SECTION I

GENERAL

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THANK YOU . . .

for displaying confidence in us by selecting a Beechcraft airplane. Our design engineers, assemblers, and inspectors have utilized their skills and years of experience to ensure that the new Beechcraft meets the high standards of quality and performance for which Beechcraft airplanes have become famous throughout the world.

IMPORTANT NOTICE

This handbook should be read carefully by the owner and the operator in order to become familiar with the operation of the airplane. Suggestions and recommendations have been made within it to aid in obtaining maximum performance without sacrificing economy. Be familiar with, and operate the airplane in accordance with the *Pilot's Operating Handbook and FAA Approved Airplane Flight Manual* and/or placards which are located in the airplane.

As a further reminder, the owner and the operator should also be familiar with the Federal Aviation Regulations applicable to the operation and maintenance of the airplane, and FAR Part 91, General Operating and Flight Rules. Further, the airplane must be operated and maintained in accordance with FAA Airworthiness Directives which may be issued against it.

The Federal Aviation Regulations place the responsibility for the maintenance of this airplane on the owner and the operator, who should ensure that all maintenance is done by qualified mechanics in conformity with all airworthiness requirements established for this airplane.

All limits, procedures, safety practices, time limits, servicing, and maintenance requirements contained in this handbook are considered mandatory for continued airworthiness and to maintain the airplane in a condition equal to that of its original manufacture.

Authorized Beechcraft Aviation Centers, International Distributors, and International Dealers can provide recommended modification, service, and operating procedures issued by both the FAA and Beech Aircraft Corporation, which are designed to get maximum utility and safety from the airplane.

USE OF THE HANDBOOK

The *Pilot's Operating Handbook* is designed to facilitate maintaining the documents necessary for the safe and efficient operation of the airplane. The handbook has been prepared in loose leaf form for ease in maintenance. It incorporates quick-reference tabs imprinted with the title of each section.

NOTES

In an effort to provide as complete coverage as possible, applicable to any configuration of the airplane, some optional equipment has been included in the scope of the handbook. However, due to the variety of airplane appointments and arrangements available, optional equipment described or depicted herein may not be designated as such in every case.

Beech Aircraft Corporation expressly reserves the right to supersede, cancel, and/or declare obsolete, without prior notice, any part, part number, kit, or publication referenced in this handbook.

The owner/operator should always refer to all supplements, whether STC Supplements or Raytheon Aircraft Supplements, for possible placards, limitations, emergency, abnormal, normal, and other operational procedures for proper operation of the airplane with optional equipment installed.

The following publications will be provided, at no charge, to the registered owner/operator of this airplane:

1) Reissues and revisions of Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
2) Original issues and revisions of FAA Approved Airplane Flight Manual Supplements.
3) Original issues and revisions of Raytheon Aircraft Service Bulletins.

The above publications will be provided to the registered owner/operator at the address listed on the FAA Aircraft Registration Branch List or the Raytheon Aircraft Domestic/International Owners Notification List. Further, the owner/operator will receive only those publications pertaining to the registered airplane serial number. For detailed information on how to obtain "Revision Service" applicable to this handbook or other Raytheon Aircraft Service Publications, consult any Raytheon Aircraft authorized outlet, or refer to the latest revision of Raytheon Aircraft Service Bulletin No. 2001.

REVISING THE HANDBOOK

When the handbook is originally issued, and each time it is revised or reissued, a new Log Of Revisions page is provided. All Log Of Revisions pages must be retained until the handbook is reissued. A capital letter in the lower right corner of the Log Of Revisions page designates the Original Issue ("A") or reissue ("B", "C", etc.) covered by the Log page. If a number follows the letter, it designates the sequential revision (1st, 2nd, 3rd, etc.,) to the Original Issue or reissue covered by the Log Of Revisions page. Reference to the Log Of Revisions page(s) enables the user to determine the current issue, revision, or reissue in effect for each page in the handbook (except for the Supplements Section), and provides a record of changes made since the Original Issue or the latest reissue.

WARNING

It shall be the responsibility of the owner/operator to ensure that the latest revisions of publications referenced in this handbook are utilized during operation, servicing, and maintenance of the airplane.

AIRPLANE FLIGHT MANUAL SUPPLEMENTS REVISION RECORD

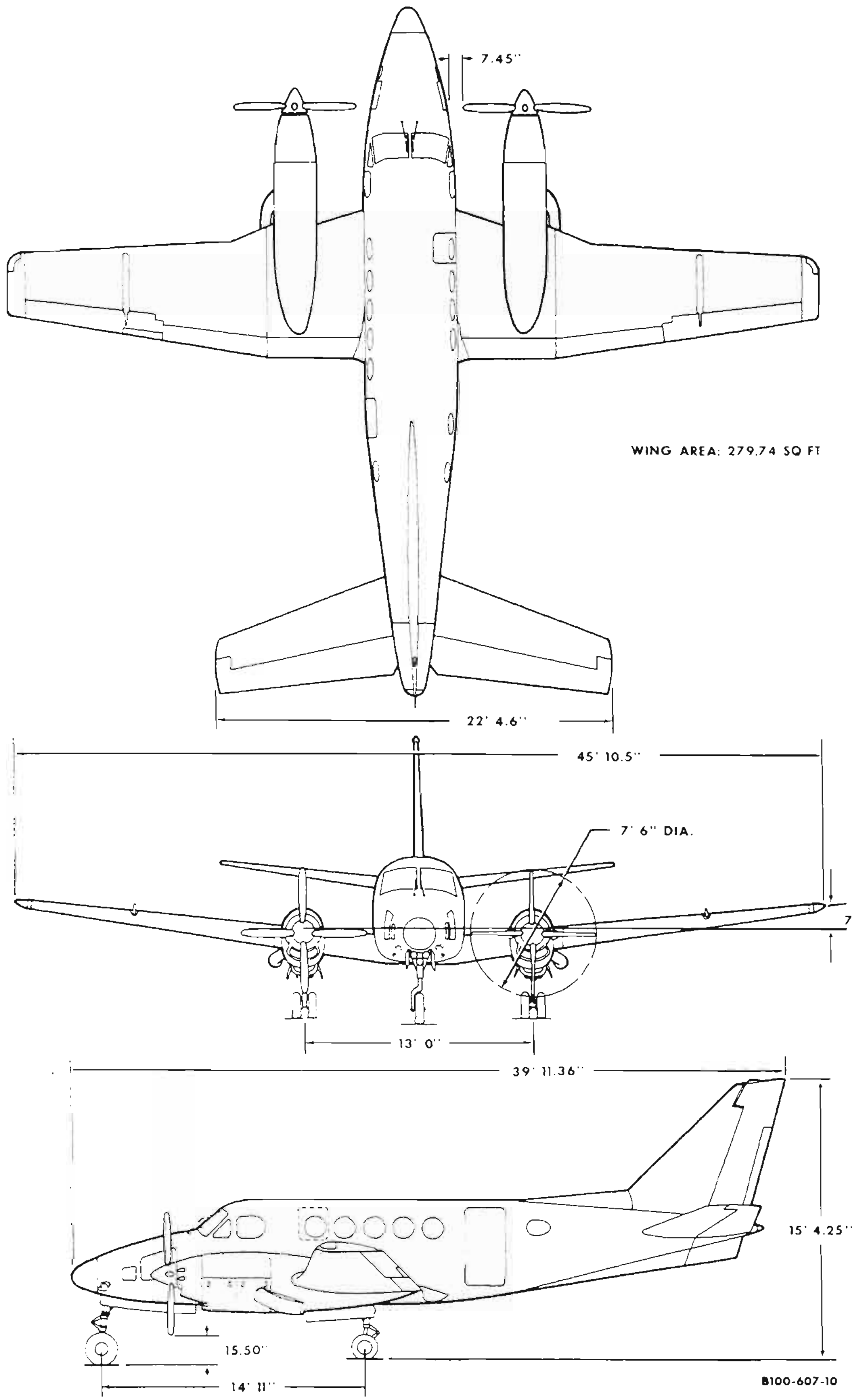
Section IX contains the FAA Approved Airplane Flight Manual Supplements headed by a Log of Supplements page. On the Log page is a listing of the FAA Approved Supplemental Equipment available for installation on the airplane. When new supplements are received or existing supplements are revised, a new Log page will replace the previous one, since it contains a listing of all previous approvals, plus the new approval. The supplemental material will be added to the Section in accordance with the sequence specified on the Log page.

NOTE

Upon receipt of a new or revised supplement, compare the existing Log of Supplements in the handbook with the corresponding applicable Log page accompanying the new or revised supplement. It may occur that the Log page already in the handbook is dated later than the Log page accompanying the new or revised supplement. In any case, retain the Log page having the later date in the folio at the bottom-left corner of the page, and discard the older Log page.

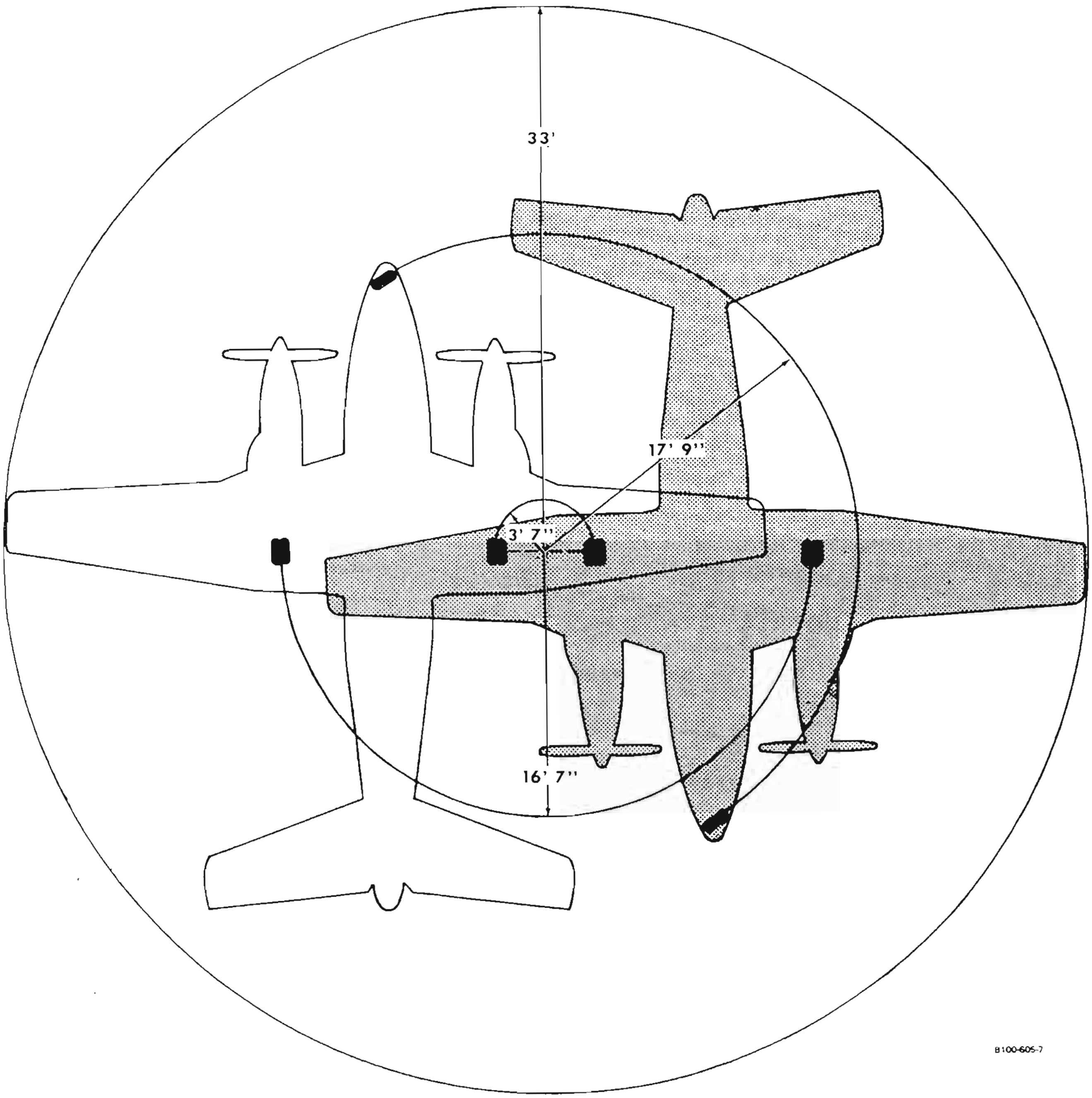
VENDOR-ISSUED STC SUPPLEMENTS

When a new airplane is delivered from the factory, the handbook delivered with it contains either an STC (Supplemental Type Certificate) Supplement or a Beech Flight Manual Supplement for every installed item requiring a supplement. If a new handbook for operation of the airplane is obtained at a later date, it is the responsibility of the owner/operator to ensure that all required STC Supplements (as well as weight and balance and other pertinent data) are transferred into the new handbook.



THREE VIEW B100

GROUND TURNING CLEARANCE



Radius for Inside Gear	3 feet 7 inches
Radius for Nose Wheel	17 feet 9 inches
Radius for Outside Gear	16 feet 7 inches
Radius for Wing Tip	33 feet

TURNING RADII ARE PREDICATED ON THE USE OF PARTIAL BRAKING ACTION AND DIFFERENTIAL POWER.

DESCRIPTIVE DATA

ENGINES

NUMBER OF ENGINES: 2

ENGINE MANUFACTURER: Garrett AiResearch

ENGINE MODEL NUMBER: TPE 331-6-252B

ENGINE TYPE: Turbo-propeller Engine

NUMBER OF DRIVE SHAFTS: 1

1 Single Fixed Shaft

COMPRESSOR STAGES AND TYPES

2 Centrifugal Stages

COMBUSTION CHAMBER TYPE: Annular

TURBINE STAGES AND TYPES

POWER TURBINE

Three-Stage Axial-flow Turbine

ENGINE SHAFT-HORSEPOWER RATING: 715 SHP

COMPRESSOR SHAFT ROTATIONAL SPEED LIMITS

Maximum Take-off/Maximum Continuous/Cruise Climb Power: 100% (41,730 rpm)

PROPELLER ROTATIONAL SPEED LIMITS

Maximum Take-off/Maximum Continuous/Cruise Climb Power: 2000 rpm

PROPELLERS

NUMBER OF PROPELLERS: 2

PROPELLER MANUFACTURER: Hartzell Propeller, Inc. (Piqua, Ohio)

NUMBER OF BLADES: 4

PROPELLER DIAMETER: 90 inches

PROPELLER TYPE

Constant-speed, Full-feathering, Reversing, Counter-weighted, Hydraulically Actuated

PITCH RANGE (30-INCH STATION)

Feathered: $+8.7°$

Reverse: $-10°$

FUEL

RECOMMENDED ENGINE FUELS

COMMERCIAL GRADES

Jet A, Jet A-1, Jet B

MILITARY GRADES

JP-4, JP-5

EMERGENCY ENGINE FUELS (See LIMITATIONS Section for limitations.)

COMMERCIAL AVIATION GASOLINE GRADES

80 Red (Formerly 80/87)
100LL Blue*

*In some countries, this fuel is colored Green and designated "100L."

MILITARY AVIATION GASOLINE GRADES

80/87 Red

USABLE FUEL

Main Fuel System .... 388 gallons
Auxiliary Fuel System .... 82 gallons
Maximum Usable Fuel Quantity .... 470 gallons

APPROVED FUEL ADDITIVES:

Anti-ice Additive conforming to Specification MIL-I-27686E or equivalent not to exceed .15 percent volume when soluable in jet turbine fuel.

Fuel biocide "BIOBOR JF" in concentrations of 135 ppm or 270 ppm.

ENGINE OIL

SPECIFICATION

Any oil specified by brand name in the latest revision of Garrett SIL P331-2 Rev. 15 or Type 1: MIL-L-7808G – Type II: MIL-L-23699B.

TOTAL OIL CAPACITY: 10.5 quarts.

DRAIN AND REFILL QUANTITY: Approximately 8.0 quarts per engine.

OIL QUANTITY OPERATING RANGE: 9.3 to 10.5 quarts.

MAXIMUM CERTIFICATED WEIGHTS

Maximum Ramp Weight........11,875 pounds

Maximum Take-off Weight........11,800 pounds

Maximum Landing Weight........11,210 pounds

Maximum Zero Fuel Weight........9,600 pounds

Maximum Weight in Rear Baggage Compartment........410 pounds

CABIN AND ENTRY DIMENSIONS

Cabin Width (Maximum)........54 inches

Cabin Length (Maximum between pressure bulkheads)........132 inches

Cabin Height (Maximum)........57 inches

Airstair Entrance Door Width (Minimum)........27 inches

Airstair Entrance Door Height (Minimum)........51.7 inches

Pressure Vessel Volume........391.7 cubic feet

Rear Baggage Compartment Volume........53.5 cubic feet

Nose Avionics Compartment Volume........16 cubic feet

SPECIFIC LOADINGS

WING LOADING: 42.2 pounds per square foot

POWER LOADING: 8.25 pounds per shaft horsepower

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following glossary is applicable within this handbook.

GENERAL AIRSPEED TERMINOLOGY

CAS	*Calibrated Airspeed* is the indicated airspeed of an airplane corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
GS	*Ground Speed* is the speed of an airplane relative to the ground.
IAS	*Indicated Airspeed* is the speed of an airplane as shown on the airspeed indicator when corrected for instrument error. IAS values published in this handbook assume zero instrument error.
KCAS	*Calibrated Airspeed* expressed in *knots.*
KIAS	*Indicated Airspeed* expressed in *knots.*
M	*Mach Number* is the ratio of true airspeed to the speed of sound.
TAS	*True Airspeed* is the airspeed of an airplane relative to undisturbed air, which is the CAS corrected for altitude, temperature, and compressibility.
V_1	*Take-off Decision Speed.*
V_2	*Take-off Safety Speed.*
V_A	*Maneuvering Speed* is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_F	*Design Flap Speed* is the highest speed permissible at which wing flaps may be actuated.
V_{FE}	*Maximum Flap Extended Speed* is the highest speed permissible with wing flaps in a prescribed extended position.
V_{LE}	*Maximum Landing Gear Extended Speed* is the maximum speed at which an airplane can be safely flown with the landing gear extended.
V_{LO}	*Maximum Landing Gear Operating Speed* is the maximum speed at which the landing gear can be safely extended or retracted.
V_{MCA}	*Air Minimum Control Speed* is the minimum flight speed at which the airplane is directionally controllable as determined in accordance with Federal Aviation Regulations. The airplane certification conditions include one engine becoming inoperative and windmilling, a 5-degree bank towards the operative engine, take-off power on operative engine, landing gear up, flaps in take-off position, and most rearward C.G. For some conditions of weight and altitude, stall can be encountered at speeds above V_{MCA} as established by the certification procedure described above, in which even stall speed must be regarded as the limit of effective directional control.
V_{MCG}	*Ground Minimum Control Speed.*
V_{MO}/M_{MO}	*Maximum Operating Limit Speed* is the speed limit that may not be deliberately exceeded in normal flight operations. V is expressed in knots and M in Mach Number.

V_R	*Rotation Speed.*
V_S	*Stalling Speed* or the minimum steady flight speed at which the airplane is controllable.
V_{SO}	*Stalling Speed* or the minimum steady flight speed at which the airplane is controllable in the *landing configuration.*
V_{SSE}	*Intentional One-Engine-Inoperative Speed* is a speed above both V_{MCA} and stall speed, selected to provide a margin of lateral and directional control when one engine is suddenly rendered inoperative. Intentional failing of one engine below this speed is not recommended.
V_X	*Best Angle-of-Climb Speed* is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
V_Y	*Best Rate-of-Climb Speed* is the airspeed which delivers the greatest gain in altitude in the shortest possible time.

METEOROLOGICAL TERMINOLOGY

Altimeter Setting — Barometric Pressure corrected to sea level.

Indicated Pressure Altitude — The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of mercury (1013.2 millibars).

IOAT — *Indicated Outside Air Temperature* is the temperature value read from an indicator.

ISA — *International Standard Atmosphere* in which:
(1) The air is a dry perfect gas;
(2) The temperature at sea level is 15° Celsius (59° Fahrenheit);
(3) The pressure at sea level is 29.92 inches of mercury (1013.2 millibars);
(4) The temperature gradient from sea level to the altitude at which the temperature is –56.5°C (–69.7°F) is –0.00198°C (–0.003566°F) per foot and zero above that altitude.

OAT — *Outside Air Temperature* is the free air static temperature, obtained either from the temperature indicator (IOAT) adjusted for compressibility effects, or from ground meteorological sources.

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

Station Pressure — Actual atmospheric pressure at field elevation.

Temperature Compressibility Effects — An error in the indication of temperature caused by airflow over the temperature probe. The error varies, depending on altitude and airspeed.

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

POWER TERMINOLOGY

Cruise Climb Power	It is the maximum power approved for normal climb. These powers are torque or temperature (ITT) limited.
Maximum Continuous Power	Is the highest power rating not limited by time. Use of this rating is intended for emergency situations at the discretion of the pilot.
Negative Torque	The turning force applied to the engine by the propeller or starter. This occurs during engine start or when an engine loses power in flight and the propeller drives the engine due to windmilling.
Negative Torque Sensing (NTS) System	A system designed to automatically reduce drag against a windmilling engine by moving the propeller blades toward feather.
RPM	*Revolutions Per Minute* normally expressed as a percentage of maximum engine speed.
SHP	*Shaft Horsepower.*
Take-off Power	Is the maximum power rating and is limited to a maximum of 5 minutes operation. Use of this rating should be limited to normal take-off operations and emergency.
Torque	A measurement that is proportional to the power output of the engine.

ENGINE TERMINOLOGY

Atomizer	An orificed device through which fuel is forced as it enters the combustor to produce rapid evaporation of the fuel for combustion.
Axial Flow Turbine	One in which energy in flowing air is converted to shaft power while the air follows a path parallel to the turbine's axis of rotation.
Centrifugal Flow Compressor	A device in which the blades are arranged to lie along the radius of the wheel or rotor. On a compressor, air flow outward; on a turbine, air flow inward.
Combustor or Liner	The holed, sheet metal assembly within which the flame is contained.
Combustion Chamber	The section of the engine into which fuel is injected and burned, and which contains the flame tube or combustor.
Compressor	The section of the engine which increases the energy of the air received from the entrance duct, and discharges it into the turbine section.
Critical Speed	The rpm at which continuous operation should be avoided because of certain vibration modes.
Fuel Control Unit	A device used to regulate fuel flow to the combustion chambers with respect to one or more of the following factors: power control lever setting, inlet air temperature and pressure, compressor rpm, combustion chamber pressure, and exhaust temperature.
Igniter	A device used to start the burning of the fuel/air mixture in a combustion chamber.
Impeller	The main rotor of a radial compressor which increases the velocity of the air which it pumps.

Plenum A duct, housing or enclosure used to contain air under pressure.

Scavenge Pump A pump used to remove oil from bearing pockets, or voids, after the oil has been used for lubricating and/or cooling.

Stage (Compressor) Each row of compressor rotor blades and the following row of stator vanes in which the air pressure is progressively increased is referred to as a compressor stage. Also, a combination impeller and diffuser constitute a stage.

Stage (Turbine) Each row of turbine nozzle guide vanes and the following row of turbine blades, used to extract power from the hot gases to drive the compressors and accessories.

Start Locks Mechanical device on each prop blade used to maintain the propeller at minimum pitch position during engine starting.

Stator A row of stationary airfoils which direct the airflow between the rows of rotor blades.

Turbine A rotating device actuated either by reaction or impulse (or a combination of both), and used to transform some of the kinetic energy of the exhaust gases into shaft horsepower to drive the compressor(s) and accessories.

Turbine Exhaust Cone A fixed or adjustable bullet-shaped fairing over which the exhaust gases pass before converging in the exhaust section.

Turboprop A type of gas turbine that converts heat energy into propeller shaft work and some jet thrust.

CONTROL AND INSTRUMENT TERMINOLOGY

Beta Range Engine operational mode in which prop blade pitch is hydromechanically controlled from the cockpit power lever.

Engine Speed Lever Cockpit lever providing inputs to underspeed governor and propeller governor to alter engine RPM. Sometimes called condition or rpm lever.

Interstage Turbine Temperature (ITT) Gas temperature measured at inlet of second stage turbine stator assembly.

Overspeed Governor Flyweight operated fuel metering device, housed in the fuel control unit. It prevents engine overspeed in the event of a malfunction of the propeller governor.

Power Lever Cockpit lever used to change propeller pitch during Beta operation and select engine fuel flow during prop governing.

Propeller Governor Regulates the rpm of the engine/propeller by increasing or decreasing the propeller pitch through a pitch change mechanism in the propeller hub.

Reverse Thrust The thrust produced when the propeller blades are rotated past flat pitch into the Beta range.

Tachometer Indicates the speed of the engine in % of maximum.

Torque Meter The instrument that indicates the torque output of the engine gearbox.

Underspeed Governor (USG) Flyweight operated fuel metering device, housed in the fuel control unit. It establishes engine RPM during Beta Mode of operation.

GRAPH AND TABULAR TERMINOLOGY

Accelerate-Go The distance to accelerate to *Take-off Decision Speed* (V_1), experience an engine failure, continue accelerating to lift-off then climb and accelerate in order to achieve Take-off Safety Speed (V_2) at 50 feet above the runway.

Accelerate-Stop The distance to accelerate to *Take-off Decision Speed* (V_1) and bring the airplane to a stop.

AGL *Above Ground Level*

Best Angle of Climb The best angle-of-climb delivers the greatest gain of altitude in the shortest possible horizontal distance with gear and flaps up.

Best Rate of Climb The best rate-of-climb delivers the greatest gain of altitude in the shortest possible time with gear and flaps up.

Clearway A clearway is an area beyond the airport runway not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clear plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.

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

Demonstrated Crosswind The maximum 90° crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification, however, this is not considered a limitation.

MEA *Minimum Enroute Altitude.*

Net Gradient of Climb The gradient of climb with the flaps in the take-off position, and the landing gear retracted. "Net" indicates that the actual gradients of climb have been reduced by .8% to allow for turbulence and pilot technique. The Net Gradient of Climb graphs are constructed so that the value(s) obtained using the airport pressure altitude and outside air temperature will be the average gradient from 50 ft above the runway up to 1500 ft above the runway.

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

Take-off Flight Path The minimum gradient of climb required to clear obstacles in excess of 50 feet, measured horizontally from reference zero and vertically at the altitude above the runway. Reference zero is the point where the airplane has reached 50 feet above the runway as determined from the Accelerate-Go graphs.

WEIGHT AND BALANCE TERMINOLOGY

Approved Loading Envelope Those combinations of airplane weight and center of gravity which define the limits beyond which loading is not approved.

Arm	The distance from the center of gravity of an object to a line about which moments are to be computed.
Basic Empty Weight	Standard empty weight plus optional equipment and modifications.
Center of Gravity	A point at which the weight of an object may be considered concentrated for weight and balance purposes.
CG Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
Datum	A vertical plane perpendicular to the airplane longitudinal axis from which fore and aft (usually aft) measurements are made for weight and balance purposes.
Standard Empty Weight	Weight of a standard airplane including unusable fuel, full operating fluids and full oil.
Jack Point	Points on the airplane identified by the manufacturer as suitable for supporting the airplane for weighing or other purposes.
Landing Weight	The weight of the airplane at landing touchdown.
Leveling Points	Those points which are used during the weighing process to level the airplane.
Maximum Weight	The largest weight allowed by design, structural, performance or other limitations.
Moment	A measure of the rotational tendency of a weight, about a specified line, mathematically equal to the product of the weight and the arm.
Payload	Weight of occupants, cargo and baggage.
PPH	*Pounds Per Hour*
Ramp Weight	The airplane weight at engine start assuming all loading is completed.
Station	The longitudinal distance from some point to the zero datum or zero fuselage station.
Take-off Weight	The weight of the airplane at lift-off from the runway.
Tare	The apparent weight which may be indicated by a scales before any load is applied.
Unusable Fuel	The fuel remaining after consumption of usable fuel.
Usable Fuel	That portion of the total fuel which is available for consumption as determined in accordance with applicable regulatory standards.
Useful Load	The difference between the airplane ramp weight and the basic empty weight.
Zero Fuel Weight	The airplane ramp weight minus the weight of fuel on board.

SECTION 2
LIMITATIONS
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SECTION 2

LIMITATIONS

TABLE OF CONTENTS (CONT'D)

SUBJECT *PAGE*

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The limitations included in this Section have been approved by the Federal Aviation Administration, and they must be observed in the operation of the Beechcraft King Air B100.

AIRSPEED LIMITATIONS			
SPEED	**KCAS**	**KIAS**	**REMARKS**
Maneuvering Speed V_A (11,800 pounds)	170	167	Do not make full or abrupt control movements above this speed.
Maximum Flap Extension/ Extended Speed V_{FE} Approach Position - 30% Full Down Position - 100%	 182 156	 179 153	Do not extend flaps or operate with flaps in prescribed position above these speeds.
Maximum Landing Gear Operating Speed V_{LO} Extension Retraction	 156 156	 153 153	Do not extend or retract landing gear above the speeds given.
Maximum Landing Gear Extended Speed V_{LE}	156	153	Do not exceed this speed with landing gear extended.
Air Minimum Control Speed V_{MCA}	86	85	This is the lowest airspeed at which the airplane is directionally controllable when one engine suddenly becomes inoperative and the other engine is at take-off power. (See definition in Section I.)
Maximum Operating Speed * V_{MO} M_{MO}	 226 .46 Mach	 223 	Do not exceed this airspeed or Mach Number in any operation. Decrease 4 kts per 1,000 ft above 15,500 ft.

AIRSPEED INDICATOR MARKINGS*			
MARKING	**KCAS VALUE OR RANGE**	**KIAS VALUE OR RANGE**	**SIGNIFICANCE**
Red Line	86	85	Air Minimum Control Speed (V_{MCA})
White Arc	86 to 156	83 to 153	Full-Flap Operating Range
White Triangle	182	179	Maximum Flaps-to/at-Approach Speed.
Blue Line	129	125	One Engine-Inoperative Best Rate of Climb Speed.
Green Arc	96 to 226	93 to 223	Normal Operating Range.
Red Line	226	223	Maximum Speed for any operation.

**The airspeed indicator is marked in IAS values.*

POWER PLANT LIMITATIONS

NUMBER OF ENGINES

2

ENGINE MANUFACTURER

Garrett AiResearch

ENGINE MODEL NUMBER

TPE331-6-252B

ENGINE OPERATING LIMITS

The following limitations shall be observed. Each column presents limitations. The limits presented do not necessarily occur simultaneously. Refer to Garrett AiResearch Maintenance Manual for specifications required if limits are exceeded.

ENGINE OPERATING LIMITS

OPERATING CONDITION	SHP	TORQUE FT LBS	MAXIMUM OBSERVED ITT °C	ENGINE SPEED %	OIL PRESS. PSIG (2)	OIL TEMP °C
TAKEOFF	715	1878	923	101 (1)	70 to 120	55 to 110
MAX CONT	715	1878	923	100.5	70 to 120	55 to 110
CRUISE	715	1878	905	96 to 100	70 to 120	55 to 110
FLIGHT IDLE	–	–	–	96 to 100	70 to 120	55 to 110
GROUND IDLE	–	–	–	64 to 97.5	40 to 120	-40 (min)
MAX REVERSE	–	–	923	93 (3)	70 to 120	55 to 110
STARTING (4)	–	–	1149 (5)	–	–	-40 (min)
TRANSIENT	–	2040 (1)	938 (6)	105 (7)	–	–
WINDMILLING	–	–	–	28 to 100 (8)	–	–

(1) These values limited to 5 minutes.
(2) Above 23,000 feet – Minimum Oil Pressure, 50 psig.
(3) Landing Minimum, Static Minimum is 94.5%.
(4) Starting Time Limits (from 10% rpm to Lightoff): Ground – 10 seconds; Air – 15 seconds.
(5) This value is limited to 1 second.
(6) Value is limited to 30 seconds.
(7) This value limited to 5 seconds.
(8) Value limited to 1 minute – Avoid operation between 18% and 28% except for engine starting and shutdown transients. 0% to 5% continuous operation permitted.

BEECH KING AIR® B100

TEMPORARY CHANGE TO THE PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL

P/N 100-590038-1BTC1

PUBLICATION AFFECTED:	King Air B100 Pilot's Operating Handbook and FAA Approved Airplane Flight Manual P/N 100-590038-1B, Reissued October, 1984 or Subsequent
AIRPLANE SERIAL NUMBERS AFFECTED:	BE-1 and after
DESCRIPTION OF CHANGE:	Provides a Limitation prohibiting the selection of Beta Range in flight.
FILING INSTRUCTIONS:	Insert this Temporary Change into the B100 Pilot's Operating Handbook and FAA Approved Airplane Flight Manual following page 2-6 (LIMITATIONS Section), and retain until rescinded or replaced.

LIMITATIONS

POWER PLANT LIMITATIONS

POWER LEVERS

Do not lift the power levers in flight. Lifting the power levers in flight, or moving the power levers in flight below the flight idle position, could result in a nose-down pitch and a descent rate leading to aircraft damage and injury to personnel.

APPROVED BY: ______________________ for
A. C. Jackson
Raytheon Aircraft Company
DOA CE-2

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PROPELLER MANUFACTURER

Hartzell Propeller, Inc.

PROPELLER HUB AND BLADE MODEL NUMBERS

HUBS		BLADES	
BE1 thru BE113	*BE114 and After*	*BE1 thru BE113*	*BE114 and After*
HCB4TN-5C	HCB4TN-5C	T10173FB-12½	T10173FK-12½
HCB4TN-5F	HCB4TN-5F		

PROPELLER DIAMETER

90 inches

PROPELLER BLADE ANGLES AT 30-INCH STATION

Feathered:	+87°	Flight Idle	+8.5°
Reverse:	-10°	Start Locks Engaged	+2.5°

PROPELLER ROTATIONAL SPEED LIMITS

Maximum Take-off/Maximum Continuous/Cruise Climb Power .... 2000 rpm
All other conditions .... 2000 rpm

POWER PLANT INSTRUMENT MARKINGS

INSTRUMENT	Red Line MINIMUM LIMIT	Yellow Arc CAUTION RANGE	Green Arc NORMAL OPERATING	Yellow Arc MAXIMUM OPERATING	Red Line MAXIMUM LIMIT
TORQUE METER			0 to 1878 ft lbs		1878 ft lbs
INTERSTAGE TURBINE TEMPERATURE*			200°-905°C	905°-923°C	923°C
TACHOMETER			96%-100%		101%
OIL PRESSURE	40 psi	40-70 psi	70-120 psi		120 psi
OIL TEMPERATURE		0°-55°C	55°-110°C		110°C

*Starting Limit (Red Dashed Line): 1149° C

MISCELLANEOUS INSTRUMENT MARKINGS

FUEL QUANTITY INDICATORS

Yellow Arc (No-Takeoff Range) .... 0 to 265 pounds

CABIN DIFFERENTIAL PRESSURE GAGE

Green Arc (Approved Operating Range) .... 0 to 4.7 psi
Red Arc (Unapproved Operating Range) .... 4.7 psi to end of scale

PITCH TRIM INDICATIONS

Pitch Trim Take-off Range (Green Arc) .... 0° to 2° Nose Up

PNEUMATIC GAGE

Green Arc (Normal Operating Range) .... 12 to 20 psi
Red Line (Maximum Operating Limit) .... 20 psi

VACUUM (SUCTION) GAGE

Narrow Green Arc (Normal from 35,000 to 15,000 feet MSL) .... 3.0 to 4.3 in. Hg
Wide Green Arc (Normal from 15,000 feet MSL to Sea Level) .... 4.3 to 5.9 in. Hg

PROPELLER DEICE AMMETER

Green Arc (Normal Operating Range) .... 18-24 amperes

WEIGHT LIMITS

Maximum Ramp Weight .... 11,875 pounds

Maximum Take-off Weight:
All Except FAR Part 135 Operations .... 11,800 pounds

FAR Part 135 Operations .... 11,800 pounds or As Limited

Maximum Landing Weight .... 11,210 pounds

Maximum Zero Fuel Weight .... 9,600 pounds

Maximum Weight in Baggage Compartment .... 410 pounds

CENTER OF GRAVITY LIMITS

AFT LIMIT

191 inches aft of datum at all weights

FORWARD LIMITS

181.75 inches aft of datum at 11,800 pounds, 175 inches aft of datum at 9100 lb or less. A linear variation between the above.

DATUM

The reference datum is located 83.5 inches forward of the center of the front jack point.

MEAN AERODYNAMIC CHORD (MAC)

The leading edge of the MAC is 165.1 inches aft of the datum.

The MAC length is 77.86 inches.

GENERATOR LIMITS		
ENGINE SPEED (RPM)	LOADMETER READING	LOAD
(GROUND) 65%	.80	240 AMPS
(GROUND) 70%	.86	260 AMPS
(FLIGHT) 96% to 100%	1.00	300 AMPS

STARTERS

Use is limited to 30 seconds on, 60 seconds off, 30 seconds on, 60 seconds off, 30 seconds on, then 30 minutes off.

APPROVED FUEL GRADES AND ADDITIVES

RECOMMENDED ENGINE FUELS

COMMERCIAL GRADES

Jet A
Jet A-1
Jet B

MILITARY GRADES

JP-4
JP-5

EMERGENCY ENGINE FUELS

COMMERCIAL AVIATION GASOLINE GRADES

80 Red (Formerly 80/87)

100LL Blue*

**In some countries, this fuel is colored Green and designated 100L*

MILITARY AVIATION GASOLINE GRADES

80/87 Red

LIMITATIONS ON THE USE OF AVIATION GASOLINE

Aviation Gasoline (MIL-G-5572D) Grade 80/87 or Aviation Gasoline (ASTM D 910) grade 100LL

Operation on 80/87 aviation gasoline is limited to:
1. 1000 gallons per engine per 100 hours of operation.
2. Main tanks only. (Auxilliary tanks shall not be filled with aviation gasoline.)

Operation on 100LL aviation gasoline is limited to:
1. 250 gallons per engine per 100 hours of operation or a total of 7000 gallons per engine during any overhaul period.
2. Main tanks only. (Auxilliary tanks shall not be filled with aviation gasoline.)

Petroleum Base Aviation Oil (MIL-L-6082) should be added at the rate of one quart per 100 gallons of aviation gasoline (Grades 80/87 or 100LL) if the total fuel mixture exceeds 25% aviation gasoline.

APPROVED FUEL ADDITIVES

FUEL ANTI-ICING ADDITIVE

Use anti-icing additive conforming to Specification MIL-I-27686.

Engine oil is used to heat the fuel on entering the fuel control. Since no temperature measurement is available for the fuel at this point, it must be assumed to be the same as the OAT.

CAUTION

Anti-icing additive must be properly blended with the fuel to avoid deterioration of the fuel cells. The additive concentration by volume shall be a minimum of 0.06% and a maximum of 0.15%. Approved procedure for adding anti-icing concentrate is contained in Section VIII.

JP-4 fuel per MIL-T-5624 has anti-icing additive per MIL-I-27686 blended in the fuel at the refinery, and no further treatment is necessary. Some fuel suppliers blend anti-icing additive in their storage tanks. Prior to refueling, check with the fuel supplier to determine whether or not the fuel has been blended. To assure proper concentration by volume of fuel on board, blend only enough additive for the unblended fuel.

FUEL BIOCIDE ADDITIVE

Fuel biocide-fungicide "BIOBOR JF" in concentrations of 135 ppm or 270 ppm may be used in the fuel. BIOBOR JF may be used as the only fuel additive or it may be used with the anti-icing additive conforming to MIL-I-27686 specification. Used together the additives have no detrimental effect on the fuel system components.

See King Air 100 Series Maintenance Manual for concentrations to use and for procedures for adding BIOBOR JF to the airplane fuel.

FUEL MANAGEMENT

1. Do not put any fuel into the auxiliary tanks unless the main tanks are full.
2. If fuel is in the auxiliary tank, it must be depleted before using fuel from the main tanks.
3. Do not take off if fuel quantity gages indicate in yellow arc or less than 265 pounds of fuel in each main tank.
4. Crossfeeding of fuel is permitted only when one engine is inoperative.
5. Do put Aviation Gasoline in auxiliary tanks.

WARNING

The airplane is approved for takeoff with one standby boost pump inoperative, but in such a case, crossfeed of fuel will not be available from the side of the inoperative standby boost pump.

OIL SPECIFICATION

Any oil specified by brand name in the latest revision of Garrett AiResearch SIL P331-2 Rev 15 approved for use in the TPE 331-6-252B engine.

NUMBER OF PROPELLERS

2

MANEUVER LIMITS

The Beech King Air B100 is a Normal Category Airplane. Acrobatic maneuvers, including spins, are prohibited. Inflight engine cuts are prohibited below V_{SSE}.

FLIGHT LOAD FACTOR LIMITS AT 11,800 POUNDS

3.27 positive g's/1.31 negative g's.

MINIMUM FLIGHT CREW

One Pilot

USABLE FUEL LIMITS

Main Fuel System .... 388 gallons

Auxiliary Fuel System .... 82 gallons

Maximum Usable Fuel Quantity .... 470 gallons

MAXIMUM OPERATING PRESSURE-ALTITUDE LIMITS

Normal Operation .... 31,000 feet

OUTSIDE AIR TEMPERATURE LIMITS

Do not operate the airplane when the outside air temperature is outside the limits specified below:

MINIMUM LIMIT

All Altitudes .... -54°C

MAXIMUM LIMIT

All Altitudes .... ISA + 37°C

CABIN PRESSURIZATION LIMIT

Maximum Cabin Pressure Differential .... 4.7 psig

MAXIMUM OCCUPANCY LIMIT

Maximum Occupancy .... Fifteen (15)

MAXIMUM STRUCTURAL LIMITS

Maximum Cabin Pressure Differential. . . . . 4.7 psi

Cabin Door Forward and Aft Side Latches (or bayonets) (4) Safelife . . . . 5,000 cycles

Cabin Door Upper Latch Hooks (2) and Attaching Hardware . . . . 10,000 cycles

Fuselage Pressure Vessel Structure. . . . . Inspections in Chapters 5 and 53-10-00 of the King Air 100 Series Maintenance Manual are required for continued airworthiness.

All Wing Attach Bolts, Nuts and Barrel Nut Assemblies:

Steel Components . . . . Inspect every 2 calendar years of installed bolt and nut time. Replace every 6 calendar years of installed bolt and nut time.

Inconel Components . . . . Inspect every 3 calendar years or 1,000 hrs of installed bolt and nut time. Replace every 15 calendar years or 15,000 hrs of installed bolt and nut time.

Horizontal Stabilizer Service Life Limit . . . . 38,000 hrs

AUTOPILOT LIMITATIONS

14 CFR PART 91 OPERATIONS

Refer to the applicable FAA Approved Airplane Flight Manual Supplement in Section IX, SUPPLEMENTS.

14 CFR PART 135 OPERATIONS

Refer to the applicable FAA Approved Airplane Flight Manual Supplement in Section IX, SUPPLEMENTS, except for Minimum Altitude, which is established by 14 CFR Part 135 as follows:

1. Enroute - 500 feet above terrain
2. Coupled Approach - Observe Decision Height (DH) or Minimum Descent Altitude (MDA).

STABILIZER TRIM SYSTEM

Flight will not be initiated with any malfunction of either the main or standby trim systems. The Main Pitch Trim System master switch and the Standby Pitch Trim System master switch shall not be in the ON position at the same time. These systems shall be operated independently of each other.

CABIN SEATS

Only aft facing seats (placarded as such on the leg crossmember) are authorized in the aft facing position.

(BE-1 thru BE-12):

During takeoff and landing, occupied seats must be in the upright position with the headrests fully raised.

(BE-13 and After):

During takeoff and landing, shoulder harness must be worn, and occupied seats must be in outboard position with backs upright and headrests fully raised.

CARGO LIMITATIONS

1. All cargo shall be properly secured by an FAA-approved cargo restraint system.
2. Cargo must be arranged to permit free access to all exits and emergency exits.

KINDS OF OPERATION LIMITS

The Beech King Air B100 is approved for the following types of operations when the required equipment is installed and operational as defined within the listing of KINDS OF OPERATIONS EQUIPMENT LIST in Section II, LIMITATIONS, of this handbook:

1. VFR Day
2. VFR Night
3. IFR Day
4. IFR Night
5. Icing Conditions

ICING LIMITATIONS

Minimum Ambient Temperature for Operation of Deicing Boots . . . . -40°C

Minimum Airspeed for Sustained Icing Flight. . . . . 140 knots

Sustained flight in icing conditions with flaps extended is prohibited except for approach and landing.

The MAN FUEL/IGN switches must be ON (ARMED for the automatic ignition system) during all operations in actual or potential icing conditions. Therefore, flight in actual or potential icing conditions will be limited by the duty cycle ON time of the ignition system. Ignition system time limits must be observed to prevent exceeding duty cycle times. The pilot should verify these limits for the particular airplane installation.

IGNITION SYSTEM	
EXCITER UNIT P/N	**DUTY CYCLE**
868962-3 (Kit no. 100-3019-1S Not Installed)	One Hour (Total) ON in Any Two-hour Period
868962-1 or 868962-2 (Kit no. 100-3019-1S Not Installed)	1 Minute ON - 1 Minute OFF or 2 Minutes ON - 2 Minutes OFF 2 Minutes ON - 23 Minutes OFF or 5 Minutes ON - 55 Minutes OFF

NOTE

Potential icing conditions exist when visible moisture is present and the OAT is +5°C or below.

APPROVED AIRPLANE DEICING/ANTI-ICING FLUIDS

SAE AMS 1424 Type I

ISO 11075 Type I

SAE AMS 1428 Type II

ISO 11078 Type II

SAE AMS 1428 Type IV. Only the following Type IV fluids are approved:

- Clariant Safewing MP IV 1957
- Clariant Safewing MP IV 2001
- UCAR ULTRA+ (Approved for use down to -15°C)
- Octagon Max Flight Type IV

LIMITATIONS WHEN ENCOUNTERING SEVERE ICING CONDITIONS (Required By FAA AD 98-04-24)

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.

1. 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.
   a. Unusually extensive ice accumulation on the airframe and windshield in areas not normally observed to collect ice.
   b. Accumulation of ice on the upper surface of the wing, aft of the protected area.
   c. Accumulation of ice on the engine nacelles and propeller spinners farther aft than normally observed.
2. Since the autopilot, when installed and operating, 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.
3. All wing icing inspection lights must be operative prior to flight into known or forecast icing conditions at night. [NOTE: This supersedes any relief provided by the Master Minimum Equipment List (MMEL).]

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PLACARDS

On Overhead Panel in Pilot's Compartment:

OPERATION LIMITATIONS
THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS MARKINGS AND MANUALS
NO ACROBATIC MANEUVERS INCLUDING SPINS ARE APPROVED
THIS AIRPLANE APPROVED FOR VFR IFR DAY & NIGHT OPERATION & IN ICING CONDITIONS
CAUTION
STALL WARNING IS INOPERATIVE WHEN MASTER SWITCH IS OFF
STANDBY COMPASS IS ERRATIC WHEN WINDSHIELD ANTI-ICE AND /OR AIR-CONDITIONER AND/OR ELECTRIC HEAT IS ON

On Overhead Panel in Pilot's Compartment (Serials BE-1 thru BE-84):

AIRSPEED LIMITATIONS I.A.S.

MAX OPERATION 223 KNOTS (S.L. TO 15,500 FT), DECREASE BY 4 KNOTS FOR EVERY 1,000 FT ABOVE 15,500 FT

MAX GEAR EXTENSION	153 KNOTS	MAX APPROACH FLAP	179 KNOTS
MAX GEAR RETRACT	153 KNOTS	MAX FULL DOWN FLAP	153 KNOTS
MAX GEAR EXTENDED	153 KNOTS	MAX MANEUVERING	167 KNOTS
MAX DEMONSTRATED CROSSWIND	25 KNOTS	RECOMMENDED APPROACH SPEED	112 KNOTS

RECOMMENDED TWIN ENGINE CLIMBS, BEST ANGLE 115 KNOTS, BEST RATE 130 KNOTS

On Overhead Panel in Pilot's Compartment (Serials BE-85 and After):

AIRSPEEDS

MAX GEAR EXTENSION	153 KNOTS
MAX GEAR RETRACT	153 KNOTS
MAX GEAR EXTENDED	153 KNOTS
MAX APPROACH FLAP	179 KNOTS
MAX FULL DOWN FLAP	153 KNOTS
MAX MANEUVERING	167 KNOTS

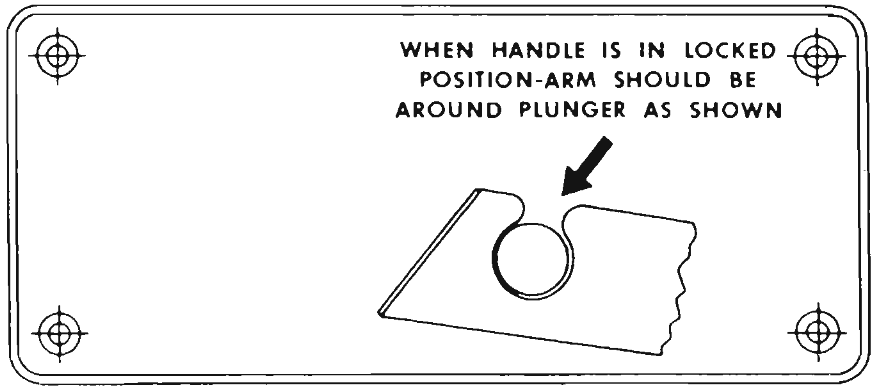
On Instrument Panel Adjacent to Each Gyroscopic Instrument (Depending on Gyro's Power Source): (Omitted When Power Source is indicated on Instrument Face.)

AIR   AC   DC

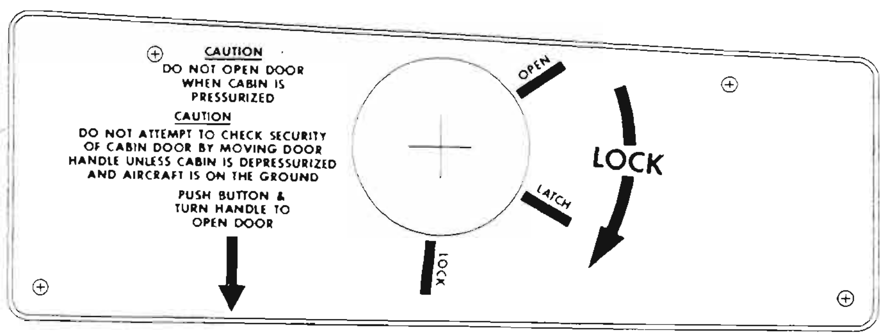
On Fuel Panel:

CAUTION:
TURN AUX TRANS OFF DURING CROSSFEED (SIDE BEING FED)

Inside Airstair Door Between Folding Steps:



Inside Airstair Door Behind Handle:



On Airstair Door Step:

On Instrument Panel Adjacent to the Copilot's Airspeed Indicator:

SEE LIMITATIONS PLACARD
FOR "MAX. OPERATION"
ABOVE 15,500 FT

Aft of Overhead Light Panel:

OXYGEN
PULL-ON

On Right Side Panel:

PILOT'S EMERGENCY
STATIC AIR SOURCE
NORMAL ALTERNATE
WARNING
SEE FLIGHT MANUAL PERFORM-
ANCE SECTION FOR
INSTR CAL ERROR

Below Latch on Forward Side of Forward & Aft Partition:

KICK HERE
FOR
EMERGENCY
EVACUATION

On Pedestal Adjacent to Cabin Pressurization Controller:

WARNING DE-PRESSURIZE CABIN
BEFORE LANDING

On Upper Fuel Control Panel:

SEE MANUAL FOR
FUEL CAPACITY

On Floor Aft of Pedestal:

LANDING GEAR
EMERGENCY EXTENSION
1. PULL UP HANDLE AND
TURN CLOCKWISE TO LOCK
2. REMOVE LEVER FROM
SECURING CLIP AND PUMP

Center of Cabin on Passenger Service Unit (On Cabin Side of Forward and Aft Partition):

NO SMOKING

FASTEN SEAT BELT

On Emergency Exit Handle:

EXIT-PULL

On Window Frame Escutcheon Adjacent to Couch (Airplanes Equipped With a Chaise Lounge):

N/A

COUCH

NOT TO BE OCCUPIED AS CHAISE LONGUE DURING TAKE-OFF AND LANDING.

On Center of Aft Bulkhead (For Airplanes not Equipped with Fold-Up Seats):

LOADING LIMITATION
410 LBS MAX
FOR THIS COMPARTMENT

On Center of Aft Bulkhead (For Airplanes Equipped with Fold-up seats):

N/A

COMPARTMENT CAPACITY

TOTAL COMPARTMENT CAPACITY (INCLUDING BAGGAGE AND/OR PASSENGER) NOT TO EXCEED 370 POUNDS

SEE WEIGHT AND BALANCE SECTION OF FLIGHT MANUAL FOR LOADING INSTRUCTIONS

On Center Front of Two-Place Couch; BE-1 Thru BE-122 (Airplanes Equipped With a Two-Place Couch):

N/A

COUCH LIMITATIONS

**TOTAL WEIGHT OF OCCUPANTS NOT TO EXCEED 340 LBS
MAX WT OF DRAWER CONTENTS 30 LBS PER DRAWER**

Center Inside Drawer; BE-123 and After (Airplanes Equipped With a Two-Place Couch):

COUCH LIMITATIONS

MAX WT OF DRAWER CONTENTS
30 LBS PER DRAWER

Stitched to Aft End of Cushion (Airplanes Equipped With a Chaise Lounge): N/A

NOT TO BE OCCUPIED AS CHAISE LOUNGE DURING TAKE-OFF AND LANDING

KINDS OF OPERATIONS EQUIPMENT LIST

This airplane may be operated in day or night VFR, or day or night IFR, and flight into icing conditions, when the appropriate equipment is installed and operable.

The following equipment list identifies the systems and equipment upon which type certification for each kind of operation was predicated. The following systems and items of equipment must be installed and operable for the particular kind of operation indicated unless:

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

   Or;

2. An alternate procedure is provided in the Pilot's Operating Handbook and FAA Approved Flight Manual for the inoperative state of the listed equipment.

Numbers on the Kinds of Operations Equipment List refer to quantities required to be operative for a specified condition.

NOTE

The following Kinds of Operations Equipment List does not include all specific flight instruments and communications/navigation equipment required by the FAR Parts 91 and 135 Operating Requirements.

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS
ELECTRICAL POWER					
1. AC Volts/Frequency Meter	1	1	1	1	1
2. Battery	2	2	2	2	2
3. Battery Monitor System Including Annunciator	2	2	2	2	2
4. DC Generator	2	2	2	2	2
5. DC Generator Annunciator	2	2	2	2	2
6. DC Loadmeter	2	2	2	2	2
7. Inverter	2	2	2	2	2
8. Inverter Annunciator	1	1	1	1	1
ENVIRONMENTAL					
1. Bleed Air Failure Annunciator	2	2	2	2	2
2. Bleed Air Shutoff Valve	2	2	2	2	2
3. Cabin Altitude Annunciator (Cabin)	1	1	1	1	1
4. Cabin Rate of Climb Indicator	1	1	1	1	1
5. Differential Pressure/Cabin Altitude Indicator	1	1	1	1	1
6. Duct Overtemp Annunciator	1	1	1	1	1
7. Outflow Valve/Safety Valve	2	2	2	2	2
Pressurization Controller	1	1	1	1	1
FIRE PROTECTION					
1. Engine Fire Detector System and Annunciators	2	2	2	2	2
FLIGHT CONTROLS					
1. Flap Position Indicator	1	1	1	1	1
2. Flap System	1	1	1	1	1
3. Out-of-Trim Aural Warning	1	1	1	1	1
4. Stall Warning Horn	1	1	1	1	1
5. Stabilizer Actuator Motor	2	2	2	2	2
6. Trim-in-motion Aural Indicator	1	1	1	1	1
7. Trim Tab Position Indicator (Rudder, and Aileron)	3	3	3	3	3
FUEL					
1. Engine Driven Boost Pump	2	2	2	2	2
2. Engine Overspeed Governor	2	2	2	2	2
3. Fuel Crossfeed System Including Annunciator	1	1	1	1	1
4. Fuel Flow Indicator	2	2	2	2	2
5. Fuel Pressure Annunciator	2	2	2	2	2
6. Fuel Quantity Gage Selector Switch	1	1	1	1	1
7. Fuel Quantity Indicating System Including Annunciators	2	2	2	2	2
8. Firewall Fuel Shutoff Valve	2	2	2	2	2
9. Standby Fuel Boost Pump	2	2	2	2	2

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS	
ICE AND RAIN PROTECTION						
1. Alternate Static Air System	0	0	1	1	1	
2. Engine Anti-Ice System Including Annunciators	2	2	2	2	2	
3. Heated Fuel Vent	0	0	2	2	2	
4. Manual Ignition System and Annunciator	2	2	2	2	2	
5. Pitot Heat	0	0	2	2	2	
6. Pneumatic Pressure Indicator	0	0	1	1	1	
7. Propeller Deicer System (Auto)	0	0	0	0	1	
8. Propeller Deicer System (Manual)	0	0	0	0	1	
9. Stall Warning Heater	0	0	0	0	1	
10. Surface Deicer System	0	0	0	0	1	
11. Windshield Heat, Left and Right	0	0	2	2	2	
12. Wing Ice Light (Left)	0	0	0	0	1	
LANDING GEAR						
1. Emergency Extension Hand Pump	1	1	1	1	1	
2. Landing Gear Aural Warning	1	1	1	1	1	
3. Landing Gear Handle Light	1	1	1	1	1	
4. Landing Gear Motor and Gearbox	1	1	1	1	1	
5. Landing Gear Position Indicator Lights	3	3	3	3	3	
LIGHTS						
1. Cabin Door Annunciator	1	1	1	1	1	
2. Cockpit and Instrument Lighting System	0	1	0	1	0	
3. Landing Lights	0	2	0	2	0	
4. Passenger Notice System (Seatbelt & Smoking)	1	1	1	1	1	
5. Position Lights	0	3	0	3	0	
6. Anticollision Light	0	1	0	1	0	
NAVIGATION INSTRUMENTS						
1. Airspeed Indicator (Left)	1	1	1	1	1	
2. Altimeter (Left)	1	1	1	1	1	
3. Clock	1	1	1	1	1	
4. Magnetic Compass	1	1	1	1	1	
5. Outside Air Temperature	1	1	1	1	1	
OXYGEN						
1. Oxygen System	1	1	1	1	1	
VACUUM SYSTEM						
1. Instrument Air System	1	1	1	1	1	
2. Gyro Suction Gage	0	1	1	1	1	

SYSTEM and/or COMPONENT	VFR DAY	VFR NIGHT	IFR DAY	IFR NIGHT	ICING CONDITIONS	
PROPELLER						
1. Beta Annunciators	2	2	2	2	2	
2. Propeller Governor	2	2	2	2	2	
3. Negative Torque Sensing System and Annunciators	2	2	2	2	2	
4. Reverse Not Ready Annunciator	1	1	1	1	1	
5. Unfeather Pumps	2	2	2	2	2	
ENGINE INDICATIONS						
1. Tachometer	2	2	2	2	2	
2. ITT Indicator	2	2	2	2	2	
3. Torque Indicator	2	2	2	2	2	
ENGINE OIL						
1. Chip Detector System Including Annunciators	2	2	2	2	2	
2. Oil Pressure Indicator	2	2	2	2	2	
3. Oil Temperature Indicator	2	2	2	2	2	

SECTION III
EMERGENCY PROCEDURES
TABLE OF CONTENTS

SUBJECT *PAGE*

Raytheon Aircraft

SECTION III

EMERGENCY PROCEDURES

TABLE OF CONTENTS (CONT'D)

All airspeeds quoted in this section are indicated (IAS) and assume zero instrument error.

EMERGENCY AIRSPEEDS (11,800 LBS)

One-Engine-Inoperative Best Angle-of-Climb (V_{xse})	111 kts
One-Engine-Inoperative Best Rate-of-Climb (V_{yse})	125 kts
Air Minimum Control Speed (V_{mca})	85 kts
One-Engine-Inoperative Enroute Climb	125 kts
Emergency Descent	153 kts
One-Engine-Inoperative Landing (Flaps 100%)	122 kts
Intentional One-Engine-Inoperative Speed (V_{sse})	100 kts
Maximum Range Glide	150 kts

ENGINE FAILURE

ENGINE FAILURE DURING TAKEOFF

1. Below Take-off Speed:
   a. Power Levers - REVERSE
   b. Brakes - AS REQUIRED

WARNING

Extreme care must be exercised when using single-engine reversing on surfaces with reduced traction.

If insufficient runway remains for stopping:

   c. Engine Start/Stop Switches - STOP
   d. Electrical Power Master Switch - OFF (Gang Bar - DOWN)
   e. Fuel Firewall Valves - CLOSED

2. If airplane is airborne, and conditions preclude an immediate landing:
   a. Power - MAXIMUM ALLOWABLE
   b. Engine Speed Levers - HIGH RPM
   c. Airspeed - MAINTAIN speed at engine failure (125 knots maximum) until obstacles are cleared.
   d. Landing Gear - UP
   e. Confirm inoperative engine.

WARNING

Do not retard the failed engine Power Lever until the propeller has been feathered. Identify failed engine by power asymmetry and engine instrument indications.

   f. Propeller (inoperative engine) - FEATHERED
   g. Airspeed 111 KNOTS or HIGHER (after obstacle clearance altitude is reached)
   h. Flaps - UP
   i. Clean up inoperative engine:
      (1) Standby Pump - OFF
      (2) Engine Start/Stop Switch - STOP
      (3) Generator - OFF
      (4) Fuel Firewall Valve - CLOSED
      (5) Bleed Air Valve - INSTR & ENV OFF
   j. Electrical Load - MONITOR

ENGINE FAILURE OR FIRE (Flight)

WARNING

Do not retard the failed engine Power Lever until the propeller has been feathered. Identify failed engine by power asymmetry and engine instrument indications.

Affected Engine:

1. Fuel Cut-Off/Feather Lever - FUEL CUTOFF & FEATHER
2. Engine Start/Stop Switch - STOP
3. Fuel Firewall Valve - CLOSED
4. Bleed Air Valve - CLOSED
5. Fire Extinguisher - ACTUATE (if installed)
6. Clean up engine:
   a. Standby Pump - OFF
   b. Generator - OFF
   c. Bleed Air Valve - INSTR & ENV OFF
   d. Propeller Synchrophaser - OFF
7. Electrical Load - MONITOR

ILLUMINATION OF L CHIP DETECT OR R CHIP DETECT ANNUNCIATOR

Illumination of a CHIP DETECT annunciator indicates possible metal contamination in the engine oil supply. In the event a CHIP DETECT annunciator illuminates, continue operation while monitoring the engine operating parameters. If any operational abnormalities occur, the engine should be shut down. Prior to the next flight, cause of the malfunction should be determined and corrected.

ENGINE FLAME-OUT (2nd Engine)

1. Power Lever - RETARD SLOWLY TO FLIGHT IDLE

WARNING

If windmilling drag increases as Power Lever is retarded, advance the lever to reduce drag.

2. Propeller - DO NOT FEATHER
3. Manual Fuel/Ignition Switch - ACTUATE

GLIDE

1. Landing Gear - UP
2. Wing Flaps - UP (0%)

WARNING

Determine that procedures for re-starting first and second inoperative engines are ineffective before feathering second engine propeller.

3. Propeller - FEATHERED
4. Airspeed - 150 KNOTS

NOTE

The zero-wind glide ratio in this configuration is 1.8 nautical miles of glide distance for each 1,000 feet of altitude. Decrease the glide by 0.2 nautical miles per 1,000 feet for each 10 knots of headwind.

ENGINE FAILURE IN FLIGHT BELOW V_{MCA}

1. Reduce power on operative engine as required to maintain control.
2. Lower nose to accelerate above minimum control speed.
3. Power - AS REQUIRED
4. Fuel Cut-Off/Feather Lever - FUEL CUTOFF & FEATHER (inoperative engine)
5. Clean up inoperative engine:
   a. Standby Pump - OFF
   b. Engine Start/Stop Switch - STOP
   c. Generator - OFF
   d. Fuel Firewall Valve - CLOSED
   e. Bleed Air Valve - INSTR & ENV OFF
   f. Propeller Synchrophaser - OFF
6. Electrical Load - MONITOR

AIR START

1. Altitude - Below 20,000 ft
2. Airspeed - 90 kts to V_{MO}/M_{MO}
3. Bleed Air Valve - INSTR and ENV OFF
4. Fuel Firewall Valve - OPEN
5. ITT - BELOW 300°C (if feasible)
6. Power Lever - FLIGHT IDLE
7. Engine Speed Lever - LOW RPM
8. Fuel Cut-Off/Feather Lever - NORMAL
9. Generator Switch - OFF
10. Standby Pump - ON
11. MAN FUEL/IGN Switches - OFF
12. Start Select Switch - AIR
13. Engine Start/Stop Switch - START (until Engine Lightoff and as Required for Priming).
14. Propeller - CHECK (Monitor unfeathering.)
15. ITT - MONITOR (1149°C Maximum/1 second)
16. Oil Pressure - CHECK
17. Start Select Switch - GND
18. Generator - RESET for a minimum of 1 second, then release to ON
19. Power - AS REQUIRED
20. Bleed Air Valve - OPEN

NOTE

Lightoff should occur between 10% and 20% RPM. If it is not indicated by 25% RPM, a failed tachometer drive or speed switch is indicated. Actuate the MANUAL FUEL/IGNITION Switch (ON); OFF at 50% RPM. If lightoff does not occur within 10 seconds of manual fuel/ignition, abort the start (ENGINE START/STOP Switch to STOP). If this procedure is followed to accomplish the start, trip and reset the appropriate STARTER CONTROL circuit breaker after the engine has started, to assure proper starter/generator operation. Do not allow the engine to windmill between 18% and 28% RPM. If the propeller does not begin to unfeather when the air start is initiated, a failure of the automatic starting circuit is indicated. If this occurs, the engine may be started by actuating the UNFEATHERING PUMP Switch (hold up). At 10% RPM, manually initiate fuel and ignition with the MANUAL FUEL/IGNITION Switch. Actuate both switches until 50% RPM. The ENG START/STOP Switch must be in the RUN position.

ENGINE FIRE (Ground)

Affected Engine:
1. Engine Start/Stop Switch - STOP
2. Fuel Firewall Valve - CLOSED
3. Fire Extinguisher - ACTUATE

FIRE EXTINGUISHER OPERATION

1. Complete Engine Fire Checklist
2. If fire persists:
   Fire Extinguisher Switch - ACTUATE (Lift cover and depress switch for affected engine.)

EMERGENCY DESCENT PROCEDURE

1. Power Levers - FLIGHT IDLE
2. Engine Speed - 100% RPM
3. Wing Flaps - APPROACH
4. Landing Gear - EXTEND
5. Airspeed - 153 KNOTS MAXIMUM

LANDING EMERGENCIES

LANDING, ONE ENGINE INOPERATIVE

Use normal landing procedures with the following exception: Approach Speed - 10 knots above normal.

NOTE

Single-engine reverse thrust may be used with caution after touchdown on smooth, dry, paved surfaces.

GO-AROUND, ONE ENGINE INOPERATIVE

WARNING

Do Not Attempt With Full Flaps.

1. Power - MAXIMUM ALLOWABLE
2. Flaps - UP
3. Landing Gear - UP
4. Airspeed - MAINTAIN 111 KNOTS TO 125 KNOTS

SYSTEMS EMERGENCIES

ENGINE

LOW FUEL PRESSURE (Fuel Pressure Annunciator Illuminated)

1. Standby Pump (Affected Side) - ON
2. Check FUEL PRESSURE Annunciator - OFF

BLEED AIR LINE FAILURE ANNUNCIATOR

BLEED AIR LINE FAILURE annunciators should extinguish when either Bleed Air Valve switch is moved from the INSTR & ENV OFF position after engine start. Illumination of either BLEED AIR LINE FAILURE annunciator indicates a rupture of an environmental or instrument Bleed Air Line. Place the Bleed Air Valve switch for the affected side to the INSTR & ENV OFF position.

NOTE

The BLEED AIR LINE FAILURE annunciator will not extinguish, even after securing the engine or closing the Bleed Air Valve.

FUEL

CROSSFEED (One Engine Inoperative Only)

Left Engine Inoperative

1. Left Standby Pump Switch - ON
2. Crossfeed Switch - OPEN
3. Right Standby Pump Switch - OFF
4. Right Auxiliary Fuel Transfer Switch - OFF
5. Check FUEL CROSSFEED Light - ON
6. Check Left FUEL PRESSURE Annunciator - ON - Right Fuel Pressure Annunciator - OUT

Right Engine Inoperative

1. Right Standby Pump Switch - ON
2. Crossfeed Switch - OPEN
3. Left Standby Pump Switch - OFF
4. Left Auxiliary Fuel Transfer Switch - OFF
5. Check FUEL CROSSFEED Light - ON
6. Check Right FUEL PRESSURE Annunciator - ON - Left Fuel Pressure Annunciator - OUT

CAUTION

The crossfeed is to be used for one-engine-inoperative operations only. Do not feed both engines simultaneously from one side.

TO DISCONTINUE CROSSFEED

1. Crossfeed Switch - CLOSED
2. Standby Pump - OFF

ELECTRICAL

GENERATOR INOPERATIVE (GEN OUT Annunciator Illuminated)

1. Generator Switch - RESET momentarily, then to ON.

CAUTION

Do not attempt to reset more than twice.

If generator will not reset:

2. Generator Switch - OFF
3. Operating Generator - DO NOT EXCEED 1.0 LOAD

EXCESSIVE LOADMETER INDICATION (over 1.0)

Non-essential Loads - OFF (Monitor Loadmeters)

CIRCUIT BREAKER TRIPPED

1. Non-essential Circuit - DO NOT RESET IN FLIGHT
2. Essential Circuit:
   a. Circuit Breaker - PUSH TO RESET
   b. If Circuit Breaker Trips Again - DO NOT RESET

SUBPANEL FEEDER CIRCUIT BREAKER TRIPPED

1. A short is indicated - DO NOT RESET IN FLIGHT
2. Depending on which circuit breaker is tripped, the following items may become inoperative:
   a. Fuel Quantity Gages
   b. FUEL PRESSURE Annunciator
   c. Fuel Crossfeed Valve

INVERTER INOPERATIVE (INVERTER OUT Annunciator Illuminated)

Select the other inverter.

ELECTRICAL SMOKE OR FIRE

Action to be taken must consider existing conditions and equipment installed:

1. Master Switch - OFF (Gang Bar - DOWN)

WARNING

Cabin will depressurize and electrically driven flight instruments will become inoperative.

2. Oxygen Control - ON
3. Oxygen Mask - INSERT FITTINGS, DON MASKS

NOTE

Opening the cabin pressurization dump valve (if pressurized) or the storm windows (if depressurized) will facilitate smoke and fume removal.

4. All Electrical Switches - OFF
5. Battery Switch - ON
6. Generators - RESET, then ON
7. Essential Electrical Equipment - ON (Isolate defective equipment)
8. Oxygen - AS REQUIRED

FLIGHT CONTROLS

MAIN PITCH TRIM SYSTEM INOPERATIVE

1. Main Pitch Trim Master - OFF
2. Standby Pitch Trim Master - ON
3. Standby Pitch Trim Switches - AS REQUIRED

BOTH MAIN AND STANDBY PITCH TRIM SYSTEMS INOPERATIVE

1. Maintain Airspeed for low control forces.
2. For landing, use flaps only as required to reduce pull forces as speed is decreased. Avoid push forces by using only enough flaps to give desired control forces.

NOTE

With stabilizer inoperative in cruise position, extending full flaps will give zero elevator force at 100 to 125 knots.

UNSCHEDULED PITCH TRIM

1. Airplane Attitude - MAINTAIN using elevator control.
2. Main Pitch Trim Switches - HOLD to oppose direction of unscheduled trim.

CAUTION

If trim continues to run, depress and hold TRIM RELEASE. The pilot may only have three seconds to execute corrective action before control forces exceed 75 pounds.

3. Main Pitch Trim Master - OFF
4. Standby Pitch Trim Master - ON
5. Standby Pitch Trim Switches - AS REQUIRED

NOTE

If Standby Pitch Trim System is inoperative, DO NOT REACTIVATE PRIMARY PITCH TRIM SYSTEM. Out-of-trim push forces can be reduced by decreasing power and airspeed. Pull forces can be reduced by decreasing airspeed below the appropriate flap airspeed limit and extending flaps as required.

GO-AROUND (Pitch Trim Inoperative)

1. Power Levers - AS REQUIRED
2. Flaps - Change position only to reduce elevator forces
3. Landing Gear - RETRACT (No trim change results)

LANDING GEAR

LANDING GEAR MANUAL EXTENSION

1. Airspeed - ESTABLISH 125 KNOTS
2. Landing Gear Relay Circuit Breaker - PULL
3. Landing Gear Handle - DOWN
4. Emergency Engage Handle - LIFT AND TURN CLOCKWISE TO THE STOP TO ENGAGE.
5. Extension Lever - PUMP up and down until the 3 green Gear Down Lights illuminate.

CAUTION

Stop pumping when the 3 green GEAR DOWN lights illuminate. Further movement of the handle could damage the drive mechanism and prevent subsequent electrical gear retraction.

WARNING

If for any reason the green GEAR DOWN lights do not illuminate (i.e., in case of an electrical system failure), continue pumping until sufficient resistance is felt to ensure that the gear is down and locked, even though this procedure may damage the drive mechanism.

WARNING

After an emergency landing gear extension has been made, do not stow pump handle, move any landing gear controls, or reset any switches or circuit breakers until airplane is on jacks, since the failure may have been in the Gear-Up Circuit and gear might retract on the ground. The landing gear cannot be retracted manually.

LANDING GEAR RETRACTION AFTER A PRACTICE MANUAL EXTENSION

After a practice manual extension of the landing gear, the gear may be retracted electrically as follows:

1. Emergency Engage Handle - ROTATE COUNTERCLOCKWISE AND PUSH DOWN.
2. Extension Lever - STOW
3. Landing Gear Relay Circuit Breaker - PUSH IN
4. Landing Gear Handle - UP

ENVIRONMENTAL

PRESSURIZATION SYSTEM

Any time the Differential Pressure Gage reading exceeds 4.7 psi, reschedule the Pressurization Controller to a higher cabin altitude. If the differential pressure remains above 4.7 psi, close the Bleed Air Valves, or dump all pressure with the DUMP switch.

LOSS OF PRESSURIZATION

In the event of pressurization loss at high altitude, USE OXYGEN AND DESCEND AS REQUIRED.

ICE PROTECTION SYSTEMS

ELECTROTHERMAL PROPELLER DEICE (AUTO SYSTEM)

Abnormal Readings on Deice Ammeter: (Normal Operation: 18 to 24 amps)

1. Zero Amps:
   a. Propeller Deice Switch (Auto) - CHECK
      1) If OFF, reposition to AUTO after 30 seconds.
      2) If in AUTO position with zero amps, system is inoperative; position the switch to OFF.
   b. Propeller Deice Switch (Manual) - ACTIVATE

If Deice Ammeter continues to indicate abnormal reading:

2. Zero to 18 Amps or 24 to 29 Amps:
   a. Continue operation
   b. If propeller imbalance occurs, increase rpm briefly to aid in ice removal.
3. More than 29 Amps:
   a. Avoid icing conditons, since continued operation of the system cannot be assured.
   b. Do not operate the system, except in emergencies
   c. Restrict time of operation to a minimum.

ELECTROTHERMAL PROPELLER DEICE (MANUAL SYSTEM)

On Airplane Serials BE-1 thru BE-113:

1. To use manual system, hold switch in OUTER position for approximately 30 seconds, then in INNER position for approximately 30 seconds. Repeat as required to avoid significant buildup of ice which will result in loss of performance, vibration and impingement upon the fuselage.

1. Monitor manual system current requirement using the airplane's loadmeters when the switch is in OUTER or INNER position. A small needle deflection (approximately 5%) indicates the system in functioning.

On Airplanes Serials BE-114 and after:

2. To use manual system, hold manual propeller deice switch in MANUAL position for approximately 90 seconds, or until ice is dislodged from blades.
3. Monitor manual system current requirement with the airplane's loadmeters when the manual deice switch is in the MANUAL position. A small needle deflection (approximately 5%) indicates the system is functioning. Check propellers for ice removal.

EMERGENCY STATIC AIR SOURCE

THE EMERGENCY STATIC AIR SOURCE SHOULD BE USED FOR CONDITIONS WHERE THE NORMAL STATIC SOURCE HAS BEEN OBSTRUCTED. When the airplane has been exposed to moisture and/or icing conditions (especially on the ground), the possibility of obstructed static ports should be considered. Partial obstruction will result in the rate of climb indication being sluggish during a climb or descent. Verification of suspected obstruction is possible by switching to the emergency system and noting a sudden sustained change in rate of climb. This may be accompanied by abnormal indicated airspeed and altitude changes beyond normal calibration differences.

Whenever any obstruction exists in the Normal Static Air System, or the Emergency Static Air System is desired for use:

1. Pilot's Emergency Static Air Source (right side panel) - Switch to ALTERNATE
2. For Airspeed Calibration and Altimeter Correction, refer to Section V, PERFORMANCE.

CAUTION

Be certain the Emergency Static Air Valve is in the NORMAL position when the emergency system is not needed.

EMERGENCY EXIT

1. Release Handle - PULL
2. This is a plug-type door and opens into the cabin.

CAUTION

The outside handle may be locked from the inside with a key. The inside handle will unlatch the door, regardless of the position of the key lock, by overriding the locking mechanism. Before flight, make certain the door is unlocked.

ILLUMINATION OF CABIN DOOR ANNUNCIATOR

WARNING

Do not attempt to check the security of the cabin door. Remain as far from the door as possible with seat belts securely fastened until the airplane has landed.

1. Oxygen - AS REQUIRED
2. Cabin Sign Switch - FASTEN SEAT BELTS POSITION
3. Pressurization Controller - RESCHEDULE TO ZERO PRESSURE DIFFERENTIAL (DESCEND IF REQUIRED).
4. After Landing - CHECK SECURITY OF THE CABIN DOOR by lifting door step and observing the position of Arm and Plunger. If position indicates an UNLATCHED condition, turn handle to LOCKED position. Attempt to turn handle toward the UNLOCKED position without depressing the RELEASE Button. The door is latched if the handle will not turn.

CRACKED WINDSHIELD

1. If it is positively determined that the crack is on the outer panel, no action is required.

CAUTION

Windshield wipers may be damaged if used on cracked outer panel. Heating elements may be inoperative in area of crack.

2. If it is determined that the crack is on the inner panel, descend or reset the pressurization controller to achieve 3 psi or less differential pressure within ten minutes. Visibility through the windshield may be significantly impaired.

INTENTIONAL INFLIGHT ENGINE SHUTDOWN

1. Engine Start/Stop Switch - STOP
2. Fuel Cut-Off/Feather Lever - FEATHER after RPM has decreased to 30% or one minute after step 1, whichever occurs first.
3. Fuel Cut-Off/Feather Lever - NORMAL at 5% to 10% RPM

NOTE

If possible, do not allow the propeller to stop rotation until step 4 is accomplished.

4. Unfeather Pump Switch - ACTUATE as required to maintain propeller rotation (15% RPM Maximum) until ITT is 200°C or less.
5. Fuel Cut-Off/Feather Lever - FEATHER

SIMULATING ONE ENGINE INOPERATIVE

WARNING

The simulation of an engine failure by retarding a Power Lever shall not be attempted below 100 knots.

A propeller feathered condition can be simulated by reducing the power on either engine to zero thrust. The following conditions will approximate zero thrust at low altitudes at speeds between 100 knots and 125 knots:

1. Engine Speed - 100% RPM
2. Power Lever - 200 FT LBS TORQUE

SPINS

If a spin is entered inadvertently (intentional spins are prohibited), immediately move the control column full forward, apply full rudder opposite to the direction of the spin and reduce power on both engines to FLIGHT IDLE. These three actions should be done as near simultaneously as possible. Continue to hold this control position until rotation stops, then neutralize all controls and execute a smooth pullout. Ailerons should be neutral during recovery.

NOTE

Federal Aviation Administration Regulations do not require spin demonstration of airplanes of this class; therefore, no spin tests have been conducted. The recovery technique is based on the best available information.

SEVERE ICING CONDITIONS (Alternate Method Of Compliance With FAA AD 98-04-24)

THE FOLLOWING WEATHER CONDITIONS MAY BE CONDUCIVE TO SEVERE IN-FLIGHT ICING:

- Visible rain at temperatures below 0 degrees Celsius ambient air temperature.
- Droplets that splash or splatter on impact at temperatures below 0 degrees Celsius ambient air temperature.

PROCEDURES FOR EXITING THE SEVERE ICING ENVIRONMENT:

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

1. Immediately request priority handling from Air Traffic Contol 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 may 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. Do not extend flaps when holding in icing conditions. Operation with flaps extended can result in a reduced wing angle-of-attack with the possibility of ice forming on the upper surface further aft on the wing than normal, possibly aft of the protected area.
7. If the flaps are extended, do not retract them until the airframe is clear of ice.
8. Report these weather conditions to Air Traffic Control.

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SECTION IV
NORMAL PROCEDURES

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SECTION IV

NORMAL PROCEDURES

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All airspeeds in this section are indicated airspeeds (IAS) and assume zero instrument error.

AIRSPEEDS FOR SAFE OPERATION (11,800 LBS)

Maximum Demonstrated Crosswind Component .... 25 kts
Takeoff (Flaps 0%)
  Rotation .... 97 kts
  50-ft Speed .... 111 kts
Best Angle-of-Climb (V_X) .... 115 kts
Best Rate-of-Climb (V_Y) .... 130 kts
Cruise Climb
  Sea Level to 10,000 Feet .... 150 kts
  10,000 to 20,000 .... 140 kts
  20,000 to 31,000 .... 130 kts
Turbulent Air Penetration .... 167 kts
Landing Approach
  Flaps 100% .... 112 kts
  Flaps 0% .... 121 kts
Balked Landing Climb .... 100 kts
Intentional One-Engine-Inoperative Speed (V_{SSE}) .... 100 kts
Air Minimum Control Speed (V_{MCA}) .... 85 kts

PROCEDURES BY FLIGHT PHASE

PREFLIGHT

LEFT WING

1. Flaps - CHECK
2. Ram Scoop Fuel Vent - CLEAR
3. Heated Fuel Vent - CLEAR
4. Two Fuel Sumps (aft of wheel well) - DRAIN
5. Aileron and Tab - CHECK
6. Flush Outboard Wing Fuel Sump - DRAIN
7. Lights - CHECK
8. Main Fuel Tank - CHECK, CAP SECURE
9. Stall Warning - CHECK
10. Tiedown and Chocks - REMOVE
11. Deice Boot - CHECK
12. Engine Exhaust - CLEAR
13. Fire Extinguisher Pressure - CHECK
14. Landing Gear and Doors - CHECK
15. Fuel Sump (aft of oil cooler) - DRAIN
16. Fuel Drain (forward of wheel well) - DRAIN
17. Propeller - CHECK ROTATION AND CONDITION
18. Engine Air and Oil Cooler Intakes - CLEAR
19. Engine Oil - CHECK QUANTITY, CAP SECURE
20. Engine Fuel Drains - CLEAR
21. Cowling, Doors and Panels - CHECK
22. Auxiliary Fuel Tank - CHECK, CAP SECURE
23. Heat Exchanger Inlet - CLEAR
24. Inboard Fuel Tank Sump - DRAIN
25. Lower Antennas and Beacon - CHECK

NOSE SECTION

1. Ram Air Inlet - CLEAR
2. Access Panels - SECURE
3. Air Conditioner Ducts - CLEAR
4. Nose Gear and Doors - CHECK
5. Landing and Taxi Lights - CHECK
6. Pitot Covers - REMOVE
7. Windshield Wipers - CHECK

RIGHT WING

1. Inboard Fuel Tank Sump - DRAIN
2. Heat Exchanger Inlet - CLEAR
3. Auxiliary Fuel Tank - CHECK, CAP SECURE
4. Engine Fuel Drains - CLEAR
5. Propeller - CHECK ROTATION AND CONDITION
6. Engine Air and Oil Cooler Intakes - CLEAR
7. Engine Oil - CHECK QUANTITY, CAP SECURE
8. Cowling, Doors and Panels - CHECK
9. Engine Exhaust - CLEAR
10. Fuel Drain (forward of wheel well) - DRAIN
11. Fuel Sump (aft of oil cooler) - DRAIN
12. Fire Extinguisher Pressure - CHECK
13. Landing Gear and Doors - CHECK
14. Deice Boot - CHECK
15. Tiedown and Chocks - REMOVE
16. Main Fuel Tank - CHECK, CAP SECURE
17. Lights - CHECK
18. Aileron - CHECK
19. Flush Outer Wing Tank Sump - DRAIN
20. Flaps - CHECK
21. Two Fuel Sumps (aft of wheel well) - DRAIN
22. Heated Fuel Vent - CLEAR
23. Ram Scoop Fuel Vent - CLEAR

TAIL SECTION

1. Oxygen Door - SECURE
2. Static Ports - CLEAR
3. Emergency Locator Transmitter - ARM
4. Tiedown - REMOVE
5. Access Panels - SECURE
6. Deice Boots - CHECK
7. Control Surfaces and Rudder Tab - CHECK
8. Lights - CHECK
9. Stabilizer Setting - NOTE
10. Top Antennas - CHECK
11. Static Ports - CLEAR

BEFORE ENGINE STARTING

1. Cabin Door - LOCKED. (Check cabin door security by attempting to turn handle toward unlocked position without depressing release button. Handle should not move.

