	Sea Level	67	1305	1235	1170	1110	980
	2000	67	1245	1170	1110	1050	865
	4000	68	1180	1115	1050	950	750
	6000	68	1120	1055	995	830	645
	8000	68	1060	1000	885	715	---
	10,000	68	1005	935	765	610	---
	12,000	68	950	805	655	505	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 35 FT/NM for INERTIAL SEPARATOR set in BYPASS and 45 FT/NM for CABIN HEAT ON.
3. Where climb gradient values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those climb gradients which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-30

WITHOUT CARGO POD
MAXIMUM RATE OF CLIMB
FLAPS UP

CONDITIONS:
1900 RPM
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	108	1390	1370	1350	1325	1020
	4000	105	1350	1320	1300	1055	760
	8000	102	1295	1270	1050	800	505
	12,000	99	1170	995	775	535	255
	16,000	96	875	705	505	275	---
	20,000	92	595	435	255	---	---
	24,000	87	330	185	---	---	---
8300	Sea Level	104	1495	1480	1460	1435	1120
	4000	102	1455	1435	1410	1155	860
	8000	99	1400	1375	1155	895	595
	12,000	96	1270	1090	870	625	335
	16,000	92	965	795	595	360	---
	20,000	88	680	520	335	---	---
	24,000	83	415	265	---	---	---
7800	Sea Level	101	1610	1595	1580	1560	1230
	4000	98	1570	1555	1530	1270	960
	8000	96	1520	1490	1260	995	690
	12,000	92	1380	1195	970	720	420
	16,000	88	1065	895	690	445	160
	20,000	84	775	610	420	190	---
	24,000	79	500	350	165	---	---
7300	Sea Level	98	1740	1725	1710	1690	1355
	4000	95	1695	1675	1660	1390	1075
	8000	92	1645	1620	1380	1110	790
	12,000	88	1500	1310	1080	820	515
	16,000	84	1175	1000	790	540	245
	20,000	79	875	710	515	275	---
	24,000	74	595	440	250	---	---

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. With climb power set below the torque limit, decrese rate of climb by 90 FPM for INERTIAL SEPARATOR set in BYPASS and 85 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-31

WITHOUT CARGO POD
CLIMB GRADIENT - TAKEOFF
FLAPS UP

CONDITIONS:
Takeoff Power
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb Gradient - Feet/Nautical Mile (FT/NM)				
			-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	78	970	920	875	825	630
	2000	78	925	875	830	720	540
	4000	78	880	830	785	620	450
	6000	79	835	785	695	530	370
	8000	79	790	740	595	450	---
	10,000	80	745	645	505	365	---
	12,000	80	665	545	415	285	---
8300	Sea Level	73	1070	1015	965	915	710
	2000	74	1025	970	920	805	610
	4000	74	975	925	870	700	515
	6000	75	930	875	775	600	430
	8000	75	880	825	670	510	---
	10,000	75	830	720	575	425	---
	12,000	76	740	615	480	340	---
7800	Sea Level	68	1185	1125	1070	1010	795
	2000	69	1130	1070	1020	895	690
	4000	69	1080	1020	970	785	590
	6000	70	1025	970	865	680	495
	8000	70	980	920	750	585	---
	10,000	70	925	805	650	490	---
	12,000	71	825	690	550	400	---
7300	Sea Level	63	1320	1250	1185	1120	895
	2000	64	1260	1190	1130	1000	785
	4000	64	1200	1135	1080	885	675
	6000	64	1140	1080	970	770	570
	8000	65	1085	1025	845	665	---
	10,000	65	1035	900	735	565	---
	12,000	66	925	780	625	470	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 50 FT/NM for INERTIAL SEPARATOR set in BYPASS and 65 FT/NM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-32

WITHOUT CARGO POD
CRUISE CLIMB

FLAPS UP - 115 KIAS

CONDITIONS:
1900 RPM
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Rate of Climb - Feet Per Minute (FPM)				
		-40°C	-20°C	0°C	20°C	40°C
8807	Sea Level	1395	1370	1350	1330	1005
	2000	1375	1350	1330	1185	865
	4000	1355	1330	1300	1040	720
	6000	1330	1300	1195	895	575
	8000	1305	1275	1040	755	---
	10,000	1275	1145	885	610	---
	12,000	1190	980	725	455	---
8300	Sea Level	1510	1485	1465	1445	1100
	2000	1490	1465	1445	1295	955
	4000	1470	1445	1415	1140	800
	6000	1450	1420	1310	990	650
	8000	1425	1390	1140	845	---
	10,000	1395	1255	980	690	---
	12,000	1305	1080	815	530	---
7800	Sea Level	1640	1615	1595	1575	1210
	2000	1620	1595	1575	1415	1055
	4000	1600	1575	1545	1250	895
	6000	1575	1545	1430	1095	735
	8000	1550	1520	1255	940	---
	10,000	1520	1375	1085	780	---
	12,000	1425	1195	910	605	---
7300	Sea Level	1785	1760	1740	1720	1325
	2000	1765	1740	1720	1545	1165
	4000	1745	1720	1685	1375	995
	6000	1720	1690	1565	1210	825
	8000	1695	1660	1380	1045	---
	10,000	1660	1510	1200	875	---
	12,000	1565	1315	1015	695	---

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. With climb power set below the torque limit, decrese rate of climb by 125 FPM for INERTIAL SEPARATOR set in BYPASS and 90 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-33

WITHOUT CARGO POD
RATE OF CLIMB
BALKED LANDING - FLAPS LAND

CONDITIONS:
Takeoff Power
1900 RPM

INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Rate of Climb - Feet Per Minute (FPM)				
			-40°C	-20°C	0°C	20°C	40°C
8500	Sea Level	83	1145	1125	1105	1080	965
	2000	82	1125	1100	1080	1050	845
	4000	81	1095	1075	1045	960	725
	6000	80	1070	1040	1010	835	610
	8000	79	1040	1005	900	710	---
	10,000	78	1005	960	775	595	---
	12,000	77	965	825	655	470	---
8000	Sea Level	82	1255	1230	1210	1190	1070
	2000	81	1230	1205	1185	1155	945
	4000	80	1205	1180	1150	1060	820
	6000	79	1175	1150	1115	930	700
	8000	78	1150	1115	1005	805	---
	10,000	77	1110	1065	875	685	---
	12,000	76	1070	925	750	560	---
7500	Sea Level	81	1370	1350	1330	1310	1185
	2000	80	1345	1325	1300	1275	1050
	4000	79	1320	1295	1270	1175	925
	6000	78	1295	1265	1235	1040	795
	8000	77	1265	1230	1115	910	---
	10,000	75	1230	1180	980	780	---
	12,000	74	1190	1035	850	650	---
7000	Sea Level	80	1505	1480	1460	1440	1310
	2000	79	1480	1455	1435	1410	1175
	4000	78	1455	1430	1405	1305	1040
	6000	77	1425	1400	1365	1165	905
	8000	75	1395	1365	1245	1025	---
	10,000	74	1360	1310	1100	895	---
	12,000	73	1320	1160	965	755	---

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NOTE

1. **Do not exceed torque limit for takeoff per Engine Torque for Takeoff Chart, Figure 5-8. When ITT exceeds 825°C, this power setting is time limited to 5 minutes.**
2. With climb power set below the torque limit, decrese rate of climb by 65 FPM for INERTIAL SEPARATOR set in BYPASS and 70 FPM for CABIN HEAT ON.
3. Where rate of climb values have been replaced by dashes, an appreciable rate of climb for the weight shown cannot be expected or operating temperature limits of the airplane would be greatly exceeded. Those rates of climb which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-34

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WITHOUT CARGO POD
TIME, FUEL, AND DISTANCE TO CLIMB
MAXIMUM RATE OF CLIMB

CONDITIONS:
Flaps **UP**
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb Speed KIAS	Climb From Sea Level								
			20°C Below Standard			Standard Temperature			20°C Above Standard		
			Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM
8807	Sea Level	108	0	0	0	0	0	0	0	0	0
	4000	105	3	27	5	3	28	6	4	32	8
	8000	102	6	55	11	7	58	12	9	67	16
	12,000	99	10	84	17	11	90	21	14	104	28
	16,000	96	14	117	26	16	125	31	22	149	43
	20,000	92	19	156	37	23	168	46	32	207	67
	24,000	88	27	205	53	35	227	70	53	306	113
8300	Sea Level	104	0	0	0	0	0	0	0	0	0
	4000	102	3	25	5	3	26	5	4	30	7
	8000	99	6	51	10	6	53	11	8	60	14
	12,000	96	9	78	16	10	82	18	13	93	24
	16,000	92	13	108	23	15	114	27	19	132	37
	20,000	88	18	142	32	21	150	40	28	179	55
	24,000	83	24	184	46	30	199	59	43	248	87
7800	Sea Level	101	0	0	0	0	0	0	0	0	0
	4000	99	3	23	4	3	24	5	3	27	6
	8000	96	5	47	9	6	49	10	7	55	13
	12,000	93	8	72	14	9	75	16	11	84	21
	16,000	89	12	99	20	13	103	24	17	117	32
	20,000	84	16	129	29	19	135	35	24	157	47
	24,000	79	22	165	40	26	175	50	35	210	70
7300	Sea Level	98	0	0	0	0	0	0	0	0	0
	4000	95	2	22	4	3	22	4	3	24	5
	8000	92	5	43	8	5	45	9	6	50	11
	12,000	88	8	66	12	8	69	14	10	76	18
	16,000	84	11	91	18	12	94	21	15	105	28
	20,000	79	15	118	25	17	122	30	21	138	40
	24,000	74	20	150	35	23	156	43	30	180	58

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. Add 35 pounds of fuel for engine start, taxi, and takeoff allowance.
3. With INERTIAL SEPARATOR set in BYPASS, increase time, fuel, and distance numbers by 9% for each 2000 feet of climb and for CABIN HEAT ON, increase time, fuel, and distance numbers by 7% for each 2000 feet of climb.

Figure 5-35 (Sheet 1 of 2)

WITHOUT CARGO POD
TIME, FUEL, AND DISTANCE TO CLIMB
CRUISE CLIMB - 115 KIAS

CONDITIONS:
Flaps **UP**
1900 RPM
Zero Wind
INERTIAL SEPARATOR **NORMAL**

Weight Pounds	Pressure Altitude Feet	Climb From Sea Level								
		20°C Below Standard			Standard Temperature			20°C Above Standard		
		Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM	Time min	Fuel Lbs	Dist NM
8807	Sea Level	0	0	0	0	0	0	0	0	0
	2000	2	14	3	2	14	3	2	16	4
	4000	3	27	6	3	28	6	4	33	8
	6000	5	41	9	5	43	10	6	51	13
	8000	6	54	12	7	58	14	9	69	19
	10,000	8	69	15	9	74	18	12	88	25
	12,000	10	84	19	11	91	23	15	110	33
8300	Sea Level	0	0	0	0	0	0	0	0	0
	2000	1	13	3	1	13	3	2	15	4
	4000	3	25	5	3	26	6	4	30	8
	6000	4	38	8	4	39	9	6	46	12
	8000	6	50	11	6	53	12	8	62	17
	10,000	7	63	14	8	68	16	11	80	23
	12,000	9	77	18	10	83	21	13	99	29
7800	Sea Level	0	0	0	0	0	0	0	0	0
	2000	1	12	2	1	12	3	2	14	3
	4000	3	23	5	3	24	5	3	28	7
	6000	4	34	8	4	36	8	5	42	11
	8000	5	46	10	6	49	11	7	57	15
	10,000	7	58	13	7	62	15	10	72	20
	12,000	8	70	16	9	75	19	12	89	26
7300	Sea Level	0	0	0	0	0	0	0	0	0
	2000	1	11	2	1	11	2	2	12	3
	4000	2	21	5	2	22	5	3	25	6
	6000	4	32	7	4	33	7	5	38	10
	8000	5	42	9	5	45	10	7	51	14
	10,000	6	53	12	7	56	14	9	65	18
	12,000	7	64	15	8	69	18	11	80	24

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NOTE

1. **Torque set at 2397 foot-pounds or lesser value must not exceed maximum climb ITT of 825°C or Ng of 103.7%.**
2. Add 35 pounds of fuel for engine start, taxi, and takeoff allowance.
3. With INERTIAL SEPARATOR set in BYPASS, increase time, fuel, and distance numbers by 5% for each 1000 feet of climb and for CABIN HEAT ON, increase time, fuel, and distance numbers by 4% for each 2000 feet of climb.

Figure 5-35 (Sheet 2)

WITHOUT CARGO POD
CRUISE PERFORMANCE

NOTE

The following general information is applicable to all CRUISE PERFORMANCE Charts.

1. The highest torque shown for each temperature and RPM corresponds to maximum allowable cruise power. Do not exceed this torque, 805°C ITT, or 103.7% Ng, whichever occurs first.

2. The lowest torque shown for each temperature and RPM corresponds to the recommended torque setting for best range in zero wind conditions.

3. With the INERTIAL SEPARATOR in BYPASS and power set below the torque limit (2397 foot-pounds), decrease the maximum cruise torque by 185 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 55 pounds per hour (PPH) higher.

4. With the CABIN HEAT ON and power set below the torque limit (2397 foot-pounds), decrease maximum cruise torque by 95 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 13 PPH higher.

Figure 5-36 (Sheet 1 of 12)

WITHOUT CARGO POD
CRUISE PERFORMANCE
CRUISE PRESSURE ALTITUDE 2000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
46	1422	402	163	1563	407	165	1686	411	164
	1415	401	163	1475	393	161	1520	385	156
40	1590	427	171	1743	431	172	1862	436	170
	1400	396	161	1455	387	159	1520	381	156
30	1854	464	181	2020	468	181	2118	471	178
	1700	439	174	1900	450	177	2000	451	174
	1500	407	165	1700	419	169	1800	419	166
	1385	389	159	1445	381	157	1510	374	154
20	1954	476	183	2123	480	183	2321	502	183
	1800	450	177	2000	460	178	2200	479	179
	1600	418	168	1800	429	171	2000	443	172
	1405	387	158	1600	400	163	1800	412	165
				1440	376	155	1525	370	153
10	1919	465	180	2083	467	180	2284	485	180
	1800	445	175	1900	439	173	2100	451	174
	1600	414	166	1700	409	165	1900	419	167
	1395	381	156	1435	370	153	1500	362	150
0	1887	454	177	2044	456	177	2243	468	177
	1700	424	169	1900	434	171	2100	443	172
	1500	393	159	1700	404	163	1900	414	165
	1415	380	156	1500	375	155	1700	385	157
				1415	362	151	1485	355	148
-10	1855	444	173	2006	445	173	2201	453	173
	1700	419	167	1900	428	169	2000	423	167
	1500	389	158	1700	400	162	1800	394	159
	1435	379	155	1395	355	148	1445	345	145
-20	1826	434	170	1969	434	170	2157	440	170
	1700	414	165	1800	409	164	2000	416	165
	1500	384	156	1600	380	156	1800	389	158
	1440	375	153	1390	350	146	1460	343	144
-30	1794	425	167	1931	423	167	2114	427	167
	1600	395	158	1800	404	161	2000	410	163
	1475	376	152	1600	375	154	1800	383	156
				1400	347	145	1445	336	142
-40	1767	416	163	1894	413	163	2069	415	163
	1600	390	156	1700	385	156	1900	392	157
	1515	378	152	1500	357	147	1700	365	150
				1420	345	144	1430	329	139
-50	1737	406	160	1857	402	160	2023	403	160
	1600	385	154	1700	380	153	1900	386	155
	1535	376	151	1500	352	145	1700	360	148
				1445	344	143	1395	320	136
-54	1725	403	158	1843	398	158	2005	399	158
	1600	383	153	1700	378	153	1800	371	151
	1545	375	150	1435	341	141	1400	320	135

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Figure 5-36 (Sheet 2)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 4000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
42	1418	389	166	1557	393	168	1669	397	166
	1360	379	163	1410	371	160	1445	362	155
40	1473	397	169	1616	401	170	1726	406	168
	1345	376	162	1405	369	159	1440	360	155
30	1735	434	180	1889	438	180	1974	441	177
	1600	413	174	1700	409	172	1800	411	170
	1400	381	163	1500	379	163	1600	379	161
	1360	374	161	1405	365	158	1440	355	153
20	1928	463	186	2079	465	185	2153	467	181
	1800	440	181	1900	435	179	2000	438	176
	1600	408	172	1700	404	171	1800	404	168
	1400	376	162	1500	374	161	1600	373	160
	1370	371	160	1400	359	156	1430	348	152
10	1986	468	186	2158	472	186	2344	499	186
	1800	436	179	2000	446	181	2200	468	181
	1600	403	170	1600	385	164	1800	397	167
	1370	367	159	1390	354	154	1435	344	150
0	1948	456	183	2115	460	183	2321	482	183
	1800	431	177	2000	441	179	2200	458	179
	1600	399	168	1600	380	163	1800	390	165
	1375	363	157	1380	347	152	1430	338	149
-10	1915	446	180	2076	448	180	2278	463	180
	1800	427	175	1900	420	173	2100	432	174
	1600	394	166	1500	361	156	1700	371	159
	1380	360	155	1360	340	149	1415	332	147
-20	1881	436	176	2036	437	176	2233	447	176
	1700	405	169	1900	415	171	2100	425	172
	1500	374	160	1700	385	163	1900	394	165
	1385	357	154	1500	356	155	1700	366	157
				1370	337	148	1410	326	145
-30	1847	425	173	1995	425	173	2188	432	173
	1700	401	166	1800	395	165	2000	403	166
	1500	370	157	1600	366	157	1600	347	152
	1400	355	153	1375	334	147	1395	321	142
-40	1816	416	169	1954	414	169	2141	418	169
	1700	397	164	1800	390	163	2000	398	164
	1500	365	155	1600	361	155	1800	369	158
	1430	355	152	1395	332	146	1405	317	141
-50	1783	406	165	1915	404	165	2093	406	165
	1600	376	158	1600	357	153	1700	351	152
	1465	356	151	1385	327	143	1375	309	138
-54	1772	402	164	1899	399	164	2075	402	164
	1600	375	157	1700	369	156	1700	350	151
	1475	356	151	1385	325	143	1365	306	137

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Figure 5-36 (Sheet 3)

WITHOUT CARGO POD CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 6000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
38	1407	376	169	1542	380	170	1642	383	168
	1365	368	167	1395	357	162	1400	345	155
30	1605	404	178	1746	408	178	1826	410	175
	1500	387	173	1600	385	172	1700	388	169
	1340	361	164	1405	355	161	1415	343	155
20	1784	431	184	1923	433	184	1990	434	180
	1600	399	176	1800	412	179	1800	397	172
	1400	367	166	1600	380	170	1600	365	163
	1330	356	162	1395	349	159	1400	335	153
10	1980	460	190	2123	462	189	2167	463	184
	1800	429	183	2000	440	185	2000	429	178
	1600	394	174	1600	376	168	1600	359	161
	1330	351	160	1385	344	158	1425	333	153
0	2017	462	190	2193	468	190	2352	495	188
	1900	441	185	2000	435	183	2200	460	183
	1700	407	177	1800	402	175	2000	420	176
	1500	374	167	1600	371	167	1600	354	160
	1330	347	158	1370	337	155	1415	328	151
-10	1976	450	186	2150	454	186	2355	484	186
	1800	419	179	2000	430	181	2200	449	181
	1600	386	170	1800	398	173	2000	411	174
	1400	354	160	1600	367	165	1800	378	167
	1335	344	157	1375	333	154	1415	323	150
-20	1939	439	183	2107	442	183	2311	461	183
	1800	415	177	2000	425	179	2200	440	179
	1600	382	168	1800	393	171	2000	405	172
	1400	350	158	1600	362	163	1800	373	165
	1340	341	155	1340	324	150	1400	317	147
-30	1907	429	179	2065	430	179	2264	443	179
	1800	411	175	1900	404	173	2100	415	174
	1600	377	166	1700	373	165	1700	353	159
	1340	337	153	1350	322	149	1395	312	145
-40	1873	418	175	2021	419	175	2218	427	175
	1700	390	168	1900	400	171	2100	408	172
	1500	357	159	1700	369	163	1700	348	157
	1345	334	151	1350	317	147	1380	306	143
-50	1840	409	172	1977	407	172	2169	412	172
	1700	386	166	1800	380	165	2000	387	166
	1500	353	157	1600	349	157	1600	331	151
	1390	336	152	1340	312	144	1380	302	142
-54	1826	404	170	1960	403	170	2148	407	170
	1700	384	165	1800	378	164	2000	385	165
	1500	352	156	1600	348	156	1600	329	150
	1400	336	151	1340	311	144	1380	300	141

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Figure 5-36 (Sheet 4)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 8000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
34	1373	360	170	1500	364	171	1590	367	168
	1345	356	168	1385	346	164	1415	338	158
30	1467	374	175	1600	377	175	1676	379	172
	1345	354	168	1395	346	164	1425	337	158
20	1647	400	182	1776	403	182	1836	404	177
	1500	375	175	1600	372	174	1700	377	171
	1320	346	165	1385	340	162	1410	329	156
10	1820	426	188	1952	428	187	1993	429	182
	1700	405	183	1800	401	181	1800	389	174
	1500	370	173	1600	368	172	1600	353	165
	1315	341	163	1370	333	160	1435	327	156
0	2020	457	194	2152	459	193	2165	459	187
	1900	436	190	2000	430	187	2000	421	180
	1700	401	181	1800	396	179	1800	382	172
	1500	366	171	1600	364	170	1600	348	163
	1310	336	161	1370	329	158	1425	321	155
-10	2049	457	193	2229	465	193	2327	490	190
	1900	431	187	2100	442	189	2200	457	186
	1700	397	179	1900	408	181	2000	411	178
	1500	363	170	1700	376	173	1600	344	162
	1305	331	159	1350	322	156	1395	313	152
-20	2006	445	190	2183	451	190	2381	491	190
	1900	427	185	2000	420	183	2200	445	184
	1700	392	177	1800	387	175	2000	404	176
	1500	359	168	1600	356	167	1800	369	169
	1310	329	157	1340	317	154	1400	309	150
-30	1969	434	186	2138	438	186	2340	465	186
	1800	405	179	2000	415	181	2200	434	181
	1600	371	170	1800	383	173	2000	397	174
	1400	338	160	1600	352	165	1600	333	158
	1305	324	155	1320	310	151	1390	304	148
-40	1935	424	182	2093	425	182	2292	443	182
	1800	401	176	1900	395	175	2100	406	176
	1600	367	168	1700	363	167	1900	373	169
	1400	335	158	1500	332	158	1700	343	161
	1305	320	153	1315	305	149	1370	297	146
-50	1901	413	178	2046	413	178	2245	423	178
	1700	380	170	1900	390	173	2100	398	173
	1500	347	161	1700	359	165	1700	339	159
	1315	317	151	1310	301	146	1365	292	144
-54	1889	410	176	2028	408	176	2226	416	176
	1700	378	169	1900	388	172	2100	396	172
	1500	346	160	1700	357	164	1700	337	158
	1320	317	151	1320	301	146	1355	290	143

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Figure 5-36 (Sheet 5)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 10,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
30	1337	345	171	1460	348	171	1535	351	168
	1325	343	170	1390	337	167	1415	330	161
20	1519	372	180	1636	374	179	1691	375	175
	1400	351	173	1500	350	172	1500	338	165
	1315	337	168	1370	330	165	1405	322	159
10	1667	394	186	1789	396	185	1829	397	179
	1500	365	177	1600	363	176	1700	370	173
	1310	332	166	1365	325	163	1400	316	158
0	1855	423	192	1976	424	191	1991	425	184
	1700	396	185	1800	392	183	1800	382	176
	1500	361	175	1600	359	174	1600	344	167
	1300	327	164	1355	319	161	1420	314	157
-10	2040	453	198	2155	454	195	2140	454	188
	1900	427	192	2000	422	189	2000	417	183
	1700	391	183	1800	387	181	1800	374	174
	1500	357	173	1600	355	172	1600	339	165
	1285	320	161	1330	312	158	1405	308	155
-20	2078	455	197	2261	466	197	2282	479	191
	1900	422	190	2100	435	191	2100	431	184
	1700	387	181	1900	400	183	1900	385	177
	1500	353	172	1700	367	175	1700	350	168
	1270	314	158	1320	307	156	1395	302	153
-30	2040	443	193	2216	450	193	2397	491	193
	1900	418	187	2100	430	189	2200	444	186
	1700	383	179	1900	395	181	2000	398	178
	1500	349	170	1700	362	173	1600	329	162
	1275	312	157	1315	302	154	1390	297	151
-40	2004	432	189	2166	436	189	2364	467	189
	1800	396	181	2000	407	183	2200	431	183
	1600	362	172	1800	374	175	2000	389	176
	1400	329	162	1600	342	167	1600	324	160
	1270	307	154	1310	297	152	1360	289	148
-50	1966	421	185	2118	423	185	2317	443	185
	1800	392	178	2000	402	181	2200	420	181
	1600	358	170	1800	370	173	2000	381	174
	1400	325	160	1600	339	164	1600	319	158
	1260	302	152	1285	290	148	1340	283	146
-54	1955	417	183	2098	418	183	2298	434	183
	1800	390	177	1900	384	176	2100	396	177
	1600	357	169	1700	352	168	1900	363	169
	1400	324	159	1500	321	159	1700	333	162
	1250	299	150	1280	288	147	1330	280	144

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Figure 5-36 (Sheet 6)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 12,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
26	1287	328	170	1392	330	170	1451	332	166
				1370	326	169	1385	319	161
20	1380	342	176	1488	344	175	1540	346	170
	1295	328	170	1365	323	168	1385	316	161
10	1525	364	183	1637	366	182	1674	367	176
	1400	342	175	1500	342	174	1500	332	166
	1285	322	168	1355	317	166	1385	309	159
0	1684	389	189	1798	390	187	1816	391	181
	1500	356	179	1600	354	178	1700	364	175
	1300	321	167	1400	321	167	1500	325	165
	1275	316	166	1335	311	163	1385	304	158
-10	1859	417	195	1966	418	193	1956	418	185
	1700	387	188	1800	384	186	1800	378	178
	1500	352	178	1600	351	176	1600	336	169
	1300	318	166	1400	317	165	1400	302	158
	1250	309	162	1325	305	161	1380	299	157
-20	2022	442	199	2124	442	197	2088	441	189
	1900	420	194	2000	416	192	1900	392	181
	1700	383	186	1800	380	184	1700	348	172
	1500	348	176	1600	346	174	1500	314	162
	1250	305	161	1295	297	157	1370	293	155
-30	2117	454	201	2285	475	200	2255	476	193
	2000	433	196	2100	430	193	2100	431	187
	1800	397	188	1900	393	186	1900	381	179
	1600	362	179	1500	327	167	1700	343	170
	1230	299	158	1285	292	155	1365	288	153
-40	2076	441	196	2243	452	196	2396	514	195
	1900	411	189	2100	423	191	2200	440	188
	1700	375	181	1900	388	183	2000	397	181
	1500	341	171	1500	322	165	1600	322	163
	1220	294	155	1275	287	153	1350	282	151
-50	2040	430	192	2193	434	192	2390	499	192
	1900	406	187	2000	401	185	2200	427	186
	1700	371	178	1800	367	177	2000	385	178
	1500	337	169	1600	334	168	1600	318	161
	1205	289	152	1255	281	150	1325	275	148
-54	2027	426	190	2173	428	190	2369	485	190
	1900	404	185	2000	398	184	2200	425	185
	1700	370	177	1800	365	176	2000	383	177
	1500	336	168	1600	333	167	1600	315	161
	1200	287	151	1245	278	148	1320	273	146

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Figure 5-36 (Sheet 7)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 14,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
22	1218	310	168	1316	312	168	1368	313	162
							1330	305	159
15	1322	326	175	1426	328	174	1468	328	168
	1250	313	170	1310	307	166	1340	303	160
10	1392	336	179	1495	338	178	1529	339	171
	1240	310	168	1320	308	167	1325	297	158
0	1530	358	185	1634	359	184	1652	359	177
	1400	334	178	1500	334	176	1500	325	168
	1230	304	166	1300	300	164	1325	292	157
-10	1690	383	192	1790	384	189	1783	383	182
	1500	348	182	1600	347	180	1600	339	172
	1215	299	164	1275	293	161	1340	289	157
-20	1842	407	197	1936	407	194	1906	406	186
	1700	381	190	1800	378	188	1800	378	181
	1500	345	180	1600	343	178	1600	331	171
	1190	291	160	1270	288	159	1325	282	155
-30	2004	434	201	2089	436	198	2059	436	190
	1800	395	192	1900	393	190	1900	393	183
	1400	323	172	1500	323	171	1700	344	174
	1190	288	158	1240	280	155	1315	277	153
-40	2159	478	204	2225	481	201	2213	480	193
	2000	431	198	2100	432	196	2100	437	189
	1800	390	190	1900	387	188	1900	381	181
	1400	320	170	1500	320	169	1700	337	172
	1175	282	155	1230	275	153	1305	272	151
-50	2119	463	200	2270	484	200	2352	513	196
	2000	428	195	2100	428	193	2200	462	190
	1800	386	187	1900	383	186	2000	391	183
	1400	317	167	1500	315	167	1600	313	165
	1165	277	153	1215	270	151	1285	265	148
-54	2107	458	198	2247	475	198	2397	523	196
	2000	428	194	2100	427	192	2200	458	189
	1800	385	186	1900	380	185	2000	390	182
	1400	315	167	1500	314	166	1600	313	164
	1170	277	152	1210	268	150	1285	264	147

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Figure 5-36 (Sheet 8)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 16,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
18	1153	292	165	1245	294	164	1289	295	158
10	1265	310	173	1359	311	172	1391	311	165
	1240	305	172	1300	301	168	1315	296	159
0	1390	329	181	1485	330	179	1504	330	172
	1220	299	169	1305	297	167	1310	289	158
-10	1535	351	188	1629	352	186	1625	352	178
	1400	327	180	1500	328	178	1500	322	170
	1200	292	166	1285	290	164	1315	283	157
-20	1673	374	193	1762	374	190	1737	373	182
	1500	341	184	1600	341	182	1600	337	174
	1300	306	171	1400	307	170	1400	295	162
	1190	287	163	1265	284	161	1320	280	157
-30	1826	398	198	1906	399	195	1876	400	187
	1700	374	192	1800	374	190	1700	353	178
	1500	338	182	1600	337	180	1500	308	167
	1175	281	160	1255	279	159	1305	273	155
-40	1968	438	202	2030	440	198	2019	441	191
	1800	390	194	1900	391	192	1900	394	186
	1600	353	185	1700	351	183	1700	343	176
	1400	317	174	1500	316	173	1500	302	165
	1165	276	158	1230	271	156	1300	268	153
-50	2107	471	204	2142	472	200	2148	471	193
	2000	443	200	2000	420	194	2000	420	187
	1800	386	191	1800	365	186	1800	355	179
	1400	313	171	1600	331	176	1600	314	169
	1150	270	155	1205	265	153	1290	262	151
-54	2164	485	205	2193	485	201	2201	484	194
	2000	442	198	2000	419	193	2000	415	186
	1800	386	190	1800	364	185	1800	353	178
	1400	312	170	1600	328	175	1600	313	168
	1150	269	154	1205	263	152	1285	260	150

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Figure 5-36 (Sheet 9)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 18,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
10	1144	284	166	1230	285	164	1261	286	156
-5	1323	312	179	1410	313	177	1421	313	169
	1225	294	171	1295	290	168	1305	286	159
-10	1391	322	183	1478	323	181	1478	323	172
	1220	291	170	1295	289	168	1295	281	158
-20	1519	343	189	1600	343	186	1579	343	177
	1400	321	182	1400	304	174	1400	297	165
	1195	284	167	1275	282	165	1300	275	158
-30	1657	364	195	1734	365	192	1704	365	183
	1500	335	186	1600	337	184	1500	312	170
	1175	277	164	1245	274	162	1295	270	156
-40	1789	400	199	1849	402	195	1836	403	187
	1600	350	189	1700	350	188	1700	354	180
	1400	315	177	1500	315	177	1500	305	169
	1155	271	160	1240	270	160	1285	263	154
-50	1920	432	201	1955	433	197	1957	432	190
	1800	400	196	1800	377	190	1800	376	183
	1600	346	186	1600	327	180	1600	318	173
	1400	311	175	1400	294	169	1400	278	161
	1155	267	158	1220	264	157	1295	260	154
-54	1973	445	202	1999	445	198	2007	444	191
	1800	399	195	1800	376	189	1900	409	187
	1600	345	185	1600	328	179	1700	338	177
	1400	310	174	1400	291	168	1500	296	166
	1145	265	157	1210	260	155	1285	257	153

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Figure 5-36 (Sheet 10)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 20,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

> **NOTE**
> Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
5	1087	269	161	1166	270	159	1189	270	147
-15	1318	305	181	1396	306	178	1387	305	168
	1230	288	173	1290	284	170	1290	280	159
-20	1376	315	184	1451	315	181	1434	314	171
	1220	286	172	1290	283	169	1280	275	158
-30	1500	333	190	1571	334	187	1542	334	177
	1300	297	177	1400	299	176	1400	296	167
	1200	279	169	1270	276	166	1295	270	158
-40	1622	365	195	1681	367	191	1666	367	183
	1500	331	188	1500	316	181	1500	314	172
	1300	294	175	1300	277	167	1300	268	157
	1175	271	165	1250	268	163	1290	264	157
-50	1745	396	198	1781	396	194	1780	396	186
	1600	356	191	1600	333	184	1600	328	177
	1400	308	179	1400	292	173	1400	282	164
	1160	265	162	1230	262	160	1280	257	155
-54	1794	407	199	1821	408	195	1826	407	188
	1600	355	189	1700	365	189	1700	365	181
	1400	307	178	1500	308	178	1500	298	170
	1150	262	161	1230	261	160	1290	257	156

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Figure 5-36 (Sheet 11)

WITHOUT CARGO POD
CRUISE PERFORMANCE

CRUISE PRESSURE ALTITUDE 22,000 FEET

CONDITIONS:
8807 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
-20	1242	288	177	1311	288	173	1298	287	161
	1205	281	174	1265	278	170	1275	281	159
-25	1294	295	181	1362	295	177	1341	294	165
	1200	278	173	1280	278	170	1270	275	158
-30	1351	304	184	1418	304	181	1390	304	169
	1190	275	171	1275	275	169	1260	270	157
-40	1466	332	190	1524	334	186	1506	334	177
	1300	292	178	1400	297	178	1400	298	168
	1185	271	169	1255	268	166	1275	265	158
-50	1583	362	194	1618	362	190	1614	362	182
	1400	311	183	1500	319	183	1500	320	174
	1160	263	165	1230	260	163	1265	256	156
-54	1627	372	195	1654	373	191	1657	372	183
	1500	339	188	1500	318	182	1500	316	174
	1155	261	164	1220	258	162	1255	252	155

CRUISE PRESSURE ALTITUDE 24,000 FEET

CONDITIONS:
8500 Pounds
INERTIAL SEPARATOR **NORMAL**

NOTE
Do not exceed maximum cruise torque or 805°C ITT.

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	1900 RPM			1750 RPM			1600 RPM		
	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS	Torque Ft-Lbs	Fuel Flow PPH	KTAS
-30	1216	277	179	1280	278	175	1255	277	162
	1185	271	176	1230	267	171	1235	271	160
-40	1323	302	186	1379	303	182	1359	303	171
	1180	266	174	1235	263	170	1230	261	159
-50	1433	331	191	1468	331	187	1462	330	177
	1300	293	182	1300	273	174	1300	269	165
	1170	262	171	1230	258	168	1245	255	159
-54	1474	340	192	1502	340	188	1501	340	179
	1300	292	181	1300	271	173	1300	269	164
	1160	259	170	1220	255	167	1225	249	157

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Figure 5-36 (Sheet 12)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

NOTE

The following general information is applicable to all CRUISE MAXIMUM TORQUE Charts.

1. The highest torque shown for each temperature and RPM corresponds to maximum allowable cruise power. Do not exceed this torque, 805°C ITT, or 103.7% Ng, whichever occurs first.

2. With the INERTIAL SEPARATOR in BYPASS and power set below the torque limit (2397 foot-pounds), decrease the maximum cruise torque by 185 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 55 pounds per hour (PPH) higher.

3. With the CABIN HEAT ON and power set below the torque limit (2397 foot-pounds), decrease maximum cruise torque by 95 foot-pounds. Do not exceed 805°C ITT. Fuel flow for a given torque setting will be 13 PPH higher.

4. Where torque values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those torque values which are included, but the operation slightly exceeds the temperature limit, are provided for interpolation purposes only.

Figure 5-37 (Sheet 1 of 7)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 1000 Feet			Pressure Altitude 2000 Feet			Pressure Altitude 3000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
50	1373	1514	1643	1322	1457	1582	1272	1403	1522
45	1503	1651	1778	1447	1590	1712	1393	1531	1648
40	1651	1810	1933	1590	1743	1862	1531	1679	1793
35	1787	1952	2070	1729	1888	2001	1669	1823	1931
30	1917	2089	2195	1854	2020	2118	1793	1953	2044
25	1941	2105	2299	1970	2127	2214	1900	2051	2133
20	1924	2085	2284	1954	2123	2321	1990	2159	2234
15	1907	2065	2266	1937	2104	2304	1971	2140	2338
10	1890	2048	2246	1919	2083	2284	1952	2119	2324
5	1875	2030	2227	1903	2063	2265	1934	2100	2301
0	1859	2011	2205	1887	2044	2243	1918	2080	2282
-5	1845	1992	2184	1871	2025	2223	1902	2061	2261
-10	1830	1973	2163	1855	2006	2201	1885	2041	2241
-15	1815	1955	2141	1840	1986	2180	1868	2022	2218
-20	1800	1937	2120	1826	1969	2157	1852	2002	2196
-25	1786	1919	2099	1809	1950	2135	1837	1982	2173
-30	1772	1902	2078	1794	1931	2114	1821	1963	2149
-35	1758	1884	2056	1781	1912	2092	1806	1943	2128
-40	1742	1865	2034	1767	1894	2069	1790	1924	2104
-45	1728	1848	2012	1752	1874	2046	1776	1906	2081
-50	1716	1831	1990	1737	1857	2023	1761	1886	2058
-54	1705	1817	1971	1725	1843	2005	1749	1870	2039

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Figure 5-37 (Sheet 2)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 4000 Feet			Pressure Altitude 5000 Feet			Pressure Altitude 6000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
45	1340	1473	1586	1289	1416	1526	1235	1357	1462
40	1473	1616	1726	1417	1554	1660	1356	1493	1591
35	1607	1755	1859	1546	1688	1789	1479	1616	1713
30	1735	1889	1974	1679	1825	1906	1605	1746	1826
25	1834	1980	2059	1771	1911	1986	1703	1837	1909
20	1928	2079	2153	1856	2000	2070	1784	1923	1990
15	2007	2180	2252	1958	2107	2165	1879	2025	2077
10	1986	2158	2344	2022	2199	2257	1980	2123	2167
5	1967	2135	2342	2002	2176	2352	2037	2216	2258
0	1948	2115	2321	1981	2154	2359	2017	2193	2352
-5	1930	2095	2299	1962	2134	2338	1996	2171	2375
-10	1915	2076	2278	1945	2112	2317	1976	2150	2355
-15	1898	2056	2256	1927	2092	2295	1958	2129	2333
-20	1881	2036	2233	1910	2072	2272	1939	2107	2311
-25	1864	2015	2211	1893	2051	2249	1923	2086	2288
-30	1847	1995	2188	1877	2030	2226	1907	2065	2264
-35	1833	1974	2163	1860	2009	2204	1891	2043	2241
-40	1816	1954	2141	1845	1988	2179	1873	2021	2218
-45	1799	1934	2117	1829	1966	2154	1856	1999	2193
-50	1783	1915	2093	1811	1946	2130	1840	1977	2169
-54	1772	1899	2075	1796	1929	2110	1826	1960	2148

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Figure 5-37 (Sheet 3)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 7000 Feet			Pressure Altitude 8000 Feet			Pressure Altitude 9000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
40	1299	1425	1523	1243	1365	1459	1191	1308	1398
35	1415	1547	1641	1355	1482	1572	1298	1419	1506
30	1535	1677	1749	1467	1600	1676	1404	1531	1605
25	1636	1766	1834	1569	1694	1759	1502	1621	1685
20	1715	1848	1912	1647	1776	1836	1582	1705	1763
15	1801	1938	1992	1727	1859	1911	1658	1785	1835
10	1899	2036	2079	1820	1952	1993	1742	1870	1910
5	2000	2138	2167	1918	2050	2079	1837	1965	1993
0	2054	2234	2257	2020	2152	2165	1936	2064	2077
-5	2032	2212	2343	2070	2251	2248	2034	2159	2157
-10	2013	2188	2390	2049	2229	2327	2086	2248	2232
-15	1991	2167	2368	2027	2205	2397	2064	2245	2306
-20	1971	2145	2347	2006	2183	2381	2042	2222	2383
-25	1953	2123	2326	1987	2160	2361	2021	2200	2392
-30	1936	2101	2302	1969	2138	2340	2005	2176	2371
-35	1920	2079	2279	1953	2115	2317	1987	2152	2350
-40	1904	2057	2255	1935	2093	2292	1969	2129	2331
-45	1887	2034	2232	1918	2070	2268	1951	2105	2305
-50	1870	2012	2207	1901	2046	2245	1932	2082	2280
-54	1856	1994	2186	1889	2028	2226	1921	2063	2261

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Figure 5-37 (Sheet 4)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 10,000 Feet			Pressure Altitude 11,000 Feet			Pressure Altitude 12,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
30	1342	1465	1538	1276	1393	1467	1211	1323	1400
25	1437	1552	1613	1370	1480	1539	1305	1410	1468
20	1519	1636	1691	1448	1561	1615	1380	1488	1540
15	1592	1713	1761	1523	1639	1685	1456	1567	1612
10	1667	1789	1829	1595	1712	1750	1525	1637	1674
5	1759	1881	1909	1677	1795	1823	1596	1712	1740
0	1855	1976	1991	1768	1886	1901	1684	1798	1816
-5	1950	2070	2068	1861	1976	1977	1773	1883	1888
-10	2040	2155	2140	1948	2059	2046	1859	1966	1956
-15	2102	2240	2210	2035	2143	2114	1941	2046	2022
-20	2078	2261	2282	2117	2223	2184	2022	2124	2088
-25	2059	2238	2380	2097	2276	2274	2109	2208	2171
-30	2040	2216	2397	2077	2254	2359	2117	2285	2255
-35	2022	2192	2386	2058	2229	2397	2096	2268	2338
-40	2004	2166	2364	2040	2205	2397	2076	2243	2396
-45	1985	2143	2343	2021	2181	2377	2057	2219	2396
-50	1966	2118	2317	2002	2156	2353	2040	2193	2390
-54	1955	2098	2298	1991	2136	2335	2027	2173	2369

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Figure 5-37 (Sheet 5)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**
Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 13,000 Feet			Pressure Altitude 14,000 Feet			Pressure Altitude 15,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
25	1241	1342	1398	1180	1277	1332	1121	1213	1267
20	1315	1415	1468	1250	1348	1399	1188	1283	1331
15	1389	1496	1541	1322	1426	1468	1258	1355	1398
10	1458	1565	1600	1392	1495	1529	1329	1427	1462
5	1525	1635	1662	1457	1562	1586	1391	1490	1518
0	1606	1714	1732	1530	1634	1652	1457	1557	1576
-5	1689	1798	1803	1610	1713	1720	1533	1633	1641
-10	1772	1876	1868	1690	1790	1783	1611	1708	1702
-15	1852	1953	1932	1765	1863	1843	1681	1776	1760
-20	1931	2029	1996	1842	1936	1906	1756	1847	1820
-25	2013	2109	2072	1921	2014	1976	1832	1921	1883
-30	2098	2186	2155	2004	2089	2059	1914	1996	1965
-35	2137	2254	2234	2077	2156	2135	1982	2059	2038
-40	2116	2282	2313	2159	2225	2213	2063	2125	2114
-45	2095	2257	2385	2136	2282	2280	2135	2182	2179
-50	2078	2230	2397	2119	2270	2352	2165	2241	2248
-54	2067	2209	2397	2107	2247	2397	2151	2287	2303

Temp °C	Pressure Altitude 16,000 Feet			Pressure Altitude 17,000 Feet			Pressure Altitude 18,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
20	1131	1221	1268	1075	1162	1206	1022	1104	1146
15	1196	1290	1331	1138	1227	1266	1082	1167	1204
10	1265	1359	1391	1203	1293	1325	1144	1230	1261
5	1327	1422	1448	1265	1356	1381	1205	1291	1316
0	1390	1485	1504	1325	1417	1435	1263	1350	1368
-5	1460	1556	1565	1390	1481	1491	1323	1410	1421
-10	1535	1629	1625	1462	1553	1550	1391	1478	1478
-15	1603	1694	1680	1528	1615	1603	1456	1539	1529
-20	1673	1762	1737	1594	1679	1656	1519	1600	1579
-25	1745	1833	1797	1663	1746	1715	1584	1664	1634
-30	1826	1906	1876	1740	1819	1788	1657	1734	1704
-35	1891	1966	1944	1803	1877	1855	1719	1790	1768
-40	1968	2030	2019	1877	1938	1926	1789	1849	1836
-45	2039	2087	2082	1947	1994	1988	1858	1904	1897
-50	2107	2142	2148	2012	2047	2052	1920	1955	1957
-54	2164	2193	2201	2065	2094	2102	1973	1999	2007

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Figure 5-37 (Sheet 6)

WITHOUT CARGO POD
CRUISE MAXIMUM TORQUE

CONDITIONS:
INERTIAL SEPARATOR **NORMAL**

Refer to sheet 1 for appropriate notes applicable to this chart.

Temp °C	Pressure Altitude 19,000 Feet			Pressure Altitude 20,000 Feet			Pressure Altitude 21,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
-5	1260	1344	1354	1199	1279	1290	1140	1216	1227
-10	1322	1406	1409	1256	1336	1339	1195	1271	1275
-15	1384	1466	1457	1318	1396	1387	1252	1326	1320
-20	1446	1524	1506	1376	1451	1434	1310	1380	1365
-25	1508	1584	1557	1434	1507	1482	1363	1433	1410
-30	1577	1651	1622	1500	1571	1542	1424	1494	1464
-35	1639	1707	1684	1561	1627	1603	1485	1549	1524
-40	1704	1763	1749	1622	1681	1666	1542	1600	1585
-45	1772	1817	1809	1689	1734	1724	1608	1652	1642
-50	1831	1866	1867	1745	1781	1780	1663	1698	1695
-54	1882	1908	1915	1794	1821	1826	1709	1736	1741

Temp °C	Pressure Altitude 22,000 Feet			Pressure Altitude 23,000 Feet			Pressure Altitude 24,000 Feet		
	Propeller Speed RPM			Propeller Speed RPM			Propeller Speed RPM		
	1900	1750	1600	1900	1750	1600	1900	1750	1600
-15	1189	1259	1254	1130	1198	1194	1073	1138	1132
-20	1242	1311	1298	1181	1249	1235	1120	1184	1172
-25	1294	1362	1341	1231	1296	1276	1168	1230	1212
-30	1351	1418	1390	1283	1348	1322	1216	1280	1255
-35	1412	1473	1448	1343	1402	1377	1275	1333	1305
-40	1466	1524	1506	1395	1451	1433	1323	1379	1359
-45	1531	1575	1563	1456	1501	1489	1382	1428	1415
-50	1583	1618	1614	1508	1543	1538	1433	1468	1462
-54	1627	1654	1657	1550	1578	1579	1474	1502	1501

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Figure 5-37 (Sheet 7)

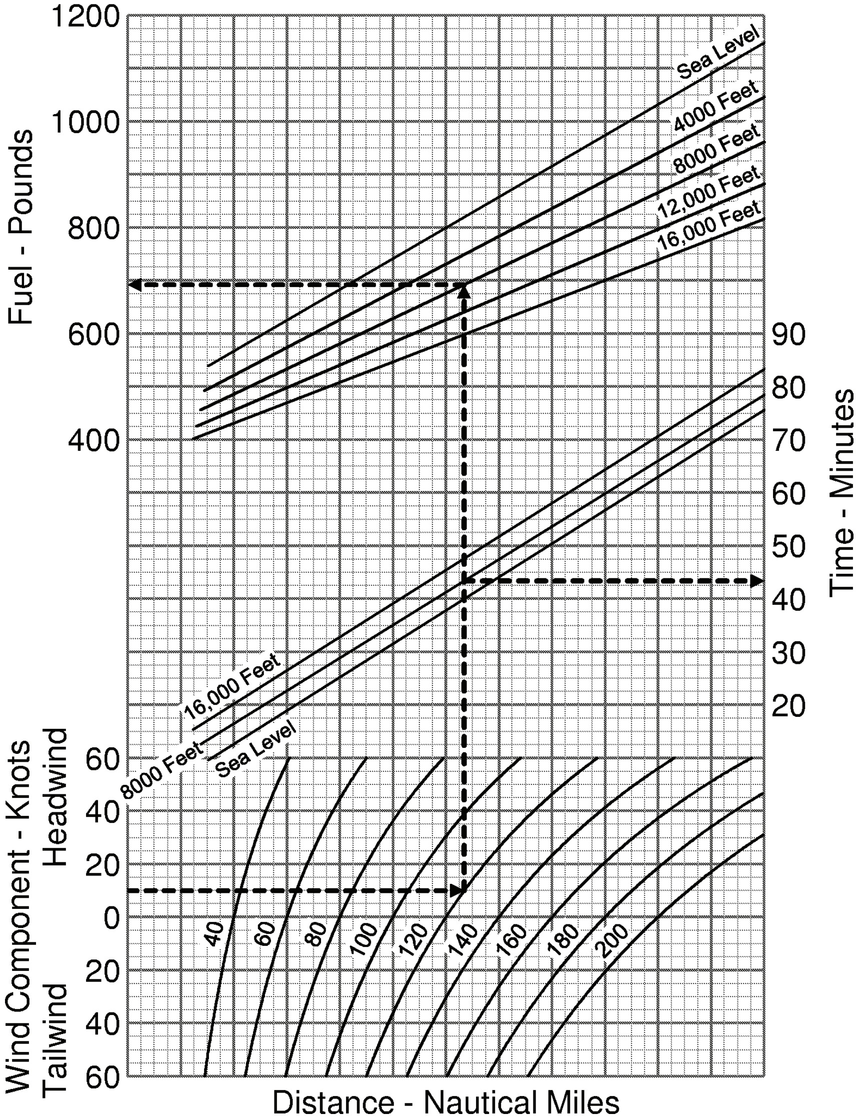
WITHOUT CARGO POD

FUEL AND TIME REQUIRED

MAXIMUM CRUISE POWER

(40-200 Nautical Miles)

CONDITIONS:
8807 Pounds   Standard Temperature
1900 RPM   INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 9% or CABIN HEAT ON, increase time by 6%.

Figure 5-38 (Sheet 1 of 2)

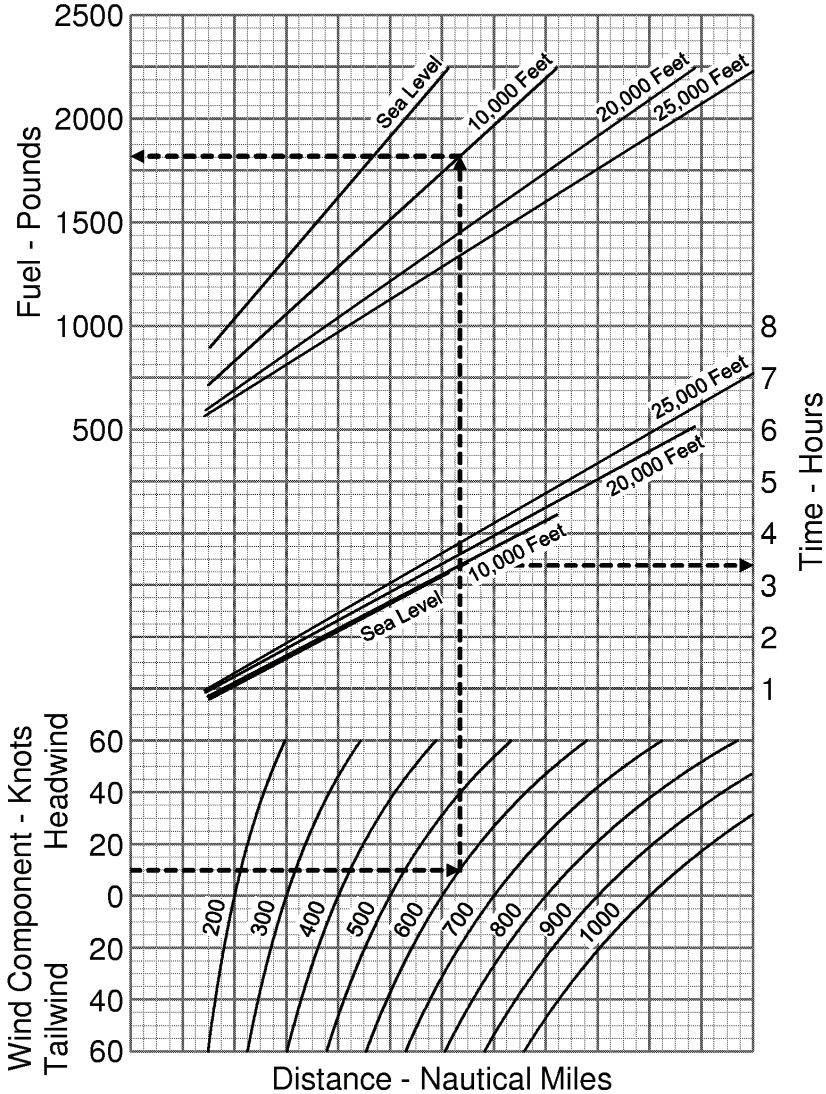
WITHOUT CARGO POD

FUEL AND TIME REQUIRED

MAXIMUM CRUISE POWER

(200-1000 Nautical Miles)

CONDITIONS:
8807 Pounds Standard Temperature
1900 RPM INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 11% and fuel by 4%, or CABIN HEAT ON, increase time by 7% and fuel by 3%.

Figure 5-38 (Sheet 2)

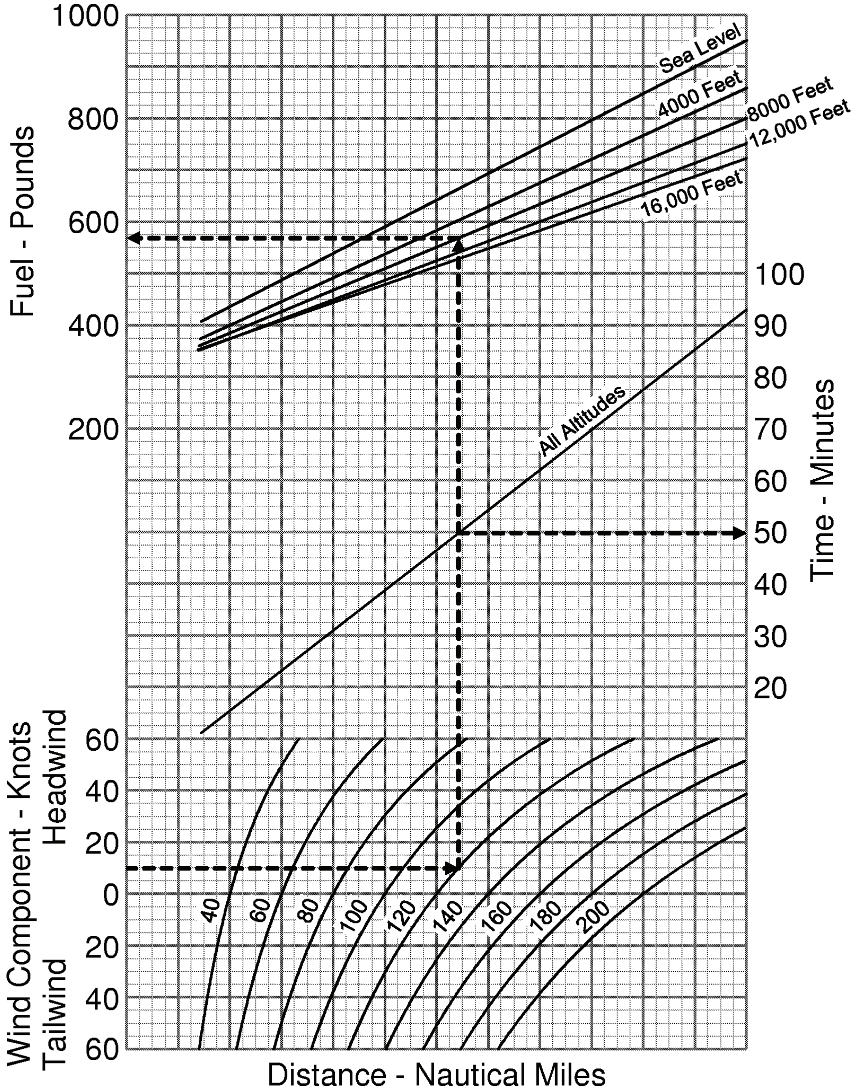
WITHOUT CARGO POD

FUEL AND TIME REQUIRED

MAXIMUM RANGE POWER

(40-200 Nautical Miles)

CONDITIONS:
8807 Pounds Standard Temperature
1900 RPM INERTIAL SEPARATOR NORMAL



NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 5% and fuel by 2%, or CABIN HEAT ON, increase time by 5% and fuel by 2%.

Figure 5-39 (Sheet 1 of 2)

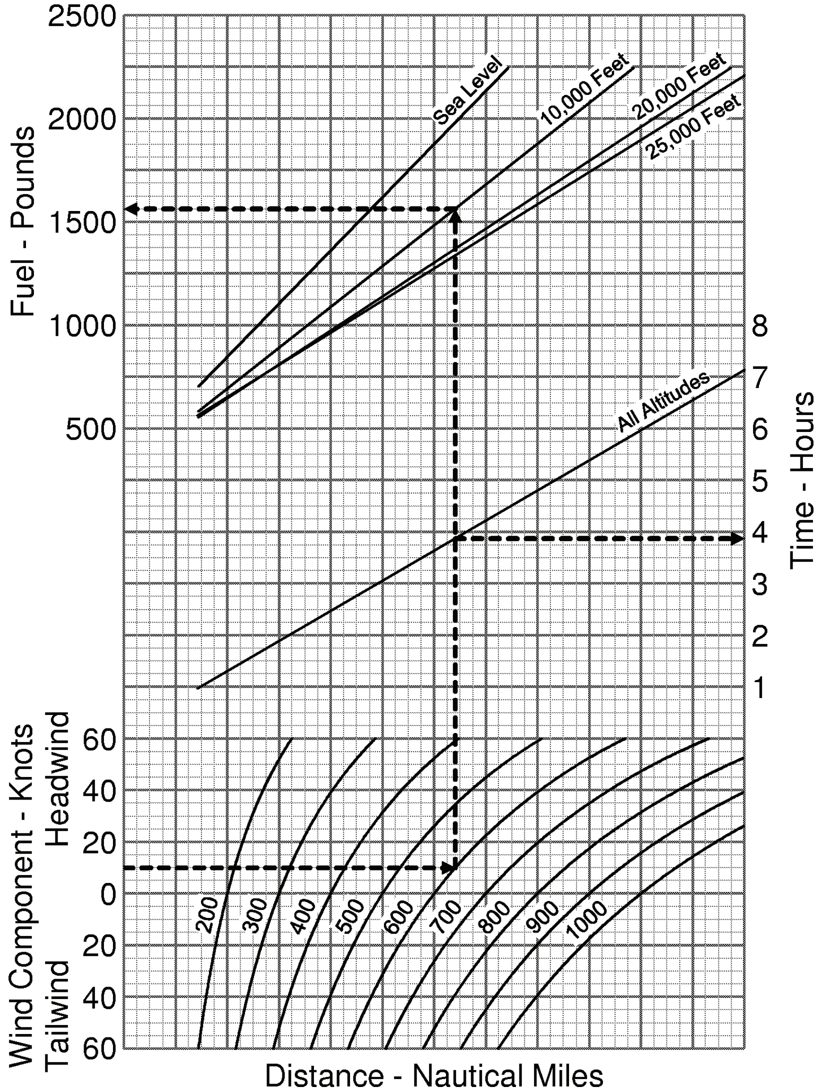
WITHOUT CARGO POD

FUEL AND TIME REQUIRED

MAXIMUM RANGE POWER

(200-1000 Nautical Miles)

CONDITIONS:
8807 Pounds   Standard Temperature
1900 RPM   INERTIAL SEPARATOR NORMAL



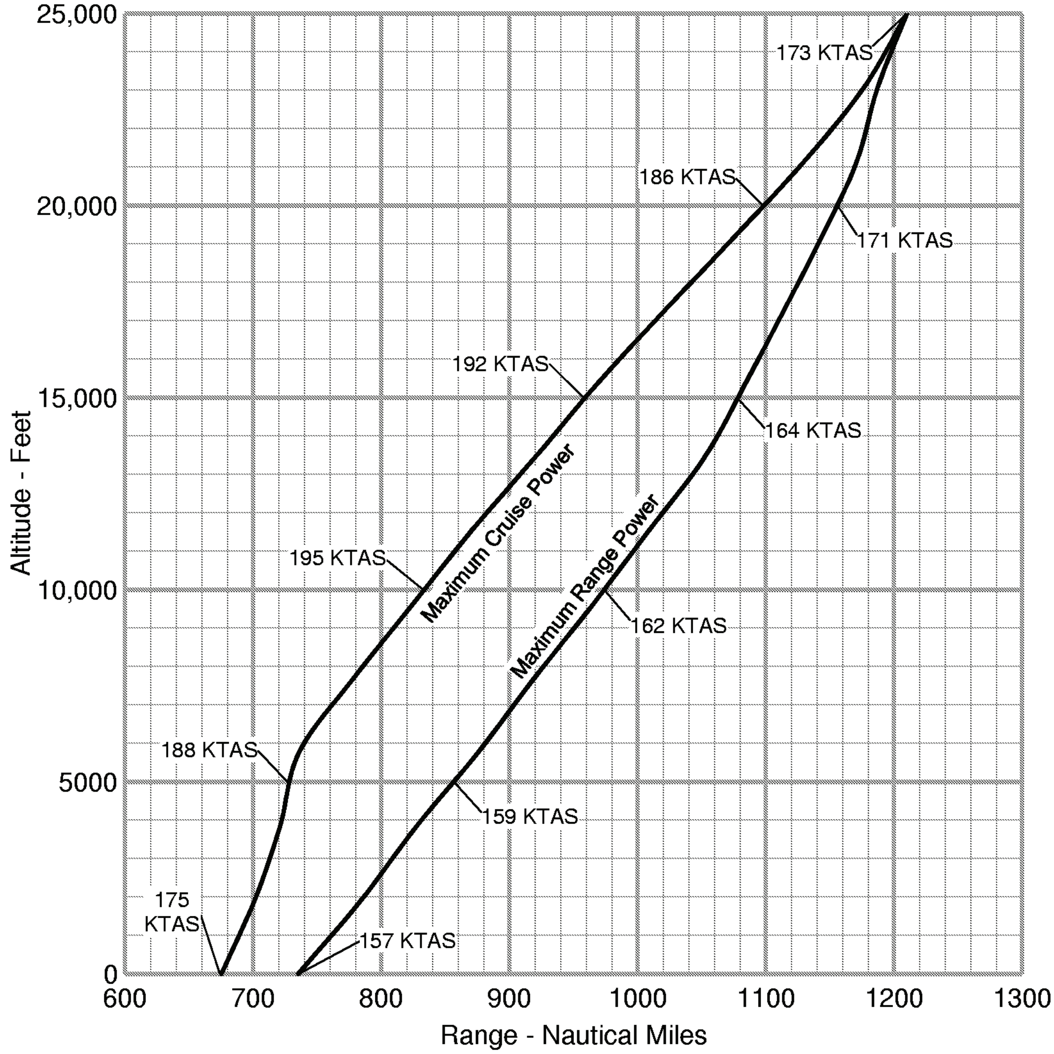
NOTE

1. Fuel required includes the fuel used for engine start, taxi, takeoff, maximum climb from sea level, descent to sea level and 45 minutes reserve. Time required includes the time during a maximum climb and descent.
2. With INERTIAL SEPARATOR in BYPASS, increase time by 2% and fuel by 5%, or CABIN HEAT ON, increase time by 2% and fuel by 3%.

Figure 5-39 (Sheet 2)

WITHOUT CARGO POD
RANGE PROFILE
45 MINUTE RESERVE
2246 POUNDS USABLE FUEL

CONDITIONS:
8807 Pounds
1900 RPM
Standard Temperature
INERTIAL SEPARATOR NORMAL
Zero Wind



NOTE

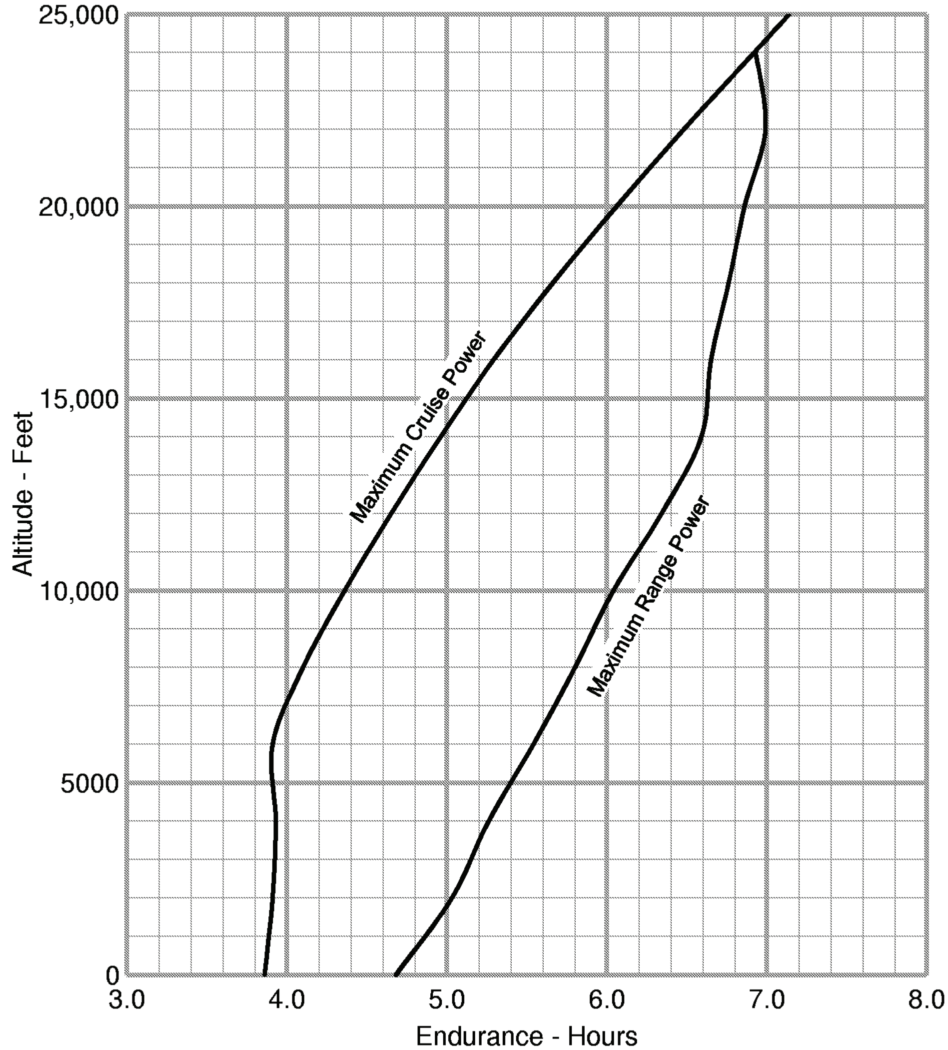
1. This chart allows for the fuel used for engine start, taxi, takeoff, climb and descent. The time during a maximum climb and the time during descent are included.

2. With INERTIAL SEPARATOR in BYPASS, decrease range by 2%, or with CABIN HEAT ON, decrease range by 3%.

Figure 5-40

WITHOUT CARGO POD
ENDURANCE PROFILE
45 MINUTE RESERVE
2246 POUNDS USABLE FUEL

CONDITIONS:
8807 Pounds
1900 RPM
Standard Temperature
INERTIAL SEPARATOR NORMAL



NOTE

1. This chart allows for the fuel used for engine start, taxi, takeoff, climb and descent. The time during a maximum climb and the time during descent are included.

2. With INERTIAL SEPARATOR in BYPASS, decrease endurance by 3%, or with CABIN HEAT ON, decrease endurance by 4%.

Figure 5-41

WITHOUT CARGO POD
TIME, FUEL, AND DISTANCE TO DESCEND

CONDITIONS:
Flaps **UP**
Zero Wind
8807 Pounds
1900 RPM
140 KIAS Above 16,000 Feet
160 KIAS Below 16,000 Feet
Power Set for 800 Feet per Minute Rate of Descent

Pressure Altitude Feet	Descent to Sea Level		
	Time Minutes	Fuel Pounds	Dist NM
24,000	30	126	91
20,000	25	110	75
16,000	20	93	59
12,000	15	71	43
8000	10	49	28
4000	5	25	14
Sea Level	0	0	0

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Figure 5-42

WITHOUT CARGO POD
SHORT FIELD LANDING DISTANCE

NOTE

The following general information is applicable to all SHORT FIELD LANDING DISTANCE Charts.

1. Use short field landing technique as specified in Section 4.
2. Decrease distances by 10% for each 11 knots headwind. For operation with tailwind up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 40% of the "Ground Roll" figure.
4. If a landing with flaps UP is necessary, increase the approach speed by 15 KIAS and allow for 40% longer distances.
5. Use of maximum reverse thrust after touchdown reduces ground roll distance by approximately 10%.
6. Where distance values have been replaced by dashes, operating temperature limits of the airplane would be greatly exceeded. Those distances which are included but the operation slightly exceeds the temperature limit are provided for interpolation purposes only.

Figure 5-43 (Sheet 1 of 5)

WITHOUT CARGO POD
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

8500 Pounds: Speed at 50 Feet: 78 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	950	1745	985	1795	1020	1845
2000	1020	1845	1060	1900	1100	1950
4000	1100	1955	1140	2010	1180	2065
6000	1185	2070	1230	2130	1275	2190
8000	1275	2195	1325	2260	1375	2325
10,000	1380	2330	1430	2400	1485	2470
12,000	1490	2480	1545	2555	1605	2630

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	1055	1895	1095	1945	1130	1995
2000	1135	2005	1175	2060	1215	2110
4000	1225	2125	1265	2180	1305	2235
6000	1320	2250	1365	2310	1410	2370
8000	1420	2390	1470	2455	1520	2520
10,000	1535	2540	1590	2610	---	---
12,000	1660	2700	1715	2775	---	---

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Figure 5-43 (Sheet 2)

WITHOUT CARGO POD
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

8000 Pounds: Speed at 50 Feet: 75 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	895	1670	925	1715	960	1765
2000	960	1765	995	1815	1035	1865
4000	1035	1865	1075	1920	1110	1975
6000	1115	1975	1155	2035	1200	2090
8000	1200	2095	1245	2155	1290	2220
10,000	1295	2225	1345	2290	1395	2355
12,000	1400	2365	1455	2435	1510	2505

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	995	1810	1030	1860	1060	1905
2000	1070	1915	1105	1965	1140	2015
4000	1150	2025	1190	2080	1230	2135
6000	1240	2150	1285	2205	1325	2260
8000	1340	2280	1385	2340	1430	2400
10,000	1445	2420	1495	2485	---	---
12,000	1560	2575	1615	2645	---	---

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Figure 5-43 (Sheet 3)

WITHOUT CARGO POD
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

7500 Pounds: Speed at 50 Feet: 73 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	840	1590	870	1635	900	1680
2000	900	1675	935	1725	970	1775
4000	970	1775	1005	1825	1045	1875
6000	1045	1880	1085	1935	1125	1990
8000	1130	1990	1170	2050	1215	2110
10,000	1220	2115	1265	2175	1310	2240
12,000	1315	2245	1365	2315	1415	2380

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	935	1725	965	1765	1000	1810
2000	1005	1820	1040	1870	1075	1915
4000	1080	1925	1120	1980	1155	2030
6000	1165	2040	1205	2095	1245	2150
8000	1255	2165	1300	2225	1340	2280
10,000	1355	2300	1405	2360	---	---
12,000	1465	2445	1515	2515	---	---

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Figure 5-43 (Sheet 4)

WITHOUT CARGO POD
SHORT FIELD LANDING DISTANCE

CONDITIONS:
Flaps **FULL**
Zero Wind
Maximum Braking
PROP RPM Lever **MAX**
Paved, Level, Dry Runway

POWER Lever **IDLE** after clearing obstacles. **BETA** range (lever against spring) after touchdown.