WARNING

Only a crew member should close and lock the door.

2. When Monogram electric toilet is installed, Knife Valve - OPEN
3. Load and Baggage - SECURE; Weight and CG - CHECKED
4. Emergency Exit - SECURE AND UNLOCKED
5. Control Locks - REMOVED
6. Seats - POSITIONED; Seatbacks - UPRIGHT
7. Lateral Tracking Chairs - OUTBOARD
8. Seat Belts and Shoulder Harness - FASTENED
9. Brakes - SET
10. Switches - OFF
11. Landing Gear Switch Handle - DOWN
12. Overhead Panel - CHECK
13. Power Levers - GROUND IDLE (FLIGHT IDLE if overspeed governor is to be checked)
14. Engine Speed Levers - LOW RPM
15. Fuel Cutoff & Feather Levers - NORMAL

*16. Pedestal Circuit Breakers - IN

17. Cabin Sign - ON (BOTH position)
18. Cabin Temp Mode - OFF; Vent Blower - AUTO
19. Pressurization Bleed Air Valves - ENV OFF

*20. Circuit Breakers - IN
*21. Oxygen Supply Pressure - CHECK
*22. Emergency Static Air Valve - NORMAL
*23. Fuel Firewall Valves - CLOSED; Circuit Breakers - IN
*24. Standby Pumps - ON (Listen for operation.)

25. Battery Switch - ON (Fuel Pressure Annunciators - ON)

*26. Fuel Firewall Valves - OPEN (Fuel Pressure Annunciators - OFF)
*27. Left Standby Pump - OFF (Left Fuel Pressure Annunciator - ON)
*28. Crossfeed - OPEN (Crossfeed Light - ON; Left Fuel Pressure Annunciator - OFF)
*29. Crossfeed - CLOSED
*30. Right Standby Pump - OFF (Right FUEL PRESS Annunciator - ON)

31. Fuel Quantity - CHECK (Main and Auxiliary Tanks)
32. Voltmeters - CHECK (No voltage indicates current limiter failure)

*33. MAN FUEL/IGN Switches - OFF

34. Fire and Smoke Detectors - TEST
35. Annunciator Panel - TEST

**May be omitted for quick turn-around at pilot's discretion.*

USE OF EXTERNAL POWER

1. Battery Switch (Under gang bar) - ON
2. Avionics Master Power Switch - OFF
3. Auxiliary Power Unit (APU) Output - SET AT 28 VOLTS ± .25 VOLTS

NOTE

The APU must be regulated at 28 volts DC and be capable of supplying at least 1000 amperes at a minimum of 16 volts DC during the start cycle.

CAUTION

Do not exceed 400 amperes continuous power load.

4. APU - OFF
5. APU Output Plug - INSERT INTO AIRPLANE APU RECEPTACLE, located on underside of nacelle just aft of right main gear.

CAUTION

NEVER CONNECT AN EXTERNAL POWER SOURCE TO THE AIRPLANE UNLESS A BATTERY INDICATING A CHARGE OF AT LEAST 20 VOLTS IS IN THE AIRPLANE. If the battery voltage is less than 20 volts, the battery must be recharged, or replaced with a battery indicating at least 20 volts, before connecting external power.

Only use an external power source fitted with an AN-type plug.

6. Battery Select Switch - NORMAL. The parallel circuit will automatically be selected anytime an APU is connected, even if the switch is in the SERIES position.
7. Engine Starts - SAME AS BATTERY STARTS, except that the generators must remain OFF until the APU has been disconnected.
8. APU Connecting Cable - DISCONNECTED BEFORE MOVING THE AIRPLANE.

ENGINE STARTING

NOTE

The maximum ITT for initiating an engine start is 300°C. The engine may be motored to reduce the ITT by placing the START SELECT switch in the CRANK position and momentarily moving the ENG START/STOP switch to START. This initiates motoring. To cease motoring after ITT drops below 300°C, place the ENG START/STOP switch to STOP. Observe starter time limits.

1. Propeller - CLEAR and UNFEATHERED; if feathered, or to ensure full engagement of start locks:
   a. Power Lever - REVERSE
   b. Unfeather Pump Switch - ON (hold up) - observe that propeller blades move from feathered to locked.
   c. Power Lever - GROUND IDLE (FLIGHT IDLE if overspeed governor is to be checked).
2. Inverters - CHECK Both then either one ON (BE-1 thru BE-20)
3. Battery Select Switch - AS REQUIRED

NOTE

If the airplane has cold soaked at ambient temperatures of $-4^{\circ}C$ or below, a SERIES start is recommended. Above $-4^{\circ}C$ ambient temperatures (or with warm engines) a NORMAL (parallel) start is recommended. At ambient temperatures of $-12^{\circ}C$ or below, the use of an auxiliary power unit is recommended.

A series start cannot be accomplished – regardless of Battery Select switch position – if either generator is on the line, or if an auxiliary power unit is connected.

4. Auto Ignition System - CHECK
   a. MAN FUEL/IGN Switches - ARM
   b. Observe Ignition Annunciators Illuminated and Auto Ignition Arm Lights Extinguished.
   c. MAN FUEL/IGN Switches - OFF

RIGHT ENGINE

5. Start Select Switch - GROUND

NOTE

The Start Select switch must be in the GROUND position to assure proper start system operation. If a start is attempted with this switch in *any other* position, place the Engine Start/Stop switch to STOP before selecting GROUND.

6. NTS System - CHECK. This check is done in conjunction with engine start.
   a. NTS Test Switch - ON (hold up) - observe illumination of R NEGATIVE TORQUE SYS annunciator in glareshield panel.
7. Right Engine Start/Stop Switch - START until engine lightoff (ITT rises).
   a. NTS Annunciator - EXTINGUISHED at start initiation
   b. NTS Test Switch - RELEASE
   c. Eng Start/Stop Switch - RELEASE to RUN after engine lightoff
   d. Eng Start/Stop Switch - Momentarily to START as required for priming above 25% RPM for satisfactory engine acceleration.

NOTE

Use of the prime function should not normally be required if the engine is warm (oil temperature within the normal operating range).

CAUTION

If engine lightoff has not occurred within approximately 10 seconds after reaching 10%RPM, or by 15% RPM, a failed tachometer drive or speed switch is indicated. Actuate the MANUAL FUEL/IGNITION Switch (ON); OFF at 50% RPM. If lightoff does not occur within 10 seconds after manual ignition, place the ENG START/STOP Switch to STOP. If this procedure is followed to accomplish the start, trip and reset the appropriate STARTER CONTROL circuit breaker after the engine has started, to assure proper starter/generator operation.

If the NTS check is unsatisfactory, correct the fault before flight.

8. ITT - MONITOR rise as engine accelerates (1149°C maximum/1 second).

CAUTION

If rate of RPM increase *slows* appreciably below 40% RPM, and ITT is rapidly increasing, cease priming immediately. If RPM *stops* increasing prior to 40% RPM, or if ITT is approaching the start limit, immediately place the ENG START/STOP switch to STOP. Do not allow RPM to dwell in the 18 to 28% RPM range.

9. Oil Pressure - CHECK FOR RISE within 10 seconds after start initiation; if not observed, abort the start.
10. RPM - CHECK FOR STABILIZATION
11. Right Generator - RESET for a minimum of one second, then release to ON

NOTE

The BATTERY CHARGE annunciator will illuminate approximately 6 seconds after generator is on the line. If the annunciator does not extinguish within 5 minutes, refer to NICKEL-CADMIUM BATTERY CONDITION CHECK procedure, this section.

*12. Overspeed Governor - CHECK AS REQUIRED. This check should be performed every 25 flight hours or once a month whichever occurs first, when air starts are anticipated, when engine control system maintenance or adjustment has been performed, or when there is any indication of malfunction.
    a. Propeller - on start locks (Flat Pitch) (balance of test is performed on individual engines.)
    b. Power Lever - ADVANCE slowly to the full-forward position
    c. RPM - STABLE AT 103.0% to 104.0% - Operation above 101.0% should be limited to 30 seconds maximum. Do not exceed 105.0% at any time. (Repeat a, b, and c on the opposite engine.)

NOTE

If an overspeed governor check is to be made, do not move the Power Levers below FLIGHT IDLE until the check has been completed.

13. Power Lever - GROUND IDLE
14. MAN FUEL/IGN Switch - ARM
    a. Observe Auto Ignition Light Illuminated.
    b. MAN FUEL/IGN Switch - OFF

**May be omitted for quick turn-around at pilot's discretion.*

LEFT ENGINE

CAUTION

Ensure that the right engine is idling at 65% RPM before initiating left engine start.

15. Start - Repeat steps above for left engine.
16. Battery Select Switch - NORMAL

ENGINE CLEARING PROCEDURE

The engine may be cleared of fuel and/or vapors by allowing three minutes for draining after an attempted start before attempting another start, or by:

1. Start Select Switch - CRANK

CAUTION

If the other engine is operating, ensure that it is idling at 65% RPM before cranking.

2. Engine Start/Stop Switch - MOMENTARILY TO START and allow to crank for approximately 15 seconds, then to STOP.
3. Start Select Switch - GND

AFTER STARTING, AND TAXI

1. Standby Pumps - ON (Fuel Pressure Annunciators OUT)
2. Auxiliary Fuel Transfer Switches - ON (If fuel is in AUX TANKS); AUX EMPTY Annunciators Illuminates - PRESS TO TEST

NOTE

Any auxiliary fuel must be used first. Auxiliary fuel will not transfer unless Standby Pumps are ON.

3. Inverters - Check both, then either one - ON (BE-21 and After)
4. Voltage and Loadmeters - CHECK
5. Avionics Master Power Switch and Radios - ON
6. Lights - AS REQUIRED
7. Cabin Temperature Mode - AS REQUIRED
8. Annunciators - TEST, then clear except for PROP REV NOT READY Annunciator and BETA Annunciator.
9. Instruments - CHECK
10. Propellers (each engine) - UNLOCK
    a. Power Levers - MOVE TOWARD REVERSE until an increase in TORQUE, ITT, and FUEL FLOW is observed.
    b. Power Levers - GROUND IDLE
    c. Engine RPM - CHECK for 64% to 66% RPM reading
11. Brakes - CHECK

NOTE

Care must be exercised when taxiing on unimproved surfaces to prevent propeller blade and airplane surface damage from sand, gravel, and debris.

BEFORE TAKEOFF (RUNUP)

1. Radios and Radar - CHECK
2. Pressurization - SET
   a. Cabin Altitude Selector Knob - ADJUST SO THAT INNER SCALE (ACFT ALT) INDICATES 31,000 FEET (end of scale) or PLANNED CRUISE ALTITUDE PLUS 500 FEET, whichever is lower. (If this setting does not result in an outer scale (CABIN ALT) indication of at least 500 feet above take-off field pressure altitude, adjust as required.)
   b. Rate Control Selector Knob - SET INDEX BETWEEN 9- and 12-O'CLOCK POSITIONS.

* 3. Pitch Trim Indicator - COMPARE WITH STABILIZER POSITION NOTED DURING PREFLIGHT

* 4. Autopilot - CHECK

5. Pitch Trim System - CHECK
   a. Standby Pitch Trim - CHECK: Individual Switches, Stabilizer movement, then OFF
   b. Main Pitch Trim - CHECK UP and DOWN (travel to full extreme required on first flight of day) (Note aural trim-movement indication.)
      (1) Individual Switches - NO MOVEMENT OF STABILIZER
      (2) Trim Release - DEACTIVATION OF SYSTEM
      (3) Copilot's Switches - OPERATION

WARNING

Operation of the trim system should occur only by movement of pairs of switches. Any movement of the indicator while depressing one switch denotes a malfunctioning system. Flight shall not be initiated with any malfunction of either the main or standby trim systems.

The Main Pitch Trim System Master Switch and the Standby Pitch Trim System Master Switch shall not be in the ON position at the same time. These systems shall be operated independently of each other.

   c. Out of Trim Warning System - CHECK
      (1) Activate Pilot (or Copilot's) Main Pitch Trim Switches until trim indicator is above or below the green arc.
      (2) Advance Left Engine Power Lever to 90% or above
      (3) Retard Left Engine Power Lever to Idle.

6. Pitch Trim - SET FOR TAKEOFF (GREEN ARC)
7. Trim Tabs - SET
8. Engine Control Friction Locks - Set
9. Flaps - CHECK AND SET
10. Flight Controls - CHECK FOR FREEDOM OF MOVEMENT AND PROPER DIRECTION OF TRAVEL
11. Instrument Vacuum and Deice Pressure - CHECK
12. Fuel Quantity, Flight and Engine Instruments - CHECK

BEFORE TAKEOFF (FINAL ITEMS)

1. Bleed Air Valves - OPEN
2. Annunciators - EXTINGUISHED or considered
3. Transponder - ON
4. Ice Protection - AS REQUIRED

TAKEOFF

1. Manual Fuel/Ignition Switches - AS REQUIRED

WARNING

Standing water or slush on the runway may induce flameout. If such conditions exist, turn the Manual Fuel/Ignition switches ON before takeoff and observe time limits.

2. Engine Speed Levers - HIGH RPM - Note Tachometer at 96.5% to 97.5% rpm
3. Power Levers - ADVANCE TO MAXIMUM POWER (99.5% to 100.5% RPM, 1878 ft lbs TORQUE and/or 923°C ITT limits)

NOTE

Refer to PERFORMANCE Section for minimum take-off power, take-off speeds, field length, and climb information. Monitor torque and ITT while applying power. Increasing airspeed will cause torque and ITT to increase. Verify that minimum take-off power is obtained.

4. Airspeed - TAKE-OFF SPEED
5. Landing Gear - RETRACT after airplane is positively climbing.

CLIMB

CAUTION

Before reducing engine speed for climb or cruise, reduce ITT to 850°C or lower.

1. Engine Speed - AS REQUIRED
2. Climb Power - SET (Observe ITT and TORQUE LIMITS)
3. Propeller Synchrophaser - ON
4. Manual Fuel/Ignition Switches - AS REQUIRED
5. Standby Pumps - OFF if auxiliary tanks are empty
6. Engine Instruments - MONITOR
7. Cabin Sign - AS REQUIRED

CRUISE

WARNING

DO NOT LIFT POWER LEVERS IN FLIGHT.

1. Cruise Power - SET

NOTE

Establish cruise power by setting ITT. At low altitudes, Maximum Cruise may be limited by Vmo (223 Knots).

2. Engine Instruments - MONITOR
3. Auxiliary Fuel Quantity Gages - MONITOR to ensure fuel is being transferred from auxiliary tanks.
4. Auxiliary Fuel Transfer Switches - OFF (When AUX EMPTY Annunciators Illuminate)

5. Standby Pumps - OFF (If AUX tanks empty)
6. Battery Condition - MONITOR Battery Charge annunciators. If either illuminates in flight, perform the following procedures:
   a. Either Generator - OFF
   b. Battery Switch - OFF (momentarily), then ON
   c. Loadmeter - Note Change
   d. Generator - ON

NOTE

The change in loadmeter indications is the battery charge current and should be no more than .05. With a greater reading, turn the battery switch OFF and proceed to destination. (The battery switch should be turned ON for landing in order to avoid electrical transients caused by power fluctuations.) During an Engine Shutdown, a battery condition check as outlined below should be made after landing. If battery indicates unsatisfactory, it should be removed and checked by a qualified nickel-cadmium battery shop.

If annunciator(s) does not extinguish when the Battery Switch is placed in the OFF position, land as soon as practical.

DESCENT

1. Cabin Pressurization Controller - SET
   a. Cabin Altitude Selector Knob - SET per PRESSURIZATION CONTROLLER SETTING FOR LANDING graph, or so that "CABIN ALT" DIAL INDICATES LANDING FIELD PRESSURE ALTITUDE PLUS 500 FEET.
   b. Rate Control Selector Knob - AS REQUIRED.
2. Altimeter - SET
3. Cabin Sign - AS REQUIRED
4. Windshield Anti-Ice - AS REQUIRED (Turn ON well before descent into warm, moist, air to aid in defogging.)
5. Power - AS REQUIRED to give desired rate of descent.

LANDING

WARNING

Standing water or slush on the runway may induce flameout. Turn the Manual Fuel/Ignition switches ON (ARM for auto ignition system) before landing and observe time limits.

NOTE

Under low visibility conditions, landing and taxi lights should be left off due to light reflections.

Refer to PERFORMANCE Section for 0% flaps landing information.

1. Cabin Sign - ON
2. Standby Pumps - ON
3. Approach Flaps - AS REQUIRED
4. Propeller Synchrophaser - OFF
5. Engine Speed Levers - HIGH RPM
6. Landing Gear - DOWN

7. Flaps - 100%
8. Landing and Taxi Lights - AS REQUIRED
9. Pressurization - CHECK
10. Manual Fuel/Ignition Switches - AS REQUIRED
11. Power Levers:
    a. FLIGHT IDLE at or before touchdown
    b. GROUND IDLE after touchdown
    c. REVERSE as required after BETA Annunciator have illuminated.

WARNING

Do not move Power Levers below FLIGHT IDLE until after touchdown.

12. Brakes - AS REQUIRED

CAUTION

If possible, propellers should be moved out of reverse pitch above 40 knots, to minimize propeller blade erosion. Care must be exercised when reversing on runways with loose sand or dust on the surface. Flying gravel will damage propeller blades, and dust may obscure the pilot's forward visual field.

BALKED LANDING

1. Power - TAKEOFF (1878 ft lbs or ITT 923°C at 100% RPM)
2. Airspeed - 100 knots (When clear of obstacles ESTABLISH 110 knots.)
3. Flaps - Up
4. Landing Gear - UP

AFTER LANDING

1. Power Levers - GROUND IDLE

NOTE

Operate at taxi power for at least three minutes prior to shutdown (taxi time included).

2. Engine Speed Levers - LOW RPM (After reaching normal taxi speed)
3. Manual Fuel/Ignition Switches - OFF
4. Landing and Taxi Lights - AS REQUIRED
5. Ice Protection - OFF
6. Electrical Load - OBSERVE LIMITS
7. Trim - SET TO ZERO
8. Flaps - UP

SHUTDOWN AND SECURING

1. Parking Brake - SET
2. Inverter - OFF
3. Avionics Master Power Switch - OFF
4. Light Switches - OFF
5. Bleed Air Valves - ENV OFF
6. Cabin Temp Mode - OFF; Vent Blower - AUTO
7. Overhead Panel Switches - OFF
8. Batteries - If either BATTERY CHARGE annunciator illuminates during flight, perform the following BATTERY CONDITION CHECK:
   a. One Generator - OFF
   b. Volt Meter - INDICATING 28 VOLTS
   c. Momentarily turn the Battery Master Switch OFF, noting the change in loadmeter reading.

NOTE

The change in loadmeter indication is the battery charge current and should be no more than .05. If the result of the first check is not satisfactory, allow the batteries to charge, repeating the test each 90 seconds. If the results are not satisfactory within three minutes, the batteries should be removed and checked by a qualified nickel-cadmium battery shop.

9. Engine Start/Stop Switches - STOP
10. Power Levers - REVERSE before 50% rpm - Monitor engine for unusual noises.

CAUTION

Monitor ITT during shutdown. If sustained combustion is observed, proceed immediately to the ENGINE CLEARING procedure given earlier. During shutdown, ensure that the engines decelerate freely. Do not close the Fuel Firewall Shutoff Valves for normal engine shutdown.

11. Standby Pumps - OFF

CAUTION

The Standby Pumps are connected to the battery bus. Failure to turn these switches OFF will discharge the left battery.

12. Current Limiters - CHECK
13. Battery and Generator Switches - OFF AFTER PROPELLER ROTATION STOPS

NOTE

Failure of propeller(s) to cease rotation with Battery and Generator Switches ON indicates failure of starter or generator control systems. Turn Battery and Generator Switches OFF and initiate corrective action prior to next flight.

14. Power Levers - GROUND IDLE after propeller rotation stops
15. All other switches - OFF
16. Control Locks, Pitot Covers, Tiedown and Chocks - AS REQUIRED

CAUTION

Thermal distortion of the main rotor assembly may occur because of differential cooling of the rotor assembly components. If engine restarts within 10 to 45 minutes after engine shutdown are anticipated, this distortion can be avoided by rotating the engine (in the normal direction of rotation) until the rotating group is 180 degrees from the shutdown position. This is to be accomplished approximately 10 minutes before restart.

If the above procedure is not followed, stagnated acceleration may occur between 18- and 28-percent speed, accompanied by a rapid increase in ITT or EGT. In extreme cases, engine rotating group damage may result.

NIGHT OR INSTRUMENT FLIGHT (BEFORE TAKEOFF)

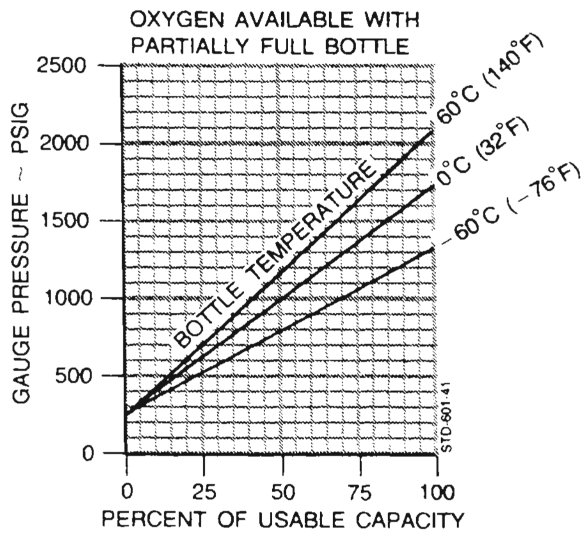
1. Internal Lights - CHECK
2. External Lights - CHECK
3. Flight Instruments - CHECK
4. Instrument Vacuum and Deice Pressure - CHECK
5. Voltage and Loadmeters - CHECK

ENVIRONMENTAL SYSTEMS

OXYGEN SYSTEM

PREFLIGHT

1. Oxygen Pressure Gauge - CHECK TO ENSURE SUFFICIENT PRESSURE, AND NOTE READING.
2. Percent of Full Bottle - DETERMINE FROM "OXYGEN AVAILABLE WITH PARTIALLY FULL BOTTLE" GRAPH AT RIGHT .
3. Oxygen Duration in Minutes - COMPUTE.
   a. Duration with Full Bottle - OBTAIN FROM "OXYGEN DURATION" TABLE BELOW.
   b. Current Oxygen Duration Available - MULTIPLY FULL-BOTTLE DURATION BY PERCENT OF USABLE CAPACITY to obtain answer in minutes.
4. Plug in all masks that will be used during flight.
5. Oxygen Control Valve - PULL ON, CHECK FLOW INDICATOR EACH MASK.
6. Diluter Demand System - CHECK OPERATION, SET MASKS AT 100% POSITION.
7. Oxygen Control Valve - PUSH OFF, STOW MASKS.



Oxygen Duration is computed for Puritan - Bennett Oxygen masks which regulate the flow rate to 3.7 Liters Per Minute (LPM-NTPD). These masks, identified by a red color coded plug-in, are approved for pressure altitudes up to 30,000 feet.

Stated Cylinder Size	†NUMBER OF PEOPLE USING																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	†16	†17
Cu ft	DURATION IN MINUTES																
22	151	75	50	37	30	25	21	18	16	15	13	12	11	10	10	*	*
49	334	167	111	83	66	55	47	41	37	33	30	27	25	23	22	20	19
64	445	222	148	111	89	74	63	55	49	44	40	37	34	31	29	27	26
76	514	257	171	128	102	85	73	64	57	51	46	42	39	36	34	32	30

**Will not meet oxygen requirements*

†For oxygen duration computations, count each diluter-demand crew mask in use as 2 (e.g., with 4 passengers and a crew of 2, enter the table at 8 people using).

WARNING

NO SMOKING when using Oxygen.

IN FLIGHT

Provision has been made for normal storage of the pilot's and copilot's oxygen masks under their seats and passenger oxygen masks can be stored in the seat back pockets.

1. Oxygen Control Valve - PULL ON

   Passengers:

   a. Masks - INSERT FITTINGS and DON MASK (adjust mask for proper fit)

      NOTE

      System efficiency is determined by the fit of the oxygen mask. Make certain the masks fit properly and are in good condition.

   b. Oxygen Flow Indicator - CHECK that the plunger lifts from its seat when the hose is inserted into the oxygen coupling.

   Crew:

   c. DON QUICK-DONNING MASK (when used at a cabin altitude of 20,000 feet or lower, the selector lever is usually moved to "NORMAL" to conserve oxygen.)

AFTER USING OXYGEN

1. Masks - DISCONNECT by pulling fitting from coupling.

   NOTE

   Closing the oxygen control valve while in flight is not necessary due to automatic sealing of the outlet when the mask is unplugged. It is desirable, however, to shut off the oxygen supply when not in use.

2. Oxygen Control - PUSH OFF (may be accomplished during shut-down)

PRESSURIZATION SYSTEM

FUNCTIONAL CHECK DURING RUNUP

1. Bleed Air Valves - OPEN
2. Cabin Pressure Controller - SET

   a. Cabin Altitude Selector Knob - ADJUST SO THAT "CABIN ALT" DIAL INDICATES AN ALTITUDE 500 FEET BELOW FIELD PRESSURE ALTITUDE.
   b. Rate Control Selector Knob - SET INDEX BETWEEN 9- AND 12-O'CLOCK POSITIONS.

3. Pressurization Switch - HOLD AT THE "TEST" POSITION.
4. Cabin Rate of Climb Indicator - CHECK FOR DESCENT INDICATION.
5. Pressurization Switch - RELEASE TO THE "PRESS" POSITION when pressurizing is confirmed.
6. Pressurization - SET (See BEFORE TAKEOFF procedure).

HEATING OR COOLING

1. Bleed Air Valves - OPEN (ENV OFF for more efficient cooling on the ground.)
2. Cabin Temperature Mode - AUTO
3. Vent Blower - AUTO
4. Electric Heat - NORMAL
5. Temperature Control - AS REQUIRED
6. Cabin Air Control - AS REQUIRED to divert cabin airflow to the cockpit.

DEFROSTER AIR

Windshield Defroster Air Control (right side of pilot's control column) - ON (pull)

COCKPIT VENTILATION

Pilot and copilot Ventilation Air Control - OFF (pull, at each lower corner of the subpanel if increased airflow is required.)

NOTE

During operation in AUTO, MANUAL HEAT or MANUAL COOL, the ventilation blower operates in the low position. For increased air circulation, turn the Blower Switch to HIGH.

Electric heat in the NORMAL position is automatically controlled when the Cabin Temperature Mode Control is in AUTO. The GROUND MAXIMUM position may be used for fast warmup. Observe RPM, ITT and Generator limits when operating in this mode. The Electric Heat switch is solenoid-held in the GRD MAX position and will drop down to the NORM position at liftoff.

OTHER NORMAL PROCEDURES

ICING FLIGHT

This airplane is approved for flight in icing conditions as defined in FAR 25, Appendix C. These conditions do not include, nor were tests conducted in, all icing conditions that may be encountered (e.g., freezing rain, freezing drizzle, mixed conditions, or conditions defined as severe). Some icing conditions not defined in FAR 25 have the potential of producing hazardous ice accumulations, which: 1) exceed the capabilities of the airplane's ice protection equipment; and/or 2) create unacceptable airplane performance. Flight into icing conditions which lie outside the FAR-defined conditions is not prohibited; however, pilot's must be prepared to divert the flight promptly if hazardous ice accumulations occur.

Refer to Section II for limitations relating to icing flight, and Section III for emergency procedures associated with icing equipment malfunctions and procedures required for severe icing conditions.

WARNING

Due to distortion of the wing airfoil, ice accumulations on the leading edges can cause a significant loss in rate of climb and in speed performance, as well as increases in stall speed. Even after cycling deicing boots, the ice accumulation remaining on the boots and unprotected areas of the airplane can cause large performance losses. For the same reason, the aural stall warning system may not be accurate and should not be relied upon. Maintain a comfortable margin of airspeed above the normal stall airspeed. In order to minimize ice accumulation on unprotected surfaces of the wing, maintain a minimum of 140 knots during operations in sustained icing conditions. In the event of windshield icing, reduce airspeed as required, but not below 140 knots. Prior to a landing approach, cycle the deicing boots to shed any accumulated ice.

1. Surface Deice System
   a. Preflight - Check boots for damage and cleanliness.
   b. Before takeoff - Deice Cycle Switch: Check both positions (SINGLE - up, and MANUAL - down.)
      (1) Check Deice Pressure Gage.
      (2) Check boots visually for inflation and hold-down.
   c. In flight (when ice accumulates ½ to 1 inch): Deice switch - SINGLE. Repeat as required.

CAUTION

Operation of the surface deice system in ambient temperatures below -40°C can cause permanent damage to the deice boots.

Rapid cycles in succession, or cycling before at least 1/2 inch of ice has accumulated, may cause the ice to grow outside the contour of the inflated boots and prevent ice removal.

NOTE

Either engine will supply sufficient air for deice operation. In the event of failure of SINGLE cycle, use MANUAL cycle.

2. Engine Inlet Heat
   a. Before takeoff (OAT + 5°C or below): Engine Inlet Switches - ON
   b. In flight (in visible moisture): Engine Inlet Switches - ON (before ice forms)

WARNING

When icing conditions may be encountered, do not delay operation of the engine inlet heat systems. Turn the systems on before any ice accumulates. Engine inlet heat must be on if icing conditions exist or are anticipated. If icing conditions are inadvertently encountered, actuate the Manual Fuel/Ignition switch to the ON position and turn on engine inlet heat systems one at a time. Ensure proper operation of the first engine before activating the inlet heat system for the second engine.

CAUTION

Do not operate engine inlet heat longer than 10 seconds if OAT is greater than + 5 degrees C.

3. Ignition System
   a. Before Takeoff and In Flight - MAN FUEL/IGN Switches - ON (ARMED for automatic ignition system) - Observe FLIGHT IN ICING CONDITIONS LIMITATIONS. Observe AUTO IGN ARMED lights illuminated.

4. Electrothermal Propeller Deice

CAUTION

Do not operate propeller deice when the propellers are static.

a. Before Takeoff
   (1) Propeller Deice Switch (Auto) - AUTO
   (2) Deice Ammeter - CHECK for 18 to 24 amperes.

On Airplane Serials BE-1 thru BE-113:

   (3) Manual Propeller Deice Switch - MOMENTARILY HOLD IN "INNER" POSITION, THEN "OUTER" (Small loadmeter deflection on both meters in each position indicates the manual system is operating.)

On Airplane Serials BE-114 and after:

   (3) Manual Propeller Deice Switch - MOMENTARILY HOLD IN "MANUAL" POSITION (Small loadmeter deflection on both meters indicates manual system is operating.)

All Airplanes:

NOTE

Use of current for the manual (backup) system is not registered on the propeller deice ammeter, however it will be indicated as part of the airplane's loadmeters (small needle deflection) when the system is switched on.

   (4) Propeller Deice Switch (Auto) - OFF

b. In Flight
   (1) Propeller Deice Switch (Auto) - AUTO. The system may be operated continuously in flight and will function automatically until the switch is turned OFF.
   (2) Relieve propeller imbalance due to ice by increasing rpm briefly and returning to the desired setting. Repeat as necessary.

CAUTION

If the deice ammeter does not indicate 18 to 24 amperes or the automatic timer fails to switch, refer to EMERGENCY PROCEDURES Section.

5. Pitot Heat - ON
6. Stall Warning Heat - ON

CAUTION

Prolonged use of pitot and stall warning heat on the ground will damage the heating elements.

7. Windshield Heat Switch - AS REQUIRED (before ice forms)
8. Wing Ice Lights - AS REQUIRED
9. Static Air Source - REFER TO EMERGENCY PROCEDURES SECTION.

PITCH TRIM CHECK PROCEDURE

The following procedure should be accomplished during the BEFORE TAKEOFF check:

1. Main - OFF; Standby Pitch Trim - ON
2. Individual Dual Element Switches - MOVE FWD AND AFT, check that there is no movement of indicator.
3. Both Dual Element Switches - MOVE FWD AND AFT, check movement with indicator.
4. Standby Pitch Trim Switch - OFF, while both dual element switches activated to check system deactivation.
5. Main Pitch Trim Switch - ON
6. Individual Dual Element Switches - MOVE FWD AND AFT, check no movement of indicator.
7. Both Pilot's Dual Element Switches -
   *a. Check travel to full extreme with indicator.
   b. Note aural trim in motion indication.
   c. Trim Release Button - DEPRESS while trim in motion in each direction to deactivate system. RELEASE (trim movement should continue).
8. Copilot's Dual Element Switches
   a. Check individual Dual Element Switches, check no movement of indicator.
   b. Check Trim Release Button while trim in motion (Travel to full extremes not required).
9. Out of Trim Warning System - CHECK
   a. Activate Pilot's (or Co-Pilot's) main trim switches until trim indicator needle is above or below green arc.
   b. Advance Left Engine Power Lever to 90% position or above. (NOTE warning horn sound.)
   c. Retard the advanced engine power lever to idle.
10. Set Trim for Takeoff - GREEN STRIPE

* Travel to full extreme required only for first flight of day.

WARNING

Operation of the trim system should occur only by movement of pairs of switches. Any movement of the indicator while depressing one switch denotes a malfunctioning system. Flight shall not be initiated with any malfunction of either the main or standby trim systems.

The Main Pitch Trim System master switch and the Standby Pitch Trim System master switch shall not be in the ON position at the same time. These systems shall be operated independently of each other.

NICKEL-CADMIUM BATTERY CONDITION CHECK

DURING ENGINE START

USING "BATTERY CHARGE" ANNUNCIATOR

1. BATTERY CHARGE Annunciator - ON (approximately 6 seconds after generator is on the line)

NOTE

Annunciator indicates a charge current above normal. The annunciator should extinguish within 5 minutes following a normal engine start. Failure to do so indicates a partially discharged battery. Continue to charge the battery. Make a check every 90 seconds, using the *DURING ENGINE SHUTDOWN* procedure, until the charge current fails to decrease and the annunciator extinguishes.

USING LOADMETER

1. Start one engine with the battery.
2. Generator - RESET then ON
3. Voltmeter - INDICATING 28 VOLTS
4. After the loadmeter stabilizes, momentarily turn the Battery Switch OFF, noting the change in meter indication.

NOTE

*Failure to obtain a change value of below .025 within 5 minutes indicates a partially discharged battery. Continue to charge the battery, repeating the above check every 90 seconds until the charge current decreases below a value of .025. No decrease of charging current between checks indicates an unsatisfactory condition. The battery should be removed and checked by a qualified nickel-cadmium battery shop.

IN FLIGHT

In-flight illumination of the BATTERY CHARGE annunciator indicates a possible battery malfunction. The battery condition can be checked using the following procedure:

1. Battery Switch - OFF (momentarily)
2. Loadmeter - NOTE CHANGE

NOTE

*If the change value exceeds .025, turn the battery switch OFF and proceed to destination. In order to avoid electrical transients caused by power fluctuations, the battery switch should be ON for landing. If the *DURING ENGINE SHUTDOWN* battery check is unsatisfactory, the battery should be removed and checked by a qualified nickel-cadmium battery shop.

3. BATTERY CHARGE Annunciator - EXTINGUISHED

NOTE

If the BATTERY CHARGE annunciator does not extinguish when the battery control switch is placed in the OFF position, land as soon as practicable.

DURING ENGINE SHUTDOWN

1. One Generator - OFF
2. Voltmeter - INDICATING 28 VOLTS
3. Momentarily turn the Battery Switch OFF, noting the change in loadmeter indication.

NOTE

*If the change value exceeds .025, allow the battery to charge, repeating the check every 90 seconds. If the change value is not less than .025 within 3 minutes, the battery should be removed and checked by a qualified nickel-cadmium battery shop.

FOOTNOTE:

**The change in loadmeter indication (i.e., the amount of needle deflection) is directly proportional to the battery charging current. A change value of .025 is indicated by very little needle movement, since full-scale deflection represents a relative load value of 1.0.*

BLENDING ANTI-ICING ADDITIVE TO FUEL

The following procedure is to be used when blending anti-icing additive (which must conform to specification MIL-I-27686) with the fuel as the airplane is being refueled:

1. Using "HI-FLO PRIST" blender (Model PHF-204), remove cap containing the tube and clip assembly.
2. Attach pistol grip on collar.
3. Press tube into button.
4. Clip tube end to fuel nozzle.
5. Pull trigger firmly to ensure full flow, then lock in place.
6. Start flow of additive when refueling begins. (Refueling should be at a rate of 30 to 60 gallons per minute. A rate of less than 30 gallons per minute may be used when topping off tanks.)

CAUTION

Ensure that the additive is directed into the flowing fuel stream; start additive flow after fuel flow starts, and stop before fuel flow stops. Do not allow concentrated additive to contact coated interior of fuel cells or airplane painted surfaces. Use not less than 20 fl oz of additive per 260 gallons of fuel or more than 20 fl oz of additive per 104 gallons of fuel.

NOISE CHARACTERISTICS

Approach to and departure from an airport should be made so as to avoid prolonged flight at low altitude near noise-sensitive areas. Avoidance of noise-sensitive areas, if practical, is preferable to overflight at relatively low altitudes.

For VFR operations over outdoor assemblies of persons, recreational and park areas, and other noise-sensitive areas, pilots should make every effort to fly not less than 2000 feet above the surface, weather permitting, even though flight at a lower level may be consistent with the provisions of government regulations.

NOTE

The preceding recommended procedures do not apply where they would conflict with Air Traffic Control clearances or instructions, or where, in the pilot's judgement, an altitude of less than 2000 feet is necessary to adequately exercise his duty to see and avoid other airplanes.

Flyover noise level established in compliance with FAR 36 is:

77.3 dB(A)

No determination has been made by the Federal Aviation Administration that the noise level of this airplane is or should be acceptable or unacceptable for operation at, into, or out of any airport.

PRACTICE DEMONSTRATION OF V_{MCA}

V_{mca} demonstration may be required for multi-engine pilot certification. The following procedure shall be used at a safe altitude of at least 5000 feet above the ground in clear air only.

WARNING

IN-FLIGHT ENGINE CUTS BELOW V_{SSE} SPEED OF 100 KNOTS ARE PROHIBITED

V_{MCA} (85 kts) was determined by actually failing an engine with the NTS system functional. During practice, when it is not desirable to fail an engine, V_{MCA} with one engine idling will be higher.

1. Landing Gear - UP
2. Flaps - UP
3. Airspeed - ABOVE 100 KTS (V_{sse})
4. Engine Speed Levers - HIGH RPM
5. Power Lever (Simulated inoperative engine) - IDLE
6. Power Lever (Other engine) - MAXIMUM ALLOWABLE
7. Airspeed - REDUCE APPROXIMATELY 1 KNOT PER SECOND UNTIL EITHER V_{MCA} OR STALL WARNING IS OBTAINED.

CAUTION

Use rudder to maintain directional control (heading) and ailerons to maintain 5° bank towards the operative engine (lateral attitude). At the first sign of either V_{mca} or stall warning (which may be evidenced by: inability to maintain heading or lateral attitude, aerodynamic stall buffet, or stall warning horn sound) immediately initiate recovery: reduce power to idle on the operative engine and immediately lower the nose to regain V_{sse}.

COLD WEATHER PROCEDURES (SNOW, SLUSH, AND ICE)

PREFLIGHT INSPECTION

Verify that the tires are not frozen to the ramp, and that the brakes are free of ice contamination. Deicing or anti-icing solutions may be used on the tires and brakes if they are frozen. Solutions which contain a lubricant, such as oil, must not be used as they will decrease the effectiveness of the brakes.

In addition to the normal exterior preflight inspection, special attention should be given all vents, openings, static ports, control surfaces, hinge points, and the wing, tail, and fuselage surfaces for accumulations of ice or snow. Removal of these accumulations is necessary prior to takeoff. Airfoil contours may be altered by the ice and snow to the extent that their lift qualities will be seriously impaired. Ice and snow on the fuselage can increase drag and weight. Frost that may form on the wing fuel tank bottom skins need not be removed prior to flight. Frost that may accumulate on other portions of the wing, the tail surfaces, or on any control surface, must be removed prior to flight.

Inspect the propeller blades and hubs for ice and snow. Unless engine inlet covers have been installed during snow or icing conditions, the propellers should be turned by hand in the direction of normal rotation to make sure they are free to rotate prior to starting engines.

The removal of frozen deposits by chipping or scraping is not recommended. A soft brush, squeegee, or mop may be used to clear snow that is not adhering to the surfaces. If use of deicing/anti-icing fluids are required to produce a clean airplane, special attention must be given to ensure that the pitot masts, static ports, fuel vents, cockpit windows and the area forward of the cockpit windows are free of the deicing/anti-icing solution. Both wings and both stabilizers must receive the same complete treatment. The type and concentration of deicing/anti-icing solution being applied and the rate of precipitation will affect the length of time the treatment will be effective. Refer to Chapter 12 of the Beech King Air 100 Series Maintenance Manual and Section VIII of this manual for additional information on deicing and anti-icing of airplanes on the ground. See Section II, LIMITATIONS, for a list of approved fluids.

Complete the normal preflight procedures, including a check of the flight controls for complete freedom of movement.

TAXIING

Taxiing through deep snow or slush should be avoided when possible. Snow and slush can be forced into brake assemblies which may cause the brakes to freeze during a prolonged hold on the ground or during the subsequent flight. Keep flaps retracted during taxiing to avoid throwing snow or slush into flap mechanisms and to minimize damage to flap surfaces.

Glaze ice can be difficult to see. Therefore, taxi slowly and allow more clearance from objects when maneuvering the airplane.

BEFORE TAKEOFF

After completion of the normal Before Takeoff checklist, verify that the airplane is still free of frozen contaminants.

Ensure the runway is free from hazards such as snow drifts, glazed ice, and ruts.

WARNING

> Ice, frost, or snow on top of deicing/anti-icing solutions must be considered as adhering to the airplane. Takeoff should not be attempted.

If the OAT is +4°C or below, and visible moisture will be encountered during the takeoff, engine inlet switches must be turned on.

TAKEOFF

Allow additional take-off distance when snow or slush is on the runway. Extra cycling of the landing gear when above 500 feet AGL may help clear any contamination from the gear system.

When using FAA Approved SAE Type II or Type IV deicing/anti-icing fluids in the concentrated form, the control column force required to rotate for takeoff may temporarily increase approximately 20 pounds. The cruise, descent, approach and landing phases of flight are not affected by the use of these fluids.

LANDING

Braking and steering are less effective on slick runways. Also, hydroplaning may occur under wet runway conditions at higher speeds. Use the rudder to maintain directional control until the tires make solid contact with the runway surface.

Selecting reverse thrust can effectively reduce stopping distances on slick runways; however, reverse thrust may cause snow or moisture to be thrown forward, temporarily reducing visibility.

SHUTDOWN AND SECURING

Avoid setting the parking brake, if possible. This will help reduce the possibility of freezing the brakes. Proper chocking can be used to prevent the airplane from rolling.

SECTION V

PERFORMANCE HIGH FLOAT GEAR

TABLE OF CONTENTS

Except as noted, all airspeeds quoted in this section are indicated airspeeds (IAS) and assume zero instrument error.

INTRODUCTION TO PERFORMANCE AND FLIGHT PLANNING

The graphs and tables in this Section present performance information for takeoff, climb, landing and flight planning at various parameters of weight, power, altitude and temperature. All FAA-approved performance information is included within this Section. Examples have been presented on all performance graphs. The following example presents the calculations for flight time, block speed, and fuel required for a proposed flight are presented using the conditions listed below:

CONDITIONS

At Billings:
- Outside Air Temperature .... 25°C (77°F)
- Field Elevation .... 3606 feet
- Altimeter Setting 29.56
- Wind .... 360° at 10 knots
- Runway 34 Length .... 5600 feet

Route of Trip:
BIL-V19-CZI-V247-DGW-V19E-CYS-V19-DEN
Weather Conditions IFR for cruise altitude of 17,000 feet

ROUTE SEGMENT	DISTANCE	MEA	WIND AT 17,000 FT	OAT AT CRUISE ALT	OAT AT MEA	ALT SET.
	NM	FT	DIR/KTS	°C	°C	IN. HG
BIL-SHR	88	8000	010/30	-10	0	29.56
SHR-CZI	57	9000	350/40	-10	-4	29.60
CZI-DGW	95	8000	040/45	-10	0	29.60
DGW-CYS	47	8000	040/45	-10	0	29.60
	46	8000	040/45	-10	0	29.60
CYS-DEN	85	8000	040/45	-10	0	29.60

REFERENCE: Enroute Low Altitude charts L-8 and L-9

At Denver:
- Outside Air Temperature .... 15°C (59°F)
- Field Elevation .... 5331 feet
- Altimeter Setting 29.60
- Wind .... 270° at 10 knots
- Runway 26 Length .... 10,000 feet

To determine pressure altitude at origin and destination airports, add 100 feet to field elevation for each .1 in. Hg below 29.92, and subtract 100 feet from field elevation for each .1 in. Hg above 29.92.

Pressure Altitude at BIL:
29.92 - 29.56 = .36 in. Hg

The pressure altitude at BIL is 360 feet above the field elevation.

3606 + 360 = 3966 Feet

Pressure Altitude at DEN:
29.92 - 29.60 = .32 in. Hg

The pressure altitude at DEN is 320 feet above the field elevation.

5331 + 320 = 5651 Feet

For enroute altitudes and MEA's this pressure correction has been ignored. Enter the graph for Maximum Take-Off Weight Operational Limitation at 25°C and 3966 feet pressure altitude:

Maximum allowable take-off weight = 11,800 lbs.

Enter the graph for Take-off Distance, Flaps 0%, at 25°C, 3966 feet pressure altitude and 11,800 pounds and a 9.5 knot headwind component:

Ground Roll .... 2800 feet
Total Distance Over a 50-Foot Obstacle .... 4400 feet
Rotation Speed .... 97 knots
50-Foot Speed .... 111 knots

The Maximum Take-off Weight chart is the only operating limitation required to meet applicable FAR requirements. Information has been presented, however, to determine the take-off weight, field requirements, and take-off flight path assuming an engine failure occurs during the take-off procedure. The following illustrates the use of these charts.

Enter the Take-off Weight - Flaps 0% - To Achieve Positive, One Engine Inoperative Climb At Lift-off graph at 3966 feet, and to 25°C, to determine the maximum weight at which the accelerate-go procedure should be attempted.

Maximum Accelerate-Go Weight .... 10,880 lbs

The following example assumes the airplane is loaded so that take-off weight is 10,880 lbs.

Enter the graph for Accelerate-Go Distance - 0% Flaps, at 25°C, 2966 feet pressure altitude, 10,880 pounds, and a 9.5 knot headwind component:

Ground Roll .... 2850 feet
Total Distance Over 50-Foot Obstacle .... 8350 feet
Take-Off Speed at Rotation .... 95 knots
at 50 feet .... 108 knots

Enter the graph for Take-off Climb Gradient - One Engine Inoperative - 0% Flaps, at 25°C, 2966 feet pressure altitude, and 10,880 pounds:

Climb Gradient 2.5%
Climb Speed .... 108 knots

A 2.5% climb gradient is 25 feet of vertical height per 1000 feet of horizontal distance.

NOTE

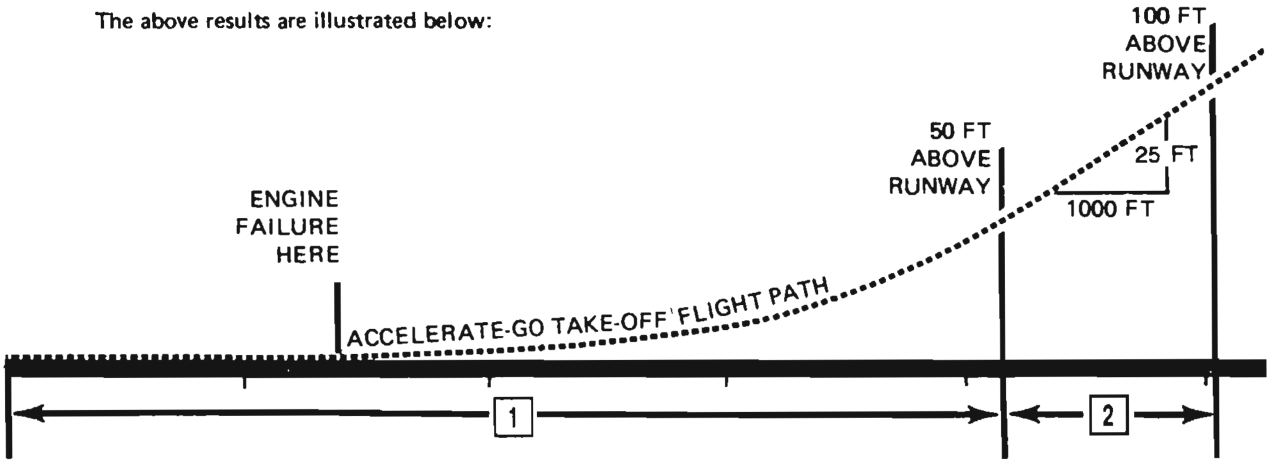
The graphs for take-off climb gradient assume a zero wind condition. Climbing into a headwind will result in higher angles of climb and hence better obstacle clearance capabilities.

Calculation of the horizontal distance to clear an obstacle 100 feet above the runway surface:

Distance from 50 feet to 100 feet = 50 feet
(100 - 50) (1000 ÷ 25) = 2000 feet

Total Distance = 8350 + 2000 = 10,350 feet

The above results are illustrated below:



1 ACCELERATE-GO TAKE-OFF = 8350 FEET

2 DISTANCE TO CLIMB FROM 50 FEET TO 100 FEET ABOVE RUNWAY = 2000 FEET

The following calculations provide information for the flight planning procedure. All examples have been presented on the performance graphs, and it is assumed that the airplane has been loaded to a ramp weight of 11,875 lbs.

ROUTE SEGMENT	AVERAGE MAGNETIC COURSE	AVERAGE MAGNETIC VARIATION
BIL-SHR	114°	15°E
SHR-CZI	136°	15°E
CZI-DGW	131°	14°E
DGW-CYS	138°	13°E
	169°	13°E
CYS-DEN	171°	13°E

REFERENCE: Enroute Low Altitude Charts L-8 and L-9

Enter the ISA Conversion graph, at the condition indicated:

ENROUTE:	Pressure Altitude (approx)	=	17,000 feet
	OAT	=	-10°C
	ISA Condition	=	ISA +9°C

Enter the Time, Fuel and Distance to Climb graph at 25°C and 3966 feet, and -10°C and 17,000 feet, with an initial weight of 11,800 lbs.

Time to Climb	=	14 - 3	=	11 min
Fuel Used to Climb	=	165 - 40	=	125 lbs
Distance Traveled	=	40 - 8	=	32 NM

Enter the tables for Maximum Recommended Cruise Power At ISA and ISA + 10°C. Respectively, read cruise speeds at 16,000 feet, 18,000 feet and 11,500 pounds and 10,500 pounds as follows:

CRUISE TRUE AIRSPEED ~ KNOTS				
ALTITUDE	11,500 POUNDS		10,500 POUNDS	
FEET	ISA	ISA + 10°C	ISA	ISA + 10°C
16,000 18,000	259 258	253 252	262 262	257 257

The estimated cruise weight is approximately 11,300 pounds.

Interpolate between these speeds for 17,000 feet, ISA + 9°C, and 11,300 pounds.

Cruise True Airspeed = 254 knots

Enter the graph for Fuel Flow At Maximum Recommended Cruise Power at ISA + 9°C (or indicated outside air temperature of -4°C) and 17,000 feet pressure altitude:

Fuel Flow Per Engine	=	292 lbs/hr
Total Fuel Flow	=	584 lbs/hr

NOTE

Fuel flows can also be obtained from tables.

Enter the Time, Fuel, and Distance to Descend graph at 17,000 feet and at 5651 feet.

Time to Descend	11 - 4	=	7 min
Fuel to Descend	88 - 34	=	54 lbs
Distance to Descend	44 - 13	=	31 NM

Time and fuel used were calculated at maximum recommended cruise power as follows:

Time	=	Distance ÷ Ground Speed
Fuel Used	=	(Time) (Total Fuel Flow)

Results are as follows:

ROUTE	DISTANCE	ESTIMATED GROUND SPEED	TIME AT CRUISE ALTITUDE	FUEL USED FOR CRUISE
	NM	KNOTS	HRS : MIN	LBS
BIL-SHR	56*	267	: 13	122
SHR-CZI	57	291	: 12	114
CZI-DGW	95	262	: 22	212
DGW-CYS	47	267	: 11	103
	46	288	: 10	93
CYS-DEN	54*	289	: 11	109

*Distance to climb or descend has been subtracted from segment distance.

The fuel used at cruise altitude from BIL to SHR at 17,000 feet and -10°C (ISA +9°C) is:

Fuel Flow	292 lbs/hr/eng
Cruise True Airspeed (11,300 lbs)	254 knots
Distance Traveled at 17,000 feet	56 NM
Estimated Ground Speed	267 knots
Fuel Used for 56 NM at 267 Knots GS	122 lbs

The total fuel used from BIL to SHR is: 125 + 122 = 247 lbs

The estimated weight upon reaching SHR is: Take-off weight of 11,800 - 247 = 11,553 lbs

NOTE

Two-engine rate of climb was determined for cruise altitude and estimated weight at SHR. The MEA at SHR was the highest MEA encountered during the flight; the one engine inoperative climb and service ceiling were determined for the MEA and weight at SHR.

FLIGHT TIME, BLOCK SPEED, AND FUEL REQUIREMENTS

ITEM	TIME HRS: MIN	FUEL POUNDS	DISTANCE NAUTICAL MILES
Start, Runup, Taxi, and Takeoff	0:00	75	0
Climb	0:11	125	32
Cruise	1:19	753	355
Descent	0:07	54	31
TOTAL	1:37	1007	418

Total Flight Time: 1 Hour 37 Minutes

Block Speed: 418 NM ÷ 1 Hour, 37 Minutes = 259 Knots

Reserve Fuel

A 45 minutes reserve at maximum recommended cruise power was assumed for convenience. However, maximum range power could have been used.

(0:45) (584 lbs/hr) = 438 lbs

TOTAL FUEL REQUIREMENT

1007 + 438 = 1445 lbs

ZERO FUEL WEIGHT LIMITATION

For this example, the following conditions were assumed:

Ramp Weight	=	11,875 pounds
Weight of Usable Fuel Onboard	=	1445 pounds

Zero Fuel Weight = Ramp Weight - Weight of Usable Fuel Onboard

Zero Fuel Weight = 11,875 - 1445	=	10,430 pounds
Maximum Zero Fuel Weight (from LIMITATIONS Section)	=	(−) 9600 pounds
Maximum Zero Fuel Weight Limitation has been exceeded by	=	830 pounds

At least 830 pounds of payload must be off-loaded. If desired, additional fuel may then be added until the maximum ramp weight limitation of 11,875 pounds is again reached.

LANDING INFORMATION

The estimated Landing Weight is determined by subtracting the fuel required for the trip from the Ramp Weight.

Ramp Weight	=	11,875 pounds
Fuel Required for Total Trip	=	(−) 1007 pounds
Landing Weight (11,875 - 1007)	=	10,868 pounds

NOTE

For the remainder of this example, a landing weight of 10,876 pounds has been assumed.

Enter the Landing Distance Without Propeller Reversing - Flaps 100% graph, at 15°C, 5651 feet pressure altitude, 10,876 lbs, and a 10 knot headwind component.

Ground Roll	1820 feet
Total Over 50-foot Obstacle	3700 feet
Approach Speed	111 knots

Enter the graph Climb-Balked Landing at 15°C, 5651 feet, and 10,876 lbs.

Rate of Climb	830 ft/min
Climb Gradient	6.6%

COMMENTS PERTINENT TO THE USE OF PERFORMANCE GRAPHS

1. In addition to presenting the answer for a particular set of conditions, the example on the graph also presents the order in which the various scales on the graph should be used. For instance, if the first item in the example is OAT, then enter the graph at the known OAT.

2. The reference lines indicate where to begin following guide lines. Always project to the reference line first, then follow the guide lines to the next known item.

3. The associated conditions define the specific conditions from which performance parameters have been determined. They are not intended to be used as instructions; however, performance values determined from charts can only be achieved if the specified conditions exist.

4. Indicated airspeeds (IAS) were obtained by using the Airspeed Calibration - Normal System graphs.

5. The full amount of usable fuel is available for all approved flight conditions.

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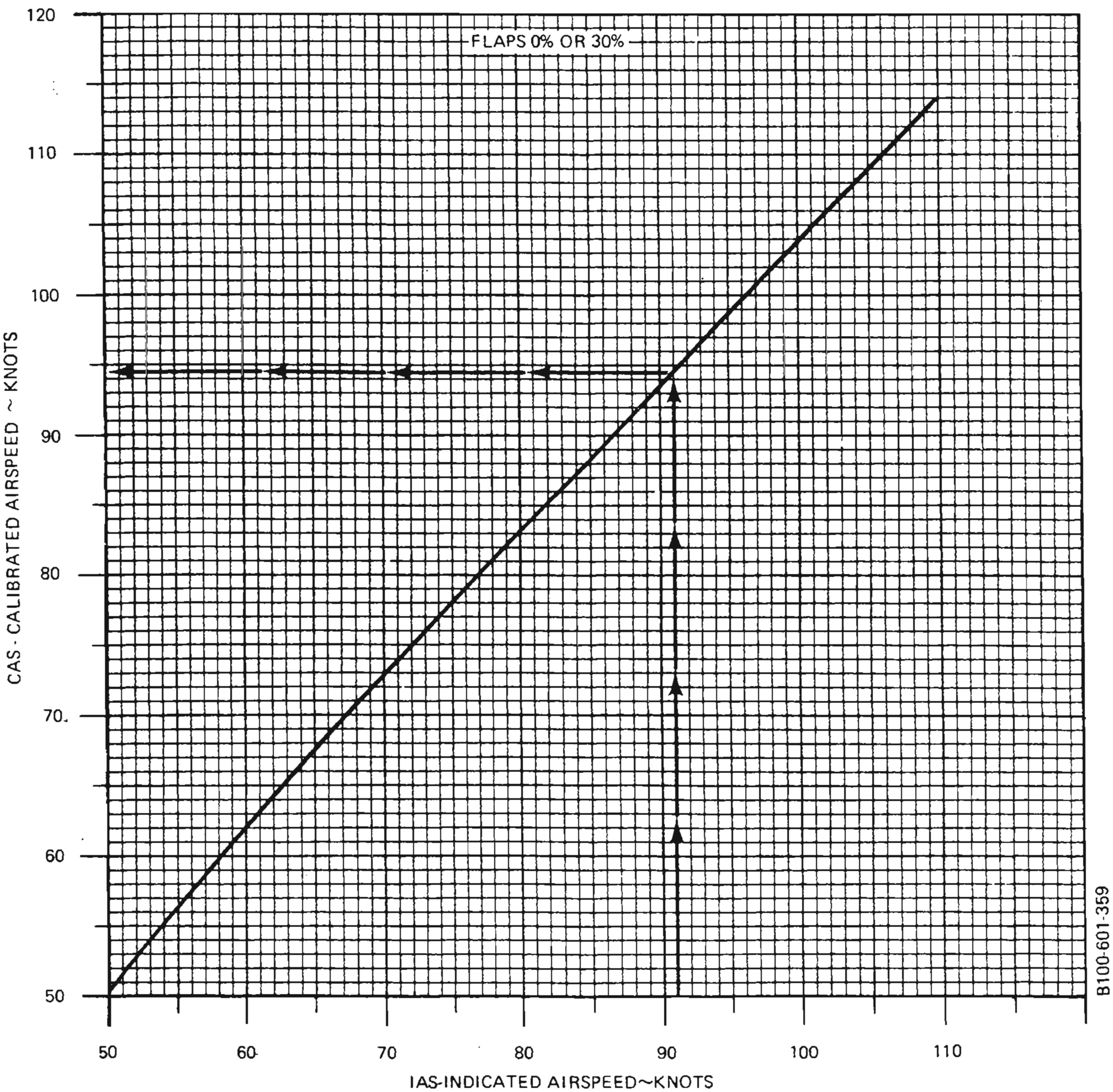
AIRSPEED CALIBRATION — NORMAL SYSTEM

TAKE-OFF GROUND ROLL

EXAMPLE:

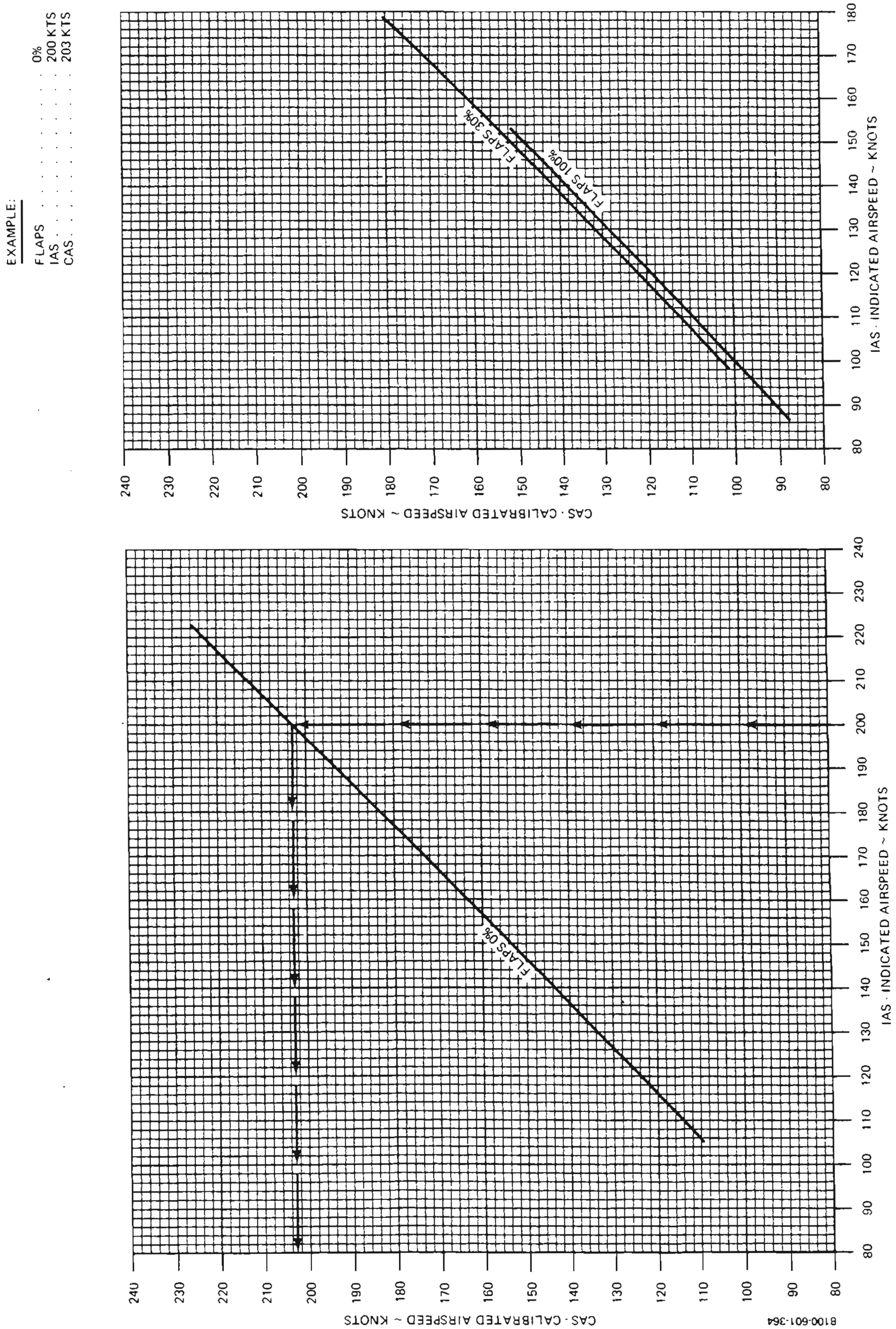
ROTATION SPEED . . . . 91 KNOTS IAS

ROTATION SPEED . . . . 94.6 KNOTS CAS



(6.50 x 10 Dual Main Wheels)

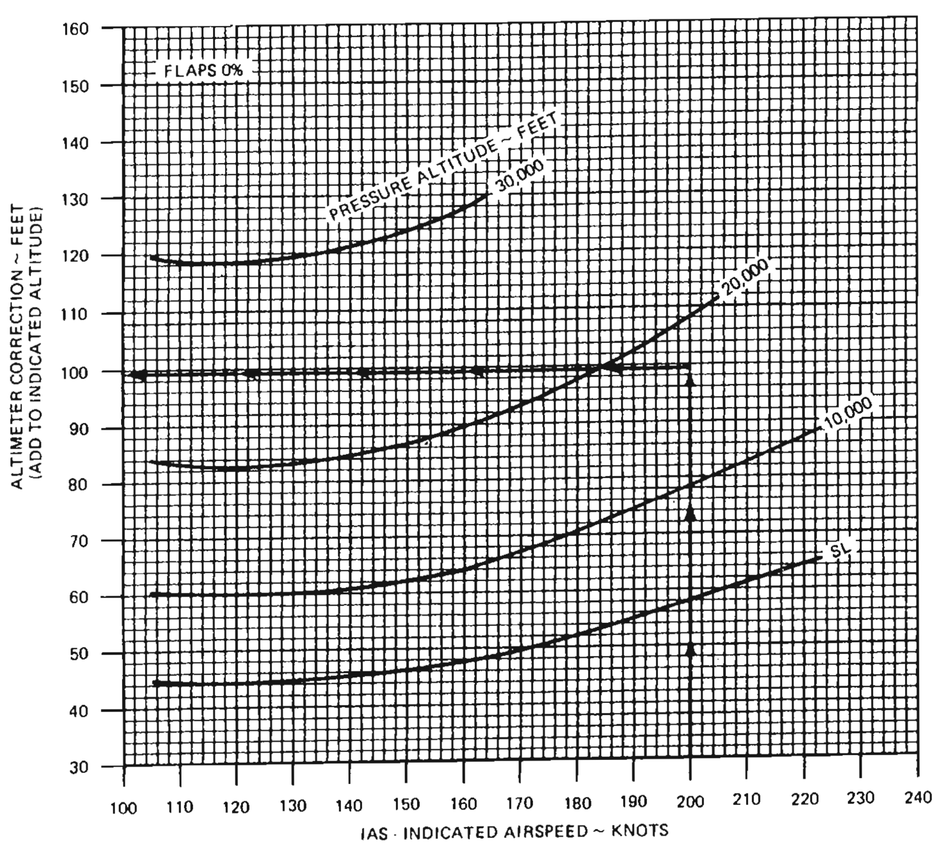
AIRSPEED CALIBRATION — NORMAL SYSTEM

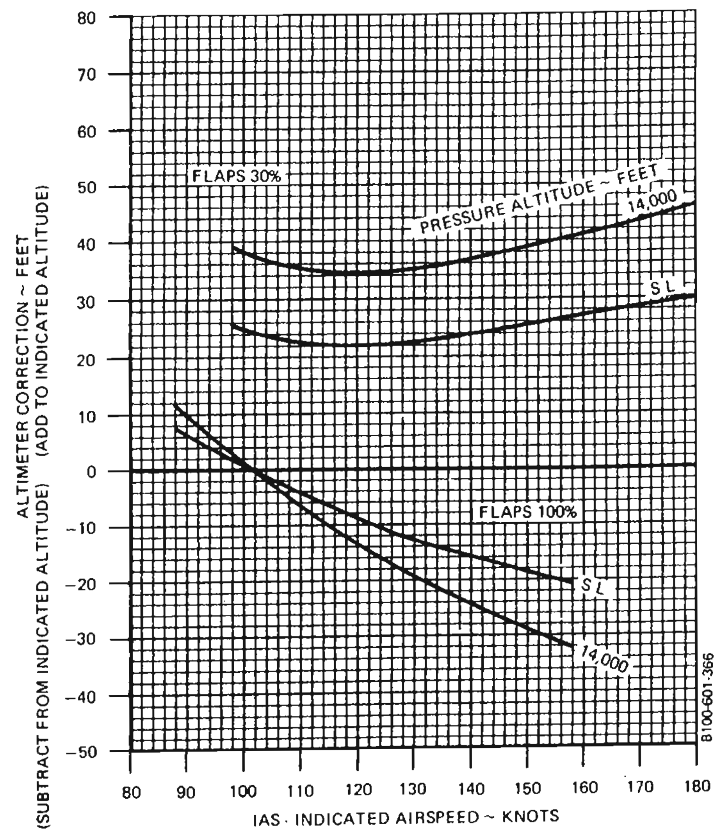


ALTIMETER CORRECTION — NORMAL SYSTEM

EXAMPLE:

FLAPS	0% (UP)
IAS	200 KTS
INDICATED PRESSURE ALTITUDE	17,000 FT
ALTIMETER CORRECTIONS	99 FT
ACTUAL PRESSURE ALTITUDE	17,000 + 99 = 17,099 FT

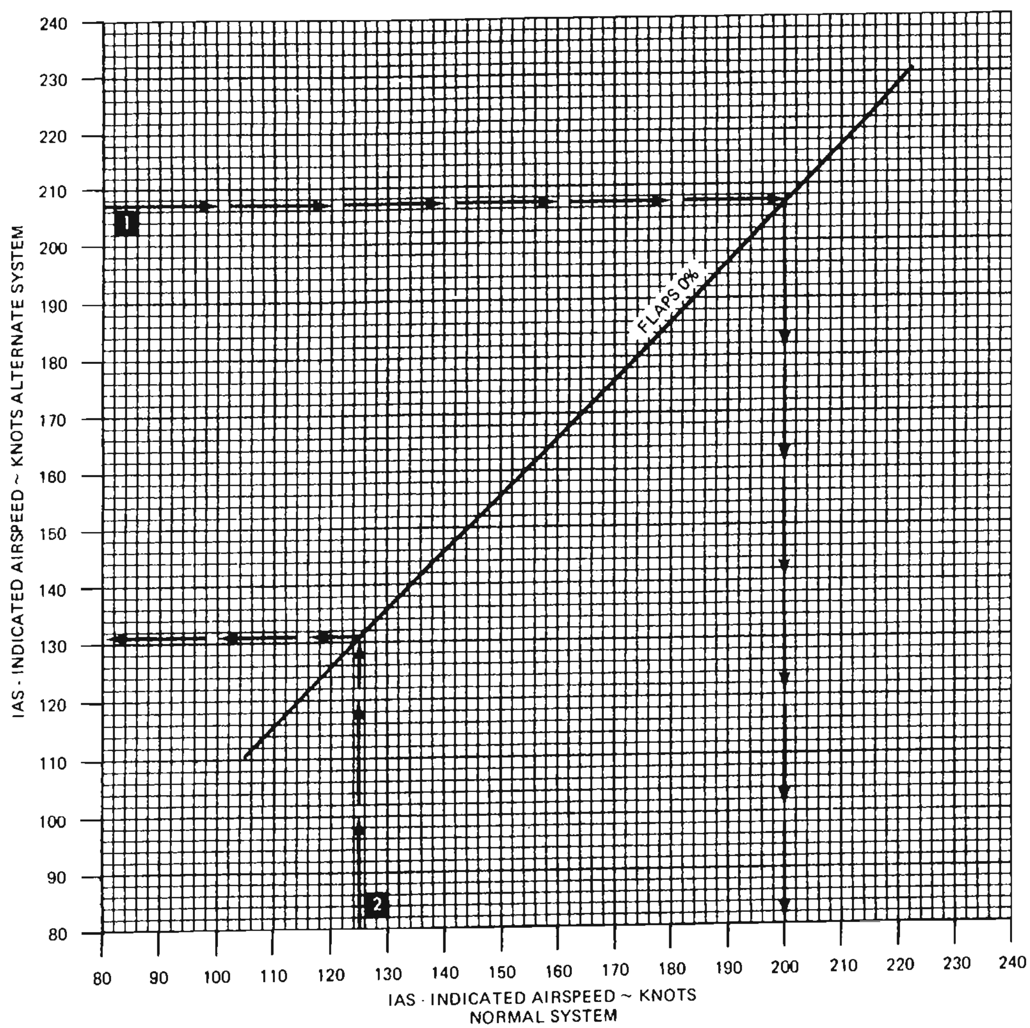


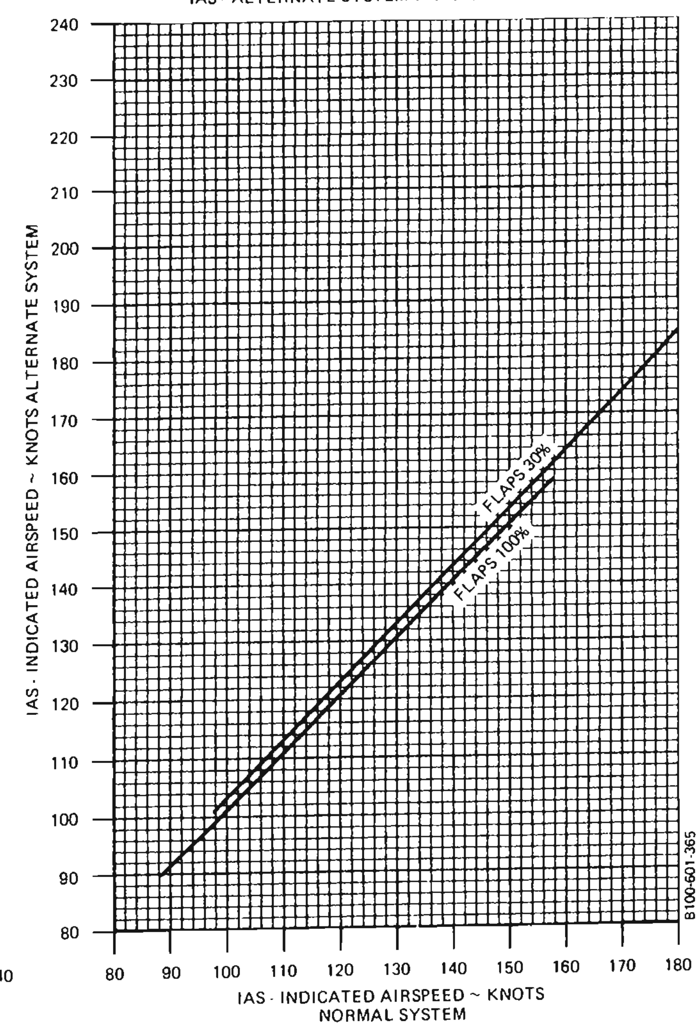


AIRSPEED CALIBRATION — ALTERNATE SYSTEM

EXAMPLE:

1	FLAPS	0% (UP)
	IAS - ALTERNATE SYSTEM	207 KTS
	IAS - NORMAL SYSTEM	200 KTS
	CAS - (SEE AIRSPEED CALIBRATION NORMAL SYSTEM)	203 KTS
2	FLAPS	0% (UP)
	IAS - NORMAL SYSTEM	125 KTS
	IAS - ALTERNATE SYSTEM	131 KTS





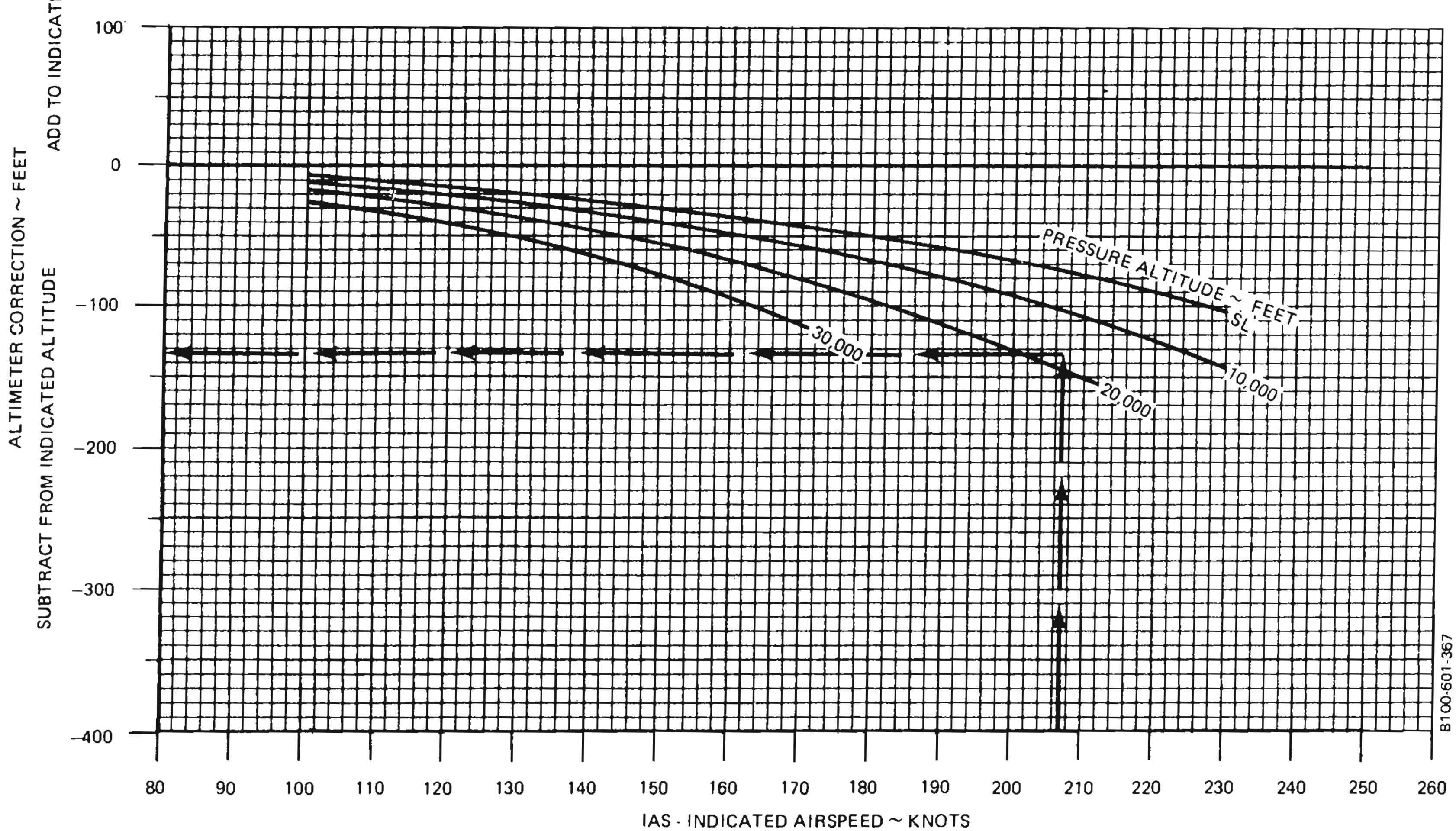
ALTIMETER CORRECTION—ALTERNATE SYSTEM

APPLICABLE FOR ALL FLAP POSITIONS

EXAMPLE:

IAS . . . . 207 KTS
INDICATED PRESSURE ALTITUDE . . . . 17,000 FT

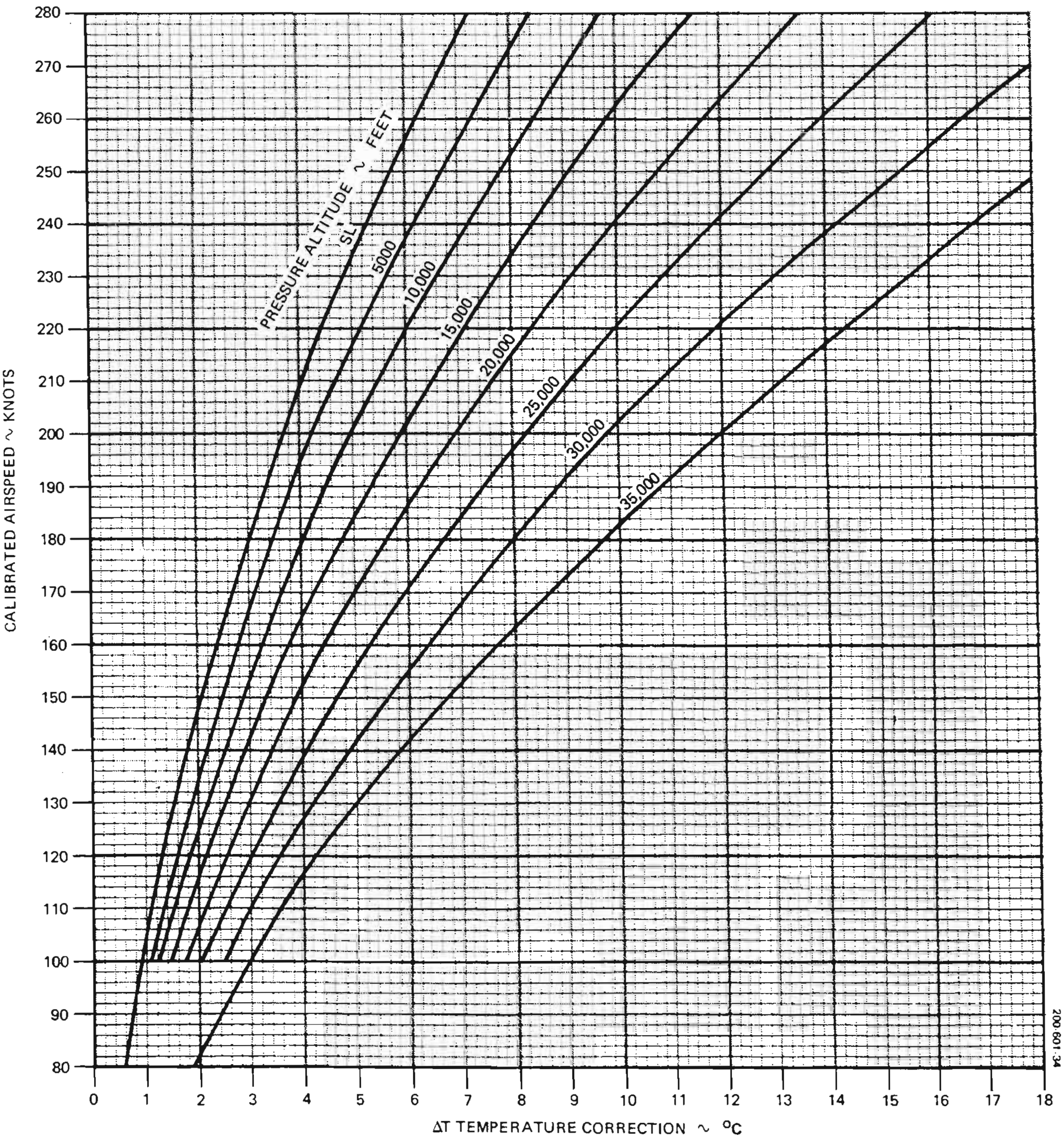
ALTIMETER CORRECTION . . . . −132 FT
ACTUAL PRESSURE ALTITUDE . . . . . 16,000 − 132 = 15,868 FT