Refer to Sheet 1 for appropriate notes applicable to this chart.

7000 Pounds: Speed at 50 Feet: 71 KIAS

Pressure Altitude Feet	-10°C		0°C		10°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	780	1510	810	1550	840	1595
2000	840	1595	870	1640	905	1685
4000	905	1685	940	1730	975	1780
6000	975	1780	1010	1835	1050	1885
8000	1050	1890	1090	1945	1130	2000
10,000	1135	2005	1175	2065	1220	2120
12,000	1225	2130	1275	2190	1320	2255

Pressure Altitude Feet	20°C		30°C		40°C	
	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst	Grnd Roll Feet	Total Dist To Clear 50 Foot Obst
Sea Level	870	1635	900	1680	930	1720
2000	935	1730	965	1775	1000	1820
4000	1005	1830	1040	1875	1075	1925
6000	1085	1935	1120	1985	1160	2040
8000	1170	2055	1210	2105	1250	2160
10,000	1265	2180	1305	2240	---	---
12,000	1365	2315	1415	2380	---	---

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Figure 5-43 (Sheet 5)

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WEIGHT AND BALANCE/ EQUIPMENT LIST

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INTRODUCTION

This section describes the procedure for establishing the basic empty weight and moment of the airplane. Sample forms are provided for reference. Procedures for calculating the weight and moment for various operations are also provided. For additional information regarding Weight and Balance procedures, refer to the Aircraft Weight and Balance Handbook (FAA-H-8083-1).

In order to achieve the performance and flight characteristics which are designed into the airplane, it must be flown within approved weight and center of gravity limits. Although the airplane offers flexibility of loading, it cannot be flown with full fuel tanks and a full complement of passengers or a normal crew and both cabin and cargo pod (if installed) loading zones filled to maximum capacity. The pilot must utilize the loading flexibility to make sure the airplane does not exceed its maximum weight limits and is loaded within the center of gravity range before takeoff.

Weight is important because it is a basis for many flight and structural characteristics. As weight increases, takeoff speed must be greater since stall speeds are increased, the rate of acceleration decreases, and the required takeoff distance increases. Weight in excess of the maximum takeoff weight may be a contributing factor to an accident, especially when coupled with other factors such as temperature, field elevation, and runway conditions, all of which may adversely affect the airplane’s performance. Climb, cruise, and landing performance will also be affected. Flights at excess weight are possible, and may be within the performance capability of the airplane, but loads for which the airplane was not designed may be imposed on the structure, especially during landing.

(Continued Next Page)

INTRODUCTION (Continued)

The pilot should routinely determine the balance of the airplane since it is possible to be within the maximum weight limit and still exceed the center of gravity limits. An airplane loading which exceeds the forward center of gravity limit may place heavy loads on the nosewheel, and the airplane will be slightly more difficult to rotate for takeoff or flare for landing. If the center of gravity is too far aft, the airplane may rotate prematurely on takeoff, depending on trim settings. A properly loaded airplane, however, will perform as intended. Before the airplane is licensed, a basic empty weight, center of gravity (C.G.) and moment are computed.

Specific information regarding the weight, arm, moment, and installed equipment for this airplane as delivered from the factory can be found in the plastic envelope in the back of this POH/AFM. Using the basic empty weight and moment, the pilot can determine the weight and moment for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved Center of Gravity Moment Envelope

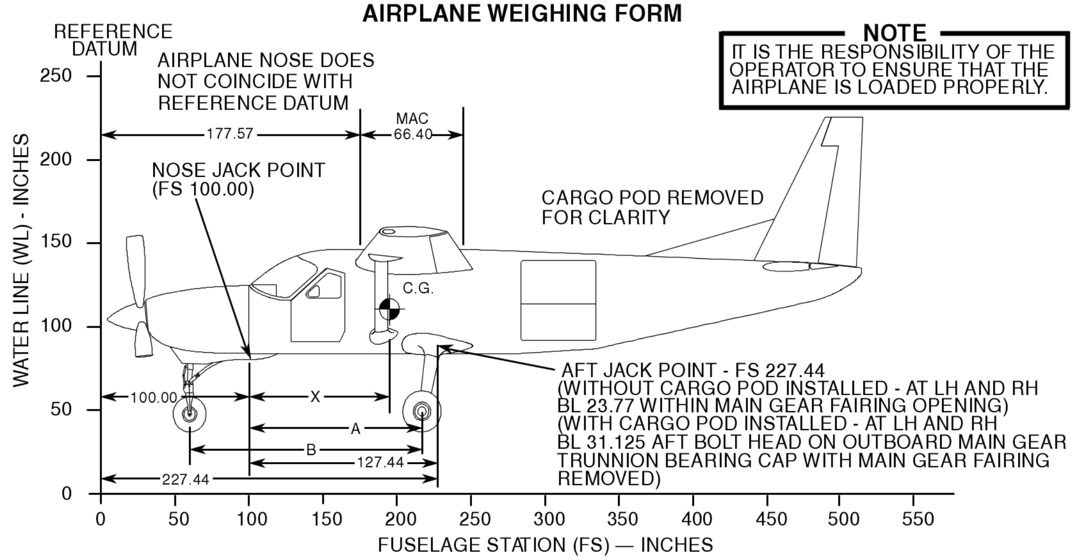
WARNING

It is the responsibility of the pilot to make sure that the airplane is loaded properly. Operation outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.

AIRPLANE WEIGHING FORM

A91607

AIRPLANE WEIGHING FORM



LOCATING CG WITH AIRPLANE ON LANDING GEAR

FORMULA for Longitudinal CG

$$(X) = (A) - \frac{\text{(Nose Gear Net Weight)(\quad) X (B)}}{\text{Nose and Main Landing Gear Weight Totaled(\quad)}} = (\quad) \text{ Inches}$$

CG Arm of Airplane = 100 + (X) = ( ) Inches Aft of Datum

MEASURING A AND B

MEASURE A AND B PER PILOT'S OPERATING HANDBOOK INSTRUCTIONS TO ASSIST IN LOCATING CG WITH AIRPLANE WEIGHED ON LANDING GEAR

LOCATING CG WITH AIRPLANE ON JACK PADS

FORMULA for Longitudinal CG

$$\text{CG Arm of Airplane} = 227.44 - \frac{127.44 \text{ X (Nose Jack Point Net Weight)(\quad)}}{\text{Nose and Aft Jack Point Weight Totaled (\quad)}} = (\quad) \text{ Inches Aft of Datum}$$

LEVELING PROVISIONS

LONGITUDINAL – LEFT SIDE OF FUSELAGE AT FS 239.00 & 272.00
LATERAL – SEAT RAILS AFT OF PILOT AND FRONT PASSENGER SEATS

LOCATING PERCENT MAC

FORMULA for Percent MAC

$$\text{CG Percent MAC} = \frac{\text{(CG Arm of Airplane)} - 177.57}{0.6640}$$

AIRPLANE AS WEIGHED TABLE

POSITION	SCALE READING	SCALE DRIFT	TARE	NET WEIGHT
LEFT SIDE				
RIGHT SIDE				
NOSE				
AIRPLANE TOTAL AS WEIGHED				

BASIC EMPTY WEIGHT AND CENTER-OF-GRAVITY TABLE

ITEM	WEIGHT (POUNDS)	CG ARM (INCHES)	MOMENT/1000 (INCH-POUNDS/1000)
AIRPLANE (CALCULATED OR AS WEIGHED) (INCLUDES ALL UNDRAINABLE FLUIDS AND FULL OIL)			
DRAINABLE UNUSABLE FUEL AT 6.7 POUNDS PER GALLON S/N 208B2197 AND 208B5000 AND ON	**24.1**	**206.4**	**5.0**
BASIC EMPTY WEIGHT			

2685T1099

Figure 6-1

WEIGHT AND BALANCE RECORD

SAMPLE WEIGHT AND BALANCE RECORD

(Continuous history of changes in structure or equipment affecting weight and balance)

Airplane model			Serial number					Page number		
Date	Item no.		Description of article or modification	Weight change						Running basic empty weight	
				Added (+)			Removed (-)				
	In	Out		WT. (lb.)	Arm (in.)	Moment /1000	WT. (lb.)	Arm (in.)	Moment /1000	WT. (lb.)	Moment /1000
			As delivered								

0585T1009

Figure 6-2

AIRPLANE WEIGHING PROCEDURES

1. AIRPLANE PREPARATION

a. Remove all snow, ice or water which may be on the airplane.

b. Inflate tires to recommended operating pressure.

c. Lock open fuel tank sump quick-drains and fuel reservoir quick-drain to drain all fuel.

d. For airplanes with optional equipment installed, see the appropriate POH/AFM supplement for additional weighing procedures.

e. Service engine oil as required to obtain a normal full indication (MAX HOT or MAX COLD, as appropriate, on dipstick).

f. Slide to move pilot and front passenger seats to position the seat locking pins on the back legs of each seat at Fuselage Station 145.0. Aft passenger seats (if installed) have recommended fixed positions and should be located, using a Fuselage Station location code on the seat rails, as described in the Cabin Internal Loading Arrangements figure. In the event the aft seats were moved to accommodate a custom loading, they should be returned to the standard locations prior to weighing.

g. Raise flaps to fully retracted positions.

h. Place all control surfaces in neutral position.

i. Remove all non-required items from airplane.

2. LEVELING

a. Place scales under each wheel (minimum scale capacity, 2000 pounds nose, 4000 pounds each main). The main landing gear must be supported by stands, blocks, etc., on the main gear scales to a position at least four inches higher than the nose gear as it rests on an appropriate scale. This initial elevated position will compensate for the difference in waterline station between the main and nose gear so that final leveling can be accomplished solely by deflating the nose gear tire.

b. Deflate the nose tire to properly center the bubble in the level (see Airplane Weighing Form). Since the nose gear strut contains an oil snubber for shock absorption rather than an air/oil strut, it can not be deflated to aid in airplane leveling.

(Continued Next Page)

AIRPLANE WEIGHING PROCEDURES (Continued)

3. **WEIGHING**
   a. Weigh airplane in a closed hangar to avoid errors caused by air currents.
   b. With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare from each reading.
4. **MEASURING**
   a. Obtain measurement A by measuring horizontally (along airplane centerline) from a line stretched between the main wheel centers to a plumb bob dropped from the center of the nose jack point located below the firewall and housed within the nose strut fairing.
   b. Obtain measurement B by measuring horizontally and parallel to the airplane centerline, from center of nose wheel axle, left side, to a plumb bob dropped from the line between the main wheel centers. Repeat on right side and calculate the average of the measurements.
5. Using weights from step 3 and measurements from step 4, the airplane weight and C.G. can be determined.
6. Basic Empty Weight may be determined by completing Figure 6-1, Airplane Weighing Form in this section.

WEIGHT AND BALANCE

The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure weight and balance, use the Sample Loading Problem, Weight and Moment Tables, and Center of Gravity Moment Envelope as follows:

1. Take the basic empty weight and moment from appropriate weight and balance records carried in your airplane, and enter them in the column titled “YOUR AIRPLANE” on the Sample Loading Problem.

NOTE

In addition to the basic empty weight and moment noted on these records, the C.G. arm (Fuselage Station) is also shown, but need not be used on the Sample Loading Problem. The moment which is shown must be divided by 1000 and this value used as the moment/1000 on the loading problem.

2. Use the Weight and Moment Tables to determine the moment/ 1000 for each additional item to be carried, then list these on the loading problem.

NOTE

Information on the Weight and Moment Tables for different fuel grades is based on average fuel density at fuel temperatures of 60°F. However, fuel weight increases approximately 0.1 pounds per gallon for each 25°F decrease in fuel temperature. Therefore, when environmental conditions are such that the fuel temperature is different than shown in the chart heading, a new fuel weight calculation should be made using the 0.1 pounds per gallon increase in fuel weight for each 25°F decrease in fuel temperature. Assume the tanks are completely filled and the fuel temperature is at 35°F (25°F below the 60°F noted on the chart).

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

3. Calculate the revised fuel weight by multiplying the total usable fuel by the sum of the average density (stated on chart) plus the increase in density estimated for the lower fuel temperature. In this particular sample, as shown by the calculation below, the resulting fuel weight increase due to lower fuel temperature will be 32.0 pounds over the 2246 pounds (for 335 gallons) shown on the chart, which might be significant in an actual loading situation:

   335 gallons X (6.7 + 0.1 pounds per gallon) = 2278 pounds revised fuel weight.

   Then calculate the revised fuel moment. The revised moment is in direct proportion to the revised fuel weight:

   $$\frac{X \text{ (revised moment)}}{456.1 \text{ (average moment)}} = \frac{2278 \text{ (revised weight)}}{2246 \text{ (average weight)}}$$

   $$X = (456.1 \times 2278) / 2246$$

   The revised moment of X = 462.6. This value would be used on the Sample Loading Problem as the moment/1000 in conditions represented by this sample.

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

NOTE

Information on the Weight and Moment Tables for crew, passenger, and cargo is based on the pilot and front passenger sliding seats positioned for average occupants (e.g., Fuselage Station 135.5), the aft passenger fixed seats (if installed) in the recommended position, and the baggage or cargo uniformly loaded around the center (e.g., Fuselage Station 172.1 in Zone 1) of the zone fore and aft boundaries (e.g., Fuselage Stations 155.4 and 188.7 in Zone 1) shown on Figure 6-11, Cabin Internal Loading Arrangements. For loadings which may differ from these, the Loading Arrangements figure and Sample Loading Problem lists Fuselage Stations for these items to indicate their forward and aft C.G. range limitations. Additional moment calculations, based on the actual weight and C.G. arm (Fuselage Station) of the item being loaded, must be made if the position of the load is different from that shown on the Weight and Moment Tables. For example, if seats are in any position other than stated on Figure 6-11, Cabin Internal Loading Arrangements, the moment must be calculated by multiplying the occupant weight times the arm in inches. A point nine inches forward of the intersection of the seat bottom and seat back (with cushions compressed) can be assumed to be the occupant C.G. For a reference in determining the arm, the forward face of the raised aft cargo floor is Fuselage Station 332.0.

Total the weights and moments/1000 and plot these values on the Figure 6-18, Center of Gravity Moment Envelope to determine whether the point falls within the envelope, and if the loading is acceptable.

WARNING

It is the responsibility of the pilot to make sure that the airplane is correctly loaded. Operation outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

CLCALC

Loading calculations may also be completed using the CLCalc application included in the CESNAV software package. CLCalc is approved for use as an alternative source to the FAA Approved Weight and Balance Manual to determine weight and balance data for a particular flight. CLCalc and the Weight and Balance Manual methods are each equally valid sources of weight and balance data; however, the operator must use data from only one of these sources for a given determination. Instructions for completing a loading calculation using CLCalc are included in the Help menu of the CLCalc application.

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

WEIGHT AND BALANCE RECORD (LOAD MANIFEST)

A Weight and Balance Record (Load Manifest) is available for recording the cargo loading configuration of each flight and verifying that the airplane weight and takeoff center of gravity in terms of % Mean Aerodynamic Chord (MAC) is acceptable. A sample of this record is shown in this section. The procedure for using this record is summarized below.

1. Enter flight date and number, point of departure and destination, and airplane identification in spaces provided.
2. Enter weight of cargo in each cabin cargo zone in appropriate ITEM WEIGHT spaces. Total cabin cargo weights in space provided as a check that maximum allowable cabin cargo weight of 3400 pounds is not exceeded. Refer to other portions of the POH/AFM for additional limitations which must be observed.
3. Enter weight of cargo in cargo pod and weight of pilot, copilot, and TKS fluid (if installed).
4. Complete ITEM INDEX column for all cargo, pilot, passenger, and TKS fluid (if installed) by referring to adjacent WEIGHT INDICES listing. For each cargo or personnel weight recorded previously, read across horizontally to the vertical column having an identical weight at the top. The number shown at this intersection is the weight index for the recorded weight. As an example, 300 pounds of cargo loaded in cabin Zone 1 has a weight index of 988, and this number should be entered under ITEM INDEX for cabin Zone 1.

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

WEIGHT AND BALANCE RECORD (LOAD MANIFEST) (Continued)

NOTE

If weight to be loaded does not match one of the weight increments provided, and a more precise weight index is needed, use the LOAD ITEM INDEX formula on the backside of the Weight and Balance Record (Load Manifest) to calculate the index. However, as shown in the sample calculation below for a 315-pound load (instead of 300 pounds) in cabin Zone 1, minor weight variables do not affect the weight index significantly. The ARM used in the following calculation is the centroid of cabin Zone 1 as shown on the diagram on the backside of the record.

$$\frac{315 \text{ X } (172.1 - 192)}{500} = -12.5$$

$$1000 - 12.5 = 987.5$$

The weight index of 987.5, when rounded to the next highest number, would still result in the 988 given in the example above for a 300-pounds load.

5. Add weight of pod cargo, pilot, passenger, and TKS fluid (if installed) to sub-total weight for cabin cargo and enter this value as the weight of the total payload; the sum of all item indices recorded is the item index for the total payload. For calculation purposes, enter only the last three digits of the total in the ITEM INDEX columns.

(Continued Next Page)

WEIGHT AND BALANCE (Continued)

WEIGHT AND BALANCE RECORD (LOAD MANIFEST)
(Continued)

6. Enter basic empty weight (from airplane weight and balance information) in ITEM WEIGHT column for aircraft empty weight. Calculate weight index using the BASIC AIRPLANE INDEX formula on the backside of the Weight and Balance Record (Load Manifest). The sample calculation below is for an airplane with a basic empty weight of 5005 pounds and a C.G. arm of 185.69.

$$\frac{5005 \text{ X } (185.69 - 192)}{500} + 500 = 436.84$$

   In the aircraft empty weight spaces for the airplane in this sample, a weight of 5005 and an index of 437 would be entered.

7. Add aircraft empty weight and index to payload weight and index to acquire a zero fuel weight and index. A plot of this weight and index on the adjacent chart indicates the location of the zero fuel weight center of gravity in terms of % MAC. A C.G. % MAC space is provided to enter this value. If the zero fuel weight C.G. falls well within clear area of chart envelope, the loading will likely be acceptable. however, if the C.G. at this weight fall near or within shaded area, a careful recheck of the loading and C.G. is important.
8. The weight available for takeoff fuel is the difference between zero fuel weight and takeoff weight. A FUEL INDICES table at bottom of Weight and Balance Record (Load Manifest) provides an index for the weight of fuel to be carried. The fuel weight and this index should be entered for takeoff fuel. When calculating takeoff fuel, 35 pounds of additional fuel can be allowed as taxi fuel under average conditions. A space for taxi fuel weight is provided.
9. Add takeoff fuel weight and index to zero fuel weight and index to acquire a takeoff weight and index which can be plotted to determine the takeoff C.G. location in terms of % MAC. A C.G. % MAC space is provided for this value.
10. Enter 8807 pounds as the maximum allowable takeoff weight for this airplane. The additional 35 pounds of taxi fuel provides a maximum ramp weight of 8842 pounds.

WEIGHT AND BALANCE RECORD (LOAD MANIFEST)

A91664

CESSNA 208B WEIGHT AND BALANCE RECORD

DEP. DATE 2		ORIGIN		AIRCRAFT NO.	
FLIGHT NO.		DESTINATION			

ITEM	ZONE	MAX. LOAD	ITEM WEIGHT	ITEM INDEX	25	50	75	100	150	200	250	300	350	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3100
CABIN CARGO	1	1780			999	998	997	996	994	992	990	988	986	984	980	976	972	968	964	960	952	944	936	928							
	2	3100			1	3	4	5	8	10	13	15	18	21	26	31	36	41	48	52	62	72	83	93	103	114	124	134	144	155	160
	3	1900			4	7	11	14	22	29	38	43	51	58	72	87	101	116	130	145	174	203	232	261	290						
	4	1380			5	10	15	21	31	41	51	62	72	82	103	123	144	164	185	205	246	287									
	5	1270			6	13	19	26	38	51	64	77	89	102	128	153	179	204	230	255	305	387									
	6	320			8	15	23	30	46	61	76	91	108																		
	TOTAL	3400																													
POD	A	230			997	994	991	988	982	976	970																				
	B	310			000	999	999	998	997	996	996	994	993																		
	C	270			2	4	6	8	12	17	21	25	21																		
	D	280			5	10	14	19	29	38	48	57																			
PILOT & FLT KIT	+				997	994	992	989	983	977	972	968																			
OBSERVER	+				997	994	992	989	983	977	972	968																			
TOTAL PAYLOAD	-																														
A/C EMPTY WT.	+																														
ZERO FUEL WEIGHT	-																														
T.O. FUEL	+																														
T.O. WEIGHT	-																														
MAX ALLOWABLE T.O. WEIGHT	-																														
TAXI FUEL	-																														
RAMP WEIGHT	-																														

ENTER ONLY LAST THREE DIGITS OF THE TOTAL IN ITEM INDEX COLUMNS

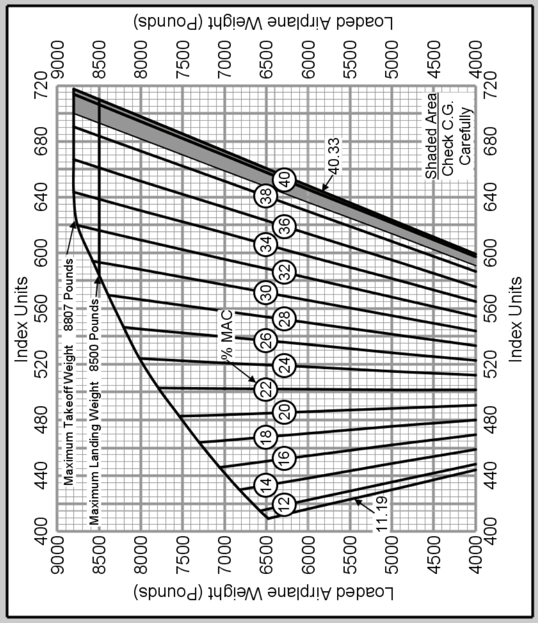
C.O.% MAC

C.O.% MAC

NOTES:

FUEL INDICES

WT.	INDEX	WT.	INDEX	WT.	INDEX	WT.	INDEX	WT.	INDEX
50	1	500	11	950	21	1400	31	1850	41
100	2	550	12	1000	22	1450	33	1900	42
150	3	600	13	1050	23	1500	34	1950	43
200	4	650	14	1100	25	1550	35	2000	44
250	5	700	15	1150	26	1600	36	2050	46
300	6	750	16	1200	27	1650	37	2100	47
350	8	800	18	1250	28	1700	38	2150	48
400	9	850	19	1300	29	1750	39	2200	49
450	10	900	20	1350	30	1800	40	2246	50



ALL FAA AND COMPANY LOADING LIMITATIONS AND WEIGHT AND BALANCE REQUIREMENTS SATISFIED IN ACCORDANCE WITH FAN 135.43C AND 125.299C.

FLIGHT CREWMEMBER (SIGNATURE)	EMPLOYEE NO

208BWRC-00

Figure 6-3 (Sheet 1 of 2)

WEIGHT AND BALANCE RECORD (LOAD MANIFEST)

A91608

MAXIMUM STRUCTURAL WEIGHTS	
MAX RAMP	8842 LBS
MAX TAKEOFF	8807 LBS
MAX LANDING	8500 LBS

INDEX FORMULA

BASIC AIRPLANE INDEX = $\frac{WT\ (ARM - 192)}{500} + 500$
LOAD ITEM INDEX = $\frac{WT\ (ARM - 192)}{500}$ = (IF NEG. SUBTRACT FROM 1000)

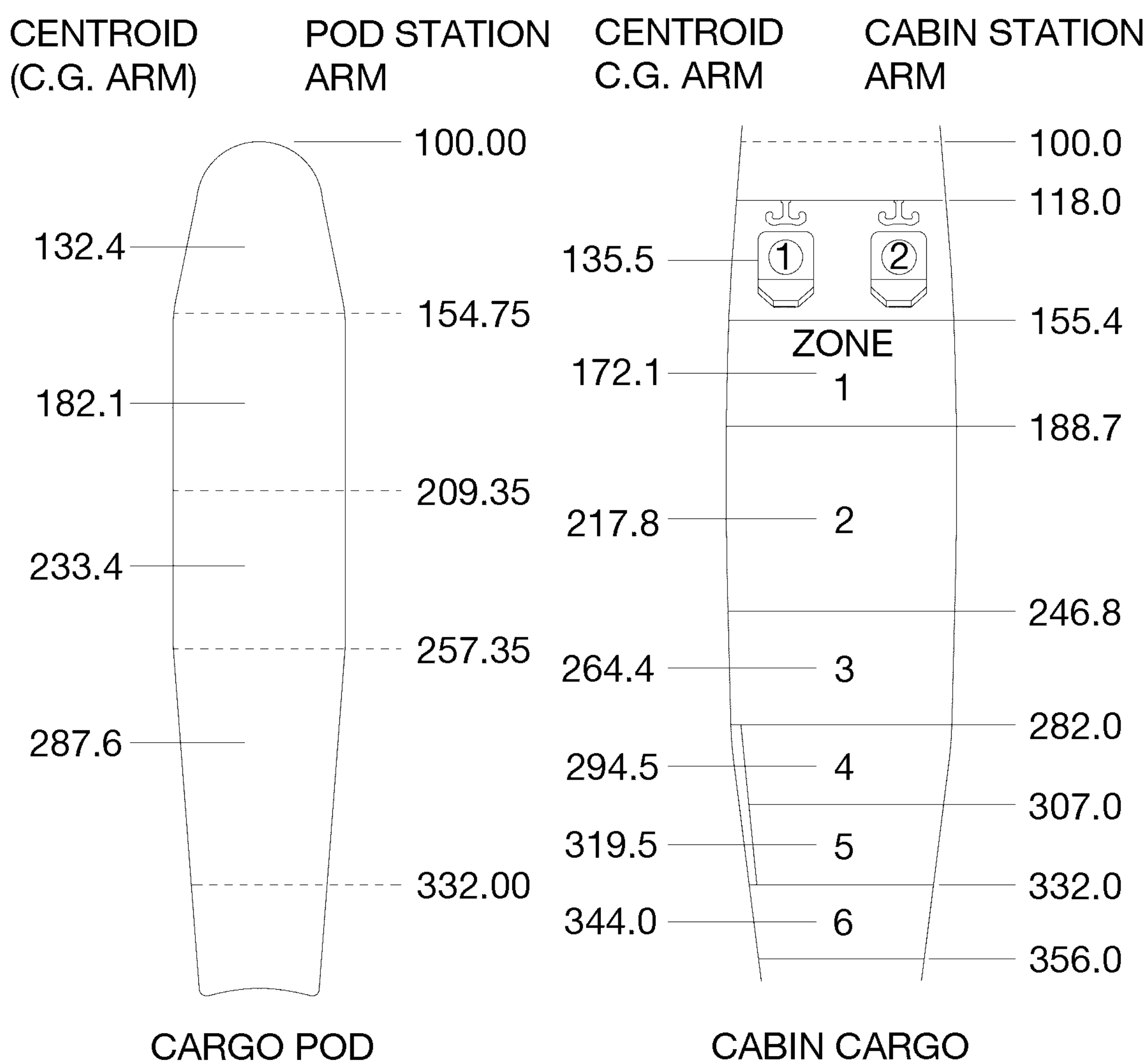


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Figure 6-3 (Sheet 1 of 2)

CREW AND PASSENGER LOADING

The pilot and front passenger positions in all airplanes have six-way adjustable seats. These seats slide forward and aft on tracks that have adjustment holes for seat position.

The Passenger Version has aft passenger seating with two configurations of Commuter Seating.

The first Commuter Seating configuration has three individual, fixed-position passenger seats on the left side of the cabin, and three two place fixed-position, bench seats located on the right side of the cabin in a side-by-side arrangement.

The second Commuter Seating configuration includes four individual, fixed-position, passenger seats on the left side of the cabin and four individual, fixed-position passenger seats on the right side of the cabin in a side-by-side arrangement.

WARNING

None of the airplane seats are approved for installation facing aft.

BAGGAGE/CARGO LOADING

CABIN CARGO AREA

Cargo may be carried in the cabin of either the Cargo Version or the Passenger Version. The cabin interior of the Cargo Version is specifically equipped for carrying cargo. However, after seat removal and the installation of miscellaneous equipment, the Passenger Version will also fulfill the requirements of cargo missions. The following paragraphs generally describe the cargo area of both versions.

To facilitate the carrying of large or bulky items, all aft seats (Passenger Version Only) and the front passenger seat may be removed from the airplane. If a cargo barrier and nets are available for installation, removal of the front passenger seat may not be desired. Mission requirements will dictate whether the barrier is to be used and the number of seats removed. If seats are removed for hauling cargo and the cargo barrier and nets are installed, the basic empty weight and C.G. moment of the airplane should be adjusted so that these values accurately represent the weight and moment of the airplane before loading.

To calculate the new weight and moment, refer to the airplane equipment list and acquire the weight and C.G. arm of each item of equipment to be removed or added, then record these values on the Sample Weight and Balance Record, to assist in the calculation. For each item of equipment, multiply its weight by its C.G. arm to provide the moment for that item. Subtract weights of removed items (seats) and add weights of installed items (cargo barrier and nets) to the original basic empty weight to provide a new basic empty weight. Likewise, subtract the moments of removed items and add the moments of installed items to the original moment to provide a new airplane moment. Remember that the moment value is to be divided by 1000 to reduce the number of digits. The new basic empty weight and moment/1000 can be used as illustrated in the Sample Loading Problem when figuring airplane loading with the selected items of equipment removed and/or installed.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

With all seats except the pilot's seat removed, a large cabin volume is available for baggage/cargo. If a cargo barrier is installed, the total volume available for cargo behind the barrier is 340 cubic feet.

Cargo can be loaded through the large, almost square, two-piece cargo door. The floor is flat from the firewall (FS 100.0) to the aft side of the cargo door (FS 332.0), except for a small area around the rudder pedals. This area is limited to a 200 pound per square foot maximum allowable loading.

Between FS 332.0 and 356.0, additional cargo space is provided on a floorboard raised approximately five inches above the main cabin floor. The raised baggage/cargo area contains eight anchor plates where quick-release tiedown fittings can be attached. This raised area is limited to a maximum cargo capacity of 320 pounds.

In the front passenger seat area, FS 125.00 to 159.98, "I" section seat tracks are installed where tiedown block assemblies can be clamped to the tracks to serve as tiedown attachment points.

From FS 158.00 to 332.0, seat tracks are provided and designed to receive quick-release tiedown fittings which can be snapped into the tracks at 1.00 inch intervals.

If rope, cable or other fittings are used for tiedowns, they should be rated at a minimum of 2100 pounds when used with all fittings noted in Figure 6-10, Cargo Tie-Down Attachments. The only exception is the double-stud quick-release tiedowns which require a 3150 pound rating.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

Strategically located nutplates are provided throughout the cabin which allow for the installation of plywood flooring option (standard equipment on Cargo Versions). The plywood flooring provides protection for the floor structure, assists in the ease of loading cargo and helps with the distribution of concentrated loads.

Maximum allowable cargo loads will be determined by the individual zone weight limitation and by the airplane weight and C.G. limitations. The number of tiedowns required is dependent on the load(s) to be secured. Figure 6-10, Cargo Tie-Down Attachments, shows the maximum allowable cargo weight for each type of cargo tiedown attachment.

On Cargo Versions, the sidewalls in the cargo area are marked with vertical lines to facilitate the identification of six loading zones. Markings located on the sidewalls between the lines identify each zone by number and display the maximum load which can be carried within the zones. Refer to Figure 6-6, Cabin Internal Load Markings (Cargo Version), for maximum zone weight limits.

CAUTION

The maximum load values marked in each zone are predicated on all cargo being tied down within the zones.

On Cargo Versions, a horizontal line labeled “75%” is prominently marked along each sidewall as a loading reference. As indicated on a placard on the lower cargo door, zones forward of the last loaded zone must be at least 75% full by volume. Whenever possible, each zone should be loaded to its maximum available volume prior to loading the next zone. An additional placard located on the right sidewall between Zones 5 and 6 cautions that if the load in Zone 5 exceeds 400 pounds, a cargo partition net is required aft of the load or the load must be secured to the floor. Refer to Figure 6-6, Cabin Internal Load Markings (Cargo version), for additional details on installed placards and loading requirements.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

CARGO BARRIER AND NETS

A cargo barrier and three barrier nets may be installed directly behind the pilot's and front passenger's seats. The barrier and nets prevent loose cargo from moving forward into the pilot's and front passenger's area during an abrupt deceleration.

The barrier consists of a U-shaped divider constructed out of honeycomb composite. The bottom portion of the barrier attaches to the pilot and front passenger seat rails at four locations (FS 153.0). The top portion attaches to cabin top structure at approximately FS 166.0.

The cargo barrier nets consist of three nets, one for the left sidewall, one for the right sidewall, and one for the center. The left and right nets fill in the space between the barrier assembly and the airplane sidewalls. The side nets are fastened to the airplane sidewalls and the edge of the barrier with six quick-release fasteners each, three on each side. The center net fills in the opening in the top center of the barrier. The center net is fastened with four fasteners, two on each side.

Horizontal lines labeled 75% are marked on the aft side of the cargo barrier. Placards above the horizontal lines caution that the maximum allowable load behind the barrier is 3400 pounds total, and that zones forward of the last loaded zone must be at least 75% full by volume. Refer to Figure 6-7, Cargo Barrier and Barrier Nets, for additional details on installed placards and loading requirements.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

CARGO BARRIER AND NETS (Continued)

WARNING

- **When utilized, the cargo barrier and its attached nets provide cargo forward crash load restraint and protection of the pilot and front passenger; however, the cargo must still be secured to prevent it from shifting due to takeoff, flight, landing, and taxi accelerations and decelerations.**
- **On the passenger version, if passengers as well as cargo, are located aft of the barrier, cargo placement must allow movement and exit of the passengers and the cargo must be secured for crash load restraint conditions. Refer to Cargo Load Restraint in this section for additional information concerning cargo restraint with and without a cargo barrier.**
- **Make sure the barrier net fasteners are secured for takeoff, landing, and inflight operations, and are momentarily detached only for movement of the nets for loading/unloading of items through the crew area.**

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

CARGO PARTITION NETS

Cargo partition nets are available and can be installed to divide the cargo area into convenient compartments. Partitions may be installed in all of the five locations at FS 188.7, 246.8, 282.0, 307.0 and 332.0. The cargo partitions are constructed of canvas with nylon webbing reinforcement straps crisscrossing the partition for added strength. The ends of the straps have quick-release fasteners which attach to the floor tracks and two floor-mounted anchor plates located just forward of the raised cargo floor and other anchor plates on the sidewalls and ceiling. Four straps have adjustable buckles for tightening the straps during installation of the partition. Refer to Figure 6-8, Cargo Partition Nets, for additional details.

Zones divided by cargo partitions can be loaded without additional tiedowns if a total loaded density for each partitioned zone does not exceed 7.9 pounds per cubic foot and the zone is more than 75% full. Cargo loading that does not meet these requirements must be secured to the cabin floor.

CAUTION

The maximum cargo partition load is the sum of any two zones. No more than two adjacent zones can be divided by one partition. The partitions are designed to prevent the cargo from shifting forward and aft in flight. They should not be considered adequate to withstand crash loads and do not replace the need for a cargo barrier.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CABIN CARGO AREA (Continued)

CARGO TIEDOWNS AND ATTACHMENTS

Various tiedown belt assemblies and tiedown ring anchors are available for securing cargo within the airplane. The belts may also be used for tying down the airplane. A standard configuration consists of three 3000-pound rated belts with ratchet-type adjusters and six single-stud, quick-release tiedown ring anchors.

A heavy-duty configuration consists of three 5000-pound rated belts with ratchet-type adjusters and six double-stud, quick-release anchors. Three 5000-pound rated belts with overcenter-type locking devices are also available for heavy-duty use. The six single-stud and double-stud tiedown ring anchors are also available separately. The single-stud anchors can be attached to any tiedown point in the airplane that isn’t placarded for attachment for partition nets only. The double-stud anchors can be attached to the aft seat tracks only. Refer to Figure 6-10, Cargo Tiedown Attachments, for maximum load ratings and tiedown ring anchor spacing restrictions.

Refer to Maximum Zone/Compartment Loading table on the following page for maximum zone weight limits.

(Continued Next Page)

BAGGAGE/CARGO LOADING (Continued)

CARGO POD

The airplane can be equipped with an 111.5 cubic foot capacity cargo pod attached to the bottom of the fuselage. The pod is divided into four compartments (identified as Zones A, B, C, and D) by bulkheads and has a maximum floor loading of 30 pounds per square foot and maximum load weight limit of 1090 pounds.

Each compartment has a loading door located on the left side of the pod. The doors are hinged at the bottom, and each has two latches. When the latch handles are rotated to the horizontal position with the doors closed, the doors are secured. Refer to Figure 6-5, Pod Internal Dimension and Load Markings, and Figure 6-12, Cargo Pod Loading Arrangements for additional information on loading cargo in the cargo pod.

MAXIMUM ZONE/COMPARTMENT LOADINGS

Maximum zone loadings are as follows:

			WEIGHT LIMITS (Pounds)		
	ZONE/ COMPART-MENT	VOLUME (CUBIC FEET)	*SECURED BY TIE-DOWNS	**UNSECURED USING PARTITIONS OR IN CARGO POD	C.G. (STATION LOCATION)
FUSELAGE	**1**	**52.9**	**1780**	**415**	**172.1**
	2	**109.0**	**3100**	**860**	**217.8**
	3	**63.0**	**1900**	**495**	**264.4**
	4	**43.5**	**1380**	**340**	**294.5**
	5	**40.1**	**1270**	**315**	**319.5**
	6	**31.5**	**320**	**245**	**344.0**
CARGO POD	**A**	**23.4**	**- - -**	**230**	**132.4**
	B	**31.5**	**- - -**	**310**	**182.1**
	C	**27.8**	**- - -**	**270**	**233.4**
	D	**28.8**	**- - -**	**280**	**287.6**

*** THIS IS THE MAXIMUM CARGO ALLOWED IN THE BAY INDICATED.**

****DENSITY MUST BE 7.9 LBS/FT^3 OR LESS AND BAY 75% OR MORE FULL.**

BAGGAGE/CARGO LOADING (Continued)

CENTER OF GRAVITY PRECAUTIONS

Since the airplane can be used for cargo missions, carrying various types of cargo in a variety of loading configurations, precautions must be taken to protect the forward and aft C.G. limits. Load planning should include a careful comparison of the mission requirements with the volume and weight limitation in each loading zone and the final airplane C.G. Cargo loaded in the forward zones may need to be balanced by loading cargo in one or more aft zones. Conversely, loadings can not be concentrated in the rear of the airplane, but must be compensated by forward cargo to maintain balance. Under ideal conditions, loadings should be accomplished with heavy items on the bottom and the load distributed uniformly around the C.G. of the cabin cargo area zone and/ or cargo pod compartment.

Loading personnel must maintain strict accountability for loading correctly and accurately, but may not always be able to achieve an ideal loading. A means of protecting the C.G. aft limit is provided by supplying an aft C.G. location warning area between 38.33% MAC and the maximum allowable aft C.G. of 40.33% MAC. The warning area is indicated by shading on Figure 6-17, Center of Gravity Limits, and Figure 6-18, Center of Gravity Moment Envelope.

CAUTION

- This shaded area should be used only if accurate C.G. determination can be obtained.
- Exercise caution while loading or unloading heavy cargo through the cargo doors. An ideal loading in every other respect can still cause tail tipping and structural damage if proper weight distribution is ignored. For example, heavy cargo loaded through the doors and placed momentarily in Zones 4 and 5, plus the weight of personnel required to move it to a forward zone, could cause an out-of-balance condition during loading.

CARGO LOAD RESTRAINT

PREVENTION OF MOVEMENT

Cargo restraint requires the prevention of movement in five principal directions: forward, aft, upward (vertical), left (side), and right (side). These movements are the result of forces exerted upon the cargo due to acceleration or deceleration of the airplane in takeoffs and landings as well as forces due to air turbulence in flight. Correct restraint provides the proper relationship between airplane configuration (with or without cargo barrier), weight of the cargo, and the restraint required.

Cargo must be tied down for flight, landing, and taxi load, and/or crash load. When a cargo barrier is not installed, all cargo must be prevented from movement in the five principal directions and secured to provide crash load restraint. The maximum rated loads specified for loadings without a cargo barrier is shown in Figure 6-10 (Sheet 1), Cargo Tiedown Attachments, and should be used for each tiedown. Consistent use of these loading criteria is important, and it is the responsibility of the pilot to make sure the cargo is restrained properly. When a cargo barrier is installed, cargo aft of the barrier must also be secured to prevent movement in the five principal directions, but only to the extent that shifting due to flight, landing, and taxi loads is provided. The maximum rated loads specified for loadings with a cargo barrier installed is shown in Figure 6-10 (Sheet 1), Cargo Tiedown Attachments, and should be used for each tiedown. With a barrier installed, all cargo must be loaded such that loading zones forward of the last loaded zone must be 75% full by volume.

WARNING

In special loading arrangements which allow the carriage of passengers as well as cargo behind the barrier in the passenger version, all cargo must be secured to prevent movement in the five principal directions and provide the same crash load restraint as though a barrier was not installed using the maximum rated loads specified for loading without a barrier. In this arrangement, cargo placement must allow for movement and exit of the passengers. The pilot must be responsible to make sure proper load restraint in all loadings.

(Continued Next Page)

CARGO LOAD RESTRAINT (Continued)

PREVENTION OF MOVEMENT (Continued)

Refer to Figure 6-14, Typical Cargo Restraint Methods, for diagrams of typical cargo tiedown methods for prevention of movement. Also, the cargo partition nets available for the airplane can be installed at Fuselage Stations 188.7, 246.8, 282.0, 307.0 and 332.0 to divide the cabin cargo area into compartments. If the partitions are used, they must be used in conjunction with the cargo barrier. Since partitions are not designed to withstand crash loads, they cannot be considered as a replacement for the barrier. Each partition will withstand the forward and aft operational loads applied during takeoff, flight, and landing by any two zones forward or aft of the partition. Use of the partitions will allow loading of the zones without tying down the cargo if the load density is not more than 7.9 pounds per cubic foot and the zone is more than 75% full. Cargo loading that does not meet these requirements must be secured to the cabin floor.

LOADING OF PIERCING OR PENETRATING ITEMS

Regardless of cargo location, items of a piercing or penetrating nature shall be located so that other cargo is loaded between the barrier/nets, cargo partitions, and rear wall and the piercing or penetrating items to provide a buffer. The density of this cargo shall be sufficient to restrain the piercing or penetrating items from passing through the barrier/nets, partitions, and rear wall under critical emergency landing conditions. If the condition cannot be complied with, the piercing or penetrating items shall be tied down separately.

TRANSPORTATION OF HAZARDOUS MATERIALS

Special protection of the airplane and training of personnel are key considerations in conducting approved transportation of hazardous materials.

Protection against hazardous materials has been provided in the fuselage bilge area under the cargo compartment from Fuselage Station 168.0 to 356.0, and these materials may be carried in any location within this area.

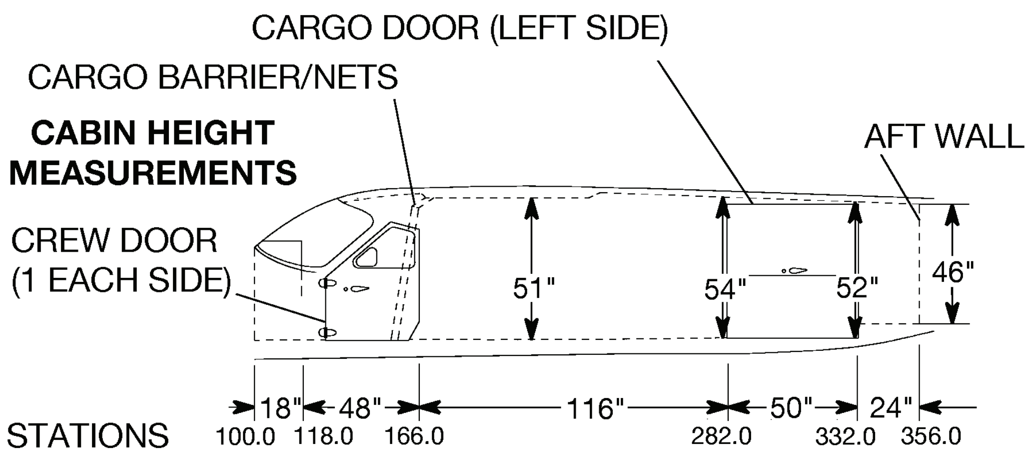
In addition to the pilot-in-command and flight crew member (if used), other personnel such as cargo receiving and loading personnel should be properly trained concerning the acceptance, handling, storage, loading and unloading of hazardous materials if these materials are to be carried. Information and regulations pertaining to the air transportation of hazardous materials is outlined in the Code of Federal Regulations (CFR) Title 49 and in the International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air.

EQUIPMENT LIST

For a complete list of equipment installed in the airplane as delivered from the manufacturer, refer to the equipment list furnished with the airplane.

CABIN INTERNAL DIMENSIONS
(CARGO VERSION)

A72483



DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (MID/ OVERALL)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (MID/ OVERALL)	HEIGHT (REAR)
CREW DOORS	11 7/8"	35 5/8"	31 7/8"	24 3/8"	41 3/4"	44 3/4"
CARGO DOOR	49"	49"	49"	50"	50"	50"

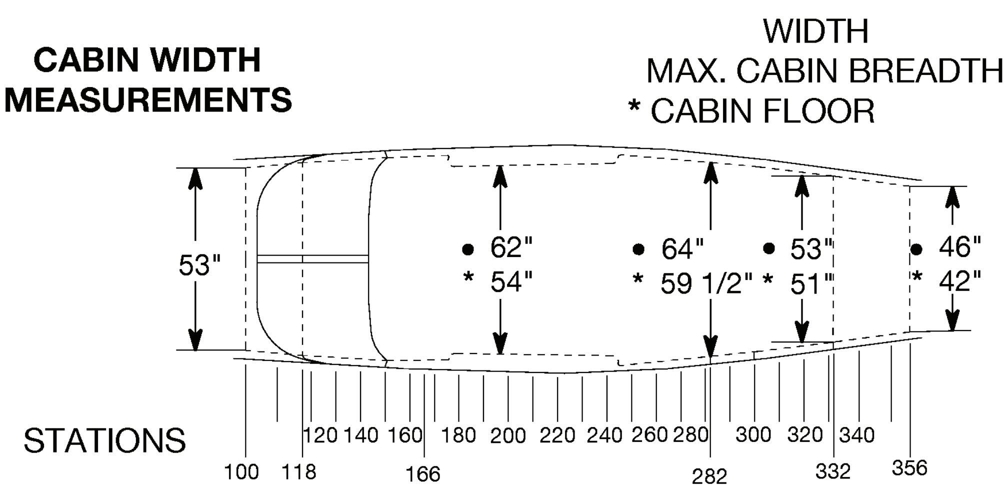


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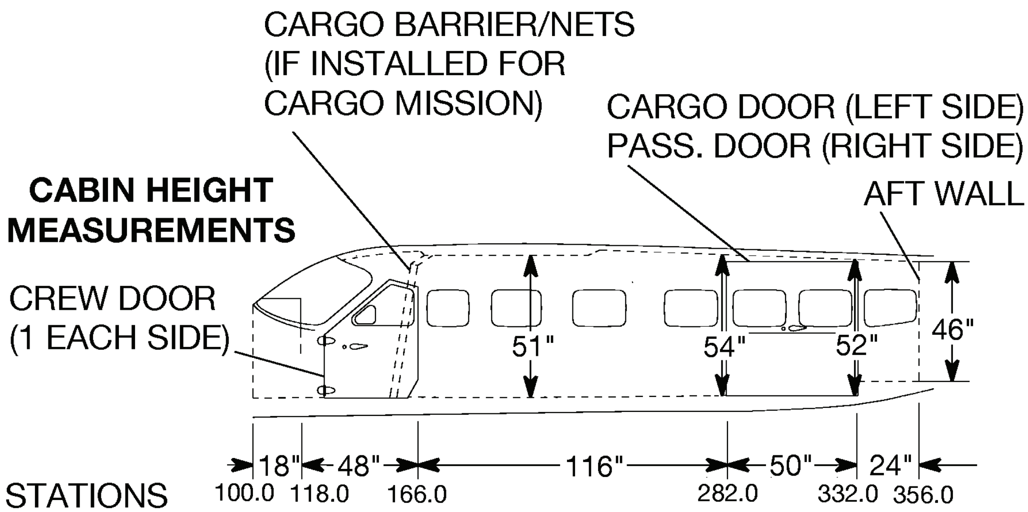
Figure 6-4 (Sheet 1 of 2)

CABIN INTERNAL DIMENSIONS
(PASSENGER VERSION)

A72482



DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (MID/ OVERALL)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (MID/ OVERALL)	HEIGHT (REAR)
CREW DOORS	11 7/8"	35 5/8"	31 7/8"	24 3/8"	41 3/4"	44 3/4"
CARGO DOOR	49"	49"	49"	50"	50"	50"
PASSENGER DOOR	24"	24"	24"	50"	50"	50"

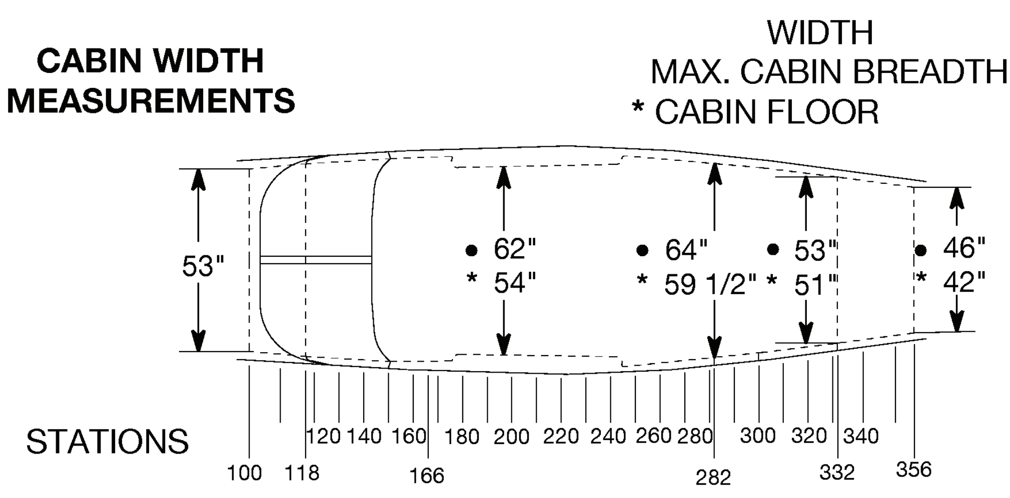
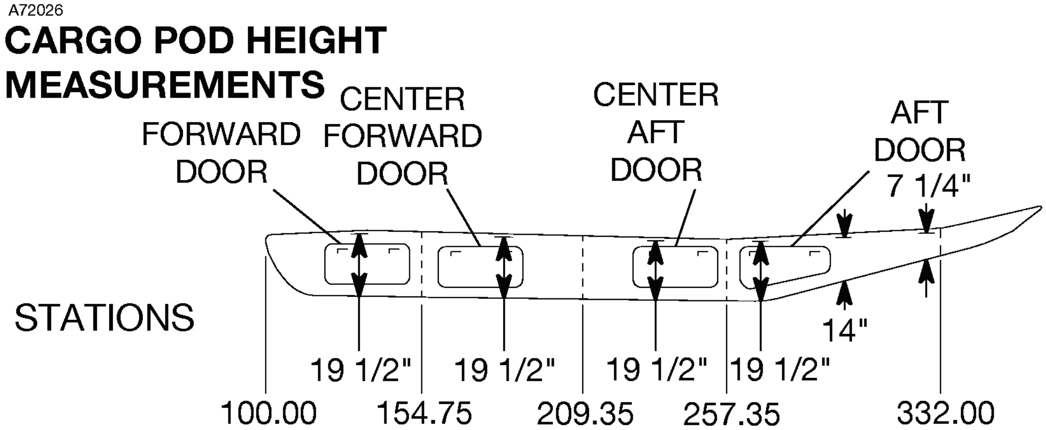


Figure 6-4 (Sheet 2)

POD INTERNAL DIMENSIONS AND LOAD MARKINGS

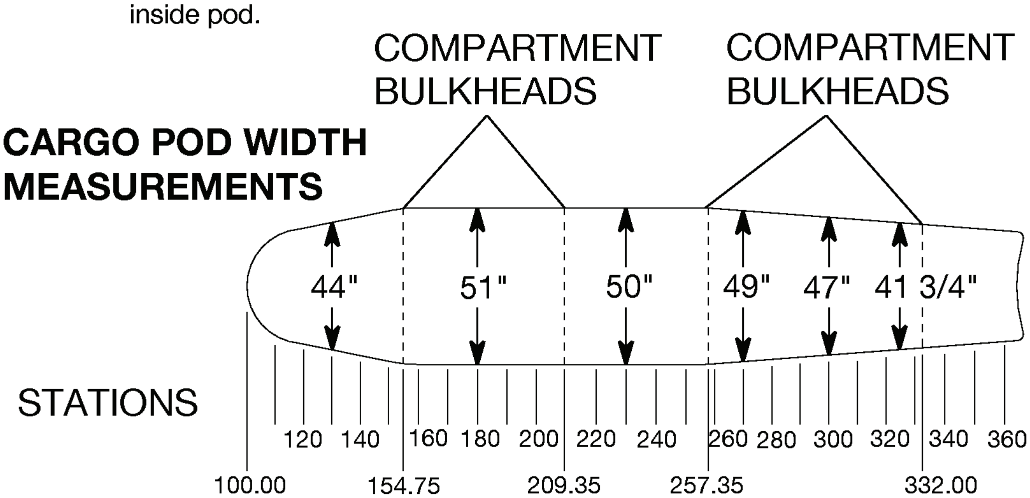


NOTE 1: Height dimensions are approximate and measured at Fuselage Stations shown from bottom of fuselage to inside floor.

NOTE 2: Width dimensions are approximate and measured at Fuselage Stations shown and on waterline 68.00 inside pod.

DOOR OPENING DIMENSIONS

	WIDTH	HEIGHT (FRONT)	HEIGHT (MID)	HEIGHT (REAR)
FORWARD DOOR	27 1/2"	– – –	14 1/2"	– – –
FWD. CTR. DOOR	30 1/2"	– – –	15 1/4"	– – –
AFT CTR. DOOR	27 1/2"	– – –	14 1/2"	– – –
AFT DOOR	30 1/2"	13 1/2"	– – –	8 1/2"



CARGO POD DOOR MARKINGS

FWD COMPARTMENT MAX. WEIGHT 230 LBS.	CTR. COMPARTMENT – FWD MAX WEIGHT 310 LBS.	CTR. COMPARTMENT – AFT MAX. WEIGHT 270 LBS.	AFT COMPARTMENT MAX. WEIGHT 280 LBS.
MAX FLOOR LOADING 30 LBS. PER SQ. FT.	MAX. FLOOR LOADING 30 LBS. PER SQ. FT.	MAX. FLOOR LOADING 30 LBS. PER SQ. FT.	MAX. FLOOR LOADING 30 LBS. PER SQ. FT.
NO SHARP EDGES	NO SHARP EDGES	NO SHARP EDGES	NO SHARP EDGES

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Figure 6-5

CABIN INTERNAL LOAD MARKINGS
(CARGO VERSION)

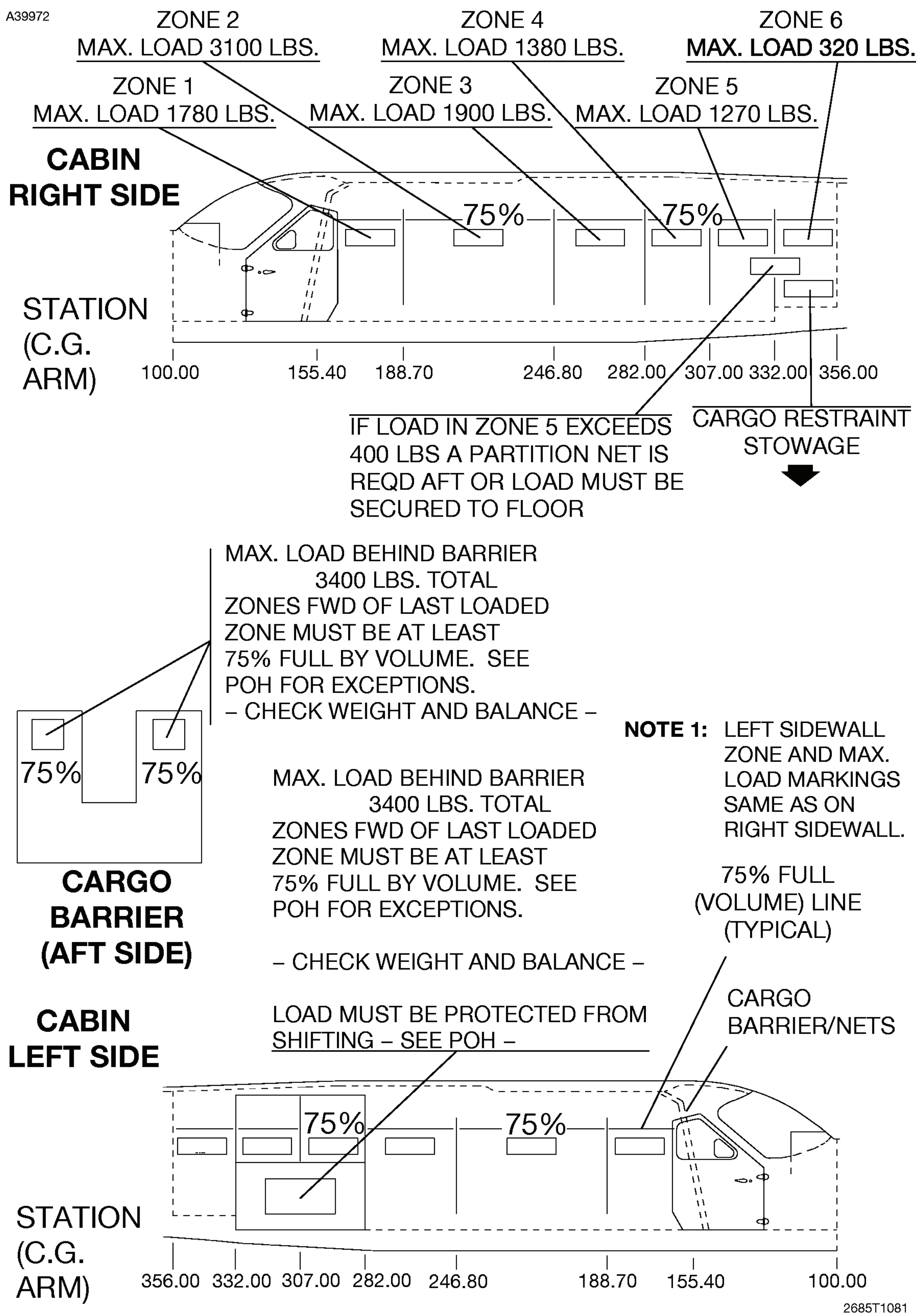
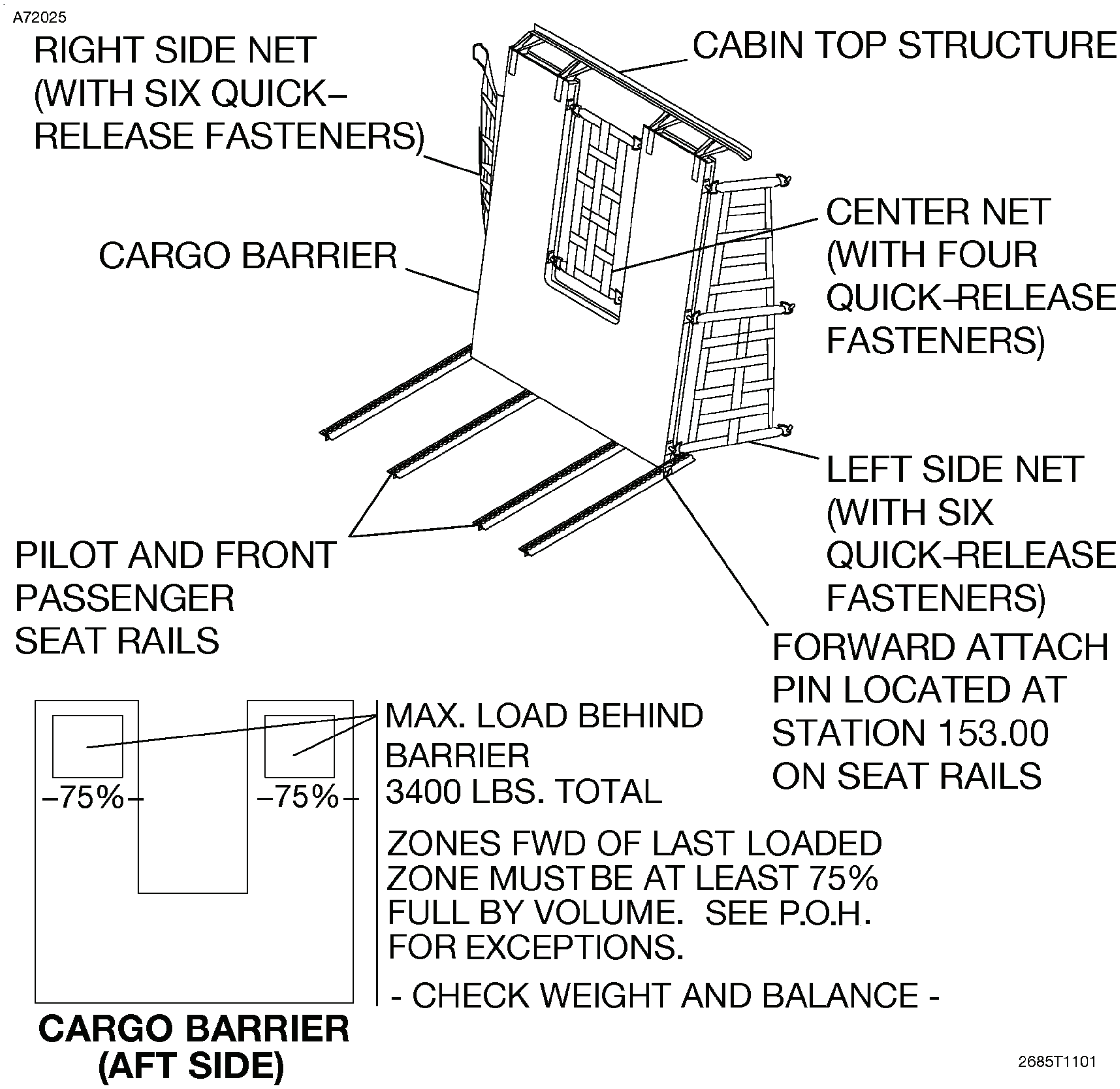


Figure 6-6

CARGO BARRIER AND BARRIER NETS

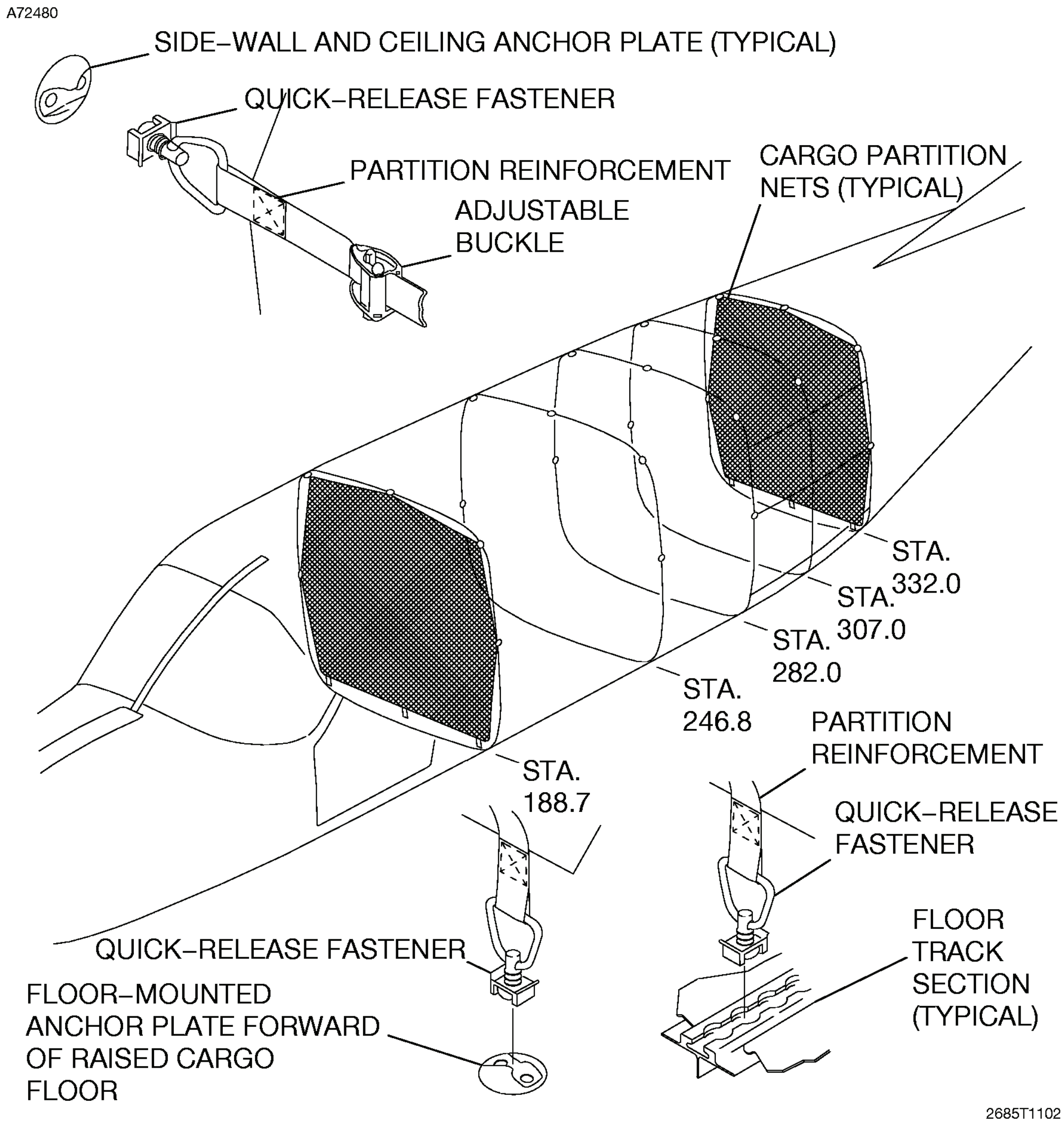


NOTE

- Installation of the fire extinguisher on the cargo barrier is not shown.
- The cargo barrier and attached barrier nets must be installed to provide forward crash load restraint.
- The quick-release fasteners which secure the center and side barrier nets allow momentary detachment of the nets for loading and unloading of items through the crew area.

Figure 6-7

CARGO PARTITION NETS

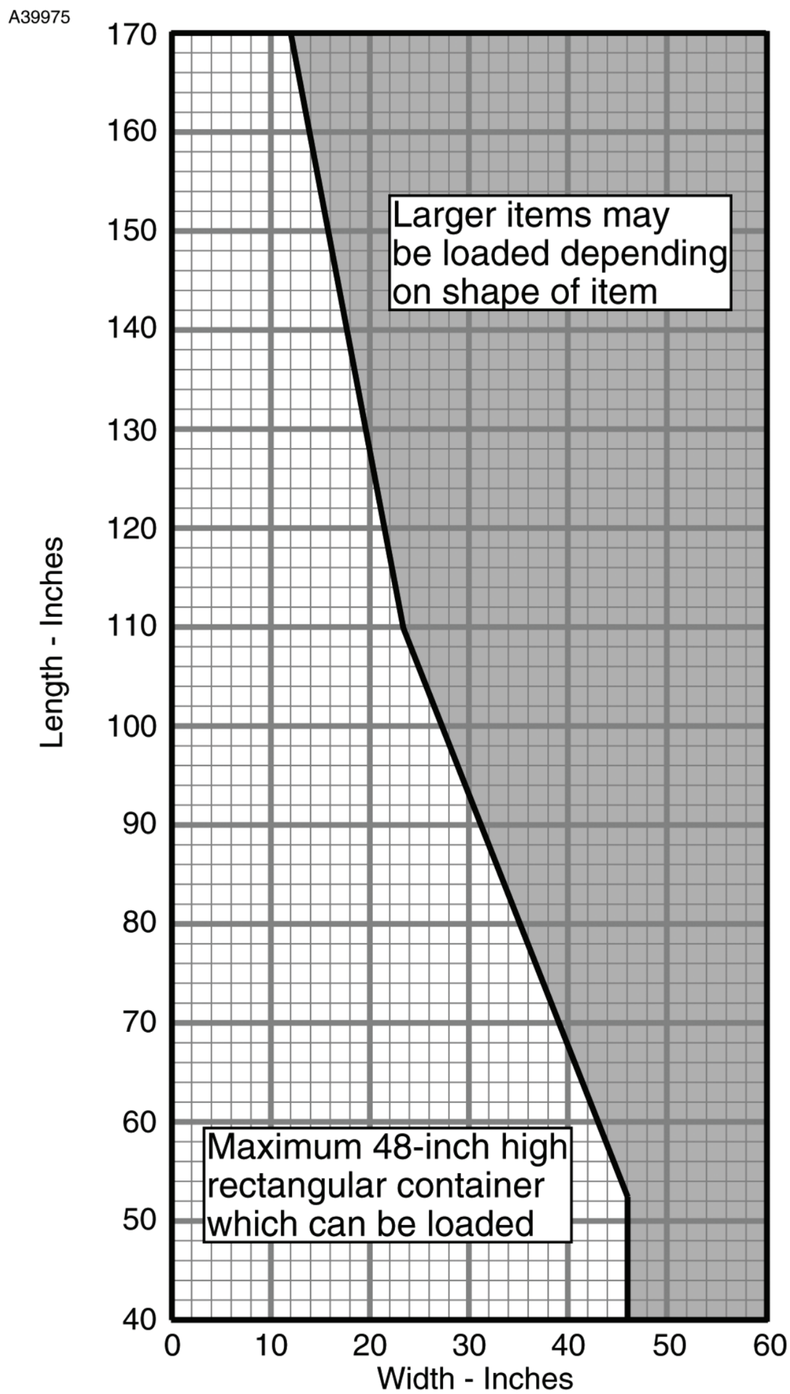


NOTE

- Partition nets are available for installation at Fuselage Stations 188.7, 246.8, 282.0, 307.0 and 332.0.
- If partitions are used, they must be used in conjunction with the cargo barrier. Partitions are not designed to withstand crash loads, therefore they cannot be considered as a replacement for the barrier.
- Each partition will withstand the forward and aft operational loads applied during takeoff, flight, and landing by any two zones forward or aft of the partition. Use of the partitions will allow loading of the zones without tying down the cargo if the load density is no more than 7.9 pounds per cubic foot and the zone is more than 75% full. Cargo loading that does not meet these requirements must be secured to the cabin floor.

Figure 6-8

MAXIMUM CARGO SIZES



NOTE

1. Approximately one inch clearance allowed from sidewall and ceiling.
2. Subtract roller height and pallet thickness, if applicable.

Figure 6-9

CARGO TIEDOWN ATTACHMENTS

A72104

Item	Location	* Maximum Rated Load (Pounds)	
		Without Cargo Barrier/Nets Installed	With Cargo Barrier Nets Installed
Tie-down block on seat track	On front passenger seat tracks	100	100
Single-stud quick-release Tie-down on seat track	On aft passenger seat tracks	100	200
Single-stud quick-release Tie-down on baggage floor Anchor plates	On raised baggage floor	100	200
Double-stud quick-release Tie-down on seat track	On aft passenger seat tracks	150	300

When utilizing the aft seat rails for tying down cargo, minimum spacing for single-stud quick release tie-down rings is 12 inches.

*Tie-downs are required toward and aft of cargo load to prevent the load form shifting. The type of tie-downs available, the sum of their individual rated loads, and the height and length of the load whether configured with or without a cargo barrier/nets, and whether passengers are carried aft of the cargo barrier/nets, are the determining factors in selecting the number of tie-downs needed.

FOR EXAMPLE:

A 600-pound load which has a height dimension that is equal to or less than its length dimension requires a minimum of six tie-downs (three forward and three aft). When the cargo barrier/nets are installed, the number of tie-downs can be reduced by 1/2 as long as load shifting can be prevented. The minimum number of tie-downs for this example would then be four (three plus one, to utilize an even number of tie-downs). Regardless of whether the cargo barrier/nets are installed, if the cargo height is greater than its Length, then the minimum number of tie-downs must be doubled. If passengers are carried aft of the cargo barrier/nets, cargo must be secured per the requirements without the barrier/nets installed. Refer to Cargo Load Restraint in this section for additional informatio

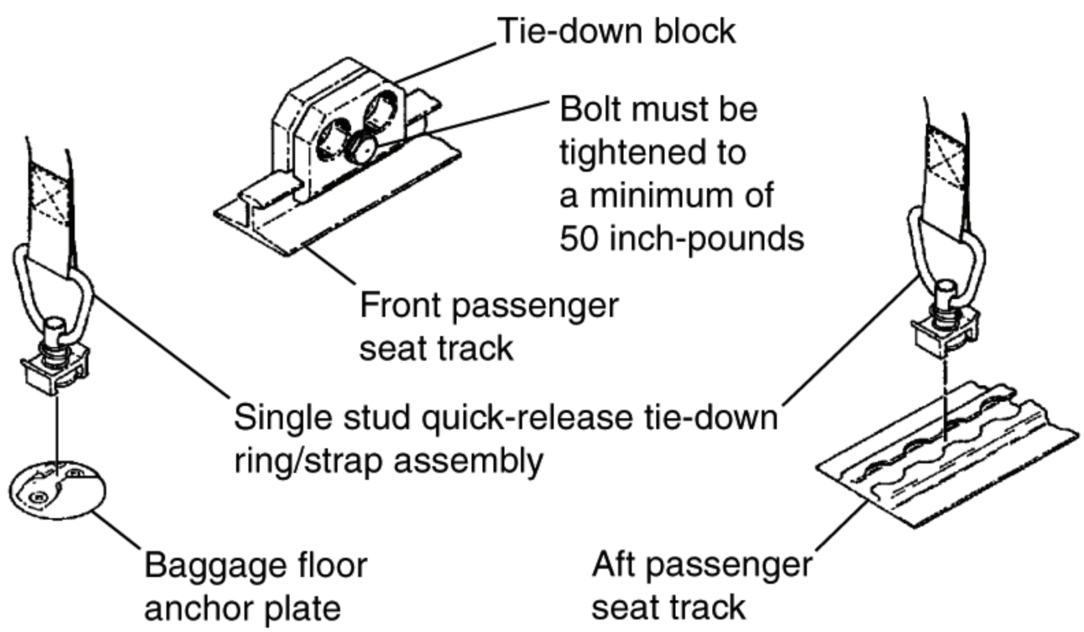


Figure 6-10 (Sheet 1 of 2)

CARGO TIEDOWN ATTACHMENTS

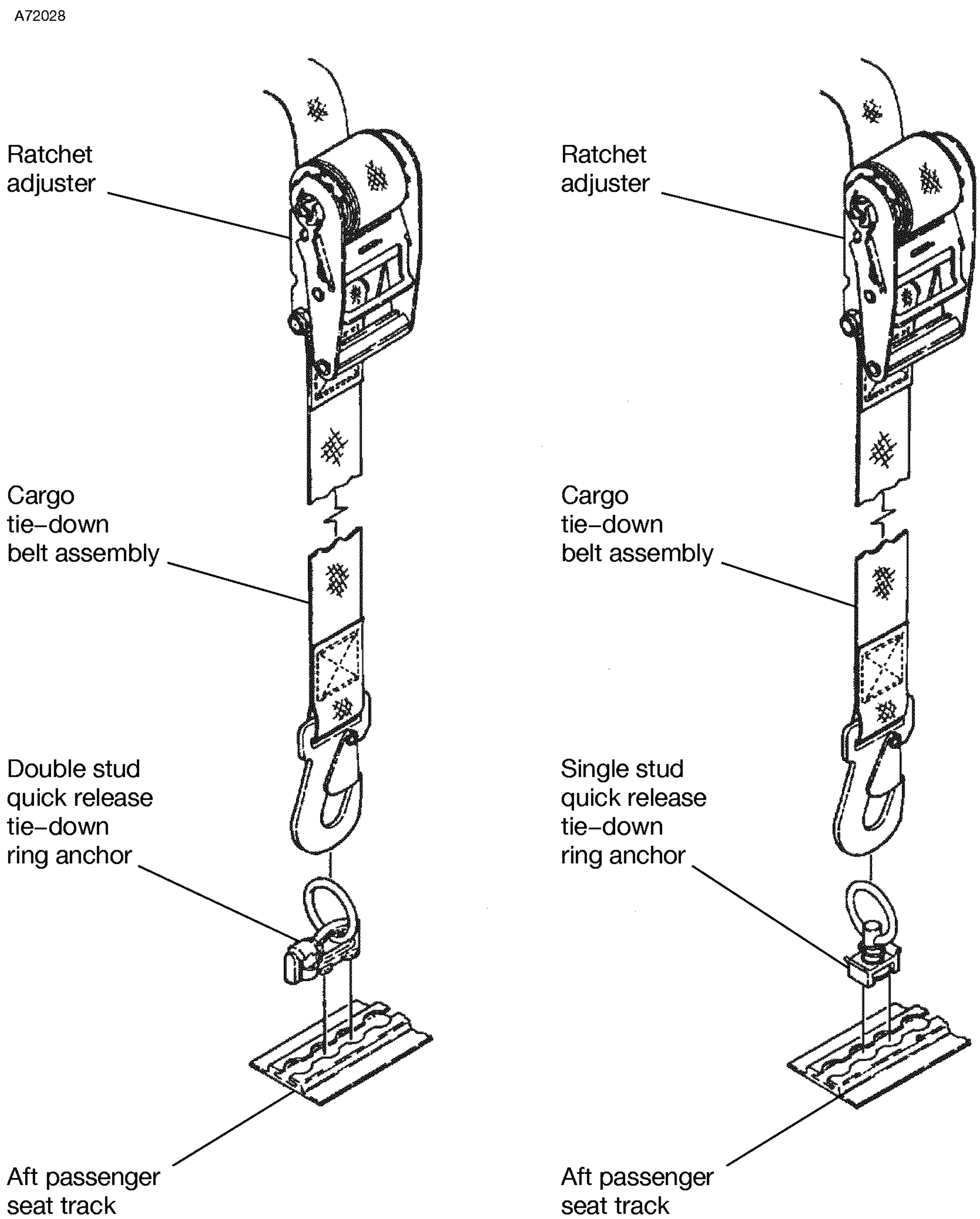
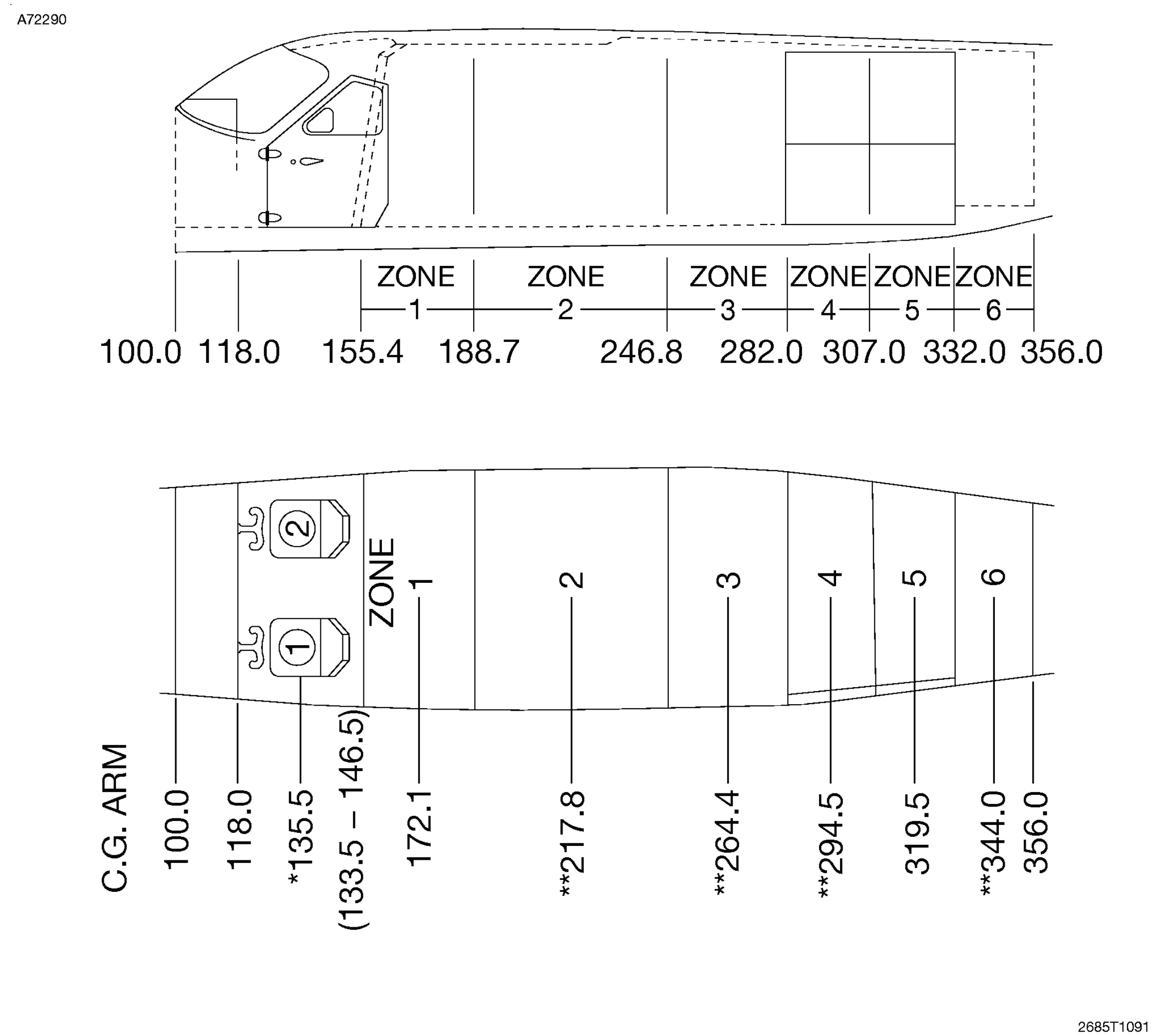


Figure 6-10 (Sheet 2)

CABIN INTERNAL LOADING ARRANGEMENTS
(CARGO VERSION)

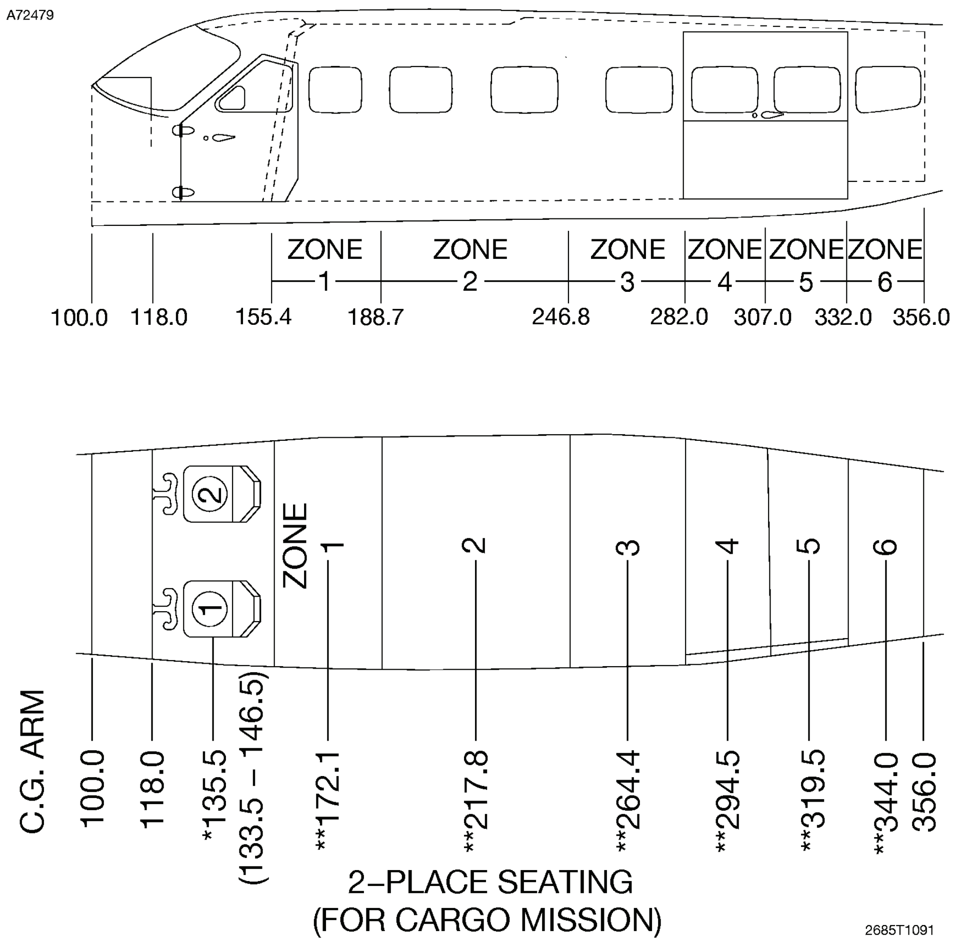


NOTE

1. * Pilot or front passenger center of gravity on adjustable seats positioned for an average occupant with the seat locking pin at Fuselage Station 145.0. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.
2. ** Cargo area center of gravity in Zones 1 thru 6 based on the mid point of the zone.
3. Vertical lines marked on the cargo area sidewalls or the forward face of the raised floor (Fuselage Station 332.0) can be used as a convenient reference point for determining the location of occupant or cargo Fuselage Station.

Figure 6-11 (Sheet 1 of 3)

CABIN INTERNAL LOADING ARRANGEMENTS
(PASSENGER VERSION)



NOTE

1. * Pilot or front passenger center of gravity on adjustable seats positioned for an average occupant with the seat locking pin at FS 145.0. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.
2. ** Cargo area center of gravity in Zones 1 thru 6 based on the mid point of the zone.
3. The forward face of the raised floor (FS 332.0) can be used as a convenient reference point for determining the location of occupant or cargo Fuselage Stations.
4. When a cargo barrier is installed, two-place Commuter seat 4 and 5 or individual Commuter seats 3 and 4 must be removed. Mission requirements will dictate if any aft passenger seating is to remain installed.

Figure 6-11 (Sheet 2)

CABIN INTERNAL LOADING ARRANGEMENTS
(PASSENGER VERSION)

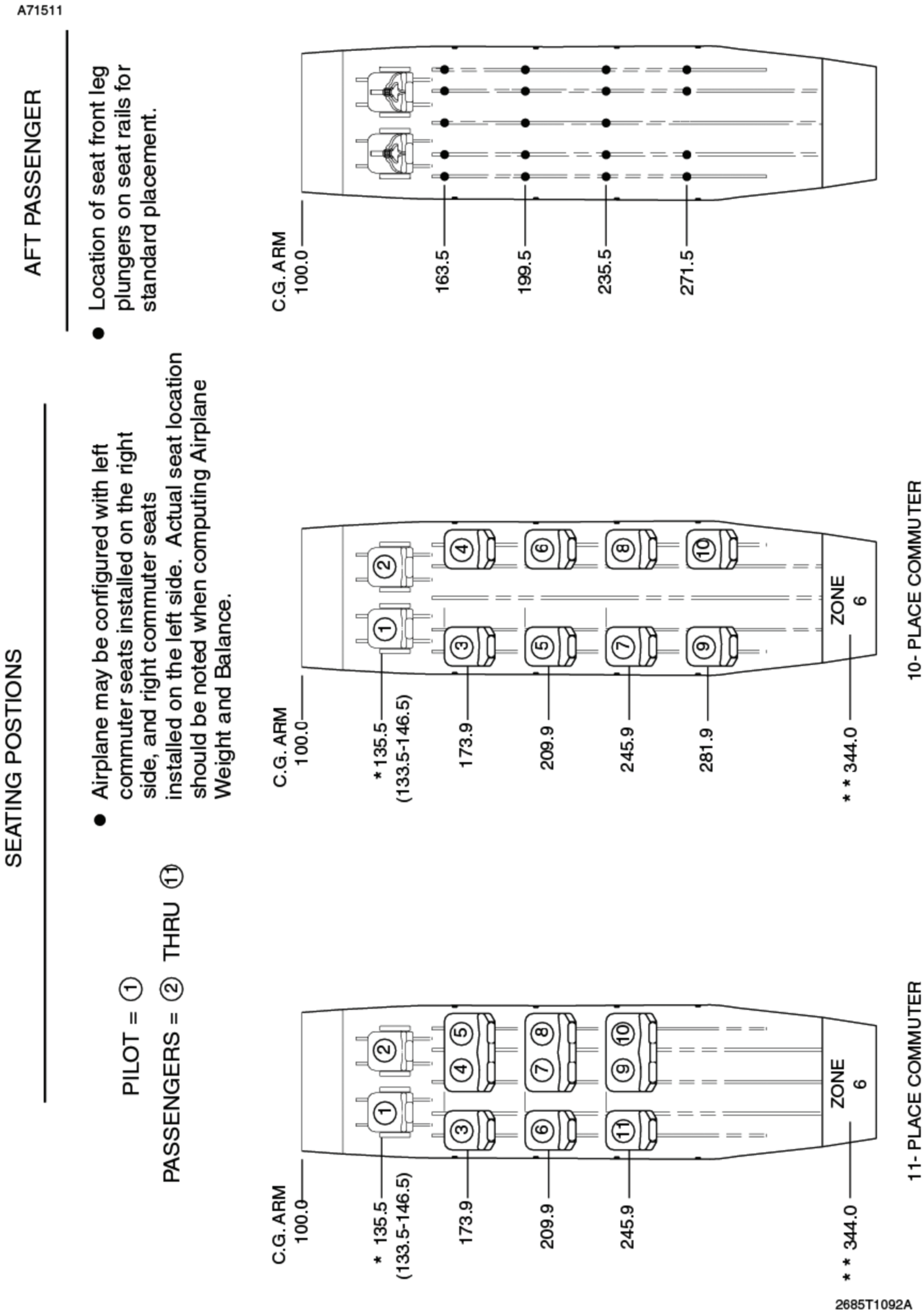
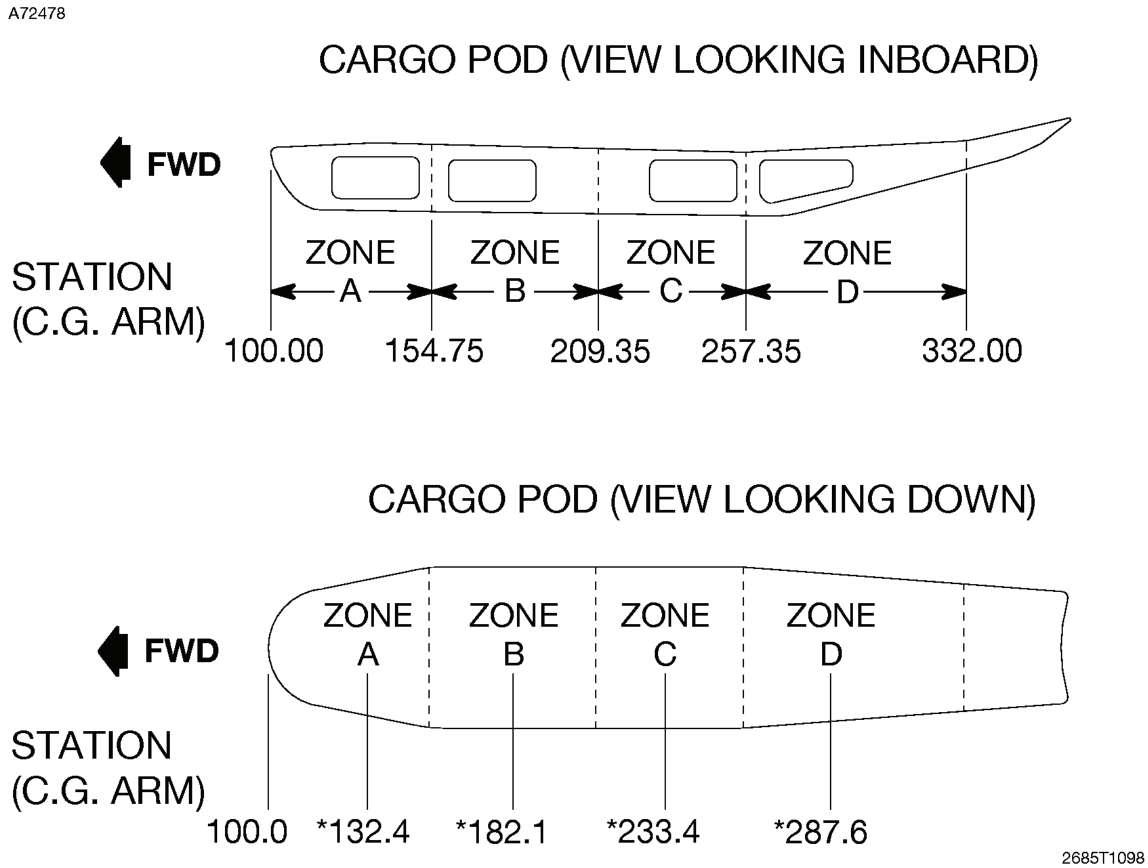


Figure 6-11 (Sheet 3)

CARGO POD LOADING ARRANGEMENT

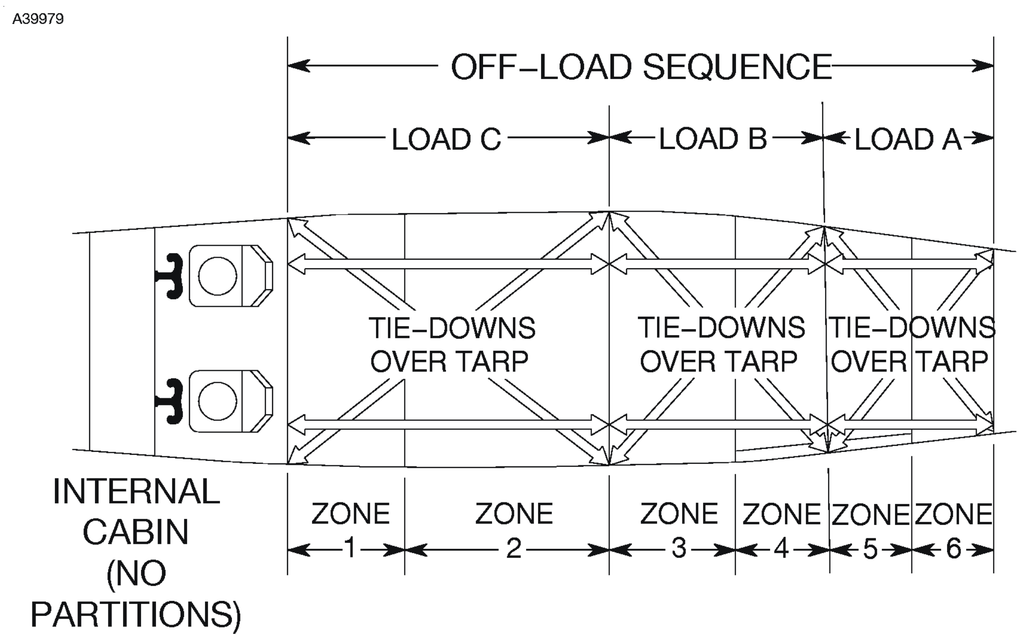


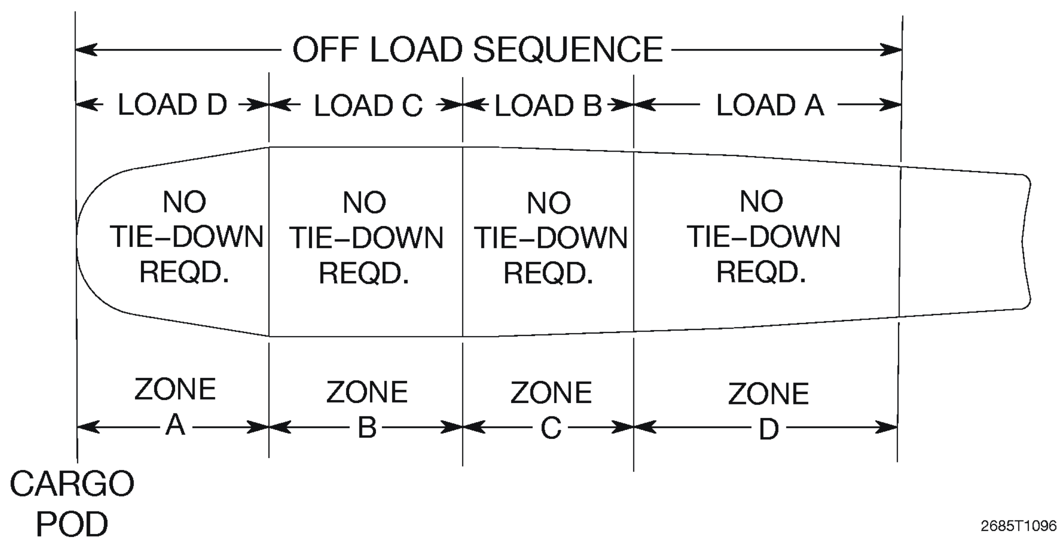
NOTE

1. * Cargo bay center of gravity in Zones A, B, C, and D.
2. Compartment bulkheads that separate Zones A and B (FS 154.75), Zones B and C (FS 209.35), and Zones C and D (FS 257.35) can be used as a reference point for determining the location of cargo Fuselage Stations.

Figure 6-12

LOADING/TIEDOWN BY ZONE AND LOAD
(OFF- LOADING SEQUENCE)





NOTE

1. If cargo partitions are not utilized, individual loads must be secured by adequate tiedowns over tarps.
2. Protection against hazardous materials has been provided in the fuselage bilge area under the cargo compartment from FS 168.0 to 356.0. These materials can be carried in any location within this area.

Figure 6-13

TYPICAL CARGO RESTRAINT METHODS

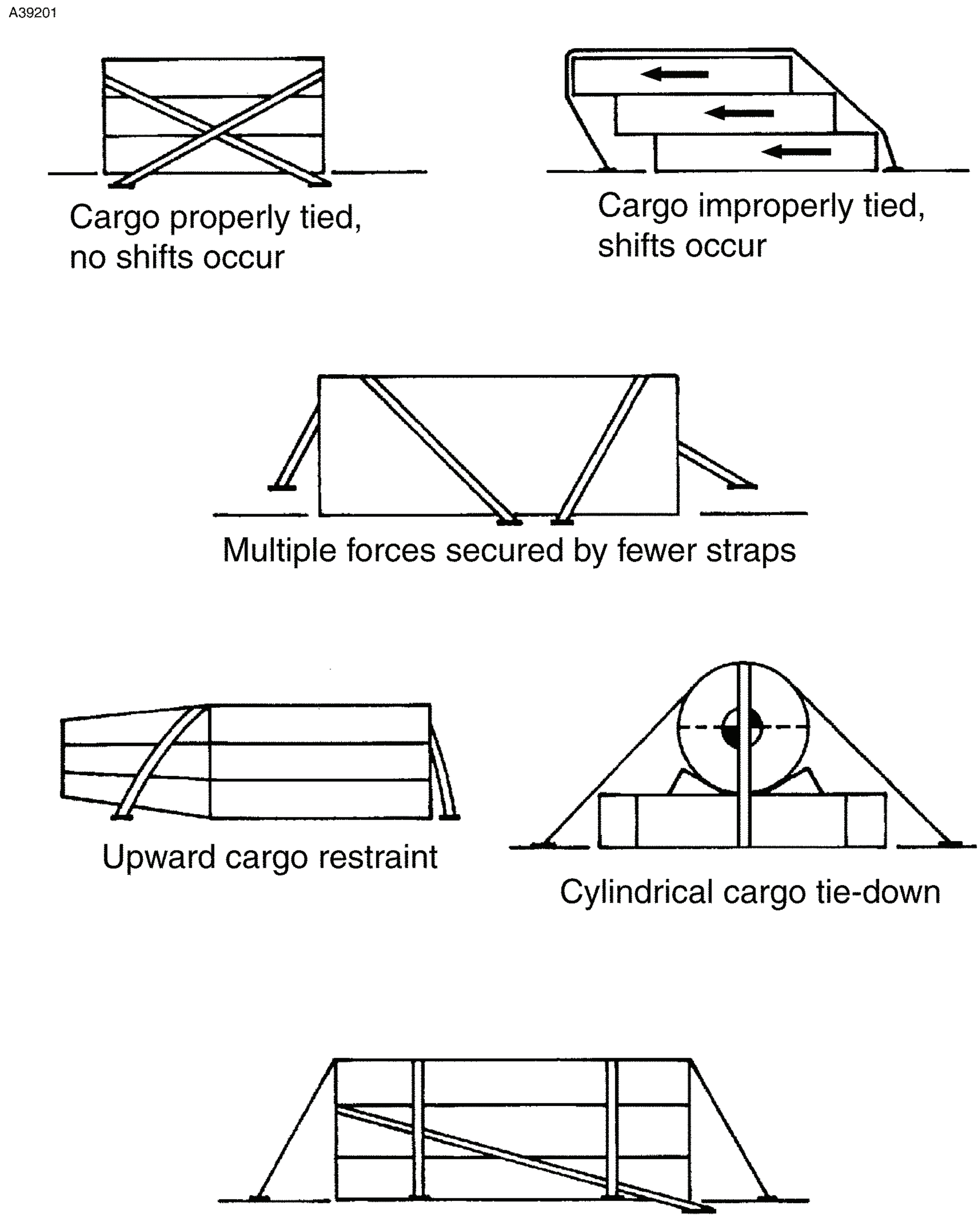


Figure 6-14

WEIGHT AND MOMENT TABLES
PILOT AND FRONT PASSENGER
(CARGO VERSION)

Weight Pounds	Moment Inch-Pound/1000 (Arm = 135.50 Inch)
1	0.1
2	0.3
3	0.4
4	0.5
5	0.7
6	0.8
7	0.9
8	1.1
9	1.2
10	1.4
20	2.7
30	4.1
40	5.4
50	6.8
60	8.1
70	9.5
80	10.8
90	12.2
100	13.6
200	27.1
300	40.7

EXAMPLE:
To obtain moments for a 170 pounds pilot, add moments shown for 100 pounds (13.6) and 70 pounds (9.5) for a total moment of 23.1 inch-pound/1000.

Figure 6-15 (Sheet 1 of 7)

WEIGHT AND MOMENT TABLES
11 PLACE COMMUTER
Crew and Passengers
(Single/ Bench Commuter Seating)

Weight Pounds	Pilot/ Front Passenger Seats 1 and 2 (Arm = 135.5 Inch)	Aft Passengers Seats		
		3, 4, and 5 (Arm = 173.9 Inch)	6, 7, and 8 (Arm = 209.9 Inch)	9, 10, and 11 (Arm = 245.9 Inch)
	Moment (Inch-Pound/1000)			
1	0.1	0.2	0.2	0.2
2	0.3	0.3	0.4	0.5
3	0.4	0.5	0.6	0.7
4	0.5	0.7	0.8	1.0
5	0.7	0.9	1.0	1.2
6	0.8	1.0	1.3	1.5
7	0.9	1.2	1.5	1.7
8	1.1	1.4	1.7	2.0
9	1.2	1.6	1.9	2.2
10	1.4	1.7	2.1	2.5
20	2.7	3.5	4.2	4.9
30	4.1	5.2	6.3	7.4
40	5.4	7.0	8.4	9.8
50	6.8	8.7	10.5	12.3
60	8.1	10.4	12.6	14.8
70	9.5	12.2	14.7	17.2
80	10.8	13.9	16.8	19.7
90	12.2	15.7	18.9	22.1
100	13.6	17.4	21.0	24.6
200	27.1	34.8	42.0	49.2
300	40.7	52.2	63.0	73.8

EXAMPLE:

To obtain moments for a 185 pounds passenger in seat 3, add moments shown for 100 pounds (17.4), 80 pounds (13.9), and 5 pounds (0.9) for a total moment of 32.2 inch-pound/1000.

NOTE

The airplane may be configured with left single commuter seats installed on the right side, and right bench commuter seats installed on the left side. Actual seat location should be noted when computing airplane weight and balance.

Figure 6-15 (Sheet 2)

WEIGHT AND MOMENT TABLES
10 PLACE COMMUTER

Crew and Passengers
(Single Commuter Seating)

Weight Pounds	Pilot/ Front Passenger Seats 1 and 2 (Arm = 135.5 Inch)	Aft Passengers Seats			
		3 and 4 (Arm = 173.9 Inch)	5 and 6 (Arm = 209.9 Inch)	7 and 8 (Arm = 245.9 Inch)	9 and 10 (Arm = 281.9 Inch)
	Moment (Inch-Pound/1000)				
1	0.1	0.2	0.2	0.2	0.3
2	0.3	0.3	0.4	0.5	0.6
3	0.4	0.5	0.6	0.7	0.8
4	0.5	0.7	0.8	1.0	1.1
5	0.7	0.9	1.0	1.2	1.4
6	0.8	1.0	1.3	1.5	1.7
7	0.9	1.2	1.5	1.7	2.0
8	1.1	1.4	1.7	2.0	2.3
9	1.2	1.6	1.9	2.2	2.5
10	1.4	1.7	2.1	2.5	2.8
20	2.7	3.5	4.2	4.9	5.6
30	4.1	5.2	6.3	7.4	8.5
40	5.4	7.0	8.4	9.8	11.3
50	6.8	8.7	10.5	12.3	14.1
60	8.1	10.4	12.6	14.8	16.9
70	9.5	12.2	14.7	17.2	19.7
80	10.8	13.9	16.8	19.7	22.6
90	12.2	15.7	18.9	22.1	25.4
100	13.6	17.4	21.0	24.6	28.2
200	27.1	34.8	42.0	49.2	56.4
300	40.7	52.2	63.0	73.8	84.6

EXAMPLE:

To obtain moments for a 185 pounds paasenger in seat 5, add moments shown for 100 pounds (21.0), 80 pounds (16.8), and 5 pounds (1.0) for a total moment of 38.8 inch-pound/1000.

NOTE

The airplane may be configured with left single commuter seats installed on the right side, and right single commuter seats installed on the left side. Actual seat location should be noted when computing airplane weight and balance.

Figure 6-15 (Sheet 3)

WEIGHT AND MOMENT TABLE
FUEL (JET FUEL WITH DENSITY OF 6.7 LB/GAL AT 60°F)

Gallons	Weight (Pounds)	FS (in)	Moment/1000 Arm Varies	Gallons	Weight (Pounds)	FS (in)	Moment/1000 Arm Varies
5	34	202.80	6.8	175	1173	203.18	238.2
10	67	202.80	13.6	180	1206	203.19	245.0
15	101	202.77	20.4	185	1240	203.20	251.9
20	134	202.74	27.2	190	1273	203.21	258.7
25	168	202.72	34.0	195	1307	203.22	265.5
30	201	202.71	40.7	200	1340	203.22	272.3
35	235	202.71	47.5	205	1374	203.23	279.1
40	268	202.70	54.3	210	1407	203.23	285.9
45	302	202.71	61.1	215	1441	203.24	292.8
50	335	202.71	67.9	220	1474	203.24	299.6
55	369	202.72	74.7	225	1508	203.24	306.4
60	402	202.74	81.5	230	1541	203.23	313.2
65	436	202.76	88.3	235	1575	203.23	320.0
70	469	202.78	95.1	240	1608	203.23	326.8
75	503	202.81	101.9	245	1642	203.22	333.6
80	536	202.84	108.7	250	1675	203.21	340.4
85	570	202.87	115.5	255	1709	203.20	347.2
90	603	202.90	122.3	260	1742	203.19	354.0
95	637	202.93	129.2	265	1776	203.18	360.7
100	670	202.95	136.0	270	1809	203.17	367.5
105	704	202.97	142.8	275	1843	203.16	374.3
110	737	202.99	149.6	280	1876	203.15	381.1
115	771	203.01	156.4	285	1910	203.14	387.9
120	804	203.03	163.2	290	1943	203.13	394.7
125	838	203.05	170.1	295	1977	203.12	401.5
130	871	203.06	176.9	300	2010	203.12	408.3
135	905	203.07	183.7	305	2044	203.12	415.1
140	938	203.09	190.5	310	2077	203.11	421.9
145	972	203.10	197.3	315	2111	203.11	428.7
150	1005	203.12	204.1	320	2144	203.11	435.5
155	1039	203.13	211.0	325	2178	203.10	442.3
160	1072	203.14	217.8	327	2191	203.10	445.0
165	1106	203.16	224.6	330	2211	203.08	449.0
170	1139	203.17	231.4	335	2246	203.04	456.1

Figure 6-15 (Sheet 4)

WEIGHT AND MOMENT TABLES

CARGO (CABIN LOCATIONS)

Weight Pounds	Zone 1 (Arm = 172.1 Inch)	Zone 2 (Arm = 217.8 Inch)	Zone 3 (Arm = 264.4 Inch)	Zone 4 (Arm = 294.5 Inch)	Zone 5 (Arm = 319.5 Inch)	Zone 6 (Arm = 344.0 Inch)
	Moment (Inch-Pound/1000)					
1	0.2	0.2	0.3	0.3	0.3	0.3
2	0.3	0.4	0.5	0.6	0.6	0.7
3	0.5	0.7	0.8	0.9	1.0	1.0
4	0.7	0.9	1.1	1.2	1.3	1.4
5	0.9	1.1	1.3	1.5	1.6	1.7
6	1.0	1.3	1.6	1.8	1.9	2.1
7	1.2	1.5	1.9	2.1	2.2	2.4
8	1.4	1.7	2.1	2.4	2.6	2.8
9	1.5	2.0	2.4	2.7	2.9	3.1
10	1.7	2.2	2.6	2.9	3.2	3.4
20	3.4	4.4	5.3	5.9	6.4	6.9
30	5.2	6.5	7.9	8.8	9.6	10.3
40	6.9	8.7	10.6	11.8	12.8	13.8
50	8.6	10.9	13.2	14.7	16.0	17.2
60	10.3	13.1	15.9	17.7	19.2	20.6
70	12.0	15.2	18.5	20.6	22.4	24.1
80	13.8	17.4	21.2	23.6	25.6	27.5
90	15.5	19.6	23.8	26.5	28.8	31.0
100	17.2	21.8	26.4	29.5	32.0	34.4
200	34.4	43.6	52.9	58.9	63.9	68.8
300	51.6	65.3	79.3	88.4	95.9	103.2
400	68.8	87.1	105.8	117.8	127.8	
500	86.1	108.9	132.2	147.3	159.8	
600	103.3	130.7	158.6	176.7	191.7	
700	120.5	152.5	185.1	206.2	223.7	
800	137.7	174.2	211.5	235.6	255.6	
900	154.9	196.0	238.0	265.1	287.6	
1000	172.1	217.8	264.4	294.5	319.5	
2000		435.6				
3000		653.4				

EXAMPLE:
To obtain moments for 350 pounds of cargo in Zone 1, add moments shown in Zone 1 for 300 pounds (51.6) and 50 pounds (8.6) for a total moment of 60.2 inch-pound/1000.

Figure 6-15 (Sheet 6)

WEIGHT AND MOMENT TABLES

CARGO (CARGO POD LOCATIONS)

Weight Pounds	Zone A (Arm = 132.4 Inch)	Zone B (Arm = 182.1 Inch)	Zone C (Arm = 233.4 Inch)	Zone D (Arm = 287.6 Inch)
	Moment (Inch-Pound/1000)			
1	0.1	0.2	0.2	0.3
2	0.3	0.4	0.5	0.6
3	0.4	0.5	0.7	0.9
4	0.5	0.7	0.9	1.2
5	0.7	0.9	1.2	1.4
6	0.8	1.1	1.4	1.7
7	0.9	1.3	1.6	2.0
8	1.1	1.5	1.9	2.3
9	1.2	1.6	2.1	2.6
10	1.3	1.8	2.3	2.9
20	2.6	3.6	4.7	5.8
30	4.0	5.5	7.0	8.6
40	5.3	7.3	9.3	11.5
50	6.6	9.1	11.7	14.4
60	7.9	10.9	14.0	17.3
70	9.3	12.7	16.3	20.1
80	10.6	14.6	18.7	23.0
90	11.9	16.4	21.0	25.9
100	13.2	18.2	23.3	28.8
200	26.5	36.4	46.7	57.5
300		54.6		

EXAMPLE:

To obtain moments for 48 pounds of cargo in Zone A, add moments shown in Zone A for 40 pounds (5.3) and 8 pounds (1.1) for a total moment of 6.4 inch-pound/1000.

Figure 6-15 (Sheet 7)

SAMPLE LOADING PROBLEM

CARGO LOADING SHOWN	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight Pounds	Moment Inch-Pound/1000	Weight Pounds	Moment Inch-Pound/1000
1. Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped (includes unusable fuel and full oil).	5360	1017.3		
2. Usable Fuel (335.3 Gallons Max)	2246	456.0		
3. Pilot (Seat 1) (Sta. 133.5 to 146.5)	170	23.8		
4. Front Passenger (Seat 2) (Sta. 133.5 to 146.5)				
5. Aft Passengers (Individual/Two-Place Commuter):				
Seat 3 (Sta. 189.37)				
Seats 4 and 5 (Sta. 189.37)				
Seat 6 (Sta. 229.37)				
Seats 7 and 8 (Sta. 229.37)				
Seat 9 (Sta. 269.37)				
Seats 10 and 11 (Sta. 269.37)				
Aft Passengers (Individual Commuter or Utility):				
Seats 3 and 4 (Sta. 174.37)				
Seats 5 and 6 (Sta. 210.37)				
Seats 7 and 8 (Sta. 246.37)				
Seats 9 and 10 (Sta. 282.37)				
6. Baggage/Cargo (Cabin Locations):				
Zone 0 (Sta. 118.0 to 155.4)				
Zone 1 (Sta. 155.4 to 188.7)	200	34.4		
Zone 2 (Sta. 188.7 to 246.8)	250	54.4		
Zone 3 (Sta. 246.8 to 282.0)	200	52.9		
Zone 4 (Sta. 282.0 to 307.0)	180	53.0		
Zone 5 (Sta. 307.0 to 332.0)	180	57.5		
Zone 6 (Sta. 332.0 to 356.0)	56	19.1		
7. Baggage/Cargo (Cargo Pod Locations):				
Zone A (Sta. 100 to 154.75)				
Zone B (Sta. 154.75 to 209.35)				
Zone C (Sta. 209.35 to 257.35)				
Zone D (Sta. 257.35 to 332.00)				
8. **RAMP WEIGHT AND MOMENT**	8842	1768.5		
9. Fuel Allowance (for engine start, taxi, and runup)	-35	-7.1		
10. **TAKEOFF WEIGHT AND MOMENT** (Subtract Step 9 from Step 8)	8807	1761.4		

11. Locate this point (8807 at 1761.4) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.

NOTE

Refer to the Weight and Moment Tables for weight and moment of crew, passengers, usable fuel, and cargo being carried. Refer to Cabin Internal Loading Arrangements for aft passenger seating arrangements.

Figure 6-16 (Sheet 1 of 2)

SAMPLE LOADING PROBLEM

YOUR AIRPLANE		YOUR AIRPLANE		YOUR AIRPLANE	
Weight Pounds	Moment Inch-Pound/1000	Weight Pounds	Moment Inch-Pound/1000	Weight Pounds	Moment Inch-Pound/1000

When several loading configurations are representative of your operations, it may be useful to fill out one or more of the above columns so that the specific loadings are available at a glance.

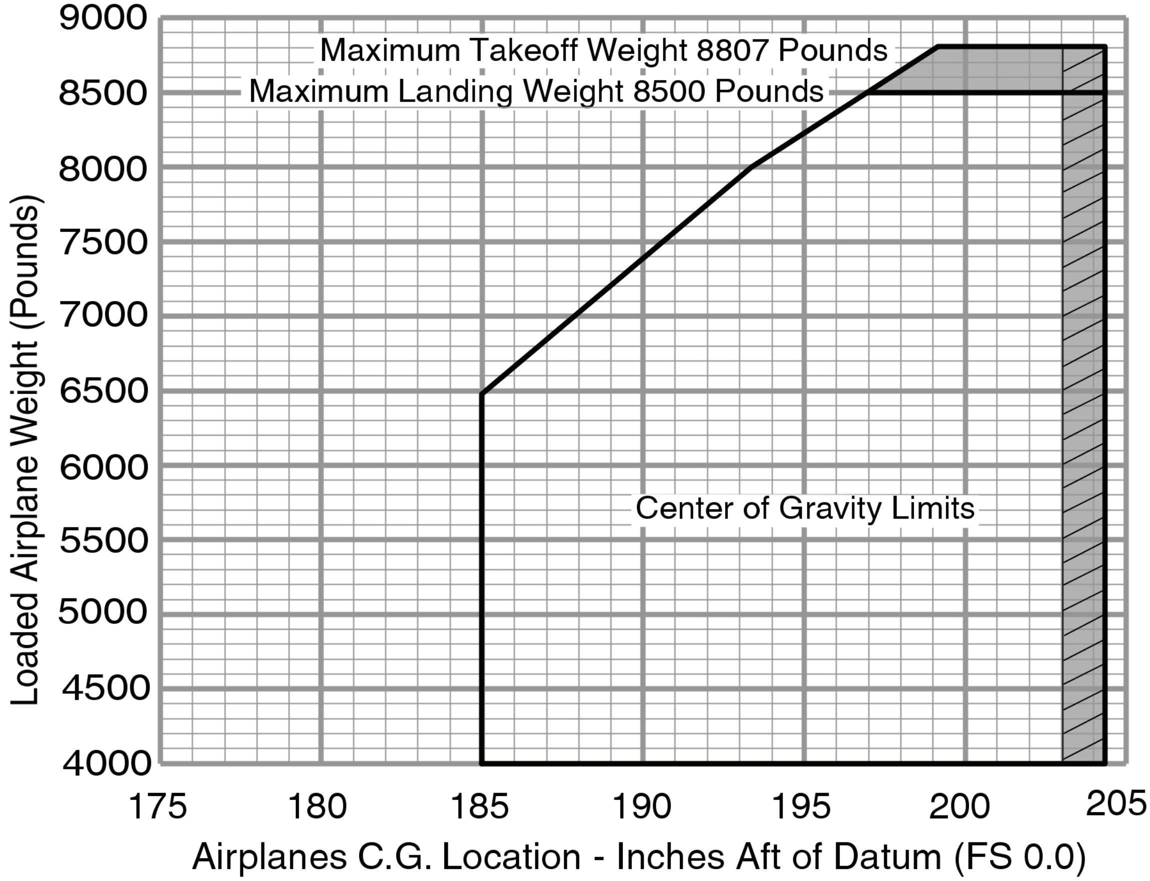
WARNING

It is the responsibility of the pilot to ensure that the airplane is loaded properly. Operations outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.

Figure 6-16 (Sheet 2)

CENTER OF GRAVITY LIMITS

A91042

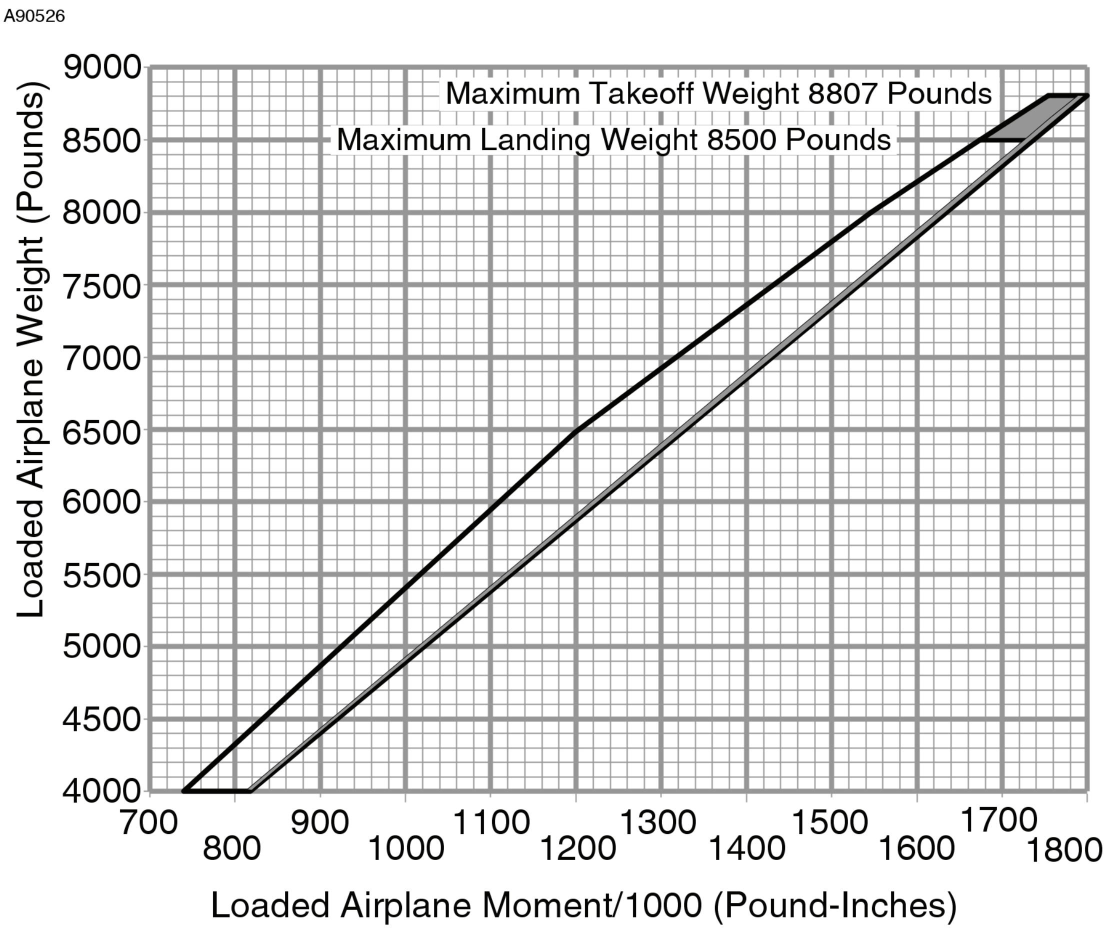


WARNING

It is the responsibility of the pilot to make sure that the airplane is loaded correctly. Operation outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.

Figure 6-17

CENTER OF GRAVITY MOMENT ENVELOPE



WARNING

- **Because loading personnel may not always be able to achieve an ideal loading, a means of protecting the C.G envelope is provided by supplying an aft C.G. location warning (shaded area) between 38.33% mac and the maximum aft c.g. of 40.33% mac on the center of gravity moment envelope. Points falling within this shaded area should be used only if accurate C.G. determination for cargo loadings can be obtained.**
- **It is the responsibility of the pilot to make sure that the airplane is loaded correctly. Operation outside of prescribed weight and balance limitations could result in an accident and serious or fatal injury.**

Figure 6-18

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AIRPLANE AND SYSTEMS DESCRIPTIONS

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Page

INTRODUCTION

This section provides description and operation of the airplane and its systems. Some equipment described herein is optional and may not be installed in the airplane. Refer to Section 9, Supplements, for details of other optional systems and equipment.

WARNING

Complete familiarity with the airplane and its systems will not only increase the pilot's proficiency and ensure optimum operation, but could provide a basis for analyzing system malfunctions in case an emergency is encountered. Information in this section will assist in that familiarization. The responsible pilot will want to be prepared to make proper and precise responses in every situation.

AIRFRAME

The airplane is an all metal, high wing, single-engine airplane equipped with tricycle landing gear and designed for general utility purposes.

The construction of the fuselage is of conventional aluminum bulkhead, stringer, and skin design commonly known as semimonocoque. Major components of structure include the front and rear carry-through spars to which the wings are attached, a bulkhead and forgings for main landing gear attachment and a bulkhead with attaching plates at its base for the strut-to-fuselage attachment of the wing struts.

The externally braced wings, containing integral fuel tanks, are constructed of a front and rear spar with formed sheet metal ribs, doublers, and stringers. The entire structure is covered with aluminum skin. The front spars are equipped with wing-to-fuselage and wing-to-strut attach fittings. The aft spars are equipped with wing-to-fuselage attach fittings. The integral fuel tanks are formed by the front and rear spars, upper and lower skins, and inboard and outboard closeout ribs. Extensive use of bonding is used in the fuel tank area to reduce fuel tank sealing.

Round-nosed ailerons and single-slot type flaps are attached to the trailing edge of the wings. The ailerons are constructed from conventional formed sheet metal ribs and smooth aluminum skin construction. A slot lip spoiler, mounted above the outboard end of each flap, is of conventional construction. The left aileron incorporates a servo tab while the right aileron incorporates a trimmable servo tab, both mounted on the outboard end of the aileron trailing edge.

(Continued Next Page)

AIRFRAME (Continued)

The empennage (tail assembly) consists of a conventional vertical stabilizer, rudder, horizontal stabilizer, and elevator. The vertical stabilizer consists of a forward and aft spar, formed sheet metal ribs and reinforcements, four skin panels, formed leading edge skins, and a dorsal fin.

The rudder is constructed of a forward and aft spar, formed sheet metal ribs and reinforcements, and a wrap-around skin panel. The top of the rudder incorporates a leading edge extension which contains a balance weight.

The horizontal stabilizer is constructed of a forward and aft spar, ribs and stiffeners, four upper and four lower skin panels, and two left and two right wrap-around skin panels which also form the leading edges. The horizontal stabilizer also contains dual jack screw type actuators for the elevator trim tabs.

Construction of the elevator consists of a forward and aft spar, sheet metal ribs, upper and lower skin panels, and wrap-around skin panels for the leading and trailing edges. An elevator trim tab is attached to the trailing edge of each elevator by full length piano-type hinges. Dual pushrods from each actuator located in the horizontal stabilizer transmit actuator movement to dual horns on each elevator trim tab to provide tab movement. Both elevator tip leading edge extensions provide aerodynamic balance and incorporate balance weights. A row of vortex generators on the top of the horizontal stabilizer just forward of the elevator enhances nose down elevator and trim authority.

CARGO POD

The airplane may be equipped with a cargo pod which provides additional cargo space. The pod attaches to the bottom of the fuselage with screws and can be removed, if desired, for increased performance and useful load. The pod and doors are fabricated with a Nomex inner housing, a layer of Kevlar, and an outer layer of fiberglass. Complete instructions for removal and installation of the cargo pod are contained in the 208 Maintenance Manual, Chapter 25-52-00, Cargo Pod - Maintenance Practices.

The volume of the cargo pod is 111.5 cubic feet and has a load-carrying capacity of 1090 pounds (494 kg). The pod has aluminum bulkheads that divide it into four separate compartments. Each compartment has a door on the left side of the pod that is hinged at the bottom. Each door has two handles that latch the doors in the closed position when rotated 90 degrees to the horizontal position.

FLIGHT CONTROLS

The airplane's flight control system, refer to Figure 7-1, consists of conventional aileron, rudder, and elevator control surfaces and a pair of spoilers mounted above the outboard ends of the flaps. The control surfaces are manually operated through mechanical linkage using a control wheel for the ailerons, spoilers and elevator and rudder/brake pedals for the rudder. The wing spoilers improve lateral control of the airplane at low speeds by disrupting lift over the appropriate flap. The spoilers are interconnected with the aileron system through a push-rod mounted to an arm on the aileron bell crank. Spoiler travel is proportional to aileron travel for aileron deflections in excess of 5° up. The spoilers are retracted throughout the remainder of aileron travel. Aileron servo tabs provide reduced maneuvering control wheel forces.

TRIM SYSTEMS

Manually operated aileron, elevator, and rudder trim systems are provided, refer to Figure 7-1.

The aileron is trimmed by a servo tab attached to the right aileron which is mechanically controlled by the AILERON TRIM control knob located on the control pedestal to the left of the FUEL/OIL SHUTOFF knob. Rotating the AILERON TRIM control knob to the right (clockwise) will trim the right wing down; conversely, rotating it to the left (counterclockwise) will trim the left wing down.

The elevator is trimmed through two elevator trim tabs by utilizing the vertically mounted ELEVATOR TRIM control wheel located on left side of the control pedestal. Forward rotation of the ELEVATOR TRIM control wheel will trim nose-down; conversely, aft rotation will trim nose-up. The airplane is also equipped with an electric elevator trim system.

The rudder is trimmed through the nosewheel steering bungee connected to the rudder control system and a RUD TRIM control wheel mounted on the control pedestal. This is accomplished by rotating the horizontally mounted RUD TRIM control wheel either left or right to the desired trim position. Rotating the RUD TRIM wheel to the right will trim nose-right; conversely; rotating it to the left will trim nose-left.

FLIGHT CONTROL AND TRIM SYSTEMS

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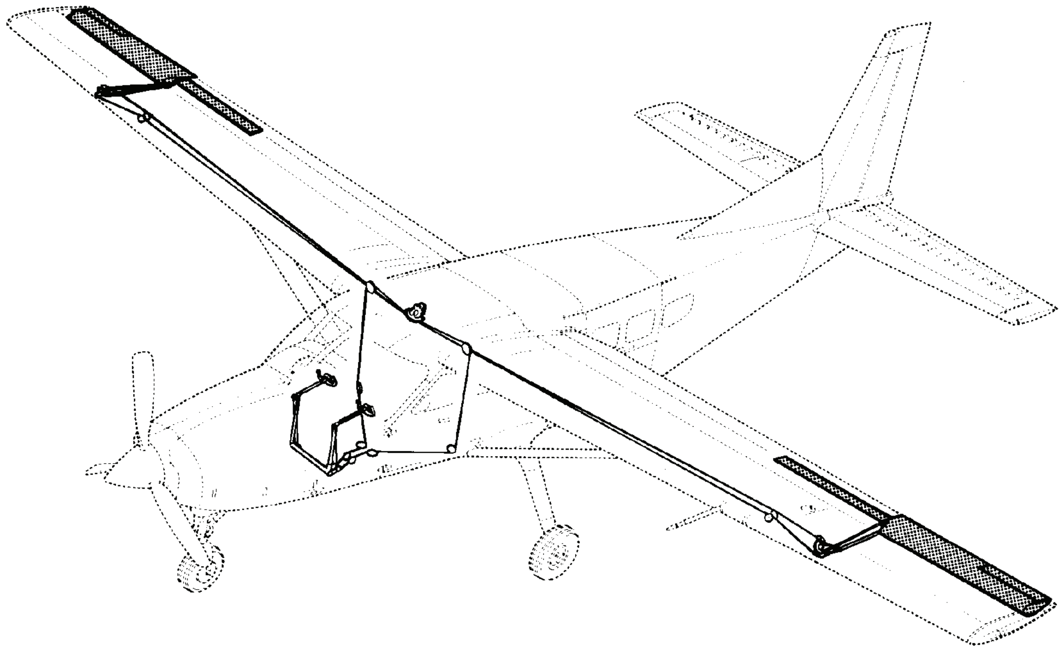
AILERON/SPOILER CONTROL SYSTEM



AILERON TRIM CONTROL SYSTEM

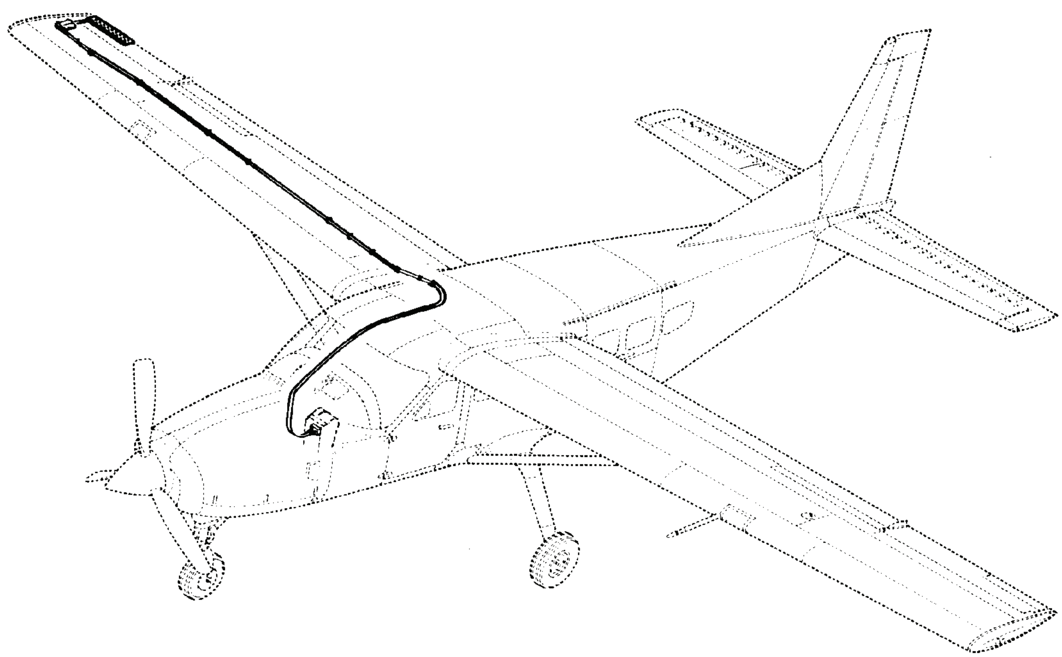


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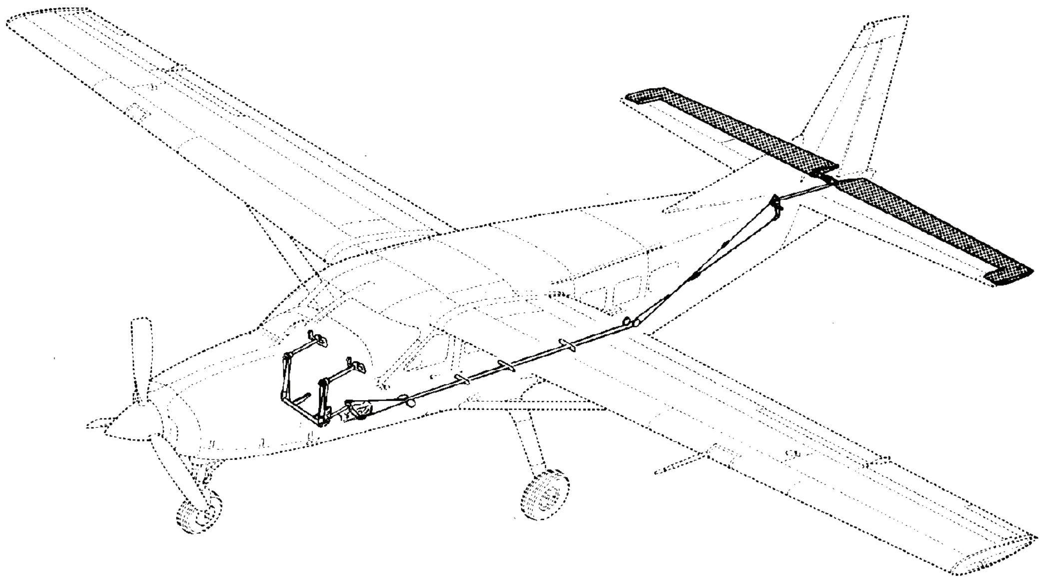
Figure 7-1 (Sheet 1 of 3)

FLIGHT CONTROL AND TRIM SYSTEMS

A39392

ELEVATOR CONTROL SYSTEM



ELEVATOR TRIM CONTROL SYSTEM

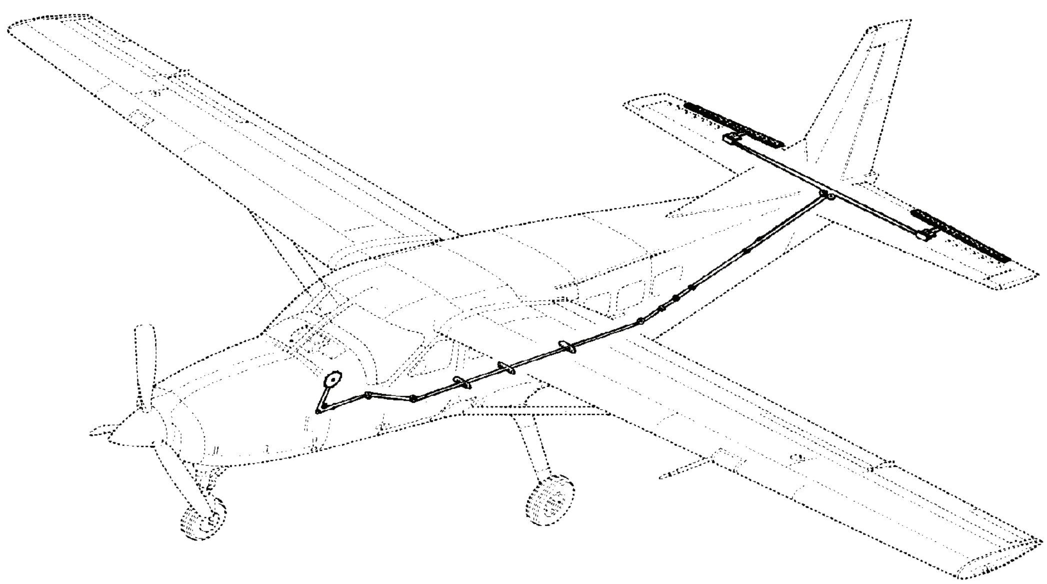


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Figure 7-1 (Sheet 2 of 3)

FLIGHT CONTROL AND TRIM SYSTEMS

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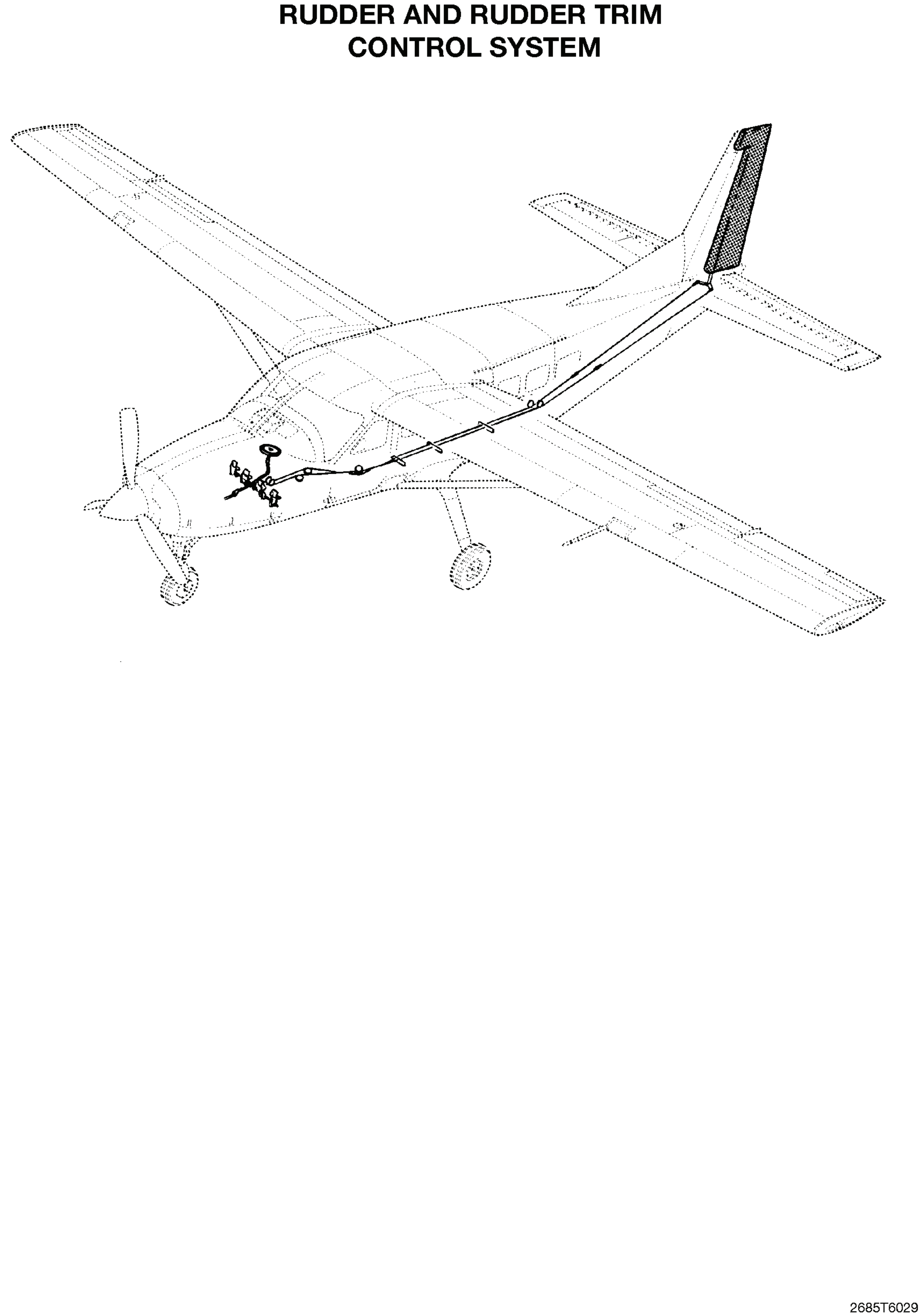

Figure 7-1 (Sheet 3 of 3)

INSTRUMENT PANEL

The instrument panel, refer to Figure 7-2, is of all metal construction and is installed in sections so equipment can be easily removed for maintenance. The glareshield, above and projecting aft from the instrument panel, limits undesirable reflections on the windshield from lighted equipment and displays mounted in the instrument panel.

Additional controls and displays are mounted on a control pedestal extending from the center of the instrument panel to the floor, on a separate panel mounted on the left sidewall, and on an overhead panel.

GARMIN INTERFACES

The interfaces to the Garmin system are three Garmin Display Units (GDUs), an audio panel, and an autopilot mode controller. The three GDUs are configured as two Primary Flight Displays (PFDs) and one Multifunction Flight Display (MFD). Refer to the Garmin G1000 CRG for specific operating information on all Garmin equipment.

The PFDs, centered above the control wheels in front of the pilot and copilot, show the primary flight instruments and display any Crew Alert System (CAS) annunciations, messages and alerts. During reversionary operation (MFD or PFD 1 failure) or when the DISPLAY BACKUP switch is selected, the Engine Indication System (EIS) is shown on the PFD.

The MFD, located between the two PFDs, depicts EIS information along the left side of the display and shows navigation, terrain, lightning and traffic data on the moving map. Flight management or display configuration information can be shown on the MFD in place of the moving map pages.

The Garmin audio panel is located between the pilot PFD and the MFD. It integrates all of the communication and navigation digital audio signals, intercom system and marker beacon controls. A pushbutton switch labeled DISPLAY BACKUP allows manual selection of reversionary mode for the PFDs and MFD.

The Garmin autopilot mode controller, located above the MFD, is the pilot interface with the autopilot system.

PANEL LAYOUT

To the left of the pilot PFD is a switch panel which has many of the switches necessary to operate the airplane systems. At lower left are a circuit breaker panel for avionics systems, the left fresh air outlet and pull knob, test switches for prop overspeed, fire detection, and fuel selection warning systems, microphone and headset jacks and an alternate static source valve.

Below the MFD are standby indicators for airspeed, attitude, altitude, and torque. Below these indicators are the parking brake, light dimming controls, inertial separator control, and cabin heat controls. Provisions are included for optional air conditioning controls and HF and ADF displays.