INDICATED OUTSIDE AIR TEMPERATURE CORRECTION

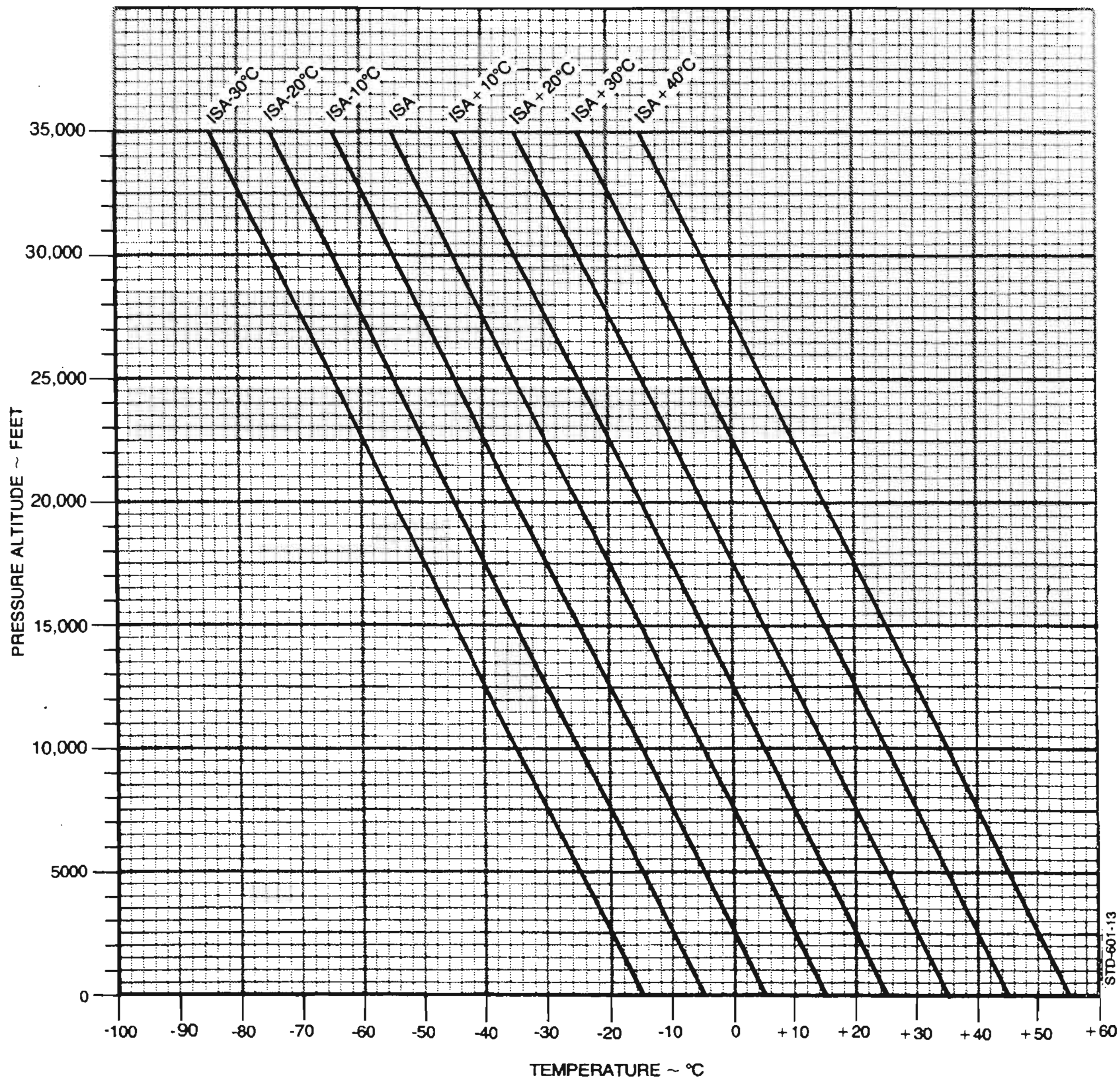
STANDARD DAY (ISA)

NOTE: SUBTRACT ΔT FROM INDICATED (GAGE) OAT TO OBTAIN TRUE OAT. (ΔT ASSUMES A RECOVERY FACTOR OF 0.7)

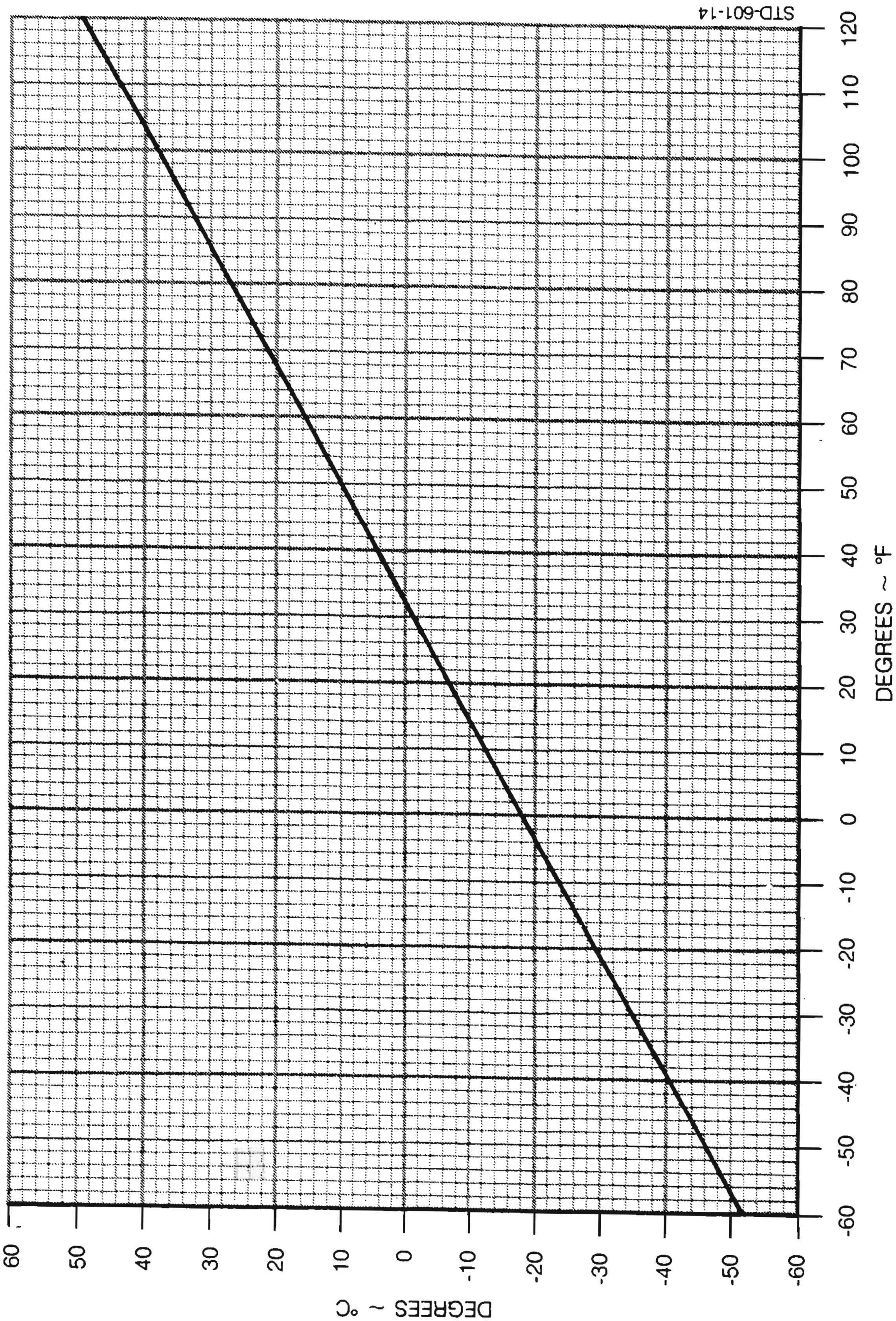


ISA CONVERSION

PRESSURE ALTITUDE vs OUTSIDE AIR TEMPERATURE



FAHRENHEIT TO CELSIUS TEMPERATURE CONVERSION



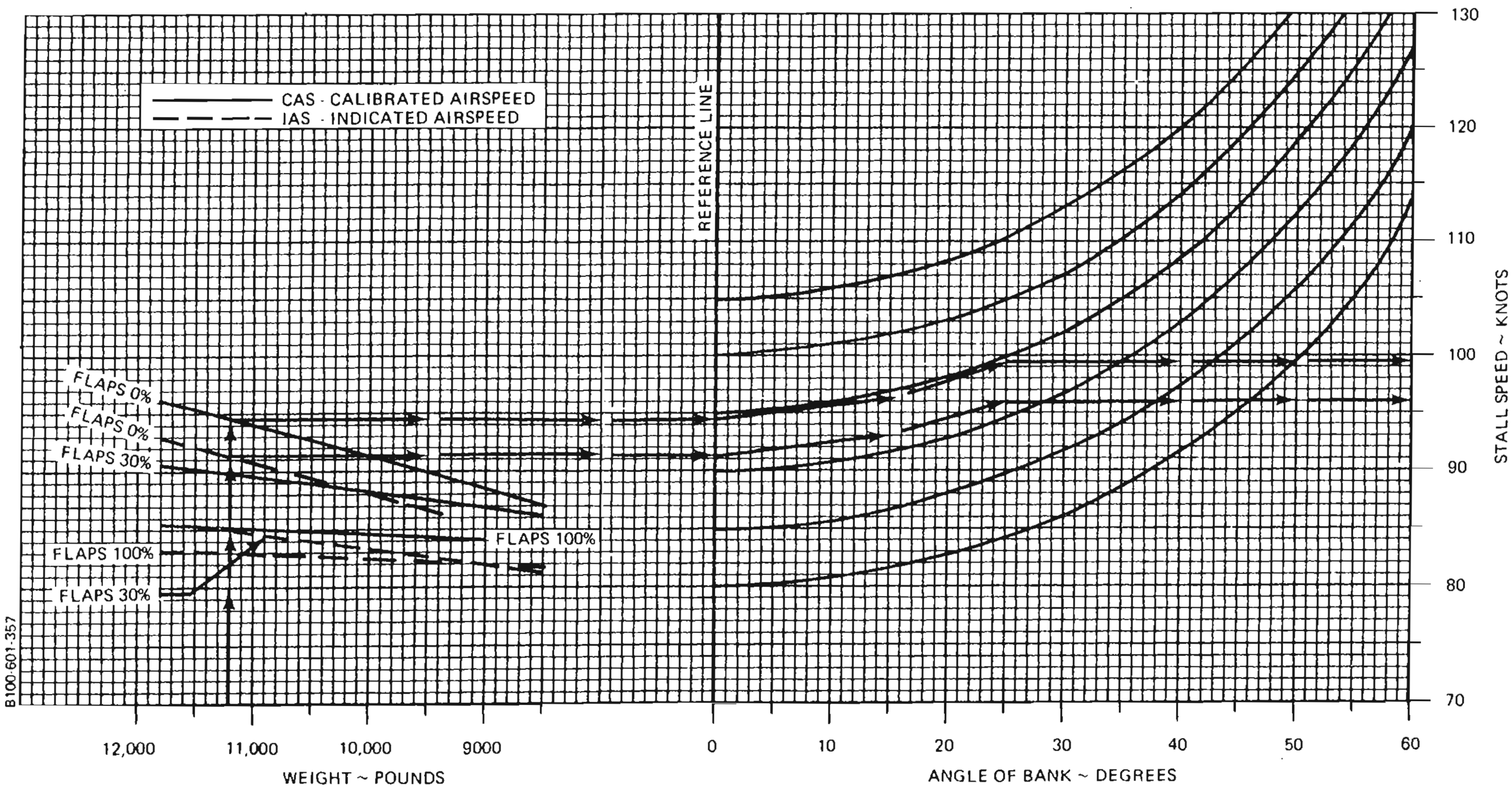
STALL SPEEDS — POWER IDLE

NOTES:

1. THE MAXIMUM ALTITUDE LOSS EXPERIENCED WHILE CONDUCTING STALL IN ACCORDANCE WITH FAR 23.201 WAS 800 FEET
2. MAXIMUM NOSE DOWN PITCH ATTITUDE AND ALTITUDE LOSS DURING RECOVERY FROM ONE ENGINE INOPERATIVE STALLS PER FAR 23.205 ARE APPROXIMATELY 8° AND 400 FEET RESPECTIVELY
3. A NORMAL STALL RECOVERY TECHNIQUE WAS USED

EXAMPLE:

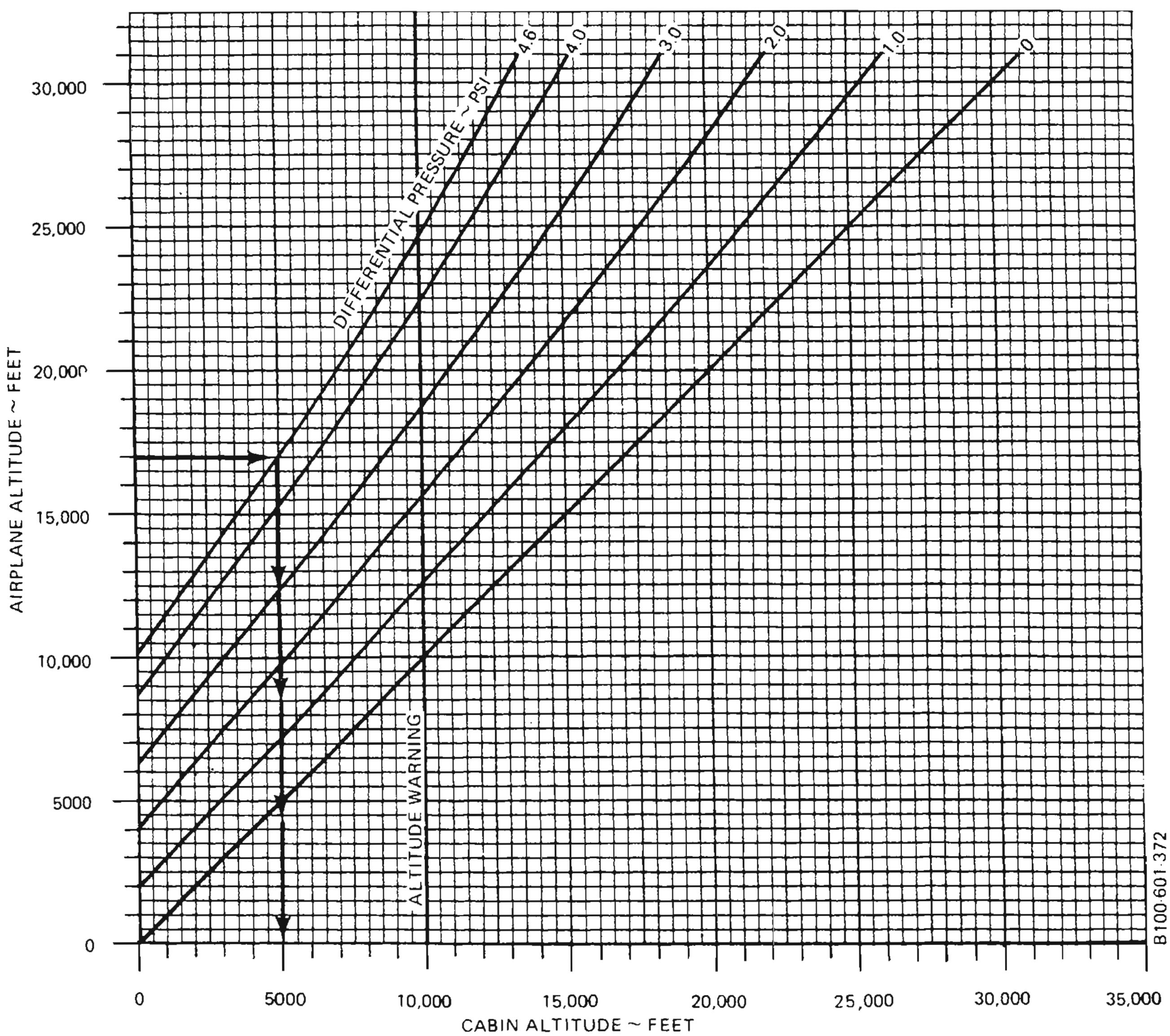
WEIGHT	11,210
FLAPS	0%
ANGLE OF BANK	25°
STALL SPEED	99 KTS CAS 96 KTS IAS



CABIN ALTITUDE FOR VARIOUS AIRPLANE ALTITUDES

EXAMPLE:

AIRPLANE ALTITUDE	17,000 FT
DIFFERENTIAL PRESSURE	4.6 PSI
CABIN ALTITUDE	5000 FT



MINIMUM TAKE-OFF POWER AT 100% RPM

(65 KNOTS)

1. TORQUE INCREASES APPROXIMATELY 25 FT POUNDS FROM 0 TO 65 KNOTS.
2. THE TORQUE INDICATED IN THIS FIGURE IS THE MINIMUM VALUE AT WHICH TAKE-OFF PERFORMANCE PRESENTED IN THIS SECTION CAN BE REALIZED. ANY EXCESS POWER WHICH MAY BE DEVELOPED WITHOUT EXCEEDING ENGINE LIMITATION, CAN BE UTILIZED.
3. GENERATOR LOAD LESS THAN

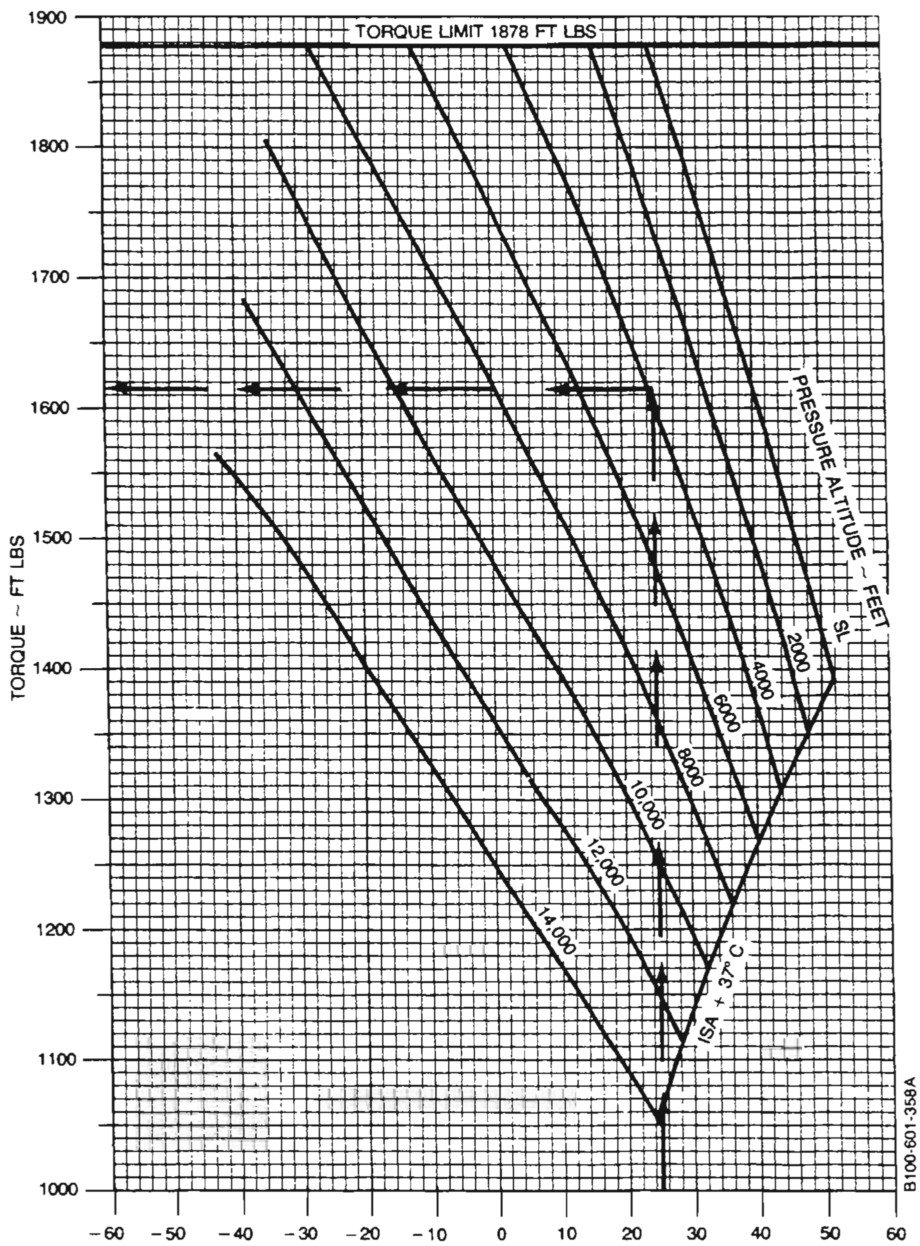
   .44 IF OAT IS LESS THAN 5°C

   .39 IF OAT IS 5°C OR GREATER

EXAMPLE:

PRESSURE ALTITUDE............ 3966 FT
OAT .... 25°C

MINIMUM TORQUE .... 1615 FT-LBS



MAXIMUM TAKE-OFF WEIGHT

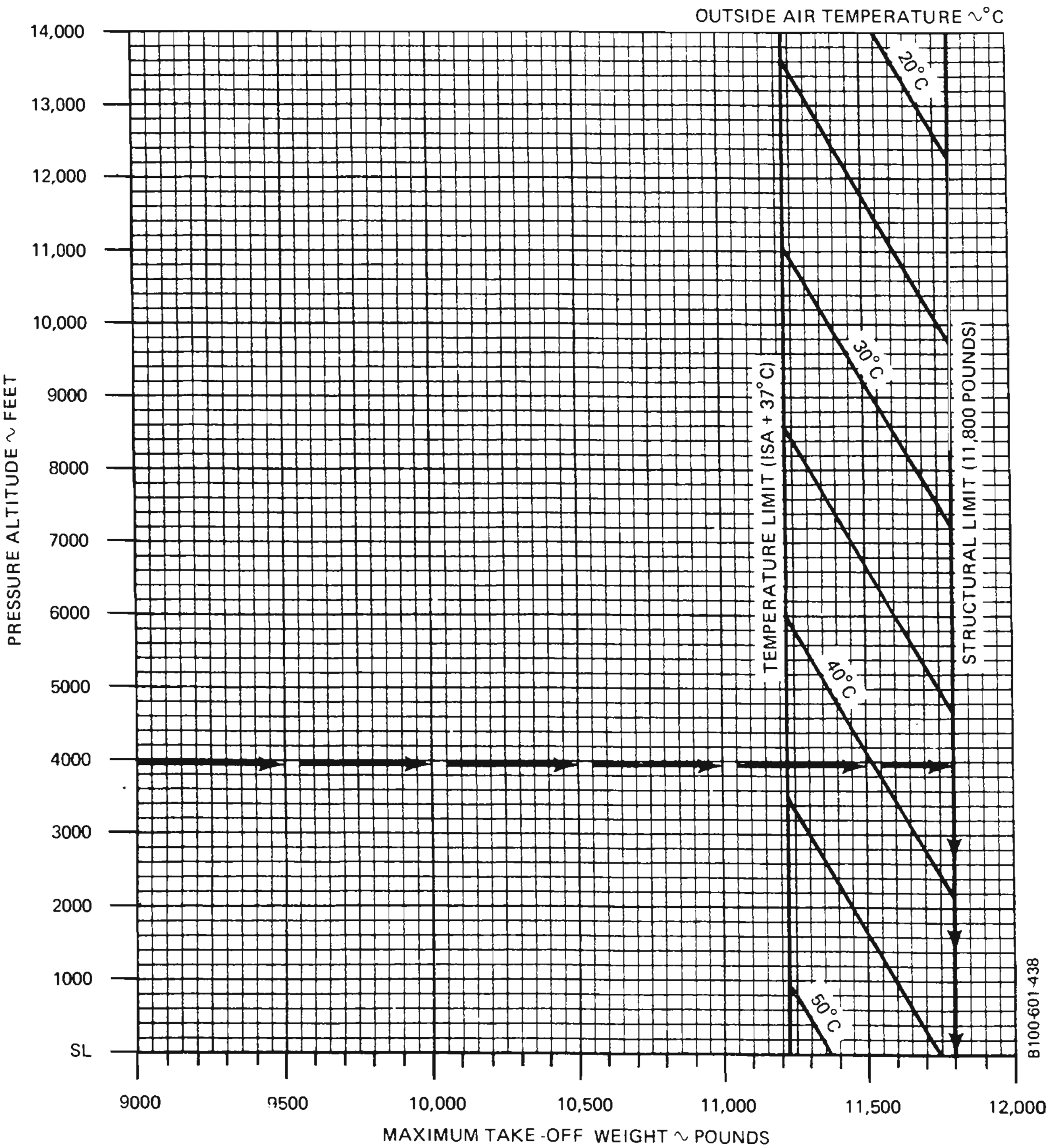
OPERATIONAL LIMITATION

EXAMPLE:

PRESSURE ALTITUDE . . . . . . 3966 FT
OAT . . . . 25°C

MAXIMUM TAKE-OFF WEIGHT . . 11,800 LBS

NOTE:
FOR OUTSIDE AIR TEMPERATURE LESS THAN ISA + 29°C THE MAXIMUM TAKE-OFF WEIGHT IS 11,800 LBS



TAKE-OFF WEIGHT — FLAPS 0%

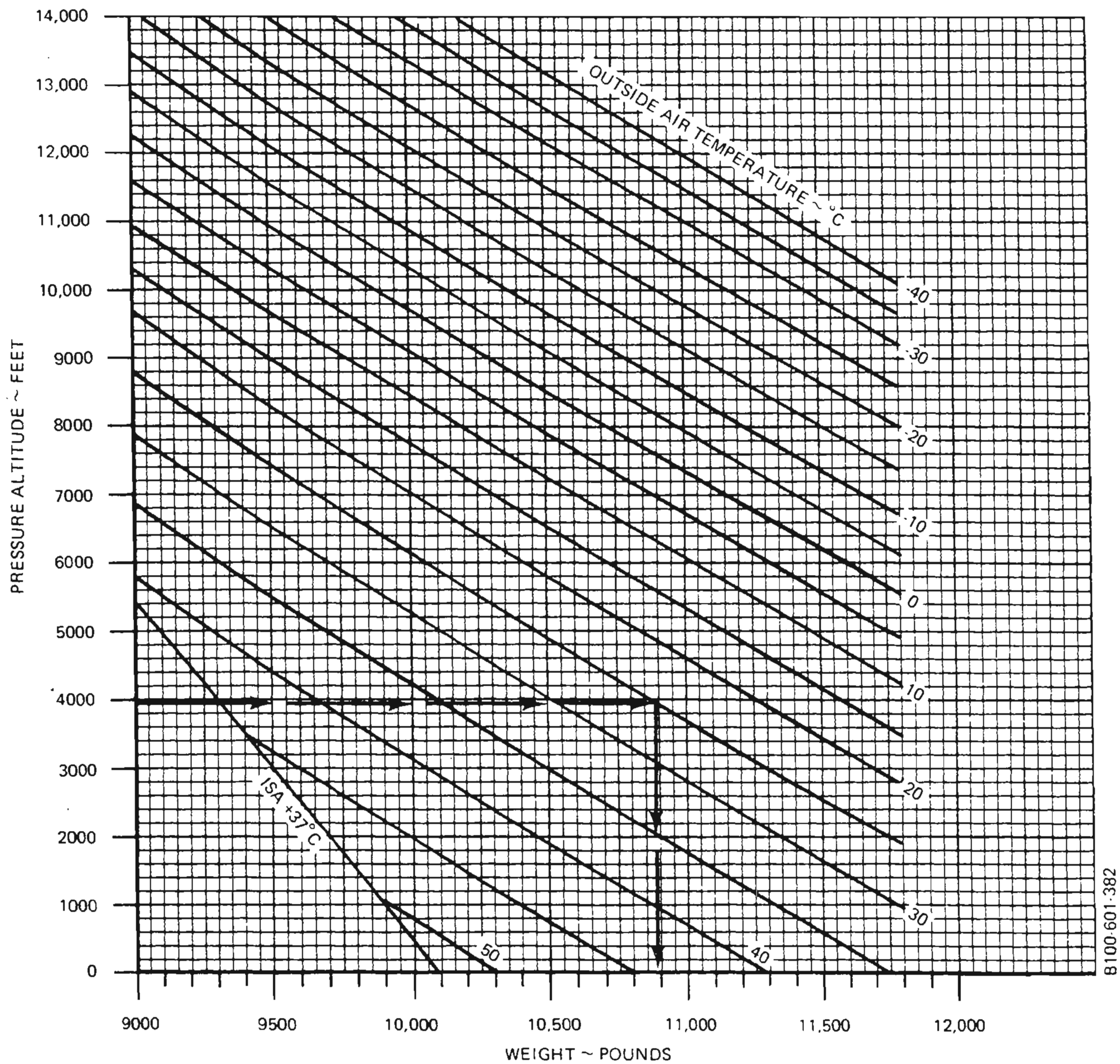
TO ACHIEVE POSITIVE ONE ENGINE INOPERATIVE CLIMB AT LIFT-OFF

ASSOCIATED CONDITIONS:

AIRPLANE	AIRBORNE
POWER	TAKE-OFF
FLAPS	0%
INOPERATIVE PROPELLER	FEATHERED
PRESSURIZATION	ON
GENERATOR LOAD	.88

EXAMPLE

PRESSURE ALTITUDE	3966 FT
OAT	25°C
TAKE-OFF WEIGHT	10,880 LBS



TAKE-OFF WEIGHT — FLAPS 30%

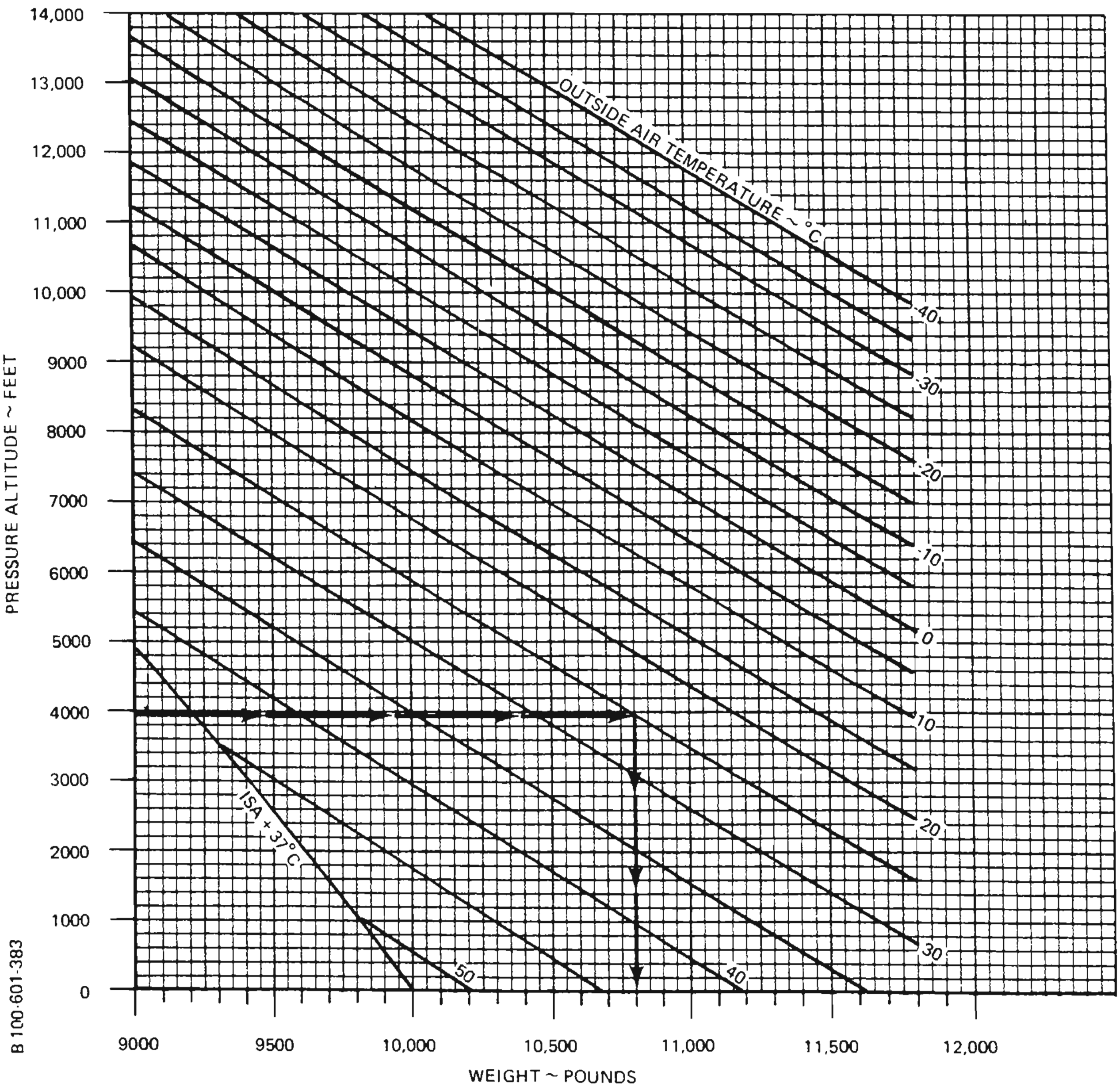
TO ACHIEVE POSITIVE ONE ENGINE INOPERATIVE CLIMB AT LIFT-OFF

ASSOCIATED CONDITIONS:

AIRPLANE	AIRBORNE
POWER	TAKE-OFF
FLAPS	30%
INOPERATIVE PROPELLER	FEATHERED
PRESSURIZATION	ON
GENERATOR LOAD	.88

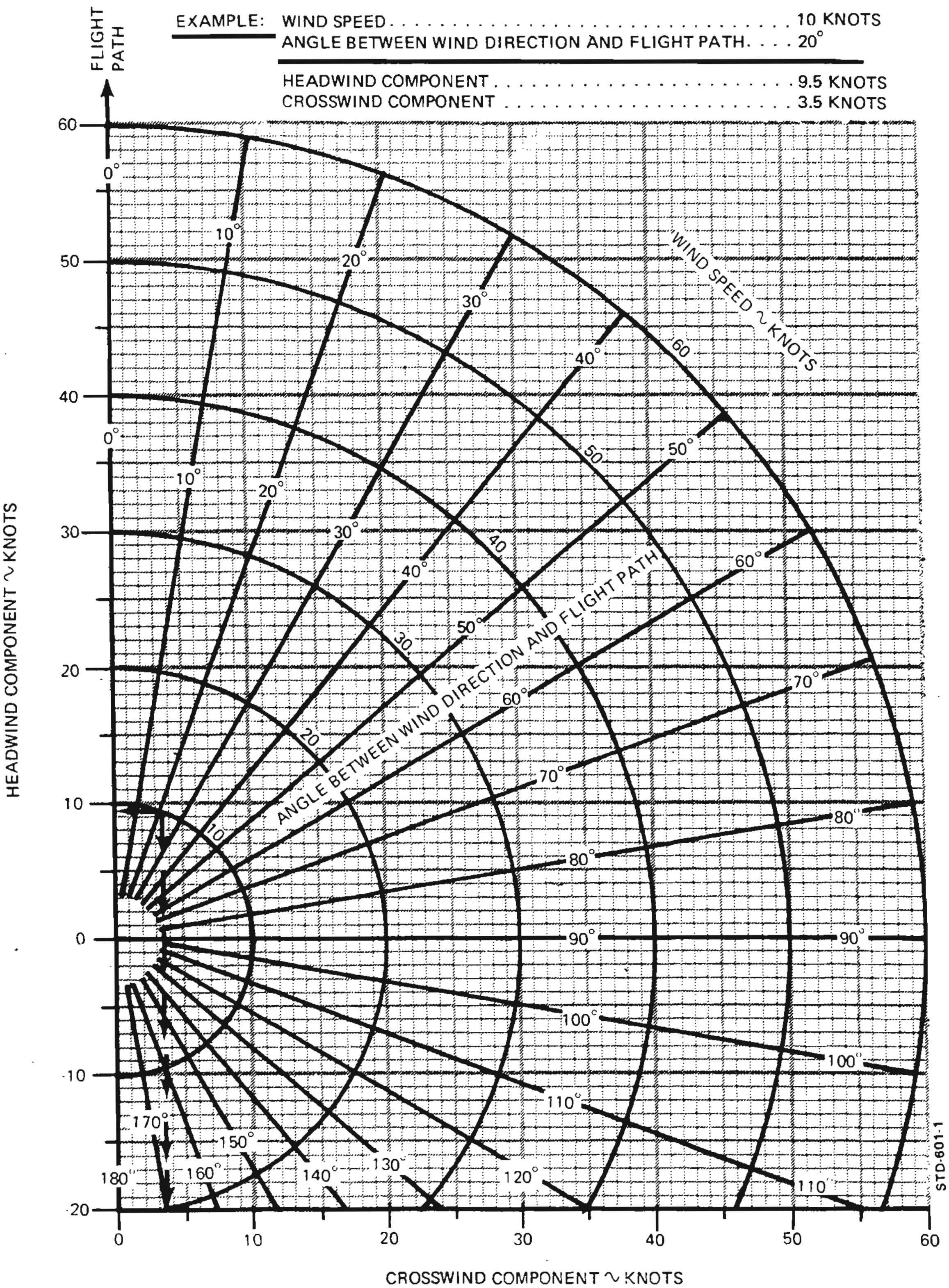
EXAMPLE:

PRESSURE ALTITUDE	3966 FT
OAT	25°C
TAKE-OFF WEIGHT	10,800 LBS



WIND COMPONENTS

EXAMPLE:	
WIND SPEED	10 KNOTS
ANGLE BETWEEN WIND DIRECTION AND FLIGHT PATH	20°
HEADWIND COMPONENT	9.5 KNOTS
CROSSWIND COMPONENT	3.5 KNOTS



TAKE-OFF DISTANCE — FLAPS 0%

ASSOCIATED CONDITIONS:

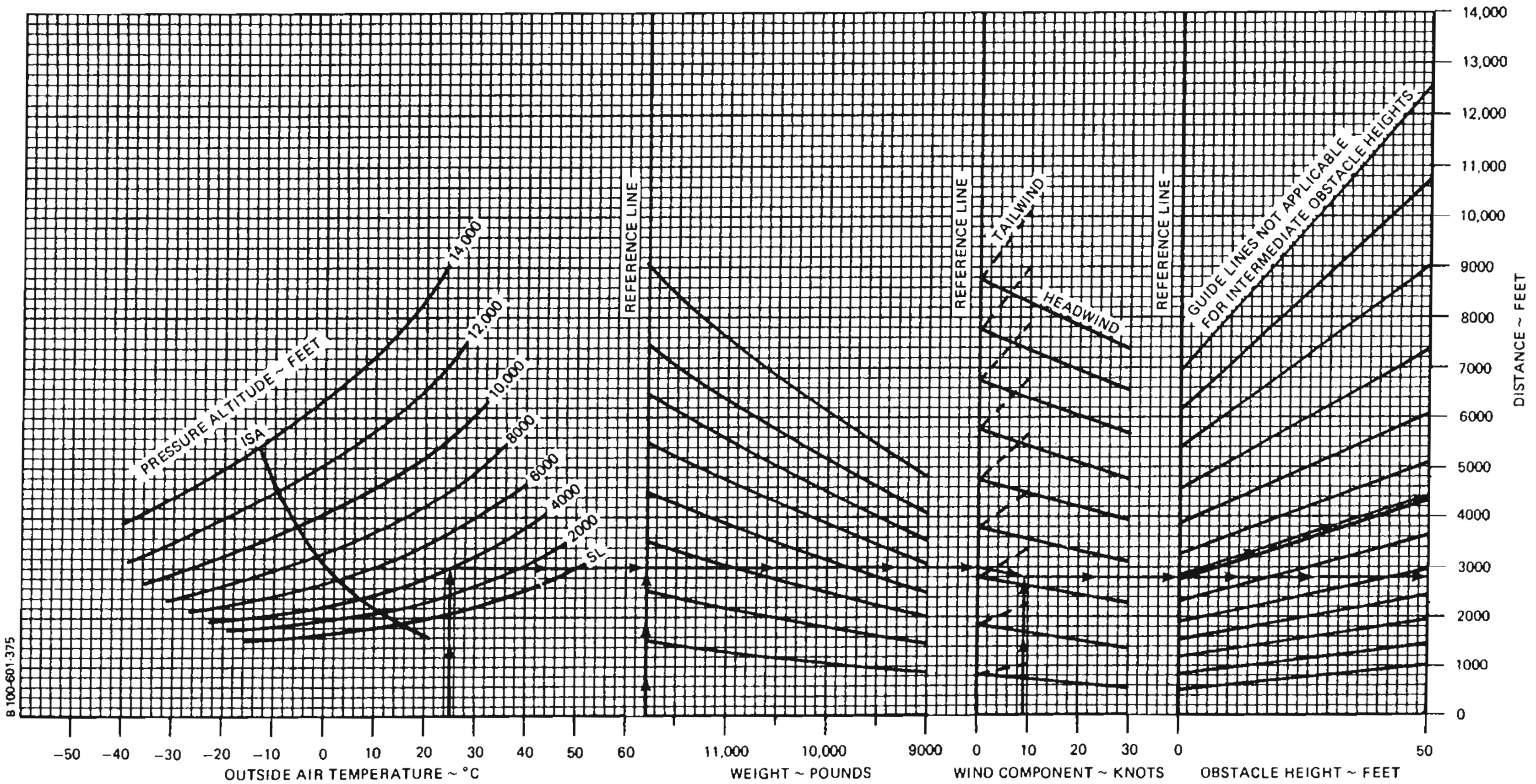
POWER . . . . TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS 0%
LANDING GEAR . . . . . DOWN
RUNWAY . . . . PAVED, LEVEL, DRY SURFACE
PRESSURIZATION . . . . ON
GENERATOR LOAD . . . . .44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 6°C OR GREATER

WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS	
	ROTATION	50 FT
11,800	97	111
11,000	95	108
10,000	92	105
9000	89	102

EXAMPLE:

OAT . . . . 25°C
PRESSURE ALTITUDE . . . . 3966 FT
TAKE-OFF WEIGHT . . . . 11,800 LBS
HEADWIND COMPONENT . . . . 9.5 KTS

GROUND ROLL . . . . 2800 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE . . 4400 FT
TAKE-OFF SPEED AT ROTATION . . . . . . 97 KTS
AT 50 FEET . . . . 111 KTS



(6.50 x 10 Dual Main Wheels)

ACCELERATE — STOP DISTANCE — FLAPS 0%

ASSOCIATED CONDITIONS:

POWER . . 1. TAKE - OFF POWER SET BEFORE BRAKE RELEASE
2. BOTH ENGINES IDLE AT ENGINE FAILURE SPEED AND REVERSE OPERATING ENGINE
FLAPS . . . 0%
BRAKING . MAXIMUM
RUNWAY. . PAVED, LEVEL, DRY SURFACE

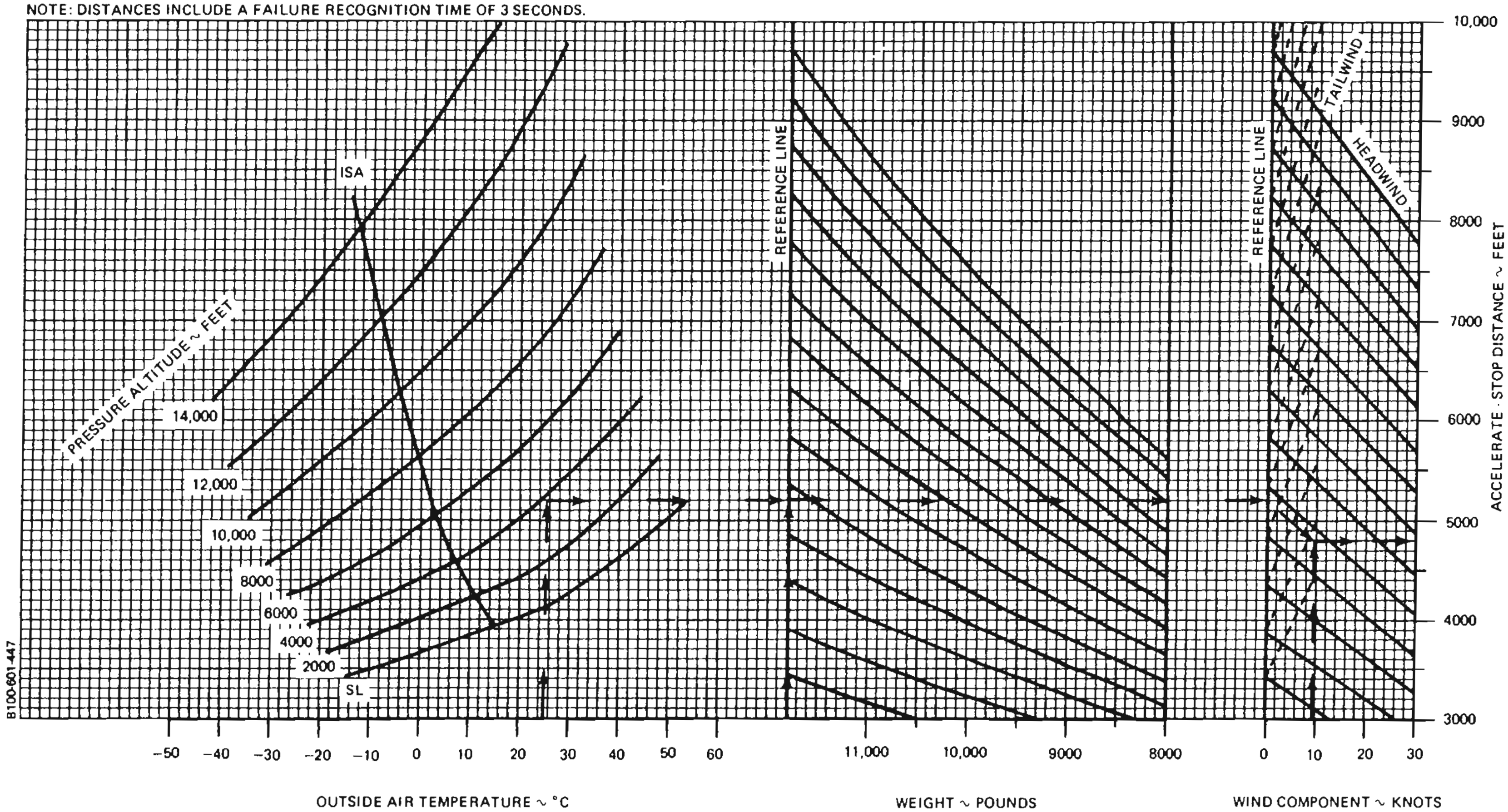
WEIGHT ~ POUNDS	ENGINE FAILURE SPEED ~ KNOTS
11,800	97
11,500	96
11,000	95
10,000	92
9 000	89

EXAMPLE:

OAT . . . . 25°C
PRESSURE ALTITUDE . . . . 3966 FT
WEIGHT . . . . 11,800 LBS
HEADWIND COMPONENT . . . . 9.5 KTS

ENGINE FAILURE SPEED. . . . . 97 KTS IAS
ACCELERATE - STOP DISTANCE. . . . . . . 4800 FT

NOTE: DISTANCES INCLUDE A FAILURE RECOGNITION TIME OF 3 SECONDS.



(6.50 x 10 Dual Main Wheels)

ACCELERATE-GO DISTANCE — FLAPS 0%

ASSOCIATED CONDITIONS:

POWER . . . . TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS 0%
LANDING GEAR . . . . RETRACT AFTER LIFT-OFF
RUNWAY . . . . PAVED, LEVEL, DRY SURFACE
PRESSURIZATION . . . ON
GENERATOR LOAD . . .88

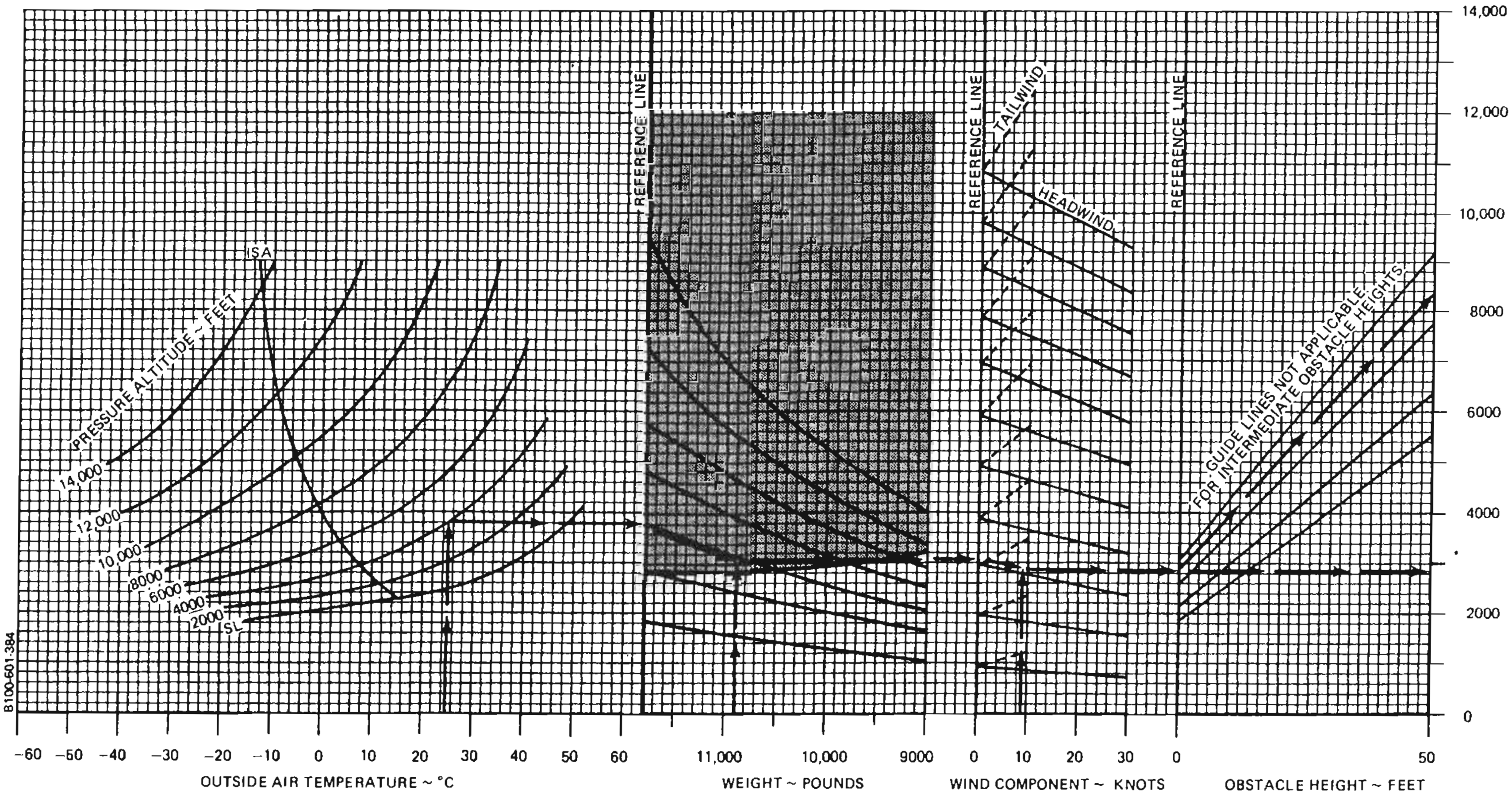
WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS	
	ROTATION	50 FT
11,800	97	111
11,000	95	108
10,000	92	105
9000	89	102

EXAMPLE:
OAT .... 25°C
PRESSURE ALTITUDE .... 3966 FT
WEIGHT (FOR SINGLE ENGINE CLIMB CAPABILITY) .... 10,880 LBS
HEADWIND COMPONENT .... 9.5 KTS

GROUND ROLL .... 2850 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE .... 8350 FT
TAKE-OFF SPEED: AT ROTATION .... 95 KTS
: AT 50 FT .... 108 KTS

NOTE:

1. DISTANCES ASSUME AN ENGINE FAILURE AT ROTATION SPEED AND NTS SYSTEM FUNCTIONING UNTIL PROPELLER CAN BE FEATHERED
2. WEIGHTS IN SHADED AREA MAY NOT PROVIDE POSITIVE GEAR DOWN SINGLE ENGINE CLIMB GRADIENT. REFER TO TAKE-OFF WEIGHT GRAPH FOR THE MAXIMUM WEIGHT AT WHICH THE ACCELERATE-GO PROCEDURE SHOULD BE ATTEMPTED



(6.50 x 10 Dual Main Wheels)

TAKE-OFF CLIMB GRADIENT – ONE ENGINE INOPERATIVE – FLAPS 0%

ASSOCIATED CONDITIONS:

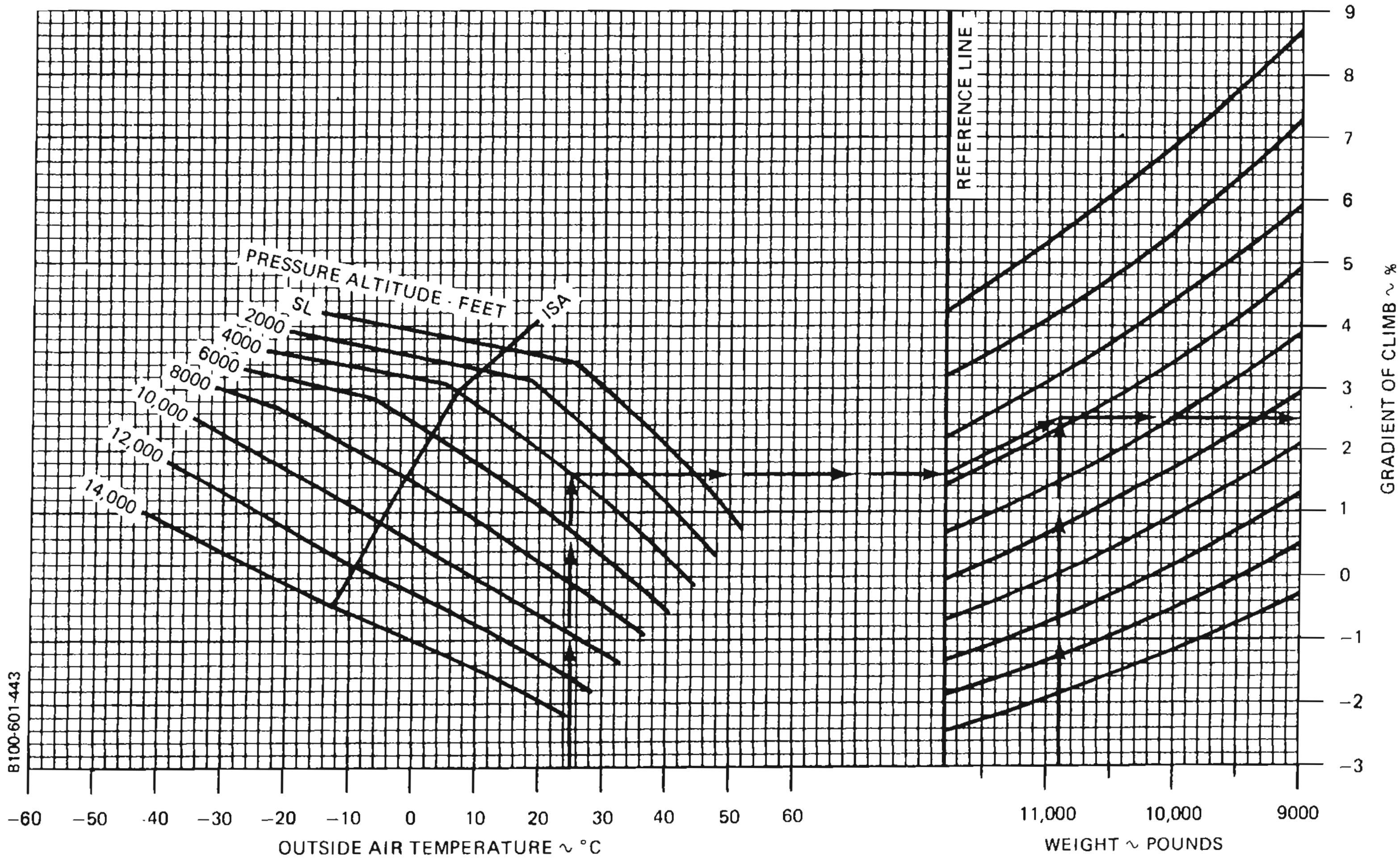
POWER . . . . TAKE-OFF
LANDING GEAR . . . . UP
FLAPS . . . . UP (0%)
INOPERATIVE PROPELLER . . . . FEATHERED
PRESSURIZATION . . . . ON
GENERATOR LOAD 88

WEIGHT ~ LBS	CLIMB SPEED ~ KTS
11,800	111
11,000	108
10,000	105
9 000	102

EXAMPLE:

OAT . . . . 25°C
PRESSURE ALTITUDE . . . . 3966 FT
WEIGHT . . . . 10,880 LBS

GRADIENT OF CLIMB 2.5%
CLIMB SPEED . . . . 108 KTS



TAKE-OFF DISTANCE — FLAPS 30%

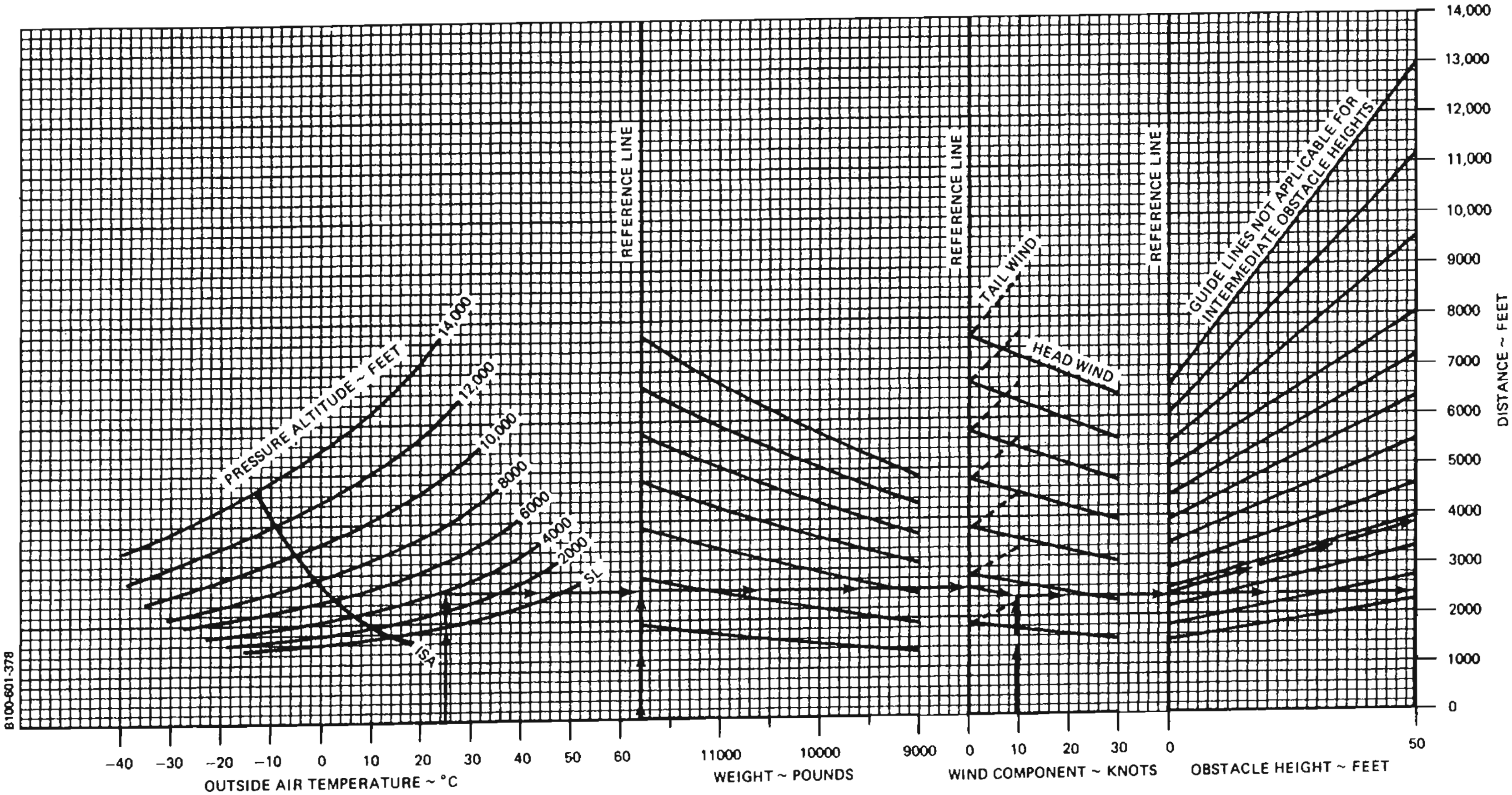
ASSOCIATED CONDITIONS:

POWER	TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS	30%
LANDING GEAR	DOWN
RUNWAY	PAVED, LEVEL, DRY SURFACE
PRESSURIZATION	ON
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS	
	ROTATION	50 FT
11,800	91	106
11,000	90	105
10,000	89	103
9000	88	102

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	3966 FT
TAKE-OFF WEIGHT	11,800 LBS
HEADWIND COMPONENT	9.5 KTS
GROUND ROLL	2450 FT
TOTAL DISTANCE OVER 50 FT. OBSTACLE	3750 FT
TAKE-OFF SPEED AT ROTATION	91 KTS
AT 50 FEET	106 KTS



(6.50 x 10 Dual Main Wheels)

ACCELERATE — STOP DISTANCE — FLAPS 30%

ASSOCIATED CONDITIONS:

POWER . . 1. TAKE - OFF POWER SET BEFORE BRAKE RELEASE
2. BOTH ENGINES IDLE AT ENGINE FAILURE SPEED AND REVERSE OPERATING ENGINE
FLAPS. . . 30%
BRAKING . MAXIMUM
RUNWAY. . PAVED, LEVEL, DRY SURFACE

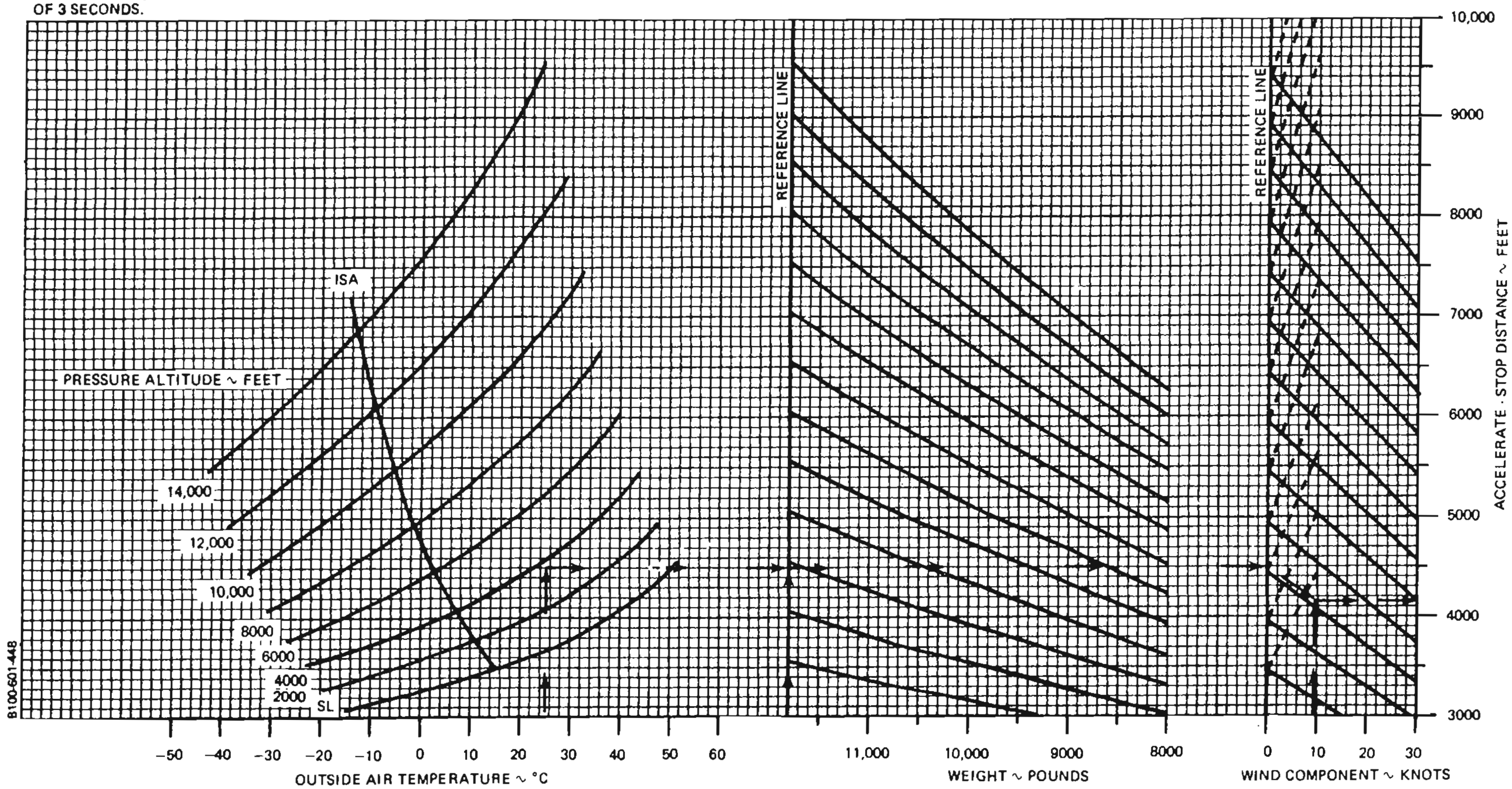
WEIGHT ~ POUNDS	ENGINE FAILURE SPEED ~ KNOTS
11,800	91
11,500	91
11,000	90
10,000	89
9 000	88

EXAMPLE:

OAT. . . . . 25°C
PRESSURE ALTITUDE . . . . . 3966 FT
WEIGHT . . . . 11,800 LBS
HEADWIND COMPONENT. . . . . 9.5 KTS

ENGINE FAILURE SPEED. . . . . 91 KTS IAS
ACCELERATE - STOP DISTANCE. . . . 4140 FT

NOTE: DISTANCES INCLUDE A FAILURE RECOGNITION TIME OF 3 SECONDS.



(6.50 x 10 Dual Main Wheels)

ACCELERATE-GO DISTANCE — FLAPS 30%

ASSOCIATED CONDITIONS:

POWER . . . . TAKE-OFF POWER SET , BEFORE BRAKE RELEASE
FLAPS 30%
LANDING GEAR . . . . RETRACT AFTER LIFT-OFF
RUNWAY . . . . PAVED, LEVEL, DRY SURFACE
PRESSURIZATION . . . ON
GENERATOR LOAD 88

WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS	
	ROTATION	50 FT
11,800	91	106
11,000	90	105
10,000	89	103
9000	88	102

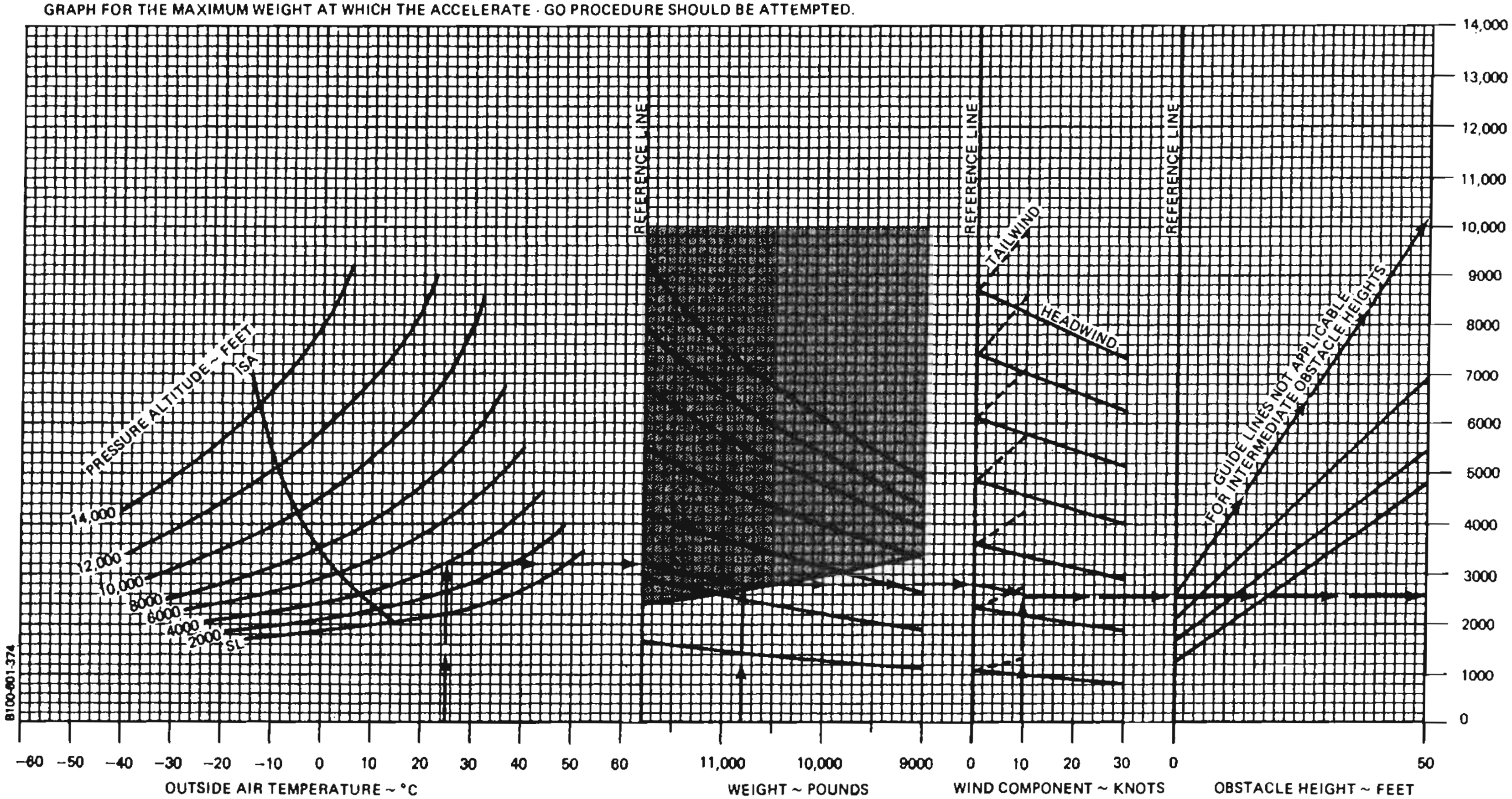
EXAMPLE:

OAT . . . . 25°C
PRESSURE ALTITUDE . . . . 3966 FT
HEADWIND COMPONENT . . . . 9.5 KTS
WEIGHT (FOR SINGLE ENGINE CLIMB CAPABILITY) . . . . 10,800 LBS

GROUND ROLL . . . . 2550 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE . . . . 10,150 FT
TAKEOFF SPEED AT ROTATION . . . . 90 KTS
AT 50 FT . . . . 105 KTS

NOTE:

1. DISTANCES ASSUME AN ENGINE FAILURE AT ROTATION SPEED AND NTS SYSTEM FUNCTIONAL UNTIL PROPELLER CAN BE FEATHERED.
2. WEIGHTS IN SHADED AREA MAY NOT PROVIDE GEAR DOWN SINGLE ENGINE CLIMB GRADIENT. REFER TO TAKE-OFF WEIGHT GRAPH FOR THE MAXIMUM WEIGHT AT WHICH THE ACCELERATE - GO PROCEDURE SHOULD BE ATTEMPTED.



TAKE-OFF CLIMB GRADIENT — ONE ENGINE INOPERATIVE — FLAPS 30%

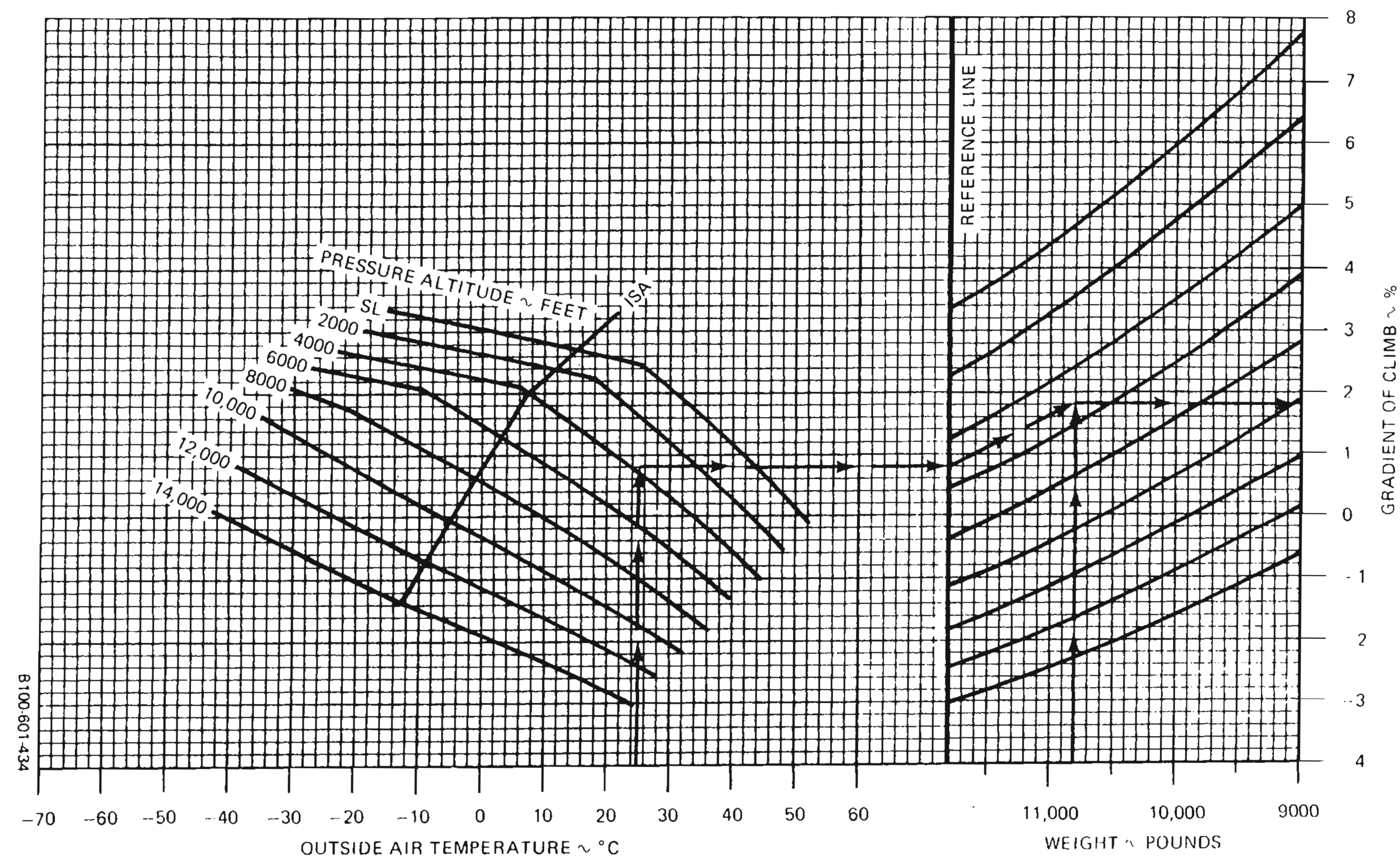
ASSOCIATED CONDITIONS:

POWER	TAKE-OFF
LANDING GEAR	UP
FLAPS	30%
INOPERATIVE PROPELLER	FEATHERED
PRESSURIZATION	ON
GENERATOR LOAD	.88

WEIGHT ~ LBS	CLIMB SPEED ~ KTS
11,800	106
11,000	105
10,000	103
9 000	102

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	3966 FT
WEIGHT	10,800 LBS
GRADIENT OF CLIMB	1.8%
CLIMB SPEED	105 KTS



TAKE-OFF DISTANCE - FLAPS 0%

SHORT DRY GRASS WITH FIRM SUBSOIL

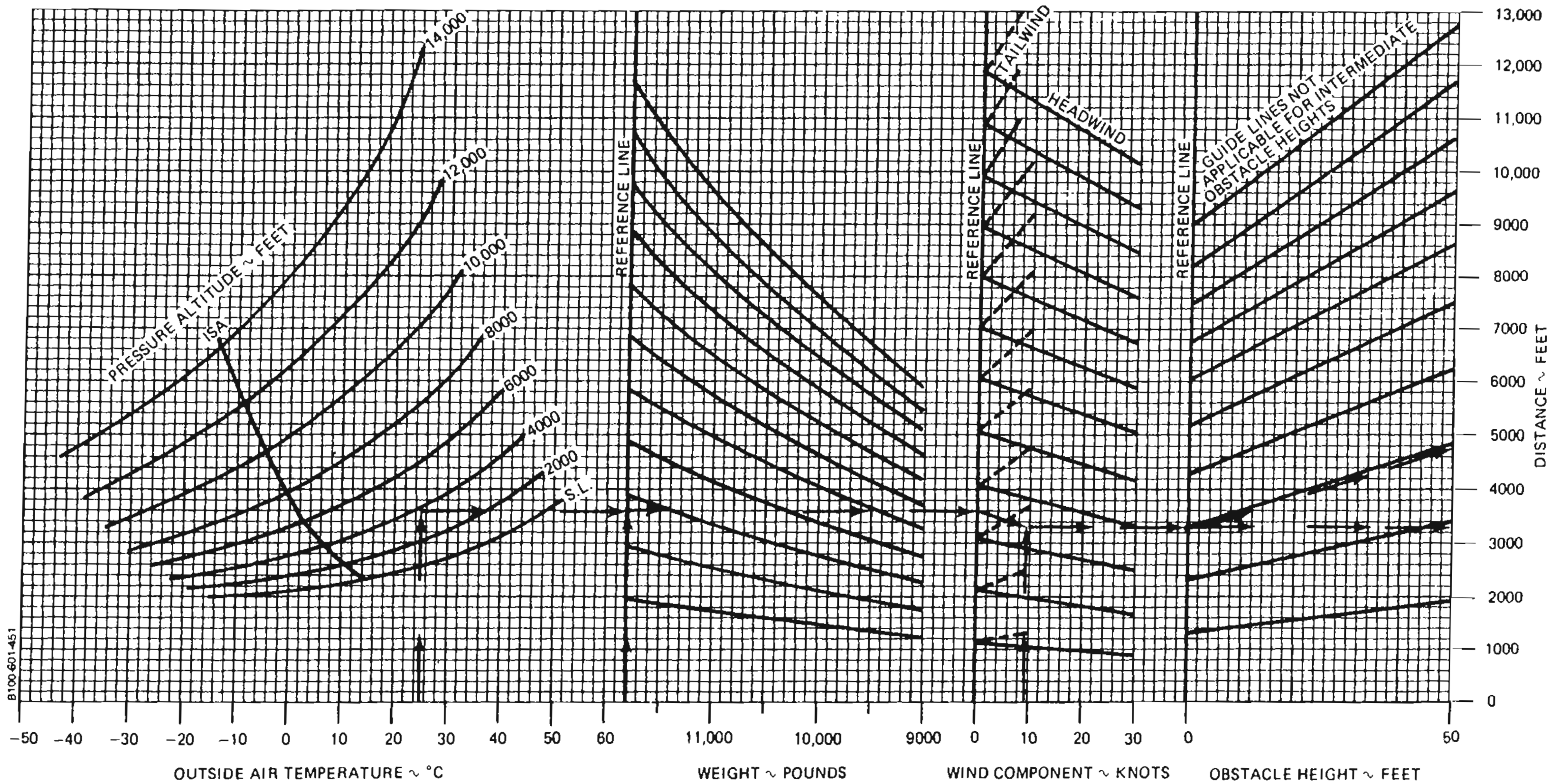
ASSOCIATED CONDITIONS:

POWER	TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS	0%
LANDING GEAR	DOWN
RUNWAY	SHORT, DRY GRASS SURFACE
PRESSURIZATION	ON
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS ROTATION	50 FT
11,800	97	111
11,000	95	108
10,000	92	105
9000	89	102

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	3966 FT
TAKE-OFF WEIGHT	11,800 LBS
HEADWIND COMPONENT	9.5 KTS
GROUND ROLL	3300 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE	4800 FT
TAKE-OFF SPEED AT ROTATION	97 KTS
AT 50 FEET	111 KTS



(6.50 x 10 Dual Main Wheels)

TAKE-OFF DISTANCE - FLAPS 30%

SHORT DRY GRASS WITH FIRM SUBSOIL

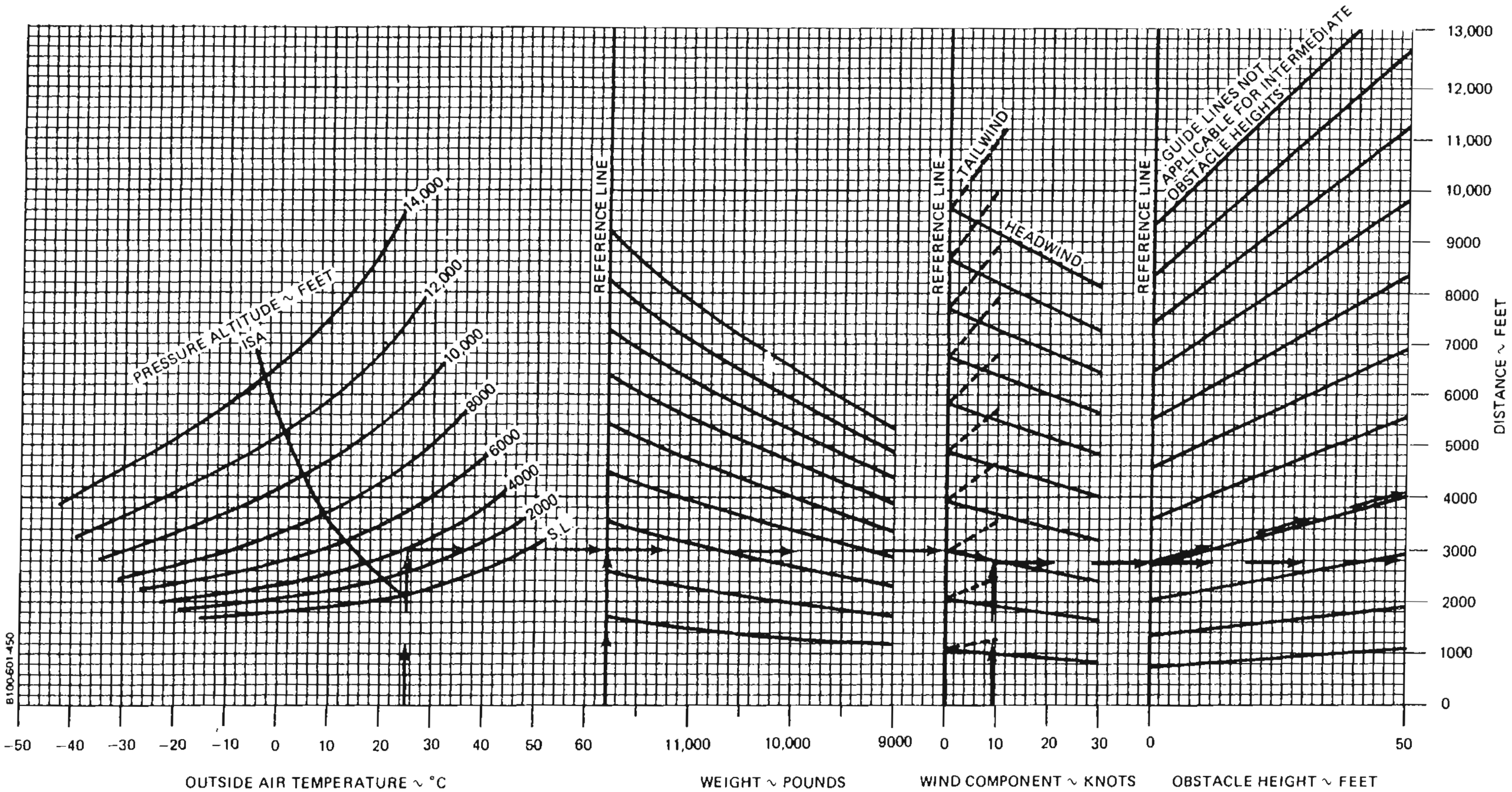
ASSOCIATED CONDITIONS:

POWER	TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS	30%
LANDING GEAR	DOWN
RUNWAY	SHORT, DRY GRASS SURFACE
PRESSURIZATION	ON
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

WEIGHT ~ LBS	TAKE-OFF SPEED ~ KTS ROTATION	50 FT
11,800	91	106
11,000	90	105
10,000	89	103
9 000	88	102

EXAMPLE:

OAT	25°C
PRESSURE ALTITUDE	3966 FT
TAKE-OFF WEIGHT	11,800 LBS
HEADWIND COMPONENT	9.5 KTS
GROUND ROLL	2800 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE	4025 FT
TAKE-OFF SPEED AT ROTATION	91 KTS
AT 50 FEET	108 KTS



CLIMB — TWO ENGINES — FLAPS 0%

CLIMB SPEED 130 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

POWER . . . . MAXIMUM CONTINUOUS
FLAPS 0%
LANDING GEAR . . . . UP
PRESSURIZATION . . . ON
GENERATOR LOAD . . . .44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 5°C OR GREATER

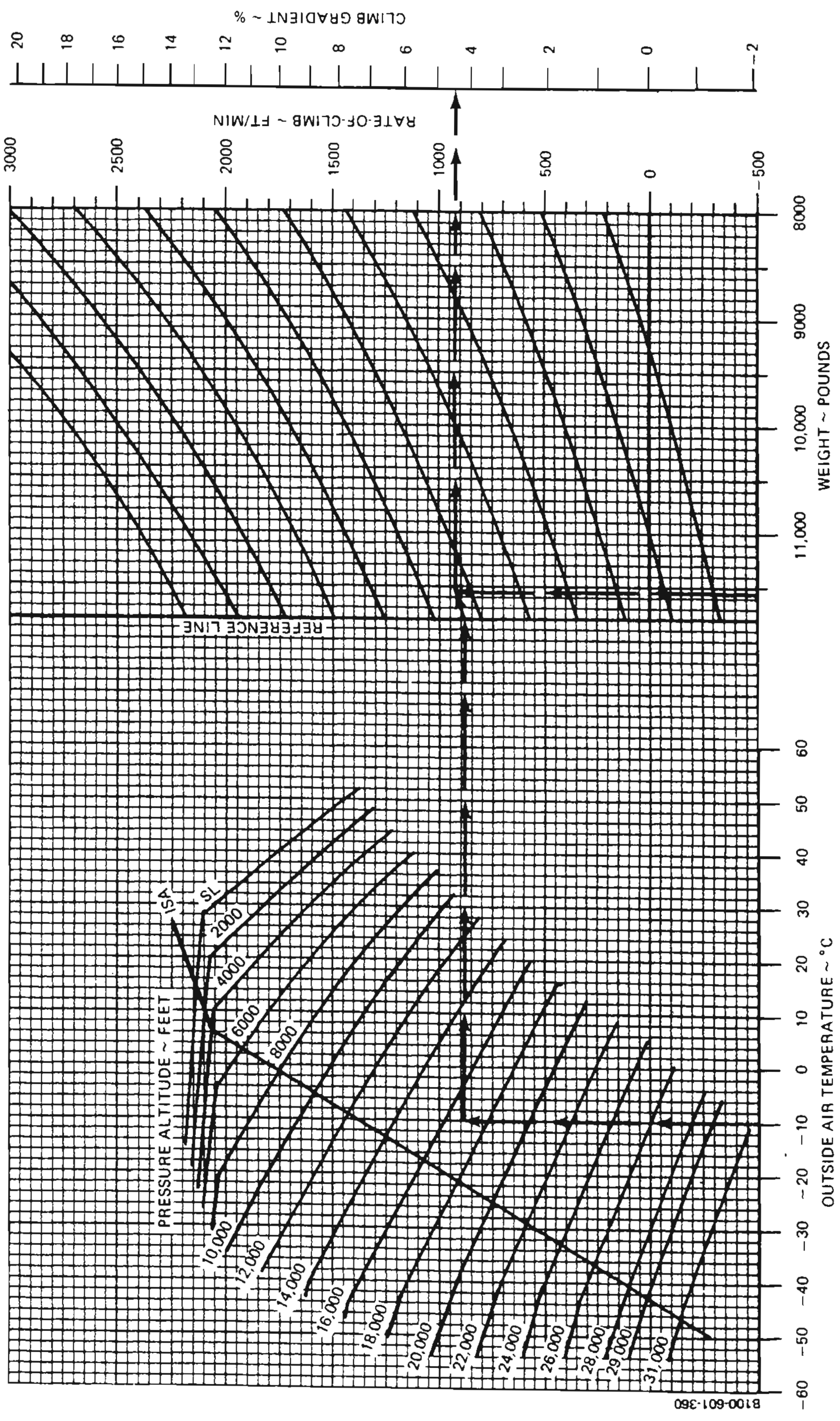
NOTE:

WHEN EQUIPPED WITH 6.50 X 10 DUAL MAIN GEAR TIRES (HIGH FLOTATION), DECREASE RATE-OF-CLIMB BY 42 FT/MIN.