At lower right are the map compartment, right fresh air outlet and pull knob, and microphone and headset jacks. At upper right are the hour meter and ELT remote switch. Mounted above the glare shield is a magnetic compass. For details concerning the instruments, switches, and controls on this panel, refer in this section to the description of the systems to which these items are related.

CONTROL PEDESTAL

A control pedestal, extending from the center of the instrument panel to the floor, contains the EMERGENCY POWER lever, POWER lever, PROP RPM lever, FUEL CONDITION lever, WING FLAPS selector and position indicator, elevator, rudder and aileron trim controls with position indicators, the FUEL/OIL SHUTOFF knob, CABIN HEAT FIREWALL SHUTOFF control, a microphone, 12VDC power outlet, and an auxiliary audio input jack

Equipment mounted on this panel is illustrated in Figure 7-2. For details concerning the instruments, switches, and controls on the pedestal, refer to the description of the systems to which these items are related.

INSTRUMENT PANEL

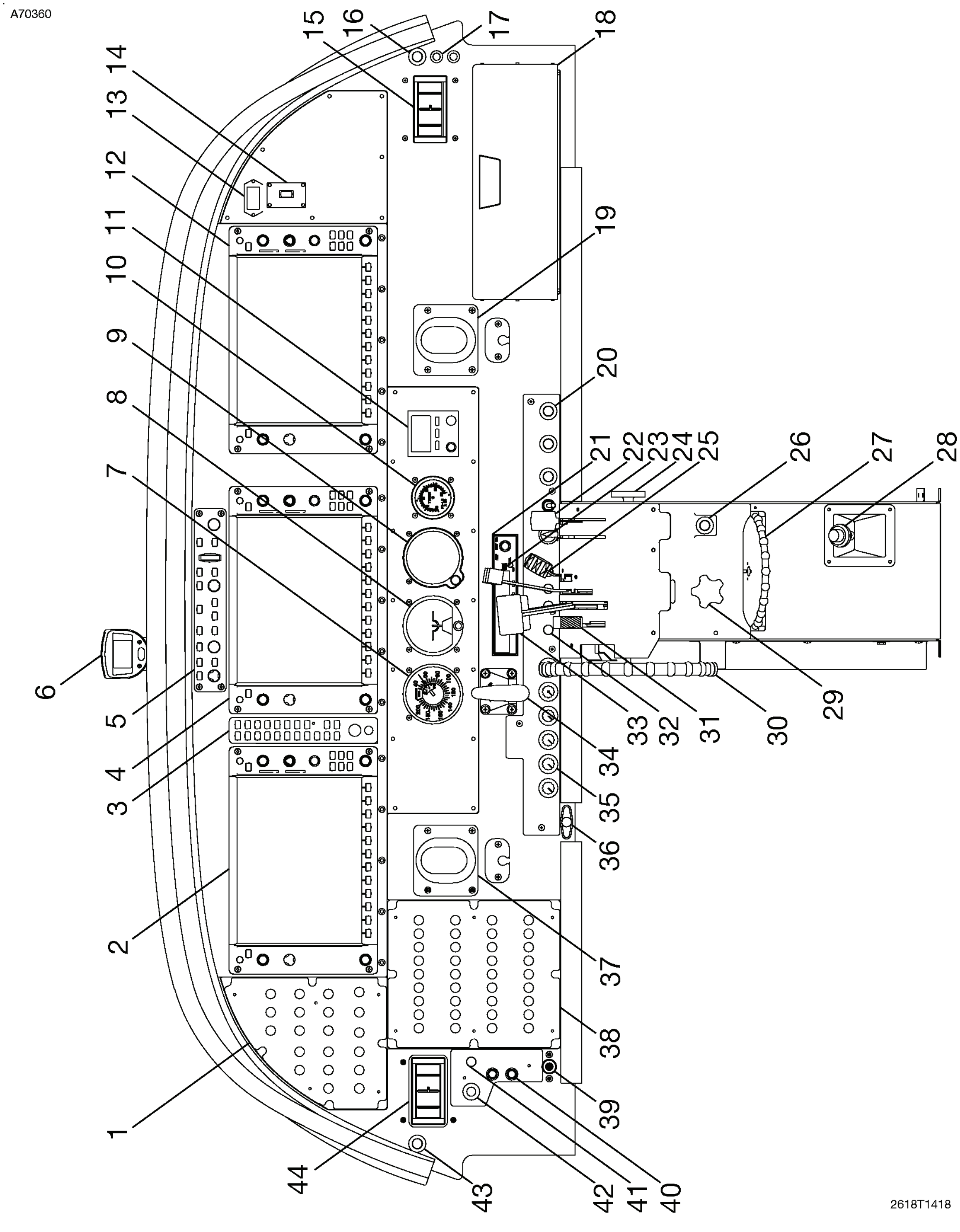

Figure 7-2 (Sheet 1 of 2)

INSTRUMENT PANEL

1. Switch Panel
2. Primary Flight Display (PFD), Pilot
3. Audio Panel
4. Multi-Function Display (MFD)
5. Autopilot Mode Controller
6. Magnetic Compass
7. Airspeed Indicator (Backup)
8. Attitude Indicator (Backup)
9. Altimeter (Backup)
10. Torque Indicator (Backup)
11. HF Radio Control Head (if installed)
12. Primary Flight Display (PFD), Co-pilot
13. Flight Hourmeter
14. ELT Remote Switch
15. Instrument Panel Ventilation Outlet
16. Instrument Panel Ventilation Control
17. Right Auxiliary Mic and Phone Jacks
18. Map Compartment
19. Co-Pilots Control Wheel Location
20. Cabin Heat Controls
21. ADF Receiver (if installed)
22. WING FLAPS Selector Lever and Position Indicator
23. PROP RPM Control Lever
24. Quadrant Friction Lock
25. FUEL CONDITION Lever
26. FUEL/OIL SHUTOFF Control Knob
27. RUD TRIM Control Wheel and Position Indicator
28. CABIN HEAT FIREWALL SHUTOFF Control Knob
29. AILERON TRIM Control Knob and Position Indicator
30. ELEVATOR TRIM Control Wheel and Position Indicator
31. EMERGENCY POWER Lever
32. Air Conditioning Switches (if installed)
33. POWER Lever
34. INERTIAL SEPARATOR Control
35. Lighting Rheostats
36. PARKING BRAKE Handle
37. Pilot’s Control Wheel Location
38. Avionics Circuit Breaker Panel
39. ALT STATIC AIR Source Valve
40. Pilot’s Auxiliary Mic and Phone Jacks
41. FUEL SELECT OFF/FIRE DETECT Warning TEST SWITCH
42. OVERSPEED GOVERNOR Test Switch
43. Instrument Panel Ventilation Control
44. Instrument Panel Ventilation Outlet

Figure 7-2 (Sheet 2 of 2)

LEFT SIDEWALL SWITCH AND CIRCUIT BREAKER PANEL

Most of the engine control switches and non-avionics circuit breakers are located on a separate panel mounted on the left cabin sidewall adjacent to the pilot. Switches and controls on this panel are illustrated in Figure 7-4, the Left Sidewall Switch and Circuit Breaker Panel. For details concerning the instruments, switches, and controls on this panel, refer to the ELECTRICAL EQUIPMENT descriptions in this section.

OVERHEAD PANEL

The overhead panel, located above and between the pilot and copilot, contains FUEL TANK SELECTORS control valves, OXYGEN control lever and pressure gage (if installed), vent outlets and controls, overhead lighting, and STBY FLAP MOTOR control switches. Equipment mounted on this panel is illustrated in Figure 7-3, Overhead Panel. For details concerning the instruments, switches, and controls on the overhead panel, refer in this section to the description of the systems to which these items are related.

OVERHEAD PANEL

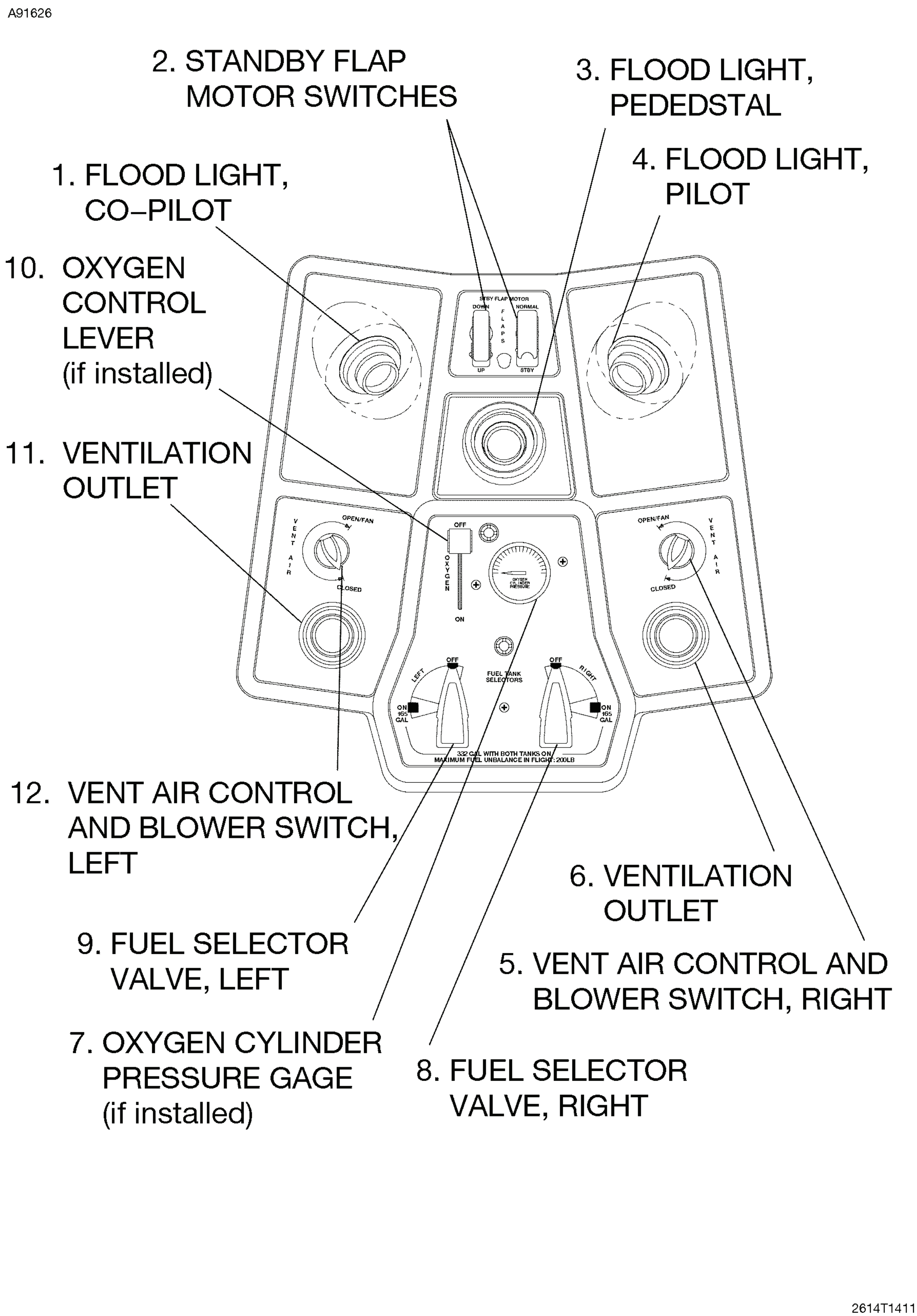

Figure 7-3

LEFT SIDEWALL SWITCH AND CIRCUIT BREAKER PANEL

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1. AVIONICS POWER SWITCH/BREAKERS (2)
2. AVIONICS BUS TIE SWITCH/BREAKER
3. AVIONICS STANDBY POWER SWITCH/BREAKER
4. STARTER SWITCH
5. IGNITION SWITCH
6. STANDBY POWER SWITCH
7. STANDBY POWER INDICATOR LIGHT
8. FUEL BOOST SWITCH
9. GENERATOR SWITCH
10. EXTERNAL POWER SWITCH
11. BATTERY SWITCH
12. GENERAL CIRCUIT BREAKER BUS 1
13. GENERAL CIRCUIT BREAKER BUS 2

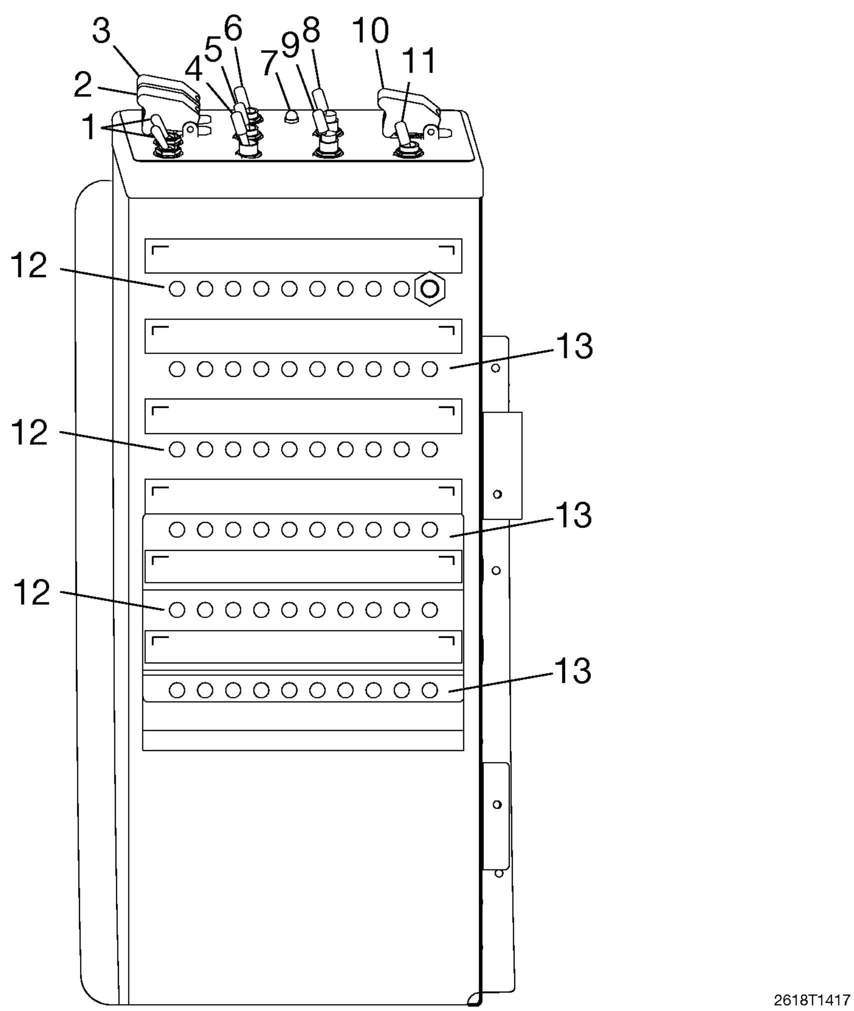

Figure 7-4

ANNUNCIATORS

1. OIL PRESS LOW (RED) - Indicates engine oil pressure is less than 40 PSI.
2. VOLTAGE LOW (RED) - Indicates electrical system bus voltage is less than 24.0 volts prior to engine start or less than 24.5 volts with engine running and power is being supplied from the battery.
3. VOLTAGE HIGH (RED) - Indicates electrical system bus voltage is greater than 32.0 volts.
4. ENGINE FIRE (RED) - Indicates an excessive temperature condition and/or fire has occurred in the engine compartment.
5. RSVR FUEL LOW (RED) - Indicates the fuel level in the reservoir is approximately one-half or less. With the fuel reservoir full, there is adequate fuel for approximately 3 minutes of maximum continuous power or approximately 9 minutes at idle power.
6. EMERG PWR LVR (RED) - Indicates when the EMERGENCY POWER lever is out of the stowed (NORMAL) position prior to and during the engine start (ITT in the OFF and STRT modes ONLY).
7. FUEL SELECT OFF (RED) - Indicates LEFT and RIGHT FUEL TANK SELECTORS are both OFF at any time, or LEFT FUEL TANK SELECTOR is OFF when right tank is low, or RIGHT FUEL TANK SELECTOR is OFF when the left tank is low; or that either LEFT or RIGHT FUEL TANK SELECTORS are OFF when STARTER switch is ON. It can also indicate that the START CONT and/or FUEL SEL WARN circuit breaker has been pulled.
8. GENERATOR OFF (AMBER) - Indicates that the generator is not connected to the electrical bus with engine running.
9. DOOR UNLATCHED (AMBER) - Indicates the upper cargo door and/or upper aft passenger door (passenger version only) are not latched.
10. L FUEL LOW (AMBER) - Indicates fuel quantity in the left fuel tank is 25 gallons (170 lbs) or less.
11. EMERG PWR LVR (AMBER) - Indicates when the EMERGENCY POWER lever is out of the stowed (NORMAL) position while engine is running (Non-Start).

(Continued Next Page)

ANNUNCIATORS (Continued)

12. R FUEL LOW (AMBER) - Indicates fuel quantity in the right fuel tank is 25 gallons (170 lbs) or less.
13. L-R FUEL LOW (AMBER) Indicates fuel quantity in both the left and right fuel tanks is 25 gallons (170 pounds) or less.
14. FUEL BOOST ON (AMBER) - Indicates the auxiliary fuel pump is operating.
15. STBY PWR INOP (AMBER) - Indicates electrical power is not available from the standby alternator.
16. FUEL PRESS LOW (AMBER) - Indicates fuel pressure in the fuel manifold assembly is below 2.5 PSI.
17. STARTER ON (AMBER) - Indicates the starter-generator is operating in starter mode.
18. CHIP DETECT (AMBER) Indicates that metal chips have been detected in either or both the accessory gearbox or reduction gearbox.
19. L P/S HEAT (AMBER) - Indicates that either the left side pitot/static vane heater system has malfunctioned or that the LEFT PITOT HEAT circuit breaker is pulled.
20. R P/S HEAT (AMBER) - Indicates that either the right side pitot/static vane heater system has malfunctioned or that the RIGHT PITOT HEAT circuit breaker is pulled.
21. L-R P/S HEAT (AMBER) - Indicates that either both pitot/static vane heater systems (left and right) have malfunctioned or that both the LEFT and RIGHT PITOT HEAT circuit breakers are pulled.
22. STALL HEAT (AMBER) - Indicates that the stall warning heater system has malfunctioned or the STALL WARN circuit breaker is pulled in conditions below 19°C (66°F) or above 52°C (125°F).

(Continued Next Page)

ANNUNCIATORS (Continued)

23. GENERATOR AMPS (AMBER) - Indicates that the generator output is less than -10 amps or greater than 200 amps (-15/300 with 300 amp starter generator).
24. ALTNR AMPS (AMBER) - Indicates that the alternator output is less than -10 amps or greater than 75 amps.
25. IGNITION ON (WHITE) - Indicates electrical power is being supplied to the engine ignition system.
26. STBY PWR ON (WHITE) - Indicates that the standby alternator is generating electrical power.
27. SPD NOT AVAIL (WHITE) - Indicates that the “SPD” button was pressed on Autopilot Mode Control panel.
28. TORQUE GAGE (WHITE) - Indicates a miscompare between either the Pressure Altitude or OAT sensors. This annunciation will be accompanied with a static torque gage dynamic redline.

GROUND CONTROL

Effective ground control while taxiing is accomplished through nosewheel steering by using the rudder pedals; left rudder pedal to steer left and right rudder pedal to steer right. When a rudder pedal is depressed, a spring loaded steering bungee, which is connected to the nose gear and to the rudder bars, will turn the nosewheel through an arc of approximately 15° each side of center. By applying either left or right brake, the degree of turn may be increased up to 51.5° each side of center.

Moving the airplane by hand is most easily accomplished by attaching a towbar (stowed in aft cargo compartment) to the nose gear fork axle holes. If a towbar is not available, or pushing is required, use the wing struts as push points. Do not use the propeller blades or spinner to push or pull the airplane. If the airplane is to be towed by vehicle, never turn the nosewheel beyond the steering limit marks either side of center. If excess force is exerted beyond the turning limit, a red over-travel indicator block (frangible stop) will fracture and the block, attached to a cable, will fall into view alongside the nose strut. This should be checked routinely during preflight inspection to prevent operation with a damaged nose gear.

The minimum turning radius of the airplane, using differential braking and nosewheel steering during taxi, is approximately 33.65 feet, refer to Figure 7-5, Minimum Turning Radius.

MINIMUM TURNING RADIUS

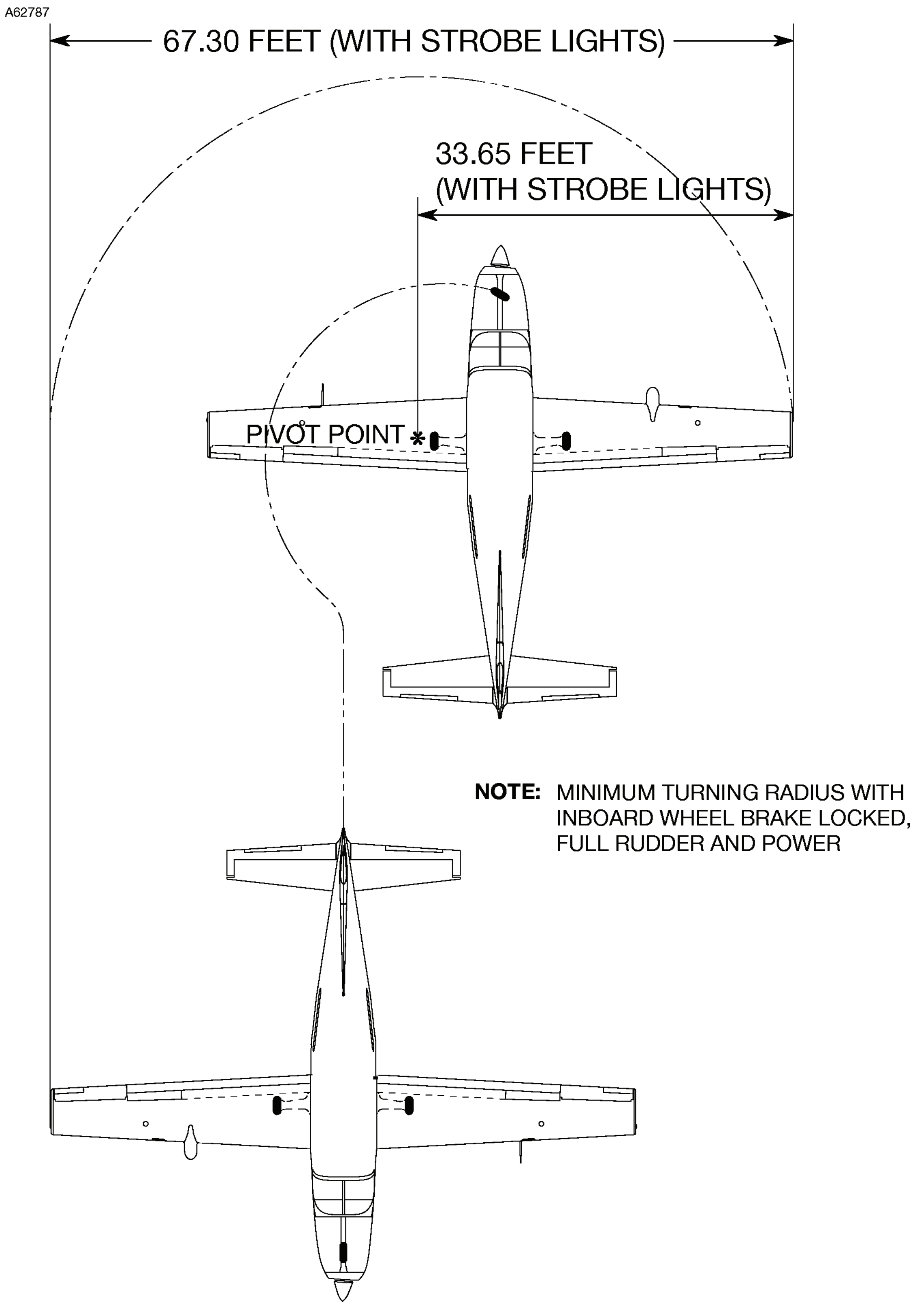

Figure 7-5

WING FLAP SYSTEM

The wing flaps are large span, single-slot type, refer to Figure 7-6, Wing Flap System, and incorporate a trailing edge angle and leading edge vortex generators to reduce stall speed and provide enhanced lateral stability. The flaps are driven by an electric motor. They are extended or retracted by positioning the WING FLAPS selector lever on the control pedestal to the desired flap deflection position. The selector lever is moved up or down in a slotted panel that provides mechanical stops at the TO/APR position. For flap deflections greater than TO/APR, move the selector lever to the right to clear the stop and position it as desired. A scale and white-tipped pointer on the left side of the selector lever provides a flap position indication. The wing flap system is protected by a “pull-off” type circuit breaker, labeled FLAP MOTOR, on the left sidewall switch and circuit breaker panel.

A standby system can be used to operate the flaps in the event the primary system should malfunction. The standby system consists of a standby motor, a guarded standby flap motor switch and a standby flap motor up/down switch located on the overhead panel. Both switches have guards which are safetied in the closed position, with breakable copper wire.

The guarded STBY FLAP MOTOR switch has NORM and STBY positions. The guarded NORM position of the switch permits operation of the flaps using the control pedestal mounted selector; the STBY position is used to disable the primary flap motor when the standby flap motor system is operated.

The STBY FLAP MOTOR UP/DOWN switch has UP, center OFF and DOWN positions. The switch is guarded in the center off position. To operate the flaps with the standby system, lift the guard breaking safety wire, and place the STBY FLAP MOTOR switch in STBY position; then, lift the guard, breaking safety wire and actuate the STBY FLAP MOTOR UP/DOWN switch momentarily to UP or DOWN, as desired. Observe the flap position indicator to obtain the desired flap position. Since the standby flap system does not have limit switches, actuation of the STBY FLAP MOTOR UP/DOWN switch should be terminated before the flaps reach full up or down travel. After actuation of the standby flap motor system, switch guards should be resafetied to the closed position by maintenance personnel when maintenance action is accomplished. The standby flap system is protected by a “pull-off” type circuit breaker, labeled STBY FLAP MOTOR, located on the left sidewall switch and circuit breaker panel.

WING FLAP SYSTEM

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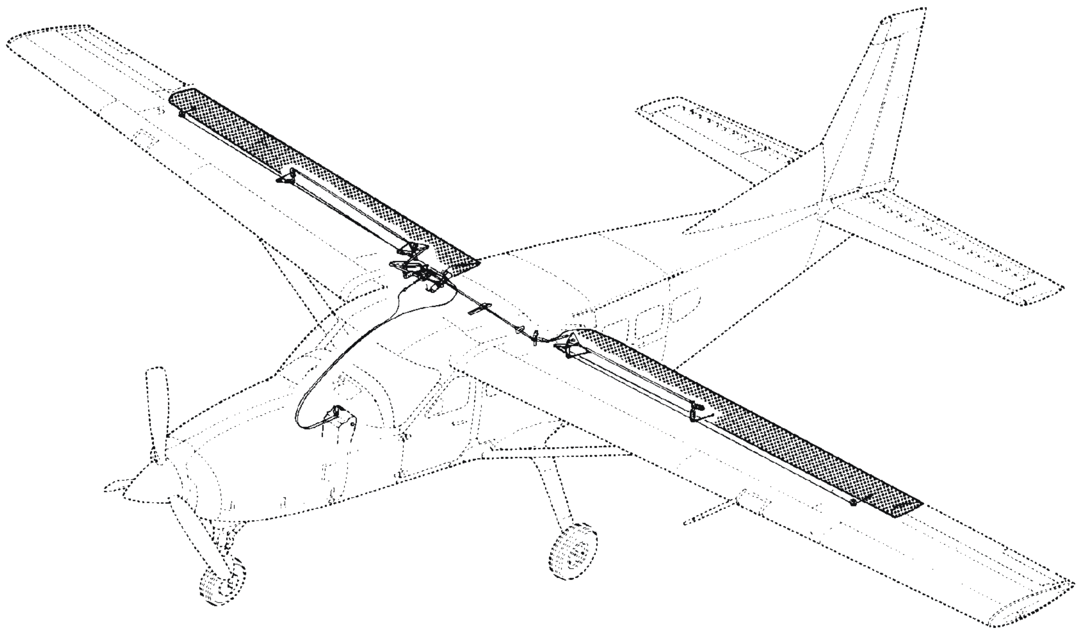

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Figure 7-6

LANDING GEAR SYSTEM

The landing gear is of the tricycle type with a steerable nosewheel and two main wheels. Shock absorption is provided by the tubular spring-steel main landing gear struts, an interconnecting spring-steel tube between the two main landing gear struts, and the nose gear oil-filled shock strut and spring-steel drag link. Each main gear wheel is equipped with a hydraulically-actuated single-disc brake on the inboard side of each wheel. To improve operation from unpaved runways, and in other conditions, the standard nose gear fork can be replaced with a three-inch extended nose gear fork. Oversized wheels are available to facilitate operations from unimproved runways.

BAGGAGE/CARGO COMPARTMENT

In the passenger version, the space normally used for baggage consists of the raised area from the back of the cargo doors to the aft cabin bulkhead. Access to the baggage area is gained through the cargo doors, the aft passenger door or from within the cabin. Quick release tiedown ring/strap assemblies are provided for securing baggage and are attached to baggage floor anchor plates provided in the airplane. When utilizing the airplane as a cargo carrier, refer to Section 6 for complete cargo loading details. When loading aft passengers in the passenger version, they should not be placed in the baggage area unless the airplane is equipped with special seating for this area. Also any material that might be hazardous to the airplane or occupants should not be placed anywhere in the airplane. Refer to Section 6, Weight and Balance, Figure 6-4 and 6-5 for baggage/cargo area and door dimensions.

SEATS

Standard seating consists of both a pilot's and copilot's six-way adjustable seat. Additional cabin seating is available in the passenger version in two different commuter configurations and one utility configuration. One commuter configuration consists of three rows of two-place fixed seats and two (or three) rows of one-place fixed seats. A second commuter configuration consists of four rows of one-place fixed seats on each side of the cabin. The utility configuration consists of four rows of one-place, fixed-position collapsible seats on each side of the cabin.

WARNING

None of the airplane seats are approved for installation facing aft.

PILOT'S AND COPILOT'S SEATS

The six-way adjustable pilot's or copilots seats may be moved forward or aft, adjusted for height, and the seat back angle changed. Position the seat by pulling on the small T-handle under the center of the seat bottom and slide the seat into position; then release the handle, and check that the seat is locked in place by attempting to move the seat and by noting that the small pin on the end of the T-handle sticks out.

The seat is not locked if the pin is retracted or only partially extends. Raise or lower the seat by rotating a large crank under the front right corner of the seat. Seat back angle is adjusted by rotating a small crank under the front left corner of the seat. The seat bottom angle will change as the seat back angle changes, providing proper support. Seats are equipped with armrests which can be moved to the side and raised to a position beside the seat back for stowage.

AFT PASSENGERS' SEATS (COMMUTER) (Passenger Version)

The third, sixth and eleventh seats of one commuter configuration and all aft seats of the second commuter configuration are individual fixed position seats with fixed seat backs. Seats for the fourth and fifth, seventh and eighth, and ninth and tenth positions of the first commuter configuration are two-place, fixed position bench type seats with fixed seat backs. All seats are fastened with quick-release fasteners in the fixed position to the seat tracks. The seats are lightweight and quick removable to facilitate cargo hauling.

AFT PASSENGERS' SEATS (UTILITY) (Passenger Version)

Individual collapsible seats are available for the aft eight passenger positions. The seats, when not in use, are folded into a compact space for stowage in the aft baggage area. When desired, the seats can be unfolded and installed in the passenger area. The seats are readily fastened with quick-release fasteners to the seat tracks in any one of the eight seat positions.

HEADRESTS

Headrests are available for all pilot and passenger seat configurations, except the utility aft passenger seats. To adjust a pilot's seat or copilot seat headrest, apply enough pressure to it to raise or lower it to the desired level. The aft passenger seat headrests are not adjustable.

SEAT BELTS AND SHOULDER HARNESSES

PILOT'S AND COPILOT'S SEAT

(Typical)

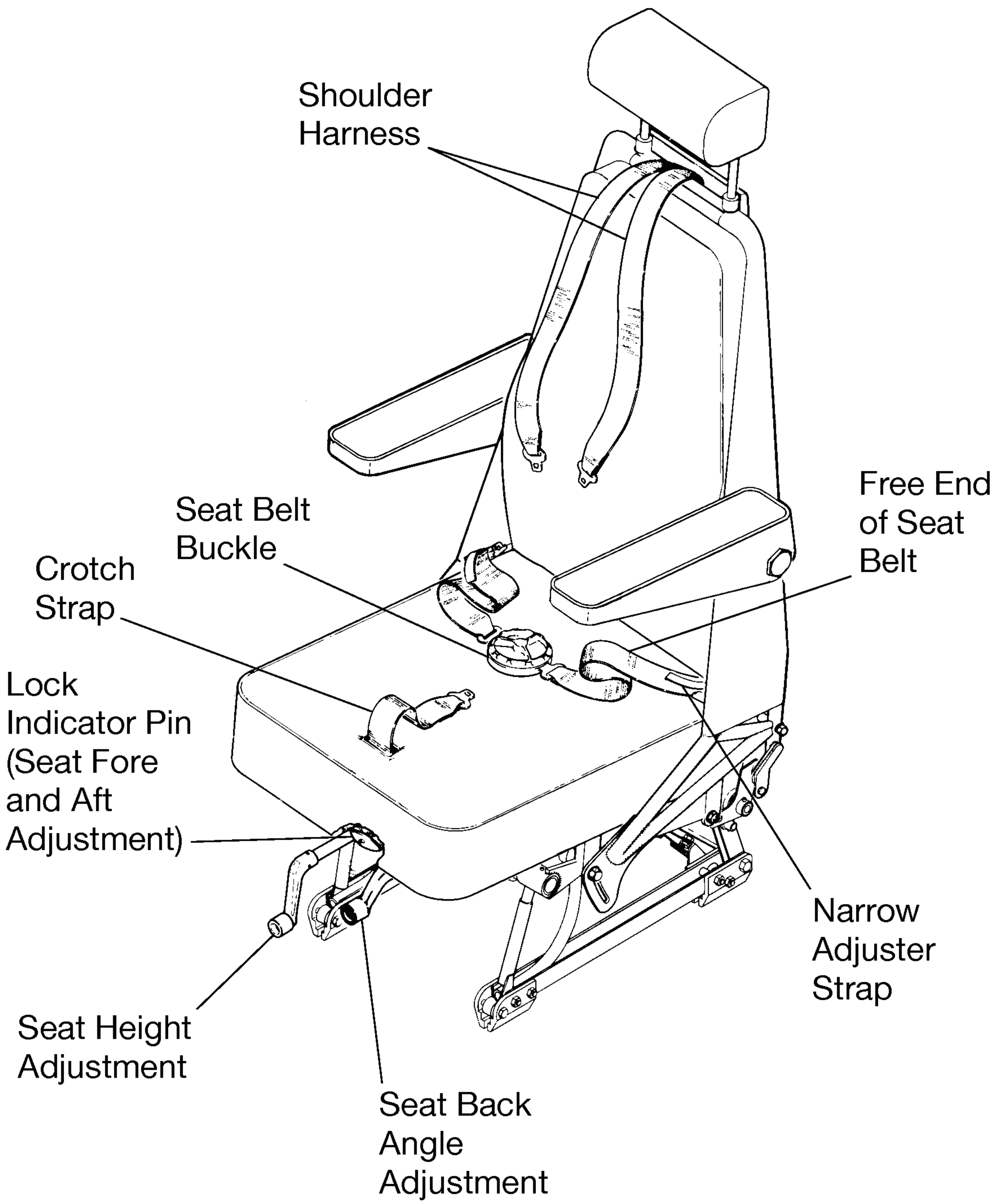


Figure 7-7 (Sheet 1 of 3)

SEAT BELTS AND SHOULDER HARNESSES

AFT PASSENGERS' SEATS

(Individual Commuter Seating Shown)

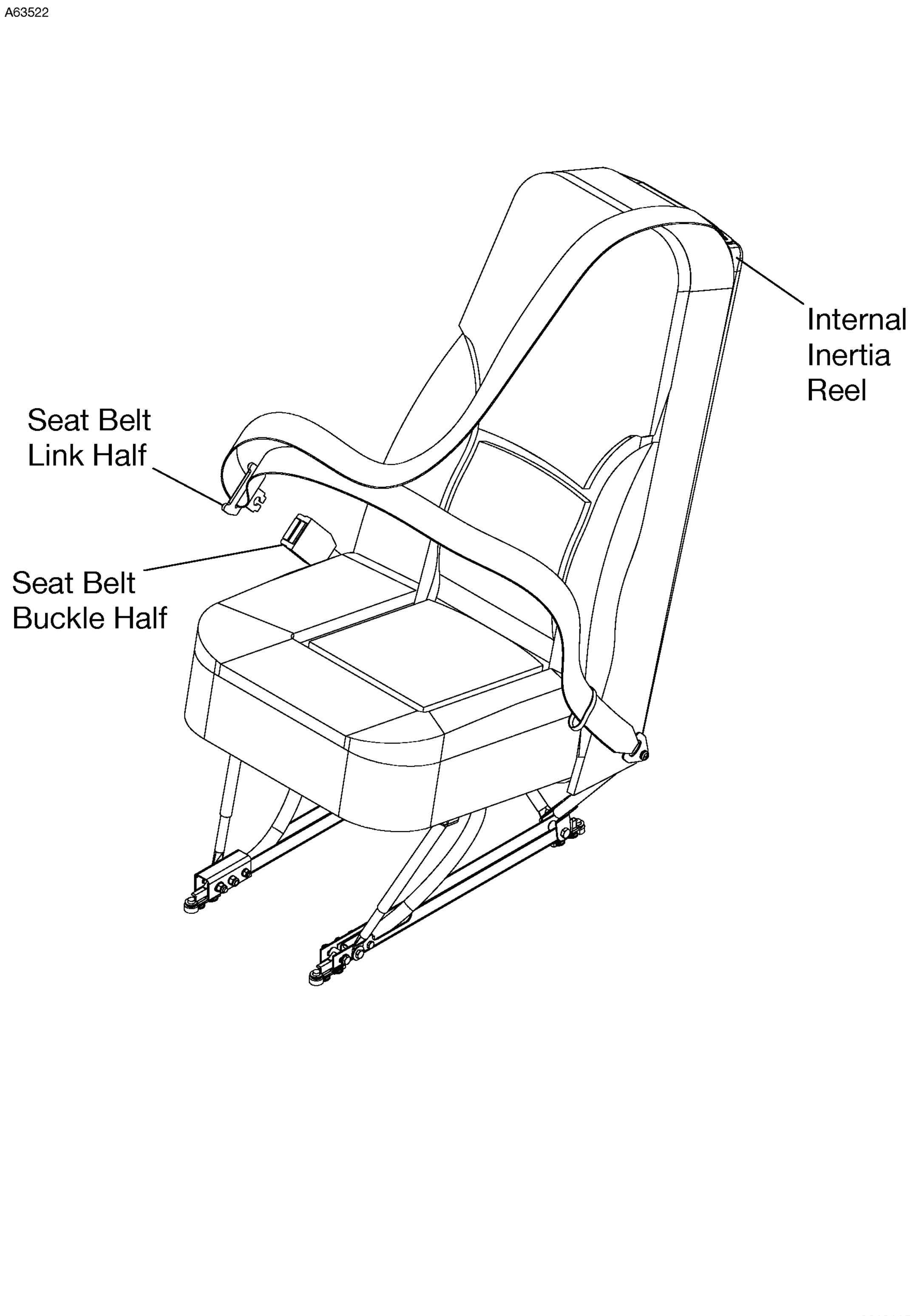


Figure 7-7 (Sheet 2 of 3)

SEAT BELTS AND SHOULDER HARNESSES

AFT PASSENGERS' SEATS

(Dual Commuter Seating Shown)

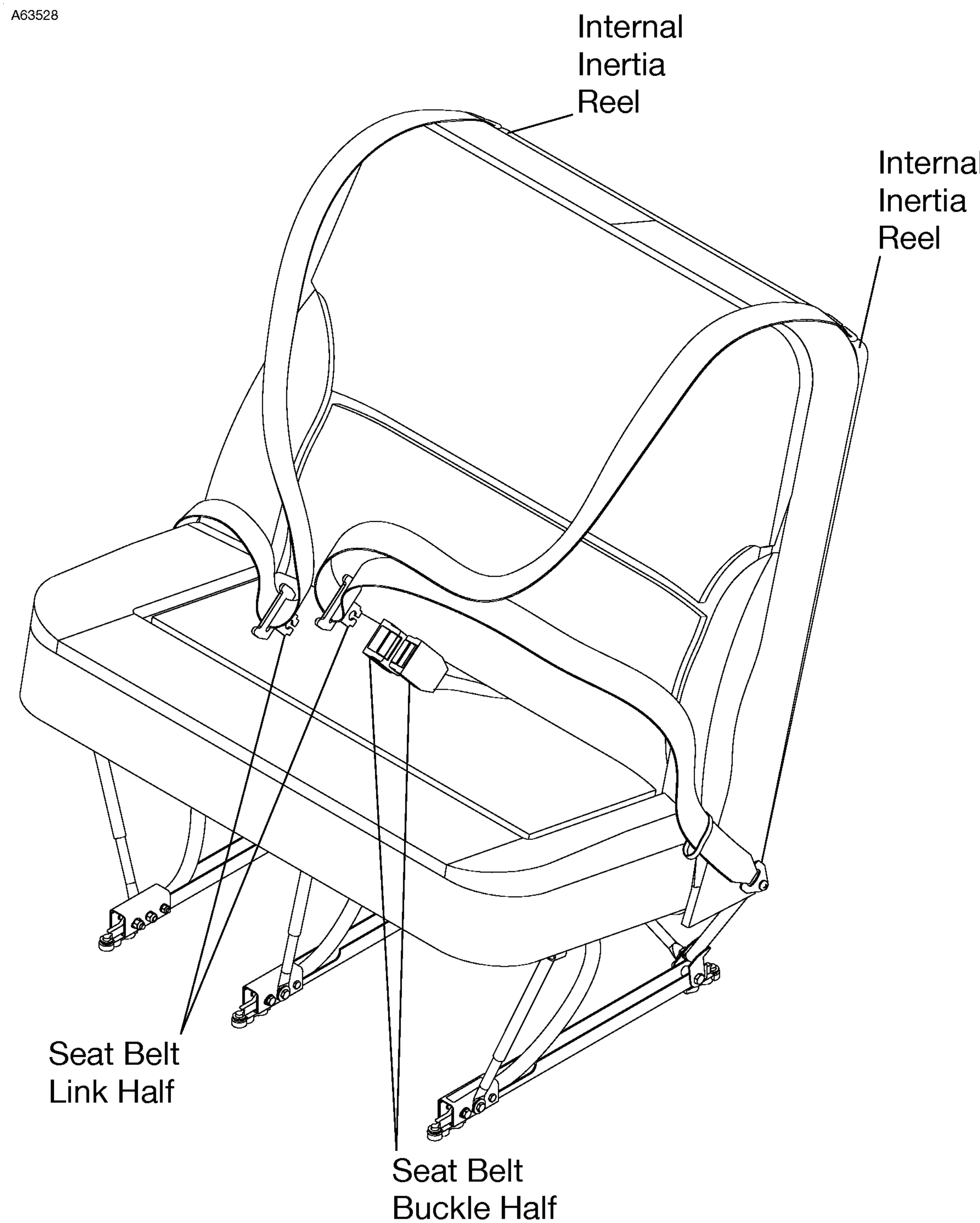


Figure 7-7 (Sheet 3 of 3)

SEAT BELTS AND SHOULDER HARNESSES

All seat positions are equipped with seat belts and shoulder harnesses. The pilot's and copilot's seat positions are equipped with shoulder harnesses with inertia reels.

WARNING

Failure to correctly use seat belts and shoulder harnesses could result in serious or fatal injury in the event of an accident.

SEAT BELTS, STRAP, AND SHOULDER HARNESSES (PILOT AND COPILOT SEATS)

Both the pilot's and copilot's seat positions are equipped with a five-point restraint system which combines the function of conventional type seat belts, a crotch strap, and an inertial reel equipped double-strap shoulder harness in a single assembly. The seat belts and crotch strap attach to fittings on the lower seat frame and the inertia reel for the shoulder harness attaches to the frame of the seat back.

The right half of the seat belt contains the buckle, which is the connection point for the left belt half, crotch strap, and shoulder harnesses. The left belt, crotch strap, and shoulder harnesses are fitted with links which insert into the buckle. Both halves of the seat belt have adjusters with narrow straps to enable the belt halves to be lengthened prior to fastening.

(Continued Next Page)

SEAT BELTS AND SHOULDER HARNESSES
(Continued)

SEAT BELTS, STRAP, AND SHOULDER HARNESSES (PILOT AND COPILOT SEATS) (Continued)

To use the restraint system, lengthen each half of the belt as necessary by pulling the buckle (or connecting link) to the lap with one hand while pulling outward on the narrow adjuster strap with the other hand. Insert the left belt link into the left slot of the buckle. Bring the crotch strap upward and insert the link into the bottom slot in the buckle. Finally, position each strap of the shoulder harness over the shoulders and insert their links into the upper slots in the buckle. the seat belts should be tightened for a snug fit by grasping the free end of each belt and pulling up and inward.

During flight operations, the inertia reel allows complete freedom of upper body movement; however, in the event of a sudden deceleration, the reel will lock automatically to protect the occupant.

WARNING

Failure to correctly use seat belts and shoulder harnesses could result in serious or fatal injury in the event of an accident.

Release of the belts, strap, and shoulder harnesses is accomplished by simply twisting the front section of the buckle in either direction and pulling all connecting links free.

CABIN ENTRY DOORS

Entry to, and exit from the airplane is accomplished through a door on each side of the cabin at the pilot's and copilot's positions and, on the Passenger Version only, through a two-piece, airstair-type door on the right side of the airplane aft of the wing, refer to Section 6, Weight and Balance, Figure 6-4, Cabin Internal Dimensions, for cabin and cabin entry door dimensions. A cargo door on the left side of the airplane aft of the wing, also can be used for cabin entry.

CREW ENTRY DOORS

The left door for crew entry has a conventional exterior door handle, a key-operated door lock, a conventional interior door handle, a lock override knob, and an openable vent window. The right crew door has a conventional interior and exterior door handle and manually-operated inside door lock. To open either crew door from outside the airplane (if unlocked), rotate the handle down and forward to the OPEN position. To close the door from inside the airplane, use the conventional door handle and door pull. The inside door handle is a three-position handle with OPEN, CLOSE and LATCHED positions. Place the handle in the CLOSE position and pull the door shut; then rotate the handle forward to the LATCHED position. When the handle is rotated to the LATCHED position, an over-center action will hold it in that position.

CAUTION

Failure to correctly close and latch the left and right crew entry doors may cause the doors to open in flight.

A lock override knob on the inside of the left crew door provides a means of overriding the outside door lock from inside the airplane. To operate the override, pull the knob and rotate it in the placarded direction to unlock or lock the door. Both crew doors should be latched before flight, and should not be opened intentionally during flight. To lock the crew doors when leaving the airplane, lock the right door with the manually operated inside door lock, close the left door, and, using the key, lock the door.

CABIN ENTRY DOORS (Continued)

PASSENGER ENTRY DOOR (Passenger Version Only)

The entry door for passengers consists of an upper and lower section. When opened, the upper section swings upward and the lower section drops down providing integral steps to aid in boarding or exiting the airplane. The upper door section incorporates a conventional exterior door handle with a separate key-operated lock, a pushbutton exterior door release, and an interior door handle which snaps into a locking receptacle. The lower door section features a flush handle which is accessible from either inside or outside the airplane. This handle is designed so that when the upper door is closed, the handle cannot be rotated to the OPEN position. The lower door also contains integral door support cables and a door-lowering device. A cabin door unlatched warning system is provided as a safety feature so that if the upper door is not properly latched, an amber DOOR UNLATCHED annunciator located on the PFD will be shown to alert the pilot that.

To enter the airplane through the passenger entry door, depress the exterior pushbutton door release, rotate the exterior door handle on the upper door section counterclockwise to the open position, and raise the door section to the overcenter position. Following this action, the automatic door lift with the telescoping gas spring raises the door to the full up position. When the upper section is open, release the lower section by pulling up on the inside door handle and rotating the handle to the OPEN position. Lower the door section until it is supported by the integral support cables. The door steps deploy automatically from their stowed positions.

WARNING

The outside proximity of the lower door section must be clear before opening the door.

(Continued Next Page)

CABIN ENTRY DOORS (Continued)

PASSENGER ENTRY DOOR (Passenger Version Only) (Continued)

To close the passenger entry door from the inside of the airplane, grasp the support cables of the lower door section and pull the door up until the top edge is within reach, then grasp the center of the door and pull inboard until the door is held snugly against the fuselage door frame. Rotate the inside handle forward to the CLOSE position and latch the lower door section.

Check that the lower front and rear latches are correctly engaged. After the lower door section is secured, grasp the pull strap on the upper door section and pull down and inboard. As the door nears the closed position, pull inboard firmly to make sure the latching pawls engage correctly. When the latching pawls are engaged, rotate the inside handle counterclockwise to the horizontal (latched) position, but do not use excessive force. If the handle will not rotate easily, the door is not fully closed. Use a more firm closing motion to get the latching pawls to engage and rotate the door handle again to the latched position. Then snap the interior handle into its locking receptacle.

CAUTION

Refer to Section 3, Emergency Procedures, for proper operational procedures to be followed if the passenger entry door should inadvertently open in flight.

To exit the airplane through the passenger entry door, pull the upper door section inside handle from its locked position receptacle, rotating the handle clockwise to the open position as you push the door outward. When the door is partially open, the automatic door lift will raise the upper door section to the fully open position. Next, rotate the door handle of the lower section up and aft to the open position and push the door outward. The telescoping gas spring will lower the door to its fully open position and the integral steps will deploy.

WARNING

The outside proximity of the lower door section must be clear before opening the door.

(Continued Next Page)

CABIN ENTRY DOORS (Continued)

PASSENGER ENTRY DOOR (Passenger Version Only) (Continued)

To close the passenger entry door from outside the airplane, raise the lower door section until the door is held firmly against the door frame in the fuselage. Rotate the inside handle of the lower door section forward and down to the CLOSE position. After the lower door section is secured, grasp the pull strap on the upper door section and pull down. As the door nears the closed position, grasp the edge of the door and push inward firmly to make sure the latching pawls engage correctly. When engaged, rotate the outside door handle clockwise to the horizontal (latched) position. After entering the airplane, snap the interior handle of the upper door into its locking receptacle (unless cargo obstructs access to the door). If desired when leaving the airplane parked, use the key in the outside key lock to lock the handle in the horizontal position.

WARNING

Do not use the outside key lock to lock the door prior to flight. The door could not be opened from the inside if it were needed as an emergency exit.

CAUTION

Failure to properly latch the upper passenger door section will result in the amber DOOR WARNING annunciator being shown on the PFD. Inattention to this safety feature may allow the upper cargo door to open in flight.

The exterior pushbutton-type lock release located on the upper door section just forward of the exterior door handle operates in conjunction with the interior door handle. It is used whenever it is desired to open the door from outside the airplane while the interior door handle is in the locked position. Depress the pushbutton to release the lock of the interior door handle and to allow the exterior door handle to function normally to open the door.

CARGO DOORS

A two-piece cargo door is installed on the left side of the airplane just aft of the wing trailing edge. The cargo door is divided into an upper and a lower section. When opened, the upper section swings upward and the lower section swings forward to create a large opening in the side of he fuselage which facilitates the loading of bulky cargo into the cabin. The upper section of the cargo door incorporates a conventional exterior door handle with a separate key-operated lock, and, on the Passenger Version only, a pushbutton exterior emergency door release and an interior door handle which snaps into a locking receptacle. The upper door also incorporates two telescoping door lifts which raise the door to the fully open position, when opened. A cargo door open warning system is provided as a safety feature so that if the upper door is not properly latched an amber annunciator, labeled DOOR UNLATCHED, located on the PFD, illuminates to alert the pilot. The lower door section features a flush handle which is accessible from either inside or outside the airplane. The handle is designed so that when the upper door is closed, the handle cannot be rotated to the open position.

WARNING

In an emergency, do not attempt to exit the cargo version through the cargo doors. Because the inside of the upper door has no handle, exit from the airplane through these doors without outside assistance is not possible.

CAUTION

Failure to properly latch the upper cargo door section will result in illumination of the amber DOOR WARNING annunciator. Inattention to this safety feature may allow the upper cargo door to open in flight.

(Continued Next Page)

CARGO DOORS (Continued)

To open the cargo door from outside the airplane, depress the upper door section exterior pushbutton door release (Passenger Version only) and rotate the exterior door handle clockwise to the open position. Following this action, the telescoping door lifts will automatically raise the door to the full up position. When the upper section is open, release the lower section by pulling up on the inside door handle and rotating the handle to the OPEN position. Open the door forward until it swings around next to the fuselage where it can be secured to the fuselage by a holding strap or chain.

To close the cargo door from outside the airplane, disconnect the holding strap or chain from the fuselage, swing the door aft to the closed position, and hold the door firmly against the fuselage door frame to assure engagement of the latching pawls. Rotate the inside handle forward and down to the CLOSE position to latch the lower door section. After the lower door section is secured, grasp the pull strap on the upper door section and pull down. As the door nears the closed position, grasp the edge of the door and push inward firmly to assure engagement of the latching pawls. When engaged, the exterior door handle can be rotated counterclockwise to the horizontal (latched) position. On the Passenger Version only, after entering the airplane, snap the upper door interior handle into its locking receptacle (unless cargo obstructs access to the door). If desired when leaving the airplane parked, use the key in the outside key lock to lock the handle in the horizontal position.

(Continued Next Page)

CARGO DOORS (Continued)

To open the cargo door from inside the airplane (Passenger Version only), pull the inside door handle of the upper door section from its locked position receptacle. Rotate the handle counterclockwise to the vertical position, and push the door outward. When the door is partially open, the automatic door lifts will raise the upper door section to the fully open position. Next, rotate the door handle of the lower section door up and aft to the open position and push the aft end of the door outward. The door may be completely opened and secured to the fuselage with the holding strap or chain from outside.

WARNING

Do not attempt to exit the cargo version through the cargo doors. Because the inside of the upper door has no handle, exit from the airplane through these doors is not possible without outside assistance.

To close the cargo door from inside the airplane (Passenger Version only), disconnect the holding strap or chain from the fuselage and secure it to the door. Pull the door aft to the closed position and hold the aft edge of the door firmly against the fuselage door frame to assure engagement of the latching pawls. Rotate the inside handle forward and down to the CLOSE position to latch the lower door section (refer to Section 2, Placards). After the lower door section is secured, grasp the pull strap on the upper door section and pull down. As the door nears the closed position, grasp the edge of the door and pull inward firmly to assure engagement of the latching pawls. When engaged, the interior door handle can be rotated clockwise to the horizontal position. Snap the handle into its locking receptacle.

CABIN WINDOWS

The airplane is equipped with a two-piece windshield reinforced with a metal center strip. The passenger version has sixteen cabin side windows of the fixed type including one each in the two crew entry doors, two windows in the cargo door upper section, and one window in the upper section of the passenger entry door. The pilot's side window incorporates a small triangular foul weather window. The foul weather window may be opened for ground ventilation and additional viewing by twisting the latch. The cargo version has only two cabin side windows, one in each crew entry door.

CONTROL LOCKS

A control lock is provided to lock the aileron and elevator control surfaces to prevent damage to these systems by wind buffeting while the airplane is parked. The lock consists of a shaped steel rod and flag. The flag identifies it as a control lock and cautions about its removal before starting the engine. To install the control lock, align the hole in the right side of the pilot's control wheel shaft with the hole in the right side of the shaft collar on the instrument panel and insert the rod into the aligned holes. Installation of the lock will secure the ailerons in a neutral position and the elevators in a slightly trailing edge down position. Proper installation of the lock will place the flag over the left sidewall switch panel.

The Rudder Gust Lock is a positive locking device consisting of a bracket assembly and a bolt action lock attached to the rear bulkhead inside the tailcone stinger below the rudder. When engaged, the rudder is locked in the neutral position. A placard located below the lock handle shaft on the left side of the tailcone explains the operation of the rudder gust lock. The rudder gust lock is manually engaged and disengaged on the ground by turning the airfoil-shaped handle mounted on the shaft projecting from the left side of the tailcone. The lock is engaged by turning the handle downward so that its trailing edge points nearly due aft.

(Continued Next Page)

CONTROL LOCKS (Continued)

The Rudder Gust Lock has a fail-safe connection to the elevator control system to ensure that it will always be disengaged before the airplane becomes airborne. This fail-safe connection automatically disengages the lock when the elevator is deflected upward about one-fourth of its travel from neutral. The pilot is responsible for disengaging the Rudder Gust Lock during the preflight inspection and operating the fail-safe disengagement mechanism by momentarily deflecting the elevator to the full up position after the control lock is removed and before starting the engine. If these procedures are not followed the rudder and rudder pedals will be locked in the neutral position making ground steering impossible. In the event that the engagement of the Rudder Gust Lock goes completely unnoticed and the pilot commences a takeoff run with the rudder system locked, the upward elevator deflection during rotation will disengage the Rudder Gust Lock.

Because of the fail-safe system, the elevator lock should always be engaged prior to engaging the Rudder Gust Lock when securing the airplane after shutdown.

NOTE

The control lock and any other type of locking device should be removed or unlocked prior to starting the engine.

ENGINE

The Pratt & Whitney Canada Inc. PT6A-140 powerplant is a free turbine engine. It utilizes two independent turbines; one driving a compressor in the gas generator section, and the second driving a reduction gearing for the propeller.

Inlet air enters the engine through an annular plenum chamber formed by the compressor inlet case where it is directed to the compressor. The compressor consists of three axial stages combined with a single centrifugal stage, assembled as an integral unit.

A row of stator vanes located between each stage of compressor rotor blades diffuses the air, raises its static pressure and directs it to the next stage of compressor rotor blades. The compressed air passes through diffuser ducts which turn it 90° in direction. It is then routed through straightening vanes into the combustion chamber.

The combustion chamber liner located in the gas generator case consists of an annular reverse-flow weldment provided with varying sized perforations which allow entry of compressed air. The flow of air changes direction to enter the combustion chamber liner where it reverses direction and mixes with fuel. The location of the combustion chamber liner eliminates the need for a long shaft between the compressor and the compressor turbine, thus reducing the overall length and weight of the engine.

Fuel is injected into the combustion chamber liner by 14 simplex nozzles supplied by a dual manifold. the mixture is initially ignited by two spark igniters which protrude into the combustion chamber liner. The resultant gases expand from the combustion chamber liner, reverse direction and pass through the compressor turbine guide vane to the compressor turbine. The turbine guide vanes ensure that the expanding gases impinge on the turbine blades at the proper angle, with a minimum loss of energy. The still expanding gases pass forward through a second set of stationary guide vanes to drive the power turbine.

(Continued Next Page)

ENGINE (Continued)

The compressor and power turbines are located in the approximate center of the engine with their shafts extending in opposite directions. The exhaust gas from the power turbine is directed through an exhaust plenum to the atmosphere via a single exhaust port on the right side of the engine.

The engine is flat rated at 867 shaft horsepower (2397 foot-pounds torque at 1900 RPM. The speed of the gas generator (compressor) turbine (N_g) is 37,468 RPM at 100% N_g. Maximum permissible speed of the gas generator is 38,900 RPM which equals 103.7% N_g. The power turbine speed is 33,000 RPM at a propeller shaft speed of 1900 RPM.

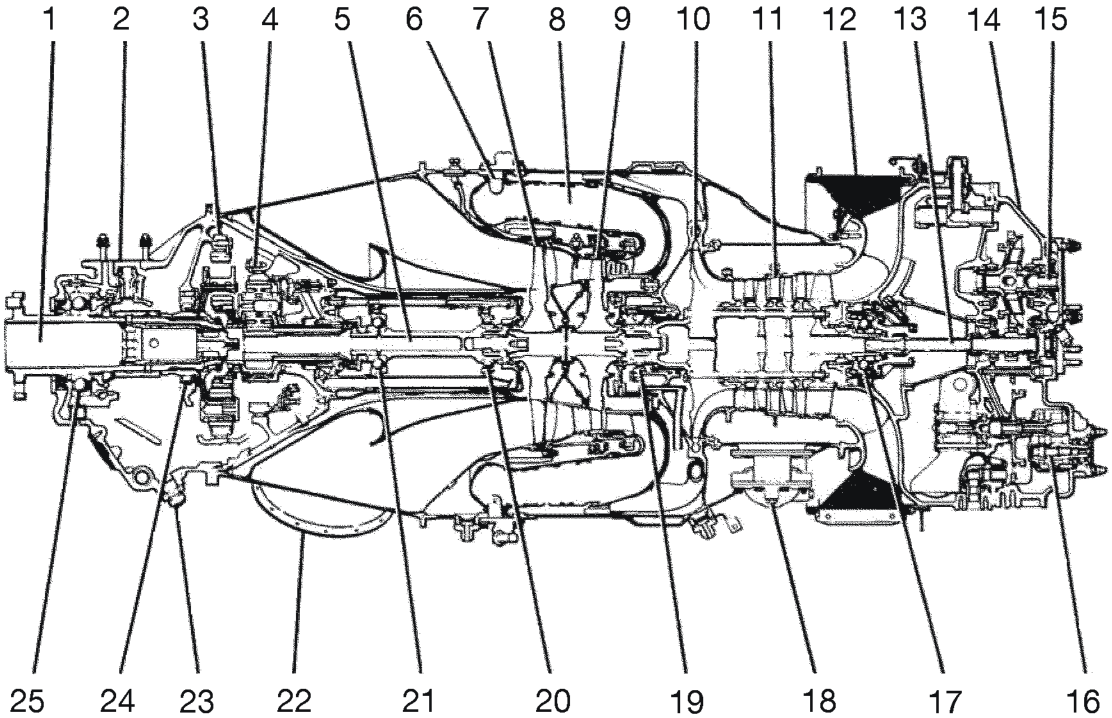
All engine-driven accessories, with the exception of the propeller tachometer-generator and the propeller governors, are mounted on the accessory gearbox located at the rear of the engine. These are driven by the compressor turbine with a coupling shaft which extends the drive through a conical tube in the oil tank center section.

The engine oil supply is contained in an integral tank which forms part of the compressor inlet case. The tank has a drain and fill capacity of 9.5 U.S. quarts and is provided with a dipstick and drain plug.

The power turbine drives the propeller through a two-stage planetary reduction gearbox located on the front of the engine. The gearbox embodies an integral torquemeter device which is instrumented to proved an accurate indication of the engine power output.

ENGINE COMPONENTS

A39403



1. Propeller Shaft
2. Propeller Governor Drive Pad
3. Second Stage Planetary Gear
4. First Stage Planetary Gear
5. Power Turbine Shaft
6. Fuel Nozzle
7. Power Turbine
8. Combustion Chamber
9. Compressor Turbine
10. Centrifugal Compressor Impeller
11. Axial-Flow Compressor Impellers (3)
12. Compressor Air Inlet
13. Accessory Gearbox Drive Shaft
14. Accessory Gearbox Cover
15. Starter-Generator Drive Shaft
16. Oil Scavenge Pump
17. Number 1 Bearing
18. Compressor Bleed Valve
19. Number 2 Bearing
20. Number 3 Bearing
21. Number 4 Bearing
22. Exhaust Outlet
23. Chip Detector
24. Roller Bearing
25. Thrust Bearing

Figure 7-8

ENGINE CONTROLS

The engine is operated by four separate controls consisting of a POWER lever, EMERGENCY POWER lever, PROP RPM lever and a FUEL CONDITION lever. The POWER and FUEL CONDITION levers are engine controls while the PROP RPM lever controls propeller speed and feathering.

POWER LEVER

The POWER lever is connected through linkage to a cam assembly mounted in front of the fuel control unit at the rear of the engine. The POWER lever controls engine power through the full range from maximum takeoff power back through idle to full reverse. The lever also selects propeller pitch when in the BETA range. The POWER lever has MAX, IDLE, and BETA and REVERSE range positions. The range from MAX position through IDLE enables the pilot to select the desired power output from the engine. The BETA range enables the pilot to control propeller blade pitch from idle thrust back through a zero or no-thrust condition to maximum reverse thrust.

CAUTION

The propeller reversing linkage can be damaged if the power lever is moved aft of the idle position when the propeller is feathered.

ENGINE CONTROLS (Continued)

EMERGENCY POWER LEVER

The EMERGENCY POWER lever is connected through linkage to the manual override lever on the fuel control unit and governs fuel supply to the engine should a pneumatic malfunction occur in the fuel control unit. When the engine is operating, a failure of any pneumatic signal input to the fuel control unit will result in the fuel flow decreasing to minimum idle (about 48% N_g at sea level and increasing with altitude). The EMERGENCY POWER lever allows the pilot to restore power in the event of such a failure. The EMERGENCY POWER lever has NORMAL, IDLE, and MAX positions. The NORMAL position is used for all normal engine operation when the fuel control unit is operating normally and engine power is selected by the POWER lever. The range from IDLE position to MAX governs engine power and is used when a pneumatic malfunction has occurred in the fuel control unit and the power lever is ineffective. A mechanical stop in the lever slot requires that the EMERGENCY POWER lever be moved to the left to clear the stop before it can be moved from the NORMAL (full aft) position to the IDLE position.

NOTE

- The knob on the EMERGENCY POWER lever has crosshatching. The crosshatching is visible when the lever is in MAX position.
- The EMERGENCY POWER lever is annunciated by a red (OFF and STRT modes) or amber (RUN mode) EMERG PWR LVR on the PFD.
- The red annunciation will illuminate whenever the EMERGENCY POWER lever is unstowed from the NORMAL position with the ITT indications in either of the OFF or STRT modes. This precaution is intended to preclude starting of the engine with the EMERGENCY POWER lever inadvertently placed in any position other than NORMAL.
- The amber annunciation will illuminate whenever the EMERGENCY POWER lever is unstowed during normal operations.

(Continued Next Page)

ENGINE CONTROLS (Continued)

EMERGENCY POWER LEVER (Continued)

CAUTION

- The EMERGENCY POWER lever and its associated manual override system are considered to be an emergency system and should be used only in the event of a fuel control unit malfunction. When attempting a normal start, the pilot must make sure that the EMERGENCY POWER lever is in the NORMAL (full aft) position; otherwise, an over-temperature condition may result.
- When using the fuel control manual override system, engine response may be more rapid than when using the POWER lever. Additional care is required during engine acceleration to avoid exceeding engine limitations.

Operation of the EMERGENCY POWER lever is prohibited with the primary POWER lever out of the IDLE position. The EMERGENCY POWER lever overrides normal fuel control functions and results in the direct operation of the fuel metering valve. The EMERGENCY POWER lever will override the automatic fuel governing and engine acceleration scheduling controlled during normal operation by the primary POWER lever.

CAUTION

Inappropriate use of the EMERGENCY POWER lever may adversely affect engine operation and durability. Use of the EMERGENCY POWER lever during normal operation of the POWER lever may result in engine surges, or exceeding the ITT, N_G, and torque limits.

ENGINE CONTROLS (Continued)

PROPELLER CONTROL LEVER

The PROP RPM lever is connected through linkage to the propeller governor mounted on top of the front section of the engine, and controls propeller governor settings from the maximum RPM position to full feather. The PROP RPM lever has MAX, MIN, and FEATHER positions. The MAX position is used when high RPM is desired and governs the propeller speed at 1900 RPM. PROP RPM lever settings from the MAX position to MIN permit the pilot to select the desired engine RPM for cruise. The FEATHER position is used during normal engine shutdown to stop rotation of the power turbine and front section of the engine. Since lubrication is not available after the gas generator section of the engine has shut down, rotation of the forward section of the engine is not desirable. Also, feathering the propeller when the engine is shut down minimizes propeller windmilling during windy conditions. A mechanical stop in the lever slot requires that the PROP RPM lever be moved to the left to clear the stop before it can be moved into or out of the FEATHER position.

FUEL CONDITION LEVER

The FUEL CONDITION lever is connected through linkage to a combined lever and stop mechanism on the fuel control unit. The lever and stop also function as an idle stop for the fuel control unit rod. The FUEL CONDITION lever controls the minimum RPM of the gas generator turbine (N_g) when the POWER lever is in the IDLE position. The FUEL CONDITION lever has CUTOFF, LOW IDLE, and HIGH IDLE positions. The CUTOFF position shuts off all fuel to the engine fuel nozzles. LOW IDLE positions the control rod stop to provide an RPM of 55% N_g. HIGH IDLE positions the control rod stop to provide an RPM of 65% N_g.

QUADRANT FRICTION LOCK

A quadrant friction lock, located on the right side of the pedestal, is provided to minimize creeping of the engine controls once they have been set. The lock is a knurled knob which increases friction on the engine controls when rotated clockwise.

ENGINE INDICATING SYSTEM (EIS)

The G1000 Engine Indicating System (EIS) provides graphical indicators and numeric values for engine, fuel, and electrical system parameters to the pilot. The EIS is shown in a vertical strip on the left side of the PFD during engine starts and on the MFD during normal operation. If either the MFD or PFD fails during flight, the EIS is shown on the remaining display.

The EIS consists of two pages that are selected using the ENGINE softkey. The ENGINE page provides indicators for Engine Torque, Engine ITT, Gas Generator RPM%, Propeller RPM, Oil Pressure, Oil Temperature, Fuel Quantity, Fuel Flow, Battery Amps and Bus Voltage. When the ENGINE softkey is pressed, the SYSTEM softkey will appear adjacent to the ENGINE softkey. The SYSTEM page provides numerical values for parameters on the ENGINE page that are shown as indicators only. Torque, ITT, N_g% and N_p RPM are displayed identically on the SYSTEM page. The SYSTEM page also provides numerical indication for fuel quantity, fuel totalizer (pounds remaining and pounds used), generator amps, standby alternator amps, battery amps and bus voltage.

The engine and airframe unit provides data to the EIS, which displays the data for the ENGINE page described below. Engine operation is monitored by: torque, ITT, N_g%, propeller RPM, oil pressure, oil temperature, and fuel flow.

ENGINE INDICATING SYSTEM (EIS) (Continued)

TORQUE INDICATIONS

Torque (TRQ) indication is displayed at the top of both the ENGINE and SYSTEM pages. The indicator is a round gage with a white pointer. The transmitter senses the difference between the engine torque pressure and the pressure in the engine case and transmits this data to the G1000. Normal operating range is indicated by a green arc that extends from 0 to redline. The Torque (TRQ) indicator incorporates a dynamic redline varies with OAT and altitude.

DYNAMIC REDLINE

The dynamic redline is a graphical representation of takeoff power below 16,000 feet MSL and Maximum Continuous Power above 16,000 feet MSL as depicted in Section 5, Performance, Figure 5-8, Maximum Engine Torque For Takeoff chart and Figure 5-9 Maximum Engine Torque For Climb. The dynamic redline automatically compensates for altitude and temperature changes and adjusts displayed takeoff torque for inertial separator deployment and bleed air heat switch position. Failure to comply with the dynamic redline indication can result in accelerated engine wear, unscheduled engine maintenance and increased operating costs even though no other published engine limitation has been exceeded.

STATIC REDLINE

The dynamic redline reverts to a static redline whenever the white TORQUE GAGE annunciation is shown on the PFD. The white TORQUE GAGE annunciation indicates when there is an ALT MISCOMP message, red “X” through the OAT, Altitude, Airspeed and Vertical Speed Indicators on PFD1 or a 5°C temperature difference between OAT’s on PFD1 and PFD2. With a white TORQUE GAGE annunciation, the dynamic redline will become fixed at 2397 FT-LB regardless of temperature or altitude changes. The cruise torque bug will become inoperative and will not be shown on the EIS torque indicator. Refer to Section 5, Performance, for the appropriate power settings.

ENGINE INDICATING SYSTEM (EIS) (Continued)

TORQUE INDICATIONS (Continued)

MAXIMUM CRUISE TORQUE BUG

For normal cruise flight when prop RPM is between 1600-1900, a maximum cruise torque “bug” is included on the arc. This indicates maximum allowed cruise torque per the cruise performance and maximum torque charts in Section 5, Performance. The blue maximum cruise torque bug located on the EIS torque indication is not to be used as the primary means of setting cruise torque. Always refer to the appropriate performance chart in Section 5 of the POH/AFM.