EXAMPLE:

OAT . . . . -10°C
PRESSURE ALTITUDE . . . 17,000 FT
WEIGHT . . . . 11,553 LBS

RATE-OF-CLIMB . . . . . 930 FT/MIN
CLIMB GRADIENT 4.5%
CLIMB SPEED . . . . . 130 KTS



CLIMB — TWO ENGINES — FLAPS 30%

CLIMB SPEED 130 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

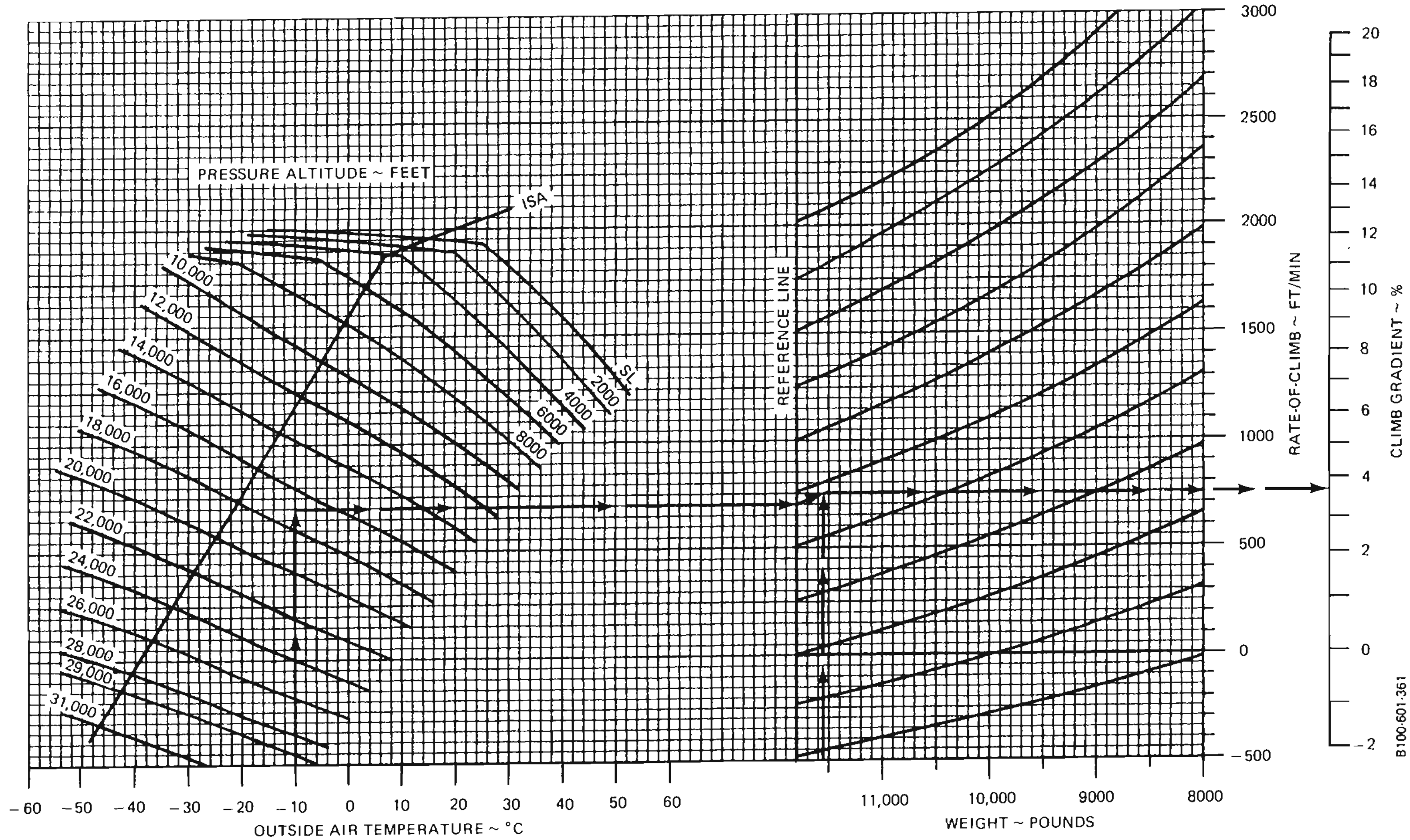
POWER	MAXIMUM CONTINUOUS
FLAPS	30%
LANDING GEAR	UP
PRESSURIZATION	ON
GENERATOR LOAD	.44 IF OAT LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

NOTE:

WHEN EQUIPPED WITH 6.50 X 10 DUAL MAIN GEAR TIRES (HIGH FLOTATION), DECREASE RATE-OF-CLIMB BY 42 FT/MIN.

EXAMPLE:

OAT	−10°C
PRESSURE ALTITUDE	17,000 FT
WEIGHT	11,553 LBS
RATE-OF-CLIMB	750 FT/MIN
CLIMB GRADIENT	3.7%
CLIMB SPEED	130 KTS



CLIMB — ONE ENGINE INOPERATIVE

CLIMB SPEED 125 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

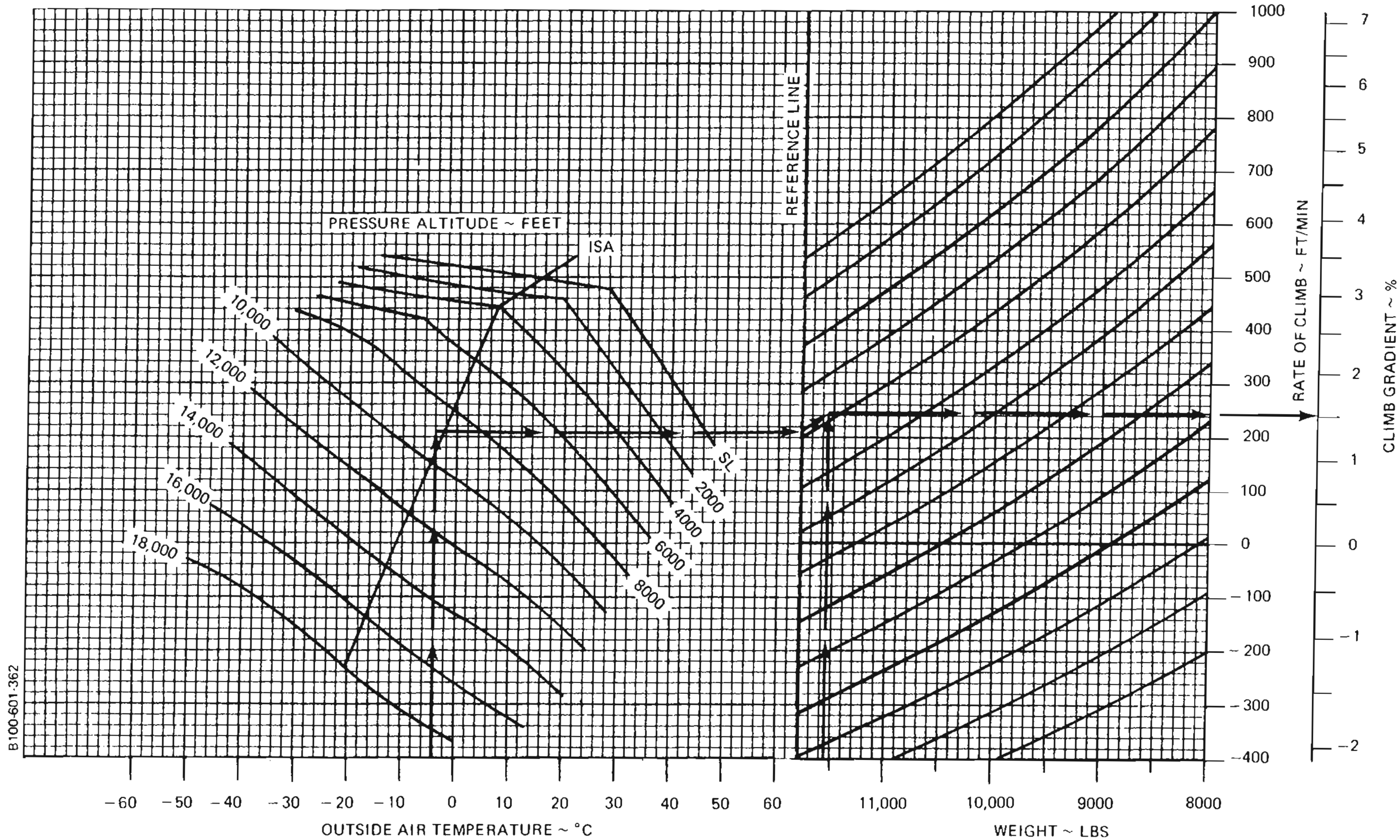
POWER . . . . MAXIMUM CONTINUOUS
FLAPS 0%
LANDING GEAR . . . . . UP
PRESSURIZATION . . . . ON
GENERATOR LOAD . . . . .8 IF OAT IS LESS THAN 5°C
.4 IF OAT IS 5°C OR GREATER

NOTE:

WHEN EQUIPPED WITH 6.50 X 10 DUAL MAIN GEAR TIRES (HIGH FLOTATION), DECREASE RATE-OF-CLIMB BY 29 FT/MIN.

EXAMPLE:

OAT	-4°C
PRESSURE ALTITUDE	9000 FT
WEIGHT	11,553 LBS
RATE-OF-CLIMB	240 FT/MIN
CLIMB GRADIENT	1.5%
CLIMB SPEED	125 KTS



SERVICE CEILING — ONE ENGINE INOPERATIVE

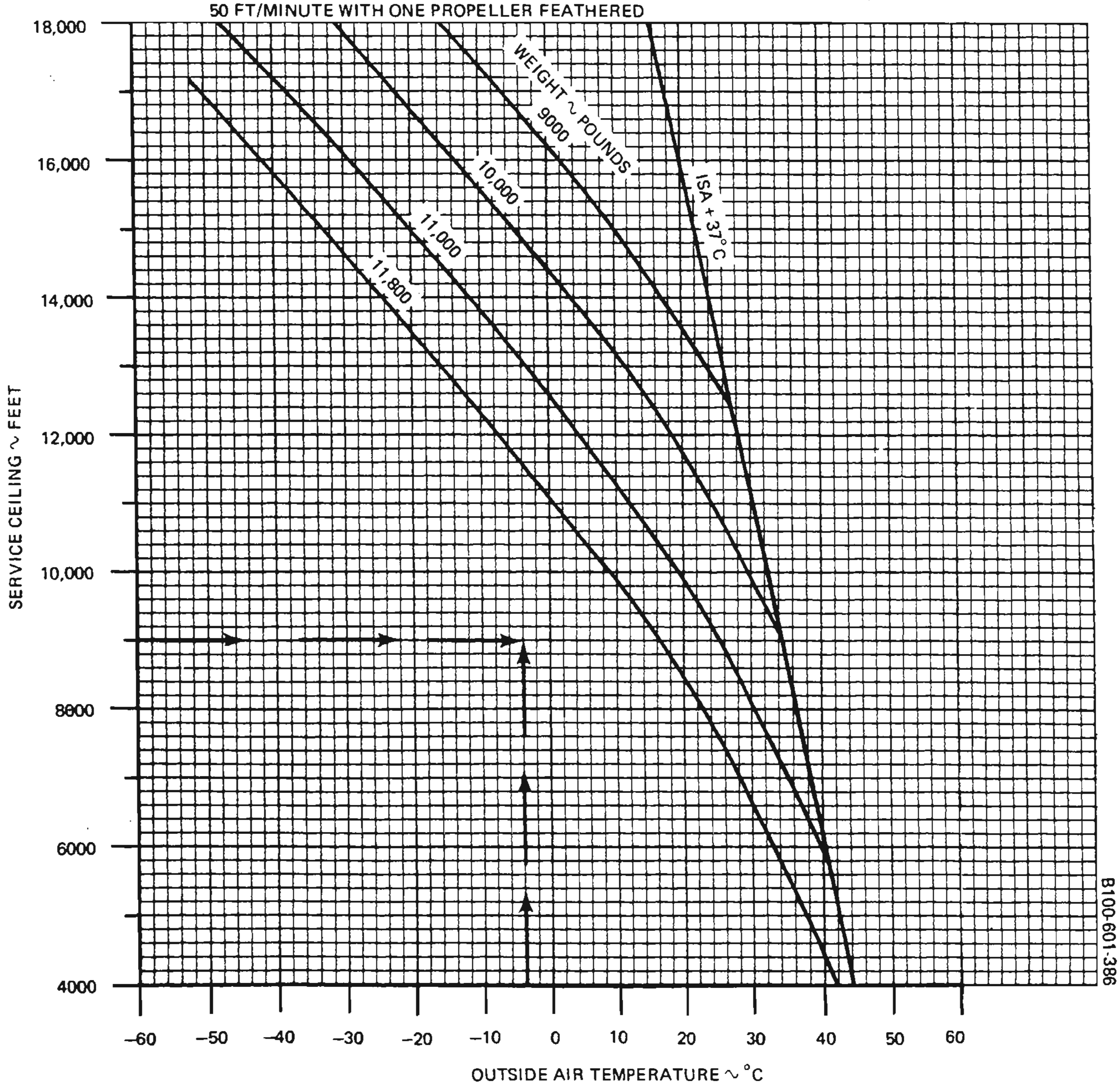
ASSOCIATED CONDITIONS:

POWER	MAXIMUM CONTINUOUS
LANDING GEAR	UP
FLAPS	0%
PRESSURIZATION	OPEN
INOPERATIVE PROPELLER	FEATHERED
GENERATOR LOAD	.88

EXAMPLE:

OAT AT MEA	−4°C
ROUTE SEGMENT MEA	9000 FT
WEIGHT	MEA CAN BE MAINTAINED AT ALL WEIGHTS

NOTE: SERVICE CEILING IS THE PRESSURE ALTITUDE WHERE AIRPLANE HAS CAPABILITY OF CLIMBING 50 FT/MINUTE WITH ONE PROPELLER FEATHERED



TIME, FUEL, AND DISTANCE TO CLIMB

ASSOCIATED CONDITIONS:

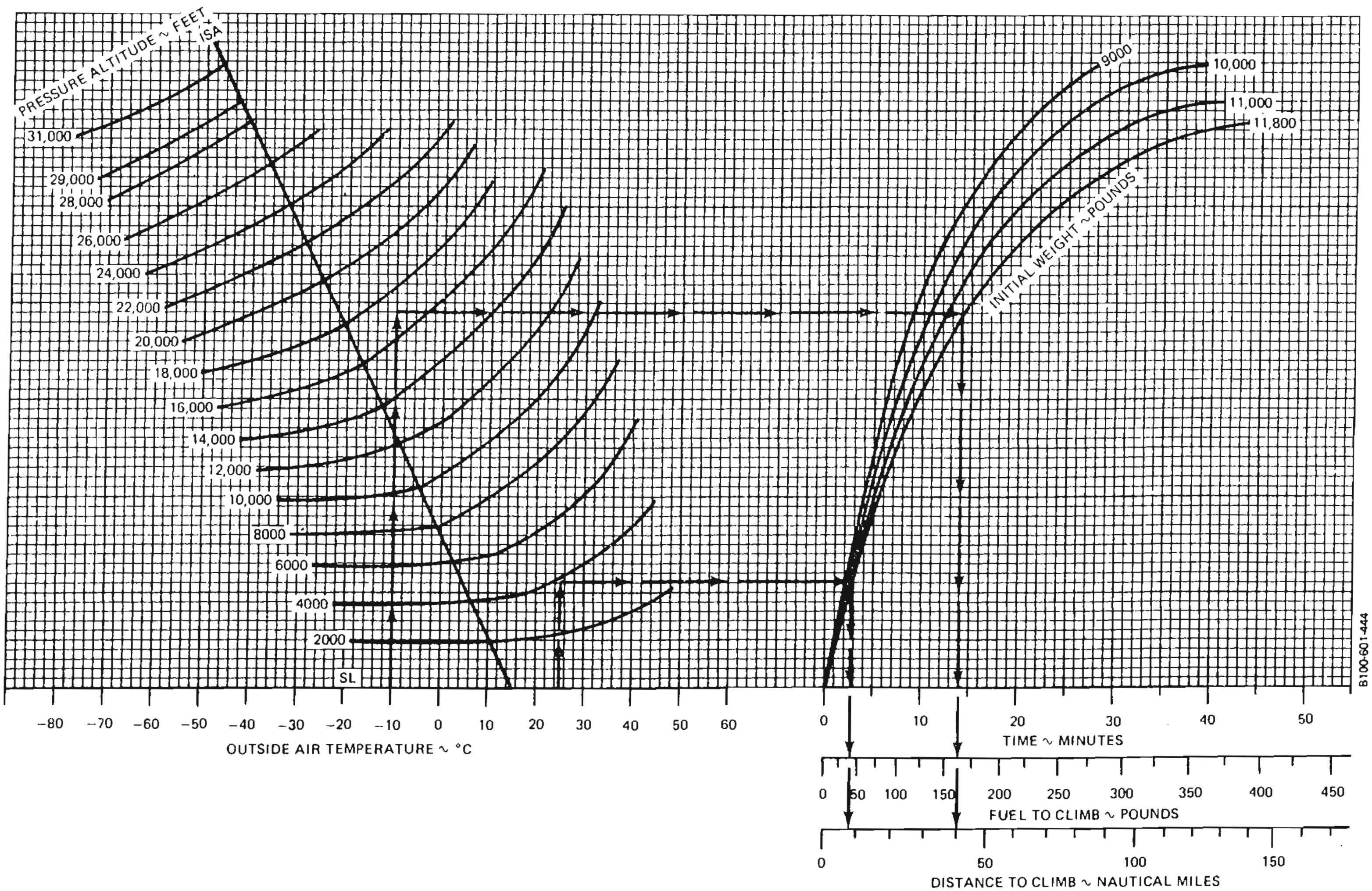
PROPELLER SPEED . . . . 96% RPM
TORQUE OR ITT . . . . . 1878 FT LB OR 905°C
GENERATOR LOAD . . . . .44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 5°C OR GREATER

ALTITUDE ~ FT	CLIMB SPEED ~ KTS
SL TO 10,000	150
10,000 TO 20,000	140
20,000 TO 31,000	130

EXAMPLE:

TAKE-OFF OAT . . . . 25°C
PRESSURE ALTITUDE . . . . 3966 FT
CRUISE OAT . . . . −10°C
PRESSURE ALTITUDE . . . . 17,000 FT
INITIAL WEIGHT . . . . 11,800 LBS

TIME TO CLIMB . . . . (14-2.8) = 11 MIN
FUEL TO CLIMB . . . . (165-40) = 125 LBS
DISTANCE TO CLIMB . . . . (40-8) = 32 NM



(6.50 x 10 Dual Main Wheels)

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MAXIMUM RECOMMENDED CRUISE POWER

ISA -30°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	-11	12	1352	354	708	226	214	226	214	226	214
2000	-15	5	1398	353	706	226	220	226	220	226	220
4000	-18	0	1441	352	704	226	226	226	226	226	226
6000	-22	-8	1487	353	706	226	233	226	233	226	233
8000	-26	-15	1530	354	708	226	239	226	239	226	239
10,000	-29	-20	1568	355	710	226	246	226	246	226	246
12,000	-33	-27	1604	356	712	226	254	226	254	226	254
14,000	-36	-33	1644	359	718	226	261	226	261	226	261
16,000	-40	-40	1647	356	712	224	267	224	267	224	267
18,000	-44	-47	1544	335	670	216	265	216	265	216	265
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA -20°C **96% RPM**

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	-1	30	1395	357	714	226	218	226	218	226	218
2000	-4	25	1438	356	712	226	224	226	224	226	224
4000	-8	18	1482	355	710	226	231	226	231	226	231
6000	-12	10	1527	356	712	226	237	226	237	226	237
8000	-15	5	1568	356	712	226	244	226	244	226	244
10,000	-19	-2	1604	357	714	226	252	226	252	226	252
12,000	-23	-9	1642	358	716	226	259	226	259	226	259
14,000	-26	-15	1682	361	722	226	267	226	267	226	267
16,000	-30	-22	1631	349	698	219	267	221	269	223	271
18,000	-34	-29	1536	331	662	211	265	214	268	216	271
20,000	-38	-36	1444	313	626	203	264	206	267	208	270
22,000	-42	-44	1351	294	588	195	261	198	265	200	268
24,000	-46	-51	1251	275	550	185	256	189	261	192	265
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA -10°C　　　96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	10	50	1441	364	728	226	222	226	222	226	222
2000	6	43	1481	361	722	226	228	226	228	226	228
4000	2	36	1522	359	718	226	235	226	235	226	235
6000	-1	30	1563	359	718	226	242	226	242	226	242
8000	-5	23	1601	359	718	226	249	226	249	226	249
10,000	-9	16	1637	359	718	226	257	226	257	226	257
12,000	-12	10	1678	361	722	226	264	226	264	226	264
14,000	-16	3	1630	349	698	219	264	221	267	223	269
16,000	-20	-4	1542	331	662	212	264	214	266	216	268
18,000	-24	-11	1455	314	628	204	262	207	265	209	268
20,000	-28	-18	1367	297	594	196	260	199	264	201	267
22,000	-32	-26	1274	279	558	187	257	191	261	193	265
24,000	-36	-33	1175	260	520	177	251	181	257	185	262
26,000	-40	-40	1081	242	484	166	243	171	251	176	258
28,000	-45	-49	993	225	450	153	233	161	244	166	252
29,000	-47	-53	948	216	432	145	225	155	239	161	249
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	20	68	1492	373	746	226	226	226	226	226	226
2000	16	61	1531	370	740	226	233	226	233	226	233
4000	12	54	1568	366	732	226	239	226	239	226	239
6000	9	48	1605	364	728	226	246	226	246	226	246
8000	5	41	1637	363	726	226	254	226	254	226	254
10,000	2	36	1673	362	724	225	260	226	261	226	261
12,000	-2	28	1600	346	692	218	260	220	262	222	264
14,000	-6	21	1526	330	660	211	260	214	263	215	265
16,000	-10	14	1449	314	628	204	259	207	262	209	265
18,000	-14	7	1370	298	596	197	258	200	262	202	265
20,000	-18	0	1290	282	564	189	256	192	260	195	264
22,000	-22	-8	1203	265	530	180	252	184	257	187	261
24,000	-26	-15	1108	247	494	169	245	174	252	178	258
26,000	-31	-24	1017	230	460	156	235	163	245	169	253
28,000	-35	-31	928	213	426	141	220	152	236	158	246
29,000	-37	-35	883	204	408	130	206	145	229	153	242
31,000	-42	-44	790	187	374	---	---	126	208	140	231

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA +10°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	30	86	1530	387	762	226	230	226	230	226	230
2000	26	79	1567	377	754	226	237	226	237	226	237
4000	23	73	1602	373	746	226	244	226	244	226	244
6000	19	66	1633	369	738	226	251	226	251	226	251
8000	15	59	1589	355	710	220	251	222	253	223	255
10,000	11	52	1523	338	676	214	252	216	254	218	257
12,000	7	45	1460	323	646	208	252	210	255	212	257
14,000	3	37	1403	309	618	202	253	204	256	206	259
16,000	0	32	1343	296	592	195	253	198	257	201	260
18,000	-4	25	1279	282	564	189	252	192	257	195	260
20,000	-8	18	1207	267	534	181	250	185	255	188	259
22,000	-13	9	1127	251	502	171	245	176	252	180	257
24,000	-17	1	1040	234	468	160	237	166	246	171	253
26,000	-21	-6	954	218	436	146	225	155	238	161	247
28,000	-25	-13	869	202	404	---	---	142	226	151	239
29,000	-28	-18	822	193	386	---	---	133	216	145	234
31,000	-33	-27	701	173	346	---	---	---	---	130	219

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA +20°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	40	104	1563	391	782	226	234	226	234	226	234
2000	36	97	1563	380	760	223	237	224	239	226	240
4000	33	91	1513	362	724	218	239	220	241	221	242
6000	29	84	1458	345	690	212	240	214	242	216	244
8000	25	77	1404	328	656	207	241	209	243	211	246
10,000	21	70	1353	313	626	201	242	204	244	206	247
12,000	17	63	1304	299	598	196	242	198	246	201	249
14,000	13	55	1262	288	576	190	243	193	247	196	250
16,000	9	48	1216	276	552	184	243	188	248	191	252
18,000	5	41	1167	264	528	178	242	182	248	185	252
20,000	1	34	1111	251	502	170	240	175	247	179	252
22,000	-3	27	1044	237	474	161	235	167	244	172	250
24,000	-7	19	968	222	444	149	226	157	238	163	246
26,000	-11	12	889	206	412	132	208	146	228	153	240
28,000	-16	3	806	191	382	---	---	130	211	142	231
29,000	-18	0	756	182	364	---	---	---	---	136	224
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA +30°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)[1]	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	50	122	1373	367	734	211	222	213	224	215	226
2000	46	115	1338	350	700	207	224	209	226	211	228
4000	42	108	1301	334	668	202	226	205	228	207	230
6000	38	100	1261	318	636	197	227	200	230	202	232
8000	34	93	1221	303	606	192	228	195	231	197	234
10,000	30	86	1184	289	578	187	229	190	233	193	236
12,000	26	79	1147	277	554	182	230	186	234	189	238
14,000	23	73	1115	266	532	177	231	181	236	184	240
16,000	19	66	1080	255	510	172	231	176	236	179	241
18,000	15	59	1041	245	490	165	230	170	237	174	242
20,000	11	52	1000	234	468	158	227	164	236	169	242
22,000	7	45	946	222	444	148	221	156	232	161	240
24,000	2	36	884	208	416	134	207	146	225	153	236
26,000	-2	28	816	194	388	---	---	133	213	144	230
28,000	-7	19	708	176	352	---	---	---	---	132	218
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES: 1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

MAXIMUM RECOMMENDED CRUISE POWER

ISA +37°C **96% RPM**

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS (REF)¹	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	56	133	1236	349	698	201	213	203	216	205	218
2000	53	127	1198	332	664	196	214	198	217	201	220
4000	49	120	1163	316	632	191	216	194	219	196	221
6000	45	113	1129	300	600	186	217	189	220	192	223
8000	41	106	1097	286	572	182	218	185	222	188	225
10,000	37	99	1967	273	546	177	218	180	223	183	227
12,000	33	91	1037	262	524	172	219	176	224	179	229
14,000	29	84	1013	252	504	167	220	171	226	175	231
16,000	25	77	984	242	484	161	220	167	227	171	233
18,000	21	70	953	232	464	155	218	161	227	166	233
20,000	17	63	916	222	444	147	214	155	255	160	233
22,000	13	55	870	210	420	135	205	146	221	153	231
24,000	9	48	815	198	396	---	---	136	212	145	227
26,000	5	41	751	185	370	---	---	---	---	135	219
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. Establish maximum recommended cruise power by setting ITT. The cruise speeds and fuel flows are normally achieved when ITT is set at 885°C. Cruise settings up to 905°C are permitted as desired or if required because of configuration variations. Torque values are for reference only.
2. Refer to "Airspeed Calibration-Normal System" for conversions between IAS and CAS.
3. Observe V_{MO} limit of 223 knots IAS (226 Knots CAS).

CRUISE SPEEDS AT MAXIMUM RECOMMENDED CRUISE POWER

96% RPM

ASSOCIATED CONDITIONS:

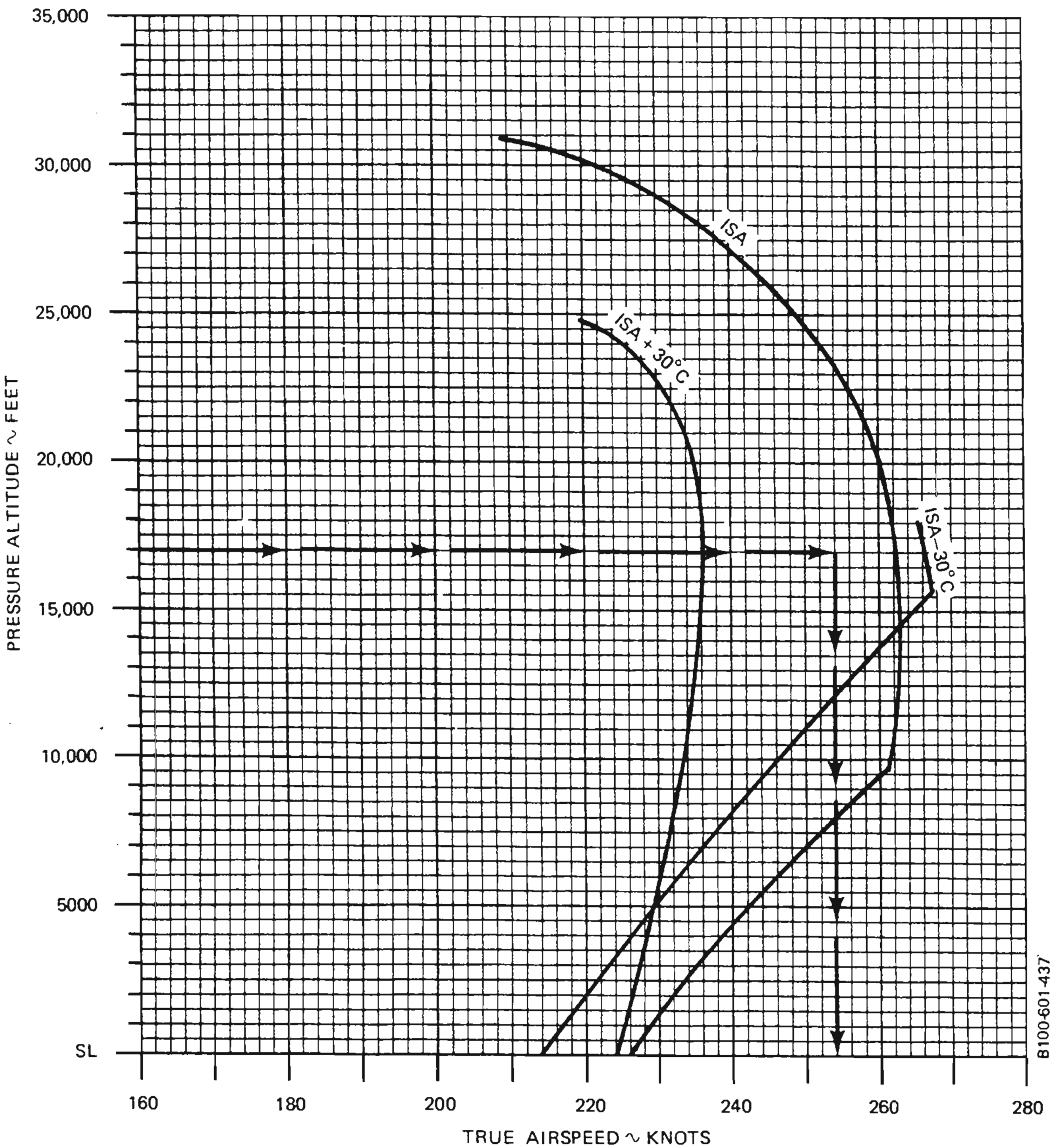
GENERATOR CONDITIONS:
.44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 5°C OR GREATER

WEIGHT 10,500 LBS

EXAMPLE:

PRESSURE ALTITUDE . . . . . 17,000 FT
OAT . . . . ISA + 9°C

TRUE AIRSPEED . . . . 254 KTS



FUEL FLOW AT MAXIMUM RECOMMENDED CRUISE POWER

96% RPM

ASSOCIATED CONDITIONS:

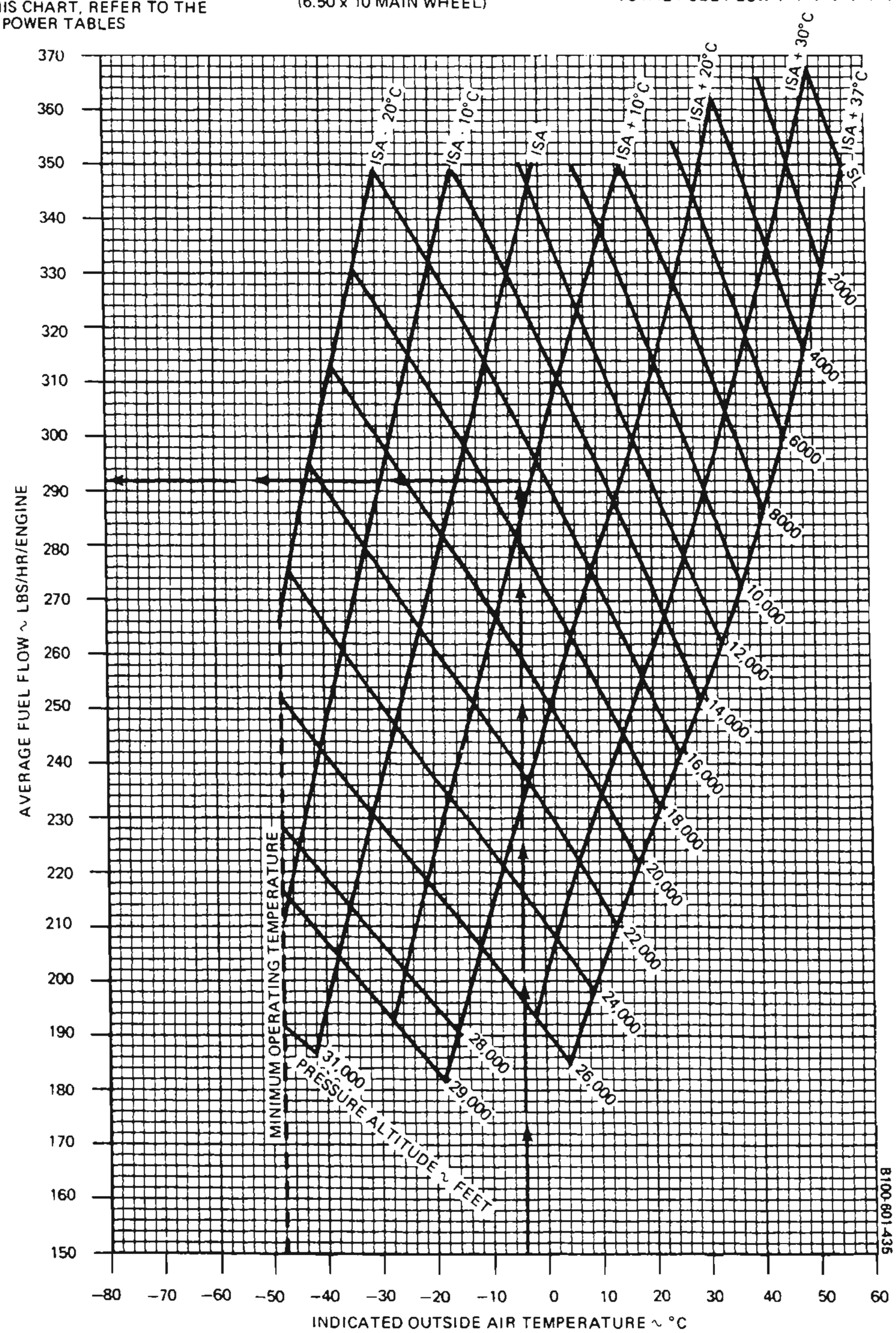
GENERATOR LOAD . .44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 5°C OR GREATER

NOTE:
FOR TEMPERATURE CONDITIONS THAT CAN NOT BE READ FROM THIS CHART, REFER TO THE MAXIMUM CRUISE POWER TABLES

NOTE:
FOR HIGH FLOTATION LANDING GEAR CONFIGURATION (6.50 x 10 MAIN WHEEL)

EXAMPLE:

PRESSURE ALTITUDE	17,000 FT
INDICATED OAT	-4°C
FUEL FLOW PER ENGINE	292 LBS/HR
TOTAL FUEL FLOW	584 LBS/HR



MAXIMUM RANGE POWER

ISA -30°C   96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	---	---	---	---	---	---	---	---	---	---	---
2000	---	---	---	---	---	---	---	---	---	---	---
4000	-20	-3	1000	302	604	186	187	189	189	191	192
6000	-23	-10	1000	293	586	185	191	188	194	190	196
8000	-27	-17	1000	285	570	184	195	187	198	189	200
10,000	-31	-23	1000	277	554	182	199	185	202	187	205
12,000	-35	-31	1000	269	538	180	203	183	206	186	209
14,000	-39	-38	1000	262	524	178	207	182	211	184	214
16,000	-42	-44	1000	256	512	176	211	180	215	183	218
18,000	-46	-51	1000	250	500	174	214	178	219	181	223
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

MAXIMUM RANGE POWER

ISA -20°C　　　　96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	---	---	---	---	---	---	---	---	---	---	---
2000	-6	22	1000	306	612	187	185	189	188	191	190
4000	-10	15	1000	297	594	185	189	188	192	190	194
6000	-13	8	1000	288	576	184	193	187	196	189	199
8000	-17	1	1000	280	560	182	197	185	200	188	203
10,000	-21	-6	1000	272	544	180	201	183	204	186	207
12,000	-25	-13	1000	264	528	179	205	182	209	185	212
14,000	-29	-19	1000	259	518	176	209	180	213	183	216
16,000	-32	-26	1000	253	506	174	213	178	217	181	221
18,000	-36	-33	1000	248	496	172	217	176	221	179	225
20,000	-40	-40	1000	242	484	169	220	173	226	177	230
22,000	-44	-47	1000	238	476	167	224	171	230	175	235
24,000	-47	-53	1000	233	466	164	228	169	234	173	240
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

MAXIMUM RANGE POWER

ISA -10°C   96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	8	47	1000	312	624	187	184	189	186	192	188
2000	4	40	1000	301	602	185	187	188	190	190	192
4000	1	33	1000	292	584	184	192	187	194	189	197
6000	-3	26	1000	283	566	183	196	185	199	188	201
8000	-7	19	1000	275	550	181	199	184	203	186	205
10,000	-11	12	1000	267	534	179	204	182	207	185	210
12,000	-15	6	1000	261	522	177	207	180	211	183	214
14,000	-18	-1	1000	255	510	175	211	178	216	181	219
16,000	-22	-8	1000	250	500	172	215	176	220	179	223
18,000	-26	-15	1000	245	490	170	218	174	224	177	228
20,000	-30	-22	1000	240	480	167	222	172	228	175	233
22,000	-34	-28	1000	236	472	165	226	169	232	173	238
24,000	-37	-35	1000	232	464	162	230	167	237	171	242
26,000	-41	-42	1000	229	458	158	233	164	241	168	247
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitudes values which have been omitted.

MAXIMUM RANGE POWER

ISA 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	18	65	1000	308	616	186	186	188	188	190	190
2000	14	58	1000	298	596	184	190	187	193	189	195
4000	11	51	1000	289	578	183	194	186	197	188	200
6000	7	44	1000	280	560	181	198	184	201	186	203
8000	3	37	1000	272	544	179	202	182	205	185	208
10,000	-1	31	1000	265	530	177	206	181	209	183	212
12,000	-5	24	1000	258	516	175	209	179	213	181	217
14,000	-8	17	1000	252	504	173	213	177	218	180	221
16,000	-12	10	1000	247	494	170	217	174	222	177	226
18,000	-16	3	1000	242	484	168	220	172	226	175	230
20,000	-20	-3	1000	237	474	165	224	170	230	173	235
22,000	-23	-10	1000	233	466	162	228	167	234	171	240
24,000	-27	-17	1000	230	460	159	231	164	239	169	245
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

MAXIMUM RANGE POWER

ISA +10°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT		TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS					
						11,500 LBS		10,500 LBS		9500 LBS	
	°C	°F				CAS	TAS	CAS	TAS	CAS	TAS
SL	28	83	1000	307	614	184	188	187	190	189	193
2000	25	76	1000	297	594	183	192	186	195	188	197
4000	21	69	1000	288	576	182	196	184	199	187	201
6000	17	62	1000	279	558	180	200	183	203	185	206
8000	13	56	1000	271	542	178	204	181	207	184	211
10,000	9	49	1000	263	526	176	208	179	212	182	215
12,000	6	42	1000	256	512	174	211	177	216	180	219
14,000	2	35	1000	250	500	171	215	175	220	178	224
16,000	-2	28	1000	244	488	168	218	172	224	176	228
18,000	-6	22	1000	239	478	166	222	170	228	174	233
20,000	-10	15	1000	235	470	163	226	168	232	172	237
22,000	-13	8	1000	231	462	160	229	165	236	169	242
24,000	-17	1	1000	227	454	157	232	162	241	167	247
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitudes values which have been omitted.

MAXIMUM RANGE POWER

ISA +20°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	38	101	1000	308	616	183	190	186	192	188	195
2000	35	94	1000	297	594	182	194	185	197	187	199
4000	31	87	1000	288	576	180	197	183	201	185	203
6000	27	81	1000	279	558	178	202	181	205	184	208
8000	23	74	1000	270	540	176	205	180	209	182	212
10,000	19	67	1000	262	524	174	209	178	213	181	217
12,000	16	60	1000	255	510	172	213	176	218	179	221
14,000	12	53	1000	249	498	169	216	173	222	176	226
16,000	8	46	1000	243	486	166	220	171	226	174	230
18,000	4	40	1000	238	476	164	224	169	230	172	235
20,000	0	33	1000	234	468	161	227	166	234	170	240
22,000	-3	26	1000	230	460	158	230	163	238	167	244
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

MAXIMUM RANGE POWER

ISA +30°C   96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	48	119	1000	310	620	182	191	185	194	187	197
2000	45	112	1000	299	598	180	195	183	198	186	201
4000	41	106	1000	289	578	179	199	182	202	184	205
6000	37	99	1000	279	558	177	203	180	207	183	210
8000	33	92	1000	271	542	175	207	178	211	181	214
10,000	29	85	1000	263	526	173	211	176	215	179	219
12,000	26	78	1000	256	512	170	214	174	219	177	223
14,000	22	71	1000	250	500	167	218	171	223	175	228
16,000	18	65	1000	244	488	165	222	169	228	173	232
18,000	14	58	1000	239	478	162	225	167	232	171	237
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

MAXIMUM RANGE POWER

ISA +37°C 96% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	56	132	1000	312	624	181	193	184	196	186	198
2000	52	125	1000	302	604	179	196	182	199	185	202
4000	48	118	1000	291	582	178	200	181	204	183	207
6000	44	111	1000	282	564	176	204	179	208	182	211
8000	40	105	1000	273	546	173	208	177	212	180	216
10,000	37	98	1000	265	530	171	212	175	216	178	220
12,000	33	91	1000	257	514	168	215	172	220	176	224
14,000	29	84	1000	251	502	166	219	170	224	174	229
16,000	---	---	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: Use Maximum recommended cruise power tables for altitude values which have been omitted.

RANGE PROFILE — FULL MAIN AND AUX TANKS

STANDARD DAY

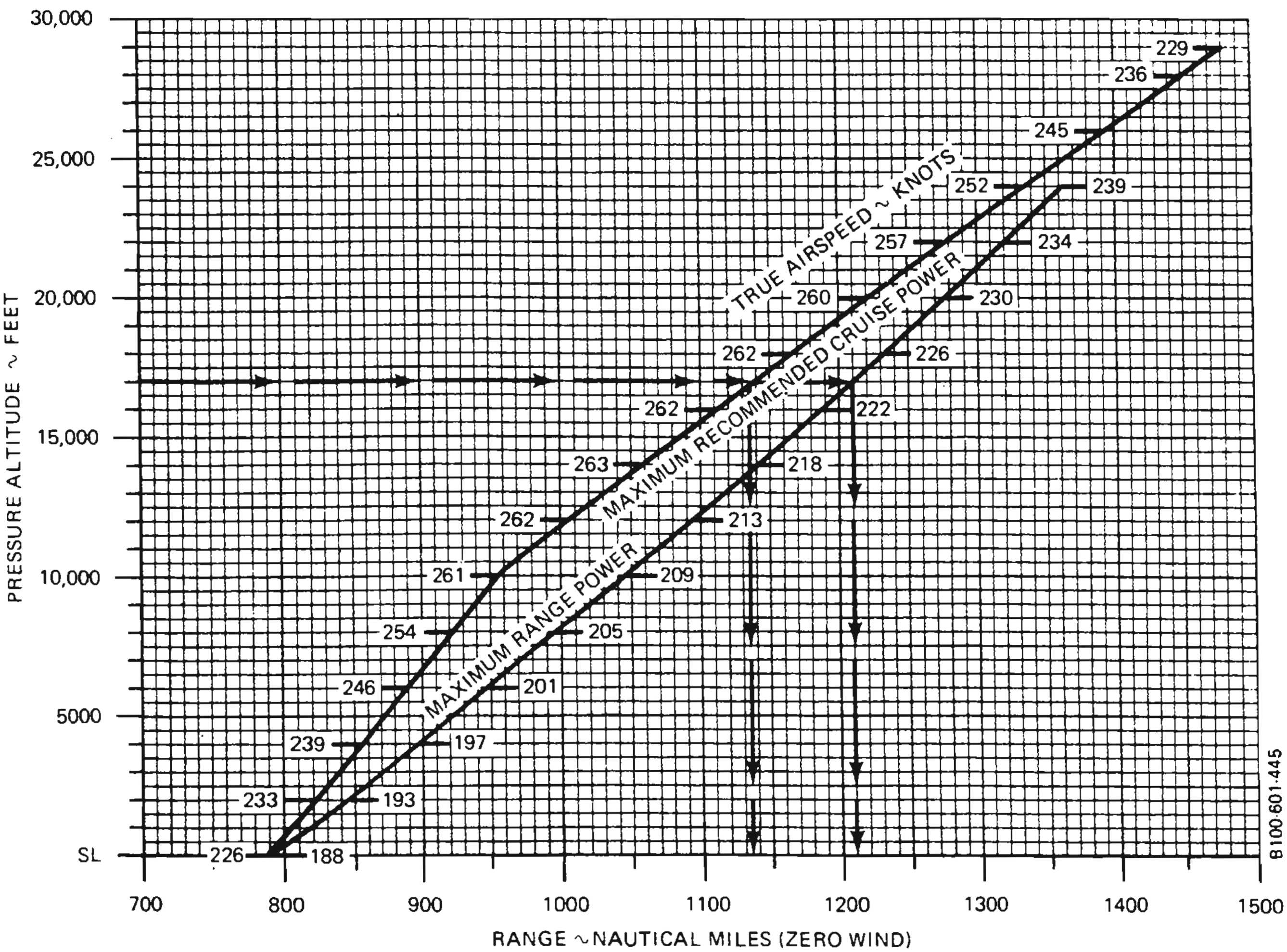
ASSOCIATED CONDITIONS:

WEIGHT	11,875 LBS BEFORE ENGINE START
FUEL	AVIATION KEROSENE
FUEL DENSITY	6.7 LBS/GAL
INITIAL FUEL LOADING	470 U.S. GAL (3149 LBS)
PROPELLER SPEED	96% RPM
GENERATOR LOAD	.44 IF OAT LESS THAN 5°C .39 IF OAT 5°C OR GREATER

EXAMPLE:

PRESSURE ALTITUDE	17,000 FT
RANGE @ MAX CRUISE POWER	1136 NM
RANGE @ MAX RANGE POWER	1210 NM

NOTE: RANGE INCLUDES START, TAXI, CLIMB, AND DESCENT WITH 45 MINUTES RESERVE FUEL AT MAXIMUM RANGE POWER



(6.50 x 10 Dual Main Wheels)

Reissued: October, 1984
P/N 100-590038-33

ENDURANCE PROFILE — FULL MAIN AND AUX TANKS

ASSOCIATED CONDITIONS:

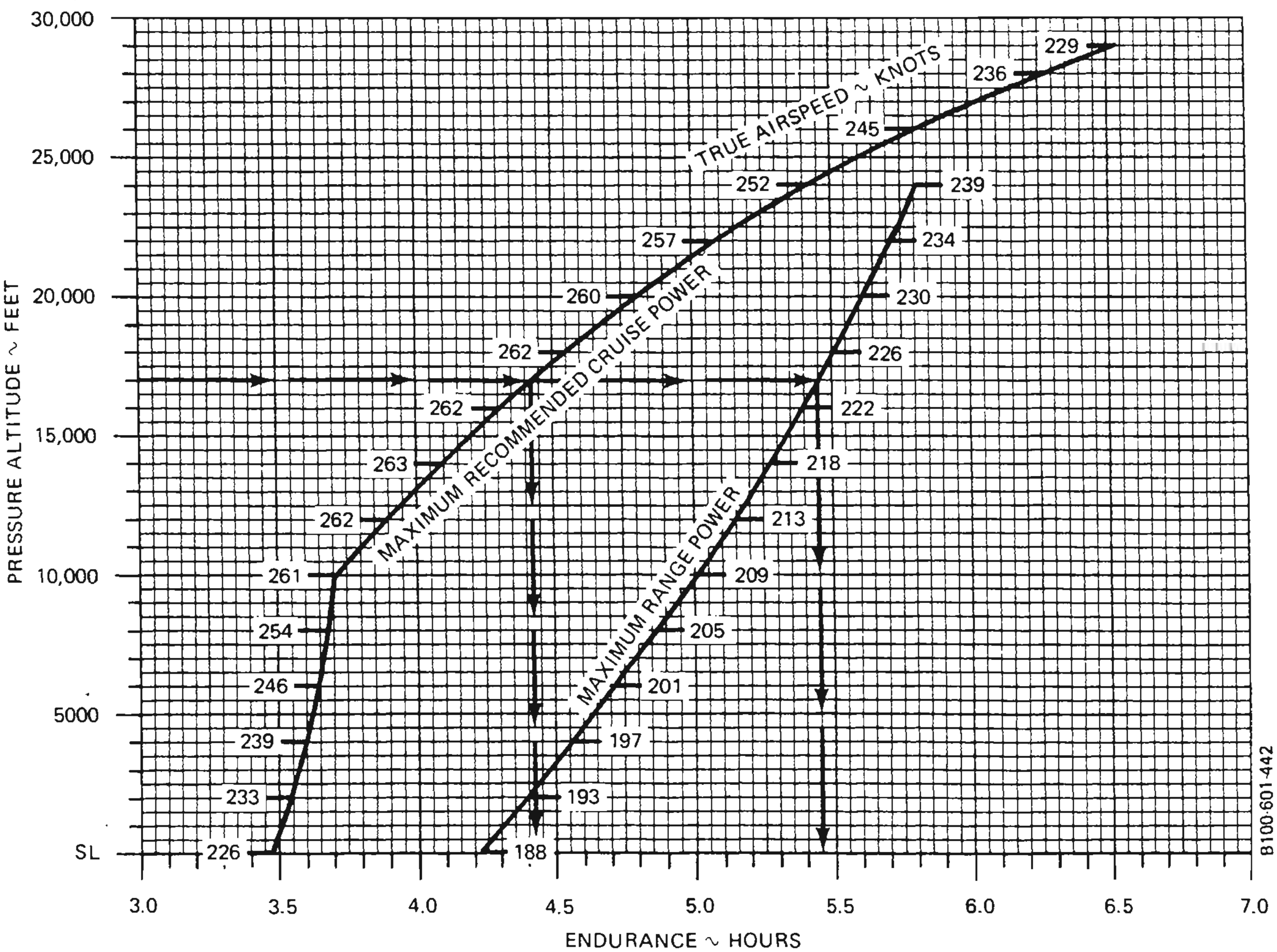
WEIGHT . . . . 11,875 LBS BEFORE ENGINE START
FUEL . . . . AVIATION KEROSENE
FUEL DENSITY . . . . . . 6.7 LBS/GAL
INITIAL FUEL LOADING . . 470 U.S. GAL (3149 LBS)
PROPELLER SPEED . . . . 96% RPM
GENERATOR LOAD . . . . .44 IF OAT IS LESS THAN 5°C
.39 IF OAT IS 5°C OR GREATER

EXAMPLE:

PRESSURE ALTITUDE . . . . 17,000 FT

ENDURANCE @ MAX CRUISE POWER. . . . . . 4.43 HRS
ENDURANCE @ MAX RANGE POWER. . . . . . 5.45 HRS

NOTE: ENDURANCE INCLUDES START, TAXI, CLIMB AND DESCENT WITH 45 MINUTES RESERVE FUEL AT MAXIMUM RANGE POWER



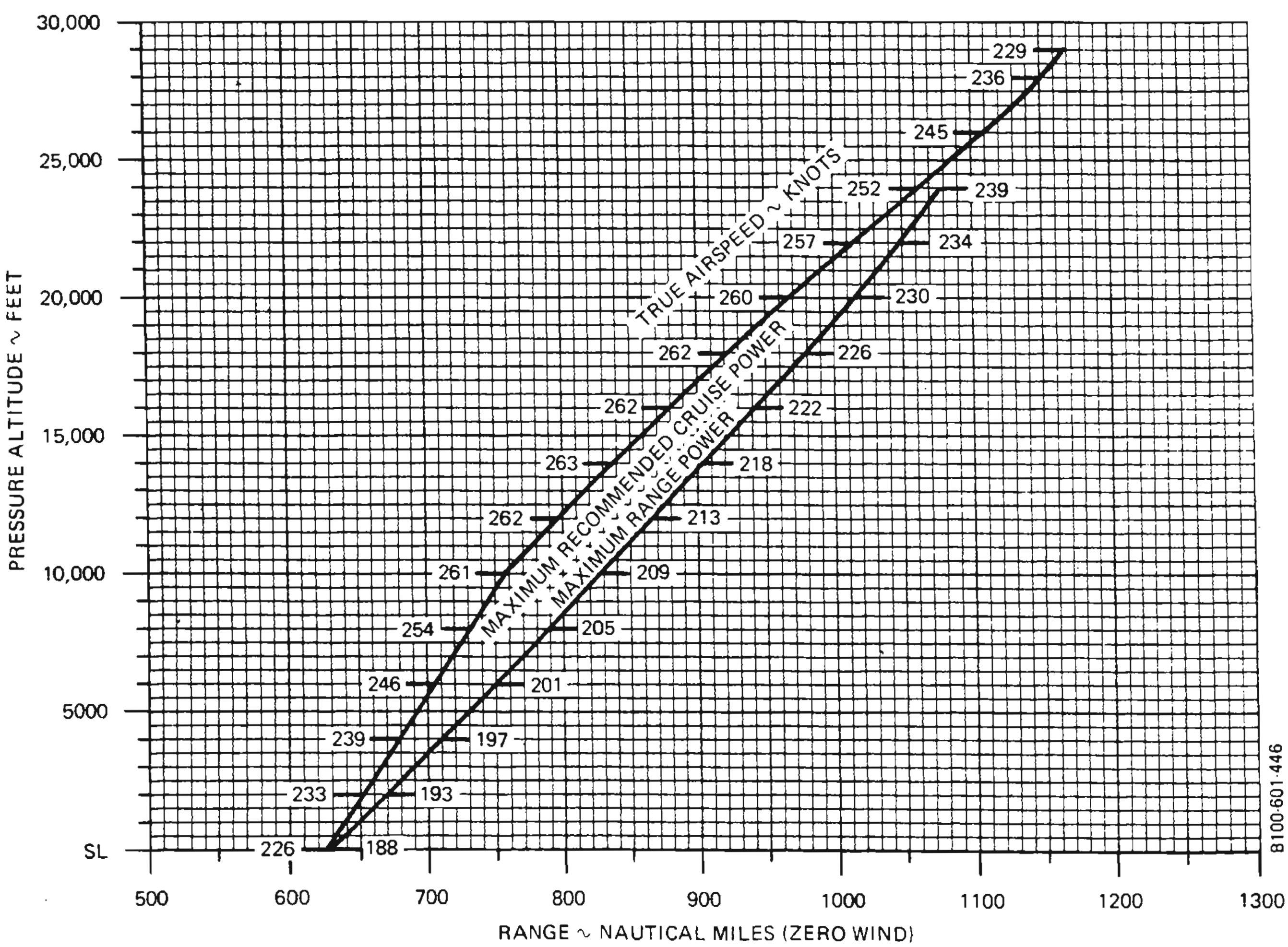
RANGE PROFILE — FULL MAIN TANKS

STANDARD DAY

ASSOCIATED CONDITIONS:

WEIGHT	11,875 LBS BEFORE ENGINE START
FUEL	AVIATION KEROSENE
FUEL DENSITY	6.7 LBS/GAL
INITIAL FUEL LOADING	388 U.S. GAL (2600 LBS)
PROPELLER SPEED	96% RPM
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

NOTE: RANGE INCLUDES START, TAXI, CLIMB, AND DESCENT WITH 45 MINUTES RESERVE FUEL AT MAXIMUM RANGE POWER



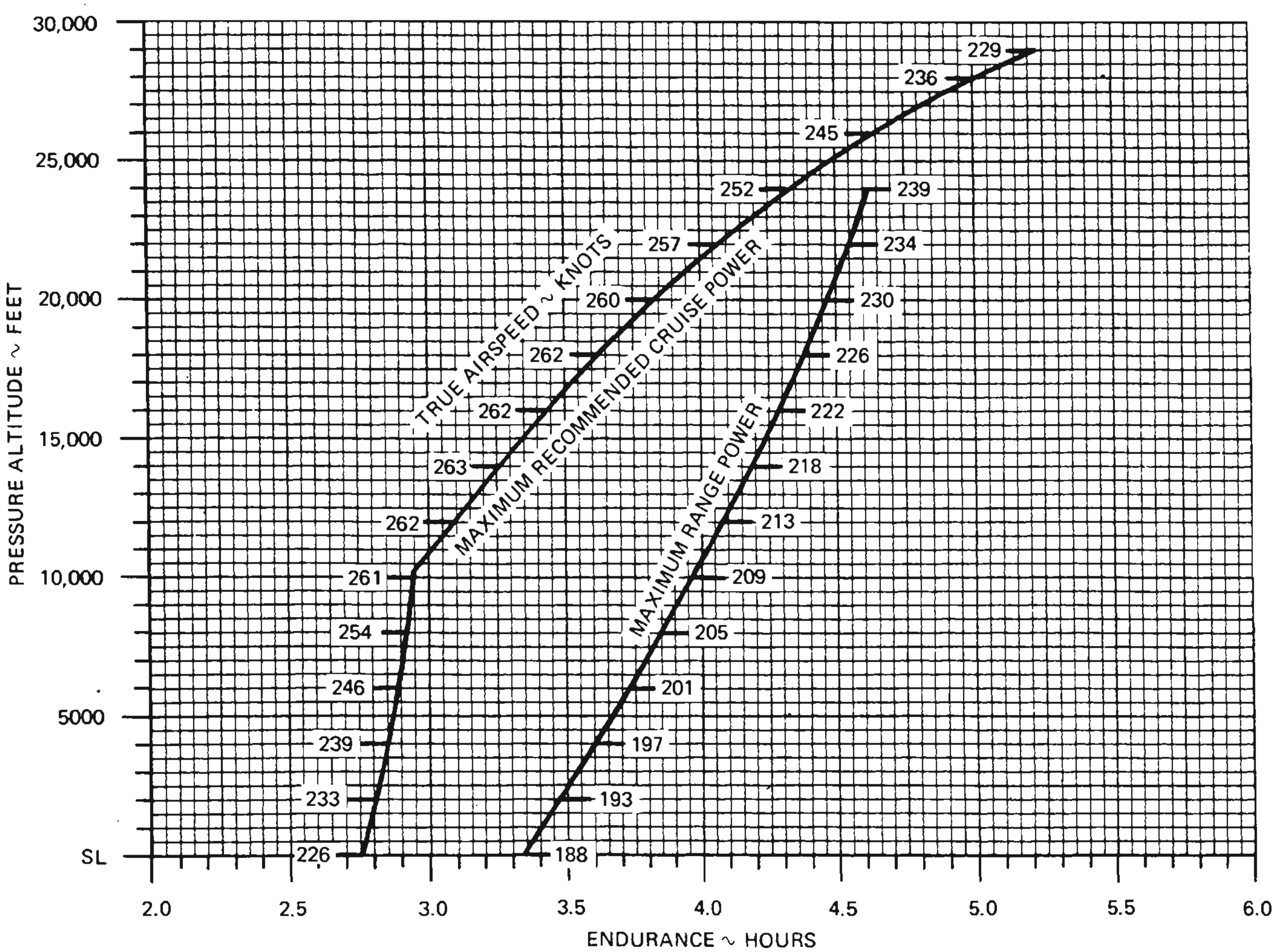
ENDURANCE PROFILE — FULL MAIN TANKS

STANDARD DAY

ASSOCIATED CONDITIONS:

WEIGHT	11,875 LBS BEFORE ENGINE START
FUEL	AVIATION KEROSENE
FUEL DENSITY	6.7 LBS/GAL
INITIAL FUEL LOADING	388 U.S. GAL (2600 LBS)
PROPELLER SPEED	96% RPM
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

NOTE: ENDURANCE INCLUDES START, TAXI, CLIMB, AND DESCENT WITH 45 MINUTES RESERVE FUEL AT MAXIMUM RANGE POWER



B100-601-439

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA -30°C **100% RPM**

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	-12	11	1878	480	480	191	181	194	184	197	186
2000	-16	4	1878	471	471	189	184	192	187	194	189
4000	-20	-3	1878	461	461	187	187	190	190	192	193
6000	-23	-10	1878	452	452	184	190	188	193	190	196
8000	-27	-17	1878	444	444	182	193	185	196	188	199
10,000	-31	-24	1848	432	432	177	193	181	198	185	202
12,000	-35	-31	1732	406	406	168	189	173	195	177	199
14,000	-39	-39	1607	381	381	157	182	164	190	169	196
16,000	-44	-46	1483	356	356	143	172	153	184	160	191
18,000	-48	-54	1358	332	332	---	---	141	174	150	185
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA -20°C   100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	-2	29	1878	474	474	189	183	192	186	195	188
2000	-6	22	1878	466	466	187	186	190	189	193	191
4000	-10	15	1878	458	458	185	188	188	192	191	195
6000	-13	8	1878	449	449	182	191	186	195	188	198
8000	-17	1	1850	437	437	178	192	182	197	185	200
10,000	-21	-6	1739	411	411	169	189	174	194	178	198
12,000	-25	-14	1632	387	387	160	184	166	191	170	196
14,000	-30	-21	1527	363	363	148	176	157	186	163	193
16,000	-34	-29	1420	340	340	131	160	146	179	154	188
18,000	-38	-37	1305	317	317	---	---	131	166	144	182
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
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28,000	---	---	---	---	---	---	---	---	---	---	---
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31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA -10°C 100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	8	47	1878	469	469	188	184	191	187	193	190
2000	4	40	1878	460	460	185	187	188	190	191	193
4000	1	33	1878	452	452	183	190	186	194	189	197
6000	-3	26	1861	442	442	179	192	183	196	186	199
8000	-7	19	1747	417	417	170	188	175	193	179	197
10,000	-11	11	1634	392	392	161	183	167	190	171	195
12,000	-16	4	1529	368	368	150	176	158	185	163	192
14,000	-20	-4	1430	346	346	135	164	148	179	155	188
16,000	-24	-11	1331	324	324	---	---	136	170	146	183
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA 100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	18	65	1878	465	465	186	186	189	189	192	192
2000	14	58	1878	456	456	183	189	187	192	190	195
4000	11	51	1863	446	446	180	191	184	195	187	198
6000	7	44	1756	421	421	171	187	176	192	180	196
8000	2	36	1651	397	397	163	183	168	189	173	194
10,000	-2	29	1546	374	374	152	177	160	185	165	191
12,000	-6	22	1442	351	351	138	166	150	179	157	188
14,000	-10	14	1339	329	329	---	---	138	171	148	183
16,000	-16	4	1195	302	302	---	---	---	---	138	176
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA +10°C   100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	28	83	1878	463	463	184	187	187	191	190	193
2000	24	76	1821	445	445	179	187	182	191	186	194
4000	20	69	1736	423	423	171	185	176	190	180	194
6000	16	61	1647	401	401	163	182	169	188	173	193
8000	12	54	1551	378	378	154	176	161	184	166	190
10,000	8	47	1452	356	356	141	167	152	179	158	187
12,000	4	39	1356	335	335	---	---	141	172	150	183
14,000	0	31	1254	313	313	---	---	---	---	140	176
16,000	---	---	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
26,000	---	---	---	---	---	---	---	---	---	---	---
28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA +20°C 100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS CAS	11,500 LBS TAS	10,500 LBS CAS	10,500 LBS TAS	9500 LBS CAS	9500 LBS TAS
SL	38	101	1705	436	436	173	179	177	183	181	187
2000	34	93	1644	417	417	167	178	172	183	176	187
4000	30	86	1579	397	397	160	176	166	182	170	187
6000	26	79	1510	378	378	152	172	159	180	165	186
8000	22	72	1434	358	358	141	165	152	177	158	184
10,000	18	64	1354	338	338	---	---	142	171	151	181
12,000	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
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28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA + 30°C   100% RPM

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED – KNOTS 11,500 LBS IAS	11,500 LBS TAS	10,500 LBS IAS	10,500 LBS TAS	9500 LBS IAS	9500 LBS TAS
SL	48	118	1502	405	405	159	167	165	173	169	178
2000	44	111	1458	388	388	153	165	160	173	165	178
4000	40	104	1407	371	371	---	---	154	171	159	178
6000	36	96	1353	353	353	---	---	147	169	154	177
8000	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
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29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

NOTE: This information is provided for flight planning and as practical power settings to establish where one engine inoperative cruise becomes necessary. Flight may not be possible for altitudes where values have been omitted. If required, power may be increased up to the torque, ITT and/or RPM limits. Torque settings above those tabulated will result in higher fuel flow and reduced range.

MAXIMUM RECOMMENDED CRUISE POWER
ONE ENGINE INOPERATIVE

ISA + 37°C **100% RPM**

PRESSURE ALTITUDE FEET	IOAT °C	IOAT °F	TORQUE PER ENGINE FT-LBS	FUEL FLOW PER ENGINE LBS/HR	TOTAL FUEL FLOW LBS/HR	AIRSPEED - KNOTS 11,500 LBS IAS	11,500 LBS TAS	10,500 LBS IAS	10,500 LBS TAS	9500 LBS IAS	9500 LBS TAS
SL	55	130	1361	385	385	---	---	155	164	160	170
2000	51	123	1326	369	369	---	---	149	164	156	170
4000	---	---	---	---	---	---	---	---	---	---	---
6000	---	---	---	---	---	---	---	---	---	---	---
8000	---	---	---	---	---	---	---	---	---	---	---
10,000	---	---	---	---	---	---	---	---	---	---	---
12,000	---	---	---	---	---	---	---	---	---	---	---
14,000	---	---	---	---	---	---	---	---	---	---	---
16,000	---	---	---	---	---	---	---	---	---	---	---
18,000	---	---	---	---	---	---	---	---	---	---	---
20,000	---	---	---	---	---	---	---	---	---	---	---
22,000	---	---	---	---	---	---	---	---	---	---	---
24,000	---	---	---	---	---	---	---	---	---	---	---
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28,000	---	---	---	---	---	---	---	---	---	---	---
29,000	---	---	---	---	---	---	---	---	---	---	---
31,000	---	---	---	---	---	---	---	---	---	---	---

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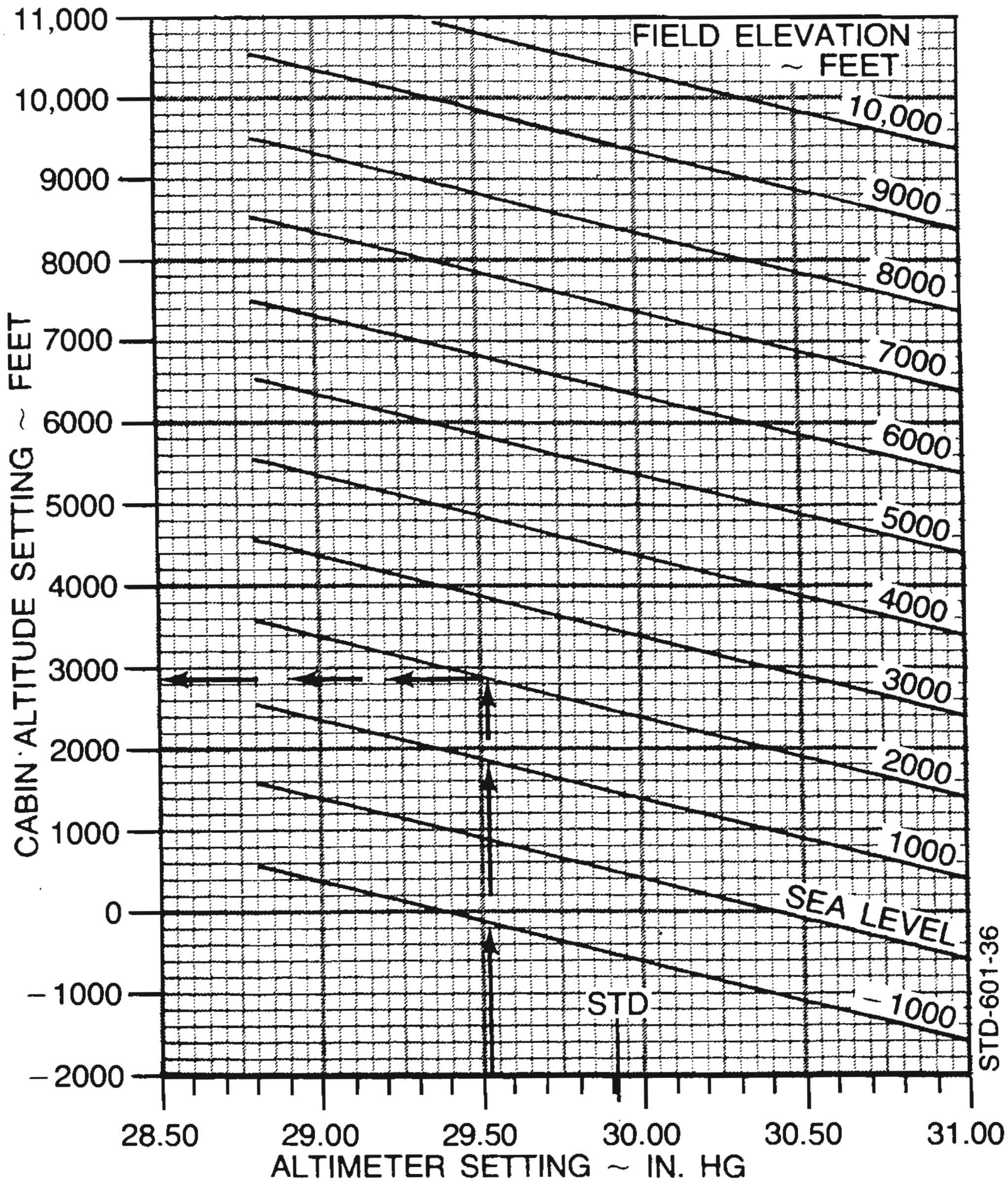
PRESSURIZATION CONTROLLER SETTING FOR LANDING

EXAMPLE

ALTIMETER SETTING .... 29.52 IN. HG
LANDING FIELD ELEVATION ... 2000 FT

CABIN ALTITUDE SETTING .... 2885 FT



HOLDING TIME

ASSOCIATED CONDITIONS:

PROPELLER SPEED . . . . 96% RPM
TORQUE . . . . 750 FT-LBS

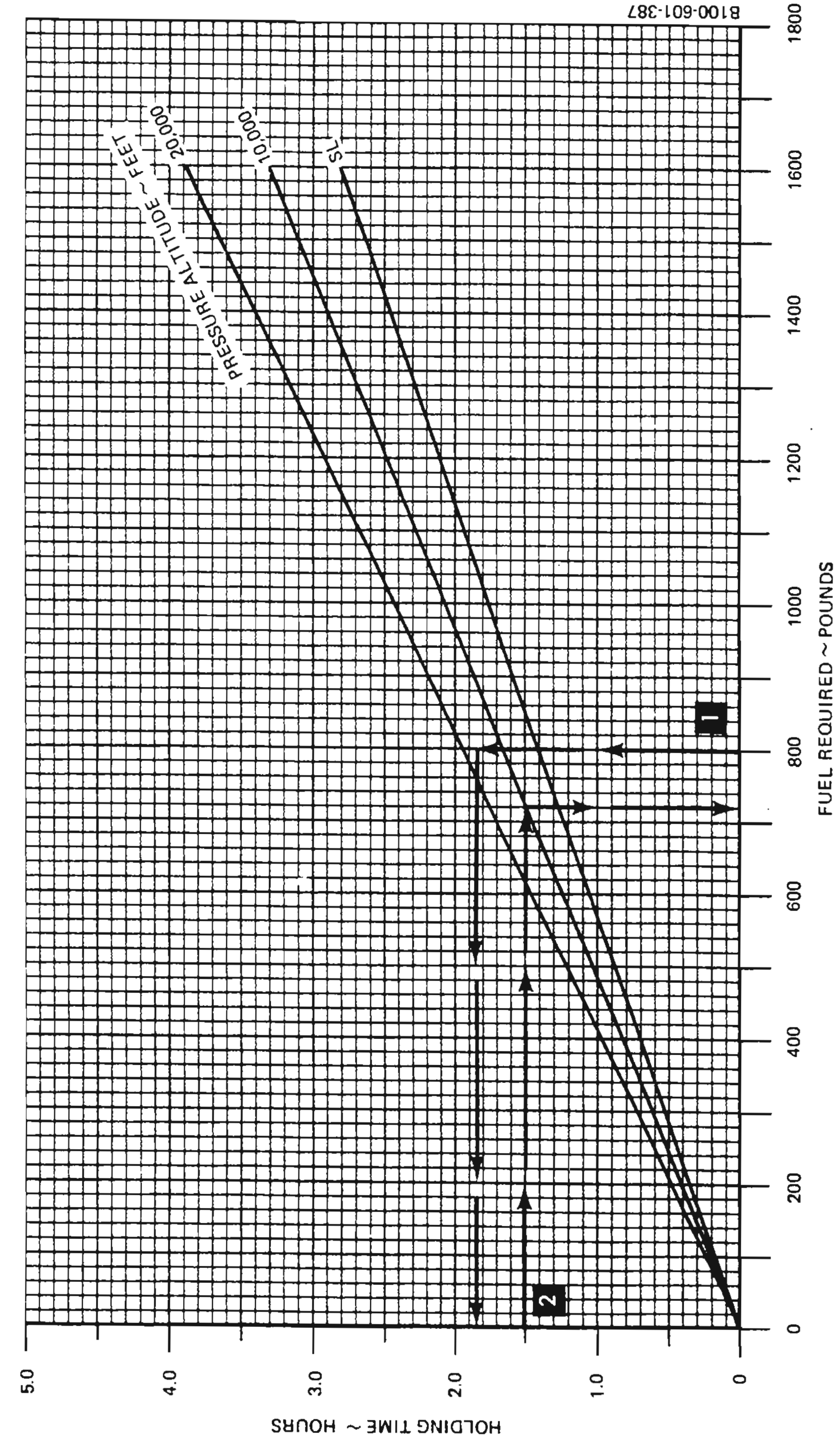
EXAMPLES:

1 FUEL AVAILABLE FOR HOLDING . . . . 800 LBS
PRESSURE ALTITUDE . . . . 17,000 FT

HOLDING TIME . . . . 1.85 HRS

2 REQUIRED HOLDING TIME . . . . 1.5 HRS
HOLDING PRESSURE ALTITUDE . . . . 10,000 FT

FUEL REQUIRED . . . . 720 LBS



TIME, FUEL, AND DISTANCE TO DESCEND

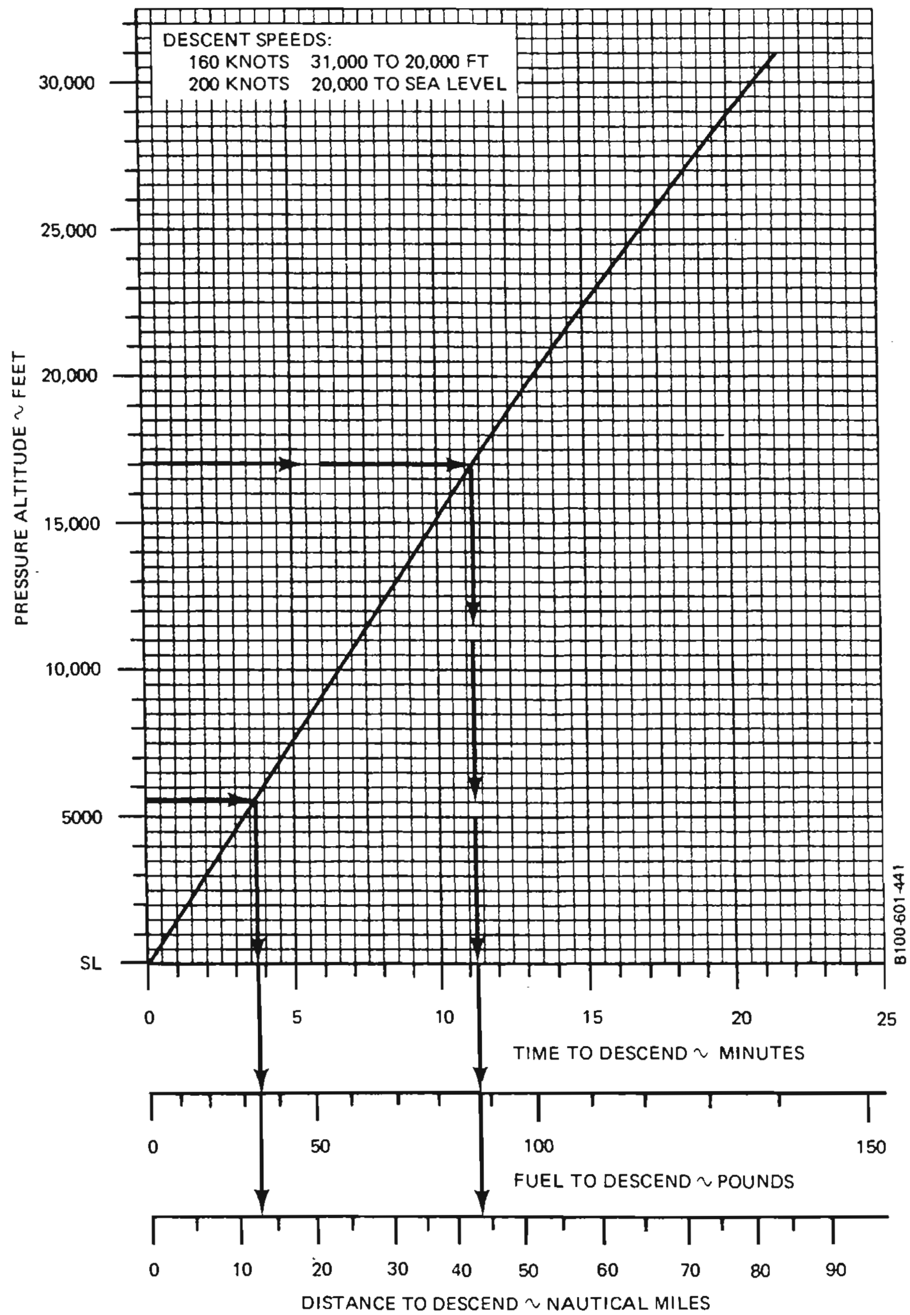
ASSOCIATED CONDITIONS:

POWER . . . . AS REQUIRED TO DESCEND @ 1500 FT/MIN
GEAR . . . . UP
FLAPS . . . . UP (0%)

EXAMPLE:

INITIAL ALTITUDE . . . . 17,000 FT
FINAL ALTITUDE . . . . 5651 FT

TIME TO DESCEND. . . . . (11-4) = 7 MIN
FUEL TO DESCEND . . . . (88-34) = 54 LBS
DISTANCE TO DESCEND. . . . . (44-13) = 31 NM



CLIMB — BALKED LANDING

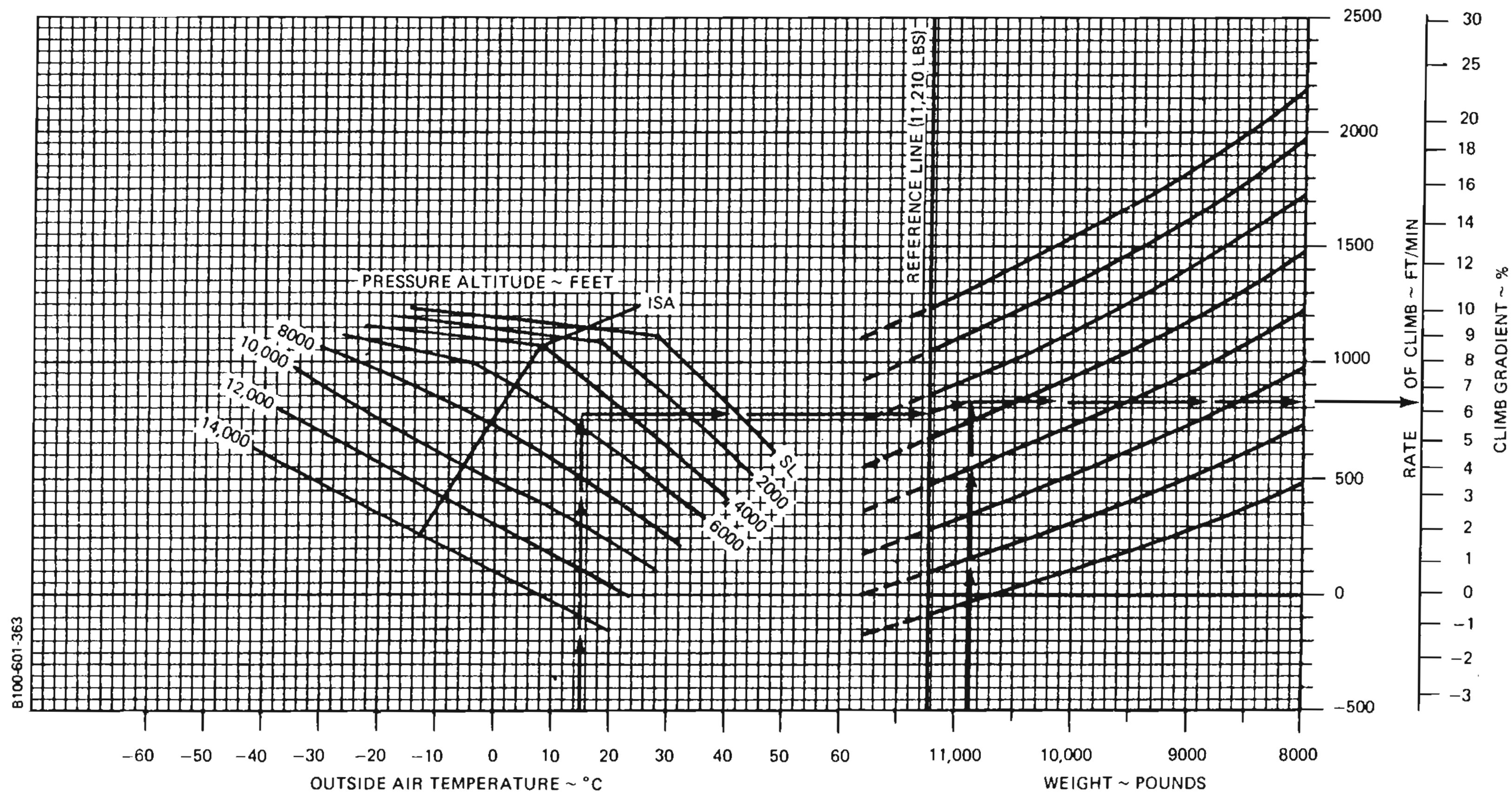
CLIMB SPEED 100 KNOTS (ALL WEIGHTS)

ASSOCIATED CONDITIONS:

POWER	TAKE-OFF
FLAPS	100%
LANDING GEAR	DOWN
PRESSURIZATION	ON
GENERATOR LOAD	.44 IF OAT IS LESS THAN 5°C .39 IF OAT IS 5°C OR GREATER

EXAMPLE:

OAT	15°C
PRESSURE ALTITUDE	5651 FT
WEIGHT	10,876 LBS
RATE-OF-CLIMB	830 FT/MIN
CLIMB GRADIENT	6.6%



NORMAL LANDING DISTANCE WITHOUT PROPELLER REVERSING – FLAPS 100%

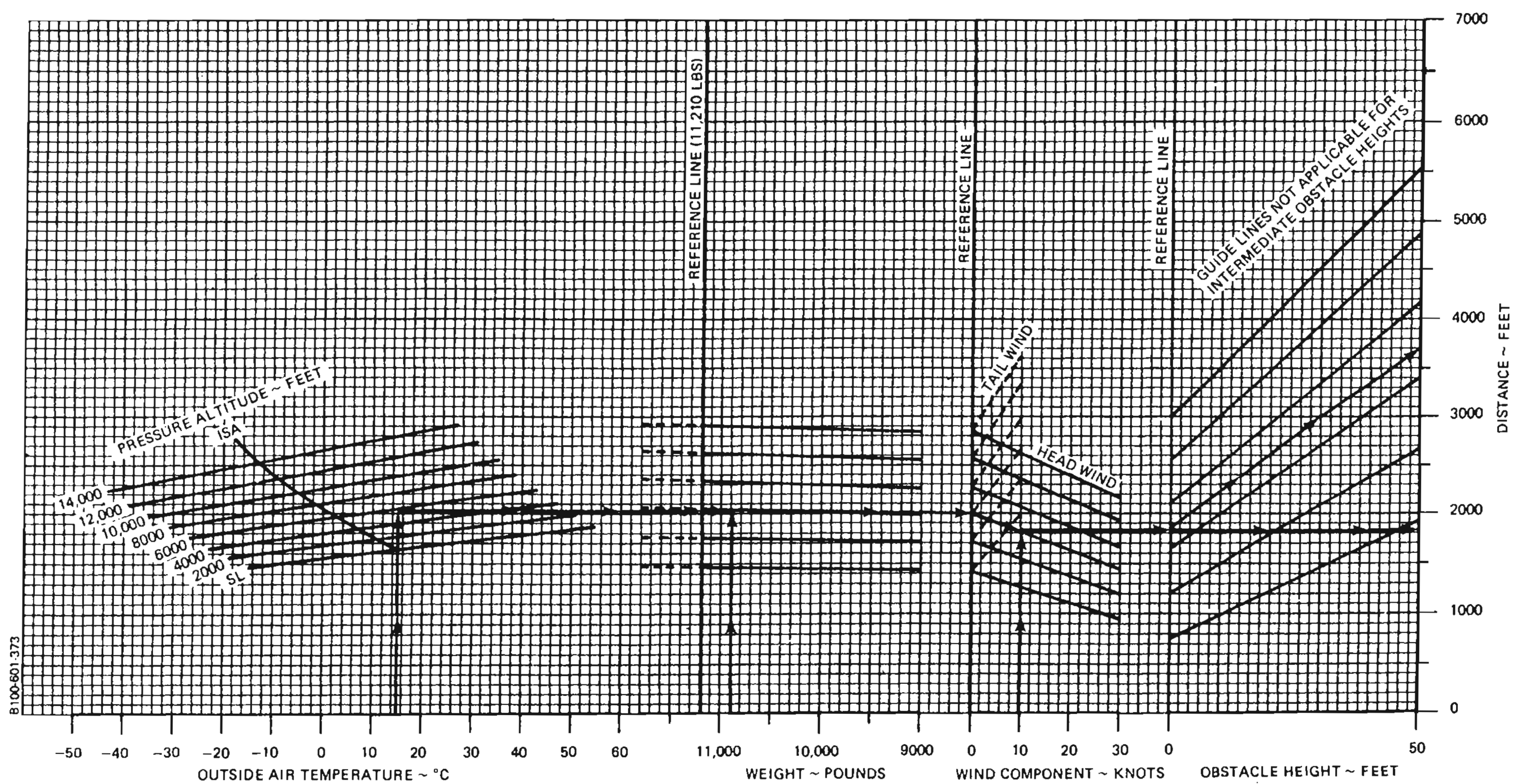
ASSOCIATED CONDITIONS:

POWER	RETARDED TO MAINTAIN 600 FT/MIN ON FINAL APPROACH
FLAPS	100%
RUNWAY	PAVED, LEVEL, DRY SURFACE
APPROACH SPEED	IAS AS TABULATED
BRAKING	MAXIMUM

WEIGHT ~ LBS	APPROACH SPEED ~ KTS
11,800	112
11,210	111
11,000	111
10,000	110
9000	110

EXAMPLE:

OAT	15°C
PRESSURE ALTITUDE	5651 FT
LANDING WEIGHT	10,876 LBS
HEADWIND COMPONENT	10 KTS
GROUND ROLL	1820 FT
TOTAL OVER 50 FT OBSTACLE	3700 FT
APPROACH SPEED	111 KTS



NORMAL LANDING DISTANCE WITHOUT PROPELLER REVERSING – FLAPS 100%

SHORT DRY GRASS WITH FIRM SUBSOIL

ASSOCIATED CONDITIONS:

POWER . . . . RETARDED TO MAINTAIN 1000 FT/MIN ON FINAL APPROACH
FLAPS 100%
RUNWAY . . . . SHORT, DRY GRASS SURFACE
APPROACH SPEED . . . . IAS AS TABULATED
BRAKING . . . . MAXIMUM

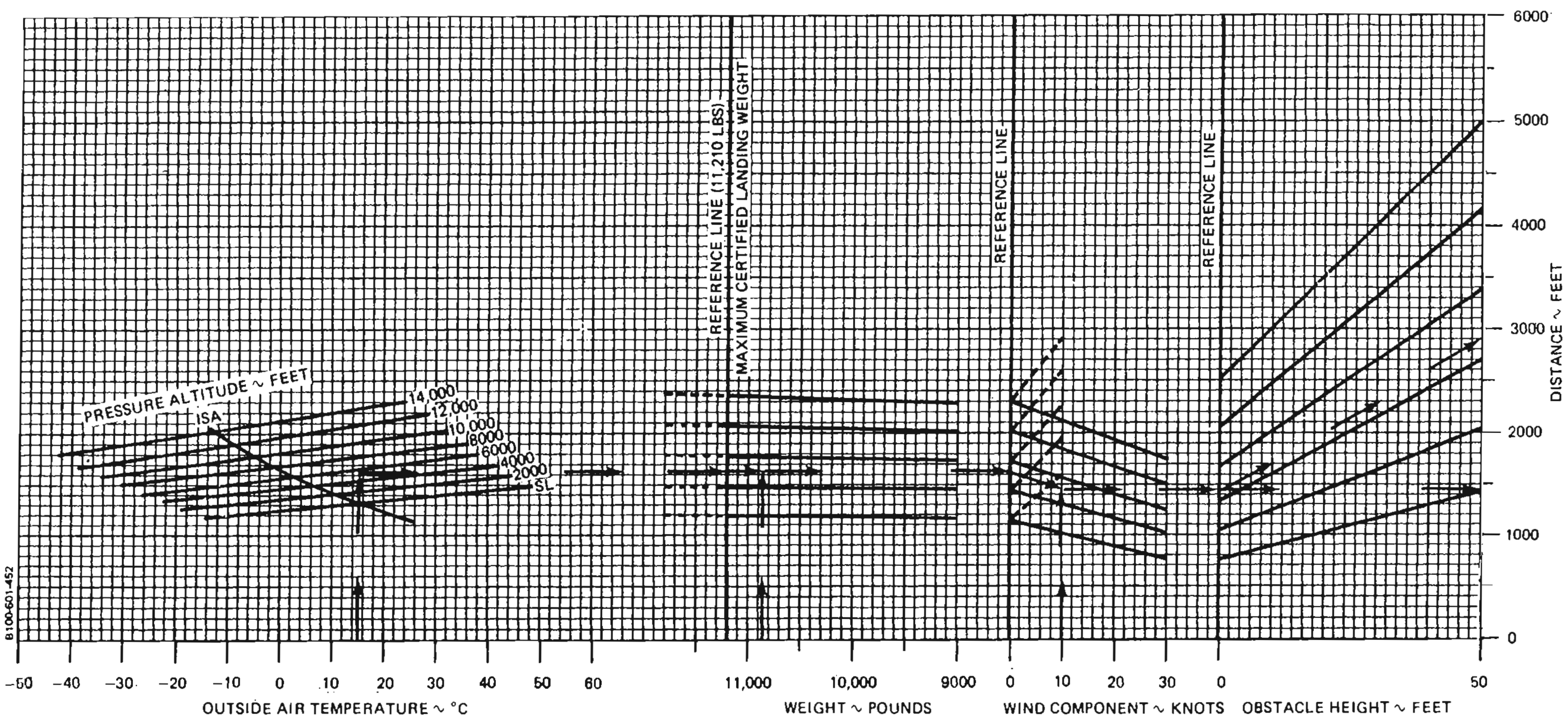
WEIGHT ~ LBS	APPROACH SPEED ~ KTS
11,800	112
11,210	111
11,000	111
10,000	110
9 000	110

EXAMPLE:

OAT . . . . 15°C
PRESSURE ALTITUDE . . . . 5651 FT
LANDING WEIGHT . . . . 10,876 LBS
HEADWIND COMPONENT . . . . 10 KTS

GROUND ROLL . . . . 1450 FT
TOTAL OVER 50 FT OBSTACLE . . . . 2900 FT
APPROACH SPEED . . . . 111 KTS

NOTE: DISTANCES ASSUME THAT TOUCHDOWN SPEED IS APPROXIMATELY 20 KNOTS BELOW APPROACH SPEED. IF TOUCHDOWN SPEED IS ACCOMPLISHED 10 KNOTS BELOW THE APPROACH SPEED THE GROUND ROLL DISTANCE WILL INCREASE BY 31% WITH NO INCREASE IN THE TOTAL DISTANCE OVER A 50 FOOT OBSTACLE.



LANDING DISTANCE WITHOUT PROPELLER REVERSING

FLAPS 0%

ASSOCIATED CONDITIONS:

POWER . . . . RETARDED TO MAINTAIN 600 FT/MIN ON FINAL APPROACH
FLAPS 0%
RUNWAY . . . . PAVED, LEVEL, DRY SURFACE
BRAKING . . . MAXIMUM

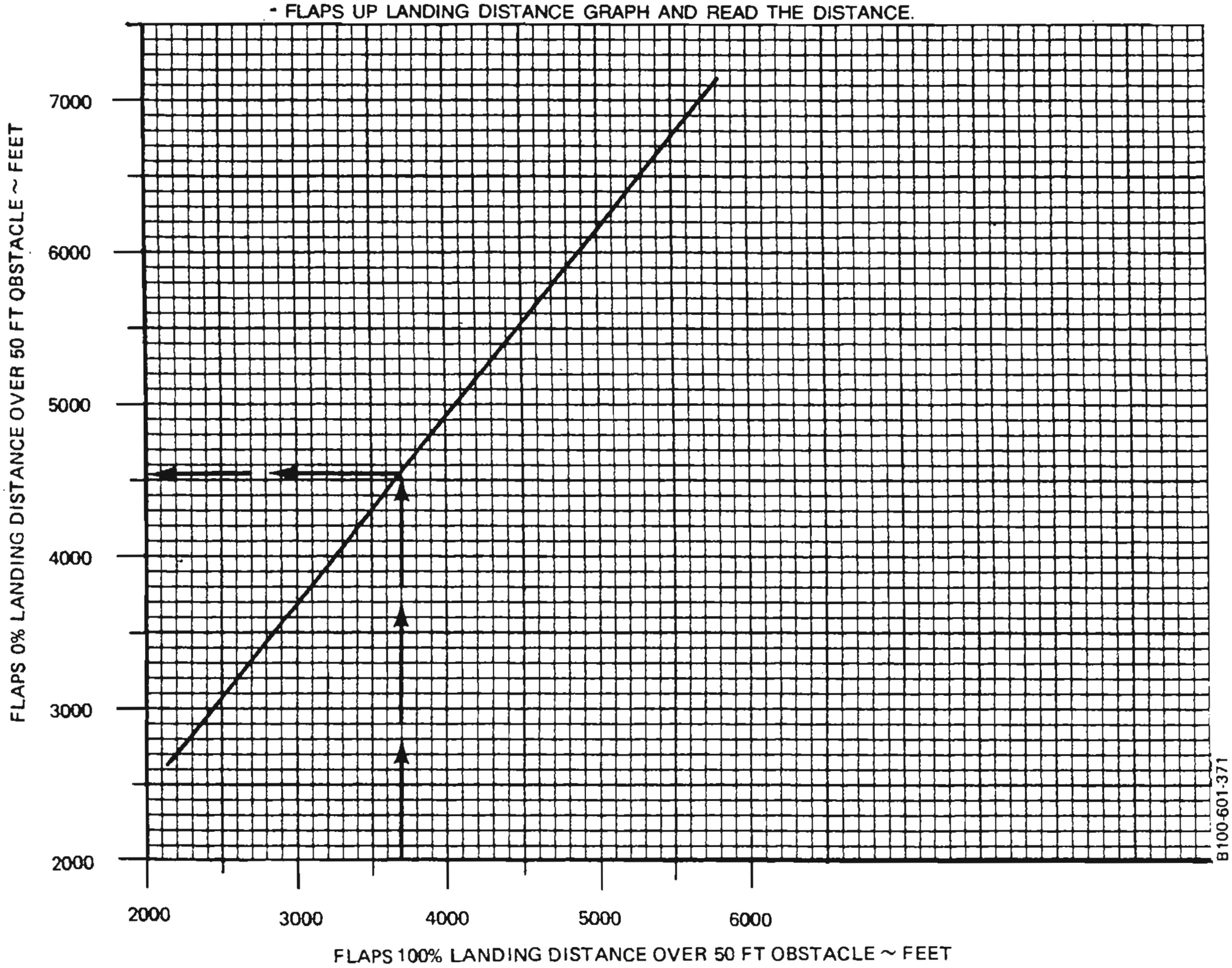
EXAMPLE:

FLAPS 100% LANDING DISTANCE OVER 50 FT OBSTACLE . . . . 3700 FT
LANDING WEIGHT . . . . 10,876 LBS

FLAPS UP LANDING DISTANCE OVER 50 FT OBSTACLE . . . . 4530 FT
APPROACH SPEED . . . . 118 KTS

WEIGHT ~ LBS	APPROACH SPEED ~ KTS
11,800	121
11,210	119
11,000	118
10,000	114
9000	111

NOTE:
1. LANDING WITH FLAPS FULL DOWN (100%) IS NORMAL PROCEDURE. USE THIS GRAPH WHEN IT IS NECESSARY TO LAND WITH FLAPS UP (0%).
2. TO DETERMINE FLAPS-UP LANDING DISTANCE, READ THE FLAPS 100% LANDING DISTANCE APPROPRIATE TO THE OAT, ALTITUDE, WEIGHT AND WIND FROM THE LANDING DISTANCE WITHOUT PROPELLER REVERSING-FLAPS 100% GRAPH. ENTER THE FLAPS UP LANDING DISTANCE GRAPH AND READ THE DISTANCE.



LANDING DISTANCE WITH PROPELLER REVERSING — FLAPS 100%

ASSOCIATED CONDITIONS:

POWER . . . . RETARDED TO MAINTAIN 1000 FT/MIN ON FINAL APPROACH
FLAPS. 100%
RUNWAY. . . . . PAVED, LEVEL, DRY SURFACE
APPROACH SPEED. . . . IAS AS TABULATED
BRAKING . . . . MAXIMUM

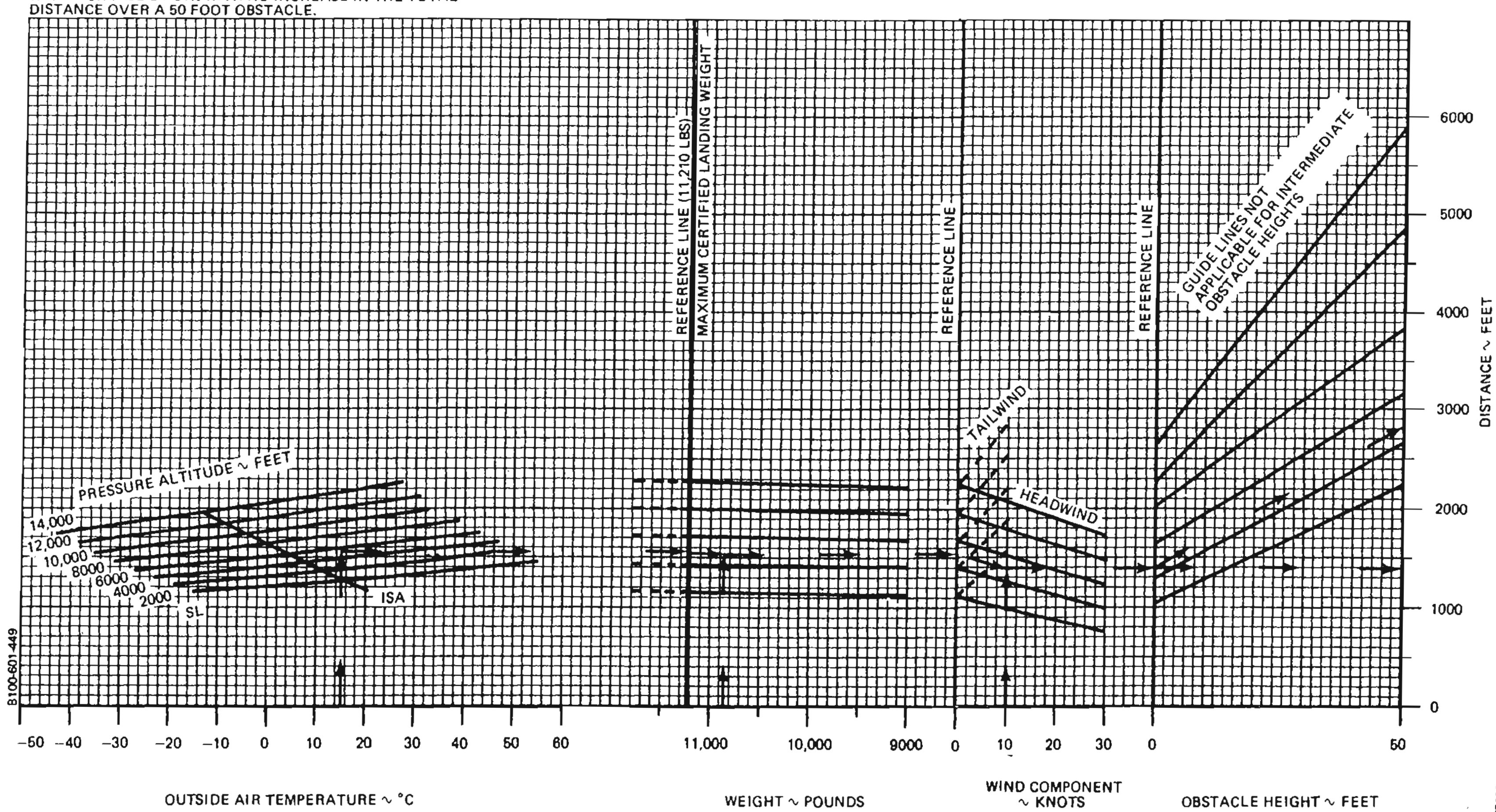
WEIGHT ~ POUNDS	APPROACH SPEED ~ KNOTS
11,800	112
11,210	111
11,000	111
10,000	110
9 000	110

EXAMPLE:

OAT. . . . . 15°C
PRESSURE ALTITUDE . . . . 5651 FT
LANDING WEIGHT. . . . . 10,876 LBS
HEADWIND COMPONENT. . . . . 10 KTS

GROUND ROLL. . . . . 1400 FT
TOTAL OVER 50 FT OBSTACLE . . . . . . 2810 FT
APPROACH SPEED. . . . . 111 KTS

NOTE: DISTANCES ASSUME THAT TOUCHDOWN SPEED IS APPROXIMATELY 20 KNOTS BELOW APPROACH SPEED. IF TOUCHDOWN SPEED IS ACCOMPLISHED 10 KNOTS BELOW THE APPROACH SPEED THE GROUND ROLL DISTANCE WILL INCREASE BY 31% WITH NO INCREASE IN THE TOTAL DISTANCE OVER A 50 FOOT OBSTACLE.



(6.50 x 10 Dual Main Wheels)

SECTION VI

WEIGHT AND BALANCE / EQUIPMENT LIST

TABLE OF CONTENTS

DATE ______________________

SERIAL ______________________

REGISTRATION NO. ______________________

WEIGHING INSTRUCTIONS

Periodic weighing of the King Air B100 may be required to keep the Basic Empty Weight current. Frequency of weighing is to be determined by the operator. All changes to the airplane affecting weight and/or balance are the responsibility of the airplane operator.

1. Airplane may be weighed on wheels or jack points. Three jack points are provided with one on the nose section of the fuselage at station 83.5 and two on the wing center section rear spar at station 225.5. Wheel reaction locations should be measured as described in paragraph 6 below.

2. Fuel should be drained preparatory to weighing. Tanks are drained from the regular drain ports with the airplane in static ground attitude. When tanks are drained, 8 pounds of unusable fuel remains in the airplane at an arm of 188 inches. The remainder of the unusable fuel to be added to a drained system is 32 pounds at station 167. If the airplane is weighed with full fuel the fuel specific weight (pounds/gallon) should be determined by using a hydrometer. Compute total fuel weight and moment using fuel tables.

3. Engine oil must be at the full level in each tank. Total engine oil aboard when both tanks are full is 42 pounds at an arm of 107 inches.

4. To determine airplane configuration at time of weighing, installed equipment is checked against the airplane equipment list or superceding forms. All equipment must be in its proper place during weighing.

5. The airplane is placed on the scales in level attitude. Leveling screws are located on the fuselage entrance door frame. Leveling is accomplished with a plumb bob. Jack pad leveling may require the nose gear shock to be secured in the static position to prevent its extension. Wheel weighings can be leveled by varying the amounts of air in the shocks and tires.

6. Measurement of the reaction arms for a wheel weighing is made using the nose jacking point for a reference. Using a steel measuring tape, measurements are taken with the airplane level on the scales from the reference (a plumb bob hung from the center of the nose jacking point) to the axle center line of the nose gear and then from the nose gear axle center line to the main wheel axle center line. The main wheel axle center line is best located by stretching a string across from one main wheel to the other. All measurements are to be taken with the tape level with the hangar floor and parallel to the fuselage center line. The locations of the wheel reactions will be approximately at an arm of 209 inches for main wheels and 30 inches for the nose wheel.

7. The Basic Empty Weight and Moment are determined from the scale readings. Items weighed which are not part of the empty airplane are subtracted, i.e., usable fuel. Unusable fuel and engine oil are added if not already in the airplane.

8. Weighing should always be made in an enclosed area which is free from air currents. The scales used should be properly calibrated and certified.

NOTE

Each new airplane is delivered with a completed sample loading, empty weight and center of gravity, and equipment list, all pertinent to that specific airplane. It is the owner's responsibility to ensure that changes in equipment are reflected in a new weight and balance and in an addendum to the equipment list. There are many ways of doing this; it is suggested that a running tally of equipment changes and their effect on empty weight and c.g. is a suitable means for meeting both requirements.

The current equipment list and empty weight and c.g. information must be retained with the airplane when it changes ownership. Beech Aircraft Corporation cannot maintain this information; the current status is known only to the owner. If these papers become lost, the FAA will require that the airplane be reweighed to establish the empty weight and c.g. and that an inventory of installed equipment be conducted to create a new equipment list.

It is recommended that duplicate copies of the Basic Empty Weight and Balance sheet and the Equipment List be made and kept in an alternate location in the event the original handbook is misplaced.

BASIC EMPTY WEIGHT AND BALANCE

DATE: ______________ SERIAL NO: ______________________

REGISTRATION NO: ______________

PREPARED BY: ______________

STRUT POSITION -	NOSE	MAIN
EXTENDED	29.4	208.5
COMPRESSED	30.8	210.5

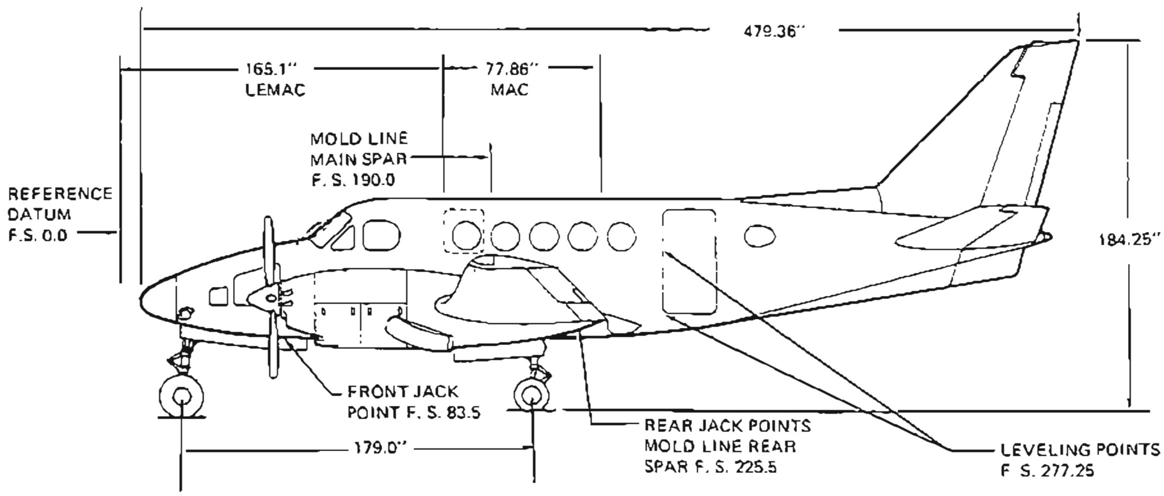
JACK POINT LOCATION	
FORWARD	83.5
AFT	225.5

REACTION WHEEL - JACK POINTS	SCALE READING	TARE	NET WEIGHT	STATION OR ARM	MOMENT
LEFT MAIN					
RIGHT MAIN					
SUB TOTAL					
NOSE					
TOTAL (AS WEIGHED)					

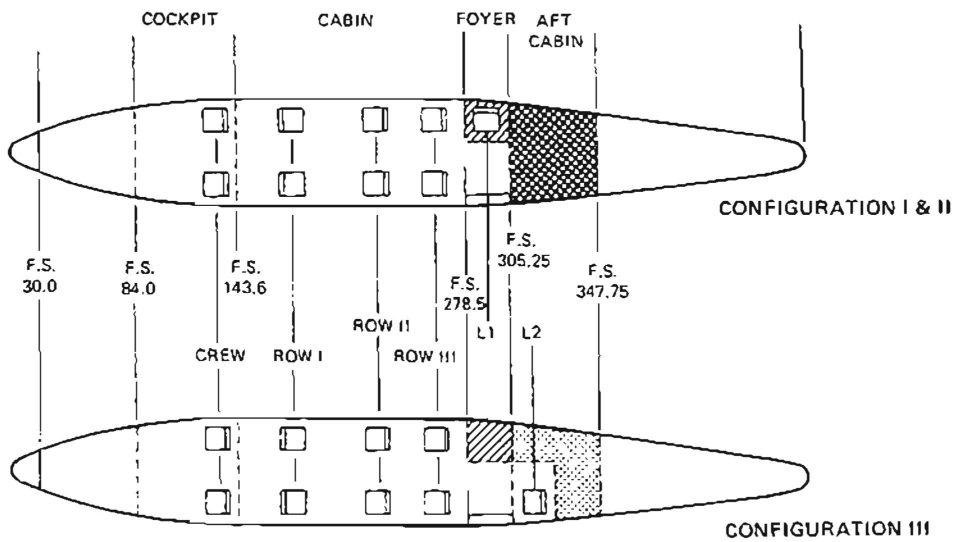
SPACE BELOW PROVIDED FOR ADDITIONS AND SUBTRACTIONS TO AS WEIGHED CONDITION

EMPTY WEIGHT			
ENGINE OIL UNUSABLE FUEL	42 40	107 171	4494 6840
BASIC EMPTY WEIGHT			

DIMENSIONAL AND LOADING DATA



STANDARD SEATING



OCCUPANT	CENTROID
CREW	F.S. 129.0
ROW I	F.S. 174.0
ROW II	F.S. 220.0
ROW III	F.S. 254.0
L1	F.S. 292.0
L2	F.S. 314.0

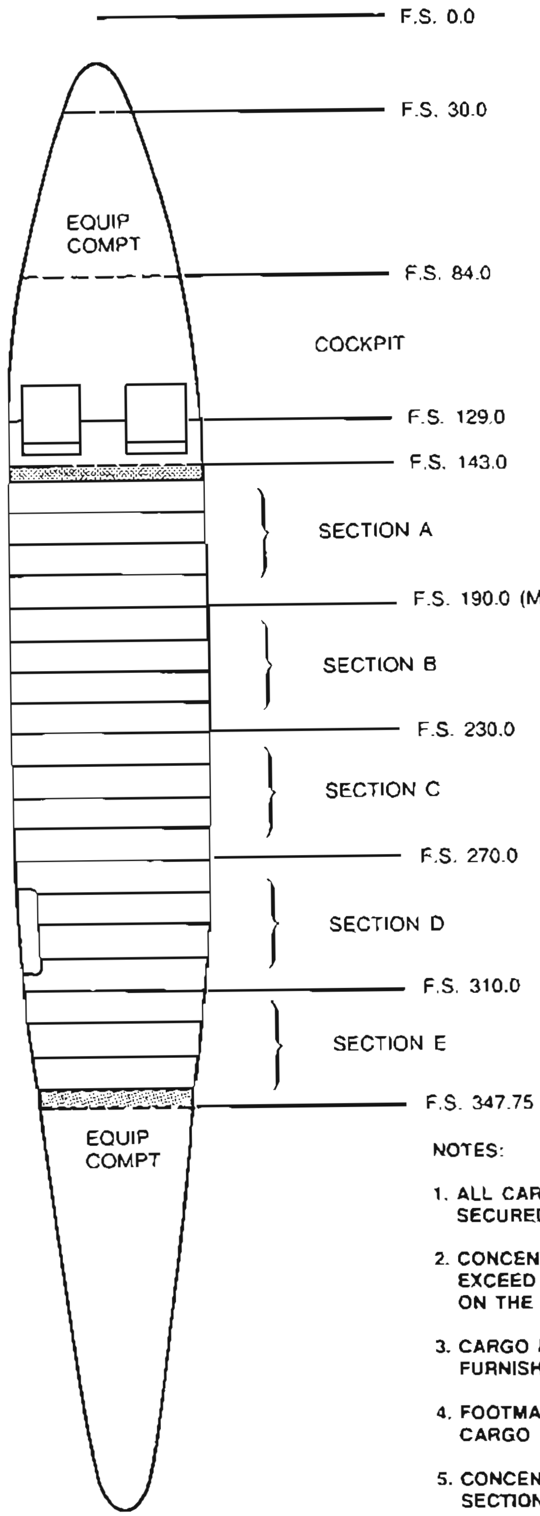
CONFIGURATION	BAGGAGE COMPARTMENT	BAGGAGE CAPACITY	CENTROID
I - SIDE PASSENGER SEAT AND TOILET	FOYER	150	F.S. 292.0
	AFT CABIN	410	F.S. 325.0
II - SIDE TOILET	FOYER	150	F.S. 292.0
	AFT CABIN	410	F.S. 325.0
III - AFT PASSENGER SEAT AND TOILET	FOYER	150	F S. 292.0
	AFT CABIN	200 & 370 *	F.S. 332.0 & 325.0

NOTE: Loading data for standard configurations only
** Increase aft baggage to 370 pounds when compartment is not occupied by a passenger. Foyer is not equipped for loose baggage; clothing on hangers may be hung from the rod provided.*

B100-603-432

DIMENSIONAL AND LOADING DATA

CARGO CONFIGURATION



SECTION	MAXIMUM	CENTROID ARM
A	880 LBS.	F.S 167
B	860 LB.	F.S 210
C	830 LB.	F.S. 250
D	550 LB.	F.S. 290
E	410 LB.	F.S. 325

CARGO TIEDOWN PROVISIONS ARE NOT PROVIDED. CARGO MAY BE SUPPORTED UPON AND TIED DOWN TO THE SEAT TRACKS, BY AN FAA APPROVED RESTRAINT SYSTEM.

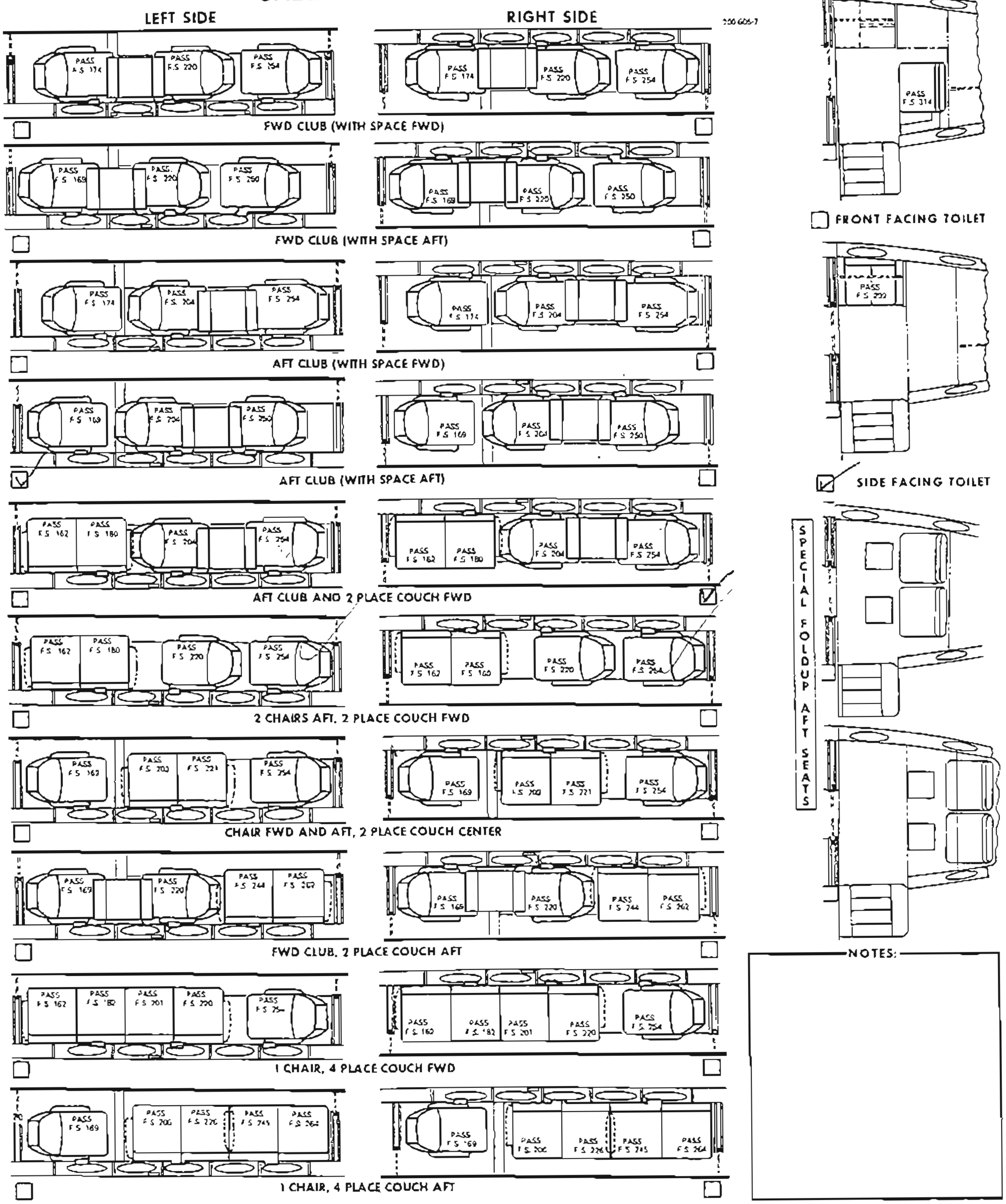
NOTES:

1. ALL CARGO IN SECTIONS A, B & C MUST BE SUPPORTED ON AND SECURED TO THE SEAT TRACKS BY AN FAA APPROVED SYSTEM.
2. CONCENTRATED CARGO LOADS IN SECTIONS A, B, & C MUST NOT EXCEED 200 LBS. PER SQUARE FOOT & MUST BE SUPPORTED ON THE SEAT RAILS.
3. CARGO IN SECTION D & E IS TO BE SECURED BY BEECH FURNISHED BAGGAGE NET, WEBBING, OR STRAPS.
4. FOOTMAN LOOPS IN SECTION D & E ARE TO BE USED TO SECURE CARGO BAGGAGE IN THAT AREA ONLY.
5. CONCENTRATED FLOOR LOADINGS OF CARGO OR BAGGAGE IN SECTION D & E MUST NOT EXCEED 100 LBS. PER SQUARE FOOT.
6. ANY EXCEPTIONS TO THE ABOVE PROCEDURES WILL REQUIRE APPROVAL BY A LOCAL FAA OFFICE.

B100-603-504

WEIGHT AND BALANCE

CABIN ARRANGEMENT DIAGRAM



The cabin seating may be arranged in different combinations. The diagrams marked X above represent the seating arrangement established for this airplane prior to delivery. The passenger locations shown on the designated diagram are averages. Additional data for modified arrangements are noted. No diagrams are included for Hi-density variations.

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

USE COLUMNS MARKED x →	CREW	CHAIR POSITIONS					
	F.S. 129	F.S. 169	F.S. 174	F.S. 204	F.S. 220	F.S. 250	F.S. 254
		X		X		X	X
WEIGHT	MOMENT/100						
80	103	135	139	163	176	200	203
90	116	152	157	184	198	225	229
100	129	169	174	204	220	250	254
110	142	186	191	224	242	275	279
120	155	203	209	245	264	300	305
130	168	220	226	265	286	325	330
140	181	237	244	286	308	350	356
150	194	254	261	306	330	375	381
160	206	270	278	326	352	400	406
170	219	287	296	347	374	425	432
180	232	304	313	367	396	450	457
190	245	321	331	388	418	475	483
200	258	338	348	408	440	500	508
210	271	355	365	428	462	525	533
220	284	372	383	449	484	550	559
230	297	389	400	469	506	575	584
240	310	406	418	490	528	600	610

OCCUPANTS

USE COLUMNS MARKED x →	AFT FOLD-UP SEATS		LAVATORY SEAT		
	F.S. 316	F.S. 330	F.S. 292	F.S. 314	F.S. 335
			X		
WEIGHT	MOMENT/100				
80	253	264	234	251	268
90	284	297	263	283	302
100	316	330	292	314	335
110	348	363	321	345	369
120	379	396	350	377	402
130	411	429	380	408	436
140	442	462	409	440	469
150	474	495	438	471	503
160	506	528	467	502	536
170	537	561	496	534	570
180	569	594	526	565	603
190	600	627	555	597	637
200	632	660	584	628	670
210	664	693	613	659	704
220	695	726	642	691	737
230	727	759	672	722	771
240	758	792	701	754	804

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

USE COLUMNS MARKED x →	FOUR PLACE COUCH							
	FORWARD POSITION				AFT POSITION			
	F.S. 162	F.S. 182	F.S. 201	F.S. 220	F.S. 206	F.S. 226	F.S. 245	F.S. 264
WEIGHT	MOMENT/100							
80	130	146	161	176	165	181	196	211
90	146	164	181	198	185	203	221	238
100	162	182	201	220	206	226	245	264
110	178	200	221	242	227	249	270	290
120	194	218	241	264	247	271	294	317
130	211	237	261	286	268	294	319	343
140	227	255	281	308	288	316	343	370
150	243	273	302	330	309	339	368	396
160	259	291	322	352	330	362	392	422
170	275	309	342	374	350	384	417	449
180	292	328	362	396	371	407	441	475
190	308	346	382	418	391	429	466	502
200	324	364	402	440	412	452	490	528
210	340	382	422	462	433	475	515	554
220	356	400	442	484	453	497	539	581
230	373	419	462	506	474	520	564	607
240	389	437	482	528	494	542	588	634

OCCUPANTS

USE COLUMNS MARKED x →	TWO PLACE COUCH					
	FORWARD		CENTER		AFT	
	F.S. 162	F.S. 180	F.S. 203	F.S. 221	F.S. 244	F.S. 262
	X	X				
WEIGHT	MOMENT/100					
80	130	144	162	177	195	210
90	146	162	183	199	220	236
100	162	180	203	221	244	262
110	178	198	223	243	268	288
120	194	216	244	265	293	314
130	211	234	264	287	317	341
140	227	252	284	309	342	367
150	243	270	305	332	366	393
160	259	288	325	354	390	419
170	275	306	345	376	415	445
180	292	324	365	398	439	472
190	308	342	386	420	464	498
200	324	360	406	442	488	524
210	340	378	426	464	512	550
220	356	396	447	486	537	576
230	373	414	467	508	561	603
240	389	432	487	530	586	629

USEFUL LOAD WEIGHTS AND MOMENTS

BAGGAGE

WEIGHT	(Clothing on Hangers) FOYER F.S. 292	AFT CABIN F.S. 325 CONFIGURATIONS I & II*	AFT CABIN F.S. 332 CONFIGURATION III*
	MOMENT/100		
10	29	33	33
20	58	65	66
30	88	98	100
40	117	130	133
50	146	163	166
60	175	195	199
70	204	228	232
80	234	260	266
90	263	293	299
100	292	325	332
200		650	664
300		975	
370		1203	
400		1300	
410		1333	

*Refer to DIMENSIONAL AND LOADING DATA, this section.

CABINET CONTENTS

WEIGHT	Chart Cases	Forward Cabinet	Aft Cabinet	Foyer Cabinet	Couch Drawers		
	F.S. 145	F.S. 155	F.S. 270	F.S. 284	F.S. 171	F.S. 212	F.S. 253
	MOMENT/100						
10	14	16	27	28	17	21	25
20	29	31	54	57	34	42	51
30	44	47	81	85	51	64	76
40	58	62	108	114			
50	72	78	135	142			
60		93	162	170			
70		109	189	199			
80		124	216	227			
90		140	243	256			
100		155	270	284			

USEFUL LOAD WEIGHTS AND MOMENTS

CARGO

	COMPARTMENT*				
	A F.S. 143-190	B F.S. 190-230	C F.S. 230-270	D F.S. 270-310	E F.S. 310-348
	CENTROID				
	F.S. 167	F.S. 210	F.S. 250	F.S. 290	F.S. 325
WEIGHT	MOMENT/100				
10	17	21	25	29	33
20	33	42	50	58	65
30	50	63	75	87	98
40	67	84	100	116	130
50	84	105	125	145	163
60	100	126	150	174	195
70	117	147	175	203	228
80	134	168	200	232	260
90	150	189	225	261	293
100	167	210	250	290	325
200	334	420	500	580	650
300	501	630	750	870	975
400	668	840	1000	1160	1300
410	685	861	1025	1189	1333
500	835	1050	1250	1450	
550	919	1155	1375	1595	
600	1002	1260	1500		
700	1169	1470	1750		
800	1336	1680	2000		
830	1386	1743	2075		
860	1436	1806			
880	1470				

NOTE: All cargo must be supported by the seat tracks in a uniform distribution and tied down to the tracks by an FAA approved method.

*Refer to LOADING DATA CARGO CONFIGURATION, this section.

USEFUL LOAD WEIGHTS AND MOMENTS

USABLE FUEL

	6.4 LB/GAL		6.5 LB/GAL		6.6 LB/GAL		6.7 LB/GAL	
GALLONS	WEIGHT	MOMENT/100	WEIGHT	MOMENT/100	WEIGHT	MOMENT/100	WEIGHT	MOMENT/100
10	64	99	65	100	66	102	67	103
20	128	198	130	201	132	204	134	207
30	192	297	195	302	198	306	201	311
40	256	423	260	430	264	437	268	443
50	320	540	325	548	330	557	335	565
60	384	661	390	671	396	681	402	692
70	448	785	455	797	462	810	469	822
80	512	908	520	922	528	936	536	951
90	576	1025	585	1041	594	1057	603	1073
100	640	1142	650	1160	660	1178	670	1196
110	704	1261	715	1280	726	1300	737	1320
120	768	1380	780	1402	792	1423	804	1445
130	832	1499	845	1522	858	1546	871	1569
140	896	1616	910	1642	924	1667	938	1692
150	960	1735	975	1762	990	1789	1005	1816
160	1024	1852	1040	1881	1056	1910	1072	1939
170	1088	1971	1105	2002	1122	2033	1139	2064
180	1152	2090	1170	2122	1188	2155	1206	2188
190	1216	2208	1235	2243	1254	2277	1273	2312
200	1280	2323	1300	2360	1320	2396	1340	2432
210	1344	2437	1365	2475	1386	2513	1407	2551
220	1408	2551	1430	2591	1452	2631	1474	2671
230	1472	2664	1495	2706	1518	2748	1541	2789
240	1536	2779	1560	2823	1584	2866	1608	2910
250	1600	2896	1625	2941	1650	2986	1675	3031
260	1664	3012	1690	3059	1716	3106	1742	3153
270	1728	3131	1755	3180	1782	3228	1809	3277
280	1792	3247	1820	3298	1848	3349	1876	3399
290	1856	3365	1885	3418	1914	3470	1943	3523
300	1920	3483	1950	3537	1980	3592	2010	3646
310	1984	3602	2015	3658	2046	3715	2077	3771
320	2048	3720	2080	3778	2112	3836	2144	3894
330	2112	3839	2145	3899	2178	3959	2211	4019
340	2176	3961	2210	4023	2244	4085	2278	4147
350	2240	4084	2275	4147	2310	4211	2345	4275
360	2304	4209	2340	4275	2376	4341	2412	4407
370	2368	4336	2405	4404	2442	4471	2479	4539
380	2432	4460	2470	4530	2508	4600	2546	4669
388	2483	4554	2522	4625	2561	4697	2600	4768
400	2560	4709	2600	4783	2640	4856	2680	4930
410	2624	4839	2665	4914	2706	4990	2747	5065
420	2688	4967	2730	5045	2772	5123	2814	5200
430	2752	5097	2795	5176	2838	5256	2881	5336
440	2816	5229	2860	5311	2904	5393	2948	5474
450	2880	5360	2925	5443	2970	5527	3015	5611
460	2944	5494	2990	5579	3036	5665	3082	5751
470	3008	5626	3055	5713	3102	5801	3149	5889

LOADING INSTRUCTIONS

It is the responsibility of the airplane operator to insure that the airplane is properly loaded. At the time of delivery, Beech Aircraft Corporation provides the necessary weight and balance data to compute individual loadings. All subsequent changes in airplane weight and balance are the responsibility of the airplane owner and/or operator.

The basic empty weight and moment of the airplane at the time of delivery are shown on the Basic Empty Weight and Balance form. Useful load items which may be loaded into the airplane are shown on the Useful Load Weight and Moment tables. The minimum and maximum moments approved by the FAA are shown on the Moment Limits vs Weight graph or table. These moments correspond to the forward and aft center of gravity flight limits for a particular weight. All moments are divided by 100 to simplify computations.

COMPUTING PROCEDURE

1. Record the basic empty weight and moment from the Basic Empty Weight and Balance form (or from the latest superseding forms). The moment must be divided by 100 to correspond to Useful Load Moments.

2. Record the weight and corresponding moment of each item to be carried. These values are found on the Useful Load Weight and Moment tables.

3. Total the weight column and moment column. The total weight without usable fuel must not exceed the Zero Fuel Weight limitations of 9600 pounds. All weight in excess of this limitation must be fuel in the main fuel system. The auxiliary tanks may be used only when the main tanks are completely filled. The total weight must not exceed the maximum allowable gross weight and the total moment must be within the minimum and maximum moments shown on the Moment Limits vs. Weight table or graph.

4. Using the USEFUL LOAD, WEIGHTS AND MOMENTS tables in this section, determine the weight and corresponding moment of fuel to be used by subtracting the amount on board on landing from the amount on board at take-off.

5. For landing configuration weight and balance subtract the weight and moment of fuel to be used from the take-off weight and moment. The landing weight must not exceed 11,210 pounds. The landing moment must be within the minimum and maximum moments shown on Moment Limits vs Weight table or graph for that weight. If the total moment is less than the minimum moment allowed, useful load items must be shifted aft, or forward load items reduced. If the total moment is greater than the maximum moment allowed, useful load items must be shifted forward, or aft load items reduced. If the quantity or location of load items is changed, the calculations must be revised and the moments rechecked.

6. Loadings may be made on the Weight and Balance Loading Form.

WEIGHT AND BALANCE LOADING FORM

SERIAL NO:	REGISTRATION NO:	DATE:

PAYLOAD COMPUTATIONS

ITEM PASSENGERS OR CARGO — NO. LOCATION (ROW, F.S., ETC)	WEIGHT	MOM/100
BAGGAGE		
CABINET CONTENTS		
TOTAL PAYLOAD		

REF	ITEM	WEIGHT	MOM/100
1.	BASIC EMPTY COND.		
2.	PILOT		
3.	PILOT'S BAGGAGE		
4.	EXTRA EQUIPMENT		
5.	TOTAL PAYLOAD		
6.	SUB TOTAL ZERO FUEL COND. DO NOT EXCEED 9600 LBS		
7.	FUEL LOADING		
8.	SUB TOTAL RAMP CONDITION		
9.	*LESS FUEL FOR START, TAXI, AND TAKE-OFF		
10.	SUB TOTAL TAKE-OFF CONDITION		
11.	LESS FUEL TO DESTINATION		
12.	LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 75 lbs at an average moment/100 of 155

WEIGHT AND BALANCE LOADING FORM

SERIAL NO:	REGISTRATION NO:	DATE:

PAYLOAD COMPUTATIONS		
ITEM PASSENGERS OR CARGO NO. LOCATION (ROW, F.S., ETC)	WEIGHT	MOM/100
BAGGAGE		
CABINET CONTENTS		
TOTAL PAYLOAD		

REF	ITEM	WEIGHT	MOM/100
1.	BASIC EMPTY COND.		
2.	PILOT		
3.	PILOT'S BAGGAGE		
4.	EXTRA EQUIPMENT		
5.	TOTAL PAYLOAD		
6.	SUB TOTAL ZERO FUEL COND. DO NOT EXCEED 9600 LBS		
7.	FUEL LOADING		
8.	SUB TOTAL RAMP CONDITION		
9.	*LESS FUEL FOR START, TAXI, AND TAKE-OFF		
10.	SUB TOTAL TAKE-OFF CONDITION		
11.	LESS FUEL TO DESTINATION		
12.	LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 75 lbs at an average moment/100 of 155

WEIGHT AND BALANCE LOADING FORM

SERIAL NO:	REGISTRATION NO:	DATE:

PAYLOAD COMPUTATIONS		
ITEM PASSENGERS OR CARGO NO. LOCATION (ROW, F.S., ETC)	WEIGHT	MOM/100
BAGGAGE		
CABINET CONTENTS		
TOTAL PAYLOAD		

REF	ITEM	WEIGHT	MOM/100
1.	BASIC EMPTY COND.		
2.	PILOT		
3.	PILOT'S BAGGAGE		
4.	EXTRA EQUIPMENT		
5.	TOTAL PAYLOAD		
6.	SUB TOTAL ZERO FUEL COND. DO NOT EXCEED 9600 LBS		
7.	FUEL LOADING		
8.	SUB TOTAL RAMP CONDITION		
9.	*LESS FUEL FOR START, TAXI, AND TAKE-OFF		
10.	SUB TOTAL TAKE-OFF CONDITION		
11.	LESS FUEL TO DESTINATION		
12.	LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 75 lbs at an average moment/100 of 155

WEIGHT AND BALANCE LOADING FORM

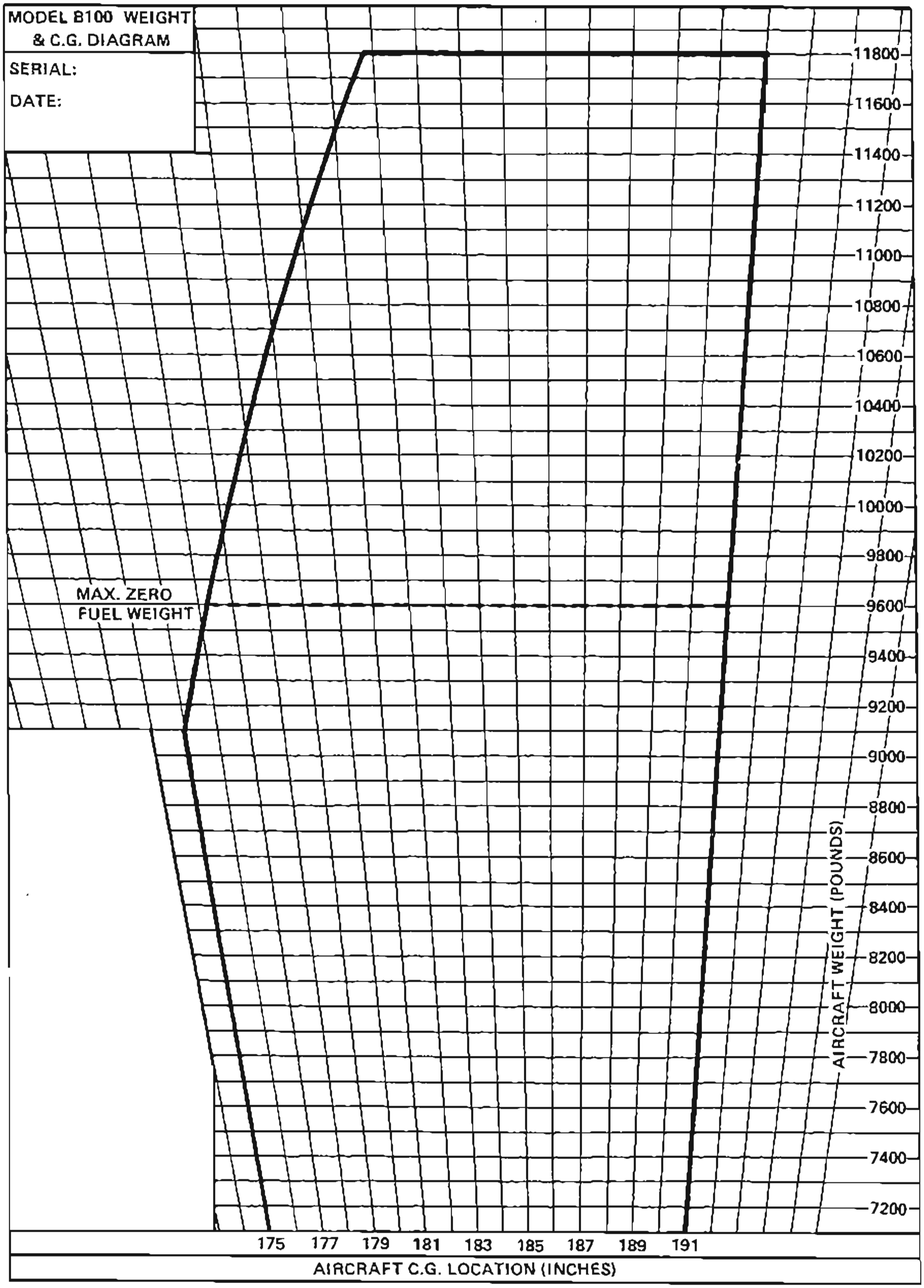
SERIAL NO:	REGISTRATION NO:	DATE:

PAYLOAD COMPUTATIONS		
ITEM PASSENGERS OR CARGO NO. LOCATION (ROW, F.S., ETC)	WEIGHT	MOM/100
BAGGAGE		
CABINET CONTENTS		
TOTAL PAYLOAD		

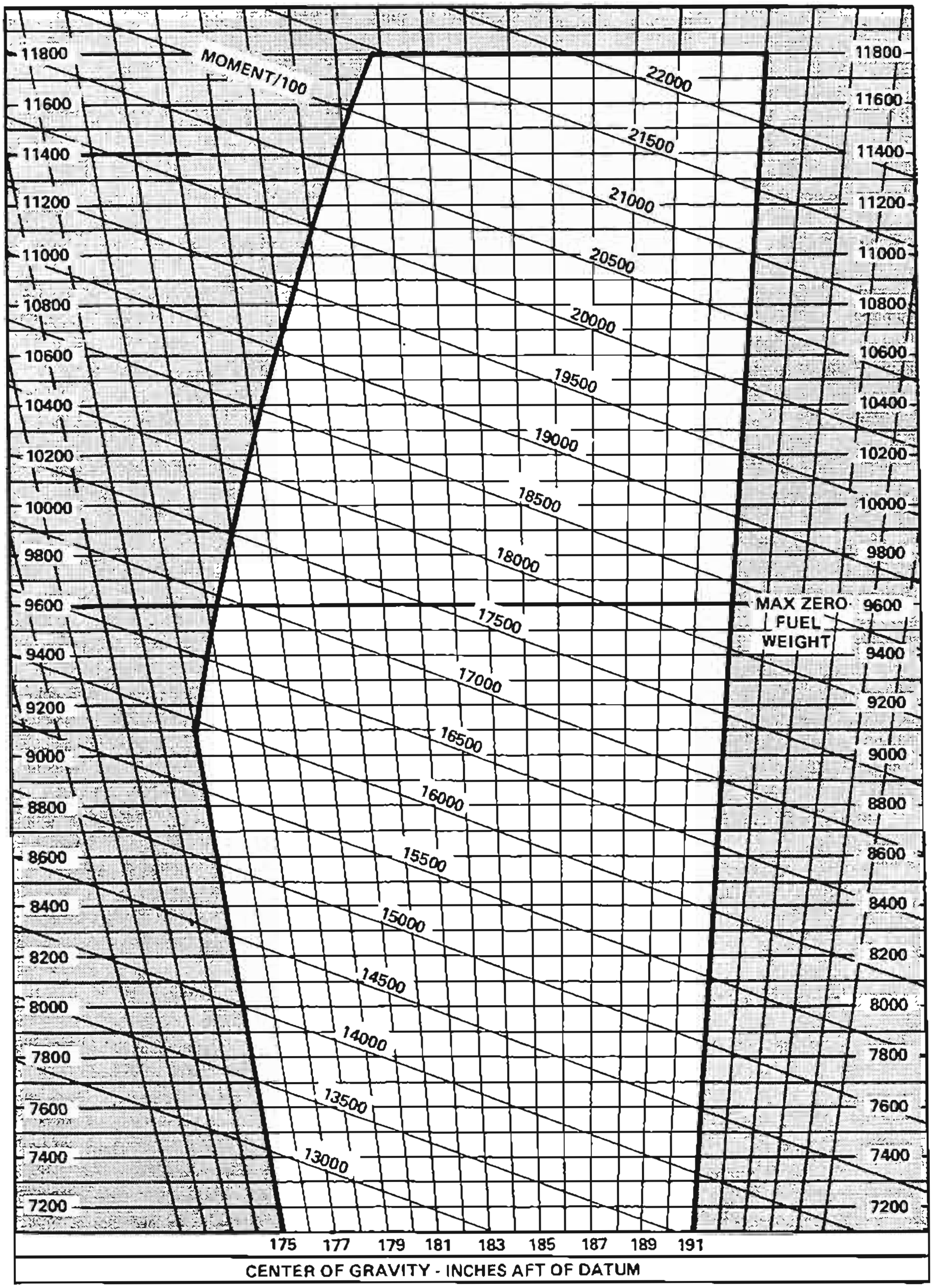
REF	ITEM	WEIGHT	MOM/100
1.	BASIC EMPTY COND.		
2.	PILOT		
3.	PILOT'S BAGGAGE		
4.	EXTRA EQUIPMENT		
5.	TOTAL PAYLOAD		
6.	SUB TOTAL ZERO FUEL COND. DO NOT EXCEED 9600 LBS		
7.	FUEL LOADING		
8.	SUB TOTAL RAMP CONDITION		
9.	*LESS FUEL FOR START, TAXI, AND TAKE-OFF		
10.	SUB TOTAL TAKE-OFF CONDITION		
11.	LESS FUEL TO DESTINATION		
12.	LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 75 lbs at an average moment/100 of 155

WEIGHT AND C.G. DIAGRAM



MOMENT LIMITS VS WEIGHT GRAPH



Bragg Avionics, Inc. • 855 N. St. Johns Bluff Road • Jacksonville, FL 32225
(904) 564-1717 • (904) 564-1718 • braggave@bellsouth.net • FAA Repair Station #UV1R546K

04/03/09 King Air B100 SN BE-126 N248JH

Weight and Balance

Previous Information Date: 10/18/2007 from Weight and Balance

Item	In/Out	Weight	Arm	Moment
Previous Information	~	7746.24	179.95	1393908.22
Narco ELT 110 and Antenna	Out	-5.00	382.00	-1910.00
C406-1 ELT Unit	In	3.36	382.00	1283.52
452-5050 Mounting Tray	In	0.44	382.00	168.08
452-3052 Top Cover	In	0.42	382.00	160.44
452-5052 Mount Cap	In	0.24	382.00	91.68
110-340 Antenna	In	1.40	382.00	534.80
Totals	~	7747.10	179.97	1394236.74

1394236.74 (total moment) divided by 7747.10 (new empty weight) equals 179.97 (new CG)

The new empty weight is 7747.10 pounds.

The new empty center of gravity is 179.97 inches aft of datum.

The new useful load is 4127.90 pounds at 11875.00 gross weight.

See Aircraft Flight Manual for center of gravity limits.

Signature: ____________

BRAGG AVIATION ELECTRONICS, INC.
JACKSONVILLE, FLORIDA 32225
CRAIG AIRPORT (904) 641-8533
FAA Approved Repair Station UV1R546K

AIRCRAFT WEIGHT & BALANCE REPORT

Weight & Balance changes dated: 10/18/2007

Previous information dated 11/3/2006 from Weight & Balance

AIRCRAFT TYPE:	BEECH		MODEL::	B100		
SERIAL #:	BE-126		REGISTRATION #:	N248JH		
ITEM	IN		OUT	WEIGHT	ARM	MOMENT
PREVIOUS INFORMATION	~		~	7746.24	179.95	1393908.22
GARMIN GNS 500 GPS	~		X	-7.20	101.00	-727.20
GARMIN GA-56 GPS ANTENNA	~		X	-0.50	117.00	-58.50
GARMIN GNS500W MFD/GPS	X		~	7.20	101.00	727.20
GARMIN GA-35 WAAS GPS ANT.	X		~	0.50	117.00	58.50
TOTALS	~		~	7746.24	179.95	1393908.22

1393908.22 (total moment) divided by 7746.24 (new empty weight) equals 179.95 (new CG)

The new empty weight is 7746.24 pounds.

The new empty center of gravity is 179.95 inches aft of datum.

The new useful load is 4128.76 pounds at 11875 gross weight.

See Aircraft Flight Manual for center of gravity limits.

Signature: ______________________ Date: 10/18/2007

4-8-09
superced

BRAGG AVIATION ELECTRONICS, INC.
JACKSONVILLE, FLORIDA 32225
CRAIG AIRPORT (904) 641-8533
FAA Approved Repair Station UV1R546K

AIRCRAFT WEIGHT & BALANCE REPORT

Supercd
10-18-07

Weight & Balance changes dated: 11/3/2006

Previous information dated 3/21/2005 from Weight & Balance

AIRCRAFT TYPE:	BEECH	MODEL::		B100	
SERIAL #:	BE-126	REGISTRATION #:		N248JH	
ITEM	IN	OUT	WEIGHT	ARM	MOMENT
PREVIOUS INFORMATION	~	~	7739.90	180.12	1394120.10
GARMIN GA 55 ANTENNA	X	~	0.50	128.00	64.00
GARMIN GDL 69 DATA LINK	X	~	2.80	76.00	212.80
GARMIN GMA 340 AUDIO PANEL	X	~	1.70	106.00	180.20
AMERIKING AK 551-18M INV.	X	~	3.50	75.00	262.50
L3 SKY 497 RT 805-10800-001	X	~	9.82	79.00	775.78
L3 SKY 497 ANT 805-10890-001	X	~	2.30	158.00	363.40
SIGTRONICS SPA400 ICS	~	X	-0.28	102.00	-28.56
COLLINS 356C-4 ISO AMP	~	X	-1.00	72.00	-72.00
COLLINS 356F-3 SPK AMP	~	X	-2.00	72.00	-144.00
AVTECH 50-384199 FILTER	~	X	-1.00	72.00	-72.00
WIRING & PLUGS	~	X	-3.00	85.00	-255.00
PIONEER KP 575 STEREO		X	-5.00	271.00	-1355.00
AUDIO AMP 50-384191	~	X	-2.00	72.00	-144.00
TOTALS	~	~	7746.24	179.95	1393908.22

1393908.22 (total moment) divided by 7746.24 (new empty weight) equals 179.95 (new CG)

The new empty weight is 7746.24 pounds.

The new empty center of gravity is 179.95 inches aft of datum.

The new useful load is 4128.76 pounds at 11875.00 gross weight.

See Aircraft Flight Manual for center of gravity limits.

Signature: [signature] Date: 11/3/2006

BRAGG AVIATION ELECTRONICS, INC.
JACKSONVILLE, FLORIDA 32225
CRAIG AIRPORT (904) 641-8533
FAA Approved Repair Station UV1R546K

SUPPLEMENTAL EQUIPMENT LIST

AIRCRAFT TYPE: BEECH		MODEL:: B100			
SERIAL #: BE-126		REGISTRATION N248JH			
ITEM	**IN**	**OUT**	**WEIGHT**	**ARM**	**MOMENT**
GARMIN GA 55 ANTENNA	X	~	0.50	128.00	64.00
GARMIN GDL 69 DATA LINK	X	~	2.80	76.00	212.80
GARMIN GMA 340 AUDIO PANEL	X	~	1.70	106.00	180.20
AMERIKING AK 551-18M INV.	X	~	3.50	75.00	262.50
L3 SKY 497 RT 805-10800-001	X	~	9.82	79.00	775.78
L3 SKY 497 ANT 805-10890-001	X	~	2.30	158.00	363.40

Signature: [signature] Date: 11-3-06

U.S. Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only
Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1000 for each such violation (Section 901 Federal Aviation Act of 1958)

1. Aircraft	Make: Beech	Model: B100
	Serial No: BE-126	Nationality and Registration Mark N248JH
2. Owner	Name (As shown on registration certificate) EXECUTIVE AIR TRANSPORTATION LLC	Address (As shown on registration certificate) 3511 SILVERSIDE RD STE 105 WILMINGTON, DELAWARE 19810

3. For FAA Use Only

4. Unit Identification				5. Type	
Unit	**Make**	**Model**	**Serial No.**	**Repair**	**Alteration**
Airframe	---------- (As described in Item 1 above) ----------				X
Powerplant					
Propeller					
Appliance	Type Mnfctr				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency		C. Certificate No.
Bragg Avionics Inc. 855 St. Johns Bluff Rd. Jacksonville, Florida 32225		U.S. Certificated Mechanic	UV1R546K
		Foreign Certificated Mechanic	
	X	Certificated Repair Station	
		Manufacturer	

D. I certify that the repair and/or alteration to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: 4/03/09	Signature of Authorized Individual

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is (X) Approved ( )Rejected

BY		FAA Flt. Standards Inspector		Manufacturer		Inspection Authorization	Other (specify)
		FAA Designee	X	Repair Station		Person Appr. by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
4/03/09	UV1R546K	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N248JH

Remove Narco ELT110 system and install new Artex C-406-1 ELT system in same location provided by manufacturer. This includes ELT unit, antenna, remote switch/annunciator assembly and buzzer. This unit was tested and inspected in accordance with FAR 91.207D.

To ensure continued reliability and airworthiness this ELT will be inspected annually per FAR 91.409. FAR 43 Appendix D.

The unit(s) are installed in accordance with the factory installation manual(s).

Artex 570-5001 Rev. B.

This installation was accomplished in accordance with: AC 43.13-1B, Chapter 5, Section 1, Chapter 11, Section 2, 3, 4, 5, 7, AC 43.13-2A.

A ground test was performed and found satisfactory.

This installation will not cause a hazard to other aircraft systems, or operation of the aircraft, or it's occupants.

The calculated electrical load remains within 80% of the system capacity.

The aircraft weight has been revised.

1. Introduction: Artex C-406-1, 110-340, 452-5050, 345-6196-04, 130-4004, 452-5052, 452-3052, 455-7421.
2. Description: Artex C-406-1 is a 406MHz ELT unit. 110-340 is an ELT antenna. 452-5050 is a mounting tray. 345-6196-04 is a remote switch. 130-4004 is a remote buzzer. 452-5052 is a mount cap. 452-3052 is a top cap. 455-7421 is an install kit.
3. Control Ops Info: Consult owner's manuals for OPS.
4. Service Information: Unit(s) will notify operator of service needs.
5. Maintenance Information: Unit(s) will notify operator of any failures.
6. Trouble Shooting Information: Unit(s) has self test.
7. Removal and Replacement Information: Power off, unscrew remove, reverse to install.
8. Diagrams: None
9. Special Inspections: None
10. Application of Special Treatments: None
11. Data Relative: None
12. List of Special Tools: None
13. Commuter Category Requirements: None
14. Recommended Overhaul Periods: None
15. Airworthiness Limitations: None
16. Revision: For any revisions to these instructions for continued airworthiness, a letter will be submitted to the local FAA FSDO.

--END--

_____Additional Sheets Are Attached

U.S. Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only
Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1000 for each such violation (Section 901 Federal Aviation Act of 1958)

1. Aircraft	Make: BEECH	Model: B100
	Serial No: BE-126	Nationality and Registration Mark N248JH
2. Owner	Name (As shown on registration certificate) EXECUTIVE KING AIR TRANSPORTATION INC	Address (As shown on registration certificate) 3511 SILVERSIDE RD STE 105 WILMINGTON, DELAWARE 19810-4902

3. For FAA Use Only

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
Airframe	(As described in Item 1 above)				X
Powerplant					
Propeller					
Appliance	Type / Mnfctr				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency		C. Certificate No.
Bragg Aviation Electronics Inc. 855 St. Johns Bluff Rd. Jacksonville, Florida 32225		U.S. Certificated Mechanic	UV1R546K
		Foreign Certificated Mechanic	
	X	Certificated Repair Station	
		Manufacturer	

D. I certify that the repair and/or alteration to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: 10/18/07	Signature of Authorized Individual

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is (X) Approved ( )Rejected

BY							
		FAA Flt. Standards Inspector		Manufacturer		Inspection Authorization	Other (specify)
		FAA Designee	X	Repair Station		Person Appr. by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
10/18/07	UV1R546K	

FAA Form 337

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N248JH

Validated that the previous installation of one GNS 500 was installed IAW with Garmin instructions and approved via an FAA stamped field approval document on FAA form 337 dated 03/21/05. Verified this aircraft and all interfaced equipment are covered under the STC AML. This unit was removed and upgraded to a GNS 500W. The existing location of this unit was determined to meet the field of view requirements without the need for external annunciation. The existing RG400 coax meets the new requirements. The existing wiring and shielding was inspected and determined to be IAW the STC AML installation data. The existing GA 56 Antenna was removed and replaced with a GA 35 Antenna using the approved mounting provisions of the previous installation.

A summary of modification done to the aircraft is as follows:

1. Removed Garmin GA 56 Antenna P/N 011-00134-00 and installed Garmin GA 35 Antenna P/N 013-00235-00in the same location using the provisions left behind from the standard antenna IAW with Garmin upgrade manual P/N 190-00357-06 revision A and STC SA01933LA.

2. Remove Garmin GNS 500 P/N 011-00863-00 and installed Garmin GNS 500W P/N 011-01063-40 in the same location using the provisions left behind from the standard antenna IAW with Garmin upgrade manual P/N 190-00357-06 revision A and STC SA01933LA.

3. The GNS 500W was configured identical to the original 500 unit. Each interface was checked out IAW the 500W installation manual P/N 190-00357-02 section 5. A copy of the checkout log was completed and included with the aircraft maintenance records.

4. Removed the aircraft flight manual supplement for the GNS 500 and installed a GNS 500W AFMS P/N 190-00356-63 , FAA approved date 12/21/06 into the aircraft flight manual.

5. Updated the aircraft equipment list and weight and balance to reflect the new WAAS unit. The current electrical analysis remains valid since the new unit draws the same or less as the original unit.

Instructions for continued airworthiness:

1. GNS 500W - Included Garmin document P/N 190-00356-65, GNS 500W instructions for continued airworthiness in the aircraft maintenance records.

1. Introduction: Garmin GNS 500W, GA 35
2. Description: Garmin GNS 500W is a MFD and WAAS GPS, GA 35 is a WAAS GPS Antenna
3. Control Ops Info: Consult owner's manuals for OPS.
4. Service Information: Unit(s) will notify operator of service needs.
5. Maintenance Information: Unit(s) will notify operator of any failures.
6. Trouble Shooting Information: Unit(s) has self test.
7. Removal and Replacement Information: Power off, unscrew remove, reverse to install.
8. Diagrams: None
9. Special Inspections: None
10. Application of Special Treatments: None
11. Data Relative: None
12. List of Special Tools: None
13. Commuter Category Requirements: None
14. Recommended Overhaul Periods: None
15. Airworthiness Limitations: None
16. Revision: For any revisions to these instructions for continued airworthiness, a letter will be submitted to the local FAA FSDO.

———END———

____Additional Sheets Are Attached

U.S. Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification

INSTRUCTIONS Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1000 for each such violation (Section 901 Federal Aviation Act of 1958)

1. Aircraft	Make: BEECH	Model: B100
	Serial No: BE-126	Nationality and Registration Mark N248JH
2. Owner	Name (As shown on registration certificate) EXECUTIVE KING AIR TRANSPORTATION INC	Address (As shown on registration certificate) 3511 SILVERSIDE RD STE 105 WILMINGTON, DELAWARE 19810-4902

3. For FAA Use Only

4. Unit Identification / **5. Type**

Unit	Make	Model	Serial No.	Repair	Alteration
Airframe	(As described in Item 1 above)				X
Powerplant					
Propeller					
Appliance	Type / Mnfctr				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency		C. Certificate No.
Bragg Aviation Electronics Inc. 855 St. Johns Bluff Rd. Jacksonville, Florida 32225		U.S. Certificated Mechanic	UV1R546K
		Foreign Certificated Mechanic	
	X	Certificated Repair Station	
		Manufacturer	

D. I certify that the repair and/or alteration to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: 11/3/06	Signature of Authorized Individual

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is (X) Approved ( )Rejected

BY							
		FAA Flt. Standards Inspector		Manufacturer		Inspection Authorization	Other (specify)
		FAA Designee	X	Repair Station		Person Appr. by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No	Signature of Authorized Individual
11/3/06	UV1R546K	

FAA Form 337

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N48JH

INSTALLED GARMIN GMA 340 AUDIO PANEL IN TOP OF CENTER AVIONICS STACK AND WIRE INTO SYSTEM. INSTALLED GARMIN GDL 69 DATA LINK RECEIVER IN NOSE COMPARTMENT ON AVIONICS SHELF, CO-PILOT SIDE. WIRE DATA LINK INTO EXISTING GARMIN GPS 500 DISPLAY. INSTALLED GARMIN GA-55 DATA LINK ANTENNA ON TOP OF AIRCRAFT TO SKIN ABOVE CO-PILOT SEAT AT STATION #127.75. INSTALLED AMERIKING AK-551-18M VOLTAGE CONVERTOR IN NOSE COMPARTMENT ON AVIONICS SHELF. THE GA 55 ANTENNA WAS INSTALLED IN ACCORDANCE WITH FAA FORM 8110-3 DATED 9/15/06, APPROVED BY DERT-230290-CE.

There is no preventative maintenance required on the installed equipment. The unit(s) are installed in accordance with the factory installation manual(s).

This installation was accomplished in accordance with: AC 43.13-1B, Chapter 5, Section 1, Chapter 11, Section 2, 3, 4, 5, 7, AC 43.13-2A, Chapter 2, 3.

A ground test was performed and found satisfactory.

This installation will not cause a hazard to other aircraft systems, or operation of the aircraft, or it's occupants.

The calculated electrical load remains within 80% of the system capacity.

The aircraft weight and balance has been revised.

1. Introduction: GARMIN GMA 340, GARMIN GDL 69, GARMIN GA-55, AMERIKING AK-551-18M.
2. Description: GARMIN GMA 340 IS AN AUDIO PANEL, GARMIN GDL 69 IS A DATA LINK RECEIVER, GARMIN GA-55 IS A DATA LINK ANTENNA, AMERIKING AK-551-18M IS A VOLTAGE CONVERTOR.
3. Control Ops Info: Consult owner's manuals for OPS.
4. Service Information: Unit(s) will notify operator of service needs.
5. Maintenance Information: Unit(s) will notify operator of any failures.
6. Trouble Shooting Information: Unit(s) has self test.
7. Removal and Replacement Information: Power off, unscrew remove, reverse to install.
8. Diagrams: None
9. Special Inspections: None
10. Application of Special Treatments: None
11. Data Relative: None
12. List of Special Tools: None
13. Commuter Category Requirements: None
14. Recommended Overhaul Periods: None
15. Airworthiness Limitations: None
16. Revision: For any revisions to these instructions for continued airworthiness, a letter will be submitted to the local FAA FSDO.

---END---

_____Additional Sheets Are Attached

U.S. Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed $1000 for each such violation (Section 901 Federal Aviation Act of 1958)

1. Aircraft	Make: BEECH	Model: B100
	Serial No: BE-126	Nationality and Registration Mark N248JH
2. Owner	Name (As shown on registration certificate) EXECUTIVE KING AIR TRANSPORTATION INC	Address (As shown on registration certificate) 3511 SILVERSIDE RD STE 105 WILMINGTON, DELAWARE 19810-4902

3. For FAA Use Only

4. Unit Identification				5. Type	
Unit	**Make**	**Model**	**Serial No.**	**Repair**	**Alteration**
Airframe	(As described in Item 1 above)				X
Powerplant					
Propeller					
Appliance	Type Mnfctr				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency		C. Certificate No.
Bragg Aviation Electronics Inc. 855 St. Johns Bluff Rd. Jacksonville, Florida 32225		U.S. Certificated Mechanic	UV1R546K
		Foreign Certificated Mechanic	
	X	Certificated Repair Station	
		Manufacturer	

D. I certify that the repair and/or alteration to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: 11/3/06	Signature of Authorized Individual

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is (X) Approved ( )Rejected

BY							
		FAA Flt. Standards Inspector		Manufacturer		Inspection Authorization	Other (specify)
		FAA Designee	X	Repair Station		Person Appr. by Transport Canada Airworthiness Group	

Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual
11/3/06	UV1R546K	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N48JH

INSTALLED L3 SKY 497 RT P/N 805-10800-001 IN NOSE COMPARTMENT ON AVIONICS SHELF, CO-PILOT SIDE. INSTALLED L3 SKY 497 ANTENNA P/N 805-10890-001 ON TOP OF AIRCRAFT TO SKIN AT STATION 151.75. WIRE SYSTEM INTO EXISTING GARMIN GPS 500 DISPLAY. THE SKY 497 ANTENNA WAS INSTALLED IN ACCORDANCE WITH FAA FORM 8110-3 DATED 9/15/06, APPROVED BY DERT-230290-CE. THIS SYSTEM WAS INSTALLED IN ACCORDANCE WITH STC #SA00733CH AS A FOLLOW ON APPROVAL REFERENCE BULLETIN FSAW 98-04B. AN FAA APPROVED FLIGHT MANUAL SUPPLEMENT WAS PROVIDED AND PLACED IN THE AIRCRAFT FLIGHT MANUAL.
There is no preventative maintenance required on the installed equipment. The unit(s) are installed in accordance with the factory installation manual(s).
This installation was accomplished in accordance with: AC 43.13-1B, Chapter 5, Section 1, Chapter 11, Section 2, 3, 4, 5, 7, AC 43.13-2A, Chapter 2, 3.
A ground test was performed and found satisfactory.
This installation will not cause a hazard to other aircraft systems, or operation of the aircraft, or it's occupants.
The calculated electrical load remains within 80% of the system capacity.
The aircraft weight and balance has been revised.

1. Introduction:L3 SKY 497 RT P/N 805-10800-001, L3 SKY 497 P/N 805-10890-001.
2. Description: L3 SKY 497 RT P/N 805-10800-001 IS A TRAFFIC ADVISORY SYSTEM RECEIVER/TRANSMITTER, L3 SKY 497 P/N 805-10890-001 IS AN L BAND ANTENNA.
3. Control Ops Info: Consult owner's manuals for OPS.
4. Service Information: Unit(s) will notify operator of service needs.
5. Maintenance Information: Unit(s) will notify operator of any failures.
6. Trouble Shooting Information: Unit(s) has self test.
7. Removal and Replacement Information: Power off, unscrew remove, reverse to install.
8. Diagrams: None
9. Special Inspections: None
10. Application of Special Treatments: None
11. Data Relative: None
12. List of Special Tools: None
13. Commuter Category Requirements: None
14. Recommended Overhaul Periods: None
15. Airworthiness Limitations: None
16. Revision: For any revisions to these instructions for continued airworthiness, a letter will be submitted to the local FAA FSDO.

————————————END————————————

_____Additional Sheets Are Attached

communications

Avionics Systems
5353 52nd Street, S.E.
Grand Rapids, MI 49512-9704, USA
Tel: 616-949-6600
www.l-3com.com/as

November 2, 2006

Michael Bragg
Bragg Aviation Electronics
855 North St. Johns Bluff Rd

Subject: STC SA00733CH Permission for Use

Dear Mr. Michael Bragg,

L-3 Communications Avionics Systems, Inc. (hereafter L-3) is granting Bragg Aviation Electronics permission to use STC SA00733CH which installs the L-3 SkyWatch 497.

The STC and the associated data may be used with this written permission from L-3 as a reference for follow on field approvals of SkyWatch 497.

If you have any questions in regard to this letter, please contact me at 616-285-4283 or e-mail lina.spross@l-3com.com.

Regards,

Lina Spross

Lina Spross
Engineering Manager,
Avionics Certification

cc: Carl Groening

United States of America

Department of Transportation -- Federal Aviation Administration

Supplemental Type Certificate

Number SA00733CH

This certificate issued to BFGoodrich Avionics Systems, Inc.
1105 Schrock Road, Suite 800
Columbus, OH 43229-0229

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 23 *of the* Federal Aviation *Regulations.*

Original Product - Type Certificate Number: A23CE

Make: Beech

Model: 58P ; 58TC

Description of Type Design Change:
Installation of BFGoodrich Avionics Systems, Inc. SkyWatch Model SKY497 Traffic Advisory System (TAS) in accordance with BFGoodrich Drawing List 497-00, Rev. B, dated November 17, 1997, or later FAA approved revision.

Limitations and Conditions:
1. Compatibility of this design change with previously approved modifications must be determined by the installer.
2. BFGoodrich Airplane Flight Manual Supplement, Drawing No. 497-01, Rev. A, FAA approved August 20, 1997, or later FAA approved revision, is required on board for operation of the modified aircraft.

(See continuation sheet 3 of 3)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: May 13, 1997

Date reissued:

Date of issuance: August 20, 1997

Date amended: February 23, 1998

By direction of the Administrator

Roy E Boffo for
(Signature)
Charles L. Smalley
Manager, Systems and Flight Test Branch
Chicago Aircraft Certification Office
(Title)

FEDERAL AVIATION ADMINISTRATION

 This certificate may be transferred in accordance with FAR 21.47.

United States of America

Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number SA00733CH

Date of Issuance: August 20, 1997
Date Amended: February 23, 1998

Limitations and Conditions (Continued):

3. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

...END...