PROPELLER RPM INDICATIONS

The PROP RPM is indicated numerically below Gas Generator Ng % RPM indicator. The digits are white with RPM between 0-1599 RPM, green between 1600-1900 RPM, and white numerals on a red background when RPM is greater than or equal to 1910 after a 20 second delay. The instrument is electrically operated from the propeller tachometer-generator which is mounted on the right side of the front case.

ITT INDICATION

Interstage Turbine Temperature (ITT) is indicated below torque gage and is round dial gage with a white pointer. This instrument displays gas temperature between the compressor and power turbines. With the engine off, or during start, ITT indicator displays a green band from 100°C to 870°C and a redline at 871°C. The gage is graduated at 100 degree intervals from 600°C to 1100°C.

With the engine running, a green arc indicates normal operating range from 100°C to 825°C, an amber caution arc from 826°C-849°C and a redline at 850°C. The gage is graduated at 50 degree intervals from 600°C-950°C.

During any temperature exceedance, the digital readout will reverse to white digits on a red background and the moving pointer will turn red.

ENGINE INDICATING SYSTEM (EIS) (Continued)

GAS GENERATOR RPM INDICATIONS

Gas generator RPM (Ng) is displayed below the ITT indicator and uses a round dial style gage with a white pointer. RPM is displayed as a percentage of maximum gas generator RPM. The Ng indicator displays a green band from 55% to 103.6% and a redline at 103.7%. The Ng % RPM labels are displayed in white with green digital values between 0%-103.6% RPM. Once Ng % RPM is greater than or equal to 103.7 % for more than a 20 seconds, the pointer switches to red and numerals switch to white on a red background. If Ng % RPM ever reaches 105.4% the pointer will immediately turn red and digital values revert to white on a red background.

The Ng % RPM indicator is electrically operated from the gas generator tachometer-generator mounted on the lower right portion of the accessory case. The gage has major tick marks at 0, 12, 50, and 110% and minor tick marks at 10% intervals from 50 to 100%, with a redline at 103.7%.

FUEL FLOW INDICATIONS

Details of the fuel flow indicator are included under Fuel System in a later paragraph in this section.

ENGINE INDICATING SYSTEM (EIS) (Continued)

OIL PRESSURE INDICATION

Engine oil pressure is shown by the OIL PSI horizontal indicator on the ENGINE page. The indicator range is 0 to 130 PSI with a minimum redline at 39 PSI, a amber band from 40 to 84 PSI (caution range), a green band from 85 to 105 PSI (normal operating range) and a maximum redline at 105 PSI. A white pointer indicates actual oil pressure. Oil pressure is shown numerically above the horizontal indicator.

When oil pressure is the normal operating range, indications 85 to 105 PSI, the OIL PSI label and pointer will remain white and digital value will be green.

When oil pressure is the caution range, indications 40 to 84 PSI, the OIL PSI label and pointer will turn amber and the digital value will be amber background with black text.

When oil pressure is the warning range, indications 0 to 39 PSI or 106 to 130 PSI, the OIL PSI label and pointer will turn red and the digital value will change to red background with white text to show that oil pressure is outside normal limits.

The oil pressure transducer, connected to the accessory case oil pressure port, provides a signal to the engine display that is processed and shown as oil pressure. A separate low oil pressure switch causes an OIL PRESS LOW annunciation on the PFD when oil pressure is 0 to 39 PSI. A red X through the oil pressure indicator means that the indicating system is inoperative.

OIL TEMPERATURE INDICATION

Oil temperature (OIL °C) is displayed using a varied color tape and digital display; the display can be 3 digits on the ENGINE page. The instrument is operated by an electrical-resistance type temperature sensor. Normal operation is indicated between 32 and 99°C; Amber caution regions are indicated from -40 to 31°C and from 100 to 104°C. Red lines are included at -41 and 105°C. Digits vary in color between green, amber or red in correlation with the pointer and tape.

NEW ENGINE BREAK-IN AND OPERATION

There are no specific break-in procedures required for the Pratt & Whitney Canada Inc. PT6A-140 turboprop engine. The engine may be safely operated throughout the normal ranges authorized by the manufacturer at the time of delivery of your airplane.

ENGINE LUBRICATION SYSTEM

The lubrication system consists of a pressure system, a scavenge system and a breather system. The main components of the lubrication system include an integral oil tank at the back of the engine, an oil pressure pump at the bottom of the oil tank, an external double-element scavenge pump located on the back of the accessory case, an internal double-element scavenge pump located inside the accessory gearbox, an oil-to-fuel heater located on the top rear of the accessory case, an oil filter located internally on the right side of the oil tank, and an oil cooler located on the right side of the nose cowl.

Oil is drawn from the bottom of the oil tank through a filter screen where it passes through a pressure relief valve for regulation of oil pressure. The pressure oil is then delivered from the main oil pump to the oil filter where extraneous matter is removed from the oil and precluded from further circulation. Pressure oil is then routed through passageways to the engine bearings, reduction gears, accessory drives, torquemeter, and propeller governor. Also, pressure oil is routed to the oil-to-fuel heater where it then returns to the oil tank

After cooling and lubricating the engine moving parts, oil is scavenged as follows:

1. Oil from the number 1 bearing compartment is returned by gravity into the accessory gearbox.
2. Oil from the number 2 bearing is scavenged by the front element of the internal scavenge pump back into the accessory gearbox.
3. Oil from the number 3 and number 4 bearings is scavenged by the front element of the external scavenge pump into the accessory gearbox.
4. Oil from the propeller governor, front thrust bearing, reduction gear accessory drives, and torquemeter is scavenged by the rear element of the external scavenge pump where it is routed through a thermostatically-controlled oil cooler and then returned to the oil tank.
5. The rear element of the internal scavenge pump scavenges oil from the accessory case and routes it through the oil cooler where it then returns to the oil tank.

(Continued Next Page)

ENGINE LUBRICATION SYSTEM (Continued)

Breather air from the engine bearing compartments and from the accessory and reduction gearboxes is vented overboard through a centrifugal breather installed in the accessory gearbox. The bearing compartments are connected to the accessory gearbox by cored passages and existing scavenge oil return lines. A bypass valve, immediately upstream of the front element of the internal scavenge pump, vents the accessory gearbox when the engine is operating at high power.

An oil dipstick/filler cap is located at the rear of the engine on the left side and is accessible when the left side of the upper cowling is raised. Markings which indicate U.S. quarts low if the oil is hot are provided on the dipstick to facilitate oil servicing. The oil tank capacity is 9.5 U.S. quarts and total system capacity is 14 U.S. quarts. For engine oil type and brand, refer to Section 8.

FIREWALL OIL SHUTOFF VALVE

A firewall oil shutoff valve, located on the forward side of the firewall, enables the pilot to shut off all oil flow from the engine to the oil cooler in the event of an engine fire. With the oil cooler shutoff valve closed, oil bypasses the oil cooler through an external oil line and relief valve and dumps back into the engine. An additional check valve is placed in the oil cooler return line to prevent bypassed oil from flowing back to the oil cooler. The shutoff valve is controlled by a red push-pull knob labeled FUEL/OIL SHUTOFF located on the right side of the control pedestal. The push-pull knob has a press-to-release button in the center which locks the knob in position when the button is released.

IGNITION SYSTEM

The ignition system consists of two igniters, an ignition exciter, two high-tension leads, an ignition monitor light, an ignition switch, and a starter switch. Engine ignition is provided by two igniters in the engine combustion chamber. The igniters are energized by the ignition exciter mounted on the engine mount on the right side of the engine compartment. Electrical energy from the ignition exciter is transmitted through two high-tension leads to the igniters in the engine. The ignition system is normally energized only during engine start.

Ignition is controlled by an ignition switch and a starter switch located on the left sidewall switch and circuit breaker panel. The ignition switch has two positions, ON and NORMAL. The NORMAL position of the switch arms the ignition system so that ignition will be obtained when the starter switch is placed in the START position. The NORMAL position is used during all ground starts and during air starts with starter assist. The ON position of the switch provides continuous ignition regardless of the position of the starter switch. This position is used for air starts without starter assist, for operation on water-covered runways, during flight in heavy precipitation, during inadvertent icing encounters until the inertial separator has been in bypass for 5 minutes, and when near fuel exhaustion as indicated by illumination of the red RSVR FUEL LOW annunciator.

(Continued Next Page)

IGNITION SYSTEM (Continued)

The main function of the starter switch is control of the starter for rotating the gas generator portion of the engine during starting. However, it also provides ignition during starting. For purposes of this discussion, only the ignition functions of the switch are described. For other functions of the starter switch, refer to paragraph titled Starting System, in this section. The starter switch has three positions, OFF, START, and MOTOR. The OFF position shuts off the ignition system and is the normal position at all times except during engine start or engine clearing. The START position energizes the engine ignition system provided the ignition switch is in the NORMAL position. After the engine has started during a ground or air start, the starter switch must be manually positioned to OFF for generator operation.

White IGNITION ON annunciator will illuminate when electrical power is being applied to the igniters. The ignition system is protected by a pull-off type circuit breaker, labeled IGN, on the left sidewall switch and circuit breaker panel.

AIR INDUCTION SYSTEM

The engine air inlet is located at the front of the engine nacelle to the left of the propeller spinner. Ram air entering the inlet flows through ducts and an inertial separator system and then enters the engine through a circular plenum chamber where it is directed to the compressor by guide vanes. The compressor air inlet incorporates a screen which will prevent entry of large articles, but does not filter the inlet air.

INERTIAL SEPARATOR SYSTEM

An inertial separator system in the engine air inlet duct prevents moisture particles from entering the compressor air inlet plenum when in bypass mode. The inertial separator consists of two movable vanes and a fixed airfoil which, during normal operation, route the inlet air through a gentle turn into the compressor air inlet plenum. When separation of moisture particles is desired, the vanes are positioned so that the inlet air is forced to execute a sharp turn in order to enter the inlet plenum. This sharp turn causes any moisture particles to separate from the inlet air and discharge overboard through the inertial separator outlet in the left side of the cowling.

Inertial separator operation is controlled by a T-handle located on the lower instrument panel. The T-handle is labeled BYPASS-PULL, NORMAL-PUSH. The inertial separator control should be moved to the BYPASS position prior to running the engine during ground or flight operation in visible moisture (clouds, rain, snow, ice crystals) with an OAT of 5°C (41°F) or less. It may also be used for ground operations or takeoffs from dusty, sandy field conditions to minimize ingestion of foreign particles into the compressor. The NORMAL position is used for all other operations.

The T-handle locks in the NORMAL position by rotating the handle clockwise 1/4 turn to its vertical position. To unlock, push forward slightly and rotate the handle 90° counterclockwise. The handle can then be pulled into the BYPASS position. Once moved to the BYPASS position, air loads on the movable vanes hold them in this position.

CAUTION

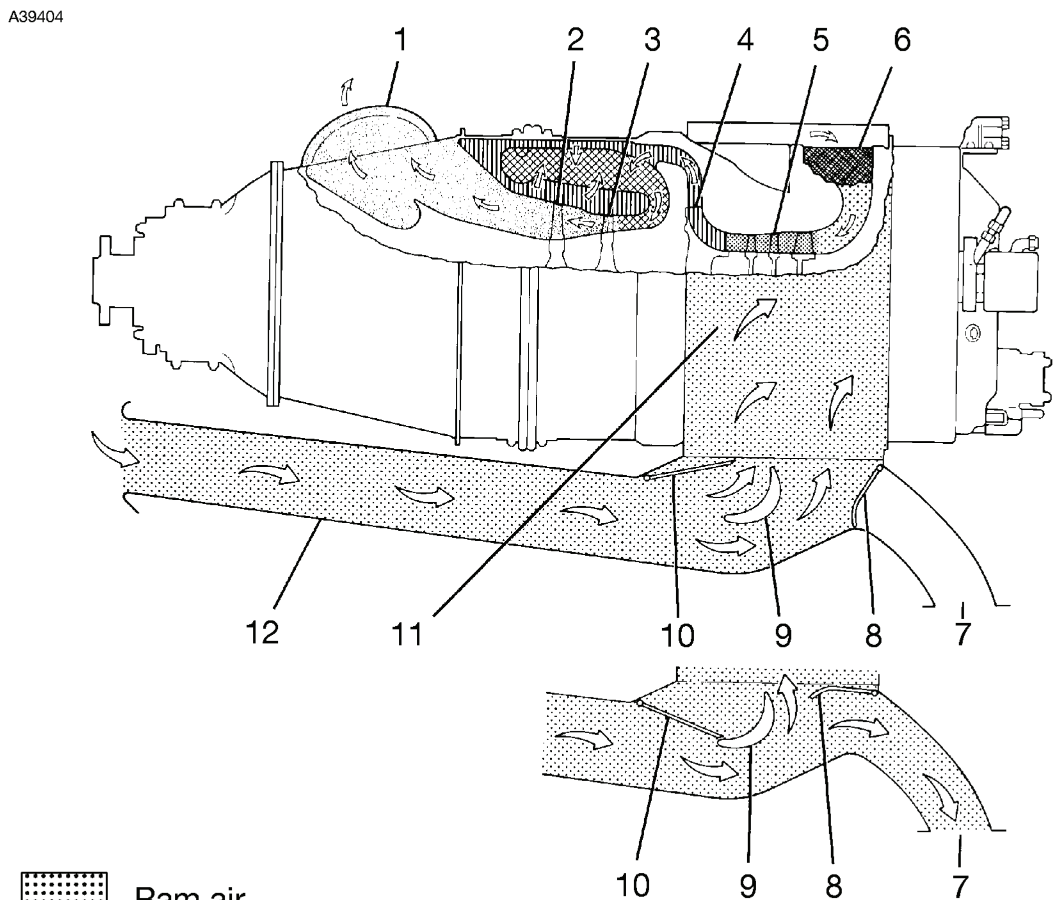
Do not return the INERTIAL SEPARATOR to NORMAL until after engine shutdown and inspection if icing conditions are encountered.

NOTE

When moving the inertial separator control from BYPASS to NORMAL position during flight, reduction of engine power will reduce the control forces.

(Continued Next Page)

ENGINE AIR FLOW



Ram air

Ram air compressed while flowing through three stages of axial−flow impellers

Ram air compressed while flowing through centifugal impeller

Compressed air injected with fuel and ignited

Burned fuel−air mixture is expanded and drives compressor turbine and power turbine, and is then exhausted

1. Primary Exhaust Pipe
2. Power Turbine
3. Compressor Turbine
4. Centrifugal Impeller
5. Axial−Flow Impellers (3)
6. Engine Air Inlet
7. Inertial Seperator Outlet
8. Inertial Seperator Rear Vane
9. Inertial Seperator Airfoil
10. Inertial Seperator Front Vane
11. Induction Air Inlet Plenum
12. Induction Air Inlet Duct

NOTE

The above view shows inertial separator in NORMAL position. Auxiliary view shows inertial separator in BYPASS position.

Figure 7-9

EXHAUST SYSTEM

The exhaust system consists of a primary exhaust pipe attached to the right side of the engine just aft of the propeller reduction gearbox. A secondary exhaust duct, fitted over the end of the primary exhaust pipe carries the exhaust gases away from the cowling and into the slipstream. The juncture of the primary exhaust pipe and secondary exhaust duct is located directly behind the oil cooler. Since the secondary exhaust duct is of larger diameter than the primary exhaust pipe, a venturi effect is produced by the flow of exhaust. This venturi effect creates a suction behind the oil cooler which augments the flow of cooling air through the cooler. This additional airflow improves oil cooling during ground operation of the engine.

ENGINE FUEL SYSTEM

The engine fuel system consists of an oil-to-fuel heater, an engine-driven fuel pump, a fuel control unit, a flow divider and dump valve, a dual fuel manifold with 14 simplex nozzles, and two fuel drain lines. The system provides fuel flow to satisfy the speed and power demands of the engine.

Fuel from the airplane reservoir is supplied to the oil-to-fuel heater which utilizes heat from the engine lubricating oil system to preheat the fuel in the fuel system. A fuel temperature-sensing oil bypass valve regulates the fuel temperature by either allowing oil to flow through the heater circuit or bypass it to the engine oil tank.

Fuel from the oil-to-fuel heater then enters the engine-driven fuel pump chamber through a 74-micron inlet screen. The inlet screen is spring-loaded and should it become blocked, the increase in differential pressure will overcome the spring and allow unfiltered fuel to flow into the pump chamber. The pump increases the fuel pressure and delivers it to the fuel control unit via a 10-micron filter in the pump outlet. A bypass valve and cored passages in the pump body enables unfiltered high pressure fuel to flow to the fuel control unit in the event the outlet filter becomes blocked.

(Continued Next Page)

ENGINE FUEL SYSTEM (Continued)

The fuel control unit consists of a fuel metering section, a temperature compensating section, and a gas generator (N_g) pneumatic governor. The fuel control unit determines the proper fuel schedule to provide the power required as established by the power lever input. This is accomplished by controlling the speed of the compressor turbine. The temperature compensating section alters the acceleration fuel schedule to compensate for fuel density differences at different fuel temperatures, especially during engine start. The power turbine governor, located in the propeller governor housing, provides power turbine overspeed protection in the event of propeller governor failure. This is accomplished by limiting fuel to the gas generator. During reverse thrust operation, maximum power turbine speed is controlled by the power turbine governor. The temperature compensator alters the acceleration fuel schedule of the fuel control unit to compensate for variations in compressor inlet air temperature. Engine characteristics vary with changes in inlet air temperature, and the acceleration fuel schedule must, in turn, be altered to prevent compressor stall and/or excessive turbine temperatures.

The flow divider schedules the metered fuel, from the fuel control unit, between the primary and secondary fuel manifolds. The fuel manifold and nozzle assemblies supply fuel to the combustion chamber through 10 primary and 4 secondary fuel nozzles, with the secondary nozzles cutting in above a preset value. All nozzles are operative at idle and above.

When the fuel cutoff valve in the fuel control unit closes during engine shutdown, both primary and secondary manifolds are connected to a dump valve port and residual fuel in the manifolds is allowed to drain into the fuel can attached to the firewall where it can be drained daily.

COOLING SYSTEM

No external cooling provisions are provided for the PT6A-140 engine in this installation. However, the engine incorporates an extensive internal air system which provides for bearing compartment sealing and for compressor and power turbine disk cooling. For additional information on internal engine air systems, refer to the engine maintenance manual for the airplane.

STARTING SYSTEM

The starting system consists of a starter-generator, a starter switch, and an amber STARTER ON annunciator. The starter-generator functions as a motor for engine starting and will motor the gas generator section until a speed of 46% N_g is reached, at which time, the start cycle will automatically be terminated by a speed sensing switch located in the starter-generator. The starter-generator is controlled by a three-positioned starter switch located on the left sidewall switch and circuit breaker panel. The switch has OFF, START, and MOTOR positions. The OFF position deenergizes the ignition and starter circuits and is the normal position at all times except during engine start. The START position of the switch energizes the starter-generator which rotates the gas generator portion of the engine for starting. Also, the START position energizes the ignition system, provided the ignition switch is in the NORMAL position. When the engine has started, the starter switch must be manually placed in the OFF position to de-energize the ignition system and activate the generator system. The MOTOR position of the switch motors the engine without having the ignition circuit energized and is used for motoring the engine when an engine start is not desired. This can be used for clearing fuel from the engine, washing the engine compressor, etc. The MOTOR position is spring-loaded to the OFF position. Also, an interlock between the MOTOR position of the starter switch and the ignition switch prevents the starter from motoring unless the ignition switch is in the NORMAL position. This prevents unintentional motoring of the engine with the ignition on. Starter contactor operation is indicated by an amber STARTER ON annunciator.

ENGINE ACCESSORIES

All engine-driven accessories, with the exception of the propeller tachometer-generator and the propeller governors, are mounted on the accessory gearbox located at the rear of the engine. These accessories are driven from the compressor turbine by a coupling shaft which extends the drive through a conical tube in the oil tank center section.

OIL PUMP

Pressure oil is circulated from the integral oil tank through the engine lubrication system by a self-contained, gear-type pressure pump located in the lowest part of the oil tank. The oil pump is contained in a cast housing which is bolted to the front face of the accessory diaphram, and is driven by the accessory gear shaft. The oil pump body incorporates a circular mounting boss to accommodate a check valve, located in the end of the filter housing. A second mounting boss on the pump accommodates a pressure relief valve.

FUEL PUMP

The engine-driven pump is mounted on the accessory gearbox at the 2 o'clock position. The pump is driven through a gear shaft and splined coupling. The coupling splines are lubricated by oil mist from the auxiliary gearbox through a hole in the gear shaft. Another splined coupling shaft extends the drive to the fuel control unit which is bolted to the rear face of the pump. Fuel from the oil-to-fuel heater enters the fuel pump through a 74-micron inlet screen. Then, fuel enters the pump gear chamber, is boosted to high pressure, and delivered to the fuel control unit through a 10-micron pump outlet filter. A bypass valve and cored passages in the pump casing enable unfiltered high pressure fuel to flow from the pump gears to the fuel control unit should the outlet filter become blocked. An internal passage originating at the mating face with the fuel control unit returns bypass fuel from the fuel control unit to the pump inlet downstream of the inlet screen. A pressure regulating valve in this line serves to pressurize the pump gear bushings.

N_g TACHOMETER-GENERATOR

The N_g tachometer-generator produces an electric current which is used in conjunction with the gas generator% RPM indicator to indicate gas generator RPM. The N_g tachometer-generator drive and mount pad is located at the 5 o'clock position on the accessory gearbox and is driven from the internal scavenger pump.

PROPELLER TACHOMETER-GENERATOR

The propeller tachometer-generator produces an electric signal which is used in conjunction with the propeller RPM indicator. The propeller tachometer- generator drive and mount pad is located on the right side of the reduction gearbox case and rotates clockwise with a drive ratio of 0.1273:1.

TORQUEMETER

The torquemeter is a hydro-mechanical torque measuring device located inside the first stage reduction gear housing to provide an accurate indication of engine power output. The difference between the torquemeter pressure and the reduction gearbox internal pressure accurately indicates the torque being produced. The two pressures are internally routed to bosses located on the top of the reduction gearbox front case and to a pressure transducer which is electrically connected to the G1000 which indicates the correct torque. For standby indication, the pressures are routed to bosses on the top of the reduction gearcase front case and plumbed to the standby torque indicator.

STARTER-GENERATOR

The starter-generator is mounted on the top of the accessory case at the rear of the engine. The starter-generator is a 28-volt, 200-amp engine-driven unit that functions as a motor for engine starting and, after engine start, as a generator for the airplane electrical system. When operating as a starter, a speed sensing switch in the starter-generator will automatically shut down the starter, thereby providing overspeed protection and automatic shutoff. The starter-generator is air cooled by an integral fan, ram air ducted from the front of the engine cowling and on airplanes equipped with the 300 amp starter generator, ram air is also supplied from a NACA scoop located on the nosewheel fairing.

INTERSTAGE TURBINE TEMPERATURE SENSING SYSTEM

The interturbine temperature sensing system is designed to provide the operator with an accurate indication of engine operating temperatures taken between the compressor and power turbines. The system consists of twin leads, two bus bars, and eight individual chromel-alumel thermocouple probes connected in parallel. Each probe protrudes through a threaded boss on the power turbine stator housing into an area adjacent to the leading edge of the power turbine vanes. The probe is secured to the boss by means of a floating, threaded fitting which is part of the thermocouple probe assembly. Shielded leads connect each bus bar assembly to a terminal block which provides a connecting point for external leads to the ITT indicator in the airplane cabin.

PROPELLER GOVERNOR

The propeller governor is located in the 12 o’clock position on the front case of the reduction gearbox. Under normal conditions, the governor acts as a constant speed unit, maintaining the propeller speed selected by the pilot by varying the propeller blade pitch to match the load to the engine torque. The propeller governor also has a power turbine governor section built into the unit. Its function is to protect the engine against a possible power turbine overspeed in the event of a propeller governor failure. If such an overspeed should occur, a governing orifice in the propeller governor is opened by flyweight action to bleed off compressor discharge pressure through the governor and computing section of the fuel control unit. When this occurs, compressor discharge pressure, acting on the fuel control unit governor bellows, decreases and moves the metering valve in a closing direction, thus reducing fuel flow to the flow divider.

TORQUE LIMITER

The torque limiter installed on the engine is a mechanical back-up unit which prevents unintentional engine overtorques. On the PT6A-140 engine it limits the maximum torque value to 2500 FT-LB regardless of propeller RPM.

The backup unit incorporates an oil bellows which senses torquemeter oil pressure and is linked to a Py bleed orifice. Oil from the torquemeter chamber passes through a restrictor before entering the bellows. The restrictor dampens torque pressure fluctuation and prevents damage to the bellows assembly. When torque pressure reaches 2500 FT-LB, the bellows expands and compresses the spring.

Bimetallic disks are mounted on the spring to compensate for variation of spring tension caused by change in ambient temperature.

The flapper valve then moves to allow Py air pressure from the fuel control unit to vent to the atmosphere and therefore limit the fuel supply to the engine reducing the engine speed and subsequently reducing torque.

CAUTION

The pilot is always responsible for operating the engine torque within limits and not depend on the mechanical torque limiter.

PROPELLER OVERSPEED GOVERNOR

This propeller overspeed governor is located at the 10 o’clock position on the front case of the reduction gearbox. The governor acts as a safeguard against propeller overspeed should the primary propeller governor fail. The propeller overspeed governor regulates the flow of oil to the propeller pitch-change mechanism by means of a flyweight and speeder spring arrangement similar to the primary propeller governor. Because it has no mechanical controls, the overspeed governor is equipped with a test solenoid that resets the governor below its normal overspeed setting for ground test. The OVERSPEED GOVERNOR PUSH TO TEST Switch is located on the left side of the instrument panel. For a discussion of this switch, refer to the paragraph titled Propellers in this section.

ENGINE FIRE DETECTION SYSTEM

The engine fire detection system consists of a heat sensor in the engine compartment, a red ENGINE FIRE annunciator located on the PFD, and a warning horn above the pilot. The heat sensor consists of three flexible closed loops. When high engine compartment temperatures are experienced, the heat causes a change in resistance in the closed loops. This change in resistance is sensed by a control box, located on the aft side of the firewall, which will illuminate the red ENGINE FIRE annunciator and trigger the audible warning horn. Fire warning is initiated when temperatures in the engine compartment exceed 425ºF (218ºC) on the first section (firewall), 625ºF (329ºC) on the second section (around the exhaust), or 450ºF (232ºC) on the third section (rear engine compartment).

A test switch, labeled TEST SWITCH, FIRE DETECT - UP, is located on the lower left corner of the instrument panel. When this switch is placed in the UP position, the red ENGINE FIRE annunciator will illuminate on the CAS system and the warning horn will sound indicating that the fire warning circuitry is operational. The system is protected by a pull-off type circuit breaker, labeled FIRE DET, on the left sidewall switch and circuit breaker panel.

ENGINE GEAR REDUCTION SYSTEM

The reduction gear and propeller shaft, located in the front of the engine, are housed in two magnesium alloy castings which are bolted together at the exhaust outlet. The gearbox contains a two-stage planetary gear train, three accessory drives, and propeller shaft. The first-stage reduction gear is contained in the rear case, while the second-stage reduction gear, accessory drives, and propeller shaft are contained in the front case. Torque from the power turbine is transmitted to the first-stage reduction gear, from there to the second stage reduction gear, and then to the propeller shaft. The reduction ratio is from a maximum power turbine speed of 33,000 RPM down to a propeller speed of 1900 RPM.

The accessories, located on the front case of the reduction gearbox, are driven by a bevel gear mounted at the rear of the propeller shaft thrust bearing assembly. Drive shafts from the bevel drive gear transmit rotational power to the three pads which are located at the 12, 3 and 9 o'clock positions. Propeller thrust loads are absorbed by a flanged ball bearing assembly located on the front face of the reduction gearbox center bore. The bevel drive gear adjusting spacer, thrust bearing, and seal runner are stacked and secured to the propeller shaft by a key washer and spanner nut. A thrust bearing cover assembly is secured by bolts at the front flange of the reduction gearbox front case.

CHIP DETECTORS

Two chip detectors are installed on the engine, one on the underside of the reduction gearbox case and one on the underside of the accessory gearbox case. The chip detectors are installed to trigger an amber CHIP DETECT annunciations anytime metal chips are present in one or both of the chip detectors. Illumination of the amber CHIP DETECT annunciator indicates the need for engine inspection for abnormal wear. The amber CHIP DETECT annunciation will also be shown if either chip detectors electrical connector has come loose. The engine oil must be drained prior to removing either of the chip detector sensors. Refer to the 208 Maintenance Manual, for more information on inspection and removal of the engine chip detectors.

OIL BREATHER DRAIN CAN

Model 208 airplanes have an oil breather drain can mounted on the right lower engine mount truss. This can collects any engine oil discharge coming from the accessory pads for the alternator drive pulley, starter/generator, air conditioner compressor (if installed), and the propeller shaft seal. This can should be drained after every flight. A drain valve on the bottom right side of the engine cowling enables the pilot to drain the contents of the oil breather drain can into a suitable container. The allowable quantity of oil discharge per hour of engine operation is 14 cc for airplanes with air conditioning and 11 cc for airplanes without air conditioning. If the quantity of oil drained from the can is greater than specified, the source of the leakage should be identified and corrected prior to further flight.

PROPELLER

The airplane is equipped standard with a Hartzell aluminum material, three-bladed propeller. The propeller is constant-speed, full-feathering, reversible, single-acting, governor-regulated propeller. A setting introduced into the governor with the PROP RPM lever establishes the propeller speed. The propeller utilizes oil pressure which opposes the force of springs and counter-weights to obtain correct pitch for the engine load. Oil pressure from the propeller governor drives the blades toward low pitch (increases RPM) while the springs and counterweights drive the blades toward high pitch (decreasing RPM). The source of oil pressure for propeller operation is furnished by the engine oil system, boosted in pressure by the governor gear pump, and supplied to the propeller hub through the propeller flange.

To feather the propeller blades, the PROP RPM lever on the control pedestal is placed in the FEATHER position; counterweights and spring tension will continue to twist the propeller blades through high pitch and into the streamlined or feathered position. Unfeathering the propeller is accomplished by positioning the PROP RPM lever forward of the feather gate. The unfeathering system uses engine oil pressure to force the propeller out of feather.

Reversed propeller pitch is available for decreasing ground roll during landing. To accomplish reverse pitch, the power lever is retarded beyond IDLE and well into the BETA range. Maximum reverse power is accomplished by retarding the power lever to the MAX REVERSE position which increases power output from the gas generator and positions the propeller blades at full reverse pitch. An externally grooved feedback ring is provided with the propeller.

Motion of the feedback ring is proportional to propeller blade angle, and is picked up by a carbon block running in the feedback ring. The relationship between the axial position of the feedback ring and the propeller blade angle is used to maintain control of blade angle from idle to full reverse.

CAUTION

The propeller reversing linkage can be damaged if the power lever is moved aft of the idle position when the propeller is feathered.

PROPELLER (Continued)

OVERSPEED GOVERNOR TEST SWITCH

An overspeed governor test switch is located on the left side of the instrument panel. The switch is the push-to-test type and is used to test the propeller overspeed governor during engine run-up. The switch, when depressed, actuates a solenoid on the propeller overspeed governor which restricts propeller RPM when the power lever is advanced. To check for proper operation of the overspeed governor, during engine run-up, depress the press-to-test switch and advance the power lever until propeller RPM stabilizes; propeller RPM should not exceed 1750 +/- 60 RPM.

FUEL SYSTEM

The airplane fuel system (see Fuel System figure) consists of two vented, integral fuel tanks with shutoff valves, a fuel selectors off warning system, a fuel reservoir, an ejector fuel pump, an electric auxiliary boost pump, a reservoir manifold assembly, a firewall shutoff valve, a fuel filter, an oil-to-fuel heater, an engine-driven fuel pump, a fuel control unit, a flow divider, dual manifolds, and 14 fuel nozzle assemblies. A fuel can and drain is also provided. Refer to the Fuel Quantity Data Chart for information pertaining to this system.

WARNING

Unusable fuel levels for this airplane were determined in accordance with Federal Aviation Regulations. Failure to operate the airplane in compliance with the fuel limitations specified in Section 2 may further reduce the amount of fuel available in flight.

Fuel flows from the tanks through the two fuel tank shutoff valves at each tanks. The fuel tank shutoff valves are mechanically controlled by two fuel selectors, labeled LEFT, ON and OFF, located on the overhead panel. By manipulating the fuel selectors, the pilot can select either left or right fuel tanks or both at the same time. Normal operation is with both tanks on. Fuel flows by gravity from the shutoff valves in each tank to the fuel reservoir.

(Continued Next Page)

FUEL SYSTEM (Continued)

The reservoir is located at the low point in the fuel system which maintains a head of fuel around the ejector boost pump and auxiliary boost pump which are contained within the reservoir. This head of fuel prevents pump cavitation in low-fuel quantity situations, especially during in-flight maneuvering. Fuel in the reservoir is pumped by the ejector boost pump or by the electric auxiliary boost pump to the reservoir manifold assembly. The ejector boost pump, which is driven by motive fuel flow from the fuel control unit, normally provides fuel flow when the engine is operating. In the event of failure of the ejector boost pump, the electric boost pump will automatically turn on, thereby supplying fuel flow to the engine. The auxiliary boost pump is also used to supply fuel flow during starting. Fuel in the reservoir manifold then flows through a fuel/oil shutoff valve located on the aft side of the firewall. This shutoff valve enables the pilot to cut off all fuel to the engine.

After passing through the shutoff valve, fuel is routed through a fuel filter located on the front side of the firewall. The fuel filter incorporates a bypass feature which allows fuel to bypass the filter in the event the filter becomes blocked with foreign material. Fuel from the filter is then routed through the oil-to-fuel heater to the engine-driven fuel pump where fuel is delivered under pressure to the fuel control unit. The fuel control unit meters the fuel and directs it to the flow divider which distributes the fuel to dual manifolds and 14 fuel nozzles located in the combustion chamber. For additional details concerning the flow of fuel at the engine, refer to the Engine Fuel System paragraph in this section.

Fuel rejected by the engine on shutdown drains into a fireproof fuel can located on the front left side of the firewall. The can should be drained during preflight inspection. If left unattended, the can fuel will overflow overboard.

Fuel system venting is essential to system operation. Complete blockage of the vent system will result in decreased fuel flow and eventual engine stoppage. Venting is accomplished by check valve equipped vent lines, one from each fuel tank, which protrude from the trailing edge of the wing at the wing tips. also the fuel reservoir is vented to both wing tanks.

FUEL SYSTEM

A70355

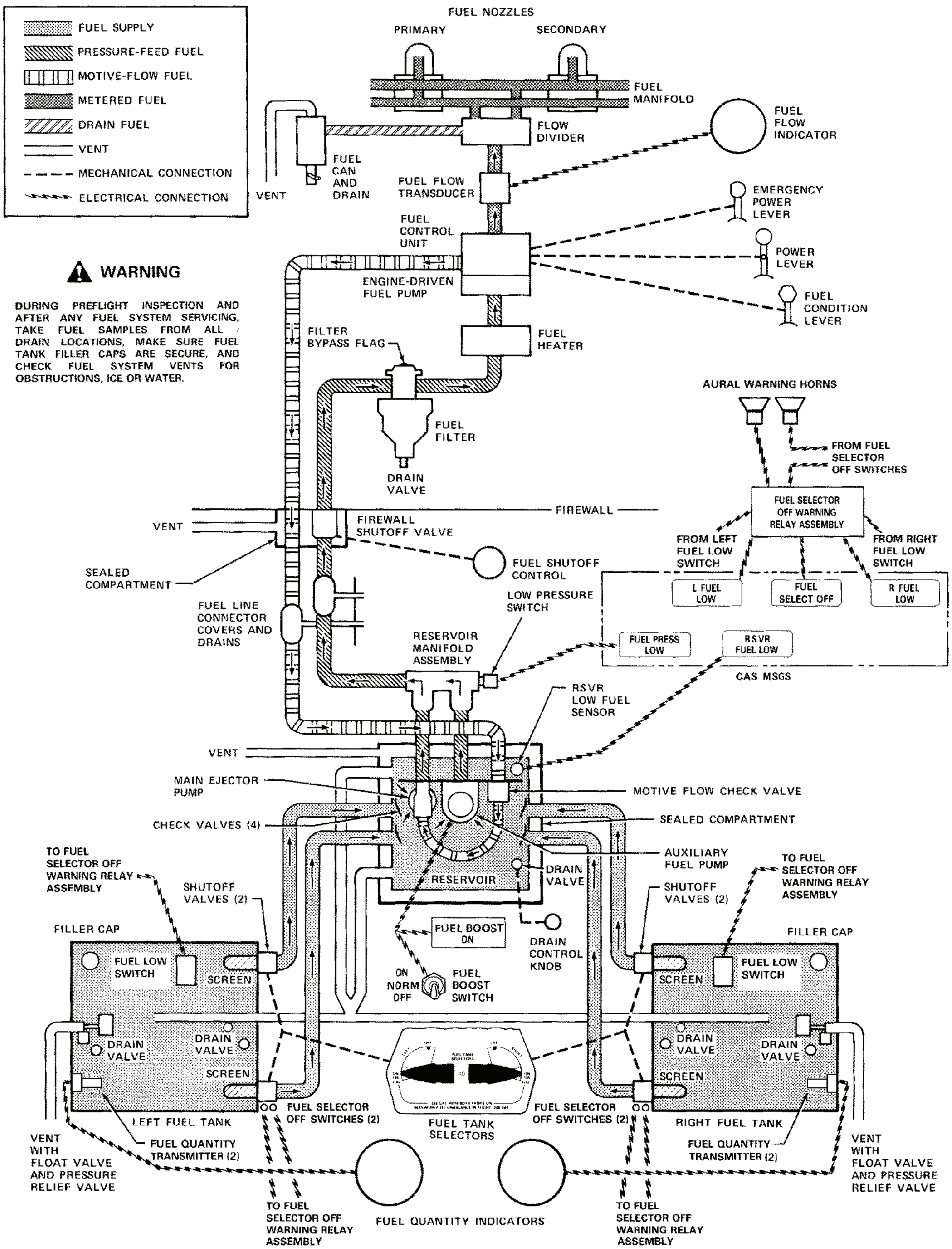


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Figure 7-10

FUEL SYSTEM (Continued)

FUEL QUANTITY DATA

UNITS OF MEASURE	FUEL LEVEL (QUANTITY EACH TANK)	TOTAL FUEL	TOTAL UNUSABLE	TOTAL USABLE ALL FLT CONDITIONS
	FULL (OUTBOARD FILLERS)			
POUNDS	**1124.25**	**2272**	**24.1**	**2246.5**
GALLONS (U.S.)	167.8	339.1	3.6	335.3

NOTE

Pounds are based on a fuel specific weight of 6.7 pounds per U.S. gallon.

WARNING

To achieve full capacity, fill fuel tank to the top of the fuel filler neck. Filling fuel tanks to the bottom of the fuel filler collar (level with the flapper valve) allows space for thermal expansion and results in a decrease in fuel capacity of four gallons per side (eight gallons total).

Figure 7-11

FUEL SYSTEM (Continued)

FIREWALL FUEL SHUTOFF VALVE

A firewall fuel shutoff valve, located on the aft side of the firewall, enables the pilot to shut off all fuel flow from the fuel reservoir to the engine. The shutoff valve is controlled by a red push-pull knob labeled FUEL/OIL SHUTOFF located on the right side of the control pedestal. The push-pull knob has a press-to-release button in the center which locks the knob in position when the button is released.

FUEL TANK SELECTORS

Two FUEL SELECTORS, one for each tank, are located on the overhead console. The selectors, labeled LEFT, ON and OFF and RIGHT, ON and OFF, mechanically control the position of the two fuel tank shutoff valves at each wing tank. When a FUEL TANK SELECTOR is in the OFF position, the shutoff valves in the tank are closed. When in the ON position, both shutoff valves in the tank are open, allowing fuel from that tank to flow to the reservoir. Normal fuel management is with both FUEL TANK SELECTORS are in the ON position.

Before refueling, or when the airplane is parked on a slope, turn off one of the FUEL TANK SELECTORS (if parked on a slope, turn high wing tank off). This action prevents crossfeeding from the fuller or higher tank and reduces any fuel seepage tendency from the wing tank vents.

FUEL SYSTEM (Continued)

FUEL SELECTORS OFF WARNING SYSTEM

A fuel selectors off warning system is incorporated to alert the pilot if one or both of the FUEL TANK SELECTORS are in the OFF position inadvertently. The system included redundant warning horns, a red FUEL SELECT OFF annunciation of the selected tank, actuation switches, and miscellaneous electrical hardware. The dual aural warning system is powered through the START CONT circuit breaker with a non-pullable FUEL SEL WARN circuit breaker installed in series to protect the integrity of the start system.

The warning system functions as follows:

1. If both the LEFT and RIGHT FUEL TANK SELECTORS are in the OFF position (fuel tank shutoff valves are closed), the red FUEL SELECT OFF annunciator illuminates and one of the fuel selector off warning horns is activated;
2. During an engine start operation (STARTER switch in START or MOTOR position) with either the left or right fuel tank selectors in the OFF position, the red FUEL SELECT OFF annunciator illuminates and both of the fuel select off warning horns are activated;
3. With one fuel tank selector in the OFF position and fuel remaining in the tank being used is less than approximately 25 gallons, the red FUEL SELECT OFF annunciator illuminates and one of the fuel selector off warning horns is activated.

The warning system has the ability to annunciate which fuel selector is selected off by displaying OFF next to the respective fuel quantity indicator on the EIS. There is no annunciation when the fuel selector is turned ON.

If the FUEL SEL WARN circuit breaker has popped or the START CONT circuit breaker has been pulled (possible for ground maintenance), the red FUEL SELECT OFF annunciator will be illuminated even with both fuel tank selectors ON. This is a warning to the pilot that the fuel selector warning system has been deactivated.

A test switch, labeled TEST SWITCH, FUEL SELECT OFF - DN, is located on the lower left corner of the instrument panel. When this switch is placed in the DOWN position, the two warning horns will sound simultaneously indicating that the fuel selector warning horns are operational.

FUEL SYSTEM (Continued)

FUEL BOOST PUMP SWITCH

An auxiliary boost pump switch, located on the left sidewall switch and circuit breaker panel, is labeled FUEL BOOST and has OFF, NORM, and ON positions. When the FUEL BOOST switch is in the OFF position, the auxiliary boost pump is inoperative. When the FUEL BOOST switch is in the NORM position, the auxiliary boost pump is armed and will operate when fuel pressure in the fuel manifold assembly drops below 2.5 psi. The NORM position is used for all normal engine operation where main fuel flow is provided by the ejector boost pump and the auxiliary boost pump is used as a standby. When the FUEL BOOST switch is placed in the ON position, the auxiliary boost pump will operate continuously and the motive flow pump will be shut off. The ON position is used for engine start and any other time that the auxiliary boost pump cycles on and off with the switch in the NORM position due to low fuel pressure.

The high pressure motive flow shutoff valve needs to be closed (FUEL BOOST switch ON) during engine starts so there is sufficient fuel pressure delivered to the Fuel Control Unit to open the minimum pressurizing valve to allow fuel flow to the fuel nozzles. The fuel boost pump incorporates a timer so when the fuel boost pump switch is moved from ON to NORM or OFF the pump will continue to run for a short period of time. This is to avoid the motive flow shutoff valve from opening and the pump switching off at the same time. This prevents potential low fuel pressure to the engine causing the boost pump to cycle back on.

NOTE

If the FUEL BOOST pump switch is not turned ON prior to engine start, (motive flow shutoff valve not energized) there will be insufficient fuel pressure to open the minimum pressurizing valve and the engine will not start.

FUEL SYSTEM (Continued)

FUEL FLOW INDICATION

A fuel flow indicator, located beneath the quantity indicators on both the ENGINE and SYSTEM pages, indicates the fuel consumption of the engine in pounds per hour based on Jet A fuel. The indicator measures the flow of fuel downstream of the fuel control unit just before being routed into the flow divider. The fuel flow indicator receives power from a pull-off type circuit breaker labeled F FLOW NP & NG, on the left sidewall switch and circuit breaker panel.

FUEL QUANTITY INDICATIONS

Fuel quantity is measured by four fuel quantity transmitters (two in each tank) and indicated in the EIS section on the MFD below the oil temperature indicators. The FUEL QTY indicators utilize twin vertical scales that show fuel quantity for both the L and R tanks in LBS from 0 to 1000 in 200 pound increments. The fuel quantity indicators, which measure volume, are calibrated in pounds (based on the weight of Jet A fuel on a standard day). An empty tank is indicated by a red line. When an indicator shows an empty tank, approximately 2.8 gallons remain in the tank as unusable fuel. The left and right fuel level senders each receive power from a pull-off type circuit breaker. The breakers are labeled LEFT FUEL QTY and RIGHT FUEL QTY, respectively, and are located on the left sidewall switch and circuit breaker panel.

WARNING

Because of the relatively long fuel tanks, fuel quantity indicator accuracy is affected by uncoordinated flight or a sloping ramp if reading the indicators while on the ground. Therefore, to obtain accurate fuel quantity readings, verify that the airplane is parked in a laterally level condition, or if in flight, make sure the airplane is in a coordinated and stabilized condition for at least 1 minute.

WING TANK FUEL LOW CAUTION ANNUNCIATORS

Two float sensors one for each wing tank will trigger the appropriate amber L FUEL LOW or R FUEL LOW annunciation when the fuel in the respective tank is 25 gallons (170 lbs) or less. When the fuel quantity in each tank is less than 25 gallons (170 lbs), amber L-R FUEL LOW annunciator will replace the previously displayed L or R FUEL LOW annunciator.

RESERVOIR FUEL LOW WARNING ANNUNCIATOR

A red RSVR FUEL LOW annunciator is located on the PFD, and will come on when the level of fuel in the reservoir drops to approximately one-half full. With the fuel reservoir full, there is adequate fuel for approximately 3 minutes of maximum continuous power or approximately 9 minutes at idle power.

FUEL PRESSURE LOW WARNING ANNUNCIATOR

An amber FUEL PRESS LOW annunciator is located on the PFD, and will illuminate when fuel pressure drops below 2.5 psi.

FUEL BOOST PUMP ON ANNUNCIATOR

An amber FUEL BOOST ON annunciator is located on the PFD and will come on when the electric boost pump is operating, such as when the FUEL BOOST pump switch is placed in the ON position or when the FUEL BOOST pump switch is in the NORM position and fuel pressure drops below 2.5 psi.

DRAIN VALVES

The fuel system is equipped with drain valves to provide a means for the examination of fuel in the system for contamination and grade. Drain valves are located on the lower surface of each wing at the inboard end of the fuel tank, in fuel tank external sumps, on the left side of the cargo pod for the reservoir tank, and on the underside of the fuel filter. Outboard fuel tank drain valves and their use is recommended if the airplane is parked with one wing low on a sloping ramp. The drain valves for the wing tanks and their external sumps are tool-operated poppet type and are flush-external mounted. The wing tank and external sump drain valves are constructed so that the phillips screwdriver on the fuel sampler which is provided can be utilized to depress the valve and then twist to lock the drain valve in the open position. The drain valve for the reservoir is controlled by a double-button push-pull drain control knob. When pulled out, fuel from the reservoir drains out the rear fuel drain pipe located adjacent to the drain valve. The drain valve for the fuel filter consists of a drain pipe which can be depressed upward to drain fuel from the filter. The fuel sampler can be used in conjunction with these drain valves for fuel sampling and purging of the fuel system. The fuel tanks should be filled after each flight when practical to minimize condensation.

Before each flight of the day and after each refueling, use a clear sampler and drain fuel from the inboard fuel tank sump, external sump quick-drain valves, fuel reservoir quick-drain valve, and fuel filter quick-drain valve to determine if contaminants are present, and that the airplane has been fueled with the proper fuel. If the airplane is parked with one wing low on a sloping ramp, draining of the outboard fuel tank sump quick-drain valves is also recommended. If contamination is detected, drain all fuel drain points again. Take repeated samples from all fuel drain points until all contamination has been removed. If after repeated sampling, evidence of contamination still exists, the fuel tanks should be completely drained and the fuel system cleaned. Do not fly the airplane with contaminated or unapproved fuel.

WARNING

JP-4 and other NAPHTHA based fuels can cause severe skin and eye irritation.

FUEL ECOLOGY TANK

A fuel ecology tank is supplied with the engine and is mounted on the engine side of the firewall, capturing fuel drained from the fuel nozzle manifolds at engine shutdown. When the engine is restarted, motive flow fuel feeds an ejector pump in the ecology tank, which picks up the discharged fuel and recirculates it back into the fuel system.

FUEL PUMP DRAIN RESERVOIR

To control expended lubricating oil from the engine fuel pump drive coupling area and provide a way to determine if fuel is leaking past the fuel pump seal, this airplanes is equipped with a drainable reservoir to collect this allowable discharge of oil and any fuel seepage. The reservoir is mounted on the front left side of the firewall. It should be drained once a day or at an interval not to exceed six engine shutdowns. A drain valve on the bottom side of the cowling enables the pilot to drain the contents of the reservoir into a suitable container. A quantity of up to 3 cc of oil and 20 cc of fuel discharge per hour of engine operation is allowable. If the quantity of oil or fuel drained from the reservoir is greater than specified, the source of leakage should be identified and corrected prior to further flight.

BRAKE SYSTEM

The airplane has a single-disc, hydraulically-actuated brake on each main landing gear wheel. Each brake is connected, by a hydraulic line, to a master cylinder attached to each of the pilot's rudder pedals. The brakes are operated by applying pressure to the top of either the left (pilot's) or right (copilot's) set of rudder pedals, which are interconnected. When the airplane is parked, both main wheel brakes may be set by utilizing the parking brake which is operated by a handle below to the right of the pilot’s control wheel. To apply the parking brake, set the brakes with the rudder pedals and pull the handle aft. To release the parking brake, push the handle fully in.

A brake fluid reservoir, located just forward of the firewall on the left side of the engine compartment, provides additional brake fluid for the brake master cylinders. The fluid in the reservoir should be checked for proper level prior to each flight.

For maximum brake life, keep the brake system properly maintained. Airplanes are equipped with metallic type brakes, and require a special brake burn-in before delivery (or after brake replacement). When conditions permit, hard brake application is beneficial in that the resulting higher brake temperatures tend to maintain proper brake glazing and will prolong the expected brake life. Conversely, the habitual use of light and conservative brake application is detrimental to metallic brakes.

Some of the symptoms of impending brake failure are: gradual decrease in braking action after brake application, noisy or dragging brakes, soft or spongy pedals, and excessive travel and weak braking action. If any of these symptoms appear, the brake system is in need of immediate attention. If, during taxi or landing roll, braking action decreases, let up on the pedals and then re-apply the brakes with heavy pressure. If the brakes become spongy or pedal travel increases, pumping the pedals should build braking pressure. If one brake becomes weak or fails, use the other brake sparingly while using opposite rudder, as required, to offset the good brake.

ELECTRICAL SYSTEM

The airplane is equipped with a 28-volt, direct-current electrical system, refer to Figure 7-12, Electrical System. The system uses a 24-volt sealed lead acid battery; located on the front right side of the firewall, as a source of electrical energy. A 200-amp engine-driven starter-generator is used to maintain the battery's state of charge. Power is supplied to most general electrical and all avionics circuits through two general buses, two avionics buses, and a hot battery bus. The battery bus is energized continuously for cabin/courtesy lights and functions requiring power when the two general buses are off. The two general buses are on anytime the BATTERY switch is turned ON. All DC buses are on anytime the BATTERY switch and the two AVIONICS switches are turned ON.

STANDBY ELECTRICAL SYSTEM

The standby electrical system serves as a power source in the event the main generator system malfunctions in flight. The system includes an alternator operated at a 75-amp capacity rating. The alternator is belt-driven from an accessory pad on the rear of the engine. The system also includes an alternator control unit located forward of the circuit breaker panel, a standby alternator contactor assembly on the left front side of the firewall and two switches on the left sidewall switch panel, labeled STBY ALT PWR and AVIONICS STBY PWR.

Circuit protection and isolation is provided by two circuit breakers, labeled STBY PWR, on the left sidewall circuit breaker panel. Field excitation to the alternator control unit is supplied through diode logic from a circuit breaker in the standby alternator relay assembly or from the HOURMETER/ACU circuit breaker in the main power relay box.

Standby electrical system monitoring is provided by annunciators; white STBY PWR ON annunciator and amber STBY PWR INOP annunciator. Total amperage supplied from the standby electrical system can be monitored on the EIS SYSTEMS DISPLAY. Additionally, an amber ALTNR AMPS annunciator is provided if the standby alternator amperage draw exceeds normal operating ranges.

ELECTRICAL SYSTEM (Continued)

GENERATOR CONTROL UNIT

The generator control unit (GCU) is mounted inside the cabin on the left forward fuselage sidewall. The unit provides the electrical control functions necessary for the operation of the starter-generator. The GCU provides for automatic starter cutoff when engine RPM is above 46%. Below 46%, the starter-generator functions as a starter, and above 46%, the starter-generator functions as a generator when the STARTER switch is OFF. The GCU provides voltage regulation plus high voltage protection and reverse current protection. In the event of a high-voltage or reverse current condition, the generator is automatically disconnected from the buses. The generator contactor (controlled by the GCU) connects the generator output to the airplane bus. If any GCU function causes the generator contactor to de-energize, the amber GENERATOR OFF annunciator will illuminate.

GROUND POWER MONITOR

The ground power monitor is located inside the electrical power control assembly mounted on the left hand side of the firewall in the engine compartment. This unit senses the voltage level applied to the external power receptacle and will close the external power contactor when the applied voltage is within the proper limits.

BATTERY SWITCH

The BATTERY switch is a two-position toggle-type switch, labeled BATTERY, and is located on the left sidewall switch and circuit breaker panel. The BATTERY switch is ON in the forward position and OFF in the aft position. When the BATTERY switch is in the ON position, battery power is supplied to the two general buses. The OFF position removes power to all buses except the battery bus.

ELECTRICAL SYSTEM (Continued)

STARTER SWITCH

The STARTER switch is a three-position toggle-type switch, labeled STARTER, on the left sidewall switch and circuit breaker panel. The switch has OFF, START, and MOTOR positions. For additional details of the STARTER switch, refer to the starting system paragraph in this section.

IGNITION SWITCH

The IGNITION switch is a two-position toggle-type switch, labeled IGNITION, on the left sidewall switch and circuit breaker panel. The switch has ON and NORMAL positions. For additional details of the IGNITION switch, refer to the ignition system paragraph in this section.

GENERATOR SWITCH

The GENERATOR switch is a three-position toggle-type switch, labeled GENERATOR, on the left sidewall switch and circuit breaker panel. The switch has ON, RESET, and TRIP positions. With the switch in the ON position, the GCU will automatically control the generator line contactor for normal generator operation. The RESET and TRIP positions are momentary positions and are spring-loaded to the ON position. If a momentary fault should occur in the generating system (as evidenced by the amber GENERATOR OFF annunciator, red VOLTAGE LOW annunciator and/or red VOLTAGE HIGH annunciator), the GENERATOR switch can be momentarily placed in the RESET position to restore generator power. If erratic operation of the generating system is observed, the system can be shutoff by momentarily placing the GENERATOR switch to the TRIP position. After a suitable waiting period, generator operation may be recycled by placing the GENERATOR switch momentarily to RESET.

ELECTRICAL SYSTEM (Continued)

STANDBY ALTERNATOR POWER SWITCH

The STBY ALT PWR switch is a two-position toggle-type switch, labeled STBY ALT PWR. There is also an amber LED light located above the switch that comes on when the BATTERY switch is in the OFF position with STBY ALT PWR switch in the ON position. This is an alert to the operator to help prevent accidental discharging of the battery that can occur if the STBY ALT PWR switch is left ON after shutdown.

AVIONICS POWER SWITCHES

Electrical power from the airplane power distribution bus to the avionics buses, refer to Figure 7-12, Electrical System, is controlled by two toggle-type switch/breakers located on the left sidewall switch and circuit breaker panel. One switch controls power to the No. 1 avionics bus while the other switch controls power to the No. 2 avionics bus. The switches are labeled AVIONICS 1 and 2 and are ON in the forward position and OFF in the aft position. The AVIONICS power switches should be placed in the OFF position prior to turning the BATTERY switch ON or OFF, or applying an external power source. The AVIONICS No. 1 Switch must be ON prior to engine start to display EIS information.

AVIONICS STANDBY POWER SWITCH

The AVIONICS STBY PWR switch is a guarded two-position switch/ breaker, labeled AVIONICS STBY PWR. The guard covering this switch must be lifted in order to select the ON position. When switched ON, the standby electrical system directly provides power to the AVN BUS 1. When switched OFF, the standby electrical system may provide extra power to the avionics buses via the main power distribution bus, provided the STBY PWR circuit breakers on the electrical buses are not pulled. When operating solely on standby power, both AVIONICS No. 1 and No. 2 power switches should be OFF to avoid feeding a possible fault in the primary power system.

ELECTRICAL SYSTEM (Continued)

AVIONICS BUS TIE SWITCH

The AVIONICS BUS TIE switch is a two-position guarded toggle-type switch located on the left sidewall switch and circuit breaker panel. The switch connects the AVN BUS 1 and AVN BUS 2 together in the event of failure of either bus feeder circuit. Because power for each avionics bus is supplied from a separate current limiter on the power distribution bus, failure of a current limiter can cause failure of the affected bus. Placing the AVIONICS BUS TIE switch to the ON position will restore power to the failed bus. Operation without both bus feeder circuits may require an avionics load reduction, depending on equipment installed.

ELECTRICAL SYSTEM

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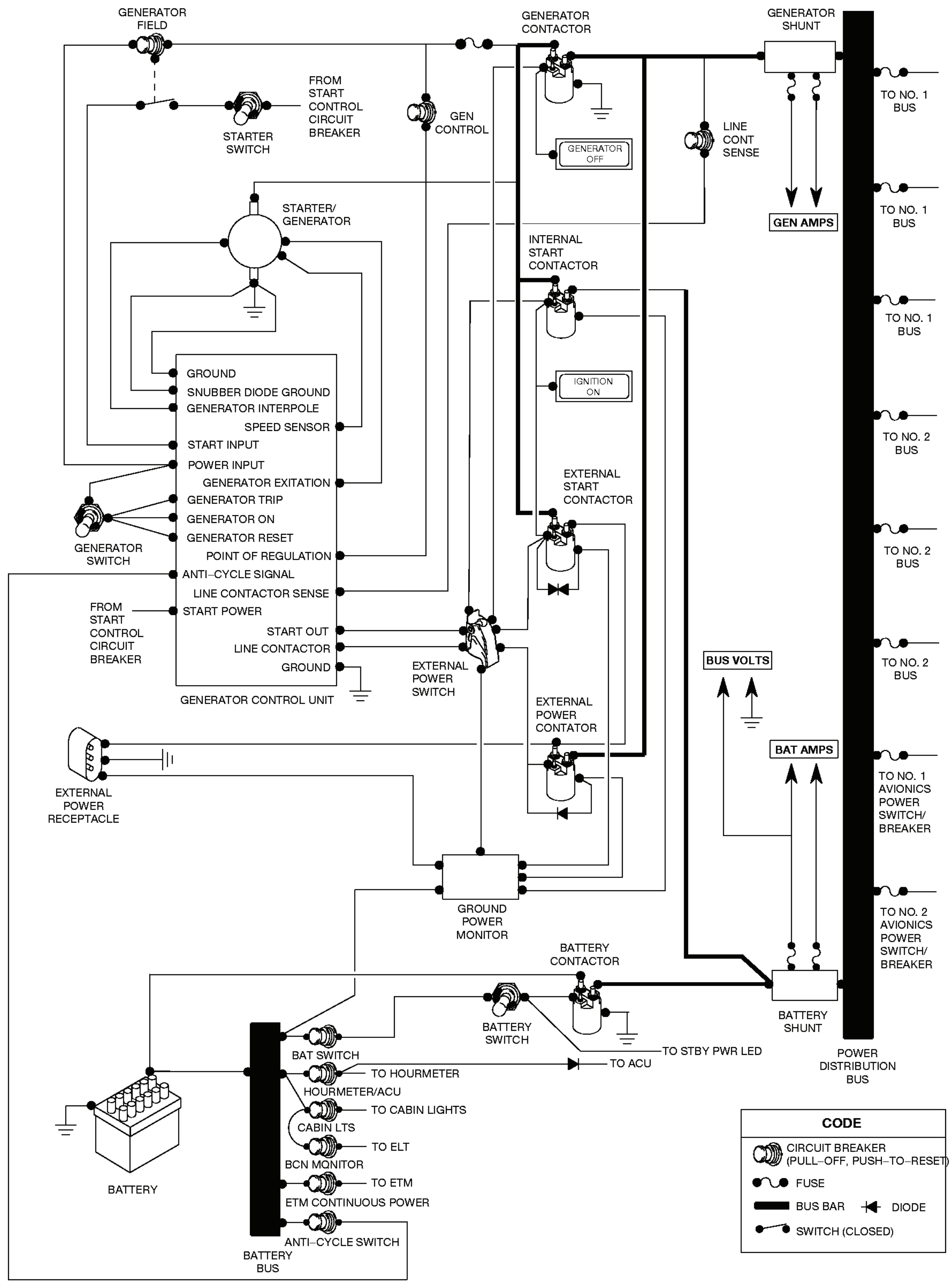

Figure 7-12 (Sheet 1 of 3)

ELECTRICAL SYSTEM

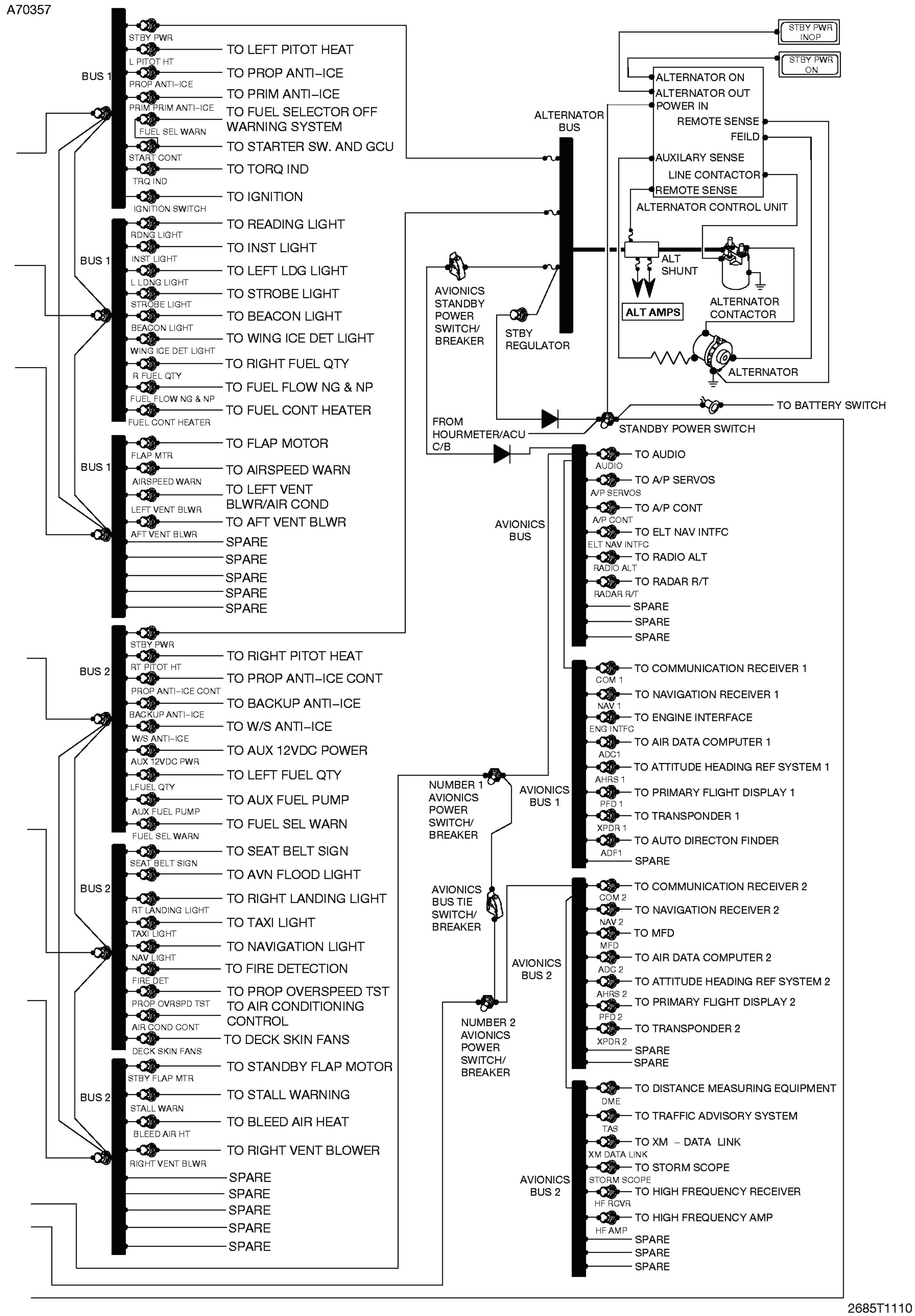

Figure 7-12 (Sheet 2 of 3)

ELECTRICAL SYSTEM

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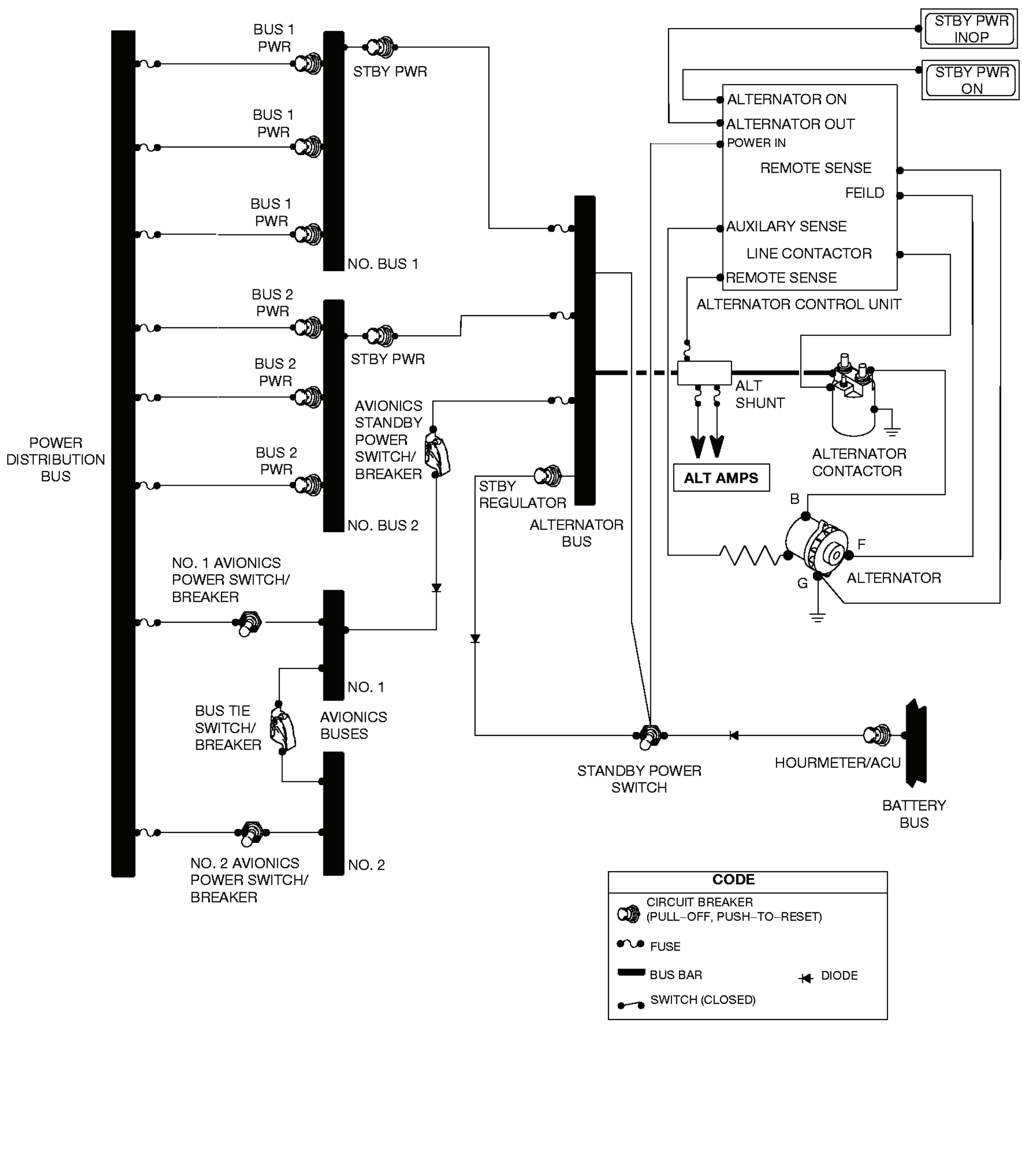

Figure 7-12 (Sheet 3 of 3)

ELECTRICAL SYSTEM (Continued)

EXTERNAL POWER SWITCH

The EXTERNAL POWER switch is a three-position guarded toggle-type switch located on the left sidewall switch and circuit breaker panel. The switch has OFF, STARTER, and BUS positions and is guarded in the OFF position. When the switch is in the OFF position, battery power is supplied to the main bus and to the starter-generator circuit, external power cannot be applied to the main bus, and, with the generator switch in the ON position, power is applied to the generator control circuit. When the EXTERNAL POWER switch is in the STARTER position, external power is applied to the starter circuit only and battery power is supplied to the main bus. No generator power is available in this position. When the EXTERNAL POWER switch is in the BUS position, external power is applied to the main bus and no power is available to the starter. The battery can be connected to the main bus with external power connected to the airplane by placing the BATTERY switch to the ON position. The battery charge must be monitored to prevent a overcharge condition.

CIRCUIT BREAKERS

Most of the electrical circuits in the airplane are protected by pull-off type circuit breakers mounted on the left sidewall switch and circuit breaker panel. Should an overload occur in any circuit, the controlling circuit breaker will trip, opening the circuit. After allowing the circuit breaker to cool for approximately three minutes, it may be reset (pushed in). If the breaker trips again, it should not be reset until corrective action is taken.

WARNING

Make sure all circuit breakers are in before all flights. Never operate with tripped circuit breakers without a thorough knowledge of the consequences.

ELECTRICAL SYSTEM (Continued)

VOLTAGE AND AMPERAGE DISPLAY

The status of the electrical system can be monitored on the MFD (non-reversionary mode). Battery current (BAT AMPS) and bus voltage (BUS VOLTS) are displayed on the default EIS-ENGINE display page. By pressing the ENGINE softkey and the SYSTEM softkey, the EIS pages changes to the EIS-Systems display where generator current (GEN AMPS), and bus voltage (BUS VOLTS) can be monitored simultaneously. A negative display on BAT AMPS indicates battery discharge, while a positive display indicates battery charging. A negative display on BAT AMPS will be shown in amber to remind the pilot to reduce electrical load, or increase Ng, to maintain battery charge.

GROUND SERVICE PLUG RECEPTACLE

A ground service plug receptacle permits the use of an external power source for cold weather starting and during lengthy maintenance work on the electrical and avionics equipment. External power control circuitry is provided to prevent the external power and the battery from being connected together during starting. The external power receptacle is installed on the left side of the engine compartment near the firewall.

The ground service circuit incorporates polarity reversal and overvoltage protection. Power from the external power source will flow only if the ground service plug is correctly connected to the airplane. If the plug is accidentally connected backwards or the ground service voltage is too high, no power will flow to the electrical system, thereby preventing any damage to electrical equipment.

LIGHTING SYSTEMS

EXTERIOR LIGHTING

Exterior lighting consists of three navigation lights, two landing lights, two taxi/recognition lights, two strobe lights, a flashing beacon, two underwing courtesy lights and one wing inspection light. All exterior lights are controlled by toggle switches located on the lighting control panel on the left side of the instrument panel. The toggle switches are ON in the up position and OFF in the down position. All exterior lights are LED.