Aircraft Weight and Balance Revision

Tail Number: **N248JH**			Date: 21 March 2005	
Prepared by: Timothy Kearns Albatross Air Inc 380 Airport Circle Beaver WV 25813			Work Order No: Type Certificate Data No:	
Aircraft Make: Beech	Model: B100		Serial No: BE-126	Time: 1350
Registered Owner: JLEE Industries LLC			Address: PO Box 1189 Beaver WV 25813-1189	
Maximum Weight 11,875			CG Range FWD 181.75 AFT 191	

As Received; Date of Previous Weight and Balance:	Useful Load:	EW:	EWCG:	Moment:
26 Dec 2002	4127	7748	180.02	1394803.5

Notes:

	Weight	Arm	Moment
KLN90B GPS receiver	-6.3	102	-642.60
KA92 GPS antenna	-0.5	117	-58.50
RNAV 612 indicator	-3.0	102	-306.00
Collins ADF-60A receiver and mount	-5.0	72	-360.00
Gables ADF control	-1.0	102	-102.00
	0.00	0.00	0.00
Garmin 500 GPS with TAWS	7.2	101	727.20
Garmin GA56 GPS antenna	0.5	117	58.50
	0.00	0.00	0.00
	0.00	0.00	0.00

Supercede 11-3-06

		New Empty Weight CG	New Useful Load
X As Calculated As Weighed	Moment 1394120.10 Weight 7739.90	180.12	4135.10

Signature [signature]

Repair Agency or License No: 2693851 A&P

ALBATROSS AIR, INC.

380 Airport Circle
Beaver WV 25813
304-255-2717

Weight and Balance Data Sheet

Registration	Model	Serial No.	Date
N123WH	B100	BE-126	12/26/02

	Weight	Arm	Moment
Aircraft as weighed................	10897		1983703.5
Less useable fuel................	-3149	187	-588900
New Totals....................	**7748**	**180.02**	**1,394,803.5**

SUPERCEDED
21 MARCH 2005

New Empty weight...............	**7748**
New Arm C.G......................	**180.02**
New Moment	**1,394,803.5**
New Useful Load..................	**4052**

Timothy D Kearns
2693851 A&P

Weight and Balance Report

MAKE Beech MODEL B100 SERIAL # BE-126 REGISTRATION # N123WH

DATUM IS 14" forward of the radome

1. Leveling bubble level on the aft baggage compartment floorboard, plumb bob to the cabin
2. Main wheel weighing point is 225.5 inches aft aft of datum.
3. Actual measured distance from the main weight point centerline to the tail (or nose) point 142 inches.
4. Date of scale calibration 10/29/2002

SUPERSEDED 21 MARCH 2005

Actual Empty Weight

Weight Point	Scale Reading	Tare	Net Weight
5. Right	4235	0	4235
6. Left	3327	0	3327
7. Tail/Nose	3335	0	3335
8. Total Net Weight			10897

CENTER OF GRAVITY AS WEIGHED

9. C.G. relative to main wheel weighing point:

$$C.G. = \frac{\text{Item 3} \times \text{Item 7}}{\text{Item 8}} = 43.46$$ inches forward of main wheel weighing

10. C.G. relative to datum:

C.G. = Item 9 + Item 2 = 182.04 inches aft of datum.

Authorized Signature

A&P mechanic
Title

2693851
Cert. Number

December 26, 2002
Date

Aircraft weighed with full fuel.

TULSAIR BEECHCRAFT INC.
2845 N. SHERIDAN
TULSA, OK. 74115
CRS HMGR732E

ADDITIONAL EQUIPMENT LIST / REVISED WEIGHT AND BALANCE

REG NO: N123WH
A/C MAKE: BEECH
A/C MODEL: B100
A/C S/N: BE126

DATE: 2-26-98
TACH:
WORK ORDER #: 14912
SUPERCEDED DATE: 1-10-97

****

	WEIGHT	ARM	MOMENT
PREVIOUS A/C EMPTY	7653.00	179.68	1375114.00
REMOVED ITEMS			
820 GPS RECV	3.00	102.00	306.00
AT575-9 GPS ANT	0.50	117.00	58.50
INSTALLED ITEMS			
KLN90B GPS RECV	6.30	102.00	642.60
KA92 GPS ANT	0.50	117.00	58.50
AI S240-35 SW	0.45	93.00	41.85
NEW A/C EMPTY	7656.75	179.64	1375492.50

SUPERCEDED 12/26/02

NEW A/C E.W. : 7656.75
NEW A/C C.G. : 179.64
NEW USEFUL LOAD : 4143.25

JAMES MADDUX

AUTHORIZED SIGNATURE
TULSAIR BEECHCRAFT INC.
2845 N. SHERIDAN
TULSA, OK. 74115
CRS HMGR732E

ABOVE INSTALLATION PERFORMED
IN ACCORDANCE WITH MANUFACTURERS
SPECIFICATIONS AND IS APPROVED
FOR RETURN TO SERVICE

****

SECTION VII

SYSTEMS DESCRIPTIONS

TABLE OF CONTENTS

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AIRFRAME

STRUCTURE

The Beechcraft King Air B100 is an all-metal, low-wing, twin-engine turbo propeller monoplane with retractable tricycle landing gear and a moveable horizontal stabilizer.

SEATING ARRANGEMENTS

The pilot and copilot seats are mounted in a separate forward compartment. Various configurations of passenger chairs and two- or four-place couch installations may be installed on the continuous tracks mounted on the cabin floor. One or two fold-up seats may be installed in the aft cabin area. The toilet is also equipped for use as a seat. Seating for up to 15 persons, including crew, is available. For additional information, refer to the "Cabin Arrangement Diagram" in Section VI, WEIGHT AND BALANCE/EQUIPMENT LIST.

FLIGHT CONTROLS

CONTROL SURFACES

The airplane is equipped with conventional ailerons, rudder, and a moveable horizontal stabilizer.

OPERATING MECHANISMS

The King Air B100 is provided with conventional dual controls. Nose gear steering is accomplished by use of the individually adjustable rudder pedals. Control surfaces are operated through push-pull rods and conventional cable systems terminating in bellcranks. Trim tabs on the rudder and left aileron are adjustable with controls mounted on the center pedestal through closed cable systems with drive jackscrew-type actuators. Position indicators for the trim tabs are integrated with their respective controls. Horizontal Stabilizer trim is accomplished through the Electric Pitch Trim system.

ELECTRIC HORIZONTAL STABILIZER

The King Air B100 is equipped with a dual electric horizontal stabilizer trim system. In normal use the system is activated by a pedestal mounted switch placarded PITCH TRIM-MAIN-ON-OFF, and operated with dual pitch trim switches on each control wheel. A switch for the standby system is adjacent to the main trim switch and is placarded PITCH TRIM-STDBY-ON-OFF. While the standby system is activated, movement of the stabilizers may be effected by the alternate switches to the left of the main pitch trim switch on the pedestal. These alternate switches then take the place of the thumb switches on the control wheel. The position of the horizontal stabilizer is shown by a pedestal mounted indicator.

Both the standby trim switches on the pedestal and the control wheel mounted trim switches are dual-element-type switches. Both switches on either system move together to operate the pitch trim. If only one switch is moved, the circuit should not be completed. A check of the switches is accomplished during the before takeoff check by moving the switches individually on both control wheels and on the pedestal. No one switch alone should operate the system; operation should occur only by movement of pairs of switches. Monitor the pitch trim indicator while operating individual switches. Any movement on the indicator denotes a malfunctioning system and takeoff should not be made.

The control wheel switches are placarded: PITCH TRIM-NOSE UP-NOSE DOWN and TRIM REL. By moving a pair of switches forward, the stabilizer will move to effect a nose-down trim condition. The movement of the stabilizers can be stopped immediately by returning the switches to the center (off) position. Moving the switches aft brings the airplane to a nose-up trim condition. In the event of a malfunction that causes the trim motor to continue to run after the thumb switch has been released, a push button on the side of the control wheel grip, placarded TRIM REL, acts to interrupt the circuit until the main switch can be turned off. Opposing the pilot's switches with the copilot's switches will cause the trim motion to stop.

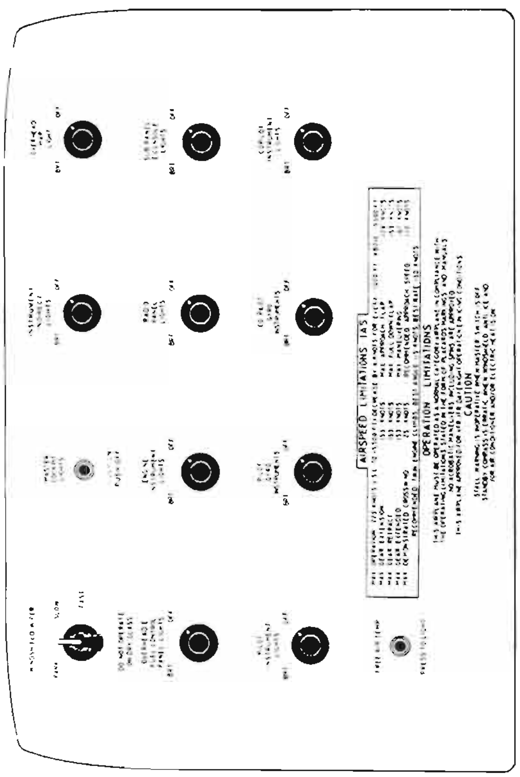
The standby switches on the pedestal operate in the same manner as the main switches; by movement of a pair of switches. The standby system has no trim release switch as does the main system, and is deactivated by moving the PITCH TRIM-STDBY switch to the OFF position.

An audio stabilizer movement system is installed to advise the pilot each time the trim system is activated. The signal is in the form of intermittent tones which come through the speaker or head phone while the stabilizer is in motion. This sound is independent of the radio system and will be heard any time the stabilizer moves.

An out-of-trim warning system is installed to advise the pilot of a mistrim condition during takeoff. A switch is installed on the left throttle quadrant which will activate the warning horn if the stabilizer trim is not set for takeoff. A squat switch on the landing gear will deactivate the system on liftoff so that the trim can function, in any position within its range, without the horn sounding.

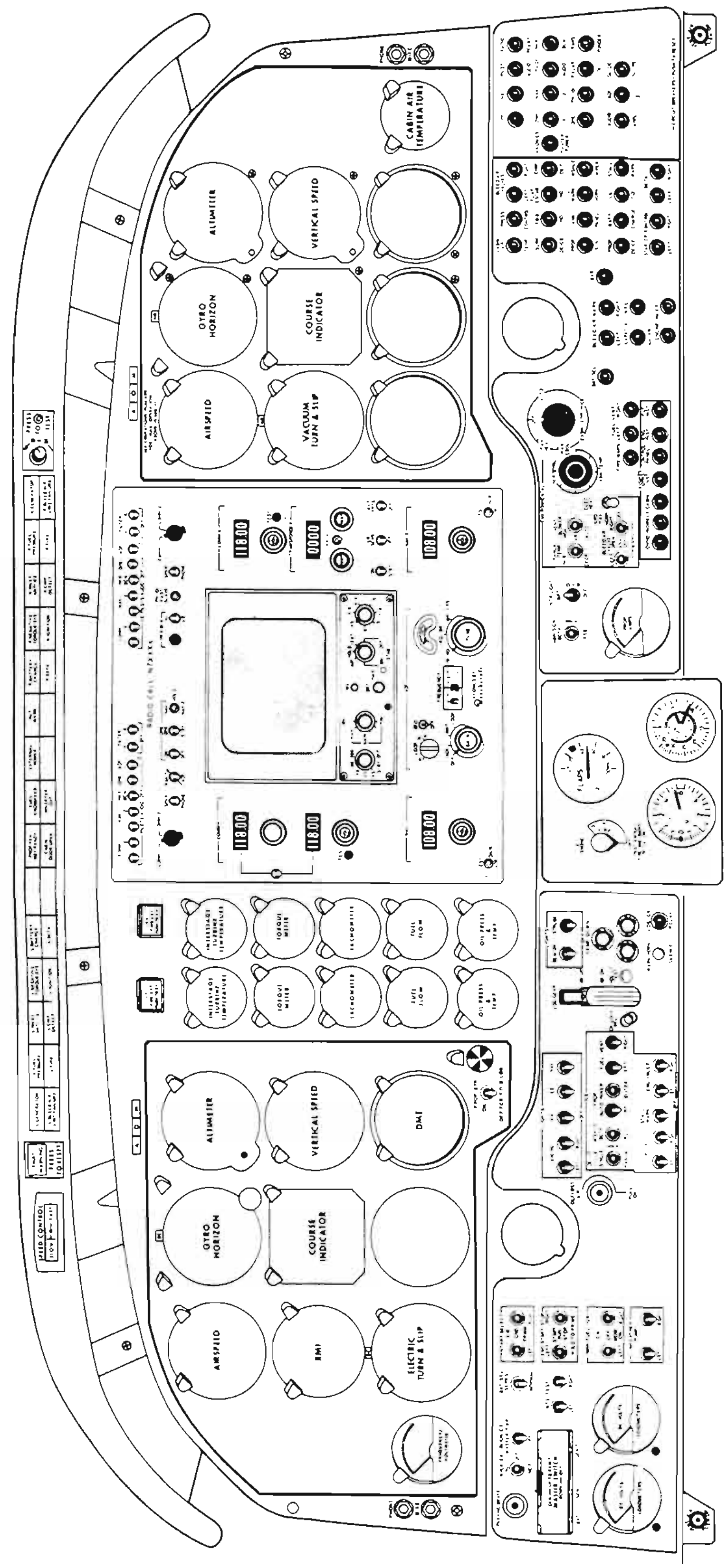
INSTRUMENT PANEL

The floating instrument panel design allows the flight instruments to be arranged in a group directly in front of the pilot and the copilot. Complete pilot and copilot flight instrumentation is installed, including dual navigation systems, two course indicators, dual gyro horizons, and dual turn and slip indicators.

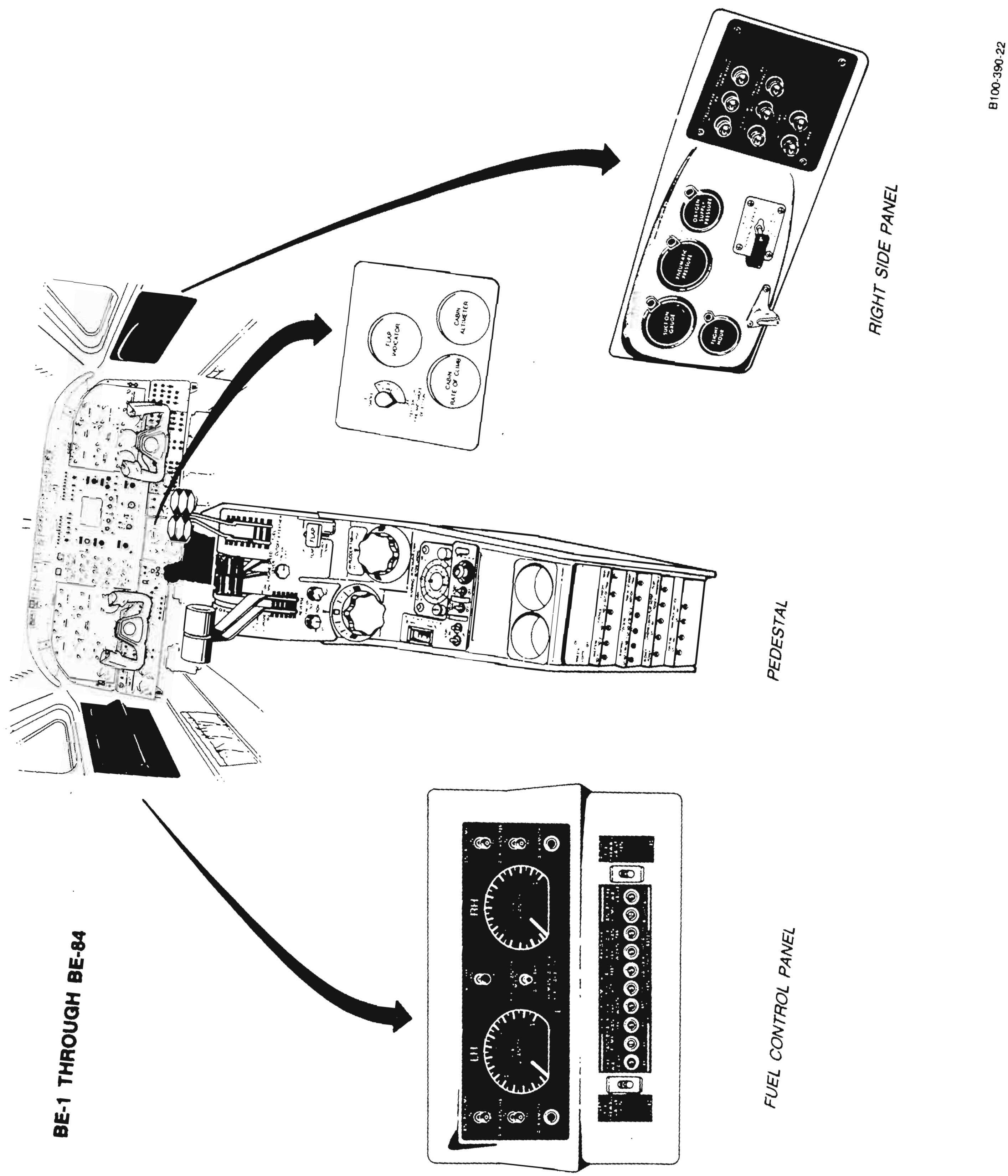


OVERHEAD LIGHT CONTROL PANEL

B100-390-22

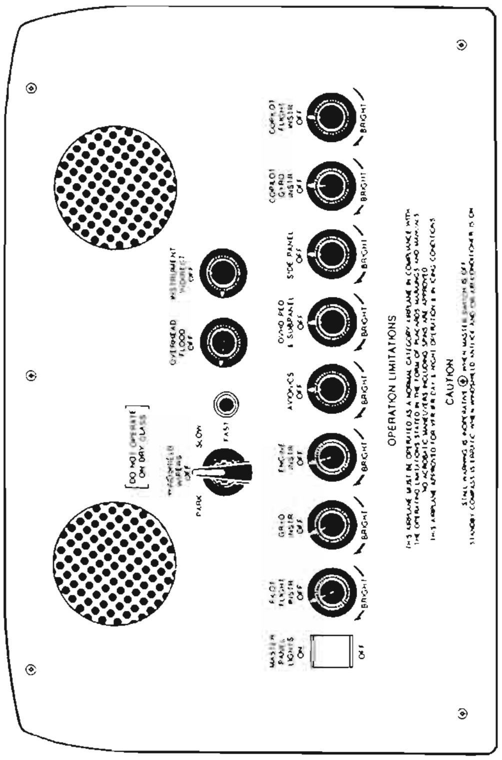


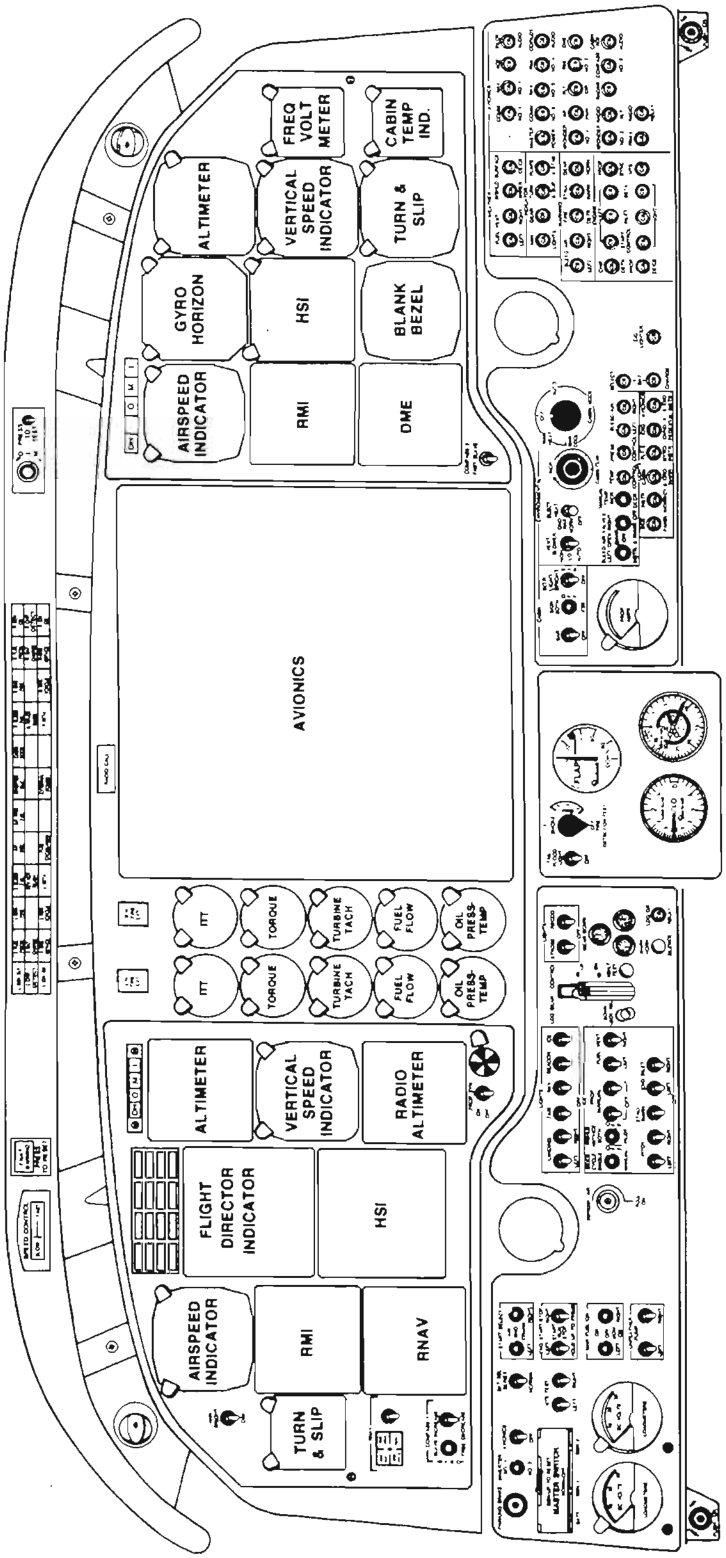
TYPICAL INSTRUMENT PANEL
BE-1 THROUGH BE-84


B100-390-22
RIGHT SIDE PANEL
FLAP INDICATOR
CABIN ALTIMETER
CABIN RATE OF CLIMB
PEDESTAL
BE-1 THROUGH BE-84
FUEL CONTROL PANEL
LH
RH

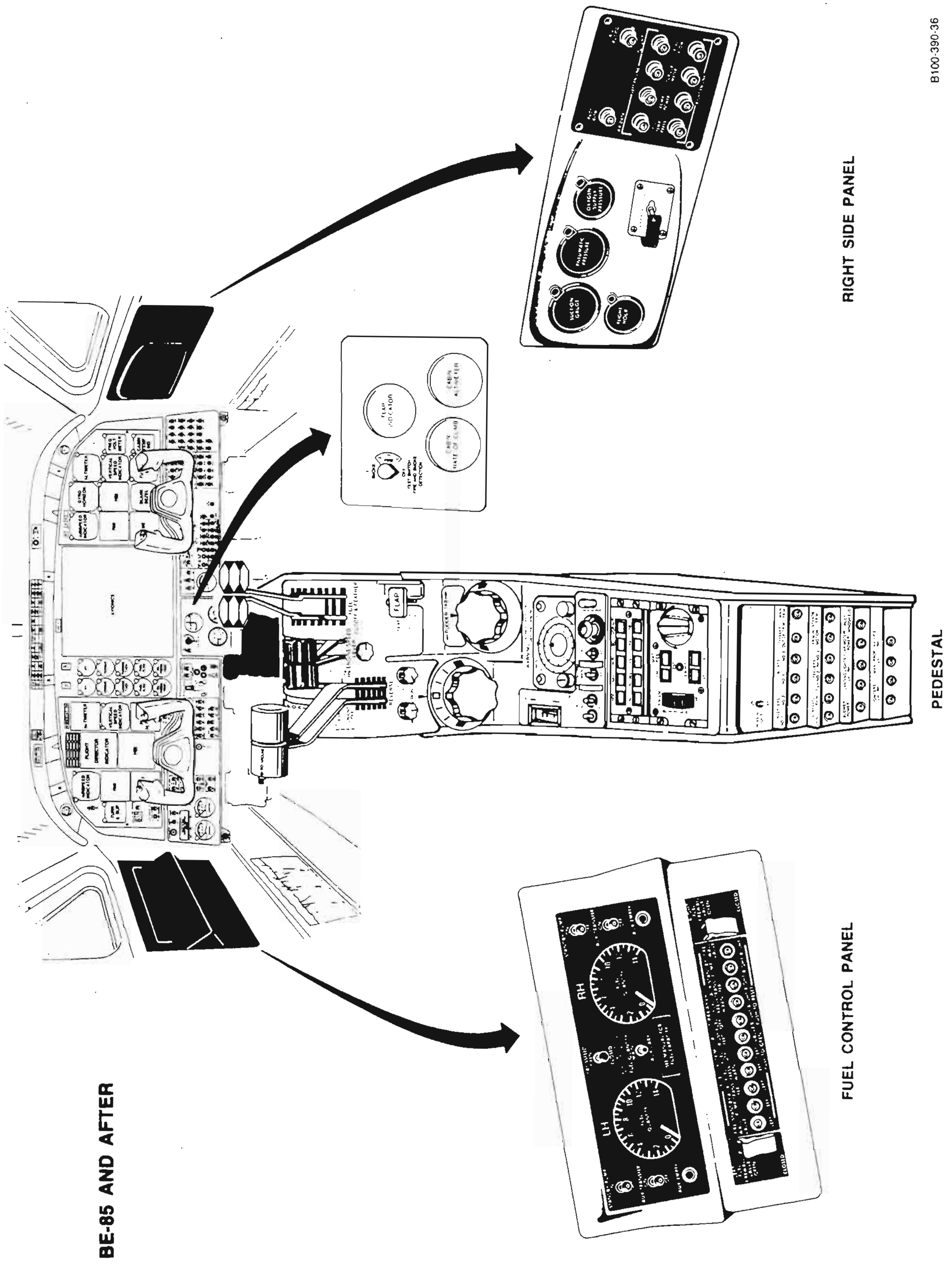
B100-390-35

OVERHEAD LIGHT CONTROL PANEL





TYPICAL INSTRUMENT PANEL
BE-85 AND AFTER


B100-390-36
RIGHT SIDE PANEL
PEDESTAL
FUEL CONTROL PANEL
BE-85 AND AFTER
FLAP
RH
LH

The operation and use of the instruments, lights, switches, and controls located on the instrument panel is explained under the systems descriptions relating to the subject items.

ANNUNCIATOR SYSTEM

The annunciator system consists of an annunciator panel centrally located in the glareshield, an annunciator panel dimming control, a press-to-test switch, and a fault warning annunciator. Individual annunciators are of the word-readout style and are color coded. The press-to-test switch, located on the right side of the annunciator panel, is provided to test the lamps. The dimming control is located adjacent to the press-to-test switch and may be used to increase or decrease the intensity of the annunciator indicator lamps to the desired level.

In the event of a fault, a signal is directed to the respective channel in the annunciator panel and lamp intensity rises to the highest level. If the fault requires the immediate attention of the pilot, the fault warning annunciator located on the left end of the annunciator panel will flash. The flashing fault warning lamp may be extinguished by pressing the face of the light to reset the circuit, and if the fault is not, or cannot be, corrected, the indicator lamp in the annunciator panel will remain illuminated at the lowest intensity selected on the dimming control. If an additional fault occurs, and it requires the immediate attention of the pilot, the appropriate lamp in the annunciator panel will illuminate and the fault warning annunciator will begin flashing. Lamp intensities will again increase to the highest level until the circuit is reset as before. A white, green or yellow lamp will not trip the flasher lamp but will increase the lamp intensity. The lamp can be dimmed by again pressing the face of the flasher lamp.

ANNUNCIATOR PANEL

(BE-1 thru BE-91)

WARNING ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L GENERATOR	RED	Left generator off the line.
L FUEL PRESSURE	RED	Low fuel pressure on left side.
L FIRE	RED	Fire in left-engine nacelle.
L BLEED AIR LINE FAILURE	RED	Failed left bleed air line.
INVERTER OUT	RED	The inverter selected is inoperative.
R BLEED AIR LINE FAILURE	RED	Failed right bleed air line.
R FIRE	RED	Fire in right-engine nacelle.
R FUEL PRESSURE	RED	Low fuel pressure on right side.
R GENERATOR	RED	Right generator off the line.

*Color Code: Red - Warning; Yellow - Caution; White or Green - Advisory

CAUTION ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L BATTERY CHARGE	YELLOW	Left battery being charged.
L CHIP DETECT	YELLOW	Metal particles in left engine oil.
PROP REV NOT READY	YELLOW	The landing gear is extended, but the engine speed levers are not in the full forward (HIGH RPM) position.
ALT WARN	YELLOW	Cabin altitude exceeds 10,000 ft.
R CHIP DETECT	YELLOW	Metal particles in right engine oil.
R BATTERY CHARGE	YELLOW	Right battery being charged.

ADVISORY ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L INLET ANTI-ICE	WHITE	Left anti-ice valve open.
L NEGATIVE TORQUE SYS	WHITE	NTS test.
L IGNITION	WHITE	Left-engine igniters firing.
L BETA	WHITE	Left propeller blade pitch is under control of the left power lever.
FUEL CROSSFEED	WHITE	Crossfeed valve is open.
EXTERNAL POWER	GREEN	An external power source is connected.
R BETA	WHITE	Right propeller blade pitch is under control of the right power lever.
R IGNITION	WHITE	Right-engine igniters firing.
R NEGATIVE TORQUE SYS	WHITE	NTS test.
R INLET ANTI-ICE	WHITE	Right anti-ice valve open.

*Color Code: Red - Warning; Yellow - Caution; White or Green - Advisory

ANNUNCIATOR PANEL

(BE-92 and After)

WARNING ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L GEN OUT	Red	Left generator off the line.
L FUEL PRESS	Red	Low fuel pressure on left side.
L ENG FIRE	Red	Fire in left engine compartment.
L BLEED FAIL	Red	Failed left bleed air line.
A/P DISC	Red	Autopilot is disconnected.
A/P TRIM FAIL	Red	Improper trim or no trim from autopilot trim command.
INVERTER OUT	Red	The inverter selected is inoperative.
CABIN DOOR	Red	Cabin door open or not secure.
R BLEED FAIL	Red	Failed right bleed air line.
R ENG FIRE	Red	Fire in right engine compartment.
R FUEL PRESS	Red	Low fuel pressure on right side.
R GEN OUT	Red	Right generator off the line.

CAUTION ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L CHIP DETECT	Yellow	Contamination in left engine oil is detected.
L BAT CHARGE	Yellow	Left battery being charged.
REV NOT READY	Yellow	The landing gear is extended, but the engine speed levers are not in full forward (HIGH RPM) position.
ALTITUDE WARN	Yellow	Cabin altitude exceeds 10,000 feet.
R BAT CHARGE	Yellow	Right battery being charged.
R CHIP DETECT	Yellow	Contamination in right engine oil is detected.
L IGN ON	Yellow	Left engine ignition is on.
R IGN ON	Yellow	Right engine ignition is on.

*Color Code: Red - Warning; Yellow - Caution; White or Green - Advisory

ADVISORY ANNUNCIATORS

NOMENCLATURE	*COLOR	CAUSE FOR ILLUMINATION
L ENG ANTI-ICE	Green	Left anti-ice valve open.
L NEG TORQUE	Green	NTS test.
L BETA	Green	Left propeller blade pitch is under control of the left power lever.
FUEL CROSSFEED	Green	Crossfeed valve is open.
EXTERNAL POWER	Green	An external power source is connected.
R BETA	Green	Right propeller blade pitch is under control of the right power lever.
R NEG TORQUE	Green	NTS test.
R ENG ANTI-ICE	Green	Right anti-ice valve open.

**Color Code: Red - Warning; Yellow - Caution; White or Green - Advisory*

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GROUND CONTROL

Direct linkage from the rudder pedals allows for nose wheel steering. When the rudder control is augmented by a main wheel brake, the nose wheel deflection can be considerably increased.

The minimum wing-tip turning radius, using partial braking action and differential engine power, is 33 feet.

FLAPS

Two flaps are installed on each wing. Power is delivered from an electric motor to a gearbox mounted on the forward side of the rear spar. The gearbox drives four flexible driveshafts which are connected to jackscrews, one of which operates each flap. The motor incorporates a dynamic braking system, through the use of two sets of motor windings. This feature helps prevent overtravel of the flaps. A safety mechanism is provided to disconnect power to the electric flap motor in the event of a malfunction which would cause any flap to be three to six degrees out of phase with the other flaps.

The flaps are operated by a sliding switch handle on the pedestal just below the fuel cutoff and feather levers. Flap travel, from 0% (full up) to 100% (full down) is registered on an electric indicator on top of the pedestal. A side detent provides for quick selection of the APPROACH position (30% flaps). From the UP position to the APPROACH position, the flaps cannot be stopped in an intermediate position. Between APPROACH and DOWN, the flaps can be stopped anywhere by moving the handle to the DOWN position until the flaps reach the desired position, then moving the flap-switch handle back to APPROACH. The flaps can be raised to any position between DOWN and APPROACH by raising the handle to UP until the desired setting is reached, then returning the handle to APPROACH. Selecting the APPROACH position will stop flap travel anytime the flaps are deflected more than 30%.

The flap-motor power circuit is protected by a 20-ampere flap-motor circuit breaker placarded FLAP MOTOR, located on the pedestal panel. A 5-ampere circuit breaker for the control circuit (placarded FLAP CONTROL) is also located on the copilot's subpanel.

Lowering the flaps will produce these results:

Attitude – Nose Up
Airspeed – Reduced
Stall Speed – Lowered
Trim – Nose-Down Adjustment Required
to Maintain Attitude

LANDING GEAR

A 28-volt split-field motor, located on the forward side of the center section main spar, extends and retracts the landing gear. The motor incorporates a dynamic braking system through the use of two motor windings, which prevents overtravel of the gear. Excessive operation of the gear motor, such as during door adjustment or landing gear rigging, may cause the motor to overheat.

NOTE

> The life of the landing gear motor may be shortened if it is cycled (1 complete extension and retraction) more than once in 5 minutes.

Torque shafts drive the main gear actuators, and duplex chains drive the nose gear actuator. Spring-loaded friction clutches between the gear box and the torque shafts protect the system in the event of mechanical malfunction. An overload protection circuit protects the system from electrical overload.

The Beech air-oil type shock struts are filled with compressed air and hydraulic fluid. Direct linkage from the rudder pedals allows for nose wheel steering. As the nose wheel retracts, it is automatically centered and the steering linkage becomes inoperative.

A safety switch on the right main strut opens the control circuit when the strut is compressed. The safety switch also completes a circuit to a solenoid which moves the downlock hook into position over the landing gear handle. This prevents the landing gear handle from being raised when the airplane is on the ground. The hook automatically unlocks when the airplane leaves the ground and can be manually overriden by pressing down on the red button placarded DN LCK REL while the airplane is on the ground.

Visual indication of landing gear position is provided by individual green GEAR DOWN indicator lights arranged in a triangle on the pilot's subpanel. Two red, parallel-wired indicator lights located in the control handle illuminate to show that the gear is in transit or unlocked. They also illuminate when the landing gear warning horn is actuated. These handle lights can be tested by depressing the switch next to the control handle, placarded HDL LT TEST.

LANDING GEAR WARNING SYSTEM

The landing gear warning system is provided to warn the pilot that the landing gear is not down and locked during specific flight regimes. Various warning modes result, depending upon the position of the flaps.

With the FLAPS in UP or APPROACH position and either or both power levers retarded below a certain power level, the warning horn will sound intermittently and the landing gear switch handle lights will illuminate. The horn can be silenced by pressing the WARNing HORN SILENCE button adjacent to the landing gear switch handle; the lights in the landing gear switch handle cannot be cancelled. The landing gear warning system will be rearmed if the power lever(s) are advanced sufficiently.

With the FLAPS BEYOND APPROACH position, the warning horn and landing gear switch handle lights will be activated regardless of the power settings, and neither can be cancelled.

MANUAL LANDING GEAR EXTENSION

Manual landing gear extension is provided through a separate, chain-drive system. Pull the LANDING GEAR RELAY circuit breaker (on the pilot's right subpanel) and make certain that the landing gear switch handle is in the down position before manually extending the gear. Pulling up on the emergency engage handle (located on the floor) and turning it clockwise will lock it in that position. When the emergency engage handle is pulled up, the motor is electrically disconnected from the system, and the emergency drive system is locked to the gear box. When the emergency drive is locked in, the chain is driven by a continuous-action ratchet, which is activated by pumping the ratchet handle adjacent to the emergency engage handle. See placard LIMITATIONS section.

WARNING

If for any reason the green GEAR DOWN lights do not illuminate (e.g. in case of an electrical failure), continue pumping until resistance prohibits further movement of the handle.

CAUTION

Stop pumping when the 3 green GEAR DOWN lights illuminate. Further movement of the handle could bind the drive mechanism and prevent subsequent gear retraction.

WARNING

After an emergency landing gear extension has been made, do not stow pump handle or move any landing gear controls or reset any switches or circuit breakers until the airplane is on jacks. These precautions are necessary because the failure may have been in the gear-up circuit, in which case the gear might retract on the ground. The gear can not be retracted manually.

After a practice manual extension, the landing gear may be retracted electrically. Rotate the emergency engage handle counterclockwise and push it down. Stow the extension lever, push in the landing gear relay circuit breaker on the pilot's subpanel, and retract the gear in the normal manner with the landing gear switch handle.

BRAKE SYSTEM

The dual hydraulic brakes are operated by depressing the toe portion of either the pilot's or copilot's rudder pedals. A shuttle valve adjacent to each set of pedals permits changing braking action from one set of pedals to the other.

Dual parking brake valves are installed adjacent to the rudder pedals between the master cylinders of the pilot's rudder pedals and the wheel brakes. A control for the valves, placarded PARKING BRAKE is located on the pilot's subpanel. After the pilot's brake pedals have been depressed to build up pressure in the brake lines, both valves can be closed simultaneously by pulling out the parking brake handle. This closes the valve to retain the pressure in the brake lines. To release the brakes, depress the pedals to equalize pressure on the brake lines, then push the parking brake handle in.

TIRES

The airplane is normally equipped with dual 18x5.5 Type VII, 8-ply-rated, tubeless, rim-inflation tires on each main gear. For increased service life, 10-ply-rated tires of the same size may be installed.

Optionally, the airplane may be equipped with dual 6.50x10, 6-ply-rated, tube tires on each main gear. These tires provide higher flotation, and permit operation at approximately 1/2 the inflation pressure required for the standard 18x5.5 tires.

The nose gear is equipped with a single 6.50x10, 6-ply-rated, tubeless tire, or in the high flotation gear option a 6.50x10, 6-ply tube tire.

BAGGAGE COMPARTMENT

The baggage compartment is located aft of the toilet area and utilizes the full width of the cabin. It has a volume of 53.5 cubic feet. An elastic web is provided for restraining loose items. Any baggage stored in this compartment is easily accessible in flight.

WARNING

DO NOT CARRY HAZARDOUS MATERIAL.

CAUTION

To prevent shifting of baggage or other objects in turbulent air they should be secured by straps or other suitable means.

SEATS AND SEATBELTS, AND SHOULDER HARNESSES

SEATS

COCKPIT

The pilot and copilot seats are adjustable fore and aft as well as up and down. The adjustment controls are located underneath the seats. The chair armrests can be raised or lowered.

CABIN

The passenger chairs utilize folding armrests and reclining seat backs. The backs can be adjusted to suit the individual passenger by means of a lever on the side of the chair. Lateral tracking seats may be moved laterally for passenger comfort by lifting the release bar under the front seat. The aft compartment fold-up seats, when occupied, must be in the locked position. Center fold down armrest is provided for aft compartment passengers. Each aft facing chair is also equipped with an adjustable headrest with a detent in the post for indication of the fully raised position. Passenger seats may be moved fore and aft to suit leg room requirements of individual passengers by lifting the horizontal release bar under the seat. If equipped with laterally tracking passenger seats, these seats must be in the outboard position (against the side of the cabin wall) for takeoff and landing.

FOYER

Hinged seat-cushion halves mounted on top of the toilet form an extra passenger seat when the toilet is not in use.

AFT-CABIN AREA

One or two optional folding seats may be installed in the aft-cabin area. They are mounted on the cabin sidewall and swing inboard when unfolded. A latch mechanism on the leg locks the seats in place when they are unfolded. When this seating is not needed, the seat(s) may be folded against the cabin sidewall and held in place with retaining straps.

SEATBELTS

Every seat in the airplane is equipped with a seatbelt. The seatbelt can be lengthened by turning the male half of the buckle at a right angle to the belt, then pulling the male half in the direction away from the anchored end of the belt. The buckle is locked by sliding the male half into the female half of the buckle. The belt is then tightened by pulling the short end of the belt through the male half of the buckle until a snug fit is obtained. The buckle is released by lifting the large, hinged release lever on the female buckle half and pulling the male half of the buckle free. All occupants must wear seat belts during takeoff and landing.

SHOULDER HARNESS

COCKPIT

The shoulder harness belts are in a "Y" configuration, with the single strap being contained in an inertial reel. The two straps are worn with one strap over each shoulder and fastened by metal loops into the seat belt buckle. Spring loading at the inertial reel keeps the shoulder harness snug, but allows the movements normally required in flight. The inertial reel is designed with a locking device that will secure the harness in the event of sudden forward movement or an impact action.

CABIN

Shoulder harnesses provided for the standard and lateral tracking cabin chairs should be worn during takeoff and landing with the seat back upright. These chairs are equipped with a locking back and a permanently attached adjustable headrest. The seat back may be folded over by rotating the handle located on the lower inboard side of the seat back. An inertial reel similar to the reel mentioned above is attached into the seat back structure. The strap extends through the upholstery and should be positioned over the outboard shoulder and down across the body, where it is fastened by a metal loop into the seat belt buckle located at the inboard hip.

AFT-CABIN AREA

The shoulder harness for aft-cabin-area fold-up chairs is of a double-strap configuration. The middle portion of the strap is secured by a metal slip ring which is anchored to the aft pressure bulkhead. The two ends (which actually function as two separate straps) extend downward toward the seatbelt-buckle area. One end of the shoulder harness strap terminates in a slotted bayonet-blade fastener. The other end is attached to the upper edge of the shoulder harness adjuster. A short adjusting strap, which is also equipped with a slotted bayonet-blade fastener, extends upward from the area of the seatbelt buckle and slides through the lower portion of the shoulder harness adjuster. A small, flexible adjusting tab is also attached to the lower edge of the adjuster.

One shoulder harness strap is worn over each shoulder.

When the two bayonet blades are placed together, the shoulder harness straps can be secured by sliding the male half of the seatbelt buckle through the bayonet slots and into the female half of the seatbelt buckle. The shoulder harness strap can be lengthened by grasping the tab on the adjuster and pulling upward. The strap can be tightened by grasping the loose end of the adjusting strap and pulling it through the adjuster until the shoulder harness is snug.

DOORS, WINDOWS AND EXITS

AIRSTAIR ENTRANCE DOOR

A swing-down door, hinged at the bottom, provides both positive cabin security for flight and a convenient stairway for entry and exit. Two of the three steps are movable and automatically fold flat against the door in the closed position. A hydraulic damper permits the door to lower gradually during opening. A plastic-encased cable provides support for the door in the open position, a handhold for passengers, and a convenience for closing the door from the inside. An inflatable rubber door seal around the cabin door expands to positively seal the pressure vessel while the airplane is in flight. Engine bleed air provides the pressure to inflate the door seal.

A locking device is operated by the handle in the center of the door. The inside and outside handles operate simultaneously. When the handle is rotated per placard instructions, two latches hook into the door frame at the top and two lock bolts on each side of the door lock into the frame on the sides. There are four sight openings on the inner facing of the door; one opening over each locking bolt. A green stripe, painted on the locking bolt, aligns with a black pointer in the sight opening when the door is in a locked condition.

Whether opening the door from the inside or outside, the button beside the door handle must be depressed before the handle can be rotated to open the door. This acts as a safety to aid in preventing accidental opening.

Another safety device is the pressurization safety lock bellows. A small round window just above the second step permits observation of the bellows. A placard adjacent to the window instructs the operator to make certain the safety lock arm is in position around the bellows shaft. Pushing the red button switch adjacent to the window illuminates the mechanism inside the door. For security of the airplane on the ground, the door can be locked with a key.

EMERGENCY EXIT

The emergency exit door, placarded EXIT-PULL, is located on the right side just aft of the copilot's seat. From the inside, the door is released with a pull-down handle, and on the outside the door may be released with a flush mounted pull-out handle. The door is of the nonhinged, plug type which removes completely from the frame when the latches are released. From the inside, the door can be key locked to prevent opening from the outside. The inside handle will unlatch the door, whether or not it is locked, by overriding the locking mechanism. The key lock should be unlocked prior to flight to allow removal of the door from the outside in the event of an emergency. The key slot is in the horizontal position when the door is locked. The key cannot be removed in this position.

A wiper type disconnect for the air duct that supplies the air to the eyeball outlet in the emergency exit door is located on the upper aft edge of the door. As the door is removed, the duct is disconnected since it is an integral part of the door.

An electrical disconnect, located on the lower forward edge of the door, will unplug as the door is being removed. On reinstalling the door, the electrical disconnect should be reconnected before moving the door into the closed position.

CABIN WINDOWS

POLARIZED CABIN WINDOWS

The cabin windows have been designed with three individual plates of acrylic plastic instead of one. The outer window is the pressure type and is an integral part of the pressure vessel. Two inner plastic windows are tinted and coated with polarized material to reduce glare. These windows are designed into a sealed unit with the polarized surfaces facing each other. The window of the unit which faces the inside of the cabin has a protruding thumb knob near the edge and turns freely in its frame. By rotating this window, the polarized windows may be so aligned as to permit any degree of light to pass through the windows from full intensity to nearly opaque. Through 90° of rotation, each of the eleven cabin side windows can give complete light regulation as desired.

SHADE TYPE

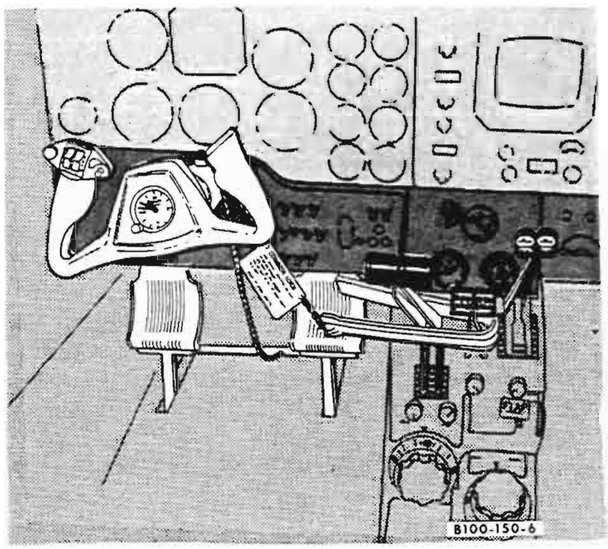
A dust pane, which is a single sheet of tinted acrylic plastic, is mounted inboard of the cabin window pane in each window frame. An adjustable window shade is provided to control the amount of light admitted. The shade is adjusted by squeezing the two latch handles located on the lower center of the shade, and then positioning the shade as desired. Detents in the shade tracks provide positive latching action at various positions.

CAUTION

When the airplane is to be parked in areas exposed to intensive sunlight, the polarized windows should be rotated to the clear position to prevent deterioration of the polarization coating. Sufficient ultraviolet protection is provided to prevent fading of the upholstery.

CONTROL LOCKS

The control lock consists of a U-shaped clamp and two pins connected by a chain. The pins lock the primary flight controls and the U-shaped clamp fits around the engine power control levers and serves to warn the pilot not to start the engines with the control locks installed. It is important that the locks be installed or removed together due to the possibility of an attempt to taxi or fly the airplane with the power levers released and the pins still installed in the flight controls.



Install the control locks in the following sequence:

1. Position the U-clamp around the engine power controls.
2. Move the control column as necessary to align the holes, then insert the small pin.
3. Insert the larger pin in the pilot's rudder pedals by pushing forward on the left pedal and inserting the pin into the hole located on the inside of the right rudder pedal. Neutralize the pedals and slide the pin into the hole in the left rudder pedal.

WARNING

Before starting engines, remove the locks, reversing the above procedure.

ENGINES

The Beechcraft King Air B100 is powered by two Garrett AiResearch TPE 331-6-252B turboprop engines. The power section of each engine consists of a single, fixed-shaft rotating assembly containing a two-stage centrifugal compressor and a three-stage axial-flow turbine. Ram air enters at the lower forward face of the engine and is routed to the compressor section. The compressed air flows into the turbine plenum assembly and then into the annular combustion chamber, where it is mixed with a finely atomized fuel spray. Fuel for initial lightoff and acceleration is injected into the combustion chamber through five small orificed primary fuel nozzles. A fuel flow divider valve then opens to permit fuel flow to the 10 secondary nozzles as well as to the five primary nozzles. The two igniter plugs in the combustion chamber are automatically energized during engine startup. Thereafter they are de-energized and combustion is self-sustaining. The combustion gases expand, flow over the turbine blades, pass through the space between the exhaust diffuser and exhaust cone assembly, into the tailpipe, and out to the atmosphere.

The compressor wheels and turbine wheels are all mounted on the main shaft. Thus, part of the energy delivered to the turbine wheels is used to drive the compressor which delivers energized air to the combustion section. The first stage reduction pinion mounted on the forward end of the torsion shaft provides power to the gear train, which operates the engine accessories and drives the propeller. The maximum main shaft speed (100% rpm) is 41,730 rpm. Due to turbine-to-propeller reduction gearing of 20.865:1, propeller speed at 100% engine speed is 2000 rpm. Each engine is rated at 715 shp.

PROPULSION SYSTEM CONTROLS

Each engine is controlled by two levers on the pedestal: a POWER lever and an ENGINE SPEED lever.

POWER LEVER

The Power lever positions are placarded INCR, FLIGHT IDLE, START, GROUND IDLE, and REVERSE. In order to be positioned below FLIGHT IDLE, it must be lifted over a stop. In order to be positioned at REVERSE it must be lifted over another stop.

When the Power lever is positioned between FLIGHT IDLE and REVERSE it is operating in the BETA MODE, where it functions to hydraulically select propeller blade angles. During BETA MODE operations, engine speeds are controlled by the underspeed governor. The BETA MODE is used during ground operations only.

With the Power lever positioned forward of FLIGHT IDLE, the engine is said to be operating in the PROPELLER GOVERNING MODE and its only function is to deliver more or less fuel to the engine in order to produce the desired power. During this mode the engine speed is controlled by the propeller governor, which delivers more or less engine oil to the propeller pitch control. This changes the propeller blade angle - and therefore the amount of thrust, which is needed under various operating conditions - while maintaining a constant engine speed. The FLIGHT IDLE position is the lowest power lever position for use during flight.

ENGINE SPEED LEVER

The Engine Speed lever is placarded LOW RPM and HIGH RPM. This lever sets the speed governors. When the Power lever is in the BETA MODE range, the engine speed is controlled by the underspeed governor. This governor limits engine speeds to a minimum of 65% and a maximum of 97.0% ± .5%. The Engine Speed lever is used to reset this governor anywhere within this range. If the lever is in the LOW RPM position, engine speed will be set at 65%. Moving this lever to HIGH RPM resets the underspeed governor to 97.0%. Any engine speed within the underspeed governor's range may be selected by appropriately positioning the Engine Speed lever.

When the Power lever is in the PROPELLER GOVERNING MODE, engine speed is controlled by the propeller governor. This governor keeps the engine speed within the 95% to 100% range. The Engine Speed lever is used to reset the governor anywhere within this range. In the HIGH RPM position, the lever sets the propeller governor at 100%. At the minimum LOW RPM position the Engine Speed lever sets the propeller governor at approximately 95%.

FUEL CUTOFF & FEATHER LEVER

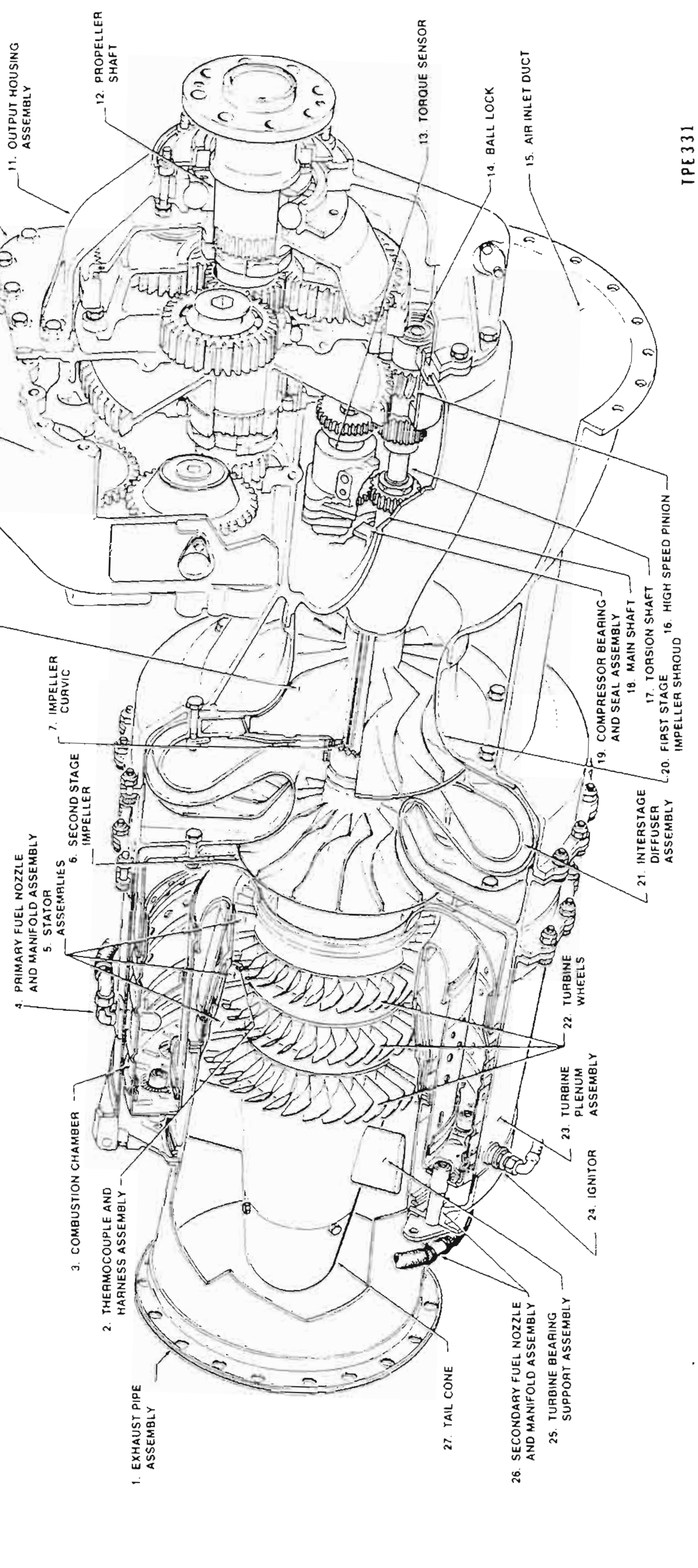
The Fuel Cutoff & Feather lever is used to shut down the engine in an emergency situation. It shuts off fuel flow to the engine and feathers the propeller blades.

FRICTION LOCKS

Friction locks are provided so that the power plant controls can be locked in any desired position.

ENGINE INSTRUMENTATION

ITT INDICATOR: Calibrated in °C, measures the average temperature of gases exiting the first stage turbine wheel.



ENGINE CUTAWAY VIEW

TORQUE METER: Calibrated in foot-pounds, measures the torque delivered to the gearbox.

TACHOMETER: Indicates engine speed in percent.

FUEL FLOW GAGE: Indicates in pounds per hour the amount of fuel being delivered to the engine.

OIL TEMPERATURE & PRESSURE GAGE: Indicates temperature of engine oil in °C and pressure in pounds per square inch.

ENGINE LUBRICATION SYSTEM

A dry-sump high-pressure lubricating system is provided to lubricate and cool the compressor and turbine bearings and the reduction gearing. The system also supplies actuating pressure to the propeller control system and to the torque sensing components. Included in the system are a high pressure pump, three scavenge pumps, an oil filter with a bypass valve, a pressure regulator, and an oil tank. A magnetic chip detector forms part of the drain plug in the lower sump of the output housing. An external oil radiator with non-congealing capabilities keeps the engine oil temperature within the operating limits.

MAGNETIC CHIP DETECTOR

A magnetic chip detector is installed in the gearbox drain plug of each engine. This detector will activate a yellow annunciator, L CHIP DETECT or R CHIP DETECT, to alert the pilot of oil contamination indicating possible or pending engine failure.

STARTING AND IGNITION SYSTEM

Two 24-volt batteries provide the necessary power for the electrical system. When the Battery Select switch (placarded BAT SEL) is in the NORMAL position the batteries are connected in parallel. The SERIES position is to be used only for cold ground starts when the OAT is at or below -4°C. If a series start is attempted above -4°C the electrical current could be so high that the battery voltage would drop below the level required for an engine start.

To initiate a ground start, the Battery Master switch is moved to ON and the Start Select switch is placed in the GND position. The Engine Start/Stop switch is then momentarily held to the START position. This immediately energizes a latching relay which will complete a circuit to the starter/generator. The relay also opens an oil vent solenoid valve in order to relieve pressure on the oil pumps. This allows the starter to turn the engine with less resistance. The Engine Start/Stop switch should be released after engine light off. Since this switch is spring loaded, it will move to the RUN position, but the starter/generator will continue cranking the engine until approximately 50% rpm.

Engine operation during startup is automatic. The pilot's duty is to monitor the start. If the start proceeds too slowly (as may occur in cold weather) again moving the Engine Start/Stop switch to START will deliver additional prime fuel to the engine and speed the start. This will not affect the starter/generator since it is already energized by a latching relay.

ITT limits must also be observed. The start must be aborted if the temperature reaches the start ITT limit of 1149°C.

At about 50% speed, combustion is self-sustaining. The relay then releases the starter/generator, opens the ignition circuit, and closes the oil vent valve. At this point the starter/generator may be converted to a generator by moving the appropriate Generator switch to ON.

For an air start, the Start Select switch is placed in the AIR position. This isolates the starter/generator. Current flows to the unfeather pump rather than to the starter. Energy for cranking the engine is supplied by airflow against the propeller as the unfeather pump moves the blades from the feathered position. In all other respects the sequence of operations is identical to that of a ground start, except that air starts are faster and cooler.

If the engine is to be cranked without lightoff, the Start Select switch is moved to the CRANK position. This will prevent the flow of ignition current and fuel to the engine, but the starter/generator circuit will be closed. The Engine Start/Stop switch is then momentarily placed at START and released. A latching relay will close and the starter will continue to crank the engine even though the spring-loaded Engine Start/Stop switch returns to RUN. Cranking will continue until the switch is moved to the STOP position. Since the engine can not start with the Start Select switch at CRANK, particular care must be taken to avoid exceeding the starter/generator duty cycle.

The normal method of stopping the engine is to move the Engine Start/Stop switch to the STOP position. This shuts off fuel flow to the engine and releases any other crank, start, or run circuitry that may be energized. Additionally, it opens the fuel purge valve and blows all fuel in the manifolds into the combustor, where it is burned.

The Manual Fuel/Ignition switch has three positions: ON, OFF, and MOM ON (ARMED for automatic ignition system). Lights, installed in the instrument panel above the engine instruments, indicate when the right or left MAN FUEL/IGN switch is in the ARMED position. When it is actuated, the main fuel solenoid valve opens (if closed) and electrical current is supplied to the igniter plugs. When the switch is returned to OFF, the main fuel solenoid valve will remain open until the Engine START/STOP switch is moved to STOP. If the Engine Start/Stop switch is already at STOP, the main fuel solenoid valve will close when the Manual Fuel/Ignition switch is returned to OFF. Ignition current flow ceases when the Manual Fuel/Ignition switch is returned to OFF. In the event of failure of the latching start relay this switch provides an alternate method of providing fuel and ignition current to the engine. The switch should be placed in the ON position for takeoffs and landings on runways covered with slush of standing water. Observe system time limits.

The engine must not be started, either in flight or on the ground, with the propeller blades feathered. Oil pressure from the engine-driven oil pump is normally used to unfeather the blades, but when the engine is stopped no oil pressure is available. Therefore an electrically operated unfeathering pump is provided. It is automatically energized when the Start Select switch is in the AIR position. But if the engine is shut down on the ground without the propeller blades being latched in flat pitch by the propeller blade locks, the Unfeather Pump switch must be used to lock the blades in flat pitch. The switch is spring-loaded off, and must be held in the upward position with the Power Lever in the REVERSE position until the blades latch.

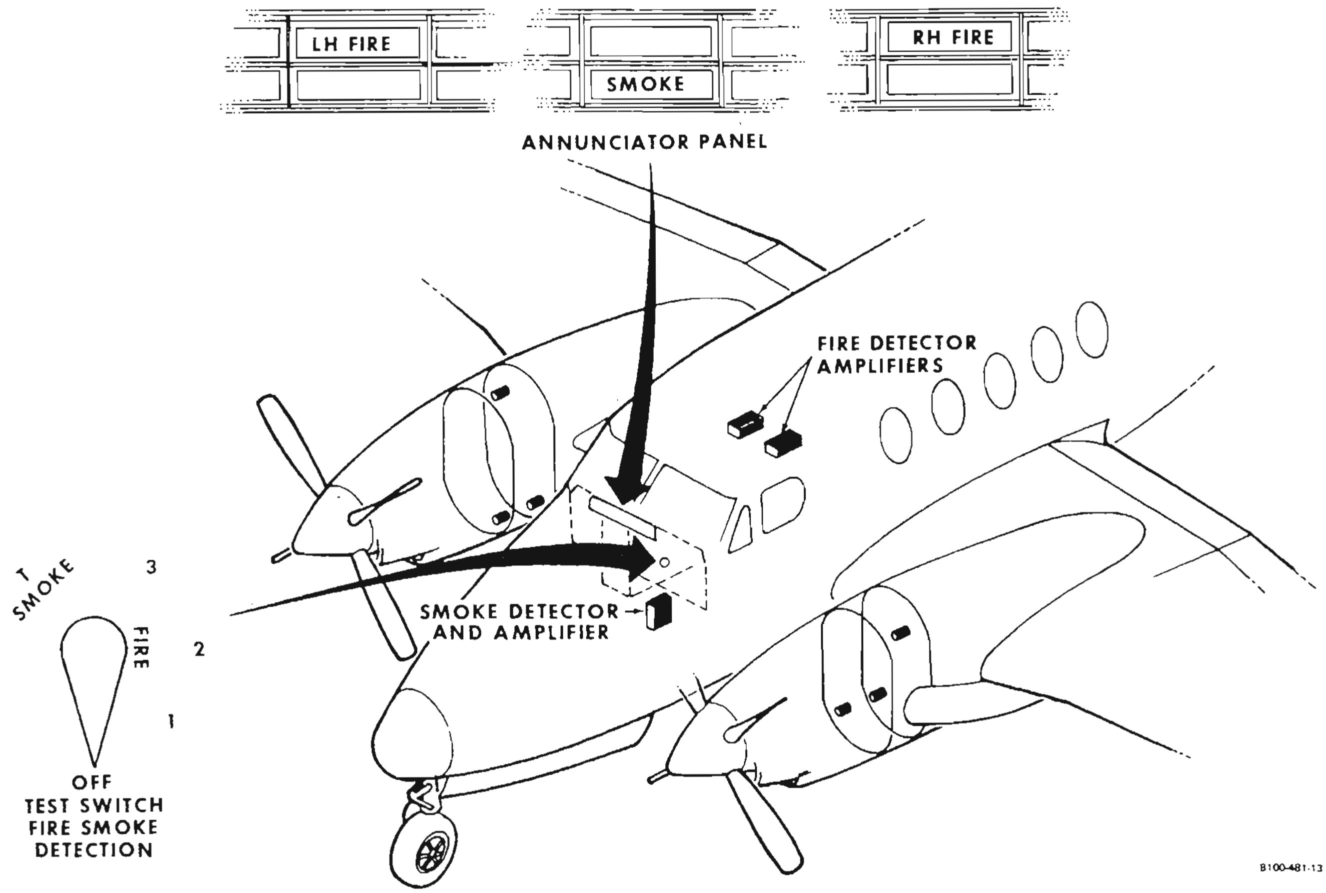
INDUCTION AIR SYSTEM

The compressor wheels draw ambient air into the engine through the inlet air duct at the lower forward face of the engine. As airspeeds increase, ram air pressure rises and compresses the air in the inlet air duct. The air then flows into the primary compressor impeller, where it is further compressed and forced through the interstage diffuser assembly. The air is further compressed by the secondary impeller, then discharged through the secondary diffuser into the turbine plenum assembly. Air in the plenum enters the annular combustor holes, flowing back toward the compressor, and mixing during the process with fuel which is injected into the combustor through the fuel atomizers. The hot gases are turned toward the turbine by the transition liner assembly. The gases then flow over the stators and rotors of the three turbines and exhaust to the tailpipe through the space between the exhaust diffuser and the exhaust cone assembly. Some compressed air is directed against the fore and aft sides of the first-stage turbine wheel and disc for cooling.

ICE PROTECTION

Hot bleed air from the engine is routed to the inlet lip of the cowling and to the inlet of the compressor to provide ice protection for the engine, and should be actuated at 4°C or colder in visible moisture.

The area at the top of the inlet scoop is actually the underside of the gear case sump and this area is normally warm from hot oil. A cockpit switch in the ICE protection group, placarded ENG INLET, activates the anti-icing solenoid valve. This valve admits hot air from the compressor plenum and routes it forward to a manifold assembly on the front end of the anti-icing shield. The hot air enters the area between the anti-ice shield and the engine inlet duct wall and moves aft, heating the entire engine inlet scoop on the lower side. Part of the compressor air is also routed forward to the air inlet lip of the engine cowling for diffusion through a series of holes in the inner surface of the lips to prevent ice formation in this area.



FIRE AND SMOKE DETECTION SYSTEMS

FIRE DETECTION SYSTEM

The fire detection system provides immediate warning in the event of fire at the engine compartment. The system consists of three photoconductive cells and a control amplifier for each engine nacelle, two annunciators on the annunciator panel placarded L ENG FIRE - R ENG FIRE, a test switch on the upper pedestal, and a circuit breaker on the copilot's subpanel. Flame detectors, sensitive to infrared rays, are positioned in the engine compartments to receive direct and reflected rays, thus viewing the entire compartment with only three cells. Heat level and rate of heat rise are not factors in the sensing method. The cell emits an electrical signal proportional to the intensity of infrared radiation striking the cell. To prevent stray light rays from signaling a false alarm, a relay in the control amplifier closes only when the signal reaches a preset alarm level. When the relay closes, the appropriate annunciator near the upper edge of the instrument panel illuminates. When the fire has been extinguished, the cell output voltage drops below the alarm level and the relay in the control amplifier opens. No manual resetting is required to reactivate the detection system.

The test switch on the upper pedestal has four positions; OFF, 1, 2, and 3. The system may be tested any time on the ground or in flight by rotating the switch from OFF to any of the positions to activate a corresponding set of flame detectors in each nacelle. The annunciators should illuminate as the selector is rotated through each of the three positions. Failure of an annunciator to illuminate in any one position indicates trouble in that particular detector circuit.

FIRE EXTINGUISHER SYSTEM

The system utilizes two cylinders charged with 2.5 pounds of Bromotrifluoromethane as the extinguishing agent, pressurized with dry nitrogen to 450 psi at 21°C. Lines from the cylinders are routed to strategic points about the engine to provide a network of spray tubes which serve to diffuse the extinguishing agent into the fire zones.

The system may be activated by raising the transparent plastic cover over the press-type switch and depressing the red plastic face of the switch placarded FIRE EXT - PUSH TO EXT. Switches for the respective engines are located above the engine instruments and just below the annunciator panel. They are wired in conjunction with the annunciator to provide an additional warning to ensure activation of the proper switch. Each extinguisher gives only one shot to its engine.

PROPELLER SYSTEM

DESCRIPTION

Each engine is equipped with a conventional four-blade, reversing, full-feathering, variable-pitch propeller. It is spring loaded and counterweighted to the feather position. Oil from the oil pump flows through the propeller governor and enters the dome area of the propeller through the Beta tube and moves a piston, causing the propeller blades to be rotated toward reverse pitch.

During engine shutdown the pilot moves the Power lever to REVERSE. As the engine winds down, oil pressure to the propeller dome piston decreases and the blades rotate toward feather. But since the engine has slowed below operating speeds, the counterweighted start locks are permitted to move in toward the propeller hub. When the blades rotate from reverse to flat pitch, springs force the locks to engage the hub flange, thus holding the blades in flat pitch, ready for the next start. It is important that the propeller start locks be fully engaged before initiating the engine overspeed governor check. After a start, the locks are relased by centrifugal force, but only after the Power lever has been moved slightly to the reverse of the GROUND IDLE position.

CAUTION

Allow sufficient time on a cold engine for the propeller control oil to circulate and fill any voids in the control system before moving Power Levers from start toward reverse.

NEGATIVE TORQUE SENSING (NTS) SYSTEM

The NTS system functions to reduce the drag on the propeller blades in the event of power loss, in which case wind resistance will cause the propeller to windmill. Even though the main shaft will then rotate in its normal direction, the NTS sensor will detect this as negative torque since the propeller is driving the engine, instead of the engine driving the propeller.

When negative torque is sensed, oil flow to the propeller dome piston is shut off and the pressure relieved into the gear case. This allows spring and counterweight forces to move the propeller blades toward the feathered position. Although the propeller will not completely feather, this low drag condition reduces yaw during an engine failure. The NTS system is a drag reducing system only. It is not an automatic feathering system, and the propeller should be manually feathered to reduce drag to a minimum.

In BETA MODE, which is limited to ground operations, the propeller pitch control provides a means of selecting propeller blade angle with the Power lever. In flight, and on the ground at moderate to high power settings, the propeller governor schedules blade angle to maintain selected rpm (PROPELLER GOVERNING MODE), however, the position of the prop pitch control, as selected by the Power lever, closely follows the propeller governor and serves as a backup in the event of propeller governor or NTS system failure by acting as a hydraulic stop to limit minimum blade angle. Minimum blade angle, as set by Beta Followup, is decreased as the Power lever is retarded. If the Power lever is retarded on a failed engine with an inoperative NTS system, the windmilling drag will be increased significantly. During inflight shutdown, do not retard the failed engine's Power lever prior to feathering. The failed engine should be identified by power asymmetry and engine instrument indications.

Two switches, placarded NTS TEST - LEFT - RIGHT and located on the pilot's subpanel, are used to check the NTS systems. As a ground start is initiated, holding the appropriate spring-loaded NTS TEST switch upward will cause the corresponding NEGATIVE TORQUE SYS annunciator to illuminate. If the NTS system is functioning properly, the annunciator will extinguish immediately after engine cranking is initiated and illuminate shortly after lightoff.

PROPELLER SYNCHROPHASER

TYPE I SYSTEM

The propeller synchrophaser automatically matches the right "slave" propeller rpm to that of the left "master" propeller and maintains the blades of one propeller at a predetermined position relative to the blades of the other propeller. To prevent the right propeller from losing excessive rpm if the left propeller is feathered while the synchrophaser is on, the synchrophaser is limited to approximately ±30 rpm from the manual governor setting. Normal governor operation is unchanged but the synchrophaser will continuously monitor propeller rpm and reset the propeller governor as required. Magnetic pickups mounted in each propeller governor and adjacent to each propeller deice brush block transmits pulses to a transistorized control box installed aft of the pedestal. The control box converts any pulse rate differences into correction commands, which are transmitted to a stepping type actuator motor mounted on the right engine mount. The motor then trims the right propeller governor through a flexible shaft and trimmer assembly to match the left propeller. The trimmer, installed between the governor control arm and the control cable, screws in or out to adjust the governor while leaving the control lever setting constant. With the Prop Sync switch OFF, the actuator automatically runs to the center of its range of travel before stopping, to assure that when next turned on the control will have full authority in both increasing and decreasing directions.

To operate the system, synchronize the propellers in the normal manner and turn the synchrophaser ON. The system is designed for in-flight operations and is placarded to be OFF for takeoff and landing. To change rpm, adjust both propeller controls at the same time. This will keep the right governor setting within the limiting range of the left propeller. If the synchrophaser is ON but is unable to adjust the right propeller to match the left, the actuator has reached the end of its travel. To reset it, turn the switch OFF, synchronize the propellers manually, then turn the switch ON.

TYPE II SYSTEM

The type II system is a replacement for the type I system. The type II system needs fewer components, is an all electronic system and is approved for use on takeoff and landing.

Function of the type II system is as follows:

This synchrophaser automatically matches RPM of the two engines, and also positions the propellers at a pre-set phase relationship. This phase relationship is intended to decrease cabin noise.

Signal pulses are obtained from magnetic pickups, one located at each propeller hub. The pickup is mounted on a bracket on the engine case while the "target" for the pickup is mounted on the back of the propeller spinner bulkhead so that it rotates with the propeller. In this way one pulse is produced for each revolution of the propeller. Electric pulses generated by the "target" passing each magnetic pickup are fed into the control box. An electro-magnetic coil for RPM trimming is mounted in each propeller governor close to the flyweights. Any difference in the pulse rates will cause the control box to vary the governor coil voltages until the propellers RPM's match, due to control by the governors. Propeller RPM is a function of the position of the propeller control lever in its quadrant; since linkage from the lever sets the governor flyweight position. The synchrophaser cannot reduce the RPM set by the propeller control lever. It can increase the RPM over a predetermined limited range. RPM of one engine will follow changes in RPM of the other engine within the limited range. This limited range limits RPM loss to a fixed value on the operative engine in the event the propeller of one engine is feathered with the synchrophaser ON. In no case will the operative engine RPM fall below the RPM set by the propeller lever.

The propeller synchrophaser may be used on takeoff at the pilots option. (The limited range of the synchrophaser will be reduced near maximum propeller RPM.) For all other operations, the synchrophaser should be switched OFF before adjusting the propeller RPM. Adjust the propeller levers to obtain synchronization and then switch ON the synchrophaser. This will keep the synchrophaser within its limited range.

NOTE

> If the synchrophaser is ON but does not synchronize the propellers it has reached the limit of its range. Switch the system OFF, adjust the propeller levers to obtain synchronization and then switch the synchrophaser ON.

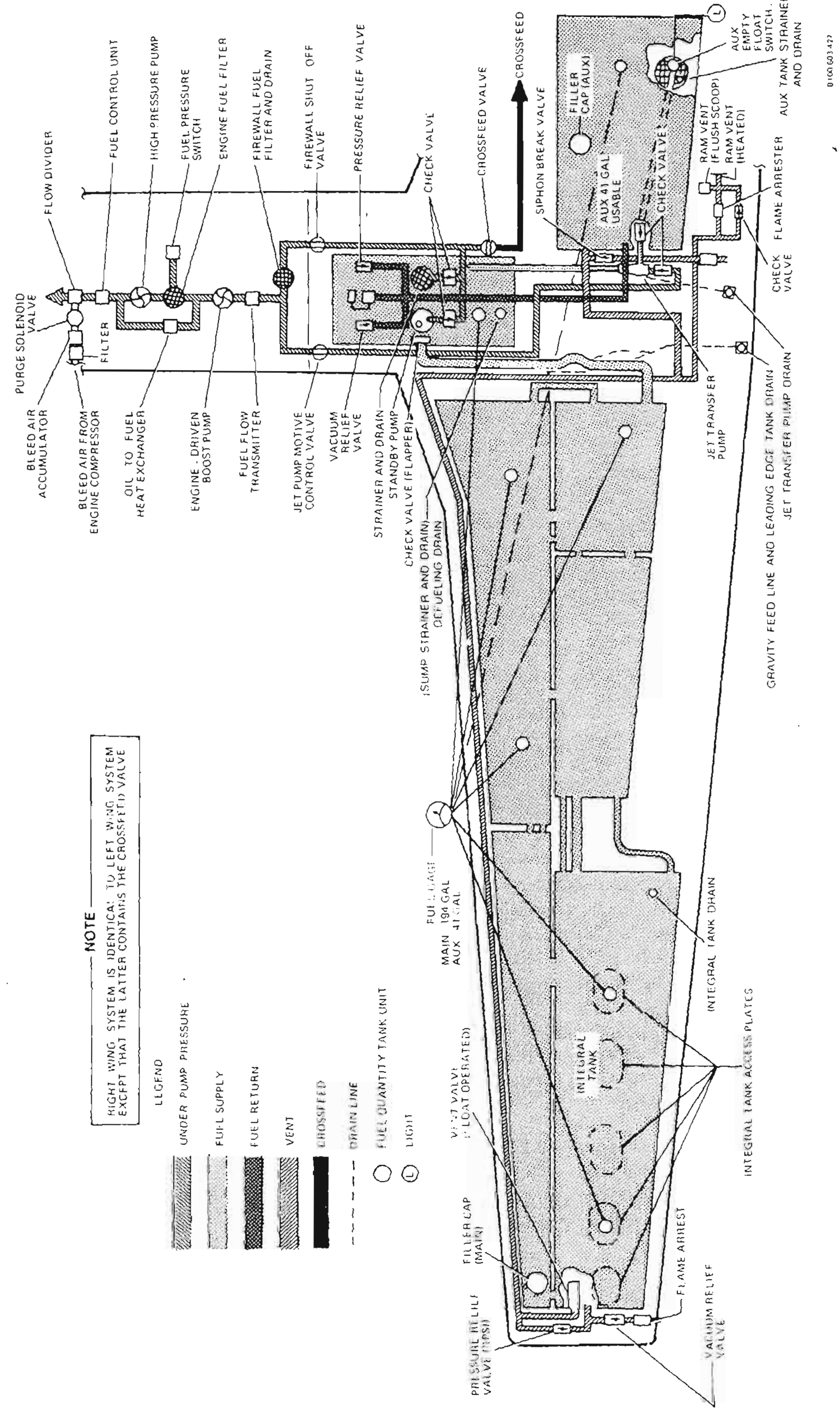
Since the synchrophaser may be ON during landing, the PROP SYNC ON caution annunciator is not required with this system and is not installed.

FUEL SYSTEM

The purpose of the fuel system is to pressurize, control, and atomize the fuel into the combustion chamber to satisfy the speed and power demands on the engine. The system includes a fuel control unit, main solenoid valve, flow divider valve, fuel nozzles and manifold assemblies, an oil-to-fuel heat exchanger, a start prime solenoid valve, and a fuel purge system. Fuel is drawn from the nacelle tank by the engine-driven centrifugal boost pump, then discharged through the firewall fuel filter. If the filter should become clogged, a bypass valve shunts fuel around the filter. The fuel then flows through the engine-driven centrifugal boost pump, through the engine fuel filter, and into the gear-type high pressure fuel pump. From there it may flow through the oil-to-fuel heat exchanger to absorb heat for anti-icing, or it can flow into the fuel control unit. The fuel control unit then meters a portion of the fuel from the high speed pump to the main fuel solenoid valve enroute to the flow divider whence it flows to the atomizers, which spray the fuel into compressed air inside the combustion chamber. After the fuel ignites and engine speed increases, the flow divider admits fuel to the 10 secondary fuel nozzles as well as to the 5 primary nozzles.

During a start, additional starting fuel is available to the engine whenever the ENG START/STOP switch is held to the START position. This opens the start fuel solenoid valve and allows fuel to bypass the fuel control unit. Even when the engine is already cranking, additional prime fuel may be delivered to the engine by holding the switch to START as long as necessary to speed up the start.

The system automatically controls fuel flow for variations in POWER lever position, compressor discharge pressure, and the temperature and pressure of ambient air. The main fuel solenoid valve is electrically closed when the ENG START/STOP switch is moved to STOP. It is mechanically closed when the FUEL CUTOFF & FEATHER lever is actuated. The valve opens anytime the MANUAL FUEL/IGNITION switch is activated (unless the FUEL CUTOFF & FEATHER lever is actuated), and it remains open even after the switch is returned to OFF unless the ENG START/STOP switch is at STOP. Once open, the



FUEL SYSTEM SCHEMATIC

main fuel solenoid valve will remain open even if an electrical failure should occur.

FUEL PURGE SYSTEM

Bleed air is drawn from the compressor, through a filter and into an accumulator via a check valve. Anytime the ENG START/STOP switch is moved to STOP the purge solenoid valve opens and discharges the air from the accumulator into the flow divider. This air then forces all remaining fuel in the fuel manifolds out through the nozzles and into the combustion chamber, where the fuel is burned. This causes a momentary rise in engine speed on shutdown. In order for the purge system to work properly, the engine must have reached 95% speed during its running cycle and the switch must remain at STOP for at least 5 seconds with the Battery Master Switch ON.

FUEL CUTOFF & FEATHER LEVER

The FUEL CUTOFF & FEATHER lever is used to stop the engine in an emergency situation. If it has been used to stop the engine, the fuel purge accumulator remains charged and raw fuel remains in the fuel manifolds. When the ENG START/STOP switch is next moved to STOP, this air and fuel will be forced into the combustion chamber and thereby disposed of.

FUEL CELLS

The fuel system consists of two separate systems connected by a valve controlled crossfeed line. The separate fuel system for each engine is further divided into a main and auxiliary fuel system. The main system consists of a nacelle tank, two wing leading edge tanks, two box section bladder tanks, and an integral (wet cell) tank, all interconnected to flow into the nacelle tank by gravity. This system of tanks is filled from the filler located near the wing tip. Each main system has a total of 194 usable gallons.

Each auxiliary fuel system consists of a 41 gallon usable fuel center section tank with its own filler opening, and a fuel transfer system to transfer the fuel into the main fuel system when the auxiliary system is being used.

The two systems are vented through a recessed ram vent coupled to a protruding heated ram vent on the underside of the wing adjacent to the nacelle. One vent is recessed to prevent icing and the protruding vent is added as a backup and is heated to prevent icing.

STANDBY PUMPS

An electrically driven standby fuel pump located in the bottom of each nacelle tank is provided as a backup pump, should the engine driven fuel boost pump fail, and for use with aviation gasoline. For crossfeed operation and auxiliary fuel transfer, standby pumps are required. In the event of an inoperative standby pump, crossfeed can only be accomplished from the side of the operative pump.

Electrical power to operate the standby pumps is controlled by lever-lock toggle switches on the fuel control panel and is supplied from two independent sources. One source is provided through the SUBPANEL FEEDER BUSES and is protected by two 10-ampere circuit breakers located below the fuel control panel. This power is only available when the Master Switch is turned ON.

Another supply source comes directly from the battery through the BATTERY EMERGENCY BUSES and dual 5-ampere fuses located in the right battery compartment. The fuse panel may be serviced through the left battery access door. This power source makes power available for the pumps at all time, regardless of the Battery Master Switch position. These circuits are protected by diodes on each side of the standby pumps to prevent the failure of one circuit from disabling the other circuit. During shut-down, make certain both Standby Pump switches are OFF to prevent battery discharge.

The respective red FUEL PRESSURE annunciation in the annunciator panel will illuminate whenever fuel pressure decreases below 20 to 22 psig. The annunciator will be extinguished by switching on the standby fuel pump on that side, thus increasing pressure above 20 to 22 psig.

FUEL TRANSFER JET PUMP

A fuel transfer jet pump mounted on the inboard side of the main landing gear wheel well will transfer fuel from the auxiliary tank sump to the nacelle tank. Fuel is taken from just downstream of the main fuel filter to supply the jet transfer pump motive flow. The transfer jet pumps are activated by lever-lock toggle switches on the fuel control panel which control a shutoff valve in the motive flow line. As long as the standby pump is operating and there is fuel in the auxiliary tank, the transfer pump will feed into the nacelle tank when the valve is open. A light located on the fuel control panel, actuated by a float type switch in the sump of the auxiliary tank, will illuminate when the auxiliary system is empty.

The auxiliary fuel system will not feed into the main fuel system if there is a failure of the standby pump or a failure of the motive flow shutoff valve. This condition will be noted on the auxiliary tank fuel gage and a failure of the AUX EMPTY light on the fuel panel to illuminate. This light (one for each side) is actuated by a float switch located in the sump of the auxiliary tank. The transfer jet pump will not be damaged by operating after the tank is dry, but extended operation with an empty auxiliary tank may tend to draw unnecessary moist air into the main fuel system from the empty vented auxiliary tank.

USE OF AVIATION GASOLINE

If the fuel tanks must be topped off with aviation gasoline as an emergency fuel, the amount of aviation gasoline taken aboard each side should be recorded. If the total fuel mixture exceeds 25% aviation gasoline, petroleum base aviation oil (MIL-L-6082) should be added at the rate of 1 quart per 100 gallons of aviation gasoline. See LIMITATIONS Section for restrictions on the use of aviation gasolines.