NAVIGATION LIGHTS

LED navigation lights are installed on the wing tips along with rear-facing wing LED navigation lights that replace the traditional tailcone white navigation light. The lights are protected by a pull-off type circuit breaker, labeled NAV LIGHT, on the left sidewall switch and circuit breaker panel.

LANDING LIGHTS

Two LED landing lights are installed on the airplane, one in each wing leading edge mounted outboard of each taxi light. The lights provide illumination forward and downward during takeoff and landing. The lights are protected by two pull-off type circuit breakers, labeled LEFT LDG LIGHT and RIGHT LDG LIGHT, on the left sidewall switch and circuit breaker panel.

TAXI/RECOGNITION LIGHTS

Two LED taxi/recognition lights are mounted inboard of each landing light in each wing leading edge. The lights are focused to provide illumination of the area forward of the airplane during ground operation and taxiing. The lights are also used to enhance visibility of the airplane in the traffic pattern or enroute. The taxi/recognition lights are protected by a pull-off type circuit breaker, labeled TAXI LIGHT, on the left sidewall switch and circuit breaker panel.

LIGHTING SYSTEMS (Continued)

EXTERIOR LIGHTING (Continued)

STROBE LIGHTS

A high intensity LED strobe light system is installed on the airplane. The system includes two strobe lights located one on each wing tip. The lights are used to enhance anti-collision protection for the airplane and are required anti-collision lights for night operations. The strobe lights are protected by a pull-off type circuit breaker, labeled STROBE LIGHT, on the left sidewall switch and circuit breaker panel.

WARNING

Strobe lights should be turned off when taxiing. Ground operation of the high intensity anti-collision lights can be considerable annoyance to ground personnel and other pilots. Do not operate the anti-collision lights in conditions of fog, clouds, or haze as the reflection of the light beam can cause disorientation or vertigo.

FLASHING BEACON LIGHT

A red flashing LED beacon light is installed on the top of the vertical fin as additional anti-collision protection in flight and for recognition during ground operation. The light is visible through most angles. The flashing beacon light is protected by a pull-off type circuit breaker, labeled BEACON LIGHT, on the left sidewall switch and circuit breaker panel.

WARNING

The flashing beacon should not be used when flying through clouds or overcast; the flashing light reflected from water droplets or particles in the atmosphere, particularly at night, can cause disorientation or vertigo.

LIGHTING SYSTEMS (Continued)

EXTERIOR LIGHTING (Continued)

WING INSPECTION LIGHT

One LED wing inspection light is installed in the left hand wing root fairing. The light illuminates the left hand wing and left hand wing strut for ice detection. The WING LIGHT switch is on the left hand switch panel and is protected by a pull-type circuit breaker labeled WING ICE DET LIGHT.

COURTESY LIGHTS

Two LED courtesy lights are installed, one under each wing. The lights illuminate the area outside of the airplane adjacent to the crew entry doors. The lights operate in conjunction with the cabin lights and are controlled by the CABIN light switch as described in the cabin lights paragraph in this section.

LIGHTING SYSTEMS (Continued)

INTERIOR LIGHTING

Instrument and control panel lighting is provided by integral and flood lights. Six lighting control knobs are grouped together on the lower part of the instrument panel to the left of the control pedestal. These controls vary the intensity of the lighting for the instrument panels, pedestal, overhead panel, left sidewall panel, LED panels, Garmin displays, and internally lit standby instruments. The following paragraphs describe the function of these controls. The circuits for these lights are protected by two pull-off type circuit breakers, labeled AVN/LED/STBY LIGHTS and COCKPIT FLOOD LIGHTS, on the left sidewall switch and circuit breaker panel. Other miscellaneous lighting provided or available includes control wheel map LED lights, cabin lights, LED passenger reading lights, and a no smoking/seat belt sign. Discussion of these lights and their controls is also included in the following paragraphs. Most interior lighting is LED.

GARMIN DISPLAYS, OPTIONAL ADF, AND HF DISPLAYS (if installed)

The AVIONICS knob varies the intensity of the Garmin and optional displays (if installed). Clockwise rotation of the knob increases display brightness and counterclockwise rotation decreases brightness. The displays cannot be dimmed to full dark. Rotating this knob counterclockwise past the dimmest setting will place the displays in photosensitive mode.

STANDBY INDICATOR CONTROL KNOB

The STANDBY IND knob varies the intensity of the Non-LED integral lighting of the standby airspeed indicator, attitude indicator, altimeter, torque indicator and magnetic compass. Clockwise rotation of the knob increases light brightness and counterclockwise rotation decreases brightness.

LIGHTING SYSTEMS (Continued)

INTERIOR LIGHTING (Continued)

LED PANELS/ANNUN CONTROL KNOB

The LED PANELS/ANNUN knob varies the intensity of the backlit LED panels. These panels are inscribed with labels for the switches, controls, and circuit breakers mounted on the instrument panel. Clockwise rotation of the knob increases panel brightness and counterclockwise rotation decreases brightness.

CENTER FLOOD/MAP PANEL KNOB

The CENTER FLOOD knob varies the intensity of the light that illuminates either pilot's seat. Clockwise rotation of the knob increases panel brightness and counterclockwise rotation decreases brightness.

LEFT FLOOD/MAP LIGHTING CONTROL KNOB

The LEFT FLOOD knob varies the brightness of the floodlight located on the right aft side of the overhead panel. This floodlight may be used to illuminate the pilot's map or chart. Clockwise rotation of this control knob increases lamp brightness while counterclockwise rotation decreases brightness.

RIGHT FLOOD/MAP LIGHTING CONTROL KNOB

This RIGHT FLOOD knob varies the brightness of the floodlight located on the left aft side of the overhead panel. This floodlight may be used to illuminate the co-pilot's map or chart. Clockwise rotation of this control knob increases lamp brightness while counterclockwise rotation decreases brightness.

CONTROL WHEEL MAPLIGHTS

A control wheel maplight is mounted on the bottom of each control wheel. These lights illuminate the lower portion of the cabin in front of the pilot and copilot, and are used for checking maps and other flight data during night operations. Brightness of these lights is adjusted with a rheostat control knob on the bottom of the control wheel. Rotating the near side of the knob to the right increases light brightness and to the left decreases brightness.

LIGHTING SYSTEMS (Continued)

INTERIOR LIGHTING (Continued)

CABIN LIGHTS WITHOUT TIMER (208B Passenger)

The 208B passenger cabin light system without timer consists of four LED cabin lights installed on the interior of the airplane and courtesy lights under each wing to facilitate boarding or loading cargo during night operations. Two lights are located above the center cabin area, one above the aft cargo door, and one above the aft passenger door.

Controls for the lighting system consists of one 2-way toggle switch labeled CABIN on the lighting control panel as well as a rocker switch just forward of both the aft passenger and cargo doors. All three of these switches will toggle all cabin lights on or off at any time regardless of the other switch positions.

The circuit for the cabin lights is protected by a pull-off type circuit breaker, labeled CABIN LTS, on the J-Box panel in the engine bay.

CABIN LIGHTS WITH TIMER (if installed)

The 208B cabin light system with timer consists of four LED cabin lights installed on the interior of the airplane and courtesy lights under each wing to facilitate boarding or loading cargo during night operations. Two lights are located above the center cabin area, one above the aft cargo door, and one above the aft passenger door.

Controls for the lighting system consists of one 3-way momentary switch labeled CABIN on the lighting control panel as well as a rocker switch just forward of both the aft passenger and cargo doors. The passenger door toggle switch will control all lights except the cargo door light, while the cargo door toggle switch will control only the cargo door light. The 3-way momentary switch labeled CABIN on the lighting control panel will control all lights regardless of the other switch positions.

The timer circuitry includes a solid state timer that will turn off all lights after 30 minutes automatically unless they are switched off manually. The circuit for the cabin lights is protected by a “pull-off” type circuit breaker, labeled CABIN LTS, on the J-Box panel in the engine bay.

LIGHTING SYSTEMS (Continued)

INTERIOR LIGHTING (Continued)

CABIN LIGHTS WITH TIMER (Super CargoMaster)

The Super CargoMaster cabin light system consists of four LED cabin lights installed on the interior of the airplane and courtesy lights under each wing to facilitate boarding or loading cargo during night operations. Two lights are located above the center cabin area, one above the aft cargo door and one opposite the aft cargo door.

Controls for the lighting system consists of one 3-way momentary switch labeled CABIN on the lighting control panel as well as a rocker switch just forward of the cargo door.

PASSENGER READING LIGHTS (Passenger Version Only)

Passenger reading lights may be installed near each of the aft passengers positions. The LED lights are located in 14 small convenience panels above each seat. A pushbutton-type ON, OFF switch, mounted in each panel, controls the lights. The lights can be pivoted in their mounting sockets to provide the most comfortable angle of illumination for the passenger.

NO SMOKE/SEAT BELT SIGN (Passenger Version Only)

A lighted warning sign may be installed in the airplane to facilitate warning passengers of impending flight operations necessitating the fastening of seat belts and/or the extinguishing of all smoking materials. This installation consists of a small lighted panel mounted in the cabin headliner immediately aft of the overhead console and two toggle-type switches, labeled SEAT BELT and NO SMOKE, on the lighting control panel. When these switches are placed in the ON position, the warning signs illuminate, displaying the international graphic symbolism for fasten seat belts and no smoking to the rear cabin passengers. The circuit for the warning sign lights is protected by a pull-off type circuit breaker, labeled SEAT BELT SIGN, on the left sidewall switch and circuit breaker panel.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM

The temperature and volume of airflow to the cabin is regulated by the cabin heating, ventilating and defrosting system, refer to Figure 7- 13, Cabin Heating, Ventilating and Defrosting System. In the heating system, hot compressor outlet air is routed from the engine through a flow control valve, then through a mixer/muffler where it is mixed with cabin return air or warm air from the compressor bleed valve (depending on the setting of the mixing air valve) to obtain the correct air temperature before the air is routed to the cabin air distribution system.

Controls are provided to direct the heated air to the forward and/or aft portions of the cabin for heating and to the windshield for defrosting. Ventilating air is obtained from an inlet on each side at the forward fuselage and through two ram air inlets, one on each wing at the upper end of the wing struts. The wing inlet ventilating air is routed through the wing into a plenum chamber located in the center of the cabin top. The plenum distributes the ventilating air to individual overhead outlets near each seat position. Two electric blowers are available for the overhead ventilating system. Refer to Section 9, Supplement 7, for additional information on ventilating and Air Conditioning systems.

BLEED AIR HEAT SWITCH

A two-position toggle switch, labeled BLEED AIR HEAT, is located on the CABIN HEAT switch and control panel. The switch controls the operation of the bleed air flow control valve. The ON position of the switch opens the flow control valve, allowing hot bleed air to flow to the cabin heating system. The OFF position (down) closes the valve, shutting off flow of hot bleed air to the heating system.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (Continued)

TEMPERATURE SELECTOR KNOB

A rotary temperature selector knob, labeled TEMP Control Knob, is located on the CABIN HEAT switch and control panel. The selector modulates the opening and closing action of the flow control valve to control the amount and temperature of air flowing into the cabin. Clockwise rotation of the TEMP Control Knob increases the mass flow and temperature of the air.

NOTE

- If more cabin heat is needed while on the ground, move the FUEL CONDITION lever to HIGH IDLE and/or select the GRD position (pulled out) of the MIXING AIR control.
- Some hysteresis may be encountered when adjusting bleed air temperature. The resulting amount and temperature of bleed air may be different when approaching a particular temperature selector knob position from a clockwise versus a counterclockwise direction. Best results can usually be obtained by turning the temperature selector knob full clockwise and then slowly turning it counterclockwise to decrease bleed airflow to the desired amount.

A temperature sensor, located in the outlet duct from the mixer/muffler operates in conjunction with the TEMP control knob. In the event of a high temperature condition (overheat) in the outlet duct, the temperature sensor will be energized, closing the flow control valve and thus shutting off the source of hot bleed air from the engine.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (CARGO VERSION)

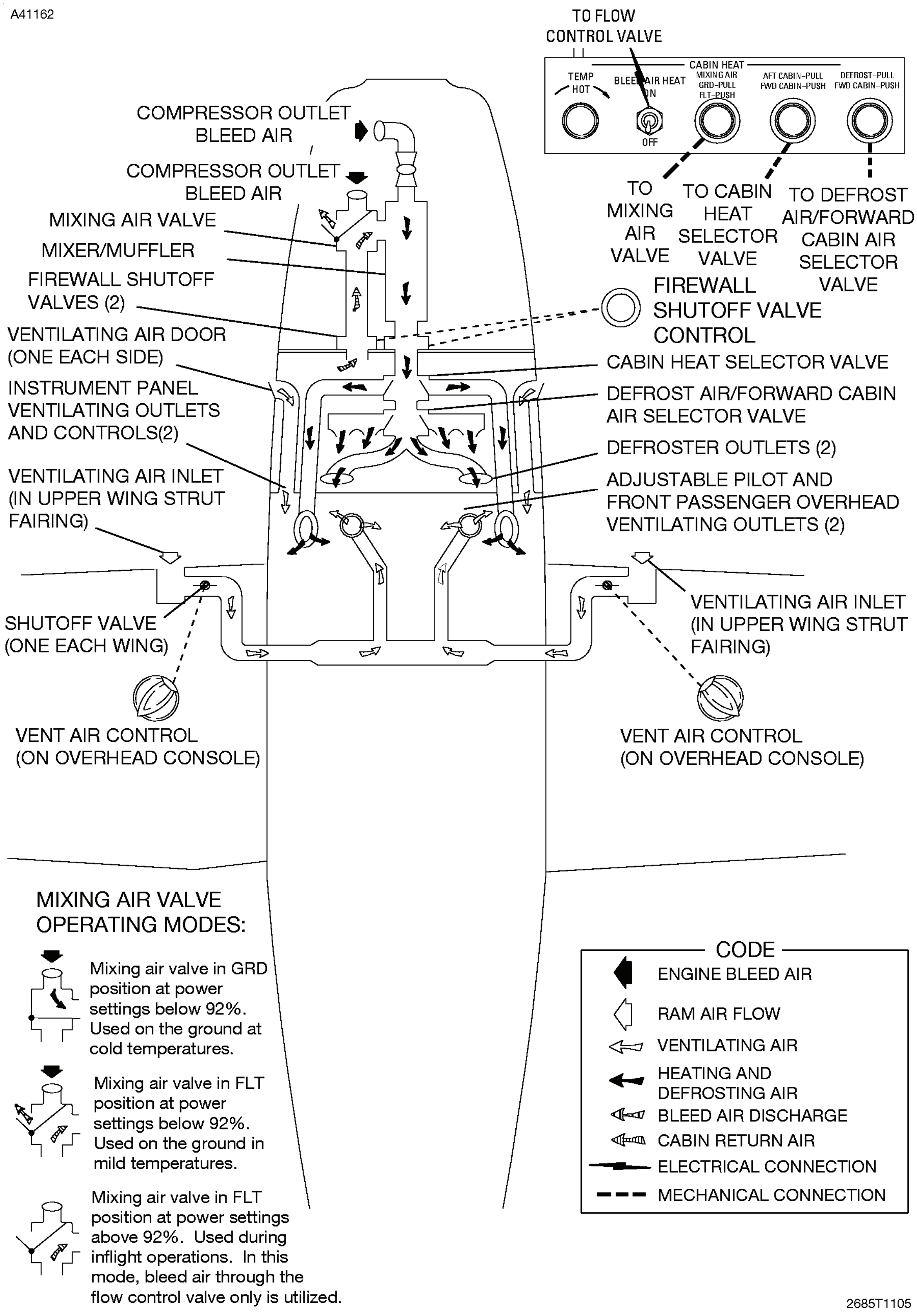

Figure 7-13 (Sheet 1 of 2)

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (PASSENGER VERSION)

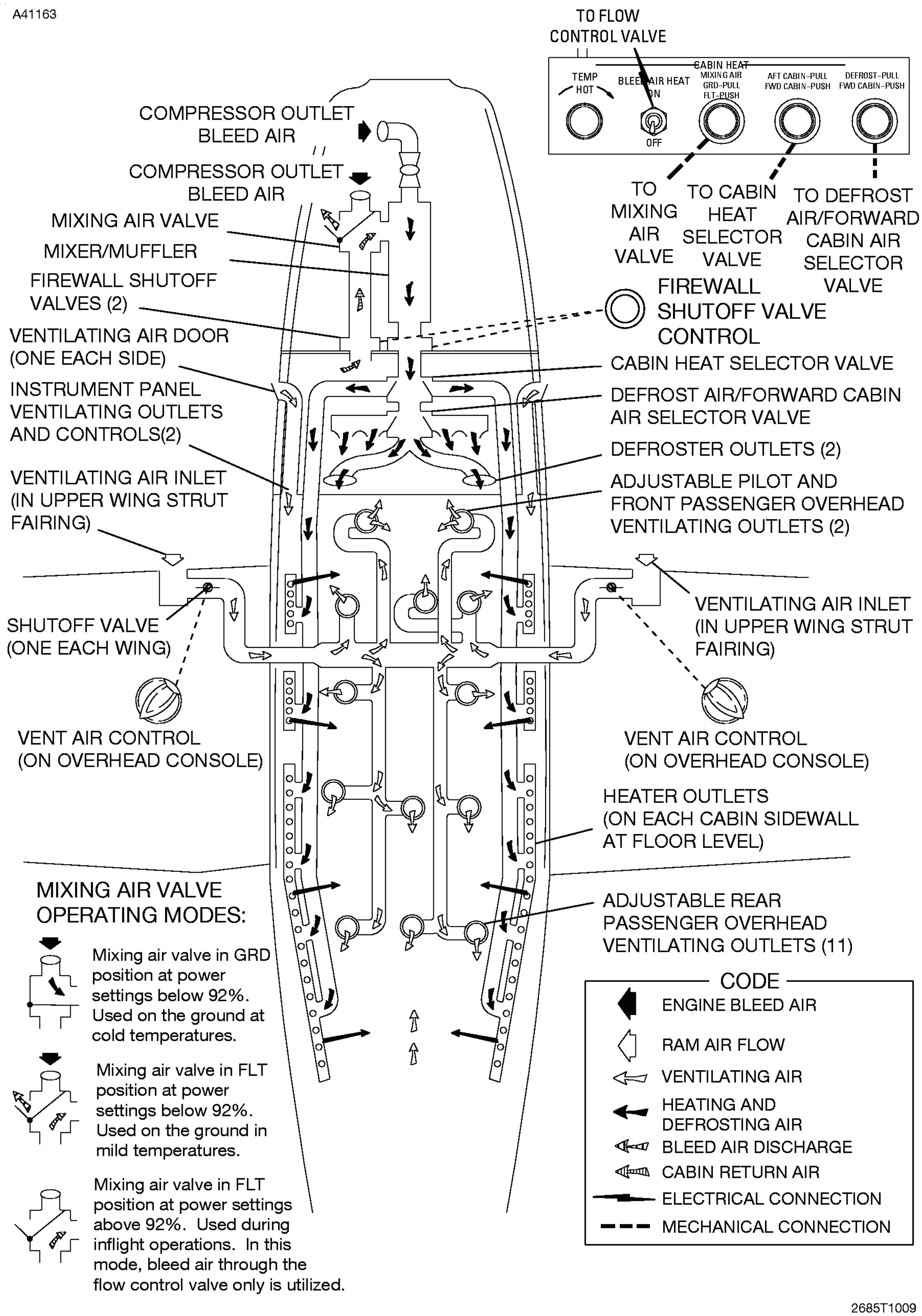

Figure 7-13 (Sheet 2 of 2)

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (Continued)

MIXING AIR PUSH-PULL CONTROL

A push-pull control, labeled MIXING AIR, GRD-PULL, FLT-PUSH, is located on the CABIN HEAT switch and control panel. With the push-pull control in the GRD position (pulled out), warm compressor bleed valve air is mixed with hot compressor outlet air in the mixer/muffler. This mode is used during ground operation when warm compressor bleed valve air is available (at power setting below 92% N_g) and can be used as additional bleed air heat to augment the hot compressor outlet bleed air supply during periods of cold ambient temperature. With the push-pull control in the FLT position (pushed in), cabin return air is mixed with the hot compressor outlet air in the mixer/muffler. This recirculation of cabin return air enables the heating system to maintain the desired temperature for proper cabin heating. If desired, the FLT position of the push-pull control can be used on the ground when ambient temperatures are mild and maximum heating is not required. In this mode, the excess warm compressor bleed valve air available at power settings below 92% N_g is exhausted overboard from the mixing air valve.

CAUTION

The MIXING AIR push-pull control should always be in the FLT position (pushed in) when the airplane is in flight. Cabin return air must be allowed to flow through the mixing valve and blend with hot compressor outlet air during high engine power operation in order to maintain proper temperature in the cabin heat distribution system. If the FLT position is not used during flight, the system may overheat and cause an automatic shutdown.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (Continued)

AFT/FORWARD CABIN PUSH-PULL CONTROL

A push-pull control, labeled AFT CABIN-PULL, FWD CABIN-PUSH, is located on the CABIN HEAT switch and control panel. With the control in the AFT CABIN position (pulled out), heated air is directed to the aft cabin heater outlets located on the cabin sidewalls at floor level on the Passenger Version 208 and the outlets in the floor behind the pilot and copilot on the Cargomaster.

With the control in the FWD CABIN position (pushed in), heated air is directed to the forward cabin through four heater outlets located behind the instrument panel and/or the two windshield defroster outlets. The push-pull control can be positioned at any intermediate setting desired for proper distribution of heated air to the forward and aft cabin areas.

DEFROST/FORWARD CABIN PUSH-PULL CONTROL

A push-pull control, labeled DEFROST-PULL, FWD CABIN-PUSH, is located on the CABIN HEAT switch and control panel. With the control in the DEFROST position (pulled out), forward cabin air is directed to two defroster outlets located at the base of the windshield (the AFT CABIN/FWD CABIN push-pull control also must be pushed in for availability of forward cabin air for defrosting). With the DEFROST/ FWD CABIN push-pull control in the FWD CABIN position (pushed in), heated air will be directed to the four heater outlets behind the instrument panel.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (Continued)

CABIN HEAT FIREWALL SHUTOFF KNOB

A push-pull shutoff knob, labeled CABIN HEAT FIREWALL SHUTOFF, PULL OFF, is located on the lower right side of the control pedestal. When pulled out, the knob actuates two firewall shutoff valves, one in the bleed air supply line to the cabin heating system and one in the cabin return air line, to the off position. This knob should normally be pushed in unless a fire is suspected in the engine compartment.

CAUTION

Do not place the CABIN HEAT FIREWALL SHUTOFF knob in the OFF position when the MIXING AIR control is in the GRD position because a compressor stall will occur at low power settings when the compressor bleed valve is open. The engine must be shut down to relieve back pressure on the valves prior to opening the valves.

VENT AIR CONTROL KNOBS

Two vent air control knobs, labeled VENT AIR, are located on the overhead console. The knobs control the operation of the shutoff valves in each wing which control the flow of ventilating air to the cabin. The knob on the right side of the console controls the right wing shutoff valve and similarly, the knob on the left side controls the left wing shutoff valve. When the VENT AIR control knobs are rotated to the CLOSE position, the wing shutoff valves are closed; rotating the knobs to the OPEN position progressively opens the wing shutoff valves. When the optional cabin ventilation fans are installed, rotating the knobs to the full OPEN position also turns on the ventilation fans.

CABIN HEATING, VENTILATING AND DEFROSTING SYSTEM (Continued)

INSTRUMENT PANEL VENT KNOBS

Two vent knobs, labeled VENT - PULL ON, are located one on each side of the instrument panel. Each knob controls the flow of ventilating air from an outlet located adjacent to each knob. Pulling each knob opens a small air door on the fuselage exterior which pulls in ram air for distribution through the ventilating outlet.

VENTILATING OUTLETS

Adjustable ventilating outlets (one located above each seat position) permits individual ventilation to the airplane occupants. The outlets are the swivel type for optimum positioning, and airflow volume is controlled by rotating the outlet nozzle controlling an internal valve. In addition to the pilot and front passenger outlets, the Passenger Version has 11 outlets in the rear cabin area for use by rear seat passengers.

OXYGEN SYSTEM

Some Cargo Versions are equipped with a two-port oxygen system having quick-don type masks for the pilot and passenger; other Cargo Versions can be equipped with a two-port oxygen system utilizing conventional masks. The Passenger Version can be equipped with up to 17-port oxygen system utilizing conventional masks. Refer to Section 9, Supplement 6, for complete details and operating instructions.

PITOT-STATIC SYSTEM AND INSTRUMENTS

There are two independent pitot-static systems on the airplane. The left pitot-static system supplies ram air pressure to Air Data Computer #1 and to the standby airspeed indicator, and supplies static pressure to Air Data Computer 1 and to the standby airspeed indicator and standby altimeter. The right pitot-static system provides ram air and static pressure to Air Data Computer 2. Each system is composed of a heated pitot-static tube mounted on the leading edge of the corresponding wing, a drain valve located on the sidewall beneath the instrument panel, and the associated plumbing necessary to connect the instruments and sources. In addition, the left system includes a ALT STATIC AIR source valve located on the lower left corner of the instrument panel.

The static pressure alternate source valve in the left system can be used if the static source is malfunctioning. This valve supplies static pressure from inside the cabin instead of from the pitot-static tube. If erroneous instrument readings are suspected due to water or ice in the pressure line going to the static pressure source, the ALT STATIC AIR source valve should be PULLED ON. Pressures within the cabin will vary with vents open or closed. Refer to Section 5, Performance for the effect of varying cabin pressures on airspeed and altimeter readings.

The drain valves incorporated in each system, located on the sidewall beneath the instrument panel, are used to drain suspected moisture accumulation by lifting the drain valve lever to the OPEN position as indicated by the placard adjacent to the valve. The valve must be returned to the CLOSED position prior to flight.

A left and right pitot-static heat system is installed to assure proper airspeed indications in the event icing conditions are encountered. The system is designed to prevent ice formation rather than remove it. The pitot-static heat system consists of a heating element in each pitot-static tube, a two-position toggle switch, labeled PITOT/STATIC HEAT, on the ANTI-ICE switch panel, and two pull-off type circuit breakers, labeled LEFT PITOT HEAT and RIGHT PITOT HEAT, on the left sidewall switch and circuit breaker panel. When the PITOT-STATIC HEAT switch is turned ON, elements in the pitot-static tubes are heated electrically to maintain proper operation in possible icing conditions.

Both pitot and static systems are monitored by the G1000 system for insufficient current and alerting is provided to the flight crew by a single chime and an amber L P/S HEAT, R P/S HEAT, or L-R P/S HEAT annunciator.

PITOT-STATIC SYSTEM AND INSTRUMENTS

AIRSPEED INDICATORS

The Garmin PFDs are the primary sources of airspeed information. Standby airspeed information is depicted by a mechanical indicator calibrated in knots, connected to the left pitot-static system. Limitation and range markings (in KIAS) match the markings on the PFD as listed in Section 2, Limitations.

The standby airspeed indicator is a true airspeed indicator and is equipped with a knob which works in conjunction with the airspeed indicator dial in a manner similar to the operation of a flight computer. To operate the indicator, first rotate the knob until pressure altitude is aligned with outside air temperature in degrees Centigrade. To obtain pressure altitude, momentarily set the barometric scale on the standby altimeter to 29.92 and read pressure altitude on the standby altimeter. Be sure to return the standby altimeter barometric scale to the original barometric setting after pressure altitude has been obtained. Having set the knob to correct for altitude and temperature, read the true airspeed shown in the window by the indicator pointer. For best accuracy, the indicated airspeed should be corrected to calibrated airspeed by referring to the Airspeed Calibration chart in Section 5, Performance. Knowing the calibrated airspeed, read true airspeed in the window opposite the calibrated airspeed.

VERTICAL SPEED INDICATION

The vertical speed indication on the PFDs depict airplane rate of climb or descent in feet per minute. The pointers are actuated by atmospheric pressure changes resulting from changes of altitude as supplied by the static sources through the respective ADC.

ALTIMETER (STANDBY INSTRUMENT PANEL)

Airplane altitude is depicted by a barometric type altimeter. A knob near the lower left portion of the indicator provides adjustment of the instrument's barometric scale to the current altimeter setting.

VACUUM SYSTEM AND INSTRUMENTS

A vacuum system, refer to Figure 7-14, Vacuum System, provides the suction necessary to operate the standby attitude indicator. Vacuum is obtained by passing regulated compressor outlet bleed air through a vacuum ejector. Bleed air flowing through an orifice in the ejector creates the suction necessary to operate the indicator. The vacuum system consists of the bleed air pressure regulator, a vacuum ejector on the forward left side of the firewall, a vacuum relief valve and vacuum system air filter on the aft side of the firewall, and the standby attitude indicator.

ATTITUDE INDICATOR (Standby Instrument Panel)

Standby attitude information is depicted by a vacuum-driven attitude indicator. Bank attitude is presented by a pointer at the top of the indicator relative to the bank scale which has index marks at 10°, 20°, 30°, 60°, and 90° either side of the center mark. Pitch and roll attitudes are presented by a miniature airplane superimposed over a symbolic horizon area divided into two sections by a white horizon bar. The upper blue sky and the lower ground area have arbitrary pitch reference lines useful for pitch attitude control. A knob at the bottom of the instrument is provided for inflight adjustment of the miniature airplane to the horizon bar for a more accurate flight attitude indication.

LOW-VACUUM WARNING FLAG

The standby attitude indicator includes an orange low-vacuum warning flag (GYRO) that comes into view when the vacuum is below the level necessary for reliable gyroscope operation.

WARNING

The orange low-vacuum warning flag (gyro) is the only indication of the loss of the vacuum system.

VACUUM SYSTEM

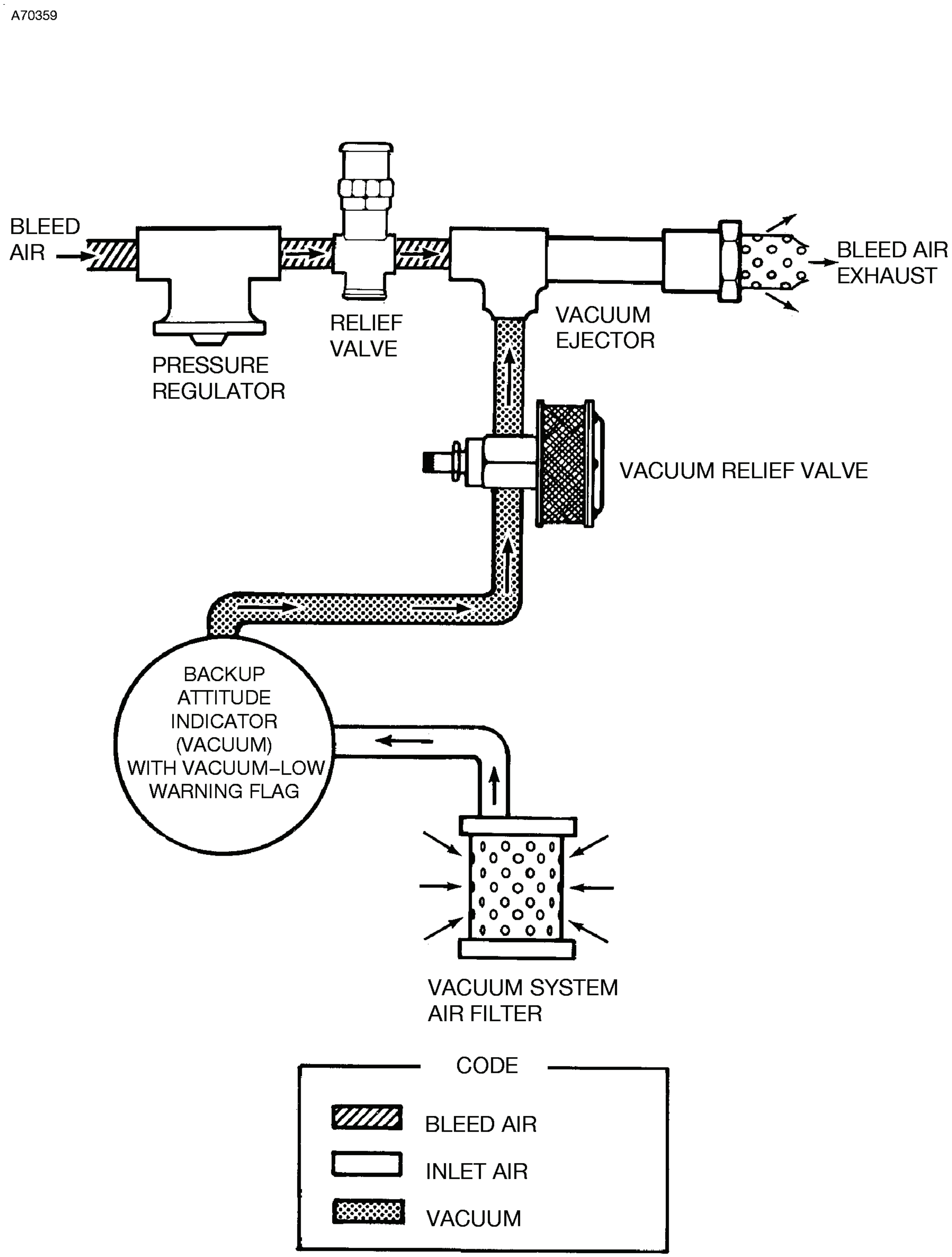

Figure 7-14

STALL WARNING SYSTEM

The airplane is equipped with a vane-type stall warning unit, in the leading edge of the left wing, which is electrically connected to a stall warning horn located overhead of the pilot's position. The vane in the wing senses the change in airflow over the wing, and operates the warning horn at airspeeds between 5 and 10 knots above the stall in all configurations.

The stall warning system should be checked during the preflight inspection by momentarily turning on the BATTERY switch and actuating the vane in the wing. The system is operational if the warning horn sounds as the vane is pushed upward. The elevator must be off the forward stop before the stall warning horn is enabled due to the fact that the airplane is equipped with a stall warning ground disconnect switch.

A pull-off type circuit breaker, labeled STALL WARN, protects the stall warning system. Also, it is provided to shut off the warning horn in the event it should stick in the on position.

WARNING

This circuit breaker must be closed (pushed in) for approach and landing.

The vane and sensor unit in the wing leading edge is equipped with a heating element. The heated part of the system is operated by the STALL HEAT switch on the ANTI-ICE switch panel, and is protected by the STALL WARN circuit breaker on the left sidewall switch and circuit breaker panel.

AVIONICS SUPPORT EQUIPMENT

Various avionics support equipment is installed in the airplane, and includes a microphone/speaker, mic/phone jacks, avionics cooling fans, 12VDC power outlets, an auxiliary audio input jack, and control surface static dischargers. Description and operation of radio equipment is covered in the Garmin CRG or Section 9 of this POH/AFM.

AVIONICS COOLING FAN

Two DC electric deck skin fans mounted on the underside of the cowl deck draw warm air from behind the instrument panel to maintain proper operating temperatures. In addition, three DC electric fans blow air directly onto the display heat sinks for prolonged equipment life. The deck skin fans will operate when the BATTERY switch is ON and the AVIONICS No. 1 power switch is ON.

MICROPHONE-HEADSET INSTALLATIONS

Radio communications are accomplished by the use of a hand-held microphone and the airplane speaker, or by aviation-style headsets. The hand-held microphone stows in a hanger on the front of the pedestal and plugs into a mic jack located on the right side of the pedestal. It includes an integral push-to-talk button. The airplane speakers are located above the pilot's and copilot's positions in the cabin headliner.

The headsets plug into microphone (MIC) and headset (PHONE) jacks located on the left side of the instrument panel for the pilot and the right side of the instrument panel for the copilot. Push-to-talk switches for the headsets are mounted on the control wheels.

Audio is controlled by the individual audio selector switches and adjusted for volume level by using the selected receiver volume controls. The system is designed so that microphones are voice activated, with transmission over the COM radios controlled by the push-to-talk switches.

AVIONICS SUPPORT EQUIPMENT (Continued)

STATIC DISCHARGERS

As an aid in IFR flights, wick-type static dischargers are installed to improve radio communications during flight through dust or various forms of precipitation (rain, snow or ice crystals). Under precipitation static (P-Static) conditions, the build-up and discharge of static electricity from the trailing edges of the wings, rudder, elevator, propeller tips, and radio antennas can result in loss of usable radio signals on all communications and navigation radio equipment. Usually the ADF is first to be affected and VHF communication equipment is the last to be affected.

Installation of static dischargers reduces interference from P-Static, but it is possible to encounter severe P-Static conditions which might cause the loss of radio signals, even with static dischargers installed. Whenever possible, avoid known severe precipitation areas to prevent loss of dependable radio signals. If avoidance is impractical, minimize airspeed and anticipate temporary loss of radio signals while in these areas.

Static dischargers lose their effectiveness with age, and therefore, should be checked periodically (at least at every annual inspection) by qualified avionics technicians, etc. If testing equipment is not available, it is recommended that the wicks be replaced every two years, especially if the airplane is operated frequently in IFR conditions. The discharger wicks are designed to unscrew from their mounting bases to facilitate replacement.

12 VDC POWER OUTLET

A power converter, located below the copilot seat, reduces the airplane's 28 VDC power to 12 VDC. This converter provides up to 10 amps of power to operate portable devices such as notebook computer and audio players. The power output connector (POWER OUTLET 12V) is located on the center pedestal, refer to Figure 7-2, Instrument Panel.

AVIONICS SUPPORT EQUIPMENT (Continued)

AUXILIARY AUDIO INPUT JACK

An auxiliary audio input jack (AUX AUDIO IN) is mounted on the lower aft face of the pedestal, refer to 7-2, Instrument Panel. It allows connection of entertainment audio devices such as cassette, compact disc, and MP3 players to play music over the airplane's headsets.

The signal from AUX AUDIO IN is automatically muted during radio communications or pilot selection of CREW ICS ISOLATION modes located on the audio panel. The AUX key on the audio panel does not control the AUX AUDIO IN signal. For a more complete description and operating instructions of the audio panel, refer to the Garmin G1000 CRG.

NOTE

Since the entertainment audio input is not controlled by a switch, there is no way to deselect the entertainment source except to disconnect the source at the audio input connector.

CABIN FEATURES

CABIN FIRE EXTINGUISHER

A portable fire extinguisher is installed on the cargo barrier in some Cargo Versions and on the inside of the pilot's entry door in other Cargo Versions and the Passenger Version. The extinguisher in both airplanes is readily accessible in case of fire. The extinguisher should be checked prior to each flight to ensure that its bottle pressure, as indicated by the gage on the bottle, is within the green arc and the operating lever lock pin is securely in place.

To operate the fire extinguisher:

1. Loosen retaining clamp and remove extinguisher from bracket.
2. Hold extinguisher upright, pull operating lever lock pin, and press lever while directing the discharge at the base of the fire at the near edge. Progress toward the back of the fire by moving the nozzle rapidly with a side-to-side sweeping motion.

CAUTION

Care must be taken not to direct the initial discharge directly at the burning surface at close range (less than five feet) because the high velocity stream may cause splashing and/or scattering of the burning material.

3. Anticipate approximately ten seconds of discharge duration.

WARNING

Ventilate the cabin promptly after successfully extinguishing the fire to reduce the gases produced by thermal decomposition. Occupants should use oxygen masks until the smoke clears.

Fire extinguishers should be recharged by a qualified fire extinguisher agency after each use. After recharging, secure the extinguisher to its mounting bracket; do not allow it to lie loose on floor or seats.

CABIN FEATURES (Continued)

SUN VISORS

Two sun visors are mounted overhead of the pilot and copilot. The visors are mounted on adjustable arms which enable them to be swung and telescoped into the desired windshield area.

CHART AND STORAGE COMPARTMENTS

A map compartment is located in the lower right side of the instrument panel. A hinged door covers the compartment and can be opened to gain access into the compartment. Storage pockets are also installed on the back of the pilot's and copilot's seats and along the bottom edge of each crew entry door and can be used for stowage of maps and other small objects.

MISCELLANEOUS EQUIPMENT

ENGINE INLET COVERS AND PROPELLER ANCHOR

Various covers and an anchor are available to close engine openings and restrain the propeller during inclement weather conditions and when the airplane is parked for extended periods of time, such as overnight. The covers preclude the entrance of dust, moisture, bugs, etc. into the engine and engine compartment.

Two covers are provided which plug into the two front inlets, thereby closing off these openings. The engine inlet covers may be installed after the engine has cooled down (ITT indicator showing off scale temperature). To prevent the propeller from windmilling during windy conditions, the propeller anchor can be installed over a blade of the propeller and its anchor strap secured around the nose gear or to the bracket located on the lower right-hand cowl.

MISCELLANEOUS EQUIPMENT (Continued)

CREW ENTRY STEP ASSEMBLY

The airplane may be equipped with a crew entry step for each crew entry door. The step assembly attaches to the floorboard just inside the entry door and extends toward ground level, providing two steps for entering or exiting the airplane. When not in use, the step assembly folds and stows just inside the cabin, inboard of each entry door.

CARGO BARRIER AND NETS

A cargo barrier and three cargo barrier nets may be installed directly behind the pilot's and copilot's seats. The barrier and nets preclude loose cargo from moving forward into the pilot's and copilot's stations during an abrupt deceleration. The barrier consists of a U-shaped assembly of honeycomb composite construction. The assembly attaches to the four seat rails at the bottom at station 153 and to structure at the top at approximately station 166. The cargo barrier nets consist of three nets: one for the left sidewall, one for the right sidewall, and one for the center. The left and right nets fill in the space between the barrier assembly and the airplane sidewalls.

The side nets are fastened to the airplane sidewalls and the edge of the barrier with six anchor-type fasteners each, three on each side. The center net fills in the opening in the top center of the barrier. The center net is fastened with four anchor-type fasteners, two on each side.

MISCELLANEOUS EQUIPMENT (Continued)

CARGO PARTITIONS

Cargo partitions are available and can be installed to divide the cargo area into convenient compartments. Partitions may be installed in all of the five locations at stations 188.7, 246.8, 282.0, 307.0, and 332.0. The cargo partitions are constructed of canvas with nylon webbing reinforcement straps crisscrossing the partition for added strength. The ends of each strap have fittings which attach to the floor tracks and anchor-type fasteners on the sides and top of the fuselage. Four straps have adjustable buckles for tightening the straps during installation of the partition.

CARGO DOOR RESTRAINING NET

A restraining net may be installed on the inside of the airplane over the cargo door opening. The net precludes loose articles from falling out the cargo door when the doors are opened. The restraining net consists of two halves which part in the center of the door opening. The front and rear halves slide fore and aft, respectively, on a rod to open the net. The net is attached to the sidewall by screws and nutplates along the front and rear edges of the net. When the net is closed, the two halves are held together by snap-type fasteners.

CARGO/AIRPLANE TIE-DOWN EQUIPMENT

Various items of tie-down equipment are available for securing cargo within the airplane and/or tying down the airplane. This equipment consists of tie-down belt assemblies having various load ratings and adjustment devices and two types of quick-release tie-down ring anchors for securing the belts to the cabin seat tracks and anchor plates. Refer to Section 6 for the recommended use and restrictions of this equipment.

MISCELLANEOUS EQUIPMENT (Continued)

HOISTING RINGS

Provisions are made for the installation of four hoisting rings which attach to the left and right sides of both front and rear spar wing-to-fuselage attach fittings. Each hoisting ring consists of a hinge which replaces the washer on the attachment bolt of the fitting. The upper half of the hinge contains a ring which is used for attaching the hoist when the airplane is being hoisted. When not in use, the upper hinge half folds down out of the way. To gain access to the hoisting rings, when installed, it is necessary to remove the wing-to-fuselage fairing strips.

RELIEF TUBE

Provisions are made for the installation of a relief tube in the aft cabin area on the Passenger Version. The relief tube is installed on the right sidewall, just aft of the passenger entry door.

OIL QUICK-DRAIN VALVE

An oil quick-drain valve is available to replace the drain plug on the bottom of the engine oil tank, and provides quicker, cleaner draining of the engine oil. To drain the oil with this valve, slip a hose over the end of the valve, cut the safety wire securing the valve on-off lever in the off position, and rotate the lever to the on position. After draining, rotate the valve on-off lever to the off position, remove the hose to check for leakage, and resafety the on-off lever in the off position.

AIRPLANE HANDLING, SERVICE AND MAINTENANCE

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INTRODUCTION

This section contains factory recommended procedures for proper ground handling and routine care and servicing of your airplane. It also identifies certain inspection and maintenance requirements which must be followed if your airplane is to retain that new airplane performance and dependability. It is important to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered in your local area.

Keep in touch with your local Cessna Authorized Service Facility and take advantage of their knowledge and experience. Your Cessna Authorized Service Facility knows your airplane and how to maintain it, and will remind you when lubrications and oil changes are necessary, as well as other seasonal and periodic services.

The airplane should be regularly inspected and maintained in accordance with information found in the airplane maintenance manual and in any company issued service bulletins and service letters. All service bulletins pertaining to the airplane by serial number should be accomplished and the airplane should receive repetitive and required inspections. Cessna does not condone modifications, whether by Supplemental Type Certificate (STC) or otherwise, unless these certificates are held and/or approved by Cessna. Other modifications may void warranties on the airplane since Cessna has no way of knowing the full effect on the overall airplane. Operation of an airplane that has been modified may be a risk to the occupants, and operating procedures and performance data set forth in the POH may no longer be considered accurate for the modified airplane.

IDENTIFICATION PLATE

All correspondence regarding your airplane should include the Serial Number. The Serial Number, Model Number, Production Certificate Number (PC) and Type Certificate Number (TC) can be found on the Identification Plate, located on the aft left tailcone. The Finish and Trim Plate, which is installed on the lower part of the left forward doorpost, contains a code describing the exterior paint combination of the airplane. The code may be used in conjunction with an applicable Illustrated Parts Catalog if finish and trim information is needed.

CESSNA OWNER ADVISORIES

Cessna Owner Advisories are sent to Cessna Aircraft FAA Registered owners of record at no charge to inform them about mandatory and/or beneficial airplane service requirements and product changes. Copies of the actual bulletins are available from Cessna Authorized Service Facilities and Cessna Customer Care.

As a convenience, service documents are now available online to all our customers through a simple, free-of-charge registration process. If you would like to sign up, please visit the “Customer Access” link at www.cessnasupport.com to register.

UNITED STATES AIRPLANE OWNERS

If your airplane is registered in the U.S., appropriate Cessna Owner Advisories will be mailed to you automatically according to the latest airplane registration name and address which you have provided to the FAA. Therefore, it is important that you provide correct and up to date mailing information to the FAA.

If you require a duplicate Owner Advisory to be sent to an address different from the FAA aircraft registration address, please complete and return an Owner Advisory Application (otherwise no action is required on your part).

INTERNATIONAL AIRPLANE OWNERS

To receive Cessna Owner Advisories, please complete and return an Owner Advisory Application.

Receipt of a valid Owner Advisory Application will establish your Cessna Owner Advisory service for one year, after which you will be sent a renewal notice. It is important that you respond promptly to update your address for this critical service.

PUBLICATIONS

Various publications and flight operation aids are furnished in the airplane when delivered from the factory. These items are listed below.

- Customer Care Program Handbook
- Pilot's Operating Handbook and FAA Approved Airplane Flight Manual
- Pilot's Checklist
- Passenger Briefing Card
- Cessna Authorized Service Facility Directory

To obtain additional publications or owner advisory information, you may contact Cessna Customer Care at (316) 517-5800. Fax (316) 517-7271 or write to Cessna Aircraft Company, P.O. Box 7706, Attn. Dept. 569, Wichita, KS 67277.

The following additional publications, plus many other supplies that are applicable to your airplane, are available from a Cessna Authorized Service Facility.

- Information Manual (contains Pilot's Operating Handbook Information)
- Maintenance Manual, Wiring Diagram Manual and Illustrated Parts Catalog

Cessna Authorized Service Facilities have access to a Customer Care Supplies and Publications Catalog covering all available items, many of which the Authorized Service Facility keeps on hand. The Authorized Service Facility can place an order for any item which is not in stock.

NOTE

A Pilot's Operating Handbook and FAA Approved Airplane Flight Manual which is lost or destroyed may be replaced by contacting Cessna Customer Care.

AIRPLANE FILE

There are miscellaneous data, information and licenses that are a part of the airplane file. The following is a checklist for that file. In addition, a periodic check should be made of the latest Federal Aviation Regulations to ensure that all data requirements are met.

To be displayed in the airplane at all times:

1. Aircraft Airworthiness Certificate (FAA Form 8100-2).
2. Aircraft Registration Certificate (FAA Form 8050-3).
3. Aircraft Radio Station License, (if applicable).

To be carried in the airplane at all times:

1. Current Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
2. Garmin G1000 Cockpit Reference Guide (190-00384-00 Rev. B or subsequent).
3. Weight and Balance, and associated papers (latest copy of the Repair and Alteration Form, FAA Form 337, if applicable).
4. Equipment List.

To be made available upon request:

1. Airplane Logbook.
2. Engine Logbook.
3. Propeller Logbook.

Most of the items listed are required by the United States Federal Aviation Regulations. Since the Regulations of other nations may require other documents and data, owners of airplanes not registered in the United States should check with their own aviation officials to determine their individual requirements.

Cessna recommends that these items, plus the Pilot's Checklists, CESCOM/Customer Care Program Handbook and Customer Care Card, be carried in the airplane at all times.

AIRPLANE INSPECTION PERIODS

FAA REQUIRED INSPECTIONS

As required by U.S. Federal Aviation Regulations, all civil aircraft of U.S. registry must undergo a complete inspection (annual) each twelve calendar months. In addition to the required annual inspection, aircraft operated commercially (for hire) must have a complete inspection every 100 hours of operation.

The FAA may require other inspections by the issuance of Airworthiness Directives (ADs) applicable to the airplane, engine, propeller and components. It is the responsibility of the owner/operator to ensure compliance with all applicable airworthiness directives, and when the inspections are repetitive, to take appropriate steps to prevent inadvertent noncompliance.

If an airplane is being operated under a CFR Part 135 Certificate, the operator can choose to use an Approved Aircraft Inspection Program.

INSPECTION PROGRAMS

Refer to the 208 Maintenance Manual, Chapter 4-00-00, Airworthiness Limitations, for FAA approved mandatory replacement times and inspection intervals for components and structures that are life-limited. The section also gives the scheduled inspection requirements for structural and fatigue components that are considered a part of the certification process. Refer to Chapter 5-00-00 for approved time limits and maintenance checks for the Model 208B airplanes.

Regardless of the inspection method selected, the owner should keep in mind that 14 CFR 43 and 14 CFR 91 establishes the requirement that properly certified agencies or personnel accomplish all required FAA inspections and most of the manufacturer recommended inspections.

NOTE

Airplanes operating in other than U.S. registry should refer to the regulations of the country of certification for information on approved maintenance inspection programs.

AIRPLANE INSPECTION PERIODS (Continued)

CESSNA CUSTOMER CARE PROGRAM

Specific benefits and provisions of the Cessna Warranty plus other important benefits are contained in the CESCOM/Customer Care Program Handbook supplied with the airplane. The CESCOM/ Customer Care Program Handbook should be thoroughly reviewed and kept in the airplane at all times.

Contact a Cessna Authorized Service Facility for the first 100-hour or annual inspection depending on the program chosen for the airplane. These inspections can be performed by any Cessna Authorized Service Facility.

CESCOM SYSTEM

CESCOM is Cessna's Computerized Maintenance Records System. This comprehensive system provides an accurate and simple method of monitoring and scheduling inspections, Service Bulletins, Service Kits, Airworthiness Directives as well as scheduled and unscheduled maintenance activities. For detail information about CESCOM, refer to the CESCOM Instruction Manual supplied with the airplane.

PILOT CONDUCTED PREVENTIVE MAINTENANCE

A certified pilot who owns or operates an airplane not used as an air carrier is authorized by 14 CFR 43 to perform limited maintenance on his airplane. Refer to 14 CFR 43 for a list of the specific maintenance operations which are allowed.

NOTE

> Pilots operating airplanes of other than U.S. registry should refer to the regulations of the country of certification for information on preventive maintenance that may be performed by pilots.

A Maintenance Manual must be obtained prior to performing any preventive maintenance to ensure that proper procedures are followed. A Cessna Authorized Service Facility should be contacted for further information or for required maintenance which must be accomplished by appropriately licensed personnel.

ALTERATIONS OR REPAIRS

It is essential that the FAA be contacted prior to any alterations on the airplane to ensure that airworthiness of the airplane is not violated. Alterations or repairs to the airplane must be accomplished by licensed personnel, utilizing only FAA Approved components and FAA Approved data, such as Cessna Service Bulletins.

GROUND HANDLING

TOWING

The airplane is most easily and safely maneuvered by hand with the towbar attached to the nosewheel. The towbar may be stowed in Zone 6. Moving the airplane by hand will require that the individual steering with the towbar be assisted by personnel pushing at the wing struts.

CAUTION

Do not push or pull the airplane using the propeller blades or control surfaces.

Use extreme caution during towing operations, especially when towing with a vehicle. Do not exceed the nose gear turning angle limit of 51.5° either side of center as shown by the steering limit marks.

If excess force is exerted beyond the turning limit, a red over-travel indicator block (frangible stop) will fracture and the block, attached to a cable, will fall into view alongside the nose strut. This should be checked routinely during preflight inspection to prevent operation with a damaged nose gear.

CAUTION

UNLOCK the rudder lock and remove any external rudder locks before towing.

If the airplane is towed or pushed over a rough surface during hangaring, watch that the normal cushioning action of the nose gear does not cause excessive vertical movement of the tail and the resulting contact with low hangar doors or structure. A flat nose tire will also increase tail height.

GROUND HANDLING (Continued)

PARKING

When parking the airplane, head into the wind and set the parking brakes. Do not set the parking brakes during cold weather when accumulated moisture may freeze the brakes, or when the brakes are overheated. Install the control wheel lock, engage the rudder lock, and chock the wheels (if the brakes are not utilized) to prevent airplane movement. In severe weather and high wind conditions, tie the airplane down as outlined in the tiedown section.

CAUTION

Any time the airplane is loaded heavily, the footprint pressure (pressure of the airplane wheels upon the contact surface of the parking area or runway) will be extremely high, and surfaces such as hot asphalt or sod may not adequately support the weight of the airplane. Precautions should be taken to avoid airplane parking or movement on such surfaces.

GROUND HANDLING (Continued)

TIEDOWN

Proper tiedown procedure is the best precaution against damage to the parked airplane by gusty or strong winds. To tiedown the airplane securely, proceed as follows:

1. Head the airplane into the wind, if possible.
2. Set the parking brake.

CAUTION

Do not set the parking brake during cold weather when accumulated moisture may freeze the brakes or when the brakes are overheated. If the brakes are not utilized, chock the nose and main wheels to prevent airplane movement.

3. Install the control wheel lock and engage the rudder lock.
4. Set aileron and elevator trim tabs to neutral position so that tabs fair with control surfaces.
5. Install pitot tube cover(s), if available.
6. Secure ropes or chains of sufficiently strong tensile strength to the wing tiedown fittings and secure to ground anchors.
7. Attach a rope or chain to the tail tiedown, and secure to a ground anchor.
8. If additional security is desired, attach a rope (no chains or cables) to the nose gear torque link and secure to a ground anchor.
9. If dusty conditions exist, or the last flight of the day has been completed, install the two engine inlet covers to protect the engine from debris. The covers may be installed after the engine has cooled down (ITT indicator showing “off scale” temperature).
10. To prevent the propeller from windmilling, install the propeller anchor over a blade of the propeller and secure its anchor strap around the nose gear or to the bracket located on the lower right hand cowl.

GROUND HANDLING (Continued)

JACKING

When a requirement exists to jack the entire airplane off the ground, or when wing jack points are used in the jacking operation, refer to the 208 Maintenance Manual, Chapter 7-10-0, Jacking - Maintenance Practices, for specific procedures and equipment required.

Several jack points or jacking locations are available depending on whether a cargo pod is installed. The nose wheel jack point is located directly below the firewall at FS 100.0 and housed within the nose gear strut fairing. This jack point is accessible for nose gear jacking regardless of the installation of a cargo pod. The two fuselage jack points are located at the main gear supports, but are not accessible with the cargo pod installed. Their use is generally reserved for maintenance such as main gear removal or raising the entire airplane whenever the cargo pod is not installed.

Anytime the cargo pod is installed, if the main gear to fuselage fairings are removed, jacks can be positioned adjacent to the sides of the cargo pod and raised to engage the receptacle on the end of the jacks over the head of the outboard bolt which secures the main gear attach trunnion bearing cap (aft) on the left and right gear. These jacking locations serve essentially the same purpose as the fuselage jack points at the main gear supports. An additional jack point on each main gear axle fitting is used primarily when the cargo pod is installed and it is desired to jack a single main gear for tire replacement, etc. If desired, jack stands with wing jack pads may be fabricated so that the front wing spar at WS 141.2 or 155.9 on each wing may be used as jacking locations. A tail jack must be used in conjunction with wing jacking.

(Continued Next Page)

GROUND HANDLING (Continued)

JACKING (Continued)

CAUTION

- A tail jack stand must be used when conducting maintenance inside the tail section, and should be installed in most jacking operations. Be sure the stand is suitably heavy enough to keep the tail stable under all conditions and is strong enough to support the airplane. Placing a jack stand under the nose jack point (if not used for jacking) will provide additional stability.
- Do not use cargo pod structure for jacking or as a blocking surface.
- Raise the airplane no more than required for the maintenance being performed.
- Jack base must be level and jack cylinder vertical at start of jacking operations.

In some instances (i.e. off-runway landing, collapsed gear, etc.) it may be necessary to use overhead means to lift (hoist) the airplane, to be followed with jacking at the jack points. Refer to the 208 Maintenance Manual, Chapter 7-10-01, Emergency Lifting - Maintenance Practices, and Chapter 7-10-0, Jacking - Maintenance Practices for specific procedures and equipment required.

GROUND HANDLING (Continued)

LEVELING

Longitudinal leveling of the airplane for weighing will require that the main landing gear be supported by stands, blocks, etc., on the main gear scales to a position at least four inches higher than the nose gear as it rests on an appropriate scale. This initial elevated position will compensate for the difference in waterline station between the main and nose gear so that final leveling can be accomplished solely by deflating the nose gear tire.

NOTE

Since the nose gear strut on this airplane contains an oil snubber for shock absorption rather than an air/oil shock strut, it cannot be deflated to aid in airplane leveling.

The airplane can also be leveled longitudinally by raising or lowering the airplane at the jack points. Longitudinal leveling points are provided at FS 239.05, WL 97.50 and FS 272.13, WL 97.50. Remove screws located at leveling screw location on the left side of the fuselage just forward of the cargo doors. Install two screws of sufficient length at longitudinal leveling points on fuselage to provide resting points for level. Place a spirit level on the screws, then deflate the nose gear tire (if placed on scales) or adjust the jacks to center the bubble in the level.

The pilot’s seat rails can also be used for longitudinal leveling by moving the pilot’s seat to the most forward position and placing the level on top of (and parallel to) seat rail, just aft of pilot’s seat. Observe level indication and deflate nose gear tire (if placed on scales) or adjust jacks to center bubble in level.

To level airplane laterally, center a spirit level across the seat rails just aft of crew doors, removing carpet if necessary. Observe level indication and deflate main gear tire to properly center bubble in level. Refer to the 208 Maintenance Manual, Chapter 8-20-00, Leveling - Maintenance Practices, for specific procedures and equipment required.

SERVICING

In addition to the Preflight Inspection covered in Section 4 of the POH, complete servicing, inspection, and test requirements for your airplane are detailed in the 208 Series Maintenance Manual. The Maintenance Manual outlines items that require attention at regular intervals, plus those items that require servicing, inspection, and/or testing at special intervals.

Since Cessna Authorized Service Facilities have the training and equipment necessary to conduct all service, inspection, and test procedures in accordance with applicable maintenance manuals, it is recommended that owner/operators contact the Cessna Authorized Service Facility concerning these requirements and begin scheduling the airplane for service at the recommended intervals.

Depending on various flight operations, your local Government Aviation Agency may require additional service, inspections, or tests. For these regulatory requirements, owners/operators should check with local aviation officials where the airplane is being operated.

For quick and ready reference, quantities, materials, and specifications for frequently used service items are as follows:

OIL

OIL SPECIFICATION

Oil conforming to Pratt & Whitney Engine Service Bulletin No. 1001, and all revisions or supplements thereto, must be used. The oils listed below comply with the engine manufacturers specification PWA521 and have a viscosity Type II rating. These oils are fully approved for use in Pratt & Whitney Canada commercially operated engines. When adding oil, service the engine with the type and brand that is currently being used in the engine. Refer to the airplane and engine maintenance records for this information. Should oils of different viscosities or brands be inadvertently mixed, the oil system servicing instructions in the Maintenance Manual shall be carried out.

APPROVED OILS

TABLE 1, Approved Lubricating Oils (Synthetic) CPW202

Aero Shell Turbine Oil 750
Royco Turbine Oil 750
Castrol 98
BP Turbo Oil 274 (New name) Exxon Turbo Oil 274 (Original name)
Turbonycoil 35 M

TABLE 2, Approved Lubricating Oils (Synthetic) MIL-PRF-23699F

Aero Shell Turbine Oil 500
Royco Turbine Oil 500
Mobil Jet Oil II
Castrol 5000
BP Turbo Oil 2380
Turbonycoil 600

TABLE 3, Approved Lubricating Oils (Synthetic) MIL-PRF-23699F

Aero Shell Turbine Oil 560 (Third generation lubricant)
Royco Turbine Oil 560 (Third generation lubricant)

Figure 8-1

(Continued Next Page)

OIL (Continued)

OIL SPECIFICATION (Continued)

CAUTION

- Do not mix different viscosities or specifications of oil as their different chemical structure can make them incompatible.
- When changing from an existing lubricant formulation to a “third generation” lubricant formulation (see list above), the engine manufacturer strongly recommends that such a change should only be made when an engine is new or freshly overhauled. For additional information on use of third generation oils, refer to the engine manufacturer’s pertinent oil service bulletins.

NOTE

The engine oils listed in Figure 8-1, Approved Oils, Tables 2 and 3 are recommended when operation will result in frequent cold soaking at ambient temperatures of 0°F (-18°C). Refer to Pratt & Whitney Engine Service Bulletin No. 1001 for additional approved oils:

OIL SYSTEM SERVICING

Pratt & Whitney Canada has determined that regular oil changes are no longer required and engine oil is to be changed on condition. Refer to Pratt & Whitney Engine Service Bulletin No. 1001 for information on oil system servicing.

OIL (Continued)

OIL CAPACITY

Total: . . . . 14 U.S. QUARTS (13.2 l)
(including filter, cooler, and hoses)
Drain and Refill Quantity: . . . . 9.5 U.S. QUARTS (9.0 l)
(approximately)

OIL QUANTITY OPERATING RANGE

Fill to within 1.5 quarts of MAX HOT or MAX COLD (as appropriate) on dipstick. Quart marking indicate U.S. quarts low if oil is hot. For example, a dipstick reading of 3 indicates the system is within 2 quarts of MAX if the oil is cold and within 3 quarts of MAX if the oil is hot.

WARNING

Make sure oil dipstick cap is securely latched down. Operating the engine with less than the recommended oil level and with the dipstick cap unlatched will result in excessive oil loss and eventual engine stoppage.

NOTE

To obtain an accurate oil level reading, it is recommended the oil level be checked within 10 minutes after engine shutdown while the oil is hot (MAX HOT marking) or prior to the first flight of the day while the oil is cold (MAX COLD marking). If more than 10 minutes has elapsed since engine shutdown and engine oil is still warm, perform an engine dry motoring run before checking oil level.

FUEL

FUEL GRADE (SPECIFICATION) AND FUEL ADDITIVES

Approved Fuel Grades	Fuel Additives (Refer to notes)	Specification	Minimum Temperature (°C)*	Maximum Temperature (°C)*
Jet A	1, 6, 7, 8	ASTM D1655	-35	57
Jet A-1	1, 6, 7, 8	ASTM D1655	-42	57
Jet No. 3	1, 5	GB 6537	-42	57
JP-5	2, 6, 7, 8	MIL-DTL-5624	-41	57
JP-8	1, 6, 7, 8	MIL-DTL-83133	-42	57
JP-8+100	1, 6, 7, 8	MIL-DTL-83133	-42	57
AN8**	1, 6, 7, 8	MIL-DTL-83133	-53	57
RT	3, 4, 6, 7, 8	GOST 10227	-45	57
RT	3, 4, 6, 7, 8	GSTU 320.00149943.007	-45	57
TS-1	3, 4, 6, 7, 8	GOST 10227	-45	57

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* It is assumed that fuel temperature is the same as Outside Air Temperature (OAT).

** AN8 is JP-8 fuel with a reduced freeze point specified for Antarctic operations.

Figure 8-2

FUEL (Continued)

FUEL ADDITIVES

The following fuel system additives are optional and may be added to the fuels as noted at the following concentrations. Use of these fuel additives is not required.

1. MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
2. MIL-DTL-27686 (EGME) or MIL-DTL-85470 (DiEGME), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.20 percent by volume.
3. GOST 8313 (Fluid I), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
4. CIS TU6-10-1458 (Fluid I-M), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.30 percent by volume.
5. T1301 (SH0396-92), Type: Anti-Ice Additive, in a concentration of 0.10 to 0.15 percent by volume.
6. DuPont Stadis 450, Type: Static Dissipator, in a concentration as required to bring fuel up to 300 conductive units, not to exceed 1 Parts Per Million (PPM).
7. SOHIO Biobor JF, Type: Biocide, at a concentration not to exceed 20 PPM of elemental boron (270 PPM of total additive).
8. Kathon FP, Type: Biocide, at a concentration not to exceed 100 PPM of total additive.

(Continued Next Page)

FUEL (Continued)

FUEL ADDITIVES (Continued)

A variety of fuels may be used in the airplane. When operating in outside air temperatures of 0°C or colder, you may choose to use an anti-icing additive, (EGME) or (DIEGME), incorporated or added to the fuel during refueling.

If you elect to use anti-ice additives, make sure the correct concentration of anti-icing additive is present in the fuel.

Anti-icing additive or biocide can be used to control bacteria and fungi. The anti-ice additives EGME/DIEGME have shown, through service experience, that they provide acceptable protection from microorganisms such as bacteria and fungi that can rapidly multiply and cause serious corrosion in tanks and may block filters, screens and fuel metering equipment.

CAUTION

- JP-5 fuels per MIL-T-5624 and JP-8 fuel per MIL-T-83133A contain the correct premixed quantity of an approved type of anti-icing fuel additive and no additional anti-ice compounds should be added.
- Proper mixing of EGME or DIEGME compound with the fuel is extremely important. A concentration in excess of that recommended (0.15% by volume maximum) will result in detrimental effects to the fuel tanks, such as deterioration of protective primer and sealants and damage to o-rings and seals in the fuel system and engine components.
- Use only blending equipment that is recommended by the manufacturer to obtain proper proportioning.

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FUEL (Continued)

FUEL ADDITIVES (Continued)

PROCEDURE FOR ADDING FUEL ANTI-ICING ADDITIVE

When the airplane is being refueled, use the following procedure to blend anti-icing additive to nontreated fuel:

1. Attach additive to refuel nozzle, making sure blender tube discharges in the refueling stream.
2. Start refueling while simultaneously fully depressing and slipping ring over trigger of blender.

WARNING

Anti-icing additives containing Ethylene Glycol Monomethyl Ether (EGME) are harmful if inhaled, swallowed, or absorbed through the skin, and will cause eye irritation. It is also combustible. Before using this material, refer to all safety information on the container.

CAUTION

- Diethylene Glycol Monomethyl Ether (DIEGME) is slightly toxic if swallowed and may cause eye redness, swelling and irritation. It is also combustible. Before using this material, refer to all safety information on the container.
- Make sure the additive is directed into the flowing fuel stream with the additive flow started after the fuel flow starts and stopped before fuel flow stops. Do not allow concentrated additive to contact coated interior of fuel tank or airplane painted surface.
- Use a minimum of 20 fluid ounces of additive per 156 gallons of fuel and a maximum of 20 fluid ounces of additive per 104 gallons of fuel.

(Continued Next Page)

FUEL (Continued)

FUEL ADDITIVES (Continued)

PROCEDURE FOR CHECKING FUEL ADDITIVES

Prolonged storage of the airplane will result in a water buildup in the fuel which “leaches out” the additive. An indication of this is when an excessive amount of water accumulates in the fuel tank sumps. The concentration of additive can be checked using an anti-icing additive concentration test kit. Refer to 208 Maintenance Manual, Chapter 12-11-01, Fuel - Servicing, for additional information on the anti-icing additive concentration test kit. It is imperative that the instructions for the test kit be followed explicitly when checking the additive concentration. The additive concentrations by volume for EGME/ DIEGME shall be 0.10% minimum and 0.15% maximum, either individually or mixed in a common tank. Fuel, when added to the tank, should have a minimum concentration of 0.10% by volume.

CAUTION

If the fuel additive concentration has fallen below 0.035% by volume, the airplane should be defueled and refueled.

(Continued Next Page)

FUEL (Continued)

FUEL ADDITIVES (Continued)

ANTI-STATIC PROTECTION

If additional anti-static protection is desired, the following additive is approved for use:

Dupont Stadis 450 - in a concentration as required to bring fuel up to 300 conductive units, not to exceed 1 PPM of total additive).

BIOCIDAL PROTECTION

If additional biocidal protection is desired, an additive is permitted for use in certain conditions. Fuel tank maintenance practices are of prime importance in controlling microbial growth. However, other factors such as climate, airplane design, route structure, and utilization also affect microbial growth; therefore, occasional use of a biocide may be required.

Biocide additive may be used on a limited basis, defined as intermittent or non-continuous use in a single application, to sterilize airplane fuel systems suspected or found to be contaminated by microbial organisms. For those operators, where the need for biocide use is dictated, Pratt & Whitney Canada recommends, as a guide, a dosage interval of once a month. This interval can then be adjusted, either greater or lesser as an operator’s own experience dictates. An engine operated in private and corporate airplanes, where utilization rates are relatively low, may use the additive continuously. The following additives are permitted for use:

- Sohio Biobor JF - at a concentration not to exceed 20 PPM of elemental boron (270 PPM of total additive).
- Kathon FP - at a concentration not to exceed 100 PPM of total additive.

FUEL (Continued)

FUEL CAPACITY

TOTAL FUEL

Both Tanks and Reservoir: . . . . 339.1 U.S. Gallons (1283 l)
Both Tanks: . . . . 335.6 U.S. Gallons (1270 l)
Each Tank: . . . . 167.8 U.S. Gallons (635 l)

TOTAL USABLE FUEL

Both Tanks ON and Reservoir: . . . . 335.3 U.S. Gallons (1268 l)
Both Tanks ON: . . . . 332.0 U.S. Gallons (1256 l)
Single Tank ON: . . . . 165.0 U.S. Gallons (624 l)

TOTAL UNUSABLE FUEL

Both Tanks ON: . . . . 3.6 U.S. Gallons (13 l)
Single Tank ON: . . . . 2.8 U.S. Gallons (10 l)

Maximum Fuel Imbalance: . . . . 200 Pounds (90 kg)

NOTE

To achieve full fuel capacity, fill fuel tank to the top of the filler neck. Filling fuel tanks to the bottom of the fuel filler collar (level with flapper valve) allows space for thermal expansion and results in a decrease in fuel capacity of 4.0 U.S. gallons (15 l) per side (8.0 U.S. gallons (30 l) total).

CAUTION

To obtain accurate fuel quantity indicator readings, verify the airplane is parked in a laterally level condition, or, if in flight, make sure the airplane is in a coordinated and stabilized condition.

FUEL (Continued)

FUEL CONTAMINATION

Fuel contamination is usually the result of foreign material present in the fuel system and may consist of water, rust, sand, dirt, microbes, or bacterial growth. In addition, additives that are not compatible with fuel or fuel system components can cause the fuel to become contaminated.

Before each flight and after each refueling, use a clear sampler cup and drain at least a cupful of fuel from each inboard fuel tank sump quick drain valve, fuel tank external sump quick drain valve, the fuel reservoir quick drain valve (actuated by a push-pull drain control on cargo pod), and fuel filter quick-drain valve to determine if contaminants are present and ensure the airplane has been fueled with the proper fuel. If the airplane is parked with one wing low on a sloping ramp, draining of the outboard fuel tank sump quick-drain valves (if installed) is also recommended.