FUEL ANTI-ICE PROTECTION

An oil-to-fuel heat exchanger, located on the engine accessory case, operates continuously and automatically to heat the fuel sufficiently to prevent freezing of any water in the fuel.

CROSSFEED

Operation of the standby pump on the side from which crossfeed is desired will ensure adequate volume to the desired engine and maintain transfer jet pump motive flow. The crossfeed valve, installed in the connecting line between the two nacelle tanks, is actuated by the lever lock crossfeed switch located on the fuel panel. When the crossfeed valve is open, the white FUEL CROSSFEED annunciator on the annunciator panel will illuminate. The crossfeed system will not transfer fuel from one fuel cell to another, its primary function is to supply fuel from one side to the opposite engine during an engine-out condition.

CAUTION

The standby pump must be in operation on the side from which the fuel is being supplied.

Turn the Aux Transfer Switch (on side being fed) OFF during crossfeed operation.

FIREWALL SHUTOFF

The system incorporates two firewall shutoff valves controlled by two switches, one on each side of the fuel system circuit breaker panel on the fuel control panel. These switches, LEFT and RIGHT respectively, are placarded FUEL FIREWALL VALVE-OPEN-CLOSED. A red guard over each switch is an aid in preventing accidental operation. Like the boost pumps, the firewall shutoff valves receive electrical power from the main buses and also the essential buses which are connected directly to the left battery.

FUEL DRAINS

During each preflight, the fuel sumps on the tanks, pumps and filters should be drained to check for fuel contamination. There are 5 sump drains and one filter drain in each wing.

NUMBER	DRAINS	LOCATION
1	Integral Tank	Underside of wing forward of aileron.
1	Firewall Fuel Filter	Underside of nacelle forward of firewall.
1	Sump Strainer	Bottom Center of nacelle forward of wheel well.
1	Jet Transfer Pump	Aft of the wheel well.
1	Gravity Feed Line & Leading Edge Tank	Aft of the wheel well.
1	Auxiliary Tank	At wing root just forward of the flap.

FUEL GAGING SYSTEM

The fuel panel contains the fuel quantity indicating system. Fuel gages read either MAIN or AUXILIARY fuel as selected by a single toggle switch between the two indicators (one for each side).

The indicators read directly in pounds of fuel.

ELECTRICAL SYSTEM

The King Air B100 is equipped with two 24-volt nickel-cadmium batteries, one located in each wing center section. A two-position Battery Select switch on the pilot's subpanel, placarded BAT SEL-SERIES-NORMAL, controls the series select relay, thereby providing the mode desired.

To start the engines in ambient air temperatures above -4°C, the Battery Select switch is placed in the NORMAL (parallel) position. For starting cold engines in ambient air temperatures below -4°C, the batteries are placed in SERIES. Warm engines are always started with the switch at NORMAL.

If the generator is turned ON after the first engine has been started, the series mode of the batteries will revert back to parallel even with the Battery Select switch in the SERIES position. For starting the second engine when the series mode is necessary, the generator of the operating engine must be turned OFF. Then the series mode will again be in effect.

Battery cooling is provided by ram air which is regulated by an air-inlet-valve thermal switch. This switch is activated when the Battery switch is ON. Power for essential components (fuel pumps, firewall valves, etc.) is provided directly from the battery.

Power for the subpanel feeder buses is taken from the dual battery start control panel then routed through 50-ampere circuit breakers and into the two looped main bus systems. Each loop is protected by diodes (to prevent a back-flow of current in case of a short in the other loop) and provided with power from each end in order to provide a back-up power source should a source failure or short occur in the system. Loads can be supplied from opposite buses. A failure of one bus system will not disable the other. The volts/frequency meter indicates the voltage and frequency of the AC bus.

The condition of the current limiters can be checked by reducing the electrical load to single generator capacity, turning OFF the generator on one side, and depressing the loadmeter test button for that side. If a loadmeter reading is observed, the current limiter for that side is good. If no reading is observed, the limiter has been expended.

The subpanel feeders which provide power through the 50-amp circuit breakers to the essential components are provided with diodes for isolation protection. The essential components are thereby provided with two sources of power – the battery emergency bus and the subpanel feeder bus. This provides a secondary source of power to the essential components in case of system failure. As a result of this arrangement, it is imperative that the standby pumps and the essential components be OFF before leaving the airplane after shutdown; otherwise, the left battery will be drained, even though the Master Switch is OFF.

The standby fuel pump fuses should be checked before starting the engines by turning the standby pumps ON, the Battery switch OFF, and listening for operation of the pumps.

Volt/loadmeters are located on the pilot's subpanel. These meters normally indicate DC generator load. A reading of 1.0 represents 100% load. A spring-loaded push button on each loadmeter may be depressed to give the bus voltage.

Number 1 Inverter Power and Number 2 Inverter Power are protected by 80-amp current limiters. A switch on the pilot's subpanel above the gang bar is provided for selection of either inverter.

A battery current detector system provides an annunciator warning to the pilot whenever the charging current is above normal. This system is designed to monitor the batteries continuously during operation to aid in the detection of excessive charge currents that may damage the batteries.

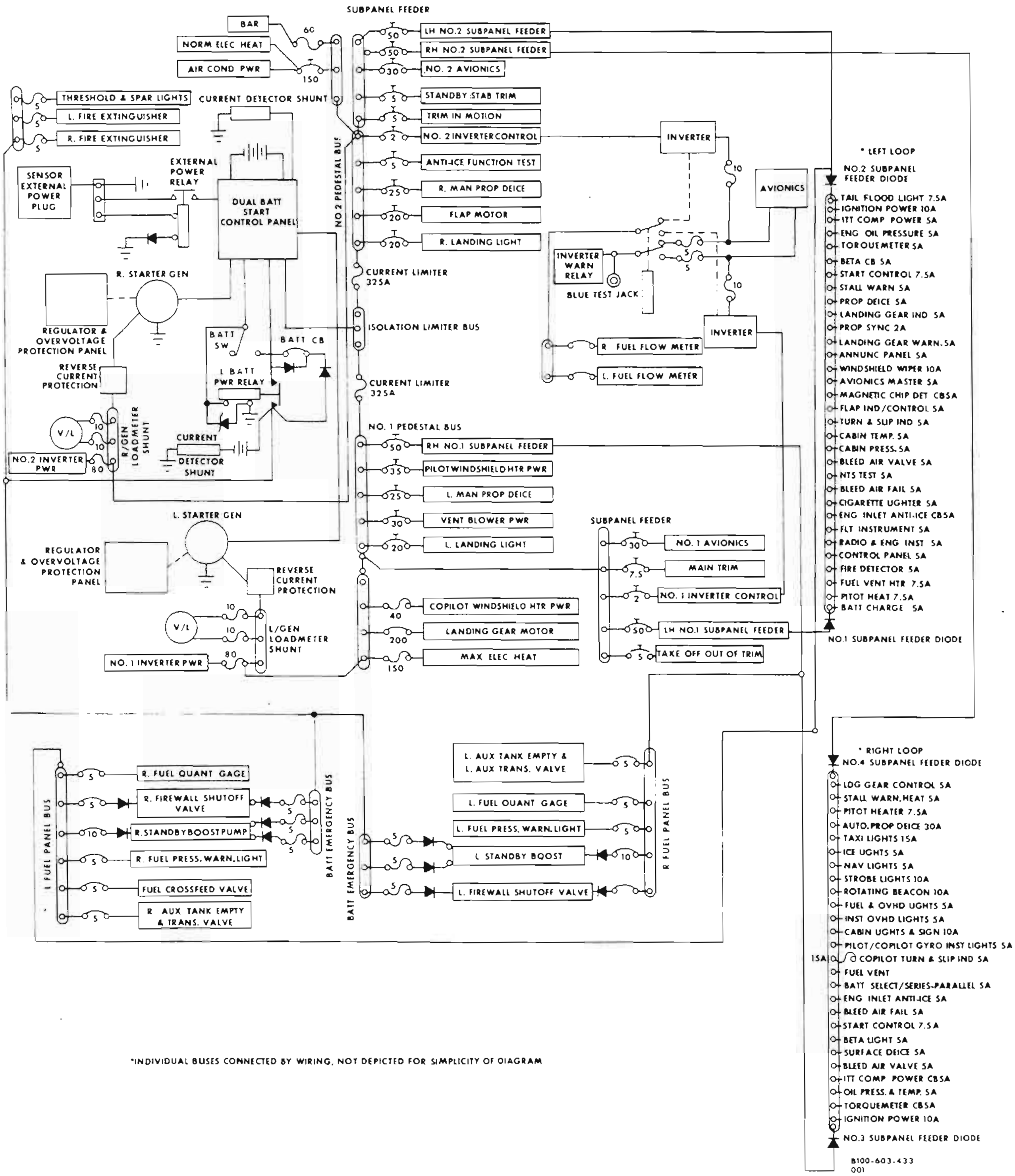
An external power sensor is provided to activate an external power relay when an auxiliary power unit is connected to the airplane. Turn the batteries ON to absorb voltage spikes which can damage electronics or avionics equipment which has been left ON. When the auxiliary power unit is plugged into the airplane, a switching relay reverts the dual battery system to the parallel mode regardless of the position of the Battery Select switch.

A normal system potential of 28.25 volts maintains the batteries at full charge. The generators are controlled by individual voltage regulators which maintain a constant voltage during variations in engine speed and electrical load requirements, and will automatically disable or enable a generator's output to the bus. The load on each generator is indicated by the respective left and right volt/loadmeter located in the left pilot's subpanel, and load division, between the generators, is accomplished electronically by the control panel.

During engine starts, the battery bus (dual battery start control panel) is connected to the starter/generator, which initially draws approximately 1000 to 1500 amperes and then drops rapidly to approximately 300 amperes as the engine starts. The airplane is equipped with three-position generator control switches. Generators are started by moving the switches to the RESET position. Since the RESET position (full up) is spring-loaded, the switch will return to the ON position when released. When operating in the generating mode, the two starter/generators provide a capability of 540 amperes (600 amps, less 10% for paralleling) at 28.25 volts.

CAUTION

Do not attempt to start generators more than twice.



POWER DISTRIBUTION DIAGRAM

LIGHTING SYSTEMS

COCKPIT

An overhead light control panel, easily accessible to both pilot and copilot, incorporates a breakdown of all lighting systems in the cockpit. Each light group has its own rheostat switch placarded BRT - OFF. The Master Panel Lights switch controls the overhead and fuel control panel lights, engine instrument lights, radio panel lights, subpanel and console lights, pilot and copilot instrument lights, and gyro instrument lights. The instrument indirect lights in the glareshield and overhead map lights are individually controlled by separate rheostat switches. A press-to-light switch on the overhead panel illuminates the free air temperature gage, mounted in the ceiling near the oxygen control knob.

CABIN

A three-position switch on the copilot's subpanel, placarded INTR LIGHT - BRT - DIM - OFF, controls the fluorescent cabin lights. The switch to the left of the interior light switch activates the cabin NO SMOKING/FASTEN SEAT BELT signs and accompanying chimes. This three-position switch is placarded CABIN SIGN - BOTH - OFF - FSB.

Two baggage area lights in the top of the aft cabin area are controlled by a two-position switch just inside the airstair door aft of the door frame.

A threshold light is located forward of the airstair door at floor level and an aisle light is located at floor level next to the spar cover. A switch adjacent to the threshold light is provided to turn both lights on and off when the airstair door is open. When the airstair door is closed, both lights extinguish automatically. They cannot be lighted when the airstair door is closed.

The individual reading lights along the top of the cabin may be turned on or off by the passengers with a push button switch adjacent to each light.

EXTERIOR

An array of switches for the exterior lights is located on the pilot's right subpanel. The controls are:

LANDING – LEFT – Left nose-gear-mounted landing light.
LANDING – RIGHT – Right nose-gear-mounted landing light.
TAXI – Nose-gear-mounted taxi light.
ICE – Wing ice lights.
NAV – Navigation lights.
BEACON – Upper and lower rotating beacons.
STROBE – (Optional) Wing tip and tail strobe lights.
RECOG – (Optional).
TAIL FLOOD LIGHT – Horizontal stabilizer mounted flood light.

ENVIRONMENTAL SYSTEMS

The environmental system consists of the bleed air pressurization, heating and cooling systems, and their associated controls.

CABIN PRESSURIZATION SYSTEM

Bleed air from the engine, as described in HEATING and COOLING, is available to the cabin at a rate of 12 pounds per minute for the purpose of pressurization. The flow control unit of each engine, which mixes ambient air with the bleed air, incorporates a solenoid actuated by the landing gear safety switch. On takeoff, a time delay relay actuates the solenoid at the left engine first, then the solenoid at the right engine in a delayed sequence to prevent excessive pressure "bump" when activating the pressurization system. A pneumatically operated outflow valve, located on the aft pressure bulkhead maintains the selected cabin altitude and rate of climb commanded by the cabin rate-of-climb and altitude controller on the pedestal. The outflow valve is equipped with a silencer cone for quiet operation. A safety valve adjacent to the outflow valve is connected to the pressure dump switch on the pedestal and is wired through the landing gear safety switch. If either of these switches is open, or the vacuum source or electrical power is lost, the safety valve will close to atmosphere.

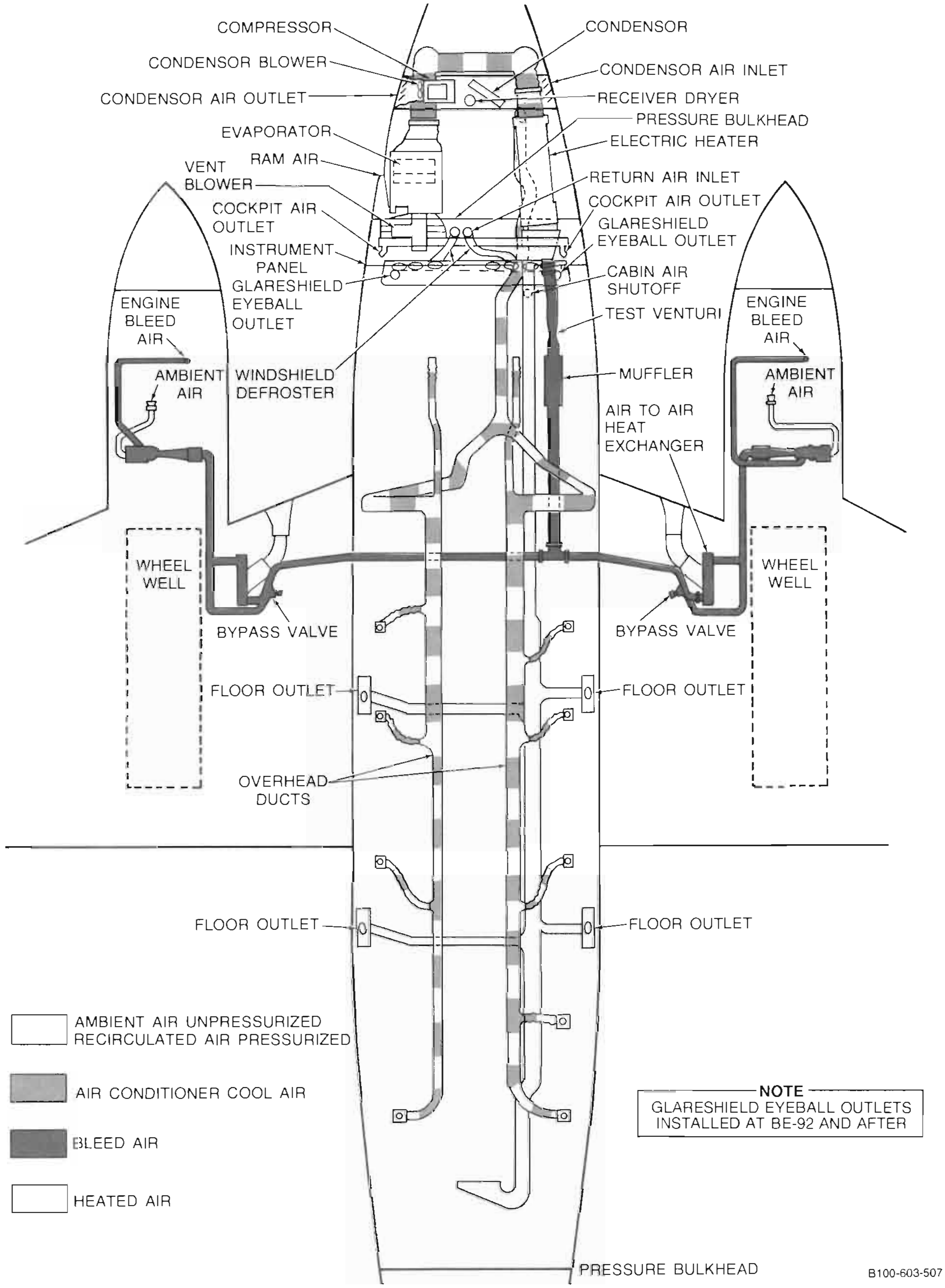
Before takeoff, the safety valve is open with equal pressure between the cabin and the outside air. The safety valve closes on liftoff if the pressure switch on the pedestal is in the PRESS mode. As the airplane climbs, the controller modulates the outflow valve and increases the cabin differential pressure until the maximum cabin pressure differential is reached. After this point the cabin altitude begins to climb. At the cabin altitude of 10,000 feet, a pressure switch completes a circuit to illuminate an annunciator, ALT WARN, to warn of operation requiring oxygen.

Also incorporated into the outflow valve is a negative pressure relief diaphragm to prevent outside atmospheric pressure from exceeding cabin pressure.

BLEED AIR FLOW CONTROL UNIT

A flow control unit forward of the firewall in each nacelle controls the bleed air from the engine to make it usable for pressurization, heating, and ventilation. This unit is fully pneumatic except for an electric solenoid operated by the bleed air switches on the copilot's subpanel, a normally open electric solenoid operated by the landing gear safety switch, and a pneumatic thermostat which opens and closes with temperature variations. The unit receives bleed air from the engine into an ejector which draws ambient air into the venturi of the nozzle. The mixed air is then forced into the bleed air line which goes through the heat exchanger in the wing center section before reaching the cabin.

ENVIRONMENTAL SYSTEM SCHEMATIC



A line from the bleed air ejector chamber to the normally closed electric solenoid is under pressure any time the engine is in operation. When the bleed air valve control switch on the copilot's subpanel is moved to OPEN, the electric solenoid valve opens, permitting air to pressurize the line to the reference pressure regulator. Here the air is regulated to a constant value of less than the bleed air pressure supply. All lines downstream from the regulator are provided with orifices to slow the movement of the valves and to allow the aneroid control to function accurately. The aneroid control restricts flow in its supply line in order to back up pressure into the ejector flow control actuator. When the bellows in the ejector flow control actuator is pressurized, it opens the ejector to allow more bleed air into the nozzle. Thus, the aneroid control regulates bleed air flow.

The firewall shutoff valve in the bleed air lines is a spring-loaded, bellows-operated valve that is held in the open position by pressure directly from the pressure regulator. When the electric solenoid is shut off, or when bleed air diminishes on engine shutdown (in both cases the pressure to the firewall shutoff valve is cut off), the firewall valve closes.

The ambient airflow is regulated by a normally open ambient modulator valve upstream from the ejector. This valve is normally open with no pressure on the system and is used to restrict the flow of ambient air to the ejector nozzle. When the airplane is on the ground and the landing gear safety switch is open, a normally open electric solenoid closes upstream from the pneumatic thermostat, building up pressure to close the ambient modulator valve. On the ground, with bleed air at lower temperatures, no ambient air is allowed to enter the bleed air line. In flight, the solenoid opens and pressure is allowed to bleed off through the pneumatic thermostat, creating a stabilized pressure condition to the ambient modulator valve. As temperatures lower, the pneumatic thermostat begins to close, which in turn closes the ambient modulator valve, shutting off the flow of ambient air to the ejector. Thus, the pneumatic thermostat governs the temperature of the hot air available to the cabin by regulating the amount of cool ambient air into the warm bleed air.

HEATING

Bleed air from the engine, combined with ambient air through the pressurization and heating flow control unit in the nacelle, is ducted into the cabin for heating and pressurization. While the airplane is on the ground, a solenoid closes off the ambient air to provide only the warm bleed air to the cabin. At liftoff, the landing gear safety switch opens a solenoid valve, allowing ambient air to be injected into the bleed air. The flow of incoming ambient air is controlled by the pneumatic thermostat. The heat of the engine bleed air is usually sufficient to maintain a comfortable cabin temperature.

There are two heating modes: manual and automatic. Selection of manual heating imposes continuous operation in that mode with regulation provided through the Manual Temperature control. In the automatic mode, the temperature may be regulated with the Cabin Temperature Control located on the copilot's subpanel.

SUPPLEMENTAL ELECTRIC HEAT

An integral electric heater with eight heating elements is provided to supplement the heating of the air within the cabin if necessary. With the Electric Heat switch in the NORM position, the heater automatically provides supplemental heat whenever necessary. An electric heat lockout system is provided. This assures that the elements of the electric heater will be blocked from functioning in favor of load requirements for the windshield anti-ice and/or propeller deice system.

If desired, an external power unit may be used during ground operation to provide initial cabin heating with the electric heater. (Refer to HANDLING, SERVICING AND MAINTENANCE Section for use of external power.)

DEFROSTING

The Defrost Air control on the pilot's subpanel controls the amount of incoming heated air that is directed through the windshield defrosting vents.

COOLING

Bleed air that is used during the cooling mode is passed through the heat exchange in the wing center section. An air intake on the leading edge of the wing brings ram air into the heat exchanger to cool the bleed air that is being ducted into the cabin. This ambient air, on leaving the heat exchanger, is dumped overboard through louvers on the bottom side of the wing. In the cooling mode, a bypass valve downstream from the heat exchanger routes the bleed air through the heat exchanger. After the air enters the cabin, it is distributed through the ducting system and recirculated. The air conditioner evaporator is mounted in the lower part of the nose forward of the pressure bulkhead. Cooling air is supplied to the air conditioner condenser by being drawn in through a louvered intake in the right side of the nose and exhausted out through louvers in the left side. The unit is electrically driven, has a rated capacity of 16,000 Btu, and uses a refrigerant gas. The circuit breaker that protects the air conditioner circuit, as well as the circuit for normal electric heat, is located on the cockpit floor just left of the pedestal.

ENVIRONMENTAL CONTROLS

An environmental control section on the copilot's subpanel provides for automatic or manual control of the system. This section contains all the major controls of the environmental function: bleed air valve switches, a vent blower control switch, a manual temperature switch for control of the heat exchanger valves, an electric heat mode selector switch, a cabin temperature level control, and the mode selector switch for selecting manual or automatic heating or cooling.

Bleed air entering the cabin is controlled by bleed air valve switches placarded BLEED AIR VALVE - OPEN - ENV OFF - INSTR & ENV OFF. When the switch is in the OPEN position, the environmental flow control unit and the pneumatic instrument air valve are open. When the switch is in the ENV OFF position, the environmental flow control unit is closed and the pneumatic instrument air valve is open; in the INSTR & ENV OFF position, both are closed. For maximum cooling on the ground, turn the bleed air valve switches to the ENV OFF position.

Above the Bleed Air Valve switches is the Vent Blower switch, placarded VENT BLOWER - HIGH - LO - AUTO. HIGH and LO positions regulate the blower to two speeds for manual operation. In the AUTO position the fan will run at low speed, but when the mode selector switch is placed in the OFF position, the blower will turn off.

To the left of the Vent Blower switch is a spring-loaded switch placarded MANUAL TEMP - INCR - DECR. It controls the motor driven bypass valves downstream of the heat exchangers in the wing center sections. In the automatic mode, the motors are driven to the proper degree of valve opening automatically as regulated by the controller. In the manual mode, the valve opening is controlled manually by moving the Manual Temperature switch to INCR or DECR and holding it in that position until the motor drives the valve to the desired position.

Also in the ENVIRONMENTAL group is the Electric Heat switch. Its three positions are GRD MAX - NORM - OFF. This switch is solenoid held in the GRD MAX position when on the ground and will drop down to the NORM position at liftoff when the landing gear safety switch is opened. It provides for maximum electric heat-from all eight elements of the electric heater for initial warmup of the cabin. If all the electrical heating elements are not desired for initial warmup, the switch may be placed in the NORM position for warmup in which only four elements will be utilized. In this position the four heating elements operate automatically, in conjunction with the cabin thermostat, to supplement bleed air heating. The OFF position turns off all electric heat and leaves cabin heating to be provided by bleed air.

The CABIN TEMP - INCR control adjacent to the Electric Heat switch provides regulation of the temperature level in the automatic mode. A temperature sensing unit in the cabin, in conjunction with the control setting, initiates a heat or cool command to the temperature controller for desired cockpit and cabin environment.

Adjacent to the Cabin Temperature controller is the mode selector, placarded CABIN TEMP MODE. With the selector in the MAN HEAT or MAN COOL position, regulation of the cabin temperature is accomplished manually with the Manual Temp control.

NOTE

Bypass valves will remain in last position when mode switch is turned off.

PITOT PRESSURE SYSTEM

The pitot system provides a source of impact air for the operation of flight instruments.

A heated pitot mast is located on each side on the bottom of the nose. Tubing from each mast is plumbed into the cabin to the instrument panel for the instruments.

Switches for pitot heat, placarded PITOT – LEFT – RIGHT, are located on the pilot's subpanel in the ICE protection group. Pitot heat should not be used on the ground except for brief periods to check operation or thaw the pitot of ice or snow.

STATIC PRESSURE SYSTEM

A dual static system provides two sources of static air to the flight instruments through two static air fittings on each side of the aft fuselage. Each static source has a fitting on each side.

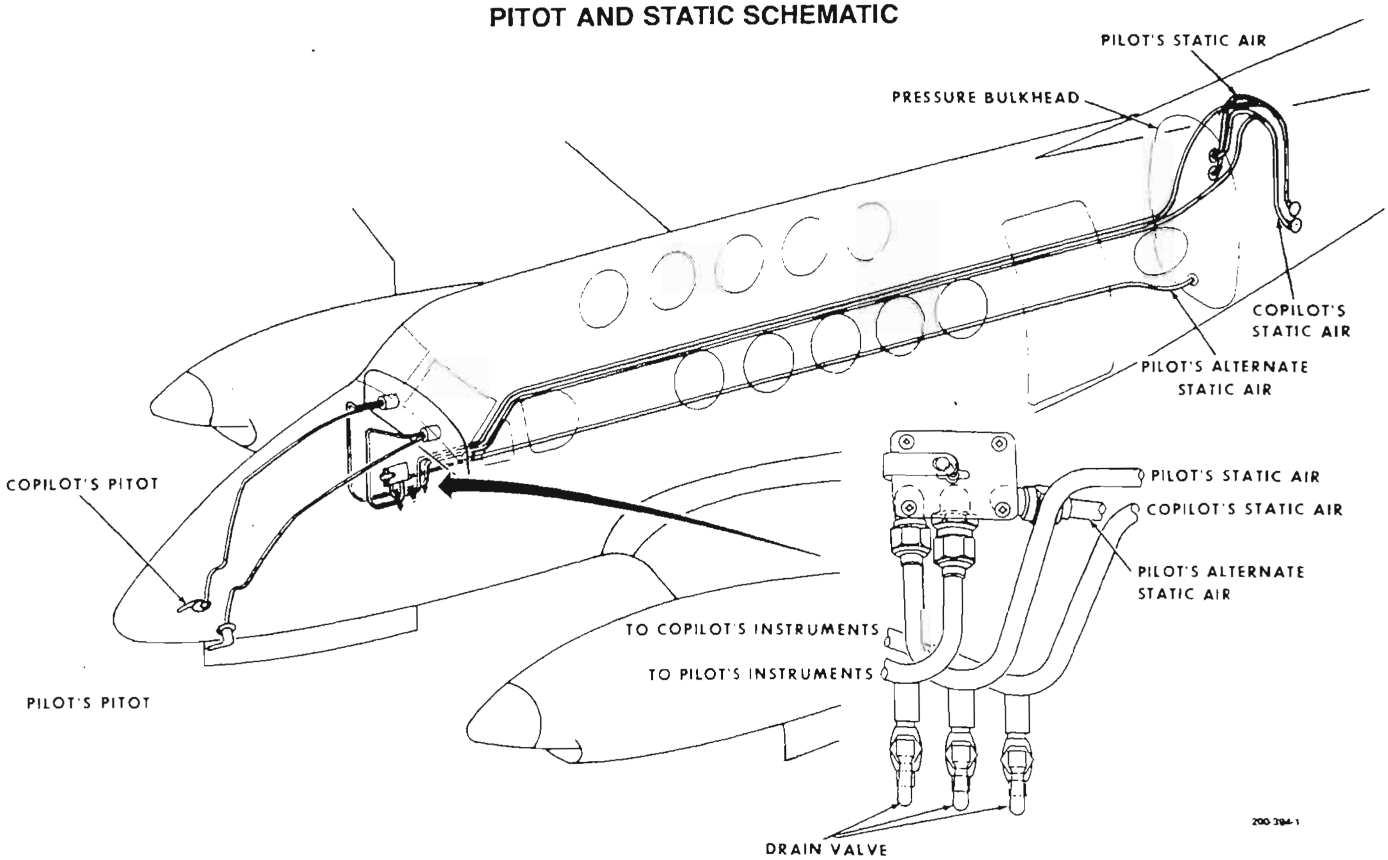
An emergency static-air line, which terminates just aft of the rear pressure bulkhead, provides a source of static air for the pilot's instruments in the event of source failure from the pilot's static air line. A control on the right side panel, placarded PILOT'S EMERGENCY STATIC AIR SOURCE, may be actuated to select either NORMAL or ALTERNATE air source by a two position selector valve. The valve is secured in the NORMAL position by a spring clip. Altimeter and airspeed information graphs are provided in the PERFORMANCE SECTION for computation when operating on Emergency Static Air.

VACUUM AND PNEUMATIC SYSTEMS

Engine-compressor bleed air, regulated at 18 psi, supplies pressure for the surface deice system and the autopilot. Vacuum for the flight instruments is derived from a bleed air ejector. One engine can supply sufficient bleed air for all these systems.

During single-engine operation, a check valve in each bleed air line from the engines prevents flow back through the line on the side of the inoperative engine. A suction gage calibrated in inches of mercury on the right side panel indicates instrument vacuum. To the right of the suction gage is a pressure gage which indicates air pressure available to the deice distributor valve.

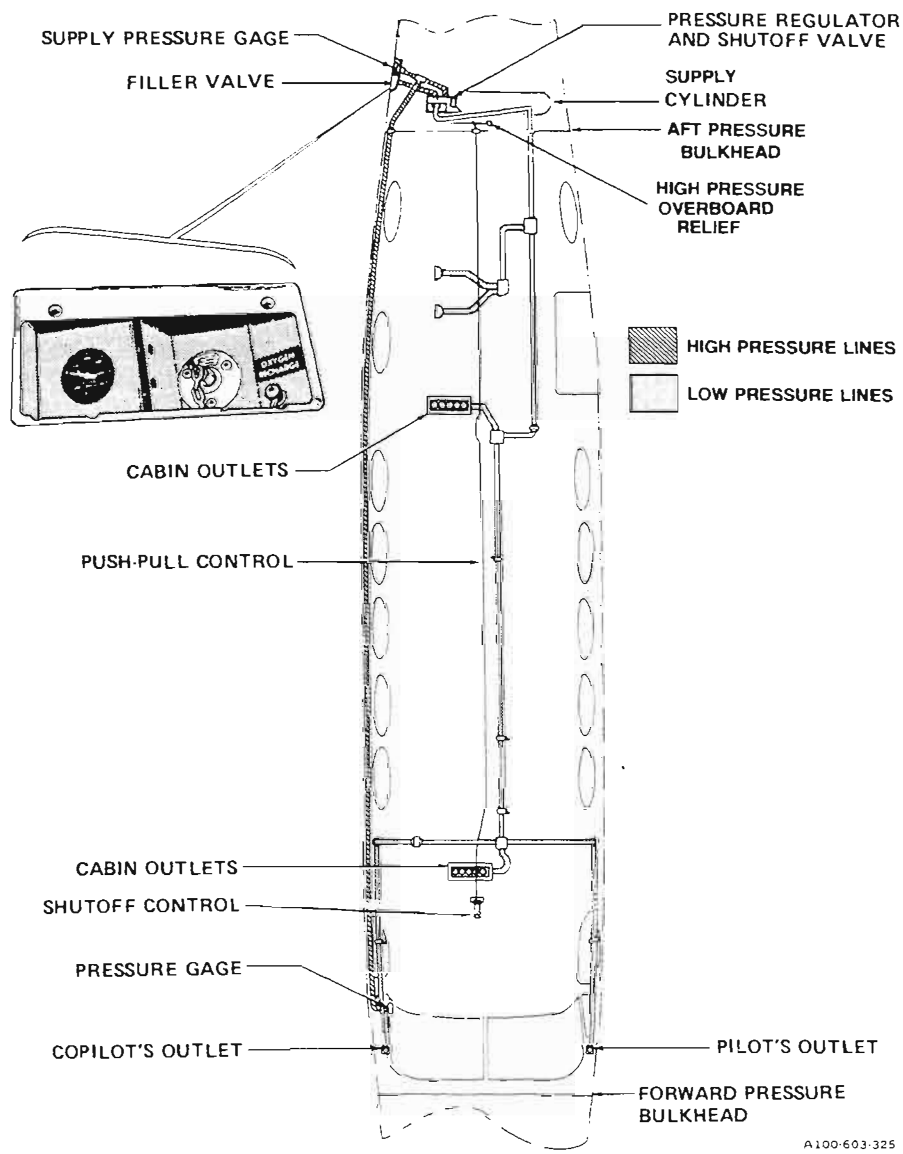
PITOT AND STATIC SCHEMATIC



OXYGEN SYSTEM

The King Air B100 oxygen system utilizes a standard 22-cubic-foot cylinder or optional 49-, 64-, or 76-, cubic-foot cylinder installed aft of the aft pressure bulkhead. The oxygen system pressure regulator and control valve is attached to the cylinder and activated by a remote push-pull knob located to the rear of the cockpit overhead light control panel.

The system is of the constant flow type, based on adequate flow for an altitude of 30,000 feet. Each mask plug is equipped with its own regulating orifice. Since the orifice is in the mask plug, the Oxygen Duration Chart is based on a flow rate of 3.70 Liters Per Minute, (LPM-NTPD). The pilot's and copilot's oxygen masks are kept under their seats with oxygen outlets located on the forward cockpit sidewalls. Passengers' masks are kept in seat back pockets except in the couch installation, where they are stored under the seats. The cabin outlets are located on the cabin headliner at the top center at both forward and aft ends of the cabin. When not in use they are protected by a sliding cover. All masks are easily plugged in by pushing the orifice in firmly and turning clockwise approximately one quarter turn. Unplugging is easily accomplished by reversing the motion.



OXYGEN SYSTEM SCHEMATIC

BLEED AIR WARNING SYSTEM

The bleed air lines from the engines to the cabin are shielded with insulation to protect other components from heat. Heat is also dissipated in the air-to-air heat exchanger in the center wing section. The bleed air lines are accompanied in close proximity by plastic tubing from the engines to the cabin. One end of the tubing is plugged off and the other is connected to a bleed air source in the cabin to supply the line with pressure. Upon release of pressure in the tubing, a normally open switch in the line, located in the fuselage, will close, causing a circuit to be completed to the respective BLEED AIR LINE FAILURE annunciator in the glareshield annunciator panel.

STALL WARNING/SAFE FLIGHT SYSTEM

The stall warning/safe flight system consists of a safe flight indicator mounted on the left side of the glareshield, a breaker type switch on the left subpanel, a warning horn forward of the right instrument panel, and a heated lift transducer vane and face plate on the leading edge of the left wing. The heater for the lift transducer vane receives power while the Battery Master Switch is on and is protected by a circuit breaker on the right subpanel. The heater for the face plate is activated by the STALL WARN switch.

The level of heat is minimal for ground operation, but is automatically increased for flight operation through the right landing gear safety switch.

When aerodynamic pressure on the lift transducer vane indicates that a stall is imminent, a transistor switch is actuated to complete the circuit to the stall warning horn.

WARNING

The heater elements protect the lift transducer vane and face plate from ice, however, a buildup of ice on the wing may disrupt the airflow and prevent the system from accurately indicating an incipient stall.

The lift transducer vane also senses the angle of attack for the safe flight indicator. This information is transmitted as a relative speed reading on the linear scale. The best approach speed is indicated when the needle centers on the scale of the indicator.

ICE PROTECTION SYSTEMS

PROPELLER ELECTROTHERMAL DEICE SYSTEM

On airplane serials BE-1 thru BE-113:

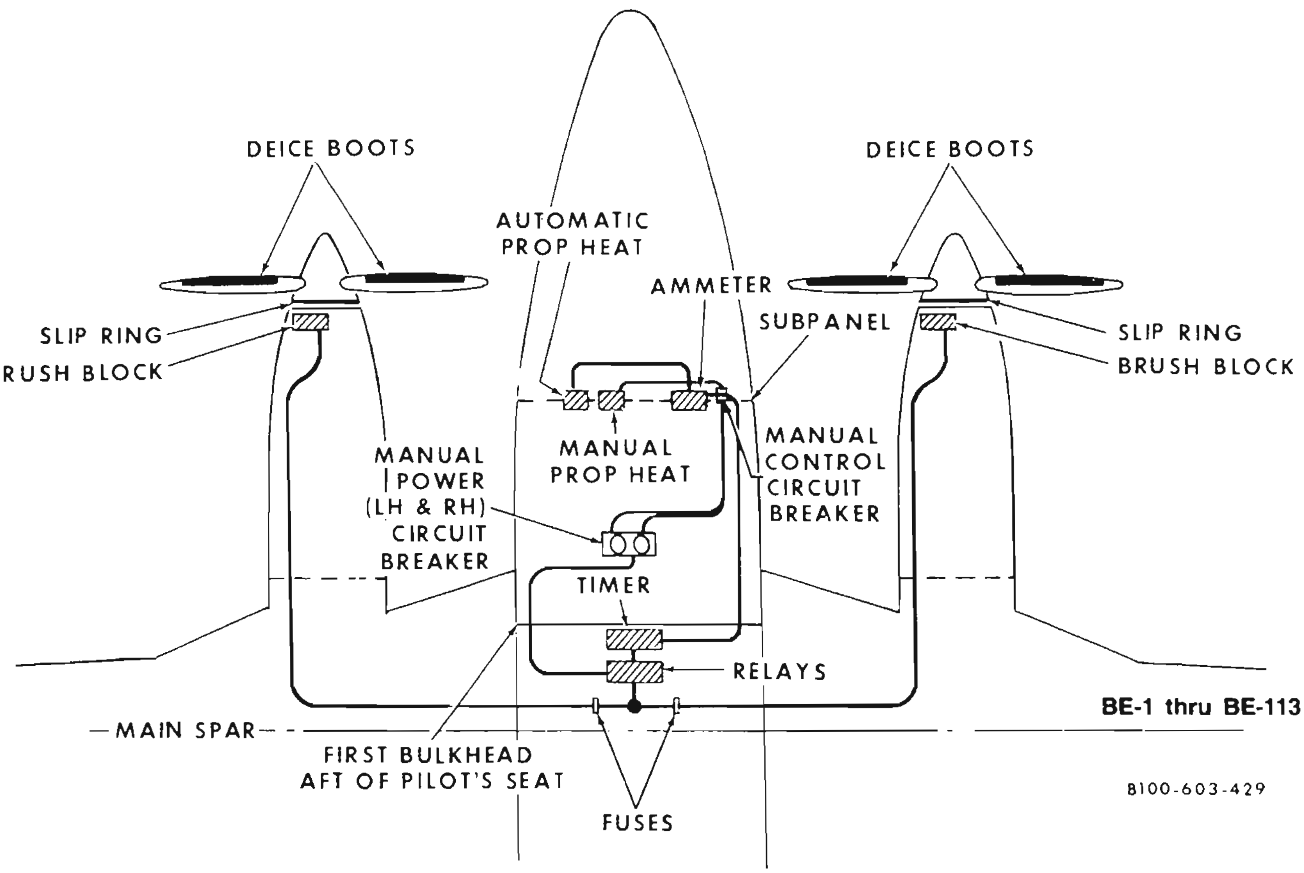
The propeller electric deice system includes: an electrically heated boot for each propeller blade, brush assemblies, slip rings, an ammeter, automatic timer, and manual and automatic switches on the pilot's subpanel.

Two propeller deice switches, placarded PROP AUTO-OFF and INNER-OUTER provide for the control of the system. A deice ammeter on the right subpanel registers the amount of current (18 to 24 amperes) passing through the system. If the current rises above the switch limit, an integral circuit breaker will cut off the power to the timer. When the AUTO-OFF switch is at AUTO, current flows from the timer to the brush assembly and then to the slip rings installed on the spinner backing plate. The slip rings distribute current to the deice boots on the propeller blades. Heat from the boots reduces the grip of the ice, which is then removed by the centrifugal effect of propeller rotation and the blast of the air stream. Power to the two heating elements on each blade (the inner and outer element) is cycled by the timer in the following sequence: right propeller outer element, right propeller inner element, left propeller outer element, left propeller inner element. All four circuits for the inner and outer elements on the blades of both propellers are protected by separate fuses located in the cabin aft of the main spar under the center aisle. Loss of one heating element circuit on one side does not mean that the entire system must be shut off. With one fuse blown, only the circuit protected by that fuse will be lost while the rest of the system remains operable. Each heating phase is 30 seconds in duration and the timer makes a complete cycle every two minutes. When the timer switches to the next phase of operation, the ammeter will register a momentary deflection. When the manual switch, which is spring-loaded to the center, is held to either the INNER or OUTER position, power flows to the selected element on both propellers.

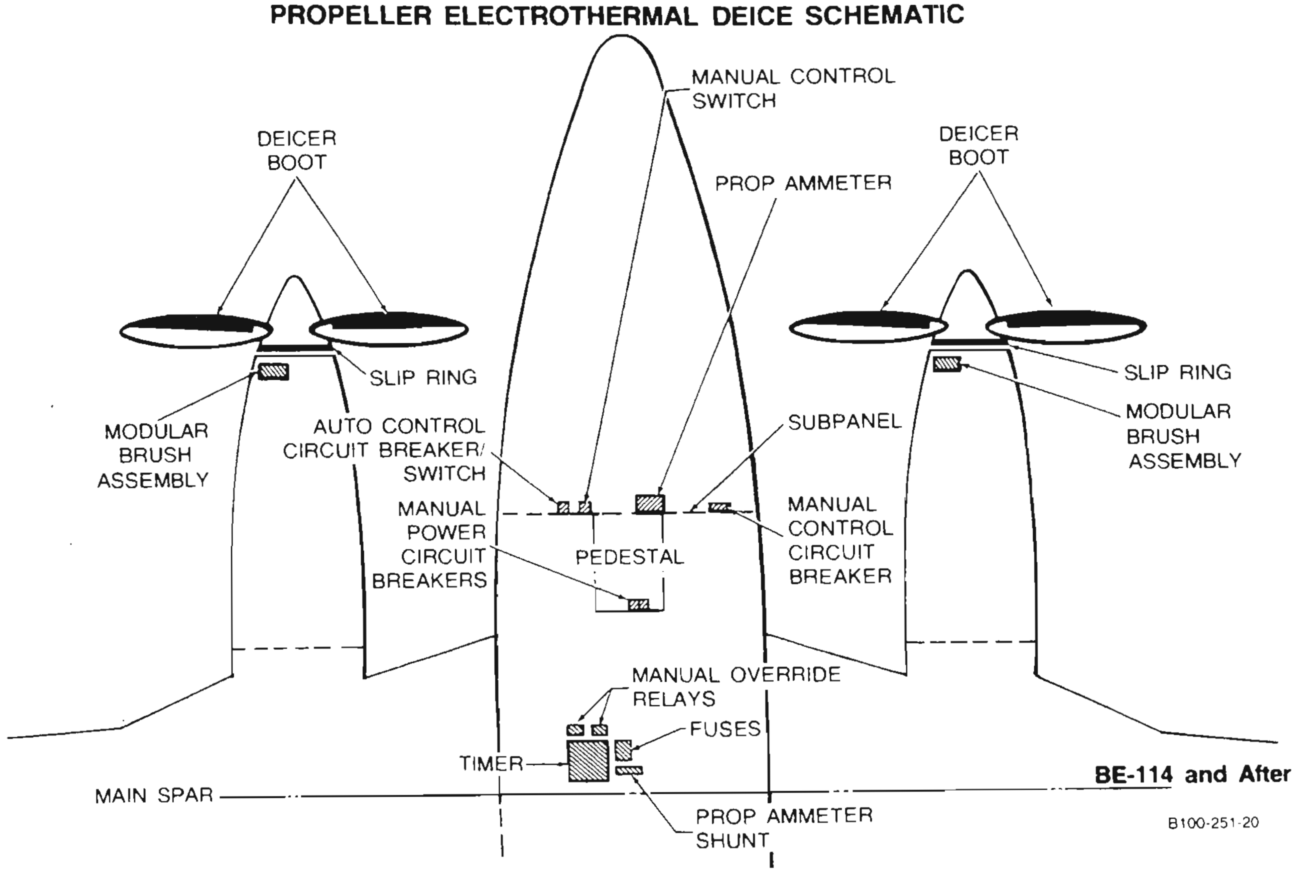
Electric heat will be disabled during operation of the propeller electric deice system in the manual or automatic mode.

On airplane serials BE-114 and after:

The propeller electric deice system includes: electrically heated deicer boots, slip rings and brush block assemblies, a timer for automatic operation, a ammeter, three circuit breakers and two fuses for left and right propeller and control circuit protection, and two switches located on the pilot's subpanel for automatic and manual control of the system.



PROPELLER ELECTROTHERMAL DEICE SCHEMATIC



A circuit breaker switch located on the pilot's subpanel, placarded PROP-AUTO-OFF, is provided to activate the automatic system. Upon placing the switch to the AUTO position the timer diverts power through the brush block and slip ring to all heating elements on one propeller. Subsequently, the timer then diverts power to all heating elements on the other propeller for the same length of time. This cycle will continue as long as the switch is in the AUTO position. This system utilizes a metal foil type single heating element energized by DC voltage. The timer switches every 90 seconds resulting in a complete cycle in approximately 3 minutes.

A manual override system is provided as a backup to the automatic timer. A control switch located on the left subpanel, placarded PROP-MANUAL-OFF, controls the manual override relay. Upon placing the switch in the MANUAL position, the automatic timer is overridden and power is then supplied to the heating elements of both propellers simultaneously. This switch is of the momentary-type and must be held in position for approximately 90 seconds to dislodge ice from the propeller surface. This procedure must be repeated as required to avoid significant buildup of ice which will result in loss of performance, vibration, and impingement upon the fuselage. The prop deicer ammeter will not indicate a load while the propeller deice system is being utilized in the manual mode. However, the loadmeters will indicate an approximate .05 increase of load per meter while the manual prop deice system is operating.

The electric heat is not affected during operation of the propeller electric deice system.

WINDSHIELD ANTI-ICE

Windshield heat for both pilot and copilot windshields is controlled by a toggle switch on the pilot's subpanel placarded WSHLD - BOTH - OFF - PILOT. The control circuit of this system is protected by a 5.0-ampere fuse on a panel mounted on the forward pressure bulkhead. Electricity is used to heat the windshield heating elements buried in the glass. The power circuit of this system is protected by a 35-ampere circuit breaker located on the lower pedestal, and a 40-ampere limiter located on the belly terminal board bracket. A controller with a temperature sensing unit maintains proper heat at the windshield surface.

Because of the close proximity of the magnetic standby compass to the windshield, erratic operation of the compass may be expected while windshield heat is being used.

SURFACE DEICE SYSTEM

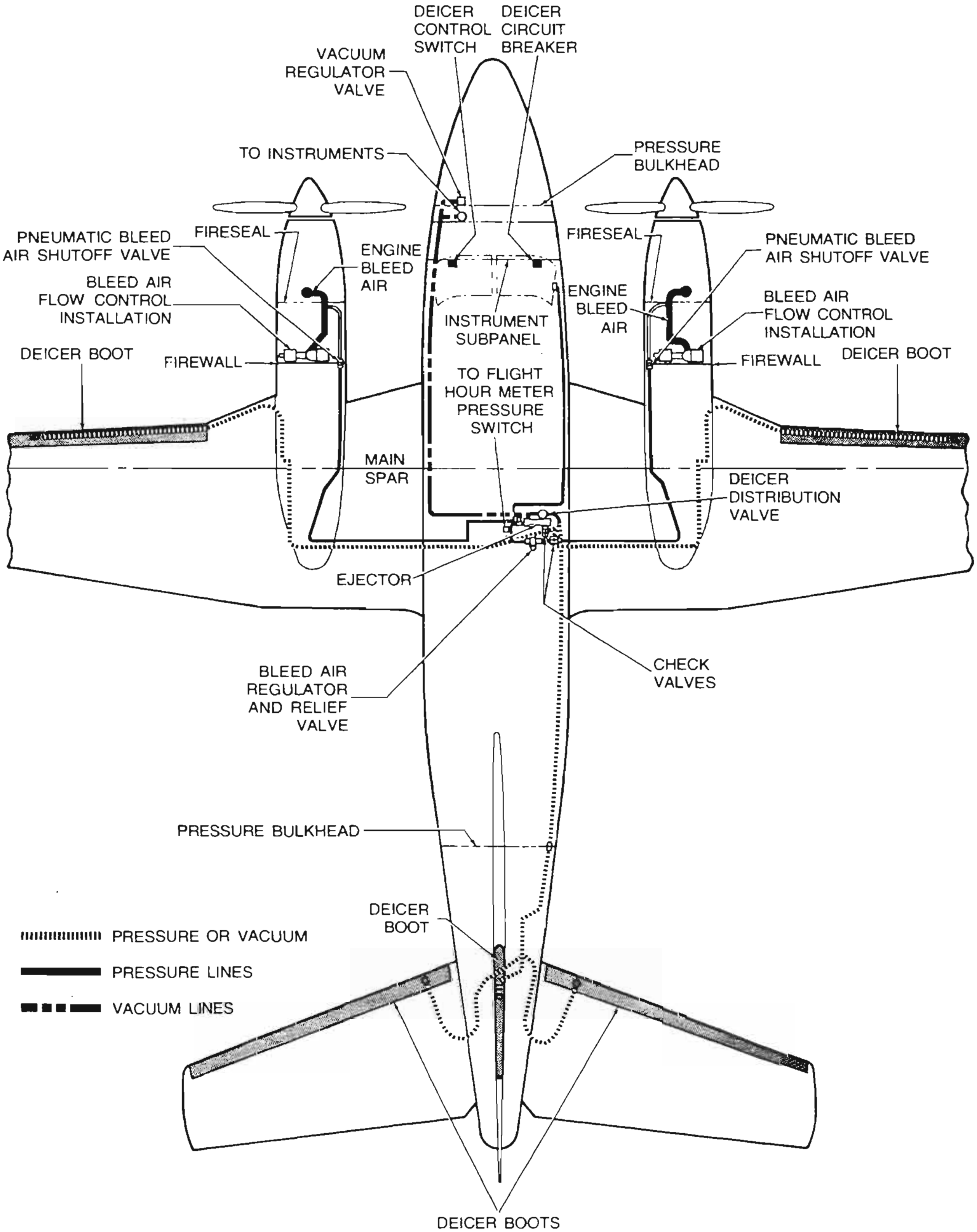
The surface deice system removes ice accumulation from the leading edges of the wings and the vertical and horizontal stabilizers. Ice removal is accomplished by alternately inflating and deflating the deice boots. Pressure regulated bleed air from the engines supplies pressure to inflate the boots. A venturi ejector, operated by bleed air, creates vacuum to deflate the boots and hold them down while not in use. To assure operation of the system should one engine fail, a check valve is incorporated into the bleed air line from each engine to prevent loss of pressure through the compressor of the inoperative engine. Inflation and deflation phases are controlled by a distributor valve. A three-position switch on the pilot's subpanel placarded DE-ICE CYCLE - SINGLE - OFF - MANUAL, controls the deicing operation. The switch is spring loaded to return to the OFF position from SINGLE or MANUAL. When the SINGLE position is selected, the distributor valve opens to inflate the boots. After an inflation period of approximately 7 seconds, a timer delay relay switches the distributor to deflate the boots. When deflation is complete, the cycle ends. If the switch is held in the MANUAL position, the boots will inflate and remain inflated until the switch is released to return to OFF. Then the boots will deflate and remain in the vacuum hold down condition until again actuated by the switch. Since very thin ice may cling to the boots during the removal attempt, the most effective deicing operation is achieved by allowing a buildup of approximately ½-1 inch of ice to form before activating the deice boots.

Surface deice system shall not be operated at ambient temperatures below -40°C.

CAUTION

Operation exceeding this temperature limit can result in permanent damage to the deice boots.

SURFACE DEICE SCHEMATIC



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PITOT MAST HEAT

Heating elements are installed in the pitot masts located on the nose. Each heating element is controlled by an individual switch, one placarded PITOT - LEFT and the other PITOT - RIGHT, located on the pilot's subpanel. It is not advisable to operate the pitot heat system on the ground except for testing or for short intervals of time to remove ice or snow from the mast.

STALL WARNING ANTI-ICE

A heating element is installed in the stall warning vane and mounting pad on the wing. The vane is heated anytime the Battery Master Switch is ON. A switch placarded STALL WARN controls power to the mounting pad element.

The level of heat is minimal for ground operation, but is automatically increased for flight operation through the right landing gear safety switch.

FUEL VENTS

The fuel system vents, located on the bottom of each wing center section, are provided with a heating element controlled by the FUEL VENT - LEFT - RIGHT switches on the pilot's subpanel.

AVIONICS COMPARTMENT SMOKE DETECTION SYSTEM

An optional smoke detector, with a constantly burning light, a photoconductive cell, and an amplifier enclosed in a perforated case, is located in the nose avionics compartment to warn of the presence of smoke. Smoke particles entering the case reflect infrared rays from the light into the cell, which transmits a signal to the smoke detector amplifier. The potential of this signal is proportional to the density of the smoke. When the signal strength is sufficient to close the relay in the amplifier, the red annunciator on the annunciator panel, placarded SMOKE, illuminates.

When the smoke detector is installed, the fire detector test switch will have an additional position, placarded SMOKE, available to check the smoke detection circuit. It is checked in the same manner as the fire detection circuits except that the SMOKE annunciator will illuminate instead of the FIRE annunciators.

COMFORT FEATURES

TOILET

Aft of the passenger compartment, and separated from it by a sliding-door-type partition, is a chemical type toilet. Optionally, an electrically operated flushing type toilet may be installed.

RELIEF TUBES

A relief tube is contained in a special tilt-out compartment at the aft side of the toilet cabinet. A relief tube may also be installed in the cockpit, and stowed under the pilot or copilot chair. The hose on the cockpit relief tube is of sufficient length to permit use by either pilot or copilot.

A valve lever is located on the side of the relief tube horn. This valve lever must be depressed at all times while the relief tube is in use. Each tube drains into the atmosphere through its own special drain port, which protrudes from the bottom of the fuselage. Each drain port atomizes the discharge to keep it away from the skin of the airplane.

NOTE

The relief tubes are for use during flight only.

CABIN FEATURES

FIRE EXTINGUISHERS

An optional portable fire extinguisher may be installed on the floor on the left side of the airplane forward of the airstair entrance door, just aft of the rearmost seat. Another one may also be installed underneath the copilot's seat.

WINDSHIELD WIPERS

The dual windshield wiper installation consists of a motor, arm assemblies, drive shafts and converters located forward of the instrument panel. The system includes a control switch, located in the upper left corner of the overhead panel. The system circuit breaker is located in the right subpanel. Windshield wipers may be operated for flight and ground operations. Do not use them on dry glass.

BE-1 through BE-84:

The control knob, placarded PARK - SLOW - FAST, controls the wipers with two speeds for light or heavy precipitation. An intermediate position between PARK and SLOW serves as the off position. After the control is turned to PARK to bring the wipers to their most inboard position, spring loading returns the control to the off position.

BE-85 and After:

The control knob, placarded PARK - OFF - SLOW - FAST, controls the wipers with two speeds for light or heavy precipitation. After the control is turned to PARK to bring the wipers to their most inboard position, spring loading returns the control to the OFF position.

SECTION VIII
HANDLING, SERVICING AND MAINTENANCE

TABLE OF CONTENTS

SECTION VIII

HANDLING, SERVICING AND MAINTENANCE

TABLE OF CONTENTS (CONT'D)

INTRODUCTION TO SERVICING

The purpose of this section is to outline to the owner and operator, the requirements for maintaining the airplane in a condition equal to that of its original manufacture. This information sets the time intervals at which the airplane should be taken to a Raytheon Aircraft authorized outlet for periodic servicing or preventive maintenance. The Federal Aviation Regulations place the responsibility for the maintenance of this airplane on the owner and the operator, who should make certain that all maintenance is done by qualified mechanics in conformity with all airworthiness requirements established for this airplane. All limits, procedures, safety practices, time limits, servicing and maintenance requirements contained in this handbook are considered mandatory. Raytheon Aircraft authorized outlets can provide recommended modification service, and operating procedures issued by both the FAA and Raytheon Aircraft Company, which are designed to get maximum utility and safety from the airplane. If a question arises, concerning the care of the airplane, it is important that the airplane serial number be included in any correspondence. The serial number appears on the Manufacturer's Identification Plaque, located on the aft frame of the airstair door opening.

WARNING

The Beech Model B100 is a pressurized airplane. Drilling, modification, or any type of work which creates a break in the pressure vessel is considered the responsibility of the owner or facility performing the work. Obtaining approval of the work is, therefore, their responsibility.

PUBLICATIONS

The following publications for the Beech Model B100 are available through Raytheon Aircraft authorized outlets.

1. Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
2. Pilot's Check List
3. Maintenance Manual
4. Components Maintenance Manual (Includes Supplier Data)
5. Wiring Diagram Manual
6. Parts Catalog
7. Service Bulletins

The following information items will be provided, at no charge, to the registered owner/operator of this airplane:

- Reissues and revisions of Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
- Original issues and revisions of FAA Approved Airplane Flight Manual Supplements.
- Original issues and revisions of Raytheon Aircraft Service Bulletins.

The above publications will be provided to the registered owner/operator at the address listed on the FAA Aircraft Registration Branch List or the Raytheon Aircraft Domestic/International Owners Notification List. Further, the owner/operator will receive only those publications pertaining to the registered airplane serial number. For detailed information on how to obtain "Revision Service" applicable to this handbook or other Raytheon Aircraft Service Publications, consult any Raytheon Aircraft authorized outlet, or refer to the latest revision of Raytheon Aircraft Service Bulletin No. 2001.

AIRPLANE INSPECTION PERIODS

Required Airplane inspection periods are found in the following publications:

1. Raytheon Aircraft Maintenance Manual
2. Raytheon Aircraft Structural Inspection Repair Manual

NOTE

The FAA may require other inspections by issuance of Airworthiness Directives applicable to the airplane, engines, propellers, and components. It is the responsibility of the owner/operator to ensure that all applicable Airworthiness Directives are complied with, and when repetitive inspections are required, to assure compliance with subsequent inspection requirements. It is also the responsibility of the owner/operator to ensure that all FAA required inspections and most Raytheon Aircraft recommended inspections are accomplished by properly certificated mechanics at properly certificated agencies (both meeting FAR 91 and FAR 43 requirements). Consult any Raytheon Aircraft authorized outlet for assistance in determining and complying with these requirements.

SPECIAL CONDITIONS CAUTIONARY NOTICE

Airplanes operated for Air Taxi, or other than normal operation, and airplanes operated in humid tropics or cold and damp climates, etc., may need more frequent inspections for wear, corrosion, and/or lack of lubrication. In these areas, periodic inspections should be performed until the operator can set his own inspection periods based on

Raytheon Aircraft

experience. The required periods do not constitute a guarantee that the item will reach the period without malfunction, as the aforementioned factors cannot be controlled by the manufacturer.

PREVENTIVE MAINTENANCE THAT MAY BE ACCOMPLISHED BY A CERTIFICATED PILOT

1. A certificated pilot may perform limited maintenance. Refer to FAR Part 43 for the items which may be accomplished. To ensure that proper procedures are followed, obtain a *Beech King Air 100 Series Maintenance Manual* prior to performing preventive maintenance.
2. All other maintenance must be performed by properly certificated personnel. Contact a Raytheon Aircraft authorized outlet.

NOTE

Pilots operating airplanes of other than U.S. Registry should refer to the regulations of the country of registry for information on preventive maintenance which may be performed by a pilot.

ALTERATIONS OR REPAIRS TO AIRPLANE

The FAA should be contacted prior to any alterations of the airplane to ensure that the airworthiness of the airplane is not violated.

NOTE

Alterations or repairs to the airplane must be accomplished by properly licensed personnel.

WARNING

Use only genuine Raytheon Aircraft or Raytheon Aircraft approved parts obtained from Raytheon Aircraft approved sources, in connection with the maintenance and repair of Beech airplanes. Genuine Raytheon Aircraft parts are produced and inspected under rigorous procedures to ensure airworthiness and suitability for use in Beech airplane applications. Parts purchased from sources other than Raytheon Aircraft, even though outwardly identical in appearance, may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in an airplane. Salvaged airplane parts, reworked parts obtained from non-Raytheon Aircraft approved sources, or parts, components, or structural assemblies, the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render the part, component or structural assembly, even though originally manufactured by Raytheon Aircraft, unsuitable and unsafe for airplane use.

Raytheon Aircraft expressly disclaims any responsibility for malfunctions, failures, damage or injury caused by use of non-Raytheon Aircraft approved parts.

GROUND HANDLING

The "Three View" drawing in Section I, GENERAL shows the minimum hangar clearances for a standard airplane. Allowances must be made for any special radio antennas and the possibility of an under-inflated nose strut or tire.

TOWING

The tow bar connects to the upper torque knee fitting of the nose strut. The airplane is steered with the tow bar when moving the airplane by hand or it can be connected to a tug to tow the airplane. Although the tug will control the steering of the airplane, position someone in the pilot's seat to operate the brakes as a safety precaution.

CAUTION

Always ensure that the airplane control locks are removed before towing the airplane. Serious damage to the steering linkage can result if the airplane is towed while the control locks are installed.

CAUTION

Do not tow the airplane with a flat shock strut.

The nose gear strut has turn limit warning marks to inform the tug driver when turning limits of the gear will be exceeded. Damage will occur to the nose gear and linkage if the turn limit is exceeded. When ground handling the airplane, do not use the propellers or control surfaces as hand holds to push or move the airplane.

CAUTION

Do not exert force on the propeller or control surfaces. Do not place weight on the stabilizers to raise the nose wheel. When towing, limit turns to prevent damage to the nose gear. Do not tow the airplane backward using the tail tie-down ring as an attach point.

PARKING

The parking brake may be set by pulling out the parking brake control, located on the extreme left side of the pilot's subpanel, and depressing the toe of the pilot's rudder pedals. The parking control closes dual valves in the brake lines that trap the hydraulic pressure applied to the brakes and prevents pressure loss through the master cylinders. To release the parking brake, depress the pilot's brake pedals to equalize the pressure on both sides of the parking brake valves and push the parking brake fully in.

NOTE

Avoid setting the parking brake when the brakes are hot from severe usage, or when moisture conditions and freezing temperature could form ice locks.

The parking brake should be disengaged and wheel chocks installed if the airplane is to be left unattended. Changes in ambient temperature can cause the brakes to release or to exert excessive pressures.

TIE-DOWN

Three mooring eyes are provided: one underneath each wing, and one in the ventral fin. To moor the airplane, chock the wheels fore and aft, install the control locks, and tie the airplane down at all three points. See "Control Locks" in Section VII, SYSTEMS DESCRIPTION. If extreme weather is anticipated, it is advisable to nose the airplane into the wind before tying it down. Install engine inlet and exhaust covers, propeller tie-down boots (one blade down) and pitot mast covers when mooring the airplane.

NOTE

Unrestrained propellers are apt to windmill. Windmilling at zero oil pressure, if prolonged, could result in bearing damage. Windmilling propellers are a SAFETY HAZARD.

OUT-OF-SERVICE STORAGE AND CARE

Refer to the *Beech King Air 100 Series Maintenance Manual.*

ENGINE CARE DURING EXTREMELY WET CONDITIONS

Refer to the *Beech King Air 100 Series Maintenance Manual.*

PROLONGED OUT OF SERVICE CARE

Refer to the *Beech King Air 100 Series Maintenance Manual.*

ENGINE CARE IN SALTY ENVIRONMENTS

When the airplane is operated in a salty atmosphere (such as near the sea) or off of airstrips treated with salt:

1. Wash each engine exterior as soon as possible with clean water.
2. Start each engine and run at ground idle for a minimum of 10 minutes to remove moisture and salt residue.
3. Spray rust preventive material on fuel control assembly, controls linkage assembly, and any exposed metal parts.
4. Inspect the entire gearcase for corrosion and spray with rust preventive material at one-week intervals. Pay particular attention to the areas around studs and inserts.

PREPARATION FOR SERVICE

Refer to the *Beech King Air 100 Series Maintenance Manual.*

SERVICING

FUEL SYSTEM

FUEL HANDLING PRACTICES

All hydrocarbon fuels contain some dissolved and some suspended water. The quantity of water contained in the fuel depends on temperature and the type of fuel. Kerosene, with its higher aromatic content, tends to absorb and suspend more water than aviation gasoline. Along with the water, it will suspend rust, lint and other foreign materials longer. Given sufficient time, these suspended contaminants will settle to the bottom of the tank. However, the settling time for kerosene is five times that of aviation gasoline. Due to this fact, jet fuels require good fuel handling practices to assure that the airplane is serviced with clean fuel. If recommended ground procedures are carefully followed, solid contaminants will settle and free water can be reduced to 30 parts per million, a value that is currently accepted by major airlines. Since most suspended matter can be removed from the fuel by sufficient settling time and proper filtration, it is not a major problem. Dissolved water has been found to be the major fuel contamination problem. It's effects are multiplied in airplanes operating primarily in humid regions and warm climates.

Dissolved water cannot be filtered from the fuel by micronic-type filters, but can be released by lowering the fuel temperature, such as will occur in flight. For example, a kerosene fuel may contain 65 ppm (8 fl oz. per 1000 gallons/ 237 milliliters per 3785 liters) of dissolved water at 80°F (26.7°C). When the temperature is lowered to 15°F (-9.4°C), only about 25 ppm will remain in solution. The difference of 40 ppm will have been released as supercooled water droplets which need only a piece of solid contaminant or an impact shock to convert to ice crystals. Tests indicate that these water droplets will not settle during flight and are pumped freely through the system. If they become ice crystals in the tank, they will not settle since the specific gravity of ice is approximately equal to that of kerosene. The 40 ppm of suspended water seems like a very small quantity, but when added to suspended water in the fuel at the time of delivery, is sufficient to ice a filter. While the critical fuel temperature range is from -40°F (-40°C) to -20°F (-28.9°C), which produces severe system icing, water droplets can freeze at any temperature below 32°F (0°C).

Water in jet fuel also creates an environment favorable to the growth of a microbiological "sludge" in the settlement areas of the fuel cells. This sludge, plus other contaminants in the fuel, can cause corrosion of metal parts in the fuel system as well as clogging the fuel filters.

Since fuel temperature and settling time affect total water content and foreign matter suspension, contamination can be minimized by keeping equipment clean. Use adequate filtration equipment and careful water drainage procedures. Store fuel in the coolest areas possible, and allow adequate settling time. Underground storage is recommended for fuels. Filtering the fuel each time it is transferred will minimize the quantity of suspended contaminants carried by the fuel.

The primary means of fuel contamination control by the owner/operator is careful handling. This applies not only to fuel supply, but to keeping the airplane system clean. The following is a list of steps that may be taken to prevent and recognize contamination problems.

1. Know your supplier. It is impractical to assume that fuel free from contaminants will always be available, but it is feasible to exercise caution and be watchful for signs of fuel contamination.
2. Assure, as much as possible, that the fuel obtained has been properly stored, filtered as it is pumped to the truck, and again as it is pumped from the truck to the airplane.
3. Perform filter inspections to determine if sludge is present.
4. Periodically flush the fuel tanks and systems. The frequency of flushing will be determined by the climate and the presence of sludge.
5. Use only clean fuel servicing equipment.
6. After refueling, allow a three-hour settle period whenever possible, then drain a small amount of fuel from each drain.

CAUTION

Fuel has a deteriorating effect and the tires should be cleaned promptly by flushing with water or by applying an absorbing material and sweeping the area.

FILLING THE TANKS

When filling the airplane fuel tanks, always observe the following:

1. Make sure the airplane is statically grounded to the servicing unit and to the ramp.
2. Service the main fuel system through the filler cap located in the outboard fuel cell on the leading edge of each wing near the wing tip. The filler caps for the auxiliary fuel system are located on the top of the center section inboard of each nacelle.

CAUTION

Do not fill auxiliary tanks unless main tanks are full. Do not fill auxiliary tanks with aviation gasoline.

3. Allow a three hour settle period whenever possible, then drain a small amount of fuel into a container from each drain point. Check fuel at each drain point for contamination.

FUEL GRADES AND TYPES

A FUEL BRAND AND TYPE DESIGNATION chart is included later in this section. It gives the fuel refiner's brand names for the designations established by the American Petroleum Institute (API) and the American Society for Testing and Materials (ASTM). The brand names are listed for ready reference and are not specified by Raytheon Aircraft Company as the only acceptable products. Any product conforming to the recommended specifications may be used.

Aviation Kerosene Grades Jet A, Jet A-l, Jet B, JP-4, and JP-5 may be mixed in any ratio. Aviation Gasoline Grades 80/87 and 100LL are the only alternate fuels approved and may be mixed with the recommended fuels in any ratio. If the normal ratio of aviation gasoline to normal fuel exceeds 25%, then 1 quart of MIL-L-6082 must be added for every 100 gallons of aviation gasoline. The use of aviation gasoline grade 80/87 is limited to 1000 gallons per engine per 100 hours of operation.

The use of aviation gasoline grade 100LL is limited to 250 gallons per engine per 100 hours of operation or a total of 7000 gallons per engine during any overhaul period. Aviation gasoline may not be used in the auxiliary tanks.

FUEL ADDITIVES

ICING INHIBITOR

Approved fuel system icing inhibitor may be used in amounts not to exceed 0.15% by volume when soluble in jet turbine fuel. Refer to the *Beech King Air 100 Series Maintenance Manual* for procedures to follow when blending anti-icing additive to the airplane fuel.

ADDING BIOCIDE TO FUEL

Refer to the *Beech King Air 100 Series Maintenance Manual* for procedures to follow when adding biocide to the airplane fuel.

DRAINING THE FUEL SYSTEM

Refer to the *Beech King Air 100 Series Maintenance Manual.*

The auxiliary fuel tank need not be drained in order to replace the standby fuel pump.

DEFUELING ADAPTER

The defueling adapter assembly is a spring-loaded check valve inserted into a threaded boss. The boss is welded onto a mounting plate which is attached directly to the bottom of the nacelle fuel cell. When the nacelle fuel cell is to be removed from the airplane the complete adapter assembly must be removed. In the event the check valve itself malfunctions, it may be removed by screwing it out of the boss. Refer to the *Beech King Air 100 Series Maintenance Manual* for procedures to remove the defueling adapter assembly.

CLEANING FUEL FILTERS

FIREWALL FUEL FILTER

Refer to the *Beech King Air 100 Series Maintenance Manual.*

FUEL PUMP FILTER

Refer to the *Beech King Air 100 Series Maintenance Manual.*

OIL SYSTEM

Servicing the engine oil system primarily involves maintaining the engine oil at the proper level, inspecting and cleaning, or replacing the filter element, and changing the oil at the proper intervals (Refer to the *Beech King Air 100 Series Maintenance Manual*). Flush the system and change the oil any time the oil has been contaminated by metal particles. Otherwise, the only service required is to maintain the oil level and clean the filters as noted above.

CAUTION

Do not mix different brands of oil when adding oil between changes. Different brands or types of oil may be incompatible because of the difference in their chemical structures.

The oil tank is provided with an oil filler neck, quantity dipstick and cap. The filler neck and dipstick protrude through the accessory gearcase housing at the eleven o'clock position. Access to the dipstick cap is gained by opening the small access door in the forward right engine cowl. Access to the drain plug is gained by removing the fiberglass oil cooler air inlet scoop.

Service the oil system with oil as specified in the Consumable Materials Chart. Do not mix different oil brands. When a dry engine is first serviced it will require approximately 3 quarts in addition to tank capacity to fill the lines and the cooler, giving a total system capacity of 10.5 quarts. The engine will trap approximately 2.5 quarts which cannot be drained; therefore, when performing an oil change, refill the system with 7 quarts and add additional oil, based on the dipstick reading. The dipstick indicates one quart below full when the oil level is normal. Overfilling may cause a discharge of oil through the breather until a satisfactory level is reached.

CAUTION

Spilled oil should be removed immediately to prevent the possibility of contaminating the airplane's tires. Oil (in some instances) can cause the rubber of the tires to deteriorate.

ENGINE OIL FILTER

The engine oil filter is located on the upper right side of the engine. For cleaning or replacement of the oil filter, refer to the *Beech King Air 100 Series Maintenance Manual.*

CHANGING THE ENGINE OIL

Refer to the *Beech King Air 100 Series Maintenance Manual.*

PROPELLER BLADES

The daily preflight should include a careful examination of the propeller blades for nicks and scratches.

Each blade leading edge should receive particular attention. It is very important that all nicks and scratches be smoothed out and polished. Raytheon Aircraft Service Centers or dealers will be glad to answer any questions concerning propeller blade repair.

BATTERIES

The two 24-volt nickel-cadmium batteries are highly valued because they have the potential for years of reliable service. However, careful maintenance is required to obtain this service. Nickel-cadmium batteries are significantly different from lead-acid batteries. When service is required for nickel-cadmium batteries it is recommended they be serviced by an authorized Raytheon Aircraft Service Center or dealer.

For detailed servicing of the battery, refer to the *Beech King Air 100 Series Maintenance Manual.*

WARNING

Serious injury can result from the handling of nickel-cadmium batteries by untrained personnel.

EXTERNAL POWER

The external power receptacle is located on the lower side of the right engine nacelle just aft of the main gear. This receptacle will accept a standard AN-type plug. External power can be used to operate all the electrical equipment (this includes avionics checkouts) during ground operations without the engine running, and it can be used to start the engines. An external power source is capable of delivering 300 amperes, and up to 1000 amperes for 0.1 second, is required for engine starting assist.

WARNING

Do not exceed 400 amperes continuous power load.

The airplane electrical system is automatically protected from reverse polarity (i.e., positive ground) by a diode network in the external power circuit.

The following precautions must be observed when using an external power source:

1. Turn the external power unit OFF before connecting it to the airplane to prevent arcing. Turn the Avionics Master Switch, located on the pilot's left subpanel, to the OFF position. Turn the battery switch ON to allow the battery to absorb voltage transients that may be present in some external power units.

NOTE

If the airplane batteries do not indicate a minimum of 20 volts, they must be recharged prior to using external power for starting engines.

2. If external power is connected to the airplane but power is not available at the battery bus, a check should be made with a voltmeter to determine the polarity of the power unit. The airplane will only accept negatively grounded external power.
3. If the unit is not equipped with a standard AN plug, check the polarity with a voltmeter. Connect the positive lead to the center large post of the receptacle and the ground to the other large pin. The small pin is the polarizing pin and must be supplied with a positive 24 VDC to close the external power relay.

SHOCK STRUTS

WARNING

NEVER FILL SHOCK STRUTS WITH OXYGEN.

Service the shock struts according to the *Beech King Air 100 Series Maintenance Manual.* If it becomes necessary to service the shock struts due to leakage of either the hydraulic oil or the air, the following procedure should be followed:

NOSE GEAR STRUT

1. Release all the air from the strut by depressing the core of the air valve on top of the strut.
2. Remove the air valve and wipe clean. with the strut fully compressed, the end of the filler neck on the air valve should touch the oil. If the oil is below this level, add MIL-H-5606 hydraulic oil. Reinstall and safety the air valve.
3. With the airplane empty except for full fuel and oil, inflate the nose strut until the inner cylinder is extended 3 to 3-1/2 inches.

MAIN GEAR STRUT

1. Release all the air from the strut through the air valve and remove the core from the valve.
2. Fully compress the strut and attach a small hose over the air valve and immerse the other end of the hose in MIL-H-5606 hydraulic oil. Slowly extend the strut to vacuum the oil into the cylinder. Cycling the strut will expel any trapped air. Return the strut slowly to the fully compressed position. This will force the excess oil back into the container and the strut will be properly filled with oil.
3. With the airplane empty except for full fuel and oil, inflate the nose strut until the inner cylinder is extended 4 to 4-1/2 inches.

CAUTION

If a compressed air bottle containing air under high pressure is used, exercise care to avoid over-inflating the shock strut.

Verify the shock strut servicing procedures with the *Beech King Air 100 Series Maintenance Manual.*

TIRES

The King Air B100 is equipped with dual 18 x 5.5, 8 or 10 ply rated tubeless tires on each main landing gear and a 6.50 x 10, 6 ply tubeless tire on the nose gear. Airplanes equipped with high floatation landing gear have 6.50 x 10, 6-ply-rated or 10-ply-rated tubeless tires on both the main and nose landing gear.

CAUTION

Tires that have picked up a film of fuel, hydraulic fluid or oil should be washed down as soon as possible with a detergent solution to prevent deterioration of the rubber.

Maintaining proper tire inflation will help to avoid damage from landing shock and contact with sharp stones and ruts, and will minimize tread wear. When inflating the tires, inspect them for cuts, cracks, breaks, and tread wear. Refer to the *Beech King Air 100 Series Maintenance Manual* for more detailed inspection and repair procedures.

TIRE INFLATION PRESSURE (psi)

	MAIN GEAR		NOSE GEAR
	8 ply	10 ply	6 ply
Standard	104 - 108	94 - 98	55 - 60
High Flotation	55 - 59 (6 ply)		55 - 60

CAUTION

Raytheon Aircraft Company cannot recommend the use of recapped tires. Recapped tires have a tendency to swell as a result of the increased temperature generated during takeoff. Increased tire size can jeopardize proper function of the landing gear retract system, with the possibility of damage to the landing gear doors and the retract mechanism.

NOTE

While Raytheon Aircraft Company cannot recommend the use of recapped tires, tires retreaded by an FAA-approved repair station with a specialized service-limited rating for TSO-C62c may be used.

BRAKE SYSTEM

Brake system servicing is limited to maintaining adequate hydraulic fluid in the reservoir mounted on the bulkhead in the upper left corner of the nose radio compartment. A dipstick is provided for measuring the fluid level. When the reservoir is low on fluid, add a sufficient quantity of approved hydraulic fluid to fill the reservoir to the full mark on the dipstick.

The only other requirement related to servicing involves the wheel brakes themselves. Brake lining adjustment is automatic, eliminating the need for periodic adjustment of the brake clearance. Refer to the *Beech King Air 100 Series Maintenance Manual* for more detailed inspection and repair procedures.

INSTRUMENT VACUUM AIR

Vacuum for the flight instruments is obtained by operating an ejector with bleed air from the engines. (Air at a pressure less than atmospheric is commonly referred to as vacuum.) During operation, the ejector draws air in through the instrument filter and the gyros. A vacuum relief regulator valve regulates instrument air pressure.

The instrument filter, located at the top of the avionics compartment, is of prime importance and should be replaced at the interval shown in the *Beech King Air 100 Series Maintenance Manual*, or more often if conditions warrant (smoky, dusty conditions).

The vacuum relief regulator valve, located on the forward pressure bulkhead in the bottom of the avionics compartment, is protected by a foam sponge-type filter which should be cleaned in solvent at the interval shown in the *Beech King Air 100 Series Maintenance Manual.* If vacuum pressure rises above a normal reading, clean the filter, and recheck vacuum pressure before adjusting the vacuum relief regulator valve.

SERVICING THE OXYGEN SYSTEM COMPONENTS

OXYGEN COMPONENTS

Oxygen for unpressurized, high-altitude flight is supplied by a cylinder located in the compartment immediately aft of the aft pressure bulkhead. A 22-, 49-, 64-, or a 76-cubic-foot cylinder may be installed. The oxygen system is serviced by a filler valve accessible by removing an access plate on the right side of the aft fuselage. The system has two pressure gages, one located on the right subpanel in the crew compartment for in-flight use, and one adjacent to the filler valve for checking system pressure during filling. A shutoff valve and regulator, located on the cylinder, controls the flow of oxygen to the crew and passenger outlets. The shutoff valve is actuated by a push-pull-type control located overhead and aft of the light control panel in the cockpit. The regulator is a constant-flow type which supplies low pressure oxygen through system plumbing to the outlets.

OXYGEN SYSTEM PURGING

Offensive odors may be removed from the oxygen system by purging. The system should also be purged any time system pressure drops below 50 psi or a line in the system is opened.

Purging is accomplished simply by connecting a recharging cart into the system and permitting oxygen to flow through the lines and outlets until any offensive odors have been carried away. The following precautions should be observed when purging the oxygen system:

1. Avoid any operation that could make sparks. Keep burning cigarettes or fire away from the vicinity of the airplane when the outlets are in use.
2. Inspect the filler connection for cleanliness before attaching it to the filler valve.
3. Make sure that hands, tools, and clothing are clean. Look particularly for grease or oil stains, because these contaminants are extremely dangerous in the vicinity of oxygen.
4. As a further precaution against fire, open and close all oxygen valves slowly during filling.

FILLING THE OXYGEN SYSTEM

When filling the oxygen system, use only Aviator's Breathing Oxygen, MIL-O-27210.

CAUTION

DO NOT USE MEDICAL or INDUSTRIAL OXYGEN. It contains moisture which can cause the oxygen valve to freeze.

Fill the oxygen system slowly by adjusting the recharging rate with the pressure regulating valve on the servicing cart, because the oxygen, under high pressure, will cause excessive heating of the filler valve. Fill the cylinder (22-cubic-foot cylinder installation) to a pressure of 1800 ±50 psi at a temperature of 70°F. This pressure may be increased an additional 3.5 psi for each degree (°F) (6.3 psi for each °C) of increase in temperature; similarly, for each degree (°F) of drop in temperature, reduce the pressure for the cylinder by 3.5 psi (6.3 psi for each °C). The oxygen system, after filling, will need to cool and stabilize for a short period before an accurate reading on the gages can be obtained. When the system is properly charged, disconnect the filler hose from the filler valve and replace the protective cap on the filler valve.

OXYGEN CYLINDER RETESTING

Oxygen cylinders used in the airplane are of two types. Light weight cylinder, stamped "3HT" on the plate on the side, must be hydrostatically tested every three years and the test date must appear on the cylinder. This bottle has a service life of 4380 pressurizations or 24 years, whichever occurs first, and then must be discarded. Regular weight cylinders stamped 3A or 3AA must be hydrostatically tested every five years and the retest date must appear on the cylinders. Service life of these cylinders is not limited.

AIR CONDITIONING SYSTEM

If an extended period of time passes during which the air conditioning system is not operated, moisture may condense and settle in the system low spots, resulting in corrosion of the refrigerant lines. Also, the system seals may dry out, shrink, and crack, due to the lack of lubrication. In order to protect the integrity of the system, the air conditioner should be operated at least 10 minutes every month.

CAUTION

Do not attempt to operate the air conditioner when the ambient temperature is below 10°C (50°F). If for several weeks, it is impossible to obtain an ambient temperature of at least 10°C (50°F), the recommended monthly interval for operating the air conditioner may be extended somewhat.

For air conditioner system servicing information, refer to the *Beech King Air 100 Series Maintenance Manual.*

WARNING

Refrigerant and oil are under pressure within the refrigeration system. Injury to personnel or damage to the system could occur if maintenance is not performed properly. The refrigerant system should be serviced only by qualified air conditioner technicians.

AIR CONDITIONER AIR FILTER REPLACEMENT

The air conditioner filter is a flexible, fiber-foam type, that covers the evaporator coil radiator in the air conditioner plenum chamber. Replace the filter according to the schedule in the *Beech King Air 100 Series Maintenance Manual.* It may be removed as follows:

1. Remove the access door in the nose wheel well beside the evaporator inlet and outlet line. Remove the evaporator plenum access door, located under wheel well door, for access to the evaporator.
2. Pull the filter down and out of the retaining clips on the evaporator coil. Remove the filter carefully so as not to distort the small tubing in the area.
3. Fold the new filter so that it can be inserted through the evaporator access door. The filter must be carefully inserted between the radiator and the tubing and secured with the retaining clips at the upper corners of the filter frame.

NOTE

Check that the flapper valve door from the cabin inlet still has clearance to open between the evaporator tubings that might have been disturbed by changing the filter.

4. Replace the access doors.

DEICING AND ANTI-ICING OF AIRPLANES ON THE GROUND

Deicing is the removal of ice, frost, and snow from the airplane's exterior after it has formed. Anti-icing is a means of keeping the surface clear of subsequent accumulations of ice, snow and frost.