If contamination is detected, drain **all** fuel drain points again. Take repeated samples from **all** fuel drain points until all contamination has been removed. If, after repeated sampling, evidence of contamination still exists, the airplane should not be flown. Tanks should be drained and system purged by qualified maintenance personnel. All evidence of contamination must be removed before further flight. If the airplane has been serviced with the improper fuel grade, defuel completely and refuel with the correct grade. Do not fly the airplane with contaminated or unapproved fuel.

In addition, Owners/Operators who are not acquainted with a particular fixed base operator should be assured that the fuel supply has been checked for contamination and is properly filtered before allowing the airplane to be serviced. Fuel tanks should be kept full between flights, provided weight and balance considerations will permit, to reduce the possibility of water condensing on the walls of partially filled tanks.

(Continued Next Page)

FUEL (Continued)

FUEL CONTAMINATION (Continued)

To further reduce the possibility of contaminated fuel, routine maintenance of the fuel system must be performed in accordance with the Airplane Maintenance Manual. Only the proper fuel, as recommended in this POH/AFM, should be used, and fuel additives must not be used unless approved by Cessna and the Federal Aviation Administration.

WARNING

- **It is the pilot's responsibility to make sure that the airplane's fuel supply is clean before flight.**
- **Do not fly the airplane with contaminated or unapproved fuel.**
- **Any traces of solid contaminants such as rust, sand, pebbles, dirt, microbes and bacterial growth or liquid contamination resulting from water, improper fuel type, or additives that are not compatible with the fuel or fuel system components must be considered hazardous.**
- **Carefully sample fuel from all fuel drain locations during each preflight inspection and after every refueling.**

LANDING GEAR

Consult the following table for servicing information on the landing gear.

COMPONENT	SERVICING CRITERIA
Nosewheel (22 x 8.00-8, 6-Ply Rated Tire)	30.0 - 42.0 PSI
Main Wheel (8.50-10, 8-Ply Rated Tire)	53.0 - 57.0 PSI
Main Wheel (29 x 11.00-10, 10-Ply Rated Tire)	35.0 - 45.0 PSI
Brakes	MIL-H-5606 (Note 1)
Nose Gear Shock Strut	MIL-H-5606 (Note 2)

NOTE

1. Service brake fluid reservoir with MIL-H-5606 hydraulic fluid as placarded on reservoir. Maintain fluid level between MIN and MAX markings.
2. Keep strut filled with MIL-H-5606 hydraulic fluid per filling instructions placard. No air pressure is required in strut.

OXYGEN

The oxygen cylinder, when fully charged, contains either 51 cubic feet for the 2-port oxygen system or 117 cubic foot for the 10-port or 17-port system, of MIL-O-27210 aviator's breathing oxygen under a pressure of 1850 PSI at 21°C (70°F). Filling pressures will vary, however, due to ambient temperature in the filling area, and the temperature rise resulting from compression of the oxygen. Because of this, merely filling to 1850 PSI will not result in a properly filled cylinder. Fill to pressures indicated on the table below for ambient temperature.

OXYGEN FILLING PRESSURES

Ambient Temperature ℃	Filling Pressure PSIG	Ambient Temperature ℃	Filling Pressure PSIG
-55	1682	0	1787
-50	1641	5	1830
-45	1614	10	1875
-40	1599	15	1918
-35	1596	20	1960
-30	1603	25	1998
-25	1618	30	2033
-20	1641	35	2062
-15	1671	40	2084
-10	1706	45	2099
-5	1745	50	2104

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Figure 8-3

NOTE

Refer to Section 9, Supplement 6 for additional information on the oxygen system installed on your airplane.

GROUND DEICE/ANTI-ICE OPERATIONS

During cold weather operations, flight crews are responsible for making sure that the airplane is free of ice contamination. Type I deice, and Type II, Type III, or Type IV anti-ice fluids may be used to ensure compliance with FAA regulations, which require that all critical components (wings, control surfaces and engine inlets as an example) be free of snow, ice, or frost before takeoff. The deicing process is intended to restore the airplane to a clean configuration so that neither aerodynamic characteristics nor mechanical interference from contaminants will occur.

WARNING

Type II, Type III, and Type IV anti-ice fluid is designed for use on airplanes with a V_R speed of 85 knots or greater. Whenever Type II, Type III, or Type IV anti-ice fluid is applied to the airplane, the takeoff flap setting is limited to UP and the V_R is 88 KCAS (83 KIAS). Refer to Section 2, Limitations, Type II, Type III, and Type IV Anti-Ice Fluid Takeoff Limitations and Section 5, Performance, Figure 5-11 and Figure 5-27, for Flaps Up Takeoff Distances and liftoff speeds in KIAS. Figures 5-11 and 5-27, Flaps Up Takeoff Distance charts start with the airplane's maximum weight for normal operations.

NOTE

It is recommended that flight crews refamiliarize themselves seasonally with the following publications for expanded deice and anti-ice procedures:

- Cessna 208 Series Maintenance Manual, Chapter 12.
- FAA Advisory Circular AC135-17, dated 14 December 1994 or later.
- FAA Advisory Circular AC20-117, dated 17 December 1982 or later.
- Cessna Aircraft Company SNL 08-1 and FAA Notice 8900.196: Revised FAA-Approved Deicing Program Updates, Winter 2012-2013.

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

Deicing and anti-icing fluids are aqueous solutions which work by lowering the freezing point of water in either the liquid or crystal phase, thus delaying the onset of freezing. For this reason, they are referred to as Freezing Point Depressant (FPD) fluids. Deicing fluid is classified as Type I. Anti-icing fluid is classified as Type II, Type III, or Type IV. Deicing and anti-icing with fluids may be performed as a one-step or two-step process. The one-step deicing procedure involves using Type I deice fluid to remove ice and slush from the airplane prior to departure and to provide minimal anti-icing protection as provided in the Type I holdover timetable (refer to FAA notice 8900.196, dated 8-16-12 or later).

The procedure involves applying Type II, Type III, or Type IV anti-ice fluid to make sure the airplane remains clean after deicing. Type II, Type III, or Type IV fluid is used to provide longer-term anti-icing protection. Type I, Type II, Type III, and Type IV fluids have time limitation before refreezing begins, at which time additional deicing is required. This time limitation is referred to as “holdover time”. Because holdover time depends highly on a number of factors, charts can provide only approximate estimates. It remains the responsibility of the pilot-in-command to determine the effectiveness of any deicing or anti-icing procedure. Refer to FAA notice 8900.196, dated 8-16-12 or later for Type I, Type II, Type III or Type IV fluids.

CAUTION

Type I, Type II, Type III, and Type IV fluids are not compatible and may not be mixed. Additionally, most manufacturers prohibit the mixing of brands within a type. However, the same spray equipment may apply Type I and Type III fluids. Line personnel should be supervised by the pilot in command to ensure proper application of Type I deice, and Type II, Type III, or Type IV anti-ice fluids.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

NOTE

Deicing fluids are not intended for use in removing snow deposits. Snow is best removed by mechanically sweeping or brushing it from the airplane structure. Use caution not to damage any airplane structure or antennas when removing snow.

Deicing may be accomplished using the ambient temperature available from a heated hangar or by mechanical means using a glycol-based Freezing Point Depressant (FPD) Type I fluid. A heated hangar is an excellent option to deice airplanes and must be utilized whenever possible. However, care must be exercised to make sure that all melted precipitation is removed from the airplane to prevent refreezing once the airplane is moved from the hangar to the flight line. Type I deicing fluids should be sprayed on the airplane (with engine shutdown) in a manner that minimizes heat loss of fluid to the air. The fluid should be applied in a temperature range from 160°F to 180°F (71°C to 82°C) using a solid cone pattern of large coarse droplets. Fluid should be sprayed as close as possible to the airplane surfaces, but not closer than approximately 10 feet if a high-pressure nozzle is used.

Application techniques for Type II, Type III, and Type IV fluids are the same as Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces. However, Type II, Type III, or Type IV fluid is sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid as the heat may change the characteristics of the thickening agents in the fluid. Therefore, Type II, Type III, or Type IV fluid applied in this manner will not be as effective as it would be if it were applied at ambient temperature.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

Refer to Figure 8-4, Essential Areas To Be Deiced, for areas to spray Type I deicing fluid, Figure 8-5, Essential Areas To Apply Anti-ice Fluid, for areas to spray Type II, Type III and Type IV anti-icing fluid, Figure 8-6, Deice And Anti-ice Fluid Direct Spray Avoidance Areas, for areas to avoid spraying directly, and Figure 8-7, Deicing And Anti-icing Application, for sequence of application.

Heated solutions of Freezing Point Depressant (FPD) are more effective than unheated solutions because thermal energy is used to melt the ice, snow, or frost formations. Type I deicing fluids are used in the diluted state, with specific ratios of fluid-to-water dependent on ambient temperature. Type I deicing fluids have a very limited holdover time. Refer to FAA Notice 8900.196, dated 8-16-12 or later.

CAUTION

Type I fluids should never be used full strength (undiluted). Undiluted glycol fluid is quite viscous below 14°F (-10°C) and can actually produce lift reductions of about 20 percent. Additionally, undiluted glycol has a higher freezing point than a glycol/water mixture.

NOTE

- Deicing and anti-icing procedures must be closely coordinated between the pilot in command and ground crews, and carried out in a timely manner. Ultimate responsibility for safety of flight rests with the pilot in command, and any decisions to deice or anti-ice an airplane must be accomplished under his or her direct supervision.
- The first area to be deiced and anti-iced must be visible from the cockpit and must be used to provide a conservative estimate for subsequent ice accumulations on unseen areas of the airplane before initiating takeoff.
- Due to the weight and C.G. changes that occur while deicing the airplane, a tail stand must be placed under the tail to prevent the airplane from tipping on its tail.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS)

NOTE

Refer to FAA Notice 8900.196, dated 8-16-12 or later for holdover timetables.

The length of time that deicing and anti-icing fluids remain effective is known as “holdover time”. The holdover timetables for Type I deicing, and Type II, Type III, or Type IV anti-icing fluids are only an estimation and vary depending on many factors (temperature, precipitation type, wind, and airplane skin temperature). The holdover times are based on the mixture ratio appropriate for the OAT. Holdover times start when the last application has begun.

Guidelines for maximum holdover times anticipated by the FAA, in coordination with Transport Canada (TC) and the SAE G-12 Aircraft Ground Deicing Holdover Time Subcommittee generated the HOT guidelines published in FAA Notice 8900.196 for Type I, Type II, Type III or Type IV, and ISO Type I, Type II, Type III, or Type IV fluid mixtures. Type I HOTs are a function of weather conditions and outside air temperature (OAT) while the HOTs for Type II, Type III, and Type IV fluids are primarily a function of the OAT, precipitation type and intensity, and percent Freezing Point Depressant (FPD) fluid concentration applied.

NOTE

The SAE no longer publishes HOT guidelines.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

CAUTION

- Aircraft operators are solely responsible for ensuring that holdover timetables contain current data.
- The tables are for use in departure planning only and should be used in conjunction with pretakeoff contamination check procedures.
- The time of protection will be shortened in heavy weather conditions. High wind velocity and jet blast may cause a degradation of the protective film. If these conditions occur, the time of protection may be shortened considerably. This is also the case when fuel temperature is significantly lower than OAT.

NOTE

- Holdover timetables in FAA Notice 8900.196, dated 11-25-09 or later do not apply to other than SAE or ISO Type I, Type II, Type III or Type IV fluids.
- The responsibility for the application of this data remains with the user.

WARNING

When ground icing conditions are present, a pretakeoff contamination check must be conducted by the pilot in command within 5 minutes of takeoff, preferably just prior to taxiing onto the active runway. Critical areas of the airplane such as empennage, wings, windshield, control surfaces, and engine inlets must be checked to make sure they are free of ice, slush, and snow and that the anti-ice fluid is still protecting the airplane.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

TYPE I DEICE FLUID

NOTE

- Freezing point of Type I fluid mixture must be at least 10°C (18°F) below OAT.
- Holdover time starts when last application has begun.
- Type I fluid should be sprayed on the airplane (with engine off) in a manner which minimizes heat loss to the air. If possible, fluid should be sprayed in a solid cone pattern of large coarse droplets at a temperature of 160°F to 180°F. The fluid should be sprayed as close as possible to the airplane surfaces, but not closer than 10 feet if a high pressure nozzle is used.

WARNING

When ground icing conditions are present, a pretakeoff contamination check should be conducted by the pilot in command within 5 minutes of takeoff, preferably just prior to taxiing onto the active runway. Critical areas of the airplane such as empennage, wings, windshield, control surfaces, and engine inlets should be checked to make sure they are free of ice, slush, and snow, and that the anti-ice fluid is still protecting the airplane.

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

TYPE II ANTI-ICE FLUID

NOTE

- Freezing point of Type II fluid mixture must be at least 7°C (13°F) below OAT.
- Holdover time starts when last application has begun.
- Application techniques for Type II fluid are the same as for Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces.
- Type II fluid can be applied undiluted at ambient temperature to a “clean” airplane within three minutes after deicing is completed, due to the limited holdover times of Type I deice fluid. Type II fluid is however, sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid, as the heat may change the characteristics of the thickening agents in the fluid. Type II fluid therefore, applied in this manner, will not be as effective as it would be if it were applied at ambient temperature.

CAUTION

Some Type II fluids could form a thick or high strength gel during “dry-out” and when rehydrated can freeze restricting movement of flight control surfaces, while in flight.

WARNING

When ground icing conditions are present, a pretakeoff contamination check must be conducted by the pilot in command within 5 minutes of takeoff, preferably just prior to taxiing onto the active runway. Critical areas of the airplane such as empennage, wings, windshield, control surfaces, and engine inlets must be checked to make sure they are free of ice, slush, and snow and that the anti-ice fluid is still protecting the airplane.

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

TYPE III ANTI-ICE FLUID

NOTE

- Freezing point of Type III fluid mixture must be at least 7°C (13°F) below OAT.
- Holdover time starts when last application has begun.
- Application techniques for Type III fluid are the same as for Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces.
- Type III fluid must be applied undiluted at ambient temperature to a “clean” airplane within 3 minutes after deicing is completed due to the limited holdover times of Type I deice fluid. However, Type III fluid is sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid, as the heat may change the characteristics of the thickening agents in the fluid. Therefore, Type II fluid applied in this manner will not be as effective as it would be if it were applied at ambient temperature.

WARNING

When ground icing conditions are present, a pre-takeoff contamination check must be conducted by the pilot in command within 5 minutes of takeoff, preferably just prior to taxiing onto the active runway. Critical areas of the airplane such as empennage, wings, windshield, control surfaces, and engine inlets must be checked to make sure they are free of ice, slush, and snow and that the anti-ice fluid is still protecting the airplane.

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

TYPE IV ANTI-ICE FLUID

CAUTION

The time of protection will be shortened in heavy weather conditions. Heavy precipitation rates, high moisture content, high wind velocity, or jet blast may reduce holdover time below the lowest time stated in the range. Holdover time may be reduced when airplane skin temperature is lower than OAT.

NOTE

- Freezing point of Type IV fluid mixture must be at least 7°C (13°F) below OAT.
- Holdover time starts when last application has begun.
- Application techniques for Type IV fluid are the same as for Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces.
- Type IV fluid can be applied undiluted at ambient temperature to a “clean” airplane within three minutes after deicing is completed, due to the limited holdover times of Type I deice fluid. Type IV fluid is however, sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid, as the heat may change the characteristics of the thickening agents in the fluid. Type IV fluid therefore, applied in this manner, will not be as effective as it would be if it were applied at ambient temperature.

(Continued Next Page)

GROUND DEICE/ANTI-ICE OPERATIONS (Continued)

HOLDOVER TIMETABLE (TYPE I, TYPE II, TYPE III, AND TYPE IV FLUIDS) (Continued)

TYPE IV ANTI-ICE FLUID (Continued)

CAUTION

- Some Type IV fluids could form a thick or high strength gel during “dry-out” and when rehydrated can freeze restricting movement of flight control surfaces, while in flight.
- Some Type IV fluids exhibit poor aerodynamic elimination (flow-off) qualities at colder temperatures.
- Heated areas of airplane (i.e., heated pitot tubes and stall warning vanes) should be avoided due to the fact that fluid may “dry-out” into hard globular nodules.

ESSENTIAL AREAS TO BE DEICED

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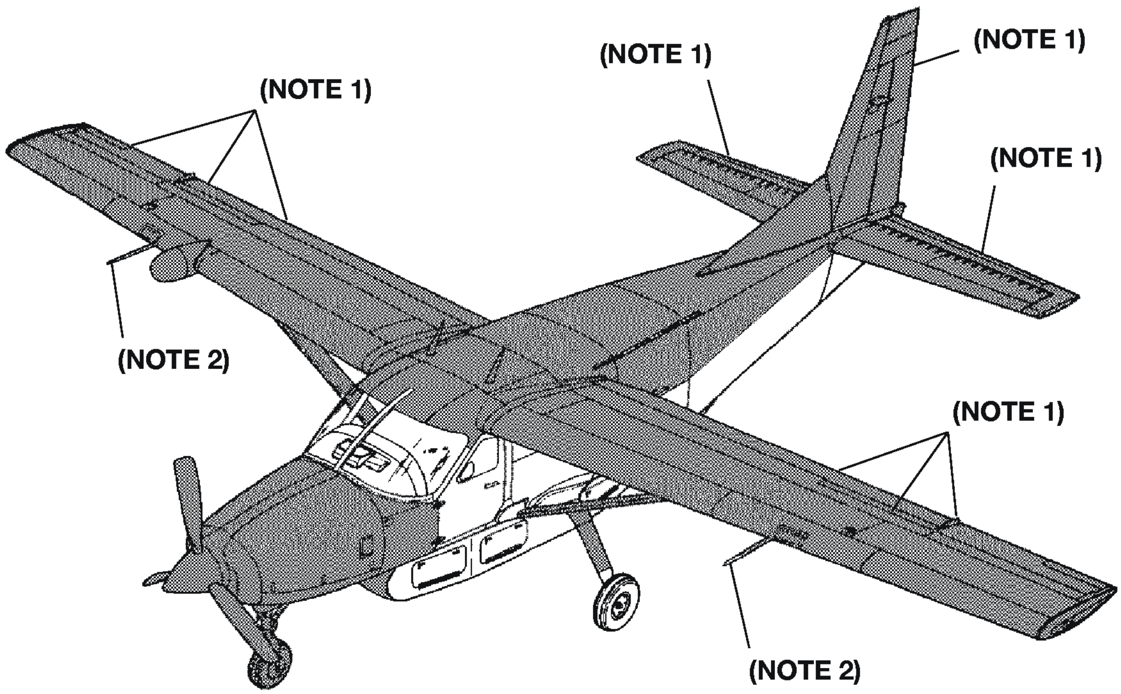

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SHADED AREAS INDICATE ESSENTIAL AREAS TO BE DEICED.

NOTE

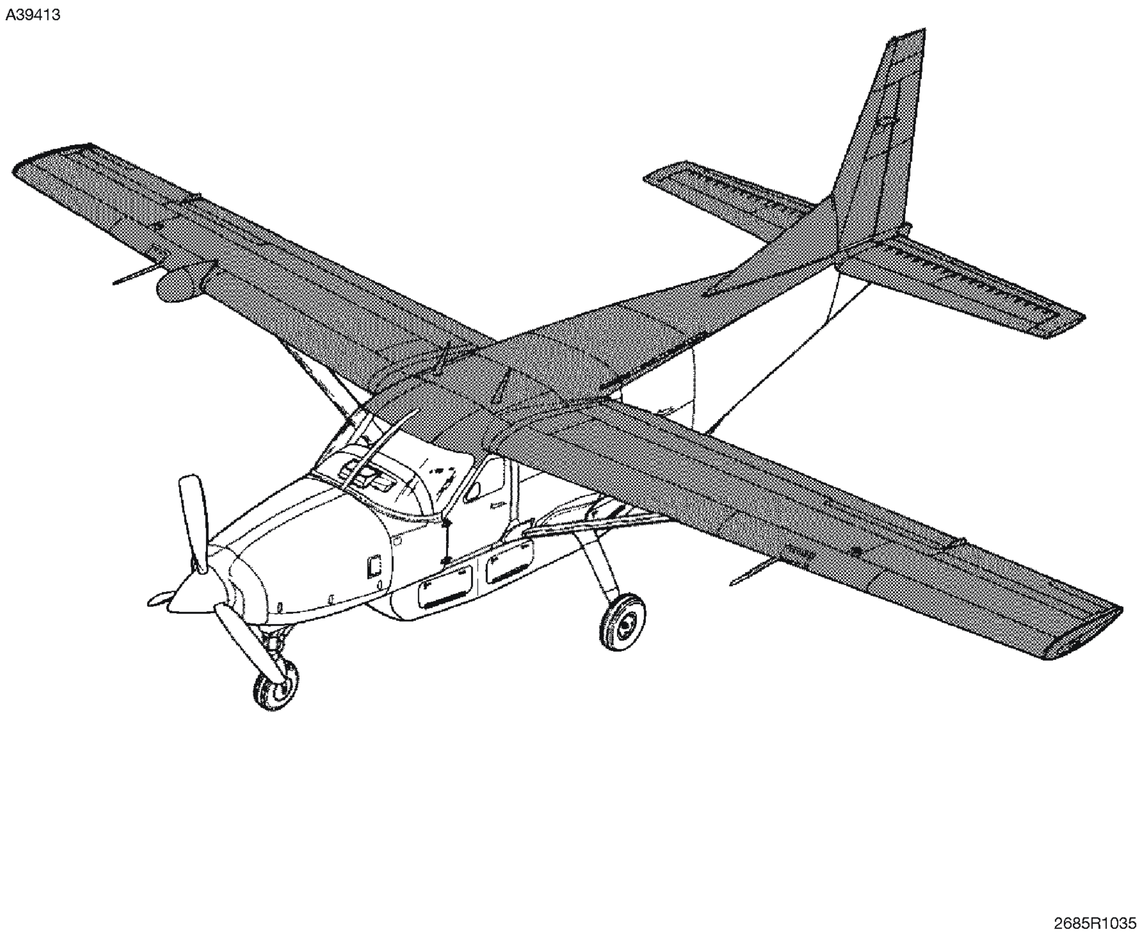
1. Give special attention to the gaps between the flight controls. All snow, ice, and slush must be removed from these gaps.
2. Remove snow, ice and slush from pitot tubes by hand only.

DIRECT SPRAY AVOIDANCE AREAS:

Engine Inlets and Exhaust, Brakes, Pitot-Static Tubes, Windshields, Cabin Windows, and Stall Warning Vane.

Figure 8-4

ESSENTIAL AREAS TO APPLY ANTI-ICE FLUID



SHADED AREAS INDICATE ESSENTIAL AREAS WHERE ANTI-ICE FLUID IS APPLIED.

NOTE

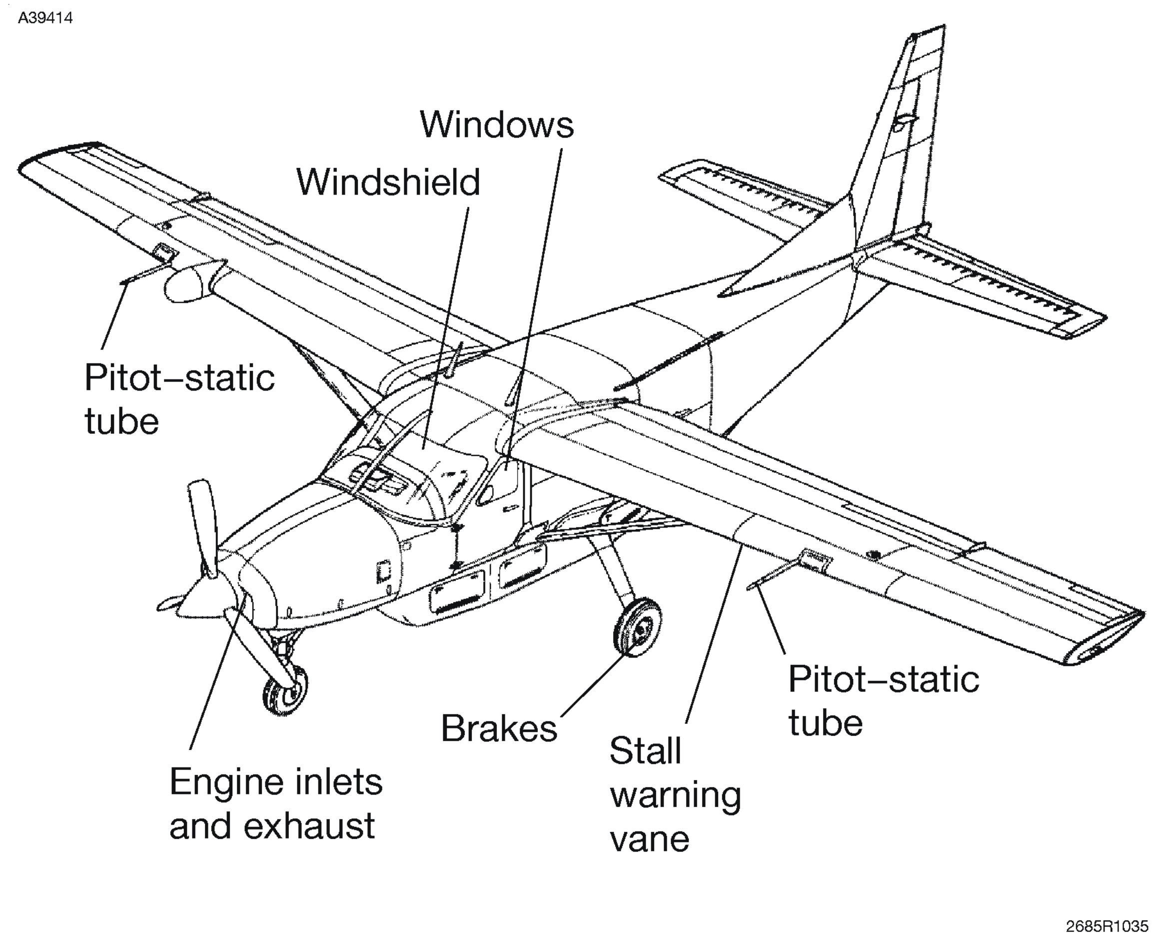
Anti-ice fluid must be applied at low pressure to form a thin film on surfaces. Fluid must just cover airplane without runoff.

DIRECT SPRAY AVOIDANCE AREAS:

Pitot-Static Tubes, Windshields, Cabin Windows, and Stall Warning Vane.

Figure 8-5

DEICE AND ANTI-ICE FLUID DIRECT SPRAY AVOIDANCE AREAS

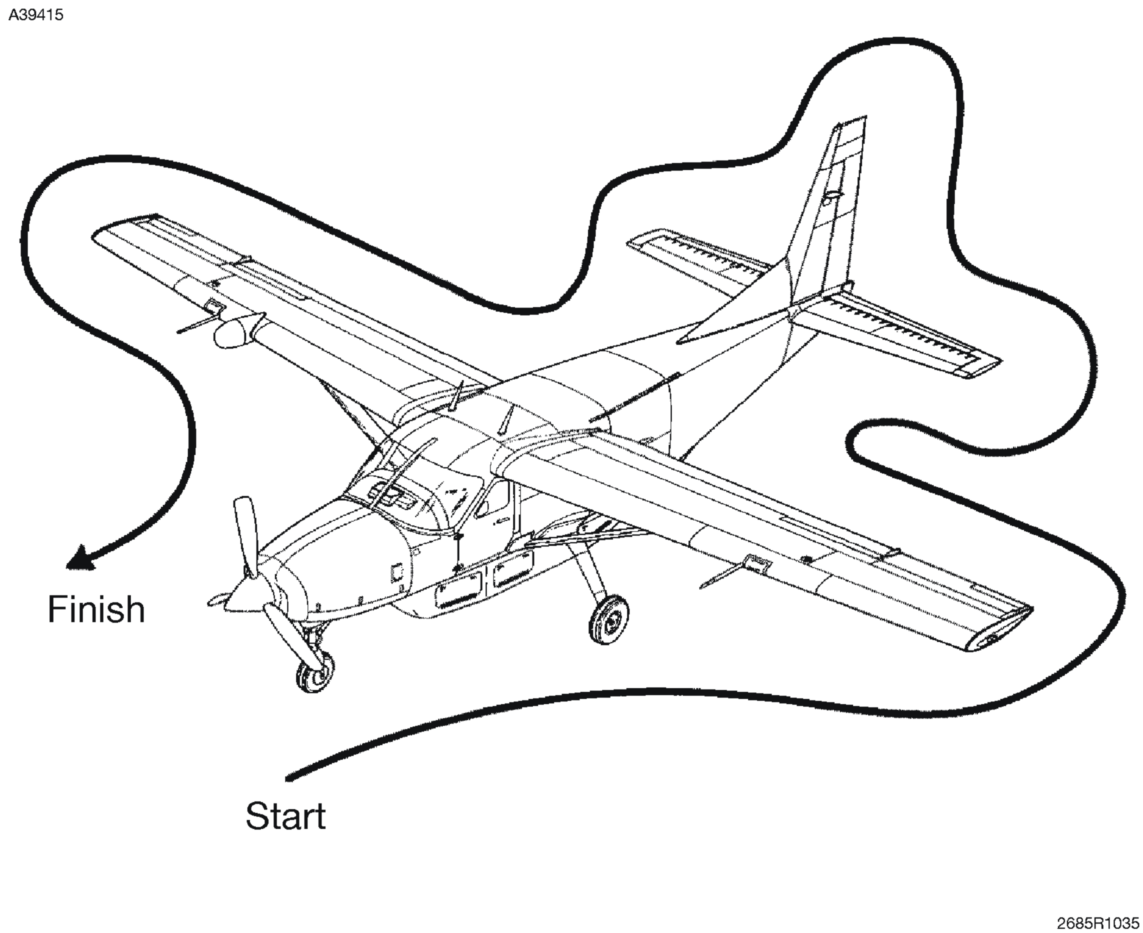


DIRECT SPRAY AVOIDANCE AREAS:

Engine Inlets and Exhaust, Brakes, Pitot-static Tubes, Windshields, Cabin Windows, and Stall Warning Vane.

Figure 8-6

DEICING AND ANTI-ICING APPLICATION



NOTE

By starting the deice and anti-ice application at the left front area of the airplane, the pilot can then get a conservative estimate of how quickly ice forms by observation from inside the cockpit. Because the cockpit is the first area deiced or anti-iced, it will be the first area where ice will form again.

Figure 8-7

CLEANING AND CARE

PAINTED SURFACES

The painted exterior surfaces of the Cessna 208B have a durable, long-lasting finish. Approximately 10 days are required for the paint to cure completely; in most cases, the curing period will have been completed prior to delivery of the airplane. In the event that polishing or buffing is required within the curing period, it is recommended that the work be done by someone experienced in handling uncured paint. Any Cessna Authorized Service Facility can accomplish this work.

Generally, the painted surfaces can be kept bright by washing with water and mild soap, followed by a rinse with water and drying with cloths or a chamois. Harsh or abrasive soaps or detergents that cause corrosion or scratches must never be used. Remove stubborn oil and grease with a cloth moistened with Stoddard solvent.

To seal any minor surface chips or scratches and protect against corrosion, the airplane must be waxed regularly with a good automotive wax applied in accordance with the manufacturer's instructions. If the airplane is operated in a sea coast or other salt water environment, it must be washed and waxed more frequently to assure adequate protection. Special care must be taken to seal around rivet heads and skin laps, which are the areas most susceptible to corrosion. A heavier coating of wax on the leading edges of the wings and tail and on the cowl nose cap and propeller spinner will help reduce the abrasion encountered in these areas. Reapplication of wax will generally be necessary after cleaning with soap solutions or after chemical deicing operations.

When the airplane is parked outside in cold climates and it is necessary to remove ice before flight, care must be taken to protect the painted surfaces during ice removal with chemical liquids. Isopropyl alcohol will satisfactorily remove ice accumulations without damaging the paint. However, keep the isopropyl alcohol away from the windshield and cabin windows since it will attack the plastic and may cause it to craze.

CLEANING AND CARE (Continued)

WINDSHIELD AND WINDOWS

The windshield and windows are constructed of cast acrylic. The surface hardness of acrylic is approximately equal to that of copper or brass. Do not use a canvas cover on the windshield unless freezing rain or sleet is anticipated. Canvas covers may scratch the plastic surface. When cleaning and waxing the windshield and windows, use only the following prescribed methods and materials.

MAINTENANCE PROCEDURES

The following procedures provide the most current information regarding cleaning and servicing windshields and windows. Improper cleaning or use of unapproved cleaning agents can cause damage to these surfaces.

CLEANING INSTRUCTIONS

CAUTION

- Windshields and windows (acrylic-faced) are easily easily damaged by improper handling and cleaning techniques.
- Do not use methanol, denatured alcohol, gasoline, benzene, xylene, methyl n-propyl ketone, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays on windshields or windows.

1. Place airplane inside hangar or in shaded area and allow to cool from heat of sun's direct rays.
2. Using clean (preferably running) water, flood the surface. Use bare hands with no jewelry to feel and dislodge any dirt or abrasive materials.

(Continued Next Page)

CLEANING AND CARE (Continued)

WINDSHIELD AND WINDOWS (Continued)

CLEANING INSTRUCTIONS (Continued)

3. Using a mild soap or detergent, such as a dishwashing liquid, and water to wash the windshield surfaces. Again, use only the bare hand to provide rubbing force. A clean cloth may be used to transfer the soap solution to the surface, but extreme care must be exercised to prevent scratching the surface.
4. When contaminants on acrylic windshields and windows cannot be removed by a mild detergent, Type II aliphatic naphtha, applied with a soft clean cloth, may be used as a cleaning solvent. Be sure to frequently refold cloth to avoid redepositing contaminants and/or scratching windshield with any abrasive particles.
5. Rinse surface thoroughly with clean fresh water and dry with a clean cloth.
6. Hard polishing wax should be applied to acrylic surfaces. (The wax has an index of refraction nearly the same as transparent acrylic and will tend to mask any shallow scratches on the windshield surface).
7. Acrylic surfaces may be polished using a polish meeting Federal Specification P-P-560 applied per the manufacturer's instructions.

CAUTION

When applying and removing wax and polish, use a clean, soft cloth, such as cotton or cotton flannel.

8. A Cessna approved rain repellent and surface conditioner may be used to increase the natural cleaning of the windshield during rain. Apply in accordance with manufacturers instructions. Caution must be used not to get rain repellent on painted surfaces surrounding the windshield.

CAUTION

REPCON is the only rain repellent conforming to Federal Specification MIL-W-6862 that is approved to use on Cessna Model 208 series airplanes.

CLEANING AND CARE (Continued)

WINDSHIELD AND WINDOWS (Continued)

PREVENTIVE MAINTENANCE

CAUTION

Utilization of the following techniques will help minimize windshield and window crazing.

1. Keep all surfaces of windshields and windows clean.
2. If desired, wax acrylic surfaces.
3. Carefully cover all surfaces during any painting, powerplant cleaning or other procedure that calls for the use of any type of solvents or chemicals.
4. The following coatings are approved for use in protecting surfaces from solvent attack:
   a. White Spray Lab, MIL-C-6799, Type I, Class II.
   b. WPL-3 Masking Paper - St. Regis, Newton, MA.
   c. 5 X N - Poly-Spotstick - St. Regis, Newton, MA.
   d. Protex 40 - Mask Off Company, Monrovia, CA and Southwest Paper Co., Wichita, KS.
   e. Protex 10VS - Mask Off Company, Monrovia, CA and Southwest Paper Co., Wichita, KS
   f. Scotch 344 Black Tape - 3M Company
5. Do not park or store the airplane where it might be subjected to direct contact with or vapors from: methanol, denatured alcohol, gasoline, benzene, xylene, MEK, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays, paint strippers, or other types of solvents.
6. Do not use solar screens or shields installed on inside of airplane or leave sunvisors up against windshield. The reflected heat from these items causes elevated temperatures which accelerate crazing.
7. Do not use power drill motor or powered device to clean, polish, or wax surfaces.

CLEANING AND CARE (Continued)

MATERIALS REQUIRED FOR ACRYLIC WINDSHIELDS AND WINDOWS

MATERIAL	MANUFACTURER	USE
Mild soap or detergent (hand dishwashing type without abrasives)	Commercially available	Cleaning windshields and windows.
Aliphatic naphtha Type II conforming to Federal Specification TT-N-95	Commercially available	Removing deposits that cannot be removed with mild soap solution on acrylic windshields and windows.
Polishing wax: (Refer to Note 1) Turtle Wax (paste) Great Reflections Paste Wax Slip-Stream Wax (paste)	 Turtle Wax, Inc. Chicago, IL 60638 E.I. duPont de Nemours and Co., (Inc.) Wilmington, DE 19898 Classic Chemical Grand Prairie, TX 75050	Waxing acrylic windshields and windows.
Acrylic polish conforming to Federal Specification P-P-560 such as: Permatex plastic cleaner Number 403D Mirror Glaze MGH-17	 Permatex Company, Inc. Kansas City, KS 66115 Mirror Bright Polish Co. Pasadena, CA	Cleaning and polishing acrylic windshields and windows.
Soft cloth, such as: Cotton flannel or cotton terry cloth material	Commercially available	Applying and removing wax and polish.
Rain repellent conforming to Federal Specification MIL-W-6882, such as: REPCON (Refer to Note 2)	UNELKO Corp. 7428 E. Karen Dr. Scottsdale, AZ 85260	Rain shedding on acrylic windshields.

NOTE

1. These are the only polishing waxes tested and approved for use by Cessna Aircraft Company.
2. This is the only rain repellent approved for use by Cessna Aircraft Company for use on Cessna Model 208B series airplanes.

Figure 8-8

CLEANING AND CARE (Continued)

STABILIZER ABRASION BOOT CARE

If the airplane is equipped with stabilizer abrasion boots, keep them clean and free from oil and grease, which can swell the rubber. Wash them with mild soap and water, using Form Tech AC cleaner or naphtha to remove stubborn grease. Do not scrub the boots and be sure to wipe off all solvent before it dries. Boots with loosened edges or small tears must be repaired. Your Cessna Authorized Service Facility has the proper material and knowledge how to do this correctly.

PROPELLER CARE

Always conduct a preflight inspection and occasionally wipe the blades with a cloth dampened with oil to clean off grass and bug stains, minimize corrosion, and assure a longer blade life. Waxing the blades with an automotive type paste wax on a regular basis will further minimize corrosion. Damaged or blistered paint must be repainted. During the preflight inspection, check the blades for nicks, gouges, scratches, corrosion pits, etc., the propeller hub for evidence of grease and oil leaks, and the propeller spinner for condition and security. Repair of small nicks and scratches may be performed by qualified mechanics in accordance with procedures specified in FAA Advisory Circular 43.13-1A. However, whenever a significant amount of metal is removed, or in the case of previously reworked blades that may be at or near minimum width and thickness limits, the appropriate Hartzell Service Manual must be consulted to determine if minimum allowable blade width and thickness limits have been exceeded. If these limits are exceeded, blade replacement is required. After filing and polishing, the damaged area must be inspected by the dye penetrant method to verify that all damage has been removed and the blade is not cracked. The area should then be reprotected by localized application of chemical film per MIL-C-5541 (e.g., Alodine) and repainted as necessary. Large nicks or scratches or other damage involving such things as bent blades, balance, diameter reduction, etc. must be corrected by an FAA approved propeller repair station.

CLEANING AND CARE (Continued)

ENGINE

ENGINE EXTERIOR/COMPARTMENT CLEANING

The engine exterior and compartment may be cleaned, using a suitable solvent, in accordance with instructions in the airplane Maintenance Manual. Most efficient cleaning is done using a spray type cleaner. Before spray cleaning, ensure that protection is afforded for components which might be adversely affected by the solvent. Refer to the 208 Maintenance Manual, Chapter 12-22-01, External - Cleaning/ Painting for approved cleaning procedures and Chapter 12-21-05, Engine Control Rod Ends - Servicing, for information on proper lubrication of controls and components after engine cleaning.

ENGINE COMPRESSOR WASH

The benefits of performance improvements and increased service life of hot section parts accruing from instituting a regular compressor wash program cannot be overemphasized. Compressor blade wash is accomplished to remove deposit buildup accumulated on compressor blades during normal operation. A compressor wash ring is installed on the top of the engine adjacent to the induction air inlet screen to facilitate this maintenance program. Refer to 208 Maintenance Manual, Chapter 71-42-00, Compressor Blade Wash - Maintenance Practices, for approved washing procedures.

Compressor washes can be performed by either motoring the engine with the starter or running the engine. Depending on the nature of the operating environment and the type of deposits in the engine gas path, either of the two wash methods can be used to remove salt or dirt and other baked-on deposits that accumulate over a period of time and cause engine performance deterioration. When the wash is performed solely to remove salt deposits, it is known as a “desalination” wash. A wash performed to remove baked on deposits to improve engine performance is known as a performance recovery wash. A motoring wash is conducted at a gas generator RPM of 14-25%; the running wash is carried out at an N_g of approximately 60% (23,000 RPM). The water or cleaning mixture and rinsing solution, dependent on ambient temperature, is injected at different pressure, depending on the wash method being conducted.

(Continued Next Page)

CLEANING AND CARE (Continued)

ENGINE (Continued)

ENGINE COMPRESSOR WASH (Continued)

Operating environment determines the nature of the wash, the frequency, and wash method recommended. If operating in a continuously salt-laden environment, a desalination wash is recommended following the last flight of the day by means of the motoring method. Occasionally, salt-laden environments may necessitate a desalination wash each week using the motoring method. Less severe and more general operating environments are not as conducive to rapid deposit buildup but eventually can contribute to performance deterioration and necessitate a performance recovery wash at intervals of 100-200 hours. In these general environments, a motoring wash is recommended for light soil and multiple motoring or a running wash is suggested for heavy soil.

CAUTION

Observe engine starting cycle limits when conducting motoring wash procedures. Refer to Section 2, Limitations, Powerplant Limitations, for details on Engine Starting Cycle limits.

A number of cleaning agents are recommended for addition to water to form the cleaning solution used for compressor wash. However, the mixture proportion of all the cleaning agents is not identical. Depending on the prevalent ambient temperature, aviation kerosene and methanol must be added to the cleaning solution in various proportions. The quality of the water used is also important; any drinking quality water is permissible for a motoring wash, but demineralized water only is recommended for a running wash. Detailed information concerning the cleaning mixture components, mixture formulation, recommended quantity and application equipment can be found in Pratt & Whitney Aircraft Gas Turbine Operation Information Letter No. 7.

CLEANING AND CARE (Continued)

ENGINE (Continued)

COMPRESSOR TURBINE BLADE WASH

Pratt & Whitney Canada has developed a procedure for performing a compressor turbine blade motoring wash. This technique will facilitate the removal of contaminants from the compressor turbine blade airfoil surfaces, thereby minimizing sulphidation attack of these surfaces. This serves as an aid for obtaining optimum blade service life. With this method, a water or water/methanol solution is injected directly into the combustion chamber by way of a special spray tube which is installed in one of the igniter plug ports. This method of engine wash does not replace the need for a normal engine compressor wash for performance recovery or desalination purposes.

Compressor turbine blade washing is accomplished using water of drinking quality (potable) only at ambient temperatures of +2°C (36°F) and above. Use a water/methanol solution at ambient temperatures below +2°C (36°F). Refer to 208 Maintenance Manual, Chapter 71-43-00, Turbine Blade Wash - Maintenance Practices, for approved washing procedures and the Pratt & Whitney, PT6A-140 Engine Maintenance Manual, for solution strength according to ambient temperature.

CLEANING AND CARE (Continued)

INTERIOR CARE

The instrument panel, control wheel, and control knobs need only be wiped off with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with Stoddard solvent. Volatile solvents must never be used since they soften and craze the plastic.

CAUTION

Do not use any of the following solvents for cleaning of the interior or interior components: methanol, denatured alcohol, gasoline, benzene, xylene, MEK, acetone, carbon tetrachloride, lacquer thinners, commercial or household window cleaning sprays. When in doubt about any product, do not use it.

The plastic trim, headliner, door panels, and floor covering in the crew area of both versions and the rear cabin headliner and sidewalls of the Passenger Version need only be wiped off with a damp cloth. In Cargo Versions, the sidewalls, cargo doors, and overhead in the cargo area are not easily soiled or stained. Dust and loose dirt must be picked up with a vacuum cleaner. Stubborn dirt can be wiped off with a cloth moistened in clean water. Mild soap suds, used sparingly, will remove grease. The soap must be removed with a clean damp cloth.

To remove dust and loose dirt from the upholstery and carpet, clean the interior regularly with a vacuum cleaner.

Blot up any spilled liquid promptly with cleansing tissue or rags. Don't pat the spot; press the blotting material firmly and hold it for several seconds. Continue blotting until no more liquid is taken up. Scrape off sticky materials with a dull knife, then spot clean the area.

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CLEANING AND CARE (Continued)

INTERIOR CARE (Continued)

Oily spots may be cleaned with household spot removers, used sparingly. Before using any solvent, read the instructions on the container and test it on an obscure place on the fabric to be cleaned. Never saturate the fabric with a volatile solvent; it may damage the padding and backing materials.

Soiled upholstery and carpet may be cleaned with foam type detergent, used according to the manufacturer's instructions. To minimize wetting the fabric, keep the foam as dry as possible and remove it with a vacuum cleaner.

The protective plywood floor panels (if installed) and aft bulkhead covering in the cargo area must be vacuum cleaned to remove dust and dirt. A cloth moistened with water will aid in removing heavy soil. Do not use excessive amounts of water, which would deteriorate the protective floor panels.

For complete information related to interior cleaning, refer to the 208 Maintenance Manual, Chapter 12-23-01, Interior - Cleaning/Painting.

AVIONICS CARE

The Garmin GDU displays have an anti-reflective coating that is very sensitive to skin oils, waxes, ammonia, and abrasive cleaners. Clean the displays as described in the Garmin G1000 Cockpit Reference Guide.

PROLONGED OUT OF SERVICE CARE

Prolonged out of service care applies to all airplanes that will not be flown for an indefinite period (less than 60 days) but which are to be kept ready to fly with the least possible preparation. If the airplane is to be stored temporarily or indefinitely, refer to the 208 Maintenance Manual, Chapter 10-11-00, Storage - Maintenance Practices, for proper storage procedures. The Maintenance Manual provides amplification for the following procedures:

1. The procedure to be followed for preservation of an engine in service depends on the period of inactivity and whether or not the engine may be rotated during the inactive period. The expected period of inactivity must be established and reference made to the Engine Preservation Schedule. The preservation carried out must be recorded in the engine maintenance record and on tags secured to the engine. The following preservation schedule lists procedures to be followed:

CAUTION

Under no circumstances should preservative oil be sprayed into the compressor or exhaust ports of the engine. Dirt particles deposited on blades and vanes during engine operation will adhere and alter the airfoil shape, adversely affecting compressor efficiency.

   a. 0 to 7 Days - The engine may be left in an inactive state, with no preservation protection, provided the engine is sheltered, humidity is not excessively high, and the engine is not subjected to extreme temperature changes that would produce condensation.
   b. 8 to 28 Days - An engine inactive for up to 28 days requires no preservation, provided all engine openings are sealed off and relative humidity in the engine is maintained at less than 40%. Humidity control is maintained by placing desiccant bags and a humidity indicator on wooden racks in engine primary exhaust duct. Suitable windows must be provided in the exhaust closure to facilitate observation of the humidity indicators.

(Continued Next Page)

PROLONGED OUT OF SERVICE CARE (Continued)

c. 29 to 90 Days - An engine inactive for a period exceeding 28 days, but less than 91 days, need only have the fuel system preserved, engine openings covered, and desiccant bags and humidity indicators installed.

d. 91 Days and Over - An engine inactive over 90 days in the airframe or removed for long-term storage in a container, must, in addition to the 29 to 90 day procedure, have the engine oil drained and unused accessory drive pads sprayed.

2. Place a cover over the pitot tube and install the two engine inlet covers. To prevent the propeller from windmilling, install the propeller anchor over a blade of the propeller and secure the strap around the nose gear or to the bracket located on the lower right hand cowl. Cover all other openings to prevent entry of foreign objects.
3. Keep the fuel tanks full to minimize condensation in the tanks.
4. If the airplane will be out of service for 5 days or more, disconnect the battery. If the battery is left in the airplane, it must be removed and serviced regularly to prevent discharge. If the battery is removed from the airplane, check it regularly for state of charge.
5. If the airplane is stored outside, tiedown the airplane in accordance with the procedure in this section. Chock the nose and main wheels; do not set the parking brake if a long period of inactivity is anticipated as brake seizing can result.
6. Either block up fuselage to relieve pressure on tires or rotate wheels every two weeks to prevent flat areas on tires. Mark tires with tape to ensure tire is placed approximately 90 degrees from previous position.
7. Drain all fuel drain points every 30 days and check for water accumulation. Prolonged storage of the airplane will result in a water buildup in the fuel which “leaches out” the fuel additive. An indication of this is when an excessive amount of water accumulates at the fuel drain points. Refer to Fuel Additive in this section for minimum allowable additive concentrations.

SUPPLEMENTS

INTRODUCTION

The supplements in this section contain amended operating limitations, operating procedures, performance data and other necessary information for airplanes conducting special operations for both standard and optional equipment installed in the airplane. Operators should refer to each supplement to ensure that all limitations and procedures appropriate for their airplane are observed.

A non FAA Approved Log Of Approved Supplements is provided for convenience only. This log is a numerical list of all FAA Approved supplements applicable to this airplane by name, supplement number and revision level. This log should be used as a checklist to ensure all applicable supplements have been placed in the Pilot's Operating Handbook (POH). Supplements for both standard and installed optional equipment must be maintained to the latest revision. Those supplements applicable to optional equipment which is not installed in the airplane, do not have to be retained.

Each individual supplement contains its own Log of Effective Pages. This log lists the page number and revision level of every page in the supplement. The log also lists the dates on which revisions to the supplement occurred. Supplement page numbers will include an S and the supplement number preceding the page number.

The part number of the supplement provides information on the revision level. Refer to the following example:

208BPHCUS -S1 -00

- -00 — Revision Level of Supplement
- -S1 — Supplement Number
- 208BPHCUS — Cessna 208B, 867 SHP, Garmin G1000, U.S. Pilot's Operating Handbook (Serials 208B2197 and 208B5000 and On)

SUPPLEMENTS

INTRODUCTION (Continued)

WARNING

- **Complete familiarity with the airplane and its systems will not only increase the pilot's proficiency and ensure optimum operation, but could provide a basis for analyzing system malfunctions in case an emergency is encountered. Information in this section will assist in that familiarization. The responsible pilot will want to be prepared to make proper and precise responses in every situation.**
- **Limitations contained in the following supplements are FAA approved. Observance of these operating limitations is required by Federal Aviation Regulations.**

NOTE

Some supplements contain references to equipment manufacturers pilot’s manuals which are supplied with the airplane at the time of delivery from the factory, or whenever equipment is installed after delivery. These manuals must be kept up-to-date with the latest revisions issued by the publisher. These vendor manuals contain a user registration form or instructions for obtaining future revisions or changes.

LOG OF APPROVED SUPPLEMENTS

NOTE

It is the airplane owner's responsibility to make sure that he or she has the latest revision to each supplement of a Pilot's Operating Handbook, and the latest issued “Log of Approved Supplements”. This “Log of Approved Supplements” was the latest version as of the date it was shipped by Cessna; however, some changes may have occurred, and the owner should verify this is the latest, most up-to-date version by contacting Cessna Customer Care at (316) 517-5800.

Supplement Number	Name	Revision Level	Equipment Installed
1	Reserved		
2	Artex ME406 Emergency Locator Transmitter (ELT)	0	
3	Artex C406-N Emergency Locator Transmitter (ELT)	0	
4	Garmin G1000 Synthetic Vision Technology (SVT)	0	
5	Configuration Deviation List (CDL)	0	
6	Oxygen System	0	
7	Air Conditioning System	0	
8	300 Amp Starter Generator	0	
9	Bendix/King KR 87 Automatic Direction Finder (ADF)	0	
10	Reserved		
11	Reserved		
12	Dual Garmin GMA 1347 Audio Panels	0	
13	Honeywell KHF-1050 HF Transceiver with PS 440 Control Display Unit	0	
14	115 Volt AC Power Outlets	0	
15	Nickel Cadmium (NiCAD) Battery	0	

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Pilot's Operating Handbook And FAA Approved Airplane Flight Manual

GRAND CARAVAN EX

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SUPPLEMENT 2

ARTEX ME406 EMERGENCY LOCATOR TRANSMITTER (ELT)

SERIAL NO.____________________

REGISTRATION NO.________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Artex ME406 Emergency Locator Transmitter (ELT) is installed.

APPROVED BY Chad M. Groene
for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
FAA Approved Under 14 CFR Part 183 Subpart D

DATE OF APPROVAL 19 December 2012

Member of GAMA

19 DECEMBER 2012

SUPPLEMENT 2

ARTEX ME406 EMERGENCY LOCATOR TRANSMITTER (ELT)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	**Date**
Original Issue	19 December 2012

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number
S2-1 thru S2-8	Original	0

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

ARTEX ME406 EMERGENCY LOCATOR TRANSMITTER (ELT)

GENERAL

The Artex ME406 Emergency Locator Transmitter (ELT) installation uses a solid-state 2-frequency transmitter powered by an internal lithium battery. The ME406 is also equipped with an instrument panel-mounted remote switch assembly, that includes a red warning light, and an external antenna mounted on the top of the tailcone. The remote switch assembly is installed along the upper right side of the instrument panel and controls ELT operating modes from the flight crew station. When the remote switch is set to the ARM position, the transmitter is energized only when the internal G switch senses longitudinal inertia forces per TSO-C91a/TSO-C126. When the remote switch is set to the ON position, the transmitter is immediately energized.

The ME406 transmitter unit is located in the dorsal fin. On the ELT transmitter unit is a panel containing an ARM/ON Switch and a transmitter warning light.

The ELT installation uses two different warnings to tell the pilot when the ELT is energized. The aural warning is an unusual buzzing sound that is easily heard by the pilot. The visual warning is a flashing red light directly above the remote switch that shows the pilot that the ELT has been activated.

When the ME406 is energized, the ELT transmits the standard swept tone signal on the international VHF frequency of 121.5 MHz until battery power is gone. The 121.5 MHz signal is mainly used to pinpoint the beacon during search and rescue operations, and is monitored by general aviation, commercial aircraft, and government agencies.

In addition, for the first 24 hours of the ELT being energized, a 406.028 MHz signal is transmitted at 50 second intervals. This transmission lasts 440 milliseconds and contains identification data programmed into the ELT and is received by COSPAS/SARSAT satellites. The transmitted data may include the Aircraft ID, ELT Serial Number, Country Code, and COSPAS/SARSAT ID.

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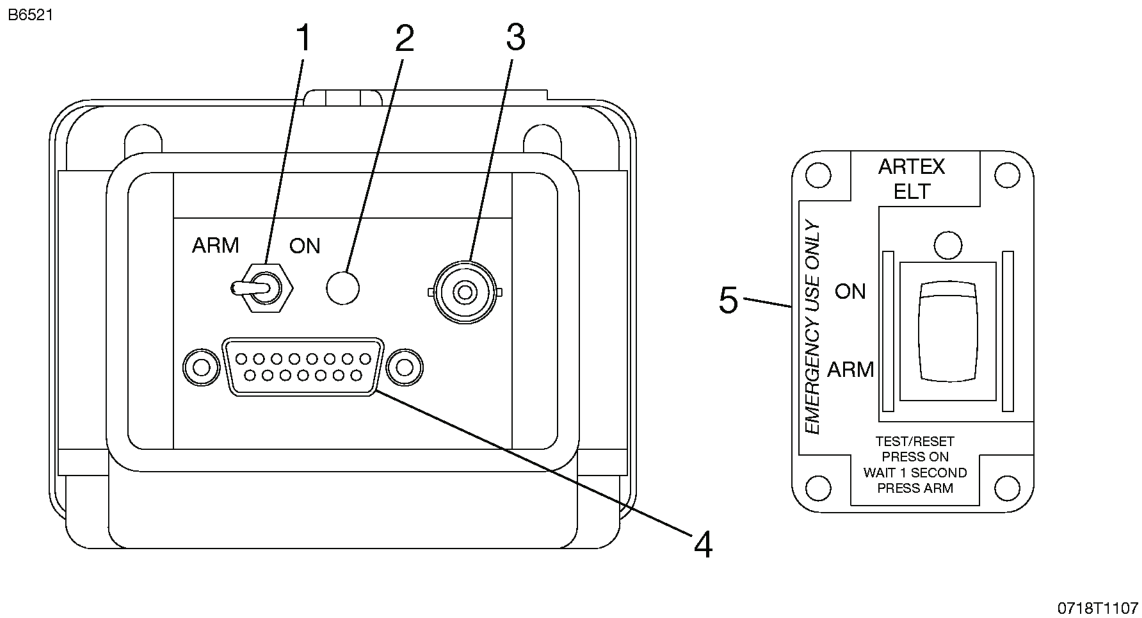
ARTEX ME406 ELT CONTROL PANEL



1. ELT PANEL SWITCH (Two-Position Toggle Switch):
   a. ARM (OFF) - Turns OFF and ARMS transmitter for automatic activation if G switch senses a predetermined deceleration level.
   b. ON - Activates transmitter instantly. The ON position bypasses the automatic activation switch. The RED warning light on ELT panel and on the remote switch assembly mounted on the instrument panel should come on.
2. TRANSMITTER WARNING LIGHT - Light comes on RED to indicate the transmitter is transmitting a distress signal.
3. ANTENNA RECEPTACLE - Connects to the antenna mounted on top of tailcone.
4. 15-PIN D-SUB RECEPTACLE - Connects to the ELT remote switch assembly located on the upper right side of the instrument panel.
5. REMOTE SWITCH ASSEMBLY - (Two-Position Rocker Switch):
   a. ARM (OFF) - Turns OFF and ARMS transmitter for automatic activation if G switch senses a predetermined deceleration level.
   b. ON - Remotely activates the transmitter for test or emergency situations. The RED warning light above the rocker switch comes on to indicate that the transmitter is transmitting a distress signal.

Figure S2-1

OPERATING LIMITATIONS

There are no additional airplane operating limitations when the Artex ME406 ELT is installed.

The airplane owner or operator must register the ME406 ELT with the applicable Civil Aviation Authority before use to make sure that the identification code transmitted by the ELT is in the COSPAS/SARSAT database. Refer to www.cospas-sarsat.org for registration information.

Refer to 14 CFR 91.207 for ELT inspection requirements. The ME406 must be inspected and tested by an approved technician using the correct test equipment under the appropriate Civil Aviation Authorities approved conditions.

EMERGENCY PROCEDURES

If a forced landing is necessary, set the remote switch to the ON position before landing. This is very important in remote or mountainous terrain. The red warning light above the remote switch will flash and the aural warning will be heard.

After a landing when search and rescue aid is needed, use the ELT as follows:

NOTE

The ELT remote switch assembly could be inoperative if damaged during a forced landing. If inoperative, the inertia G switch will activate automatically. However, to turn the ELT OFF and ON again requires manual switching of the ELT panel switch which is located on the ELT unit.

1. MAKE SURE THE ELT IS ENERGIZED:
   a. If the red warning light above the remote switch is not flashing, set the remote switch to the ON position.
   b. Listen for the aural warning. If the COM radio(s) operate and can be energized safely (no threat of fire or explosion), energize a COM radio and set the frequency to 121.5 MHz. The ELT tone should be heard on the COM radio if the ELT is working correctly. When done, de-energize the COM radio(s) to conserve the airplane battery power.
   c. Make sure that nothing is touching or blocking the ELT antenna.
2. AFTER RESCUE - Set the remote switch to the ARM position to de-energize the ELT. If the remote switch does not function, set the switch on the ME406 (in the dorsal fin) to the ARM position.

NORMAL PROCEDURES

When operating in a remote area or over hazardous terrain, it is recommended that the ELT be inspected by an approved technician more frequently than required by 14 CFR 91.207.

NORMAL OPERATION

1. Check that the remote switch (on the upper right instrument panel) is set to the ARM position.

Normal operation of the ME406 from the co-pilot station is only to de-energize and arm the ELT after it has been accidentally energized (no emergency).

The ELT can be energized by a lightning strike or hard landing. If the red light above the remote switch is flashing and the aural warning is heard, the ELT is energized. Check for the emergency signal on a COM radio set to 121.5 MHz. To stop the transmissions, set the remote switch to the ON position momentarily and then set to the ARM position. Tell the nearest Air Traffic Control facility about the accidental transmissions as soon as possible to hold search and rescue work to a minimum.

PERFORMANCE

There is no change to the airplane performance when the Artex ME406 ELT is installed.

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Pilot's Operating Handbook And FAA Approved Airplane Flight Manual

GRAND CARAVAN EX

CESSNA MODEL 208B

867 SHP - GARMIN G1000

Serials 208B2197 and 208B5000 and On

SUPPLEMENT 3

ARTEX C406-N
EMERGENCY LOCATOR TRANSMITTER (ELT)

SERIAL NO.____________________
REGISTRATION NO.________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Artex C406-N Emergency Locator Transmitter (ELT) is installed.

APPROVED BY Chad M. Groene
for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
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DATE OF APPROVAL 19 December 2012

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SUPPLEMENT 3

ARTEX C406-N EMERGENCY LOCATOR TRANSMITTER (ELT)

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

ARTEX C406-N EMERGENCY LOCATOR TRANSMITTER (ELT)

GENERAL

The Artex C406-N Emergency Locator Transmitter (ELT) installation uses a solid-state 3-frequency transmitter powered by an internal lithium battery. The navigation function of the C406-N ELT receives power from the airplane's main battery thru AVIONICS BUS 1. The C406-N is also equipped with an instrument panel-mounted remote switch assembly, that includes a red warning light, and an external antenna mounted on the top of the tailcone. The remote switch assembly is installed along the upper right side of the instrument panel and controls ELT operating modes from the flight crew station. When the remote switch is set to the ARM position, the transmitter is energized only when the internal G Switch senses longitudinal inertia forces per TSO-C91a/TSO-C126. When the remote switch is set to the ON position, the transmitter is immediately energized.

The C406-N transmitter unit is located in the dorsal fin (right side). On the ELT transmitter unit is a panel containing an ON/OFF Switch and a transmitter warning light.

The ELT installation uses two different warnings to tell the pilot when the ELT is energized. The aural warning is an unusual buzzing sound that is easily heard by the pilot. The visual warning is a flashing red light directly above the remote switch that shows the pilot that the ELT has been activated.

When the C406-N is energized, the ELT transmits the standard swept tone signal on the international VHF frequency of 121.5 MHz and UHF frequency of 243.0 MHz until battery power is gone. The 121.5 MHz signal is mainly used to pinpoint the beacon during search and rescue operations, and is monitored by general aviation, commercial aircraft, and government agencies.

In addition, for the first 24 hours of the ELT being energized, a 406.028 MHz signal is transmitted at 50 second intervals. This transmission lasts 440 milliseconds and contains identification data programmed into the ELT and is received by COSPAS/SARSAT satellites. The transmitted data may include the Aircraft ID, GPS coordinates, ELT Serial Number, Country Code, and COSPAS/SARSAT ID.

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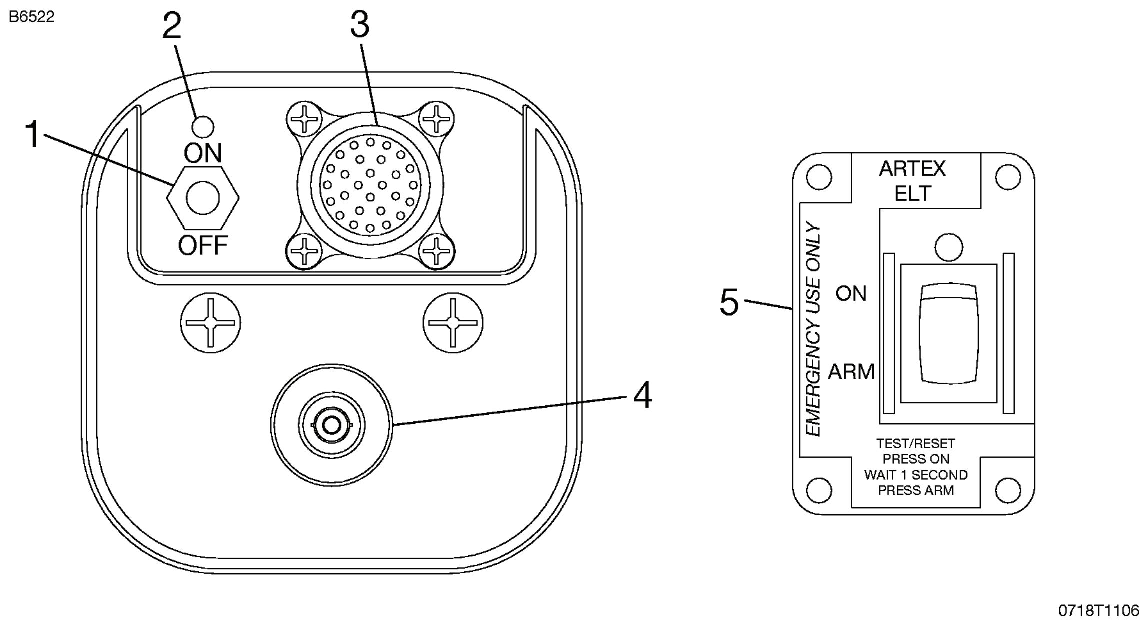
ARTEX C406-N ELT CONTROL PANEL



1. ELT PANEL SWITCH (Two-Position Toggle Switch):
   a. ARM (OFF) - Turns OFF and ARMS transmitter for automatic activation if G Switch senses a predetermined deceleration level.
   b. ON - Activates transmitter instantly. The ON position bypasses the automatic activation switch. The RED warning light on ELT panel and on the remote switch assembly mounted on the instrument panel should come on.
2. TRANSMITTER WARNING LIGHT - Light comes on RED to indicate the transmitter is transmitting a distress signal.
3. ANTENNA RECEPTACLE - Connects to the antenna mounted on top of tailcone.
4. REMOTE CABLE JACK - Connects to the ELT remote switch assembly located on the upper right side of the instrument panel.
5. REMOTE SWITCH ASSEMBLY - (Two-Position Rocker Switch):
   a. ARM (OFF) - Turns OFF and ARMS transmitter for automatic activation if G Switch senses a predetermined deceleration level.
   b. ON - Remotely activates the transmitter for test or emergency situations. The RED warning light above the rocker switch comes on to indicate that the transmitter is transmitting a distress signal.

Figure S3-1

OPERATING LIMITATIONS

There are no additional airplane operating limitations when the Artex C406-N ELT is installed.

The airplane owner or operator must register the C406-N ELT with the applicable Civil Aviation Authority before use to make sure that the identification code transmitted by the ELT is in the COSPAS/SARSAT database. Refer to www.cospas-sarsat.org for registration information.

Refer to 14 CFR 91.207 for ELT inspection requirements. The C406-N must be inspected and tested by an approved technician using the correct test equipment under the appropriate Civil Aviation Authorities approved conditions.

EMERGENCY PROCEDURES

If a forced landing is necessary, set the remote switch to the ON position before landing. This is very important in remote or mountainous terrain. The red warning light above the remote switch will flash and the aural warning will be heard.

After a landing when search and rescue aid is needed, use the ELT as follows:

NOTE

The ELT remote switch assembly could be inoperative if damaged during a forced landing. If inoperative, the inertia G Switch will activate automatically. However, to turn the ELT OFF and ON again requires manual switching of the ELT panel switch which is located on the ELT unit.

1. MAKE SURE THE ELT IS ENERGIZED**:**
   a. If the red warning light above the remote switch is not flashing, set the remote switch to the ON position.
   b. Listen for the aural warning. If the COM radio(s) operate and can be energized safely (no threat of fire or explosion), energize a COM radio and set the frequency to 121.5 MHz. The ELT tone should be heard on the COM radio if the ELT is working correctly. When done, de-energize the COM radio(s) to conserve the airplane battery power.
   c. Make sure that nothing is touching or blocking the ELT antenna.
2. AFTER RESCUE - Set the remote switch to the ARM position to de-energize the ELT. If the remote switch does not function, set the switch on the C406-N (in the dorsal fin) to the ARM position.

NORMAL PROCEDURES

When operating in a remote area or over hazardous terrain, it is recommended that the ELT be inspected by an approved technician more frequently than required by 14 CFR 91.207.

NORMAL OPERATION

1. Check that the remote switch (on the upper right instrument panel) is set to the ARM position.

Normal operation of the C406-N from the co-pilot station is only to de-energize and arm the ELT after it has been accidentally energized (no emergency).

The ELT can be energized by a lightning strike or hard landing. If the red light above the remote switch is flashing and the aural warning is heard, the ELT is energized. Check for the emergency signal on a COM radio set to 121.5 MHz. To stop the transmissions, set the remote switch to the ON position momentarily and then set to the ARM position. Tell the nearest Air Traffic Control facility about the accidental transmissions as soon as possible to hold search and rescue work to a minimum.

PERFORMANCE

There is no change to the airplane performance when the Artex C406-N ELT is installed.

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Pilot's Operating Handbook And FAA Approved Airplane Flight Manual

GRAND CARAVAN EX

CESSNA MODEL 208B

867 SHP - GARMIN G1000

Serials 208B2197 and 208B5000 and On

SUPPLEMENT 4

GARMIN G1000 SYNTHETIC VISION TECHNOLOGY (SVT)

SERIAL NO.______________________

REGISTRATION NO.________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Garmin G1000 Synthetic Vision Technology (SVT) is installed.

APPROVED BY Chad M. Groene
for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
FAA Approved Under 14 CFR Part 183 Subpart D

Member of GAMA

DATE OF APPROVAL 19 December 2012

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SUPPLEMENT 4

GARMIN G1000 SYNTHETIC VISION TECHNOLOGY

Use the Log of Effective Pages to determine the current status of this supplement.

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

GARMIN G1000 SYNTHETIC VISION TECHNOLOGY

GENERAL

The Garmin G1000 Synthetic Vision Technology (SVT) is primarily composed of a computer-generated, forward looking attitude aligned view of the topography immediately in front of the airplane from the pilot's perspective. The SVT information is shown on the Primary Flight Display (PFD) and offers a three dimensional view of potentially hazardous terrain, obstacles and traffic complete with the requisite red or yellow shading overlaid. For complete system description and operation, refer to the Garmin G1000 Cockpit Reference Guide (CRG).

NOTE

Not all airport runways are depicted with SVT.

OPERATING LIMITATIONS

The G1000 limitations listed in Section 2, of the POH apply when using SVT. In addition, SVT is not available in locations north of 75° North latitude or south of 60° South latitude due to the absence of terrain data in these geographical areas.

Airplane maneuvering in any flight phase shall not be based solely on information from the G1000 SVT. SVT shall not be used as the primary means of terrain, obstacle or traffic avoidance.

The G1000 SVT shall not be used for primary flight guidance.

Descent below published IFR minimums shall not be predicated upon the use of G1000 SVT.

The G1000 SVT Pathways are not a substitute for standard course and altitude deviation information provided by the primary lateral and vertical guidance.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

The following limitation applies only to EASA registered airplanes:

- The G1000 SVT Pathways shall not be used while the Flight Director is in use. Pathways guidance must be deselected to reduce PFD display clutter when the Flight Director is displayed.

The current Garmin G1000 Cockpit Reference Guide Part number for SVT that must be available to the pilot during flight is displayed on the MFD AUX group, SYSTEM STATUS page.

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when the Garmin G1000 Synthetic Vision Technology is installed.

ABNORMAL PROCEDURES

G1000 SVT PATHWAYS MALFUNCTION OR ERRONEOUS LATERAL AND/OR VERTICAL GUIDANCE

If G1000 SVT Pathways malfunctions or provides an erroneous indication contrary to the primary lateral and vertical guidance, use the following procedure to turn off SVT Pathways:

1. PFD Softkey . . . . **PRESS** (on PFD bezel)
2. SYN VIS Softkey. . . . . **PRESS** (on PFD bezel)
3. Pathway Softkey . . . . **PRESS** (on PFD bezel)
   (verify SVT Pathway guidance is removed from the PFD display)

NORMAL PROCEDURES

There is no change to the airplane normal procedures when the Garmin G1000 Synthetic Vision Technology is installed.