Snow and ice on an airplane will seriously affect its performance. Removal of these accumulations is necessary prior to takeoff. Airfoil contours may be altered by the ice and snow to the extent that their lift qualities will be seriously impaired. Ice and snow on the fuselage can increase drag and weight.

SNOW REMOVAL

The removal of frozen deposits by chipping or scraping is not recommended. The best way to remove snow is to brush it off with a squeegee, soft brush, or mop. Exercise care so as not to damage any components that may be attached to the outside of the airplane, such as antennas, vents, stall warning vanes, etc. Remove loose snow from the airplane before heating the airplane interior; otherwise, at low temperatures, the snow may melt and refreeze to build up a considerable depth of ice. If the airplane has been hangared and snow is falling, coat the airplane surfaces with an anti-icing solution; snow falling on the warm surface will have a tendency to melt, then refreeze.

After snow has been removed from the airplane, inspect the airplane for evidence of residual snow. Special attention should be given all vents, openings, static ports, control surfaces, hinge points, and the wing, tail, and fuselage surfaces for obstructions or accumulations of snow. Check the exterior of the airplane for damage to external components that may have occurred during the snow removal operations.

Control surfaces should be moved to ascertain that they have full and free movement. The landing gear mechanism, doors, wheel wells, uplocks and microswitches should be checked for ice deposits that may impair function.

When the airplane is hangared to melt snow, any melted snow may freeze again if the airplane is subsequently moved into subzero temperatures. Any measures taken to remove frozen deposits while the airplane is on the ground must also prevent the possibility of refreezing of the liquid.

Following snow removal, should freezing precipitation continue, the airplane surface should be treated for anti-icing.

FROST REMOVAL

Frost that may form on the wing fuel tank bottom skins need not be removed prior to flight. Frost that may accumulate on other portions of the wing, the tail surfaces, or on any control surface, must be removed prior to flight. Frost that cannot be removed by wiping with a gloved hand or soft towel must be removed by placing the airplane in a warm hangar or by the application of a deicing fluid.

After removal of all frost from the airplane exterior, check all external components for damage that may have occurred during frost removal.

ICE REMOVAL

Moderate or heavy ice and residual snow deposits should be removed with a deicing fluid. No attempt should be made to remove ice deposits or break an ice bond by force.

After completing the deicing process, the airplane should be inspected to ensure that its condition is satisfactory for flight. All external surfaces should be examined for residual ice or snow, special attention should be given all vents, openings, static ports, control surfaces, hinge points, and the wing, tail, and fuselage surfaces for obstructions or accumulations of ice or snow.

Control surfaces should be moved to ascertain that they have full and free movement. The landing gear mechanism, doors, wheel wells, uplocks and microswitches should be checked for ice deposits that may impair function.

When the airplane is hangared to melt ice, any melted ice may freeze again if the airplane is subsequently moved into subzero temperatures. Any measures taken to remove frozen deposits while the airplane is on the ground must also prevent the possible refreezing of the liquid.

Following ice removal, should freezing precipitation continue, the airplane surface should be treated for anti-icing.

DEICING AND ANTI-ICING FLUID APPLICATION

Airplane deicing fluids may be used diluted or undiluted according to manufacturers recommendations for deicing. For anti-icing purposes, the fluids should always be used undiluted. Deicing fluids may be applied either heated or unheated. Refer to Section II, LIMITATIONS, for a listing of approved airplane deicing/anti-icing fluids.

NOTE

Type II and Type IV deicing fluids should only be applied with at low pressure by trained personnel with proper equipment.

If a sprayer is not available, deicing fluid may be brushed or painted onto the airplane's surface.

MISCELLANEOUS MAINTENANCE

CLEANING

EXTERIOR PAINTED SURFACES

CAUTION

Polyester urethane undergoes a curing process for a period of 30 days after application. Wash uncured painted surfaces with a mild non-detergent soap (MILD detergents can be used on urethane finishes) and cold or lukewarm water only. Use soft cloths, keeping them free of dirt and grime. Any rubbing of the surface should be done gently and held to a minimum to avoid cracking the paint film. Rinse thoroughly with clean water. Stubborn oil or soot deposits may be removed with automotive tar removers.

Prior to cleaning, cover the wheels, making certain the brake discs are covered. Attach the pitot cover securely, and plug or mask off all other openings. Be particularly careful to mask off all static air buttons before washing or waxing. Use special care to avoid removing lubricant from lubricated areas.

Hand washing may be accomplished by flushing away any loose dirt with clean water, then washing with a mild soap and water, using soft cleaning cloths or a chamois. Avoid harsh, abrasive, or alkaline soaps or detergents which could cause corrosion or scratches. Thorough clear-water rinsing prevents build-up of cleaning agent residue which can dull the paint's appearance. To remove residue or exhaust soot, use a cloth dampened with an automotive tar remover, then wax or polish the affected area.

WARNING

Do not expose any trim tab hinge lines or trim tab pushrod systems to the direct stream or spray of high-pressure soap-and-water washing equipment. Fluid dispensed at high pressure could remove the protective lubricant, allowing moisture from heavy or prolonged rain to collect at hinge lines, and then to freeze at low temperatures. After high pressure or hand washing, and at each periodic inspection, lubricate trim tab hinge lines and pushrod systems.

When using high-pressure washing equipment, keep the spray or stream clear of wheel bearing, propeller hub bearings, etc., and openings such as pitot tubes, static air buttons, and battery and avionics equipment cooling ducts, which should be securely covered or masked off. Avoid directing high-pressure sprays toward the fuselage, wing and empennage from the rear, where moisture and chemicals might more easily enter the structure, causing corrosion damage to structural members and moving parts.

CAUTION

After operation on salty or muddy runways, wash the main and nose landing gears with low-pressure water and a mild detergent as soon as practical. Rinse with clear water and blow dry with low-pressure air immediately after rinsing. Relubricate as necessary.

CAUTION

When cleaning wheel well areas with solvent, especially if high-pressure equipment is used, exercised care to avoid washing away grease from landing gear components. After washing the wheel well areas with solvent, lubricate all lubrication points, or premature wear may result.

CAUTION

Do not apply wax, polish, rubbing compound, or abrasive cleaner to any uncured painted surface. Use of such items can permanently damage the surface finish. Also, waxes and polishes seal the paint from the air and prevent curing.

Waxing of polyester urethane finishes, although not required, is permitted. However, never use abrasive cleaner type waxes, polishes, or rubbing compounds, as these products cause eventual deterioration of the characteristic urethane gloss.

In all cases when waxing is to be accomplished, select a high quality automotive or aircraft waxing product. Do not use a wax containing silicones, as silicone polishes are difficult to remove from surfaces. A buildup of wax on any exterior paint finish will yellow with age; therefore, wax should be remove periodically. Generally, aliphatic naptha is adequate and safe for this purpose.

NOTE

Before returning the airplane to service, remove all maskings and coverings, and relubricate as necessary.

WINDOWS AND WINDSHIELDS

The windshield and plastic windows should be kept clean and waxed at all times. To prevent scratches wash the windows carefully with plenty of soap and water, using the palm of the hand to feel and dislodge dirt and mud. A soft cloth, chamois, or sponge may be used, but only to carry water to the surface. Rinse thoroughly, then dry with a clean, moist chamois. Rubbing the surface of the plastic with a dry cloth builds up a static charge which attracts dust particles in the air.

CAUTION

Do not use gasoline, benzine, acetone, carbon tetrachloride, fire extinguisher fluid, deice fluid or lacquer thinners on windshield or windows, as these substances have a tendency to soften and craze the surface.

Remove oil and grease with a cloth moistened with kerosene. After removing dirt and grease, if the surface is not badly scratched, it should be waxed with a good grade of non-acid, non-abrasive commercial wax which does not have an acrylic base. The wax will fill in minor scratches and help prevent further scratching. Apply a thin, even coat of wax and bring it to a high polish by rubbing lightly with a clean, dry, soft flannel cloth. Do not use a power buffer; the heat generated by the buffing pad may soften the plastic.

POLARIZED CABIN WINDOWS

The polarized cabin windows consist of two plastic window panes with a biased polarizing coating on one surface. The two panes are installed with the polarized surfaces facing each other in a sealed assembly. To clean the exposed interior surface of the window requires only careful application of the practices for cleaning plastic windows. If it should become necessary to clean the inner surface of the sealed assembly and the inside of the pressure glass, the sealed assemble can be removed by removing the escutcheon, four screws, and the sealed assembly. Clean the interior windows and reinstall the sealed assembly and escutcheon.

SURFACE DEICE BOOTS

The deice boots are made of soft, flexible stock, which may be damaged if gasoline hoses are dragged over the surface of the boots or if ladders and platforms are rested against them. Keep deice boots free of oil, fuel, paint remover, solvents, and other injurious substances. Deice boots should be cleaned regularly with a mild soap and water solution. The temperature of the solution should not exceed 180°F.

ENGINE

Clean the engine with kerosene, solvent ar any standard engine cleaning solvent. Spray or brush the fluid over the engine, then wash off with water and allow to dry.

INTERIOR CARE

To remove dust and loose dirt from the upholstery, headliner, and carpet, clean the interior regularly with a vacuum cleaner.

Blot up any spilled liquid promptly with a cleansing tissue or rags. Do not 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, the spot-clean the area.

CAUTION

The colors of many leathers may only be accomplished by surface dye processing. The color may be rubbed off by continuously dragging hard or coarse material across the leather. While working in the cabin, use protective covers on the leather upholstery. Use only mild detergent with a soft cloth to clean soiled leather.

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 plastic trim, instrument panel, and control knobs need only be wiped with a damp cloth. Oil and grease on the control wheel and control knobs can be removed with a cloth moistened with kerosene. Volatile solvents, such as mentioned in the article on care of plastic windows, should never be used since they may soften and craze the plastic.

FUEL BRANDS AND TYPE DESIGNATIONS

PRODUCT NAME	DESIGNATION
AMERICAN OIL COMPANY	
American Jet Fuel Type A	Jet A
American Jet Fuel Type A-1	Jet A-1
ATLANTIC REFINING COMPANY	
Arcojet-A	Jet A
Arcojet-A-1	Jet A-1
Arcojet-B	Jet B
BP TRADING COMPANY	
BP A.T.K.	Jet A-1
BP A.T.G.	Jet B
CALIFORNIA TEXAS COMPANY	
Caltex Jet A-1	Jet A-1
Caltex Jet B	Jet B
CITIES SERVICE COMPANY	
Turbine Type A	Jet A
CONTINENTAL OIL COMPANY	
Conoco Jet-40	Jet A
Conoco Jet-50	Jet A
Conoco Jet-60	Jet A-1
Conoco JP-4	Jet B
GULF OIL COMPANY	
Gulf Jet A	Jet A
Gulf Jet A-1	Jet A-1
Gulf Jet B	Jet B
EXXON OIL COMPANY	
Exxon Turbo Fuel A	Jet A
Exxon Turbo Fuel 1-A	Jet A-1
Exxon Turbo Fuel 4	Jet B
MOBIL OIL COMPANY	
Mobil Jet A	Jet A
Mobil Jet A-1	Jet A-1
Mobil Jet B	Jet B
PHILLIPS PETROLEUM COMPANY	
Philjet A-50	Jet A
Philjet JP-4	Jet B
PURE OIL COMPANY	
Purejet Turbine Fuel Type A	Jet A
Purejet Turbine Fuel Type A-1	Jet A-1

PRODUCT NAME	DESIGNATION
RICHFIELD PETROLEUM COMPANY	
Richfield Turbine Fuel A	Jet A
Richfield Turbine Fuel A-1	Jet A-1
SHELL OIL COMPANY	
Aeroshell Turbine Fuel 640	Jet A
Aeroshell Turbine Fuel 650	Jet A-1
Aeroshell Turbine Fuel JP-4	Jet B
SINCLAIR OIL COMPANY	
Sinclair Superjet Fuel	Jet A
Sinclair Superjet Fuel	Jet A-1
STANDARD OIL OF CALIFORNIA	
Chevron TF-1	Jet A-1
Chevron JP-4	Jet B
STANDARD OIL OF KENTUCKY	
Standard JF A	Jet A
Standard JF A-1	Jet A-1
Standard JF B	Jet B
STANDARD OIL OF OHIO	
Jet A Kerosene	Jet A
Jet A-1 Kerosene	Jet A-1
TEXACO	
Texaco Avjet K-40	Jet A
Texaco Avjet K-58	Jet A-1
Texaco Avjet JP-4	Jet B
UNION OIL COMPANY	
76 Turbine Fuel	Jet A-1
Union JP-4	Jet B

NOTE

Jet A - Aviation Kerosene type fuel with -40°F (-40°C) Freeze Point.

Jet A-1 - Aviation Kerosene type fuel with -58°F (-50°C) Freeze Point.

Jet B - Aviation wide-cut gasoline type fuel similar to MIL-T-5624 grade JP-4, but may have a Freeze Point of -60°F (-51°C) instead of -76°F (-60°C) Freeze Point of JP-4.

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Raytheon Aircraft

LAMP REPLACEMENT GUIDE

LOCATION	BULB NUMBER
Aft Dome Light	307
Airstair Door Threshold Light	313
Aisle and Spar Cover Light	1495
Annunciator Panel Fault Warning Light	327
Annunciator Panel Lights	327
Auxiliary Fuel Cell Empty Warning Lights	327
Baggage Compartment Light	303
Cabin Door Pressure Lock Light	1864
Cabin Interior Light (Fluorescent)	5108WW
Cabin Reading Light	2565
Cockpit Overhead Light	303
Emergency Exit Hatch Light (Fluorescent)	5108WW
Engine Fire Extinguisher Lights	327
Flight Hour Meter Light	327
Fuel Panel Circuit Board Light	D158-100-4T
Instrument Lights	327
Instrument Indirect Lights	1864
Instrument Overhead Light	327
Landing Gear Control Knob Light	327
Landing Gear Warning Lights	327
Landing Lights	4594 or 4596
Magnetic Compass Light	327
Map Lights (Pilot's and Copilot's)	1495
Navigation Lights, Wing	A7152-24
Navigation Lights, Tail	1683
No Smoking/ Fasten Seat Belts Sign Light	6838
Outside Air Temperature Gage Light	327
Overhead Light Panel Light	D158-100-4T
Oxygen Quantity Indicator Light	327
Pedestal Edge Light	D158-100-4T
Pneumatic Pressure Gage Light	327
Post Lights	327
Pressure Controller Light	327
Propeller Syncroscope Indicator Light	327
Recognition Light	DN25-3
Rotating Beacon (Upper and Lower)	A7079B24
Smoke Detector Warning Light	327
Stop Watch Light	327
Strobe Light, Tail	31-1840-1
Strobe Light, Wing (Grimes Flash tube)	55-0221-1
Subpanel Edge Light	158-100-4T
Tail Floodlight	D50079-BJ
Tail Strobe	GE 1982 or GTE
Taxi Light	4587
Wing Ice Light	A7079A24

CONSUMABLE MATERIALS

Suppliers listed as meeting Federal and Military Specifications are provided as a reference only and are not specifically recommended by Raytheon Aircraft Company. Any product conforming to the specification may be used.

The products listed below have been tested and approved for aviation usage by Raytheon Aircraft Company by the supplier, or by compliance with the applicable specifications. Other products which are locally procurable which conform to the requirements of the applicable Military Specification may be used even though not specifically included herein.

Fuels and engine oils are listed in the chart below. For a complete consumable materials list refer to the *Beech King Air 100 Series Maintenance Manual.*

FUELS AND OILS

MATERIAL	*SPECIFICATION*	*BRAND*	*SUPPLIER*
Approved Engine Fuel	Commercial Grades: Jet A, Jet A-1, Jet B Military Grades: JP-4, JP-5, MIL-T-5624G-1	See FUEL BRANDS AND TYPE DESIGNATIONS Table earlier in this Section.	
Emergency Engine Fuel	Aviation Gasoline Grades: 80 (80/87) (Red) 100LL (Blue)*	NOTE: Use of Aviation Gasoline is limited to 100 hours per engine between engine overhauls. See Section II, LIMITATIONS, for additional limitations on the use of Aviation Gasoline. Do not use in auxiliary tanks	
Engine Oil - Type I	MIL-L-7808D	Brayco 880 Conojet	Bray Oil Company
	MIL-L-7808G	Brayco 880H	Bray Oil Company
	MIL-L-7808D	Continental Conojet	Continental Oil Company
	MIL-L-7808G	Mobil Avrex, S-Turbo 256	Mobil Oil Corp
	MIL-L-7808F	Stauffer Jet 1	Stauffer Chemical Company
	MIL-L-7808G	Stauffer Jet 1	Stauffer Chemical Company
	MIL-L-7808G	Exxon 2389	Exxon Company USA
Engine Oil - Type II	MIL-L-23699B	Caltex SATO 15	Caltex Petroleum Corp
	MIL-L-23699B	Texaco Starjet 5	Texaco, Inc
	MIL-L-23699B	Mobil Jet Oil II	Mobil Oil Corp
	MIL-L-23699B	Exxon 2380	Exxon Company USA
	MIL-L-23699B	Chevron Jet Engine Oil 5	Chevron International Oil Company
	MIL-L-23699B	Caltex Jet Engine Oil 5	Caltex Petroleum Corp.
	MIL-L-23699B	Castrol 205	Castrol Oils Inc.
	MIL-L-23699B	Stauffer Jet II	Stauffer Chemical Company

* In some foreign countries, Grade 100LL (Blue) is colored Green and is designated "100L".

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SECTION X
SAFETY INFORMATION
TABLE OF CONTENTS

SUBJECT *PAGE*

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INTRODUCTION

Beech Aircraft Corporation has developed this special summary publication of Safety Information to refresh pilots' and owners' knowledge of safety related subjects. Topics in this publication are dealt with in more detail in FAA Advisory Circulars and other publications pertaining to the subject of safe flying.

The skilled pilot recognizes that safety consciousness is an integral - and never ending - part of his or her job. Be thoroughly familiar with your airplane. Know its limitations and your own. Maintain your currency, or fly with a qualified instructor until you are current and proficient. Practice emergency procedures at safe altitudes and airspeeds, preferably with a qualified instructor pilot, until the required action is instinctive. Periodically review this Safety Information as part of your recurrency training regimen.

BEECHCRAFT airplanes are designed and built to provide you with many years of safe and efficient transportation. By maintaining your BEECHCRAFT properly and flying it prudently you will realize its full potential.

. . . . . . Beech Aircraft Corporation

WARNING

Because your airplane is a high performance, high speed transportation vehicle, designed for operation in a three-dimensional environment, special safety precautions must be observed to reduce the risk of fatal or serious injuries to the pilot(s) and occupant(s).

It is mandatory that you fully understand the contents of this manual and the other manuals which accompany the airplane; that FAA requirements for ratings, certifications and review be scrupulously complied with; and that you allow only persons who are properly licensed and rated, and thoroughly familiar with the contents of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual to operate the airplane.

IMPROPER OPERATION OR MAINTENANCE OF AN AIRPLANE, NO MATTER HOW WELL BUILT INITIALLY, CAN RESULT IN CONSIDERABLE DAMAGE OR TOTAL DESTRUCTION OF THE AIRPLANE, ALONG WITH SERIOUS OR FATAL INJURIES TO ALL OCCUPANTS.

GENERAL

As a pilot, you are responsible to yourself and to those who fly with you, to other pilots and their passengers and to people on the ground, to fly wisely and safely.

The following material in this Safety Information Section covers several subjects in limited detail.

SOURCES OF INFORMATION

There is a wealth of information available to the pilot, created for the sole purpose of making flying safer, easier and more efficient. Take advantage of this knowledge and be prepared for an emergency in the remote event that one should occur.

PILOT'S OPERATING HANDBOOK AND FAA APPROVED AIRPLANE FLIGHT MANUAL

You must be thoroughly familiar with the contents of your operating manuals, placards, and check lists to ensure safe utilization of your airplane. When the airplane was manufactured, it was equipped with the following: placards, Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, and Pilot's Checklist. Beech has revised and reissued many of the early manuals for certain models of airplanes in GAMA Standard Format as Pilot's Operating Handbooks and FAA Approved Airplane Flight Manuals. For simplicity and convenience, all official manuals for various models are referred to in this publication as the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. If the airplane has changed ownership, the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual may have been misplaced or may not be current. If missing or out of date, a replacement handbook must be obtained from any BEECHCRAFT Aviation Center.

BEECHCRAFT SERVICE PUBLICATIONS

Beech Aircraft Corporation publishes a wide variety of manuals, service letters, service instructions, service bulletins, safety communiques and other publications for the various models of BEECHCRAFT airplanes. Information on how to obtain publications relating to your airplane is contained in BEECHCRAFT Service Bulletin Number 2001, entitled "General - BEECHCRAFT Service Publications - What Is Available and How to Obtain It."

Beech Aircraft Corporation automatically mails original issues and revisions of BEECHCRAFT Service Bulletins (Mandatory, Recommended and Optional), FAA Approved Airplane Flight Manual Supplements, reissues and revisions of FAA Approved Airplane Flight Manuals, Flight Handbooks, Owner's Manuals, Pilot's Operating Manuals and Pilot's Operating Handbooks, and original issues and revisions of BEECHCRAFT Safety Communiques to BEECHCRAFT owner addresses as listed by the FAA Aircraft Registration Branch List and the BEECHCRAFT International Owner Notification Service List. While this information is distributed by Beech Aircraft Corporation, we can not make changes in the name or address furnished by the FAA. The owner must contact the FAA regarding any changes to name or address. Their address is: FAA Aircraft Registration Branch (AAC250) P.O. Box 25082, Oklahoma City, OK 73125, Phone (405) 680-2131.

It is the responsibility of the FAA owner of record to ensure that any mailings from Beech are forwarded to the proper persons. Often the FAA registered owner is a bank, financing company or an individual not in possession of the airplane. Also, when an airplane is sold, there is a lag in processing the change in registration with the FAA. If you are a new owner, contact your BEECHCRAFT dealer and ensure that your manuals are up to date.

Beech Aircraft Corporation provides a subscription service which provides for direct factory mailing of BEECHCRAFT publications applicable to a specific serial number airplane. Details concerning the fees and ordering information for this owner subscription service are contained in Service Bulletin Number 2001.

For owners who choose not to apply for a publications revision subscription service, Beech provides a free Owner Notification Service by which owners are notified by post card of BEECHCRAFT manual reissues, revisions and supplements which are being issued applicable to the airplane owned. On receipt of such notification, the owner may obtain the publication through a BEECHCRAFT Aviation Center, Aero Center or International Distributor. This notification service is available when requested by the owner. This request may be made by using the owner notification request card furnished with the loose equipment of each airplane at the time of delivery, or by a letter requesting this service, referencing the specific airplane serial number owned. Write To:

Supervisor, Special Services
Dept. 52
Beech Aircraft Corporation
P.O. Box 85
Wichita, Kansas 67201-0085

From time to time Beech Aircraft Corporation issues BEECHCRAFT Safety Communiques dealing with the safe operation of a specific series of airplanes, or airplanes in general. It is recommended that each owner/operator maintain a current file of these publications. Back issues of BEECHCRAFT Safety Communiques may be obtained without charge by sending a request including airplane model and serial number to the Supervisor, Special Services, at the address listed above.

FEDERAL AVIATION REGULATIONS

FAR Part 91, General Operating and Flight Rules, is a document of law governing operation of airplanes and the owner's and pilot's responsibilities. Some of the subjects covered are:

Responsibilities and authority of the pilot-in-command

Certificates required

Liquor and drugs

Flight plans

Preflight action
Fuel requirements
Flight rules
Maintenance, preventive maintenance, alterations, inspection and maintenance records

You, as a pilot, have responsibilities under government regulations. The regulations are designed for your protection, the protection of your passengers and the public. Compliance is mandatory.

AIRWORTHINESS DIRECTIVES

FAR Part 39 specifies that no person may operate a product to which an Airworthiness Directive issued by the FAA applies, except in accordance with the requirements of that Airworthiness Directive.

Airworthiness Directives (AD's) are not issued by the manufacturer. They are issued and available from the FAA.

AIRMAN'S INFORMATION MANUAL

The Airman's Information Manual (AIM) is designed to provide airmen with basic flight information and ATC procedures for use in the national airspace system of the United States. It also contains items of interest to pilots concerning health and medical facts, factors affecting flight safety, a pilot/controller glossary of terms in the Air Traffic Control system, information on safety, and accident/hazard reporting. It is revised at six-month intervals and can be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

This document contains a wealth of pilot information. Among the subjects are:

Controlled Airspace
Emergency Procedures
Service Available to Pilots
Weather and Icing
Radio Phraseology and Technique
Mountain Flying
Airport Operations
Wake Turbulence - Vortices
Clearances and Separations
Medical Facts for Pilots
Preflight
Bird Hazards
Departures - IFR
Good Operating Practices
En route - IFR
Airport Location Director
Arrival - IFR

All pilots must be thoroughly familiar with and use the information in the AIM.

ADVISORY INFORMATION

Notams (Notices to Airmen) are documents that have information of a time-critical nature that would affect a pilot's decision to make a flight; for example, an airport closed, terminal radar out of service, or enroute navigational aids out of service.

FAA ADVISORY CIRCULARS

The FAA issues Advisory Circulars to inform the aviation public in a systematic way of nonregulatory material of interest. Advisory Circulars contain a wealth of information with which the prudent pilot should be familiar. A complete list of current FAA Advisory Circulars is published in AC 00-2, which lists Advisory Circulars that are for sale, as well as those distributed free of charge by the FAA, and provides ordering information. Many Advisory Circulars which are for sale can be purchased locally in aviation bookstores or at FBO's. These documents are subject to periodic revision. Be certain the Advisory Circular you are using is the latest revision available. Some of the Advisory Circulars of interest to pilots are:

*00-6	Aviation Weather
00-24	Thunderstorms
00-30	Rules of Thumb For Avoiding or Minimizing Encounters with Clear Air Turbulence
*00-45	Aviation Weather Services
00-46	Aviation Safety Reporting Program
20-32	Carbon Monoxide (CO) Contamination in Aircraft - Detection and Prevention
20-35	Tie-Down Sense
20-43	Aircraft Fuel Control Control Surfaces
20-105	Engine Power-Loss Accident Prevention
20-125	Water in Aviation Fuels
21-4	Special Flight Permits for Operation of Overweight Aircraft
43-9	Maintenance Records: General Aviation Aircraft
43-12	Preventive Maintenance
60-4	Pilot's Spatial Disorientation
60-6	Airplane Flight Manuals (AFM), Approved Manual Materials, Markings and Placards - Airplanes
60-12	Availability of Industry-Developed Guidelines for the Conduct of the Biennial Flight Review
60-13	The Accident Prevention Counselor Program
*61-21	Flight Training Handbook

*61-23	Pilot's Handbook of Aeronautical Knowledge
*61-27	Instrument Flying Handbook
61-67	Hazards Associated with Spins in Airplanes Prohibited from Intentional Spinning.
61-84	Role of Preflight Preparation
*67-2	Medical Handbook for Pilots
90-23	Aircraft Wake Turbulence
90-42	Traffic Advisory Practices at Nontower Airports
90-48	Pilot's Role in Collision Avoidance
90-66	Recommended Standard Traffic Patterns for Airplane Operations at Uncontrolled Airports
90-85	Severe Weather Avoidance Plan (SWAP)
91-6	Water, Slush and Snow On the Runway
91-8	Use of Oxygen by General Aviation Pilots/Passengers
91-13	Cold Weather Operation of Aircraft
*91-23	Pilot's Weight and Balance Handbook
91-26	Maintenance and Handling of Air Driven Gyroscopic Instruments
91-35	Noise, Hearing Damage, and Fatigue in General Aviation Pilots
91-43	Unreliable Airspeed Indications
91-44	Operational and Maintenance Practices for Emergency Locator Transmitters and Receivers
91-46	Gyroscopic Instruments - Good Operating Practices
91-50	Importance of Transponder Operations and Altitude Reporting
91-51	Airplane Deice and Anti-Ice Systems
91-65	Use of Shoulder Harness in Passenger Seats
103-4	Hazards Associated with Sublimation of Solid Carbon Dioxide (Dry Ice) Aboard Aircraft
210-5A	Military Flying Activities

* For Sale

FAA GENERAL AVIATION NEWS

FAA General Aviation News is published by the FAA in the interest of flight safety. The magazine is designed to promote safety in the air by calling the attention of general aviation airmen to current technical, regulatory and procedural matters affecting the safe operation of airplanes. FAA General Aviation News is sold on subscription by the Superintendent of Documents, Government Printing Office, Washington D.C. 20402.

FAA ACCIDENT PREVENTION PROGRAM

The FAA assigns accident prevention specialists to each Flight Standards and General Aviation District Office to organize accident prevention program activities. In addition, there are over 3,000 volunteer airmen serving as accident prevention counselors, sharing their technical expertise and professional knowledge with the general aviation community. The FAA conducts seminars and workshops, and distributes invaluable safety information under this program.

Usually the airport manager, the FAA Flight Service Station (FSS), or Fixed Base Operator (FBO) will have a list of accident prevention counselors and their phone numbers available. All Flight Standards and General Aviation District Offices have a list of the counselors serving the district.

Before flying over unfamiliar territory, such as mountainous terrain or desert areas, it is advisable for transient pilots to consult with local counselors. They will be familiar with the more desirable routes, the wind and weather conditions, and the service and emergency landing areas that are available along the way. They can also offer advice on the type of emergency equipment you should be carrying.

ADDITIONAL INFORMATION

The National Transportation Safety Board and the Federal Aviation Administration periodically issue, in greater detail, general aviation pamphlets concerning aviation safety. FAA Regional Offices also publish material under the FAA General Aviation Accident Prevention Program. These can be obtained at FAA Offices, Weather Stations, Flight Service Stations or Airport Facilities. Some of these are titled:

12 Golden Rules for Pilots
Weather or Not
Disorientation
Plane Sense
Weather Info Guide for Pilots
Wake Turbulence

Don't Trust to Luck, Trust to Safety
Rain, Fog, Snow
Thunderstorm - TRW
Icing
Pilot's Weather Briefing Guide
Thunderstorms Don't Flirt . . . Skirt 'em
IFR-VFR - Either Way Disorientation Can Be Fatal
IFR Pilot Exam-O-Grams
VFR Pilot Exam-O-Grams
Impossible Turn
Wind Shear
Estimating Inflight Visibility
Is the Aircraft Ready for Flight
Tips on Mountain Flying
Tips on Desert Flying
Always Leave Yourself An Out
Tips on the Use of Ailerons and Rudder
Some Hard Facts About Soft Landings
Propeller Operation and Care
Torque "What it Means to the Pilot"
Weight and Balance - An Important Safety Consideration for Pilots

GENERAL INFORMATION ON SPECIFIC TOPICS

MAINTENANCE

Safety of flight begins with a well maintained airplane. Make it a habit to keep your airplane and all of its equipment in first-class, airworthy condition. Keep a "Squawk List" on board, and see that all discrepancies, however minor, are noted and promptly repaired.

Schedule your maintenance regularly, and have your airplane serviced by a reputable organization. Be suspicious of bargain prices for maintenance, repairs and inspections.

If repairs or modifications are made to the flight control system, make sure the control surfaces are properly balanced and the controls can be moved freely from the cockpit in the proper direction and through their designed range of travel.

It is the responsibility of the owner and the operator to assure that the airplane is maintained in an airworthy condition and that proper maintenance records are kept.

Use only genuine BEECHCRAFT or BEECHCRAFT approved parts obtained from BEECHCRAFT approved sources, in connection with the maintenance and repair of Beech airplanes.

Genuine BEECHCRAFT Parts are produced and inspected under rigorous procedures to ensure airworthiness and suitability for use in Beech airplane applications. Parts purchased from sources other than BEECHCRAFT, even though outwardly identical in appearance, may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in an airplane.

Salvaged airplane parts, reworked parts obtained from non-BEECHCRAFT approved sources, or parts, components, or structural assemblies, the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage not discernible through routine visual or nondestructive testing techniques. This may render the part, component or structural assembly, even though originally manufactured by BEECHCRAFT, unsuitable and unsafe for airplane use.

BEECHCRAFT expressly disclaims any responsibility for malfunctions, failures, damage or injury caused by use of non-BEECHCRAFT parts.

Airplanes operated for Air Taxi or other than normal operation, and airplanes operated in humid tropics, or cold and damp climates, etc., may need more frequent inspections for wear, corrosion and/or lack of lubrication. In these areas, periodic inspections should be performed until the operator can set his own decreased inspection periods based on experience.

NOTE

The required periods do not constitute a guarantee that the item will reach the period without malfunction, as the aforementioned factors cannot be controlled by the manufacturer.

Corrosion and its effects must be treated at the earliest possible opportunity. A clean, dry surface is virtually immune to corrosion. Make sure that all drain holes remain unobstructed. Protective films and sealants help to keep corrosive agents from contacting metallic surfaces. Corrosion inspections should be made most frequently under high-corrosion-risk operating conditions, such as in areas of excessive airborne salt concentrations (e.g., near the sea) and in high-humidity areas (e.g., tropical regions).

If you have purchased a used airplane, have your mechanic inspect the airplane registration records, logbooks and maintenance records carefully. An unexplained period of time for which the airplane has been out of service, or unexplained significant repairs, may well indicate the airplane has been seriously damaged in a prior accident. Have your mechanics inspect a used airplane carefully. Take the time to ensure that you really know what you are buying when you buy a used airplane.

HAZARDS OF UNAPPROVED MODIFICATIONS

Many airplane modifications are approved under Supplemental Type Certificates (STC's). Before installing an STC on your airplane, check to make sure that the STC does not conflict with other STC's that have already been installed. Because approval of an STC is obtained by the individual STC holder, based upon modification of the original type design, it is possible for two STC's to interfere with each other when both are installed. Never install an unapproved modification of any type, however innocent the apparent modification may seem. Always obtain proper FAA approval.

Airplane owners and maintenance personnel are particularly cautioned not to make attachments to, or otherwise modify, seats from original certification without approval from the FAA Engineering and Manufacturing District Office having original certification responsibility for that make and model.

Any unapproved attachment or modification to seat structure may increase load factors and metal stress which could cause failure of seat structure at a lesser "G" force than exhibited for original certification. Examples of unauthorized attachments are drilling holes in seat tubing to attach fire extinguishers and drilling holes to attach approach plate book bins to seats.

FLIGHT PLANNING

FAR Part 91 requires that each pilot in command, before beginning a flight, familiarize himself with all available information concerning that flight.

Obtain a current and complete preflight briefing. This should consist of local, enroute and destination weather and enroute navaid information. Enroute terrain and obstructions, alternate airports, airport runways active, length of runways, and take-off and landing distances for the airplane for conditions expected should be known.

The prudent pilot will review his planned enroute track and stations and make a list for quick reference. It is strongly recommended a flight plan be filed with Flight Service Stations, even though the flight may be VFR. Also, advise Flight Service Stations of changes or delays of one hour or more and remember to close the flight plan at destination.

The pilot must be completely familiar with the performance of the airplane and performance data in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. The effects of temperature and pressure altitude must be taken into account in performance. An applicable FAA Approved Airplane Flight Manual must be aboard the airplane at all times, including the weight and balance forms and equipment list.

PASSENGER INFORMATION CARDS

Beech has available, for your Beech airplane, passenger information cards which contain important information on the proper use of restraint systems, oxygen masks, emergency exits and emergency bracing procedures. Passenger information cards may be obtained at any BEECHCRAFT Aviation Center. A pilot should not only be familiar with the information contained in the cards, but should, prior to flight, always inform the passengers of the information contained in the information cards. The pilot should orally brief the passengers on the proper use of restraint systems, doors and emergency exits, and other emergency procedures, as required by Part 91 of the FAR's.

STOWAGE OF ARTICLES

Airplane seats are designed to absorb energy in a downward direction. In order to accomplish this action, the space between the seat pan and the floor is utilized to provide space for seat displacement. If hard, solid objects are stored beneath seats, the energy absorbing feature is lost and severe spinal injuries can occur to occupants.

Prior to flight, pilots should assure that articles are not stowed beneath seats that would restrict seat pan energy absorption or penetrate the seat in event of a high vertical velocity accident.

Ensure that cargo and baggage is stowed and properly secured with tie-down straps and cargo nets.

FLIGHT OPERATIONS

GENERAL

The pilot must be thoroughly familiar with all information published by the manufacturer concerning the airplane, and is required by law to operate the airplane in accordance with the FAA Approved Airplane Flight Manual and placards installed.

PREFLIGHT INSPECTION

In addition to maintenance inspections and preflight information required by FAR Part 91, a complete, careful preflight inspection is imperative.

Each airplane has a checklist for the preflight inspection which must be followed. USE THE CHECKLIST.

WEIGHT AND BALANCE

Maintaining center of gravity within the approved envelope throughout the planned flight is an important safety consideration.

The airplane must be loaded so as not to exceed the weight and center of gravity (C.G.) limitations. Airplanes that are loaded above the maximum take-off or landing weight limitations will have an overall lower level of performance compared to that shown in the Performance section of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. If loaded above maximum takeoff weight, the take-off distance and the landing distance will be longer than that shown in the Performance section; the stalling speed will be higher; rate of climb, cruising speed, and range of the airplane will all be lower than shown in the Performance section.

If an airplane is loaded so that the C.G. is forward of the forward limit, it will require additional control movements for maneuvering the airplane with correspondingly higher control forces. The pilot may experience difficulty during takeoff and landing because of the elevator control limits.

If an airplane is loaded aft of the aft C.G. limit, the pilot will experience a lower level of stability. Airplane characteristics that indicate a lower stability level are; lower control forces, difficulty in trimming the airplane, lower control forces for maneuvering with attendant danger of structural overload, decayed stall characteristics, and a lower level of lateral-directional damping.

Ensure that all cargo and baggage is properly secured before takeoff. A sudden shift in balance at rotation can cause controllability problems.

AUTOPILOTS AND ELECTRIC TRIM SYSTEMS

Because there are several different models of autopilots and electric trim systems installed in Beech airplanes and different installations and switch positions are possible from airplane to airplane, it is essential that every owner/operator review his Airplane Flight Manual (AFM) Supplements and ensure that the supplements properly describe the autopilot and trim installations on his specific airplane. Each pilot, prior to flight, must be fully aware of the proper procedures for operation, and particularly disengagement, for the system as installed.

In addition to ensuring compliance with the autopilot manufacturer's maintenance requirements, all owners/operators should thoroughly familiarize themselves with the operation, function and procedures described in the Airplane Flight Manual Supplements. Ensure a full understanding of the methods of engagement and disengagement of the autopilot and trim systems.

Compare the descriptions and procedures contained in the supplements to the actual installation in the airplane to ensure that the supplement accurately describes your installation. Test that all buttons, switches and circuit breakers function as described in the supplements. If they do not function as described, have the system repaired by a qualified service agency. If field service advice or assistance is necessary, contact Beech Aircraft Corporation, Customer Support Department.

As stated in all AFM Supplements for autopilot systems and trim systems installed on Beech airplanes, the preflight check must be conducted before every flight. The preflight check assures not only that the systems and all of their features are operating properly, but also that the pilot, before flight, is familiar with the proper means of engagement and disengagement of the autopilot and trim system.

Autopilot AFM Supplements caution against trying to override the autopilot system during flight without disengaging the autopilot because the autopilot will continue to trim the airplane and oppose the pilot's actions. This could result in a severely out-of-trim condition. This is a basic feature of all autopilots with electric trim followup.

Do not try to manually override the autopilot during flight

IN CASE OF EMERGENCY, YOU CAN OVERPOWER THE AUTOPILOT TO CORRECT THE ATTITUDE, BUT THE AUTOPILOT AND ELECTRIC TRIM MUST THEN IMMEDIATELY BE DISENGAGED.

It is often difficult to distinguish an autopilot malfunction from an electric trim system malfunction. The safest course is to deactivate both. Do not re-engage either system until after you have safely landed. Then have the systems checked by a qualified service facility prior to further flight.

Depending upon the installation on your airplane, the following additional methods may be available to disengage the autopilot or electric trim in the event that the autopilot or electric trim does not disengage utilizing the disengage methods specified in the supplements.

CAUTION

Transient control forces may occur when the autopilot is disengaged.

1. Turn off the autopilot master switch, if installed.
2. Pull the autopilot and trim circuit breaker(s) or turn off the autopilot switch breaker, if installed.
3. Turn off the RADIO MASTER SWITCH, if installed (if the autopilot system and the trim system are wired through this switch).

CAUTION

Radios, including VHF COMM, are also disconnected when the radio master switch is off.

4. Turn off the ELECTRIC MASTER SWITCH.

WARNING

Almost all electrically powered systems will be inoperative. Therefore, the cabin will depressurize. Consult the AFM for further information.

5. Push the GA switch on throttle grip, if installed (depending upon the autopilot system).
6. Push TEST EACH FLT switch on the autopilot controller, if installed.
7. Position inverter switch(es) (INV 1/INV 2) to OFF momentarily, then return to original position.

CAUTION

While the switch(es) are placed OFF, the AC power will also be removed from AC-driven equipment.

NOTE

After the autopilot is positively disengaged, it may be necessary to restore other electrical functions. Be sure when the master switches are turned on that the autopilot does not re-engage.

It is essential that you read your airplane's Pilot's Operating Handbook and FAA Approved Airplane Flight Manual and applicable supplements for your autopilot system and check the function and operation of your system.

The engagement of the autopilot must be done in accordance with the instructions and procedures contained in the AFM Supplement.

Particular attention must be paid to the autopilot settings prior to engagement. If you attempt to engage the autopilot when the airplane is out of trim, a large attitude change may occur.

IT IS ESSENTIAL THAT THE PROCEDURES SET FORTH IN THE APPROVED AFM SUPPLEMENTS FOR YOUR SPECIFIC INSTALLATION BE FOLLOWED BEFORE ENGAGING THE AUTOPILOT.

FLUTTER

Flutter is a phenomenon that can occur when an aerodynamic surface begins vibrating. The energy to sustain the vibration is derived from airflow over the surface. The amplitude of the vibration can (1) decrease, if airspeed is reduced; (2) remain constant, if airspeed is held constant and no failures occur; or (3) increase to the point of self-destruction, especially if airspeed is high and/or is allowed to increase. Flutter can lead to an in-flight break up of the airplane. Airplanes are designed so that flutter will not occur in the normal operating envelope of the airplane as long as the airplane is properly maintained. In the case of any airplane, decreasing the damping and stiffness of the structure or increasing the trailing edge weight of control surfaces will tend to cause flutter. If a combination of those factors is sufficient, flutter can occur within the normal operating envelope.

Owners and operators of airplanes have the primary responsibility for maintaining their airplanes. To fulfill that responsibility, it is imperative that all airplanes receive a thorough preflight inspection. Improper tension on the control cables or any other loose condition in the flight control system can also cause or contribute to flutter. Pilots should pay particular attention to control surface attachment hardware including tab pushrod attachment during preflight inspection. Looseness of fixed surfaces or movement of control surfaces other than in the normal direction of travel should be rectified before flight. Further, owners should take their airplanes to mechanics who have access to current technical publications and prior experience in properly maintaining that make and model of airplane. The owner should make certain that control cable tension inspections are performed as outlined in the applicable Beech Inspection Guide. Worn control surface attachment hardware must be replaced. Any repainting or repair of a moveable control surface will require a verification of the control surface balance before the airplane is returned to service. Control surface drain holes must be open to prevent freezing of accumulated moisture, which could create an increased trailing-edge-heavy control surface and flutter.

If an excessive vibration, particularly in the control column and rudder pedals, is encountered in flight, this may be the onset of flutter and the procedure to follow is:

1. IMMEDIATELLY REDUCE AIRSPEED (lower the landing gear, if necessary).
2. RESTRAIN THE CONTROLS OF THE AIRPLANE UNTIL THE VIBRATION CEASES.
3. FLY AT THE REDUCED AIRSPEED AND LAND AT THE NEAREST SUITABLE AIRPORT.
4. HAVE THE AIRPLANE INSPECTED FOR AIRFRAME DAMAGE, CONTROL SURFACE ATTACHING HARDWARE CONDITION/SECURITY, TRIM TAB FREE PLAY, PROPER CONTROL CABLE TENSION, AND CONTROL SURFACE BALANCE BY ANOTHER MECHANIC WHO IS FULLY QUALIFIED.

TURBULENT WEATHER

A complete and current weather briefing is a requirement for a safe trip.

Updating of weather information enroute is also essential. The wise pilot knows that weather conditions can change quickly, and treats weather forecasting as professional advice, rather than an absolute fact. He obtains all the advice he can, but stays alert to any sign or report of changing conditions.

Plan the flight to avoid areas of reported severe turbulence. It is not always possible to detect individual storm areas or find the in-between clear areas.

The National Weather Service classifies turbulence as follows:

Class of Turbulence	Effect
Extreme	Airplane is violently tossed about and is practically impossible to control. May cause structural damage.
Severe	Airplane may be momentarily out of control. Occupants are thrown violently against the belts and back into the seat. Unsecured objects are tossed about.
Moderate	Occupants require seat belts and occasionally are thrown against the belt. Unsecured objects move about.

Light	Occupants may be required to use seat belts, but objects in the airplane remain at rest.

Thunderstorms, squall lines and violent turbulence should be regarded as extremely dangerous and must be avoided. Hail and tornadic wind velocities can be encountered in thunderstorms that can destroy any airplane, just as tornadoes destroy nearly everything in their path on the ground.

Thunderstorms also pose the possibility of a lightning strike on an airplane. Any structure or equipment which shows evidence of a lightning strike, or being subjected to a high current flow due to a strike, or is a suspected part of a lightning strike path through the airplane, should be thoroughly inspected and any damage repaired prior to additional flight.

A roll cloud ahead of a squall line or thunderstorm is visible evidence of violent turbulence; however, the absence of a roll cloud should not be interpreted as denoting that severe turbulence is not present.

Even though flight in severe turbulence must be avoided, flight in turbulent air may be encountered unexpectedly under certain conditions.

The following recommendations should be observed for airplane operation in turbulent air:

> Flying through turbulent air presents two basic problems, the answer to both is proper airspeed. On one hand, if you maintain an excessive airspeed, you run the risk of structural damage or failure; on the other hand, if your airspeed is too low, you may stall.
>
> If turbulence is encountered, reduce speed to the turbulent air penetration speed, if given, or to the maneuvering speed, which is listed in the Limitations Section of the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. These speeds give the best assurance of avoiding excessive stress loads, and at the same time providing the proper margin against inadvertent stalls due to gusts.
>
> Beware of overcontrolling in an attempt to correct for changes in attitude; applying control pressure abruptly will build up G-forces rapidly and could cause structural damage or even failure. You should watch particularly your angle of bank, making turns as wide and shallow as possible. Be equally cautious in applying forward or back pressure to keep the airplane level. Maintain straight and level attitude in either up or down drafts. Use trim sparingly to avoid being grossly out of trim as the vertical air columns change velocity and direction. If necessary to avoid excessive airspeeds, lower the landing gear.

WIND SHEAR

Wind shears are rapid, localized changes in wind direction, which can occur vertically as well as horizontally. Wind shear can be very dangerous to all airplanes, large and small, particularly on approach to landing when airspeeds are slow.

A horizontal wind shear is a sudden change in wind direction or speed that can, for example, transform a headwind into a tailwind, producing a sudden decrease in airspeed because of the inertia of the airplane. A vertical wind shear is a sudden updraft or downdraft. Microbursts are intense, highly localized severe downdrafts.

The prediction of wind shears is far from an exact science. Monitor your airspeed carefully when flying in storms, particularly on approach. Be mentally prepared to add power and go around at the first indication that a wind shear is being encountered.

FLIGHT IN ICING CONDITIONS

Every pilot should be intimately acquainted with the FAA Approved National Weather Service definitions for ice intensity and accumulation which we have reprinted below:

Intensity	Ice Accumulation
Trace	Ice becomes perceptible. Rate of accumulation slightly greater than rate of sublimation. It is not hazardous even though deicing/anti-icing equipment is not utilized, unless encountered for an extended period of time (over 1 hour).
Light	The rate of accumulation may create a problem if flight is prolonged in this environment (over 1 hour). Occasional use of deicing/anti-icing equipment will prevent or remove accumulation. It does not present a problem if the deicing/anti-icing equipment is used.
Moderate	The rate of accumulation is such that even short encounters become potentially hazardous and use of deicing/anti-icing equipment, or diversion, is necessary.
Severe	The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.

It is no longer unusual to find deicing and anti-icing equipment on a wide range of airplane sizes and types. Since the capability of this equipment varies, it becomes the pilot's primary responsibility to understand limitations which restrict the use of the airplane in icing conditions and the conditions which may exceed the systems capacity.

Pilots and airplane owners must carefully review the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual in order to ascertain the required operable equipment needed for flight in icing conditions. In addition, they must ascertain from the same sources the limits of approval or certification of their airplane for flight in icing conditions, and plan the flight accordingly if icing conditions are known or forecast along the route.

Remember that regardless of its combination of deicing/anti-icing equipment, any airplane not fully equipped and functional for IFR flight is not properly equipped for flight in icing conditions. An airplane which does not have all critical areas protected in the required manner by fully operational equipment must not be exposed to icing encounters of any intensity. When icing is detected, the pilot of such an airplane must make immediate diversion by flying out of the area of visible moisture or going to an altitude where icing is not encountered.

Even airplanes fully equipped and certified for flight in the icing conditions described in Appendix C to FAR Part 25 must avoid flights into those conditions defined by the National Weather Service as "Severe". No airplane equipped with any combination of deicing/anti-icing equipment can be expected to cope with such conditions. As competent pilots know, there appears to be no predictable limits for the severest weather conditions. For essentially the same reasons that airplanes, however designed or equipped for IFR flight, cannot be flown safely into conditions such as thunderstorms, tornadoes, hurricanes or other phenomena likely to produce severe turbulence, airplanes equipped for flight in icing conditions cannot be expected to cope with "Severe" icing conditions as defined by the National Weather Service. The prudent pilot must remain alert to the possibility that icing conditions may become "Severe" and that his equipment will not cope with them. At the first indication that such condition may have been encountered or may lie ahead, he should immediately react by selecting the most expeditious and safe course for diversion.

Every pilot of a properly fully-equipped Beech airplane who ventures into icing conditions must maintain the minimum speed (KIAS) for operation in icing conditions, which is set forth in the Normal Procedures section, and in the Limitations section, of his Pilot's Operating Handbook and FAA Approved Airplane Flight Manual. The pilot must remain aware of the fact that if he allows his airspeed to deteriorate below this minimum speed, he will increase the angle of attack of his airplane to the point where ice may build up on the under side of the wings aft of the area protected by the deice/anti-icing equipment.

Ice build-up, and its extent in unprotected areas may not be directly observable from the cockpit. Due to distortion of the wing airfoil, increased drag and reduced lift, stalling speeds will increase as ice accumulates on the airplane. For the same reasons, stall warning devices are not accurate and cannot be relied upon in icing conditions.

Even though the pilot maintains the prescribed minimum speeds for operating in icing conditions, ice is still likely to build up on the unprotected areas. Under some atmospheric conditions, it may even build up aft of the de-iced areas despite the maintenance of the prescribed minimum speed. The effect of ice accumulation on any unprotected surface is aggravated by length of exposure to the icing conditions. Ice buildup on unprotected surfaces will increase drag, add weight, reduce lift, and generally, adversely affect the aerodynamic characteristics and performance of the airplane. It can progress to the point where the airplane is no longer capable of flying. Therefore, the pilot operating even a fully-equipped airplane in sustained icing conditions must remain sensitive to any indication, such as observed ice accumulation, loss of airspeed, the need for increased power, reduced rate of climb, or sluggish response, that ice is accumulating on unprotected surfaces and that continued flight in these conditions is extremely hazardous, regardless of the performance of the deicing/anti-icing equipment.

Since flight in icing conditions is not an everyday occurrence, it is important that you maintain a proper proficiency and awareness of the operating procedures necessary for safe operation of the airplane and that the airplane is in a condition for safe operation.

Ensure moisture drains in the airplane structure are maintained open as specified in the Aircraft Maintenance Manual, so that moisture will not collect and cause freezing in the control cable area. Also, control surface tab hinges should be maintained and lubricated as specified in the Aircraft Maintenance Manual.

In icing conditions the autopilot should be disengaged at an altitude sufficient to permit the pilot to gain the feel of the airplane prior to landing. In no case should this be less than the minimum altitude specified in the Autopilot Airplane Flight Manual Supplement.

Observe the procedures set forth in your Pilot's Operating Handbook and FAA Approved Airplane Flight Manual during operation in icing conditions.

Activate your deice and anti-icing systems before entering an area of moisture where you are likely to go through a freezing level.

For any owner or pilot whose use pattern for an airplane exposes it to icing encounters, the following references are required reading for safe flying:

- The airplane's Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, especially the sections on Normal Procedures, Emergency Procedures, Abnormal Procedures, Systems, and Safety Information.
- FAA Advisory Circular 91-51 - Airplane Deice and Anti-ice Systems.
- Weather Flying by Robert N. Buck.

Finally, the most important ingredients to safe flight in icing conditions - regardless of the airplane or the combination of deicing/anti-icing equipment - are a complete and current weather briefing, sound pilot judgment, close attention to the rate and type of ice accumulations, and the knowledge that "severe icing" as defined by the National Weather Service is beyond the capability of modern airplanes and an immediate diversion must be made. It is the inexperienced or uneducated pilot who presses on "regardless" hoping that steadily worsening conditions will improve, only to find himself flying an airplane which has become so loaded with ice that he can no longer maintain altitude. At this point he has lost most, if not all, of his safety options, including perhaps a 180 degree turn to return along the course already traveled.

The responsible and well-informed pilot recognizes the limitations of weather conditions, his airplane and its systems, and reacts promptly.

WEATHER RADAR

Airborne weather avoidance radar is, as its name implies, for avoiding severe weather - not for penetrating it. Whether to fly into an area of radar echoes depends on echo intensity, spacing between the echoes, and the capabilities of you and your airplane. Remember that weather radar detects precipitation drops. Except for the most advanced radar units, it does not detect turbulence. Therefore, the radar scope provides no assurance of avoiding turbulence. The radar scope also does not provide assurance of avoiding instrument weather from clouds and fog. Your scope may be clear between intense echoes; this clear area does not necessarily mean you can fly between the storms and maintain visual sighting of them.

Thunderstorms build and dissipate rapidly. Therefore, do not attempt to plan a course between echoes. The best use of ground radar information is to isolate general areas and coverage of echoes. You must avoid individual storms by in-flight observations either by visual sighting or airborne radar. It is better to avoid the whole thunderstorm area than to detour around individual storms, unless they are scattered.

Remember that while hail always gives a radar echo, it may fall several miles from the nearest visible cloud and hazardous turbulence may extend to as much as 20 miles from the echo edge. Avoid intense or extreme level echoes by at least 20 miles; that is, such echoes should be separated by at least 40 miles before you fly between them. With weaker echos you can reduce the distance by which you avoid them.

Above all, remember this; never regard any thunderstorm lightly. Even when radar observers report the echoes are of light intensity, avoiding thunderstorms is the best policy. The following are some do's and don'ts of thunderstorm avoidance:

1. Don't land or take off in the face of an approaching thunderstorm. Sudden gust-front low level turbulence could cause loss of control.
2. Don't attempt to fly under a thunderstorm even if you can see through to the other side. Turbulence and wind shear under the storm could be disastrous.
3. Don't fly without airborne radar into a cloud mass containing scattered embedded thunderstorms. Scattered thunderstorms not embedded usually can be visually circumnavigated.
4. Don't trust the visual appearance to be a reliable indicator of the turbulence inside a thunderstorm.
5. Do avoid by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo. This is especially true under the anvil of a large cumulonimbus.
6. Do circumnavigate the entire area if the area has 6/10 or more thunderstorm coverage.
7. Do remember that vivid and frequent lightning indicates the probability of a severe thunderstorm.
8. Do regard as extremely hazardous any thunderstorm with tops 35,000 feet or higher whether the top is visually sighted or determined by radar.

If you cannot avoid penetrating a thunderstorm, the following are some do's BEFORE entering the storm:

9. Tighten your safety belt, put on your shoulder harness, and secure all loose objects.
10. Plan and hold your course to take you through the storm in minimum time.
11. To avoid the most critical icing, establish a penetration altitude below the freezing level or an altitude where the OAT is -15°C or colder.
12. Verify that pitot heat is on, and activate anti-ice systems. Icing can be rapid at any altitude and can cause almost instantaneous power failure and/or loss of airspeed indication.

MOUNTAIN FLYING

Pilots flying in mountainous areas should inform themselves of all aspects of mountain flying, including the effects of topographic features on weather conditions. Many good articles have been published, and a synopsis of mountain flying operations is included in the FAA Airman's Information Manual, Part 1.

Avoid flight at low altitudes over mountainous terrain, particularly near the lee slopes. If the wind velocity near the level of the ridge is in excess of 25 knots and approximately perpendicular to the ridge, mountain wave conditions are likely over and near the lee slopes. If the wind velocity at the level of the ridge exceeds 50 knots, a strong mountain wave is probable with extreme up and down drafts and severe turbulence. The worst turbulence will be encountered in and below the rotor zone, which is usually 8 to 10 miles downwind from the ridge. This zone is sometimes characterized by the presence of "roll clouds" if sufficient moisture is present. Altocumulus standing lenticular clouds are also visible signs that a mountain wave exists, but their presence is likewise dependent upon moisture. Mountain wave turbulence can, of course, occur in dry air and the absence of such clouds should not be taken as assurance that mountain wave turbulence will not be encountered. A mountain wave downdraft may exceed the climb capability of your airplane. Avoid mountain wave downdrafts.

VFR AT NIGHT

When flying VFR at night, in addition to the altitude appropriate for the direction of flight, pilots should maintain a safe minimum altitude as dictated by terrain, obstacles such as TV towers, or communities in the area. This is especially true in mountainous terrain, where there is usually very little ground reference. Minimum clearance is 2,000 feet above the highest obstacle enroute. Do not depend on your ability to see obstacles in time to miss them. Flight on dark nights over sparsely populated country can be the same as IFR.

VERTIGO - DISORIENTATION

Disorientation can occur in a variety of ways. During flight, inner-ear balancing mechanisms are subjected to varied forces not normally experienced on the ground. This, combined with loss of outside visual reference, can cause vertigo. False interpretations (illusions) result, and may confuse the pilot's conception of the attitude and position of his airplane.

Under VFR conditions, the visual sense, using the horizon as a reference, can override the illusions. Under low visibility conditions (night, fog, clouds, haze, etc.) the illusions predominate. Only through awareness of these illusions, and proficiency in instrument flight procedures, can an airplane be operated safely in a low visibility environment.

Flying in fog, dense haze or dust, cloud banks, or very low visibility, with strobe lights or rotating beacons turned on can contribute to vertigo. They should be turned off in these conditions, particularly at night.

Motion sickness often precedes or accompanies disorientation and may further jeopardize the flight.

Disorientation in low visibility conditions is not limited to VFR pilots. Although IFR pilots are trained to look at their instruments to gain an artificial visual reference as a replacement for the loss of a visual horizon, they do not always do so. This can happen when: the pilot's physical condition will not permit him to concentrate on his instruments, when the pilot is not proficient in flying instrument conditions in the airplane he is flying, or when the pilot's work load of flying by reference to his instruments is compounded by such factors as turbulence. Even an instrument rated pilot encountering instrument conditions, intentional or unintentional, should ask himself whether or not he is sufficiently alert and proficient in the airplane he is flying to fly under low visibility conditions and the turbulence anticipated or encountered.

All pilots should check the weather and use good judgement in planning flights. If any doubt exists, the flight should not be made or it should be discontinued as soon as possible.

The result of vertigo is loss of control of the airplane. If the loss of control is sustained, it will result in an excessive speed accident. Excessive speed accidents occur in one of two manners - either as an inflight airframe separation or as a high speed ground inpact, and they are fatal accidents in either case. All airplanes are subject to this form of accident.

Excessive speed accidents occur at airspeeds greatly in excess of two operating limitations which are specified in the manuals (Maximum maneuvering speed and the "red line" or maximum operating speed). Such speed limits are set to protect the structure of an airplane. For example, control surfaces are designed to be used to their fullest extent only below a the airplane's maximum maneuvering speed. As a result, the control surfaces should never be suddenly or fully deflected above maximum maneuvering speed. Turbulence penetration should not be performed above that speed. The accidents we are discussing here occur at airspeeds greatly in excess of these limitations. No airplane should ever be flown beyond its FAA approved operating limitations.

FLIGHT WITH ONE ENGINE INOPERATIVE

Safe flight with one engine out requires an understanding of the basic aerodynamics involved, as well as proficiency in engine-out procedures.

Loss of power from one engine affects both climb performance and controllability of twin-engine airplanes. Climb performance depends on an excess of power over that required for level flight. Loss of power from one engine obviously represents a 50% loss of power but, in virtually all twin-engine airplanes, climb performance is reduced by at least 80%. A study of the charts in your Pilot's Operating Handbook and FAA Approved Airplane Flight Manual will confirm this fact. Single-engine climb performance depends on four factors:

Airspeed	Too little, or too much, will decrease climb performance
Drag	Gear, flaps, and windmilling prop
Power	Amount available in excess of that needed for level flight
Weight	Passengers, baggage, and fuel load greatly affect climb performance

Loss of power on one engine creates yaw due to asymetric thrust. Yaw forces must be balanced with the rudder. Loss of power on one engine also reduces airflow over the wing. In addition, yaw affects the lift distribution over the wing causing a roll toward the "dead" engine. These roll forces may be balanced by banking slightly (up to 5°) into the operating engine.

Airspeed is the key to safe single-engine operations. For most twin-engine airplanes there is:

Symbol	**Description**
V_{MCA}	Airspeed below which directional control cannot be maintained
V_{SSE}	Airspeed below which an intentional engine cut should never be made

V_{YSE}	Airspeed that will give the best single engine rate-of-climb (or the slowest loss of altitude)
V_{XSE}	Airspeed that will give the steepest angle-of-climb with one engine out

AIR MINIMUM CONTROL SPEED (V_{MCA})

V_{MCA} is designated by the red radial on the airspeed indicator and indicates the minimum control speed, airborne at sea level. V_{MCA} is determined by FAA regulations as the minimum airspeed at which it is possible to recover directional control of the airplane within 20 degrees heading change, and therefore maintain straight flight, with not more than 5 degrees of bank if one engine fails suddenly with:

- Takeoff power on the operative engine
- Rearmost allowable center of gravity
- Flaps in takeoff position
- Propeller on failed engine windmilling (feathered if Auto-Feather system is required)

However, sudden engine failures rarely occur with all factors listed above, and therefore, the actual V_{MCA} under any particular situation may be a little slower than the red radial on the airspeed indicator. Most airplanes will not maintain level flight at speeds at or near V_{MCA}. Consequently, it is not advisable to fly at speeds approaching V_{MCA}, except in training situations or during flight tests. Adhering to the practice of never flying at or below the published V_{MCA} speed for your airplane will virtually eliminate loss of directional control as a problem in the event of an engine failure.

INTENTIONAL ONE-ENGINE-INOPERATIVE SPEED (V_{SSE})

V_{SSE} is specified by the airplane manufacturer and is the minimum speed to perform intentional engine cuts. Use of V_{SSE} is intended to reduce the accident potential from loss of control after engine cuts at or near minimum control speed. V_{MCA} demonstrations are necessary in training but should only be made at safe altitude above the terrain and with power reduction on one engine made at or above V_{SSE}.

ONE-ENGINE-INOPERATIVE BEST RATE-OF-CLIMB SPEED (V_{YSE})

V_{YSE} is designated by the blue radial on the airspeed indicator. V_{YSE} delivers the greatest gain in altitude in the shortest possible time, and is based on the following criteria:

- Critical engine inoperative, and its propeller in the minimum drag position.
- Operating engine set at not more than the maximum continuous power.
- Landing gear retracted.
- Wing flaps in the most favorable (i.e., best lift/drag ratio) position.
- Airplane flown at recommended bank angle.

Drag caused by a windmilling propeller, extended landing gear, or flaps in the landing position, will severely degrade or destroy single-engine climb performance. Since climb performance varies widely with weight, temperature, altitude, and airplane configuration, the climb gradient (altitude gain or loss per mile) may be marginal - or even negative - under some conditions. Study the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for your specific airplane and know what performance to expect with one engine out.

ONE-ENGINE-INOPERATIVE BEST ANGLE-OF-CLIMB SPEED (V_{XSE})

V_{XSE} is used only to clear obstructions during initial climb-out as it gives the greatest altitude gain per unit of horizontal distance. It requires more rudder control input than V_{YSE}.

SINGLE ENGINE SERVICE CEILING

The single engine service ceiling is the maximum altitude at which an airplane will climb at a rate of at least 50 feet per minute in smooth air, with one engine inoperative.

The single-engine service ceiling graph should be used during flight planning to determine whether the airplane, as loaded, can maintain the Minimum Enroute Altitude (MEA) if IFR, or terrain clearance if VFR, following an engine failure.

BASIC SINGLE ENGINE PROCEDURES

Know and follow, to the letter, the single-engine emergency procedures specified in your Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for your airplane. However, the basic fundamentals of all the procedures are as follows:

1. Maintain airplane control and airspeed at all times. **THIS IS CARDINAL RULE NUMBER ONE.**
2. Usually, apply 100% torque to the operating engine. However, if the engine failure occurs at a speed below V_{MCA}, or during cruise or in a steep turn, you may elect to use only enough power to maintain a safe speed and altitude. If the failure occurs on final approach, use power only as necessary to complete the landing.
3. Reduce drag to an absolute minimum.
4. Secure the failed engine and related sub-systems.

The first three steps should be done promptly and from memory. The check list should then be consulted to be sure that the inoperative engine is secured properly and that the appropriate switches are placed in the correct position. The airplane must be banked about 5° into the live engine, with the "slip/skid" ball slightly out of center toward the live engine, to achieve rated performance.

ANOTHER NOTE OF CAUTION. Be sure to identify the dead engine positively, before securing it. Remember: First identify the suspected engine (i.e., "Dead foot means dead engine"), second, verify with cautious throttle movement, then secure.

ENGINE FAILURE ON TAKEOFF

If an engine fails before attaining V_1, the only proper action is to discontinue the takeoff. If the engine fails after V_1, the takeoff may be continued using the procedures specified in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.

Your Pilot's Operating Handbook and FAA Approved Airplane Flight Manual contains charts that are used in calculating the runway length required to stop if the engine fails at V_1 speed and also has charts showing the single-engine performance after takeoff.

Study your charts carefully. No airplane is capable of climbing out on one engine under all weight, pressure altitude, and temperature conditions. The maximum take-off weight must be limited to achieve the required performance as specified in the LIMITATIONS section.

WHEN YOU FLY V_X, V_Y, V_{XSE} AND V_{YSE}

During normal two-engine operations always fly the published take-off speeds on initial climb out. Then, accelerate to your cruise climb airspeed after you have obtained a safe altitude. Use of cruise climb airspeed will give you increased inflight visibility and better fuel economy. However, at first indication of an engine failure during climb out, or while on approach, establish V_{YSE} or V_{XSE}, whichever is appropriate. (Consult your Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for specifics.)

STALLS, SLOW FLIGHT AND TRAINING

The stall warning system must be kept operational at all times and must not be deactivated by interruption of circuits or circuit breakers. Compliance with this requirement is especially important in all high performance multi-engine airplanes during engine-out practice or stall demonstrations, because the stall speed is critical in operation of high-performance airplanes.

The single-engine stall speed of a twin-engine airplane is generally slightly below the power off (engines idle) stall speed for a given weight condition. Single-engine stalls in multi-engine airplanes are not recommended. Single-engine stalls should not be conducted in high performance airplanes by other than qualified engineering test pilots.

V_{MCA} demonstrations should not be attempted when the altitude and temperature are such that the engine-out minimum control speed is known, or discovered to be, close to the stalling speed. Loss of directional or lateral control, just as a stall occurs, is potentially hazardous.

V_{SSE}, the airspeed below which an engine should not be intentionally rendered inoperative for practice purposes, was established because of the apparent practice of some pilots, instructors, and examiners, of intentionally rendering an engine inoperative at a time when the airplane is being operated at a speed close to, or below, the flight idle stall speed. Unless the pilot takes immediate and proper corrective action under such circumstances, it is possible to enter an inadvertent spin.

It is recognized that flight below V_{SSE} with one engine inoperative, or simulated inoperative, may be required for conditions such as practice demonstration of V_{MCA} for multi-engine pilot certification. Refer to the procedure set forth in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual for your airplane. This procedure calls for simulating one engine inoperative by reducing the power lever on one engine to zero thrust while operating at an airspeed above V_{SSE}. Power on the other engine is set at maximum, then airspeed is reduced at approximately one knot per second until either V_{MCA} or stall warning is obtained. During this transition, rudder should be used to maintain directional control, and ailerons should be used to maintain a 5° bank toward the operative engine. At the first sign of either V_{MCA} or stall warning (which may be evidenced by inability to maintain longitudinal, lateral or directional control, aerodynamic stall buffet, or stall warning horn sound), recovery must be initiated immediately by reducing power to zero thrust on the operative engine and lowering the nose to regain V_{SSE}. Resume normal flight. This entire procedure should be used at a safe altitude of at least 5,000 feet above the ground in clear air only.

If stall warning is detected prior to the first sign of V_{MCA}, an engine-out minimum control speed demonstration cannot be accomplished under the existing gross weight conditions and should not be attempted.

SPINS

A major cause of fatal accidents in general aviation airplanes is a spin. Stall demonstrations and practice are a means for a pilot to acquire the skills to recognize when a stall is about to occur and to recover as soon as the first signs of a stall are evident. IF A STALL DOES NOT OCCUR - A SPIN CANNOT OCCUR. It is important to remember, however, that a stall can occur in any flight attitude, at any airspeed, if controls are misused.

Your airplane has not been tested for spin recovery characteristics, and is placarded against intentional spins.

The pilot of an airplane placarded against intentional spins should assume that the airplane may become uncontrollable in a spin, since its performance characteristics beyond certain limits specified in the FAA regulations have not been tested and are unknown. This is why airplanes are placarded against intentional spins, and this is why stall avoidance is your protection against an inadvertent spin.

Pilots are taught that intentional spins are entered by deliberately inducing a yawing moment with the controls as the airplane is stalled. Inadvertent spins result from the same combination - stall plus yaw. That is why it is important to use coordinated controls and to recover at the first indication of a stall when practicing stalls.

In any twin engine airplane, fundamental aerodynamics dictate that if the airplane is allowed to become fully stalled while one engine is providing lift-producing thrust, the yawing moment which can induce a spin will be present. Consequently, it is important to immediately reduce power on the operating engine, lower the nose to reduce the angle of attack, and increase the airspeed to recover from the stall.

In any twin engine airplane, if application of stall recovery controls is delayed, a rapid rolling and yawing motion may develop, even against full aileron and rudder, resulting in the airplane becoming inverted during the onset of a spinning motion. Once the airplane has been permitted to progress beyond the stall and is allowed to reach the rapid rolling and yawing condition, the pilot must then immediately initiate the generally accepted spin recovery procedure for multi-engine airplanes, which is as follows:

Immediately move the control column full forward, apply full rudder opposite to the direction of the spin and reduce power on both engines to idle. These three actions should be done as near simultaneously as possible; then continue to hold this control position until rotation stops and then neutralize all controls and execute a smooth pullout. Ailerons should be neutral during recovery. THE LONGER THE PILOT DELAYS BEFORE TAKING CORRECTIVE ACTION, THE MORE DIFFICULT RECOVERY WILL BECOME.

Always remember that extra alertness and good pilot techniques are required for slow flight maneuvers, including the practice or demonstration of stalls or V_{MCA}. In addition to the foregoing mandatory procedure, always:

- Be certain that the center of gravity of the airplane is as far forward as possible. Forward C.G. aids stall recovery, spin avoidance and spin recovery. An aft C.G. can create a tendency for a spin to flatten out, which delays recovery.
- Conduct any maneuvers which could possibly result in a spin at altitudes in excess of five thousand (5,000) feet above ground level in clear air only.
- Remember that an airplane, at or near traffic pattern and approach altitudes, cannot recover from a spin, or perhaps even a stall, before impact with the ground. When descending to traffic altitude and during pattern entry and all other flight operations, maintain speed no lower than V_{SSE}. On final approach maintain at least the airspeed shown in the flight manual. Recognize that under some conditions of weight, density altitude, and airplane configuration, a twin engine airplane cannot climb or accelerate on a single engine; hence a single engine go-around is impossible and the airplane is committed to a landing. Plan your approach accordingly.
- Remember that, if a stall or spin occurs under instrument conditions, the pilot, without reference to the horizon, is certain to become disoriented. He may be unable to recognize a stall, spin entry, or the spin condition and he may be unable to determine even the direction of the rotation.
- Finally, never forget that stall avoidance is your best protection against an inadvertent spin. MAINTAIN YOUR AIRSPEED.

VORTICES - WAKE TURBULENCE

Every airplane generates wakes of turbulence while in flight. Part of this is from the propeller or jet engine, and part from the wing tip vortices. The larger and heavier the airplane, the more pronounced and turbulent the wakes will be. Wing tip vortices from large, heavy airplanes are very severe at close range, degenerating with time, wind and distance. These are rolling in nature, from each wing tip. In tests, vortex velocities of 133 knots have been recorded. Encountering the rolling effect of wing tip vortices within two minutes after passage of large airplanes is extremely hazardous to small airplanes. This roll effect can exceed the maximum counter roll obtainable in a small airplane. The turbulent areas may remain for three minutes or more, depending on wind conditions, and may extend several miles beyond the airplane. Plan to fly slightly above and to the windward side of other airplanes. Because of the wide variety of conditions that can be encountered, there is no set rule to follow to avoid wake turbulence in all situations. However, the Airman's Information Manual, and to a greater extent Advisory Circular 90-23, Aircraft Wake Turbulence, provides a thorough discussion of the factors you should be aware of when wake turbulence may be encountered.

TAKEOFF AND LANDING CONDITIONS

When taking off on runways covered with water or freezing slush, the landing gear should remain extended for approximately ten seconds longer than normal, allowing the wheels to spin and dissipate the freezing moisture. The landing gear should then be cycled up, then down, wait approximately five seconds and then retracted again. Caution must be exercised to ensure that the entire operation is performed below Maximum Landing Gear Operating Airspeed.

Use caution when landing on runways that are covered by water or slush which cause hydroplaning (aquaplaning). phenomenon that renders braking and steering ineffectiv because of the lack of sufficient surface friction. Snow and ice covered runways are also hazardous. The pilot should also be alert to the possibility of the brakes freezing.

Use caution when taking off or landing during gusty wind conditions. Also be aware of the special wind conditions caused by buildings or other obstructions located near the runway in a crosswind pattern.

MEDICAL FACTS FOR PILOTS

GENERAL

When the pilot enters the airplane, he becomes an integral part of the man-machine system. He is just as essential to a successful flight as the control surfaces. To ignore the pilot in preflight planning would be as senseless as failing to inspect the integrity of the control surfaces or any other vital part of the machine. The pilot has the responsibility for determining his reliability prior to entering the airplane for flight. When piloting an airplane, an individual should be free of conditions which are harmful to alertness, ability to make correct decisions, and rapid reaction time.

FATIGUE

Fatigue generally slows reaction time and causes errors due to inattention. In addition to the most common cause of fatigue, insufficient rest and loss of sleep, the pressures of business, financial worries, and family problems can be important contributing factors. If you are tired, don't fly.

HYPOXIA

Hypoxia, in simple terms, is a lack of sufficient oxygen to keep the brain and other body tissues functioning properly. There is a wide individual variation in susceptibility to hypoxia. In addition to progressively insufficient oxygen at higher altitudes, anything interfering with the blood's ability to carry oxygen can contribute to hypoxia (anemias, carbon monoxide, and certain drugs). Also, alcohol and various drugs decrease the brain's tolerance to hypoxia.

Your body has no built-in alarm system to let you know when you are not getting enough oxygen. It is impossible to predict when or where hypoxia will occur during a given flight, or how it will manifest itself. Some of the common symptoms of hypoxia are increased breathing rate, a light-headed or dizzy sensation, tingling or warm sensation, sweating, reduced visual field, sleepiness, blue coloring of skin, fingernails and lips, and behavior changes. A particularly dangerous feature of hypoxia is an increased sense of well-being, called euphoria. It obscures a person's ability and desire to be critical, slows reaction time, and impairs thinking ability. Consequently, an hypoxic individual commonly believes things are getting progressively better while he nears total collapse.

The symptoms are slow but progressive, insidious in onset, and are most marked at altitudes above ten thousand feet. Night vision, however, can be impaired starting at an altitude of 5,000 feet. Persons who have recently overindulged in alcohol, who are moderate to heavy smokers, or who take certain drugs, may be more susceptible to hypoxia. Susceptibility may also vary in the same individual from day to day or even morning to evening.

Depending upon altitude, a hypoxic individual requires more time to make decisions and perform useful acts, even though he may remain conscious for a longer period. If pressurization equipment fails, the pilot and passengers have only a certain amount of time to get an oxygen mask on before they exceed their time of useful consciousness. The time of useful consciousness is approximately 3-5 minutes at 25,000 feet of altitude for the average individual and diminishes markedly as altitude increases. At 30,000 feet, altitude, for example, the time of useful consciousness is approximately 1-2 minutes. Therefore, in the event of depressurization, oxygen masks should be used immediately.

Should symptoms occur that cannot definitely be identified as either hypoxia or hyperventilation, try three or four deep breaths of oxygen. The symptoms should improve markedly if the condition was hypoxia (recovery from hypoxia is rapid).

Pilots who fly to altitudes that require or may require the use of supplemental oxygen should be thoroughly familiar with the operation of the airplane oxygen systems. A preflight inspection of the system should be performed, including proper fit of the mask.

The passengers should be briefed on the proper use of their oxygen system before flight.

Pilots who wear beards should be careful to ensure that their beard is carefully trimmed so that it will not interfere with proper sealing of the oxygen masks. If you wear a beard or mustache, test the fit of your oxygen mask on the ground for proper sealing. Studies conducted by the military and oxygen equipment manufacturers conclude that oxygen masks do not seal over beards or heavy facial hair.

Federal Aviation Regulations related to the use of supplemental oxygen by flight crew and passengers must be adhered to if flight to higher altitudes is to be accomplished safely. Passengers with significant circulatory or lung disease may need to use supplemental oxygen at lower altitudes than specified by these regulations.

Pilots of pressurized airplanes should receive physiological training with emphasis on hypoxia and the use of oxygen and oxygen systems. Pilots of airplanes with pressure demand oxygen systems should undergo training, experience altitude chamber decompression, and be familiar with pressure breathing before flying at high altitude. This training is available throughout the United States at nominal cost. Information regarding this training may be obtained by request from the Chief, Civil Aeromedical Institute, Attention: Aeromedical Education Branch, AAC-140, Mike Monroney Aeronautical Center, P.O. Box 25082, Oklahoma City, Oklahoma 73125

HYPERVENTILATION

Hyperventilation, or overbreathing, is a disturbance of respiration that may occur in individuals as a result of emotional tension or anxiety. Under conditions of emotional stress, fright, or pain, breathing rate may increase, causing increased lung ventilation, although the carbon dioxide output of the body cells does not increase. As as result, carbon dioxide is "washed out" of the blood. The most common symptoms of hyperventilation are: dizziness, nausea, sleepiness, and finally, unconsciousness. If the symptoms persist, discontinue use of oxygen and consciously slow your breathing rate until symptoms clear, and then resume normal breathing rate. Normal breathing can be aided by talking aloud.

ALCOHOL

Common sense and scientific evidence dictate that you must not fly as a crew member while under the influence of alcohol. Alcohol, even in small amounts, produces (among other things):

- A dulling of critical judgement.
- A decreased sense of responsibility.
- Diminished skill reactions and coordination.
- Decreased speed and strength of muscular reflexes (even after one ounce of alcohol).
- Decreases in efficiency of eye movements during reading (after one ounce of alcohol).
- Increased frequency of errors (after one ounce of alcohol).
- Constriction of visual fields.
- Decreased ability to see under dim illuminations.

- Loss of efficiency of sense of touch.
- Decrease of memory and reasoning ability.
- Increased susceptibility to fatigue and decreased attention span.
- Decreased relevance of response.
- Increased self confidence with decreased insight into immediate capabilities.

Tests have shown that pilots commit major errors of judgment and procedure at blood alcohol levels substantially less than the minimum legal levels of intoxication for most states. These tests further show a continuation of impairment from alcohol up to as many as 14 hours after consumption, with no appreciable diminution of impairment. The body metabolizes ingested alcohol at a rate of about one-third of an ounce per hour. Even after the body completely destroys a moderate amount of alcohol, a pilot can still be severely impaired for many hours by hangover. The effects of alcohol on the body are magnified at altitudes; 2 oz. of alcohol at 18,000 feet produce the same adverse effects as 6 oz. at sea level.

Federal Aviation Regulations have been amended to reflect the FAA's growing concern with the effects of alcohol impairment. FAR 91 states:

"Alcohol or drugs.

(a) No person may act or attempt to act as a crewmember of a civil aircraft -

(1) Within 8 hours after the consumption of any alcoholic beverage;

(2) While under the influence of alcohol;

(3) While using any drug that affects the person's faculties in any way contrary to safety; or

(4) While having .04 percent by weight or more alcohol in the blood.

(b) Except in an emergency, no pilot of a civil aircraft may allow a person who appears to be intoxicated or who demonstrates by manner or physical indications that the individual is under the influence of drugs (except a medical patient under proper care) to be carried in that aircraft."

Because of the slow destruction of alcohol by the body, a pilot may still be under influence eight hours after drinking a moderate amount of alcohol. Therefore, an excellent rule is to allow at least 12 to 24 hours between "bottle and throttle," depending on the amount of alcoholic beverage consumed.

DRUGS

Self-medication or taking medicine in any form when you are flying can be extremely hazardous. Even simple home or over-the-counter remedies and drugs such as aspirin, antihistamines, cold tablets, cough mixtures, laxatives, tranquilizers, and appetite suppressors may seriously impair the judgment and coordination needed while flying. The safest rule is to take no medicine before or while flying, except after consultation with your Aviation Medical Examiner.

SCUBA DIVING

Flying shortly after any prolonged scuba diving could be dangerous. Under the increased pressure of the water, excess nitrogen is absorbed into your system. If sufficient time has not elapsed prior to takeoff for your system to rid itself of this excess gas, you may experience the bends at cabin altitudes even under 10,000 feet.

CARBON MONOXIDE AND NIGHT VISION

The presence of carbon monoxide results in hypoxia which will affect night vision in the same manner and extent as hypoxia from high altitudes. Even small levels of carbon monoxide have the same effect as an altitude increase of 8,000 to 10,000 feet. Smoking several cigarettes can result in a carbon monoxide saturation sufficient to affect visual sensitivity equal to an increase of 8,000 feet altitude.

DECOMPRESSION SICKNESS

Pilots flying unpressurized airplanes at altitudes in excess of 10,000 feet should be alert for the symptoms of 'decompresson sickness'. This phenomenon, while rare, can impair the pilot's ability to perform and in extreme cases, can result in the victim being rendered unconscious. Decompression sickness, also known as dysbarism and aviator's "bends", is caused by nitrogen bubble formation in body tissue as the ambient air pressure is reduced by climbing to higher altitudes. The symptoms are pain in the joints, abdominal cramps, burning sensations in the skin, visual impairment and numbness. Some of these symptoms are similar to hypoxia. The only known remedy for decompression sickness is recompression, which can only be accomplished in an unpressurized airplane by descending. The pilot should immediately descend if it is suspected that this condition existed, since the effect will only worsen with continued exposure to the reduced pressure environment at altitude and could result if uncorrected, in complete incapacitation. The possibility of decompression sickness can be greatly reduced by pre-breathing oxygen prior to flight and by commencing oxygen breathing well below the altitudes where it is legally mandatory.

A FINAL WORD

Airplanes are truly remarkable machines. They enable us to shrink distance and time, and to expand our business and personal horizons in ways that, not too many years ago, were virtually inconceivable. For many businesses, the general aviation airplane has become the indispensable tool of efficiency.

Advances in the mechanical reliability of the airplane we fly have been equally impressive, as attested by the steadily declining statistics of accidents attributed to mechanical causes, at a time when the airframe, systems and powerplants have grown infinitely more complex. The explosion in capability of avionics systems is even more remarkable. Radar, RNAV, LORAN, sophisticated autopilots, EFIS and other devices which, just a few years ago, were too large and prohibitively expensive for general aviation size airplanes, are becoming increasingly commonplace in even the smallest airplanes.

Thus, this SAFETY INFORMATION is directed to the pilot, for it is in the area of the skill and proficiency of you, the pilot, that the greatest gains in safe flying are to be made over the years to come. Intimate knowledge of your airplane, its capabilities and its limitations, and disciplined adherence to the procedures for your airplane's operation, will enable you to transform potential tragedy into an interesting hangar story when - as it inevitably will - the abnormal situation is presented.

Know your airplane's limitations, and your own. Never exceed either.

Safe Flying,

BEECH AIRCRAFT CORPORATION