PERFORMANCE

There is no change to the airplane performance when the Garmin G1000 Synthetic Vision Technology is installed.

WEIGHT AND BALANCE

There is no change to the airplane weight and balance when the Garmin G1000 Synthetic Vision Technology is installed.

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Pilot's Operating Handbook And FAA Approved Airplane Flight Manual

GRAND CARAVAN EX

CESSNA MODEL 208B

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SUPPLEMENT 5

CONFIGURATION DEVIATION LIST (CDL)

SERIAL NO.________________________

REGISTRATION NO.__________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

APPROVED BY Chad M. Groene

for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
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SUPPLEMENT 5

CONFIGURATION DEVIATION LIST (CDL)

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Page Number	Page Status	Revision Number
S5-1 thru S5-6	Original	0

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

CONFIGURATION DEVIATION LIST

GENERAL

This supplement is part of, and must be placed in, the Pilots Operating Handbook and basic FAA Approved Airplane Flight Manual (POH/AFM). The information contained herein supplements the information of the POH/AFM. For limitations, procedures and performance information not contained in this supplement, consult the POH/AFM. This supplement, Configuration Deviation List (CDL) contains additional certification limitations for operations without secondary airframe parts.

OPERATING LIMITATIONS

1. When the airplane is operated using the CDL, it must be operated in accordance with the limitations specified in the POH/AFM, as amended in the CDL.
2. The associated limitations must be listed on a placard affixed in the cockpit in clear view of the pilot in command and other appropriate crew member(s).
3. The pilot in command must be notified of each operation with a missing part(s) by listing the missing part(s) in the flight or dispatch release. If a flight or dispatch release system is not used, other appropriate means can be used to notify the pilot in command.
4. The operator must list in the airplane logbook an appropriate notation covering the missing part(s).
5. If an additional part is lost in flight, the airplane may not depart the airport at which it landed following this event, until it again complies with the limitations of the CDL. This, of course, does not preclude the issuance of a ferry permit to allow the airplane to be flown to a point where the necessary repairs or replacements can be made.
6. Flight into known or forecasted icing conditions is prohibited with missing TKS Leading Edge Vortex Generator(s).

CONFIGURATION DEVIATION LIST

The numbering and designation of systems in the CDL appendix is based on Air Transport Association (ATA) Specification Number 2200. The parts within each system are identified by functional description and, when necessary, by part numbers.

ATA	System or Unit	1. Number Installed	2. Number Required for Dispatch	Requirements for Flight
57	Wings			
	1. TKS Leading Edge Vortex Generators	20	16	No more than two non-adjacent vortex generators per wing may be missing. Flight into known or forecast icing is prohibited.*

* The performance decrement is negligible.

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when utilizing the Configuration Deviation List (CDL).

NORMAL PROCEDURES

There is no change to the airplane normal procedures when utilizing the Configuration Deviation List (CDL).

PERFORMANCE

There is no change to the airplane performance when utilizing the Configuration Deviation List (CDL).

WEIGHT AND BALANCE

There is no change to the airplane weight and balance when utilizing the Configuration Deviation List (CDL).

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SUPPLEMENT 6

OXYGEN SYSTEM

SERIAL NO.____________________

REGISTRATION NO.________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Oxygen System is installed.

APPROVED BY Chad M. Groene

for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
FAA Approved Under 14 CFR Part 183 Subpart D

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SUPPLEMENT 6

OXYGEN SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

OXYGEN SYSTEM

GENERAL

The oxygen system provides supplemental oxygen necessary for continuous flight at high altitude. The oxygen system contains two ports in the cockpit with either an extra 8 (10 total) or extra 15 (17 total) in the cabin.

The small capacity oxygen cylinder of 51 cubic foot supplies oxygen to the two-port system. The larger capacity oxygen cylinder of 117 cubic foot supplies oxygen to the 10-port or 17-port system. The oxygen cylinder is located in the fuselage tailcone. Cylinder pressure is reduced to an operating pressure of 70 PSI by a pressure regulator attached to the cylinder. A shutoff valve is included as part of the regulator assembly. The system also contains an altitude compensating regulator located between the pressure regulator and the oxygen supply lines, which varies the flow of oxygen to the masks, depending on altitude. An oxygen cylinder filler valve is located on the right side of the airplane (under a cover plate), at the forward end of the tailcone.

Cylinder pressure is indicated by a pressure gage located on the overhead console above the pilot's and copilot's seats. Two oxygen outlets are provided in the cabin ceiling, one each just outboard of the pilot's and copilot's seats. Two permanent microphone-equipped masks are provided for the pilot and copilot. Both masks are the partial rebreathing type equipped with vinyl plastic hoses and flow indicators. The oxygen hoses are the high-flow type and are color coded with a blue band adjacent to the plug-in fitting.

(Continued Next Page)

GENERAL (Continued)

NOTE

The pilot's and copilot's masks are equipped with a microphone to facilitate use of the radio when using oxygen. An adapter cord is furnished with the microphone-equipped mask to mate the mask microphone lead to the microphone jack located on the left or right side of the instrument panel. To connect the oxygen mask microphone, connect the mask lead to the adapter cord and plug the cord into the microphone jack. If an optional microphone-headset combination has been in use, the microphone lead from this equipment is already plugged into the microphone jack. It will be necessary to disconnect this lead from the microphone jack so that the adapter cord from the oxygen mask microphone can be plugged into the jack. A push-to-talk switch is incorporated on each control wheel to operate the corresponding microphone.

A remote OXYGEN control lever is located in the overhead console above the pilot's and copilot's seats and is used to shutoff the supply of oxygen to the system when not in use. The control lever is mechanically connected to the shutoff valve at the cylinder. The OXYGEN control lever is ON when the lever is in the full forward position and OFF when in the full aft position. With the exception of the shutoff function, the system is completely automatic and requires no manual regulation for change of altitude.

The oxygen cylinder, when fully charged, contain either 51 or 117 cubic feet of aviator's breathing oxygen (Spec. No. MIL-O-27210) under a pressure of 1960 PSI at 70°F (20°C). Filling pressures will vary due to ambient temperature in the filling area and the temperature rise resulting from compression of the oxygen. Filling to 1960 PSI may not result in a properly filled cylinder. Fill to pressures indicated in Figure S6-1, Oxygen Filling Pressures, for ambient temperatures.

(Continued Next Page)

GENERAL (Continued)

WARNING

Oil, grease, or other lubricants in contact with oxygen create a serious fire hazard and such contact must be avoided when handling oxygen equipment.

OXYGEN FILLING PRESSURES

Ambient Temperature ℃	Filling Pressure PSIG	Ambient Temperature ℃	Filling Pressure PSIG
-55	1682	0	1787
-50	1641	5	1830
-45	1614	10	1875
-40	1599	15	1918
-35	1596	20	1960
-30	1603	25	1998
-25	1618	30	2033
-20	1641	35	2062
-15	1671	40	2084
-10	1706	45	2099
-5	1745	50	2104

SUP-G208B675-00

Figure S6-1

OPERATING LIMITATIONS

There are no additional airplane operating limitations when the Oxygen System is installed.

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when the Oxygen System is installed.

NORMAL PROCEDURES

Prior to flight, check to be sure that there is an adequate oxygen supply for the trip by noting the oxygen pressure gage reading and the appropriate Oxygen Duration Chart for your airplane. Refer to Figure S6-2 for the 51 cubic feet capacity bottle and Figure S6-3 for the larger 117 cubic feet bottle. Make sure that there are enough face masks and hoses for each passenger and that they are readily accessible and in good working condition.

The Oxygen Duration Chart should be used in determining the usable duration (in hours) of the oxygen supply in your airplane. The following procedure outlines the method of finding the duration from the chart.

1. Note the available oxygen bottle size and pressure shown on the pressure gage.
2. Locate this pressure on the scale on the left side of the appropriate chart, then go across the chart horizontally to the right until you intersect the line representing the altitude at which the flight will be conducted. After intersecting the line, drop down vertically to the bottom of the chart and read the duration in hours given on the scale. This duration is for one person only and will have to be divided by the number of persons using oxygen to obtain the total duration in hours.
3. As an example of the above procedure, 1700 PSI of pressure will safely sustain the pilot, flying at 20,000 feet altitude, for 6 hours (51 cubic foot bottle). If the copilot’s seat is occupied, the total duration at 20,000 feet altitude for two people is 3 hours.

NOTE

Oxygen gage quantities below 200 PSI are not reliable. At this reduced pressure, flow rates are not predictable.

For FAA requirements concerning supplemental oxygen, Refer to 14 CFR 91.211.

It is recommended that supplemental oxygen be used by all occupants when cruising above 12,500 feet. It is often advisable to use oxygen at altitudes lower than 12,500 feet under conditions of night flying, fatigue, or periods of physiological or emotional disturbances. Also, habitual and excessive use of tobacco or alcohol will usually necessitate the use of oxygen at less than 10,000 feet.

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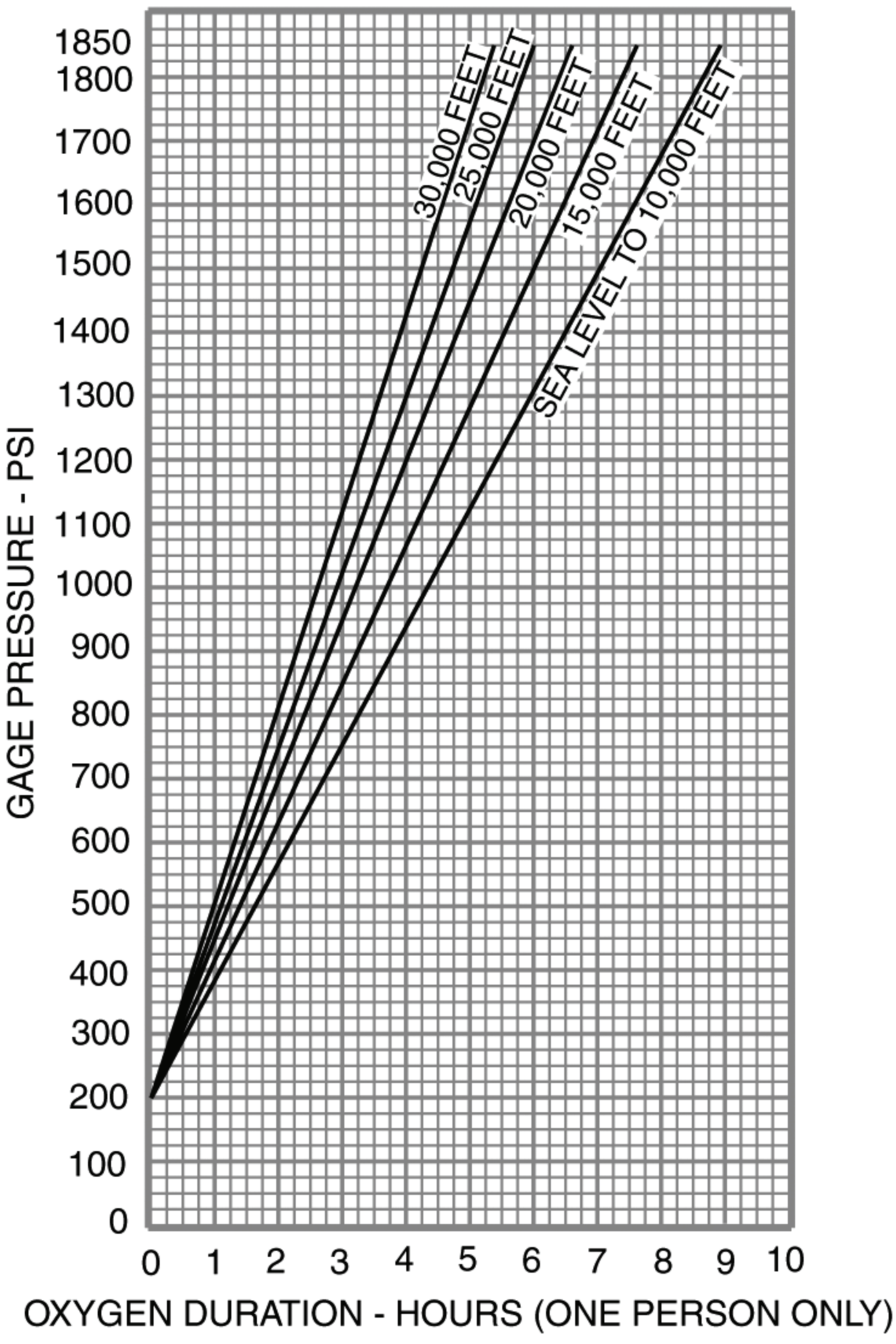
OXYGEN DURATION CHART
51 CUBIC FEET CAPACITY

A26455

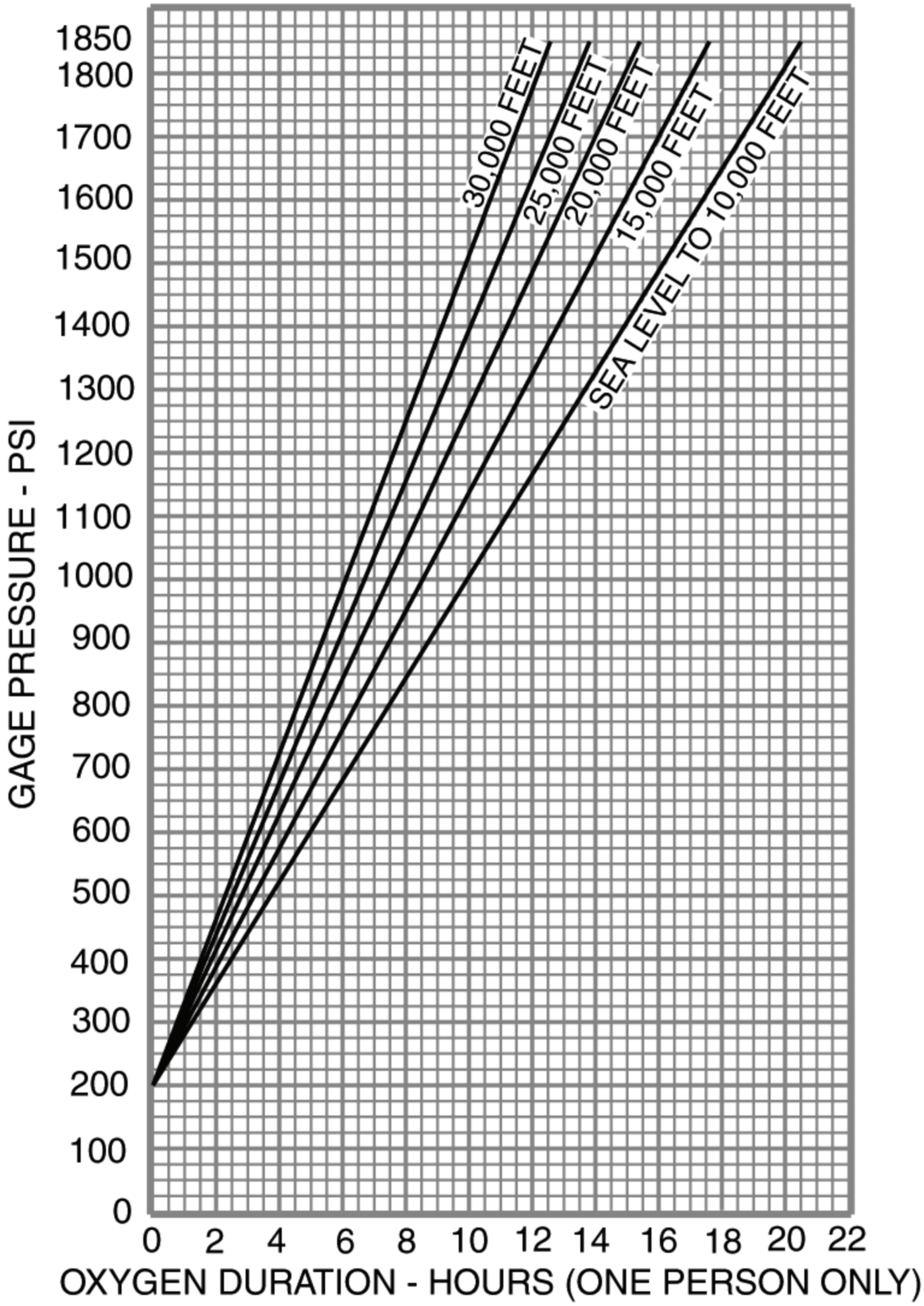


2697T1006

Figure S6-2

OXYGEN DURATION CHART
117 CUBIC FEET CAPACITY

A26456



2697T1007

Figure S6-3

NORMAL PROCEDURES (Continued)

When ready to use the oxygen system, proceed as follows:

1. Mask and Hose . . . . **SELECT**
   Adjust mask to face and adjust metallic nose strap for snug mask fit.

WARNING

Do not permit smoking when using oxygen. Oil, grease, soap, lipstick, lip balm, and other fatty materials constitute a serious fire hazard when in contact with oxygen. Be sure hands and clothing are oil-free before handling oxygen equipment.

2. Oxygen Hose . . . . **PLUG INTO OUTLET**
   (nearest to the seat you are occupying)

NOTE

When the oxygen system is turned ON, oxygen will flow continuously at the proper rate of flow for any altitude without any manual adjustments.

3. OXYGEN Control Lever . . . . **ON**
4. Face Mask Hose Flow Indicator . . . . **CHECK**
   Oxygen is flowing if the green indicator is being forced toward the mask.
5. Oxygen Hose . . . . **UNPLUG FROM OUTLET**
   (when discontinuing use of oxygen)

NOTE

This automatically stops the flow of oxygen.

6. OXYGEN Control Lever . . . . **OFF**
   (when oxygen is no longer required)

PERFORMANCE

There is no change to the airplane performance when the Oxygen System is installed.

Pilot's Operating Handbook And FAA Approved Airplane Flight Manual

GRAND CARAVAN EX

CESSNA MODEL 208B

867 SHP - GARMIN G1000

Serials 208B2197 and 208B5000 and On

SUPPLEMENT 7

AIR CONDITIONING SYSTEM

SERIAL NO.____________________

REGISTRATION NO.______________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Air Conditioning System is installed.

APPROVED BY Chad M. Groene

for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
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SUPPLEMENT 7

AIR CONDITIONING SYSTEM

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SERVICE BULLETIN CONFIGURATION LIST

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Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

AIR CONDITIONING SYSTEM

GENERAL

The air conditioning system provides comfortable cabin temperatures during hot weather operations, both on the ground or in flight. In this system, a belt-driven compressor is located on the engine accessory section. Three evaporator units with integral blowers are located one each in the left and right wing root area, and one in the tailcone behind the aft cabin bulkhead. The evaporator units direct cooled air to a series of overhead outlets in the cabin headliner. The system condenser is mounted in the engine compartment beneath the engine and is provided with an inlet and outlet in the lower left side of the engine cowling to supply cooling airflow through the condenser. Refrigerant lines under the floorboards and in the fuselage sides interconnect the compressor, evaporators, and the condenser.

Controls for the air conditioning system are located at the lower edge of the instrument panel directly above the control pedestal. Controls consist of one three-position, toggle-type air conditioning switch, and three two-position, toggle-type fan switches, refer to Figure S7-1.

Placing the three-position switch, labeled OFF, VENTILATE, COOL, from the OFF position to the COOL position starts the system compressor and evaporator fans. Placing the switch in the VENTILATE position activates only the system evaporator fans, providing uncooled ventilating air to the cabin. The three two-position switches, all labeled AC FANS, provide separate HIGH or LOW speed control of each evaporator fan. System electrical protection is provided by four 15-ampere “pull-off” type circuit breakers, labeled LEFT VENT BLWR, RIGHT VENT BLWR, AFT VENT BLWR, and AIR COND CONT, located on the left sidewall switch and circuit breaker panel.

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GENERAL (Continued)

AIR CONDITIONING SWITCH PANEL

A91495

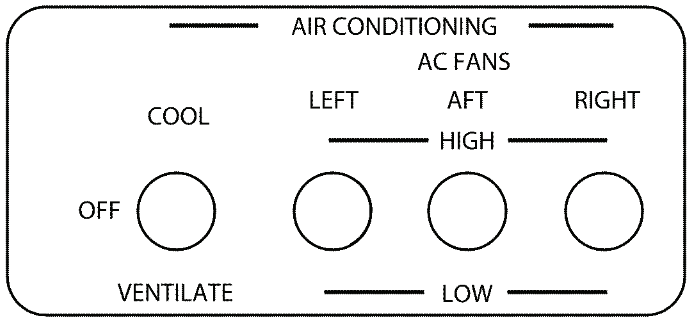


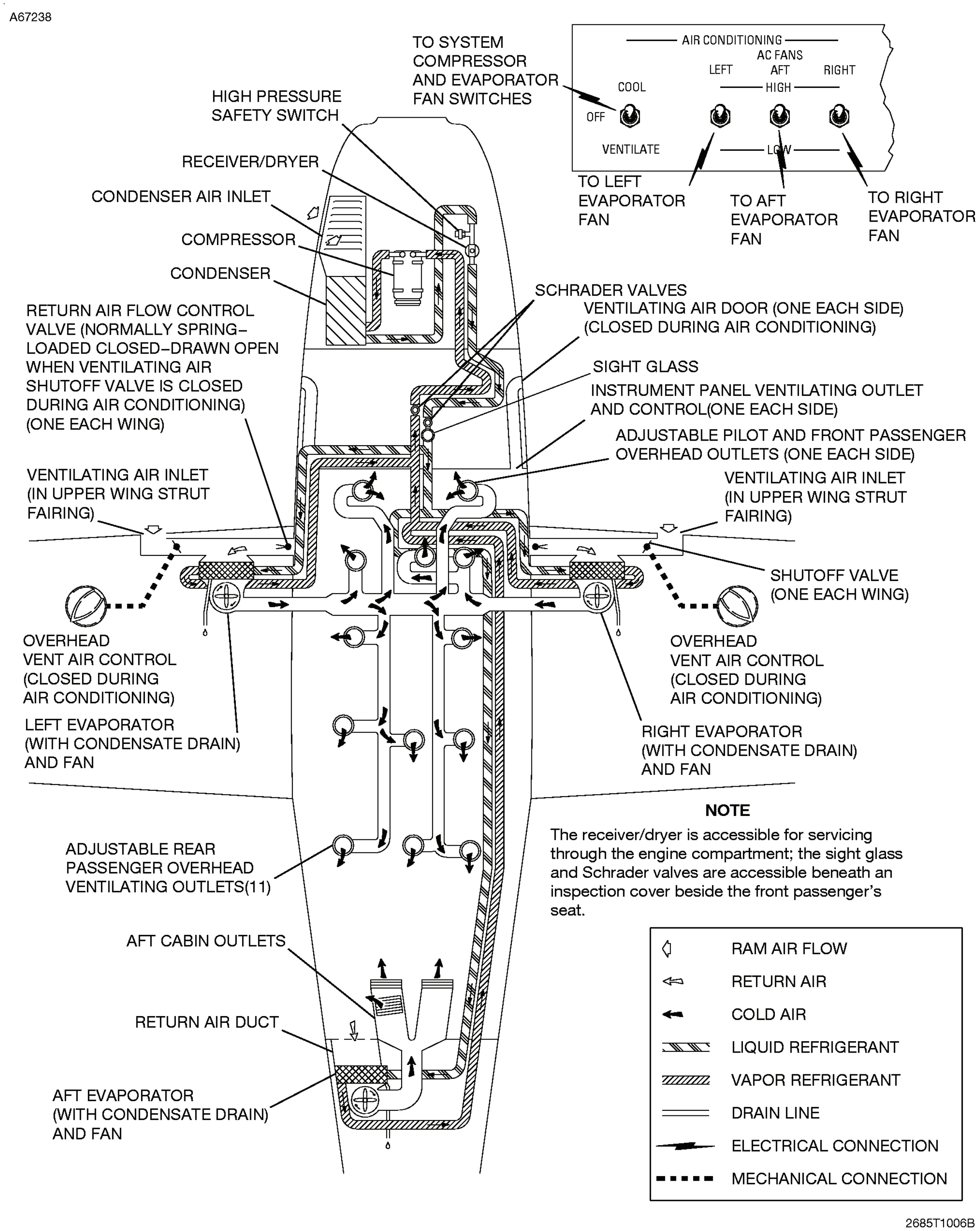
Figure S7-1

When the air conditioning system is operating, cooled air is supplied to the cabin through 15 overhead adjustable outlets (two each above the pilot and copilot, 11 directly above the rear-seat passengers, and four directing air forward from the aft cabin bulkhead). The pilot's and passenger's overhead outlets are the swivel type for optimum positioning, and airflow volume is controlled by rotating the outlet nozzle, which controls an internal valve. The four aft cabin outlets are directionally adjustable.

Access for servicing the system is provided through the engine cowling to the receiver/dryer and through a floorboard inspection cover behind the front passenger's seat to the sight glass and Schrader valves.

GENERAL (Continued)

AIR CONDITIONING SYSTEM



NOTE

The receiver/dryer is accessible for servicing through the engine compartment; the sight glass and Schrader valves are accessible beneath an inspection cover beside the front passenger's seat.

Figure S7-2

OPERATING LIMITATIONS

AIR CONDITIONING

When the takeoff torque setting is less than 2397 foot-pounds, the air conditioner must be turned off for any takeoff or landing under those conditions. Refer to Section 5, Performance, Figure 5 - 8, Maximum Engine Torque For Takeoff, for takeoff torque values.

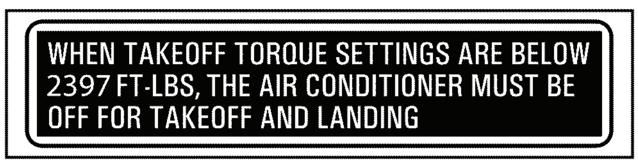
PLACARDS

INTERIOR PLACARDS

FLIGHT CREW AREA

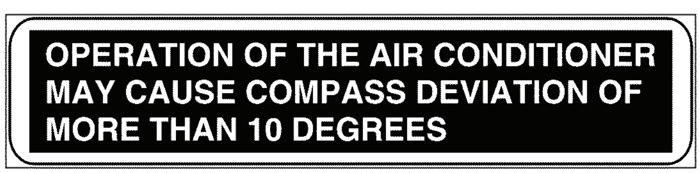
In full view of the pilot on the instrument panel.

A91493



In full view of the pilot on the instrument panel.

A91494



EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when the Air Conditioning System is installed.

NORMAL PROCEDURES

PREFLIGHT INSPECTION

During the preflight (walk around) inspection, open cabin doors to aid in cool-down of the cabin before flight. Air conditioning system components should be inspected as follows:

1. Compressor. . . . . **CHECK**
   (verify condition)
2. Drive Belt. . . . . **CHECK**
   (verify condition and tension)
3. Hoses . . . . **CHECK**
   Check hoses for evidence of damage or leaks from compressor to the condenser and evaporators.
4. Condenser Inlet/Outlet . . . . **CHECK**
   (on lower left side of cowling)
   Check for installation, condition, and blockage.

NORMAL PROCEDURES (Continued)

OPERATION ON GROUND

After preflight inspection and engine start, use the following procedures for reducing hot cabin temperatures prior to takeoff after AVIONICS No. 1 and No. 2 Switches have been turned OFF.

1. VENT Controls . . . . **PUSHED IN**
2. VENT AIR Control Knobs . . . . **CLOSE** (overhead console)
3. Overhead Air Outlets . . . . **OPEN**
4. FUEL CONDITION Lever . . . . **ADVANCE** (N_g 55% minimum)
5. AIR CONDITIONING AC FANS Switches . . . . **HIGH**
6. AIR CONDITIONING Switch. . . . . **COOL**

CAUTION

Under extremely hot OAT and/or high ground elevation conditions, the idle ITT may exceed the maximum idle ITT limitation of 700°C. Advance the FUEL CONDITION Lever toward HIGH IDLE to increase the idle N_g% as required to maintain a satisfactory ITT (700°C or lower).

NOTE

- For increased cooling during ground static conditions, increase N_g to 60-65% for a higher air conditioning compressor RPM.
- Ground operation of the air conditioner with the propeller in beta range for prolonged periods will cause the air conditioning compressor pressure safety switch to disengage the compressor clutch, and therefore should be avoided.
- If the temperature of the air coming from the outlets does not start to cool within a minute or two, the system may be malfunctioning and should be turned off.

7. AIR CONDITIONING AC FANS Switches . . . . **LOW** (as desired after initial cool down)

NORMAL PROCEDURES (Continued)

BEFORE TAKEOFF

1. AIR CONDITIONING Switch . . . . **OFF or VENTILATE**
(if takeoff torque is below 2397 ft-lbs)

   Refer to Section 5, Performance, Figure 5 - 8, Maximum Engine Torque For Takeoff, for takeoff torque settings.

IN FLIGHT (CRUISE, CLIMB, AND DESCENT)

Initially, it may be desirable to operate the system with the air conditioner fans on HIGH for fast cool-down. Later in the flight, operation of the fans on LOW speed and opening of the overhead vent air controls may be more comfortable.

During extended flight when temperature and humidity are extremely high, the evaporator coils may frost over. Normally, the compressor cycles off when temperatures in the evaporators nears 32°F (0°C). If frost does form as evidenced by reduced cooling airflow, turn the AIR CONDITIONING Switch to VENTILATE and select the HIGH speed AC FANS position. This should increase evaporator discharge temperature sufficiently to clear the frost.

NOTE

A high-pressure safety switch in the air conditioning system disengages the compressor clutch and stops system operation in the event the system becomes overloaded. The system will cycle on again when the pressure reduces. However, if cooling ability cannot be restored within a reasonable amount of time, the system may be malfunctioning and should be turned off.

The blower portion of the system may be used anytime air circulation (outside or cabin air) is desired. This is accomplished by placing the AIR CONDITIONING Switch in the VENTILATE position and placing the AC FANS Switches in LOW or HIGH positions as desired.

NORMAL PROCEDURES (Continued)

BEFORE LANDING

1. AIR CONDITIONING Switch. . . . . **OFF or VENTILATE**

   (if takeoff torque under landing conditions would be set below 2397 FT-LBS)

AFTER LANDING

1. AIR CONDITIONING Switch. . . . . **AS DESIRED**

PERFORMANCE

There is a 25 FPM reduction in climb performance, 1 to 2 KTAS decrease in cruise performance, and approximately 1% increase in fuel required for a given trip as a result of the air conditioner installation. This reduction in climb and cruise performance may be eliminated by installation of the condenser duct inlet and exit cover plates during flights when the air conditioner will not be used.

When the air conditioner is operating (compressor engaged), the following additional performance changes are also applicable:

TAKEOFF

The air conditioner installation has no appreciable effect on takeoff distances.

PERFORMANCE (Continued)

CLIMB

When climbing at altitudes above the critical altitude (if at maximum climb ITT limit and torque below 2397 FT-LBS), there is a 25 FPM loss in maximum rate of climb.

CRUISE

When cruising at altitudes where the maximum allowable cruise power is below the torque limit, reduce this setting by 40 FT-LBS when the air conditioner is operating, refer to Section 5, Performance, Cruise Performance charts, for allowable cruise power torque limits. This reduced power setting will result in an approximate 2 KTAS decrease in maximum cruise performance and a slight increase (1%) in fuel required for a given trip.

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GRAND CARAVAN EX

CESSNA MODEL 208B

867 SHP - GARMIN G1000

Serials 208B2197 and 208B5000 and On

SUPPLEMENT 8

300 AMP STARTER GENERATOR

SERIAL NO.	________________
REGISTRATION NO.	________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the 300 Amp Starter Generator is installed.

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for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
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SUPPLEMENT 8

300 AMP STARTER GENERATOR

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

300 AMP STARTER GENERATOR

GENERAL

The starter generator is mounted on the top of the accessory case at the rear of the engine. The starter generator is a 28 volt, 300 amp engine-driven unit that functions as a motor for engine starting, and after engine start, as a generator for the airplane electrical system. When operating as a starter, a speed sensing switch in the starter generator will automatically shutdown the starter, thereby providing overspeed protection and automatic shutoff. The starter generator is air cooled by an integral fan, and by ram air drawn from the engine cowling.

Amperage is shown on the GEN AMPS readout of the EIS System page.

An amber GENERATOR AMPS annunciation along with an amber background GEN AMPS readout of the EIS system page indicates a limitation has been exceeded, refer to Operating Limitations contained in this supplement.

OPERATING LIMITATIONS

ON GROUND

MOST LIMITING OF THE FOLLOWING:

1. Do not exceed 105 amps as indicated by the GEN AMPS indicator with engine power setting at 55 - 64% Ng.
2. Do not exceed 170 amps as indicated by the GEN AMPS indicator with engine power settings at or above 65% Ng.

or

3. The maximum generator load listed below as a function Ng, air conditioning and bleed air heat position.

MAXIMUM GENERATOR LOAD - GROUND OPERATIONS			
AIR CONDITIONING - **OFF,** BLEED AIR HEAT - **ON** or **OFF**		AIR CONDITIONING - **ON,** BLEED AIR HEAT - **OFF**	
Ng	AMPS	Ng	AMPS
55%	95	55%	50
60%	105	60%	105
65%	170	65%	170

Figure S8-1

OPERATING LIMITATIONS (Continued)

IN FLIGHT

MOST LIMITING OF THE FOLLOWING:

1. The 300 amp starter generator is certified to produce 300 amps up to 18,000 feet MSL. Above 18,000 feet MSL the 300 amp starter generator is limited to a maximum load of 250 amps as indicated by the GEN AMPS indicator when operating at a speeds below 100 KIAS.

or

2. The maximum generator load listed below as a function Ng, air conditioning and bleed air heat position.

MAXIMUM GENERATOR LOAD - FLIGHT OPERATIONS			
AIR CONDITIONING - **OFF,** BLEED AIR HEAT - **ON** or **OFF**		AIR CONDITIONING - **ON,** BLEED AIR HEAT - **OFF**	
Ng	AMPS	Ng	AMPS
65%	175	65%	190
72%	270	72%	250
≥80%	300	≥80%	300

Figure S8-2

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when the 300 Amp Starter Generator is installed.

ABNORMAL PROCEDURES

There is no change to the airplane abnormal procedures when the 300 Amp Starter Generator is installed.

NORMAL PROCEDURE

STARTING ENGINE (Battery Start)

After engine start, the amber GENERATOR AMPS annunciator may come on while the battery is recharging. This is normal and should go out after approximately two minutes. Advancing the FUEL CONDITION lever to HIGH IDLE will reduce the time the amber GENERATOR AMPS annunciator is shown and will help with starter/generator cooling.

PERFORMANCE

There is no change to the airplane performance when the 300 Amp Starter Generator is installed.

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CESSNA MODEL 208B

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SUPPLEMENT 9

BENDIX/KING KR87 AUTOMATIC DIRECTION FINDER (ADF)

SERIAL NO.____________________

REGISTRATION NO.________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Bendix/King KR 87 Automatic Direction Finder (ADF) is installed.

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SUPPLEMENT 9

BENDIX/KING KR87 AUTOMATIC DIRECTION FINDER (ADF)

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Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

BENDIX/KING KR87 AUTOMATIC DIRECTION FINDER (ADF)

GENERAL

The Bendix/King Digital ADF is a panel-mounted, digitally tuned automatic direction finder. It is designed to provide continuous 1-kHz digital tuning in the frequency range of 200-kHz to 1799-kHz and eliminates the need for mechanical band switching. The system has a receiver, a built-in electronic timer, a bearing pointer shown on the G1000 Horizontal Situation Indicator (HSI), and a KA-44B combined loop and sense antenna. Controls and displays for the Bendix/King Digital ADF are shown and described in Figure S9-1. The Garmin GMA 1347 Audio Panel is used to control audio output. Audio panel operation is described in the Garmin G1000 Cockpit Reference Guide.

The Bendix/King Digital ADF can be used for position plotting and homing procedures, and for aural reception of amplitude modulated (AM) signals.

The flip-flop frequency display allows switching between preselected standby and active frequencies by pushing the frequency transfer button. Both preselected frequencies are stored in a nonvolatile memory circuit (no battery power required) and displayed in large, easy-to-read, self-dimming gas discharge numbers. The active frequency is continuously displayed in the left window, while the right window will display either the standby frequency or the selected readout from the built-in electronic timer.

The built-in electronic timer has two timing functions that operate independently. An automatic flight timer starts when the unit is turned on. This timer counts up to 59 hours and 59 minutes. An elapsed timer will count up or down for up to 59 minutes and 59 seconds. When a preset time interval has been programmed and the countdown reaches :00, the display will flash for 15 seconds. Because both the flight timer and elapsed timer operate independently, it is possible to monitor either one without disrupting the other. The push button controls are internally lighted. The light intensity is controlled by the AVIONICS dimmer control knob.

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BENDIX/KING KR87 AUTOMATIC DIRECTION FINDER (ADF)

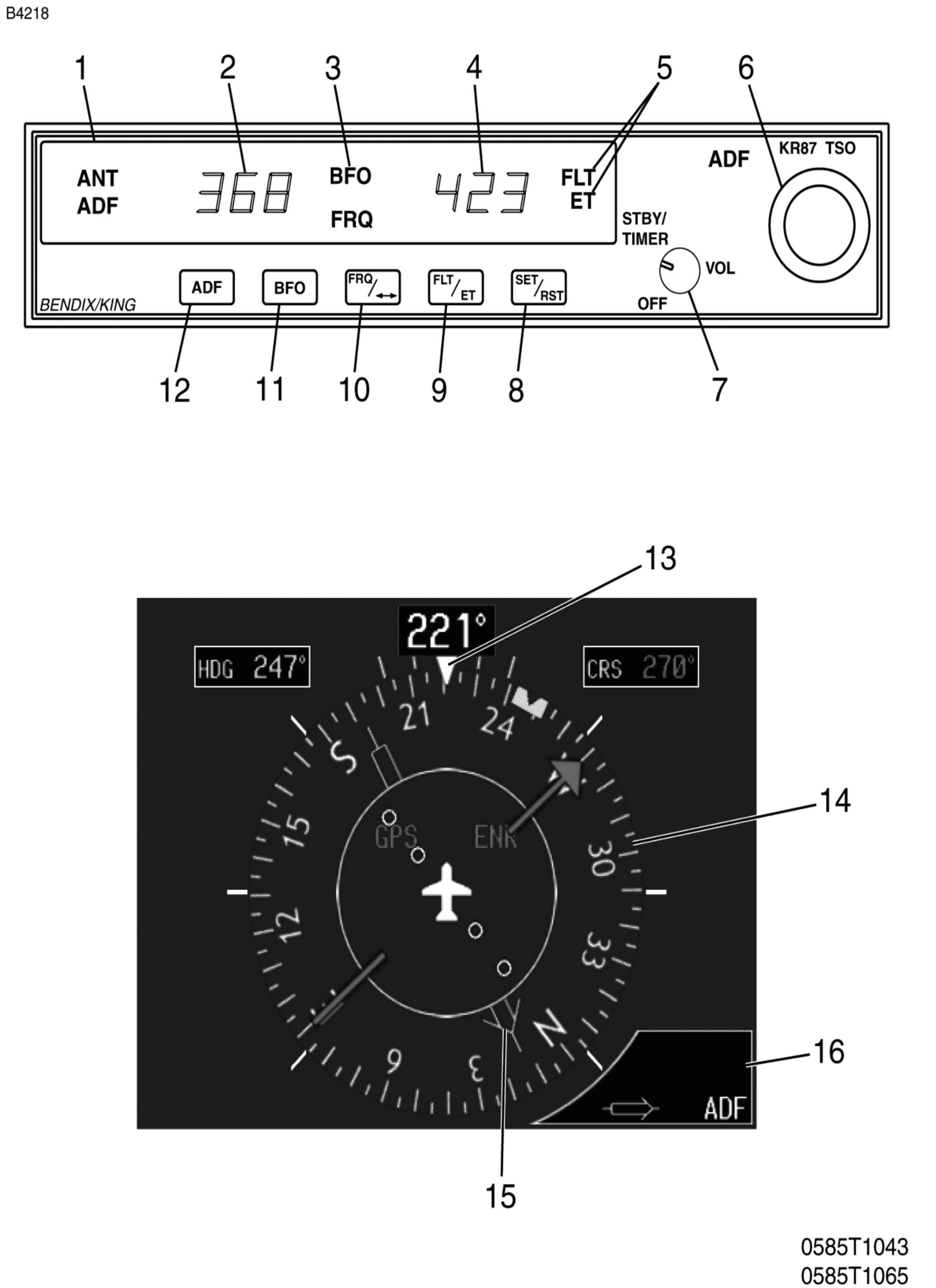

Figure S9-1

GENERAL (Continued)

1. ANT/ADF MODE ANNUNCIATOR - Antenna (ANT) is selected when the ADF button is in the OUT position. This mode improves the audio reception and is usually used for station identification. The bearing pointer is deactivated and will park in the 90° relative position. Automatic Direction Finder (ADF) mode is selected by pushing the ADF button. This mode activates the bearing pointer and will point in the direction of the station relative to the aircraft heading.
2. ACTIVE FREQUENCY DISPLAY - The frequency to which the ADF is tuned is displayed here. The active ADF frequency can be changed directly when either of the timer functions is selected.
3. BFO (Beat Frequency Oscillator) ANNUNCIATOR - The BFO mode is activated and annunciated by pushing the BFO button. When BFO mode is active, the carrier wave and its morse code identifier can be heard.

NOTE

CW signals (Morse Code) are unmodulated and no audio will be heard without use of BFO. This type of signal is not used in the United States air navigation. It is used in some foreign countries and marine beacons.

4. STANDBY FREQUENCY/FLIGHT TIME OR ELAPSED TIME DISPLAY - When FRQ is shown, the STANDBY frequency is shown in the right display. The STANDBY frequency is selected using the frequency select knobs. The selected STANDBY frequency is put into the active frequency window by pushing the frequency transfer button. Either the standby frequency, the flight timer, or the elapsed time is shown in this position. The flight timer and elapsed timer replace the standby frequency which goes into blind memory to be called back at any time by pushing the FRQ button (item 10). Flight time or elapsed time are shown and annunciated by depressing the FLT/ET button.
5. FLIGHT TIMER AND ELAPSED TIMER MODE ANNUNCIATION - Either the elapsed time (ET) or flight time (FLT) mode is annunciated here.

(Continued Next Page)

GENERAL (Continued)

6. FREQUENCY SELECT KNOBS - Selects the standby frequency when FRQ is displayed and directly selects the active frequency whenever either of the time functions is selected. The frequency selector knobs may be turned either clockwise or counterclockwise. The small knob is pulled out to tune the 1's. The small knob is pushed in to tune the 10's. The outer knob tunes the 100's with rollover into the 1000's up to 1799. These knobs are also used to set the desired time when the elapsed timer is used in the countdown mode.
7. ON/OFF/VOLUME CONTROL SWITCH (ON/OFF/VOL) -Controls power and audio output level. Turn the control switch clockwise from the OFF position to energize the receiver and increase audio volume. The KR87 has audio muting which causes the audio output to be muted unless the receiver is locked on a valid station.
8. SET/RESET ELAPSED TIMER BUTTON (SET/RST) - The SET/RST button resets the elapsed timer whether it is being displayed or not.
9. FLIGHT TIMER/ELAPSED TIMER MODE SELECTOR BUTTON (FLT/ET) - The FLT/ET button selects either Flight Timer mode or Elapsed Timer mode when pushed.
10. FREQUENCY TRANSFER BUTTON (FRQ) - The FRQ transfer button interchanges the active and standby frequencies when pushed.
11. BFO (Beat Frequency Oscillator) BUTTON - The BFO button selects the BFO mode when pushed in. (See note under item 3).
12. ADF BUTTON - The ADF button selects either the ANT mode or the ADF mode. The ANT mode is selected when the ADF button is in the OUT position. The ADF mode is selected when the ADF button is pushed in.
13. LUBBER LINE - Indicates magnetic heading of the airplane.
14. ROTATING COMPASS ROSE (HSI COMPASS CARD) - The rotating compass rose turns as the heading of the airplane changes. The magnetic heading of the airplane is under the lubber line.
15. BEARING POINTER - Shows magnetic bearing to the station.
16. BEARING INFORMATION WINDOW - Shows the type of pointer that is being used as the ADF bearing pointer. If ADF is not shown, push the BRG1 or BRG2 softkey until ADF is shown.

OPERATING LIMITATIONS

Refer to Section 2 of the Pilot's Operating Handbook and FAA Approved Flight Manual (POH/AFM).

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures when the Bendix/King KR 87 Automatic Direction Finder (ADF) is installed.

NORMAL PROCEDURES

TO OPERATE AS AN AUTOMATIC DIRECTION FINDER:

1. OFF/VOL Control . . . . **ON**
2. Frequency Selector Knobs . . . . **SELECT**
   (desired frequency in the standby frequency display)
3. FRQ Button . . . . **PUSH**
   (to move the desired frequency from the standby to the active position)
4. ADF Selector Button (on audio control panel). . . . . SELECT
   (as desired)
5. OFF/VOL Control . . . . **SET**
   (to desired volume level and identify that desired station is being received)
6. PFD Softkey . . . . **PUSH**
   (to show BRG1 and BRG2 softkeys)
7. BRG1 or BRG2 Softkey. . . . . **PUSH**
   (push until ADF shows in Bearing Information Window)
8. ADF Button . . . . **SELECT ADF**
   (mode and note magnetic bearing on HSI)

(Continued Next Page)

NORMAL PROCEDURES (Continued)

ADF TEST (PREFLIGHT or IN FLIGHT):

1. ADF Button . . . . **SELECT ANT**
   (mode and note pointer moves to 90° position)
2. ADF Button . . . . **SELECT ADF**
   Make sure pointer moves without hesitation to the station bearing. Excessive pointer sluggishness, wavering or reversals indicate a signal that is too weak or a system malfunction.

TO OPERATE BFO:

1. OFF/VOL Control . . . . **ON**
2. BFO Button . . . . **PRESS ON**
3. ADF Selector Button (on audio control panel) . . . . **SET**
   (to desired mode)
4. VOL Control . . . . **ADJUST**
   (to desired listening level)

NOTE

A 1000-KHz tone and Morse Code identifier is heard in the audio output when a CW signal is received.

TO OPERATE FLIGHT TIMER:

1. OFF/VOL Control . . . . **ON**
2. FLT/ET Mode Button. . . . . **PRESS**
   (once or twice until FLT is annunciated)
   Timer will already be counting since it is activated by turning the unit on.
3. OFF/VOL Control . . . . **OFF then ON**
   (if it is desired to reset the flight timer)

(Continued Next Page)

NORMAL PROCEDURES (Continued)

TO OPERATE AS A COMMUNICATIONS RECEIVER ONLY:

1. OFF/VOL Control . . . . **ON**
2. ADF Button . . . . **SELECT ANT MODE**
3. Frequency Selector Knobs . . . . **SELECT**
   (desired frequency in the standby frequency display)
4. FRQ Button . . . . **PRESS**
   (to move the desired frequency from the standby to the active position)
5. ADF Selector Button (on audio control panel). . . . . **SET**
   (to desired mode)
6. VOL Control . . . . **ADJUST**
   (to desired listening level)

TO OPERATE ELAPSED TIME TIMER-COUNT UP MODE:

1. OFF/VOL Control . . . . **ON**
2. FLT/ET Mode Button . . . . **PRESS**
   (once or twice until ET is annunciated)
3. SET/RST Button . . . . **PRESS**
   (momentarily to reset elapsed timer to zero)

NOTE

The Standby Frequency which is in memory while Flight Time or Elapsed Time modes are being displayed may be called back by pushing the FRQ button, then transferred to active by pushing the FRQ button again.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

TO OPERATE ELAPSED TIME TIMER COUNT DOWN MODE:

1. OFF/VOL Control . . . . **ON**
2. FLT/ET Mode Button. . . . . **PRESS**
   (once or twice until ET is annunciated)
3. SET/RST Button . . . . **PRESS**
   (until the ET annunciation begins to flash)
4. FREQUENCY SELECTOR KNOBS . . . . **SET**
   (desired time in the elapsed time display)
   The small knob is pulled out to tune the 1's. The small knob is pushed in to tune the 10's. The outer knob tunes minutes up to 59 minutes.

NOTE

Selector knobs remain in the time set mode for 15 seconds after the last entry or until the SET/RST, FLT/ET or FRQ button is pressed.

5. SET/RST Button . . . . **PRESS**
   (to start countdown)
   When the timer reaches :00, it will start to count up as display flashes for 15 seconds)

NOTE

While FLT or ET are displayed, the active frequency on the left side of the window may be changed, by using the frequency selector knobs, without any effect on the stored standby frequency or the other modes.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

ADF OPERATION NOTES:

ERRONEOUS ADF BEARING DUE TO RADIO FREQUENCY PHENOMENA:

In the U.S., the Federal Communications Commission (FCC), which assigns AM radio frequencies, occasionally will assign the same frequency to more than one station in an area. Certain conditions, such as Night Effect, may cause signals from such stations to overlap. This should be taken into consideration when using AM broadcast stations for navigation.

Sunspots and atmospheric phenomena may occasionally distort reception so that signals from two stations on the same frequency will overlap. For this reason, it is always wise to make positive identification of the station being tuned, by switching the function selector to ANT and listening for station call letters.

ELECTRICAL STORMS:

In the vicinity of electrical storms, an ADF indicator pointer tends to swing from the station tuned toward the center of the storm.

NIGHT EFFECT:

This is a disturbance particularly strong just after sunset and just after dawn. An ADF indicator pointer may swing erratically at these times. If possible, tune to the most powerful station at the lowest frequency. If this is not possible, take the average of pointer oscillations to determine station bearing.

MOUNTAIN EFFECT:

Radio waves reflecting from the surface of mountains may cause the pointer to fluctuate or show an erroneous bearing. This should be taken into account when taking bearings over mountainous terrain.

COASTAL REFRACTION:

Radio waves may be refracted when passing from land to sea or when moving parallel to the coastline. This also should be taken into account.

PERFORMANCE

There is no change in airplane performance when the Bendix/King KR 87 Automatic Direction Finder (ADF) is installed. However, the installation of an externally mounted antenna or related external antennas, will result in a minor reduction in cruise performance.

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GRAND CARAVAN EX

CESSNA MODEL 208B

867 SHP - GARMIN G1000

Serials 208B2197 and 208B5000 and On

SUPPLEMENT 12

DUAL GARMIN GMA 1347 AUDIO PANELS

SERIAL NO.________________________

REGISTRATION NO.___________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when Dual Garmin GMA 1347 Audio Panels are installed.

APPROVED BY Chad M. Groene

for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
Organization Delegation Authorization ODA-100129-CE
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SUPPLEMENT 12

DUAL GARMIN GMA 1347 AUDIO PANELS

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

DUAL GARMIN GMA 1347 AUDIO PANELS

GENERAL

With the Dual Garmin GMA 1347 audio panel installation a second audio panel has been added between the MFD and copilot's PFD. Refer to the Garmin G1000 CRG for specific operating information on all Garmin equipment.

A pushbutton switch labeled DISPLAY BACKUP on each audio panel allows manual selection of reversionary mode for the respective PFD and MFD. The MFD can operate in reversionary mode by pressing either DISPLAY BACKUP switch on either audio panel.

Each cockpit speaker is tied to the respective audio panel and the audio is controlled by the individual audio selector switches and adjusted for volume level by using the selected receiver volume controls. The system is designed so that microphones are voice activated, with transmission over the COM radios controlled by the push-to-talk switches.

The headsets plug into microphone and headset jacks located on the left side of the instrument panel for the pilot and the right side of the instrument panel for the copilot. Push-to-talk switches for the headsets are mounted on the both control wheels.

Four additional passenger intercom headset jacks are available as an option to the Dual Garmin GMA 1347 audio panel installation. Volume control for these four headsets is controlled by using the audio panel 2 volume control knob, while the standard intercom headset volume is controlled by audio panel 1.

(Continued Next Page)

GENERAL (Continued)

ENHANCED DUAL AUDIO PANEL FUNCTIONALITY

The installation of the Dual Garmin GMA 1347 audio panel includes certain protection and system prioritization not available in the standard single audio panel configuration. Protection against simultaneous transmission over a single VHF COM radio and simultaneous transmission over two different VHF COM radios are standard with the Dual Garmin GMA 1347 audio panel installation.

Each pilot has priority when transmitting using their respective VHF COM radio (e.g. pilot transmitting using COM1 or the copilot transmitting using COM2) over the cross-side pilot. If the cross-side pilot attempts to transmit on the opposite VHF radio (copilot attempting to transmit over COM1 using audio panel number 2) the onside pilot's push-to-talk switch will override the transmission when selected.

If both pilots have COM1 selected on their respective audio panels, the pilot's transmission will override the copilot's transmissions. The same priority logic applies to COM2 when the copilot transmits, it will override the pilot's transmissions.

Additionally, the system protects against simultaneous transmission by both pilots over COM1 and COM2. If the pilot's push-to-talk switch is keyed while on either COM, the copilot cannot transmit on the other COM radio. If the copilot's push-to-talk switch is keyed while on COM1, the pilot's push-to-talk switch will have no effect on COM2.

The COM3 radio does not have simultaneous transmission protection. If one pilot transmits on COM3, it will not interfere with the other pilot's transmissions on COM1, COM2 or COM3. COM3 is normally reserved for use by the HF radio option.

OPERATING LIMITATIONS

The following Operating Limitations supersede and/or are in addition to the Operating Limitations set forth in the basic Pilot's Operating Handbook and FAA Approved Airplane Flight Manual:

GARMIN GFC 700 AUTOMATED FLIGHT CONTROL SYSTEM (AFCS)

Use of the autopilot is prohibited when both audio panels are inoperative, since the aural alert will not be provided when autopilot is disengaged.

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures for airplanes equipped with Dual Garmin GMA 1347 Audio Panels.

ABNORMAL PROCEDURES

DISPLAY UNIT FAILURE

This is indicated by a complete loss of image on a display. If only individual elements of the display are failed, refer to appropriate procedures for the individual failures.

IF PFD FAILS

1. DISPLAY BACKUP Button (affected side) . . . . **PRESS**
   (Flight and EICAS information is displayed on MFD)

NOTE

The PFD CDI SYNC and BARO SYNC settings must be ON to allow the copilot's PFD controls to affect settings on the MFD. These settings are accessible using the PFD MENU button.

2. Flight Director . . . . **TRANSFER**
   (Press XFR button to operating PFD)
3. FD Modes/AUTOPILOT . . . . **RESELECT and REENGAGE**
   (as required)
4. Transponder . . . . **SWITCH**
   (to operating transponder)
5. COM and NAV Radios . . . . **SWITCH**
   (to operating COM and NAV radios)
6. PFD Controls . . . . **USE OPERATING PFD**
   (for required data entry (COM, NAV, Baro setting, etc.))

IF MFD FAILS

1. Either DISPLAY BACKUP Button . . . . **PRESS**
   (EICAS information will be displayed on the respective PFD)

ABNORMAL PROCEDURES (Continued)

AUDIO PANEL FAILURE

Audio panel failure may be indicated by a GMA 1 or (2) FAIL Garmin System Message or the inability to communicate using the affected audio panel. This failure may also be accompanied by the loss of some aural warnings such as Altitude Alert, Autopilot Disconnect, TAWS, and Traffic alerts.

1. AUDIO 1 or AUDIO 2 Circuit Breaker (affected side) . . . **OPEN** (pull out)
2. SPKR Button (operating audio panel) . . . . **ON**
3. COM Radio . . . . **USE ON-SIDE RADIO FOR COMMUNICATION**

NOTE

- In the event of an AUDIO 1 failure, a fail-safe circuit connects the pilot’s headset directly to the COM 1 radio. The speakers on the affected side will be inoperative.
- The operating audio panel will not be able to listen to COM or NAV audio from the side with the inoperative audio panel.

CAUTION

A fail-safe circuit is not provided for an AUDIO 2 failure, which will result in the copilots' headset and right cockpit speaker becoming inoperative.

NORMAL PROCEDURES

There is no change to the airplane normal procedures for airplanes equipped with Dual Garmin GMA 1347 Audio Panels.

PERFORMANCE

There is no change to the airplane performance for airplanes equipped with Dual Garmin GMA 1347 Audio Panels.

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SUPPLEMENT 13

HONEYWELL KHF 1050 HF TRANSCEIVER WITH PS440 CONTROL DISPLAY UNIT

SERIAL NO.______________________

REGISTRATION NO._________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when Honeywell KHF 1050 HF Transceiver with PS440 Control Display Unit is installed.

APPROVED BY Chad M. Groene

for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
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SUPPLEMENT 13

HONEYWELL KHF 1050 HF TRANSCEIVER WITH PS440 CONTROL DISPLAY UNIT

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SERVICE BULLETIN CONFIGURATION LIST

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Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

HONEYWELL KHF 1050 HF TRANSCEIVER WITH PS440 CONTROL DISPLAY UNIT

GENERAL

The KHF-1050 HF System is a solid-state high frequency single sideband transceiver system providing voice communications to the pilot and co-pilot in the 2 to 29.9999 MHz band with 100 Hz resolutions. A basic KHF-1050 HF System consists of five individual units; PS440 HF Control Head, KAC-1052 Antenna Coupler, KPA-1052 Power Amplifier, KRX-1053 Receiver/Exciter, and a HF antenna. The PS440 Control Display Unit provides the pilot's display and control interface. Frequency, channel, mode, audio gain, and squelch level selections are entered via its controls. Fault monitoring and fault annunciation are also provided by the PS440. The PS440 provides the pilot access to 100 manual channels and 246 ITU channels to interface with maritime radiotelephone networks. The PS440 uses a liquid crystal display to show frequency, channel, and mode of operation. The manual channels can be programmed on the ground or in the air, and nonvolatile memory stores this information even when the system is turned off.

OPERATING LIMITATIONS

The KHF 1050/PS440 Pilot's Guide, Publication Number 006-18289-0000, Revision 1, dated May 2003, or later appropriate revision, must be readily available to the flight crew when operating the KHF 1050 transceiver.

EMERGENCY PROCEDURES

There is no change to the airplane emergency procedures for airplanes equipped with Honeywell KHF 1050 HF Transceiver with PS440 Control Display Unit.

ABNORMAL PROCEDURES

There is no change to the airplane abnormal procedures for airplanes equipped with Honeywell KHF 1050 HF Transceiver with PS440 Control Display Unit.

NORMAL PROCEDURES

There is no change to the airplane normal procedures for airplanes equipped with Honeywell KHF 1050 HF Transceiver with PS440 Control Display Unit.

PERFORMANCE

There is no change to the airplane performance for airplanes equipped with Honeywell KHF 1050 HF Transceiver with PS440 Control Display Unit.

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SUPPLEMENT 14

115 VOLT AC POWER OUTLETS

SERIAL NO.________________________

REGISTRATION NO.__________________

This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when 115 Volt AC Power Outlets option is installed.

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for John Bouma, Lead ODA Administrator
Cessna Aircraft Company
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SUPPLEMENT 14

115 VOLT ALTERNATING CURRENT (115 VAC) POWER OUTLETS

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115 VOLT ALTERNATING CURRENT (115 VAC) POWER OUTLETS

GENERAL

The 115 Volt Alternating Current power outlet installation is primarily designed to provide power to low power Portable Electronic Devices (PED), such as cassette, compact disc, and MP3 players, laptop computers and accessory chargers.

This installation includes a 115 VAC POWER OUTLET Switch, installed in the pilot-side switch panel, a 115 Volt AC power inverter installed in the tailcone, power controller located under the cabin floor and four 115 VAC, 60 Hz, electrical power outlets. Two outlets are installed in the sidewall of the cabin just aft of the Pilot and Copilots seats. The 208B Passenger Version has two additional outlets installed in the aft cabin sidewall.

The system has a maximum load capacity of 4.3 amps (500 watts) and is protected by two circuit breaker(s) on the left sidewall circuit breaker panel. The two breakers are labeled 115 VAC OUTLET CTRLR and 115 VAC PWR INVTR, located on the bottom row, fifth and sixth circuit breaker from the forward end.

The system is designed to automatically shutdown all power outlets anytime the maximum load capacity of 4.3 amps (500 watts) is exceeded by opening the 115 VAC PWR INVTR circuit breaker.

The system is also designed to automatically disconnect an individual power outlet anytime the outlet maximum load capacity of 2.0 amps (230 watts) is exceeded. An overload at the outlet level will not open either circuit breaker or effect the operation of the remaining power outlets.

Either overload condition can be corrected by disconnecting all electrical devices and having the pilot reset the 115 VAC system by following the procedures listed in abnormal checklist.

CAUTION

If the circuit breakers opens (trips) again. Do not close (reset) circuit breaker a second time and have system inspected and repaired prior to next flight.

OPERATING LIMITATIONS

1. Each 115 VAC power outlet is limited to a maximum electrical load of 2 amps (230 watt).
2. The electrical current from all devices connected to the 115 VAC power outlets may not exceed 4.3 amps (500 watts).
3. The 230 watts is not available to each outlet simultaneously as the inverter limits power output to 500 watts continuous.
4. The 115 VAC POWER OUTLETS Switch must be switched to OFF when not in use.
5. The 115 VAC power outlets may not be used to power flight-critical communication, navigation, or attitude reference devices.
6. Use of the 115 VAC power system is prohibited during takeoff and landing.
7. Use of the 115 VAC power system is prohibited in Instrument Meteorological Conditions (IMC) unless the pilot has determined that each device powered by the 115 VAC power outlets will not cause interference with the navigation or communication systems of the airplane.
8. As OAT temperatures increase, inverter power output may be reduced up to 100 watts. Reduce total electrical load to prevent circuit breaker tripping.

EMERGENCY PROCEDURES

ENGINE FAILURE DURING FLIGHT

X. Electrical Load . . . . **REDUCE**
 a. 115 VAC POWER OUTLETS Switch . . . . **OFF**

AIRSTART

X. Electrical Load . . . . **REDUCE**
 a. 115 VAC POWER OUTLETS Switch . . . . **OFF**

GENERATOR FAILURE

X. Electrical Load . . . . **REDUCE**
 a. 115 VAC POWER OUTLETS Switch . . . . **OFF**

ABNORMAL PROCEDURES

LOSS OF 115 VAC ELECTRICAL POWER AT ALL POWER OUTLETS AND 115 VAC PWR INVTR CIRCUIT BREAKER OPENS

1. Electrical Devices . . . . **DISCONNECT** (from all power outlets)
2. 115 VAC POWER OUTLETS Switch . . . . **OFF**
3. 115 VAC PWR INVTR Circuit Breaker . . . . . . **CLOSE** (push in) (bottom row, fifth circuit breaker from the forward end)
4. 115 VAC POWER OUTLETS Switch . . . . **ON**
5. Electrical Devices . . . . **RECONNECT AS NECESSARY** (maximum load 4.3 amps (500 watts))

ABNORMAL PROCEDURES (Continued)

LOSS OF A SINGLE 115 VAC POWER OUTLET

1. Electrical Device . . . . **DISCONNECT**
(from affected power outlet)

NOTE

Flight maybe continued using remaining working 115 VAC power outlets.

IF OFFLINE POWER OUTLET IS REQUIRED

2. Electrical Devices . . . . **DISCONNECT**
(from faulted power outlet)

NOTE

Advise remaining power outlet users that 115 VAC power will be momentarily off as the 115 VAC system is reset.

3. 115 VAC POWER OUTLETS Switch. . . . . **OFF; THEN ON**
4. Electrical Devices . . . . **RECONNECT AS NECESSARY**

CAUTION

Maximum electrical load for all power outlets is 4.3 amps (500 watts), maximum individual outlet load is limited to 2.0 amps (230 watts).

NORMAL PROCEDURES

BEFORE STARTING ENGINE

X. Passenger Briefing . . . . **COMPLETE**
Refer to 14 CFR 91.21 and Advisory Circular 91.21-1 “Use of Portable Electronic Devices Aboard Aircraft” for passenger briefing information and requirements regarding the use of portable electronic devices in aircraft.

BEFORE TAKEOFF

X. 115 VAC POWER OUTLETS Switch. . . . . **OFF**

NORMAL PROCEDURES (Continued)

115 VAC POWER OUTLET OPERATION

TO SUPPLY POWER TO THE 115 VAC POWER OUTLETS

1. 115 VAC POWER OUTLETS Switch . . . . **ON**

CAUTION

Maximum electrical load for all power outlets is 4.3 amps (500 watts), maximum individual outlet load is limited to 2.0 amps (230 watts).

BEFORE LANDING

X. 115 VAC POWER OUTLETS Switch . . . . **OFF**

PERFORMANCE

There is no change to the airplane performance when the 115 VAC power outlets are installed.

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SUPPLEMENT 15

NICKEL CADMIUM (NiCAD) BATTERY

SERIAL NO.____________________
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This supplement must be inserted into Section 9 of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual when the Nickel Cadmium (NiCAD) Battery is installed.

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SUPPLEMENT 15
NICKEL CADMIUM (NiCAD) BATTERY

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Number	Title	Airplane Serial Effectivity	Revision Incorporated	Incorporated in Airplane

NICKEL CADMIUM (NiCAD) BATTERY

GENERAL

When the NiCAD battery is installed, a battery temperature monitoring system is provided to detect an overheat condition of the battery electrolyte. An amber BATTERY HOT annunciation indicates the temperature within the battery is 140 - 160°F (60 - 71°C) and will remain illuminated until the temperature drops below 115°F (46°C). Once the temperature of the electrolyte exceeds 160°F (71°C), the amber BATTERY HOT annunciation will go out and be replaced by a red BATTERY OVHT annunciation. The red BATTERY OVHT annunciation will remain on until the temperature drops below 46°C (145°F) at which time the amber BATTERY HOT annunciation will come back on. In either case, it is necessary to immediately stop providing charging current to the battery from the airplane power system. This is accomplished by turning the BATTERY Switch to OFF and using the appropriate checklist procedures contained in this supplement. During these procedures, BAT AMPS indication should be used to verify that charging current has been reduced to zero (0).

A red BATTERY OVHT annunciation with temperatures above 160°F (71°C) is considered critical and the flight should be terminated as soon as practical.

An amber BATTERY HOT annunciation with temperatures of 140°F (60°C) may become critical if the temperature and charging current continue to rise.

Under high ambient temperature conditions, OAT above 100°F (38°C), a battery temperature of 140°F (60°C) is not considered critical if a decreasing charging current trend is verified and maintained by monitoring the BAT AMPS indication.

OPERATING LIMITATIONS

There are no additional airplane operating limitations when the Nickel Cadmium (NiCAD) battery is installed.

EMERGENCY PROCEDURES

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

RED BATTERY OVHT ANNUNCIATOR COMES ON

1. BATTERY Switch . . . . **OFF**
2. GENERATOR Switch . . . . **TRIP**
3. STBY ALT PWR Switch . . . . **OFF**

WARNING

- **Without electrical power all electrically operated flight and engine indications, fuel boost pump, EIS annunciators, WING FLAPS Handle and all navigation and communications will be inoperative.**
- **All standby instruments, including torque indicator and vacuum-driven standby attitude indicator, will be operative.**

4. AVIONICS No. 1 and No. 2 Power Switches . . . . **OFF**

WARNING

With AVIONICS No. 1 and No. 2 OFF, use standby flight instruments.

5. BUS 1 PWR and
   BUS 2 PWR Circuit Breakers . . . . **OPEN** (pull out)
   (all six rows, first breaker from aft end)

(Continued Next Page)

EMERGENCY PROCEDURES (Continued)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

RED BATTERY OVHT ANNUNCIATOR COMES ON (Continued)

6. Electrical Load. . . . . **REDUCE**
   a. CABIN Lights Switch. . . . . **OFF**
   b. POWER OUTLET Switch(es) . . . . **OFF**
   c. BCN Lights Switch . . . . **OFF**
   d. LDG and TAXI/ RECOG Light Switches . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

   e. VENT AIR FANS. . . . . **OFF**
   f. AIR CONDITIONING (if installed). . . . . **OFF**
   g. GEN CONT and
      GEN FIELD Circuit Breakers . . . . **OPEN** (pull out)
      (first row, last two breakers on forward end)
   h. RDNG LIGHT Circuit Breaker. . . . . **OPEN** (pull out)
      (third row, second breaker from aft end)
   i. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out)
      (AVN BUS 1, second row, sixth breaker from left side)
   j. HF RCVR and
      HF AMP Circuit Breakers . . . . **OPEN** (pull out)
      (AVN BUS 2, second row, fifth and sixth breakers from left side)
7. STBY ALT PWR Switch. . . . . **ON**
8. AVIONICS STBY PWR Switch . . . . **ON**
9. AVIONICS BUS TIE Switch. . . . . **ON**
10. ALT AMPS. . . . . **VERIFY BELOW 75 AMPS**
    (continue shedding if not below 75 amps)
11. Flight . . . . **LAND AS SOON AS PRACTICAL**

NOTE

With standby alternator powering the electrical system, the flight can continue to destination airport with the amber GENERATOR OFF annunciator shown. Monitor ALT AMPS load using ENGINE SYSTEM page.

ABNORMAL PROCEDURES

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS

AMBER BATTERY HOT ANNUNCIATOR COMES ON

1. BATTERY Switch . . . . **OFF**
2. BAT AMPS . . . . **CHECK**

IF BAT AMPS INDICATOR NOT SHOWING A CHARGE CONDITION (0 ZERO)

a. Amber BATTERY HOT annunciator . . . . **MONITOR**
(annunciator will go out once battery cools)

IF BAT AMPS INDICATOR STILL SHOWING A CHARGE CONDITION (+ POSITIVE)

a. GENERATOR Switch . . . . **TRIP**
b. STBY ALT PWR Switch . . . . **OFF**

WARNING

- **Without electrical power all electrically operated flight and engine indications, fuel boost pump, EIS annunciators, WING FLAPS Handle and all navigation and communications will be inoperative.**
- **All standby instruments, including torque indicator and vacuum-driven standby attitude indicator, will be operative.**

3. AVIONICS No. 1 and No. 2 Switches . . . . **OFF**

WARNING

With AVIONICS No. 1 and No. 2 OFF, use standby flight instruments.

4. BUS 1 PWR and
BUS 2 PWR Circuit Breakers . . . . **OPEN** (pull out)
(all six rows, first breaker from aft end)

(Continued Next Page)

ABNORMAL PROCEDURES (Continued)

ELECTRICAL POWER SUPPLY SYSTEM MALFUNCTIONS (Continued)

AMBER BATTERY HOT ANNUNCIATOR COMES ON (Continued)

5. Electrical Load. . . . . **REDUCE**
   a. CABIN Lights Switch. . . . . **OFF**
   b. POWER OUTLET Switch(es) . . . . **OFF**
   c. BCN Lights Switch . . . . **OFF**
   d. LDG and TAXI/ RECOG Light Switches . . . . **OFF**

NOTE

Keep LDG and TAXI/RECOG lights OFF until required for approach and landing. Prior to landing, turn both LEFT and RIGHT LDG light switches to ON.

   e. VENT AIR FANS. . . . . **OFF**
   f. AIR CONDITIONING (if installed). . . . . **OFF**
   g. GEN CONT and
      GEN FIELD Circuit Breakers . . . . **OPEN** (pull out)
      (first row, last two breakers on forward end)
   h. RDNG LIGHT Circuit Breaker. . . . . **OPEN** (pull out)
      (third row, second breaker from aft end)
   i. RADAR R/T Circuit Breaker . . . . **OPEN** (pull out)
      (AVN BUS 1, second row, sixth breaker from left side)
   j. HF RCVR and
      HF AMP Circuit Breakers **OPEN** (pull out)
      (AVN BUS 2, second row, fifth and sixth breakers from left side)
6. STBY ALT PWR Switch. . . . . **ON**
7. AVIONICS STBY PWR Switch . . . . **ON**
8. AVIONICS BUS TIE Switch. . . . . **ON**
9. ALT AMPS. **VERIFY BELOW 75 AMPS**
   (continue shedding if not below 75 amps)
10. Flight . . . . **LAND AS SOON AS PRACTICAL**

NOTE

With standby alternator powering the electrical system, the flight can continue to destination airport with the amber GENERATOR OFF annunciator shown. Monitor ALT AMPS load using ENGINE SYSTEM page.

NORMAL PROCEDURES

There is no change to the airplane normal procedures for airplanes equipped with Nickel Cadmium (NiCAD) battery.

PERFORMANCE

There is no change to the airplane performance for airplanes equipped with Nickel Cadmium (NiCAD) battery.

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