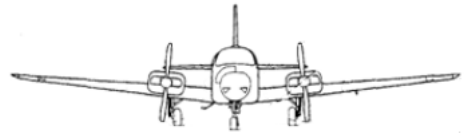
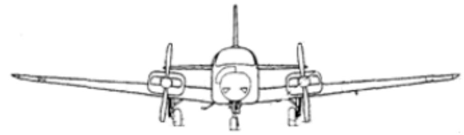


Military Visualizations

Beechcraft Baron 55

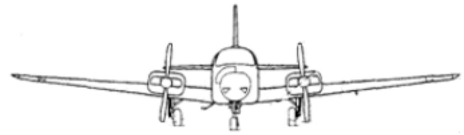
Version 1.0 – 15 May 2012



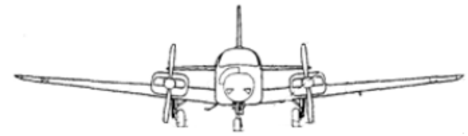
Pilot’s Operating Handbook

Version 1.0

Contents



SECTION 1
GENERAL
TABLE OF CONTENTS



Thanks you for displaying confidence in us by purchasing the Military Visualization Beechcraft Baron 55. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that the BEECHCRAFT Baron meets the high standard s of quality and performance for which BEECHCRAFT airplanes have become famous throughout the world.

IMPORTANT NOTICE

This handbook must be read carefully by the owner and operator in order to become familiar with the operation of the BEECHCRAFT Baron. The handbook presents suggestions and recommendations to help obtain safe and maximum performance without sacrificing economy. The BEECHCRAFT Baron must be operated according to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, and/or placards located in the airplane.

As a further reminder, the owner and operator of this airplane 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 must ensure that all maintenance is done by qualified mechanics in conformity with all airworthiness requirements established for this airplane.

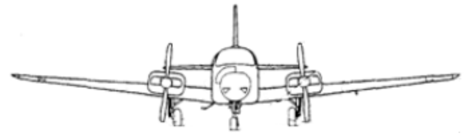
All limits, procedures, safety practices, time limits, servicing, and maintenance requirements contained in this handbook are considered mandatory for the continued airworthiness of this airplane, in a condition equal to that of its original manufacture.

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

USE OF THE HAND BOOK

The Pilot's Operating Handbook is designed so that necessary documents may be maintained for the safe and efficient operation of the Baron. The handbook has been prepared in loose leaf form for ease in maintenance and in a convenient size for storage. The handbook has been arranged with quick reference tabs imprinted with the title of each section and contains ten basic divisions:

Section 1	General
Section 2	Limitations
Section 3	Emergency Procedures
Section 4	Normal Procedures
Section 5	Performance
Section 6	Weight and Balance; Equipment List
Section 7	Systems Description
Section 8	Handling, Servicing and Maintenance



Section 9 Supplements
Section 10 Safety Information

NOTE

Except as noted, all airspeeds quoted in this handbook are Indicated Airspeeds (IAS) and assume zero instrument error.

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 and depicted herein may not be designated as such in every case.

The following information may be provided to the holder of this manual automatically:

1. Original issues and revisions of Class I and Class II Service Instructions

2. Original issues and revisions of FAA Approved Airplane Flight Manual Supplements

3. Reissues and revisions of FAA Approved Airplane Flight Manuals, Flight Handbooks, Owner's Manuals, Pilot's Operating Manuals, and Pilot's operating Handbooks.

This service is free and will be provided only to holders of this handbook who are listed on the FAA Aircraft Registration Branch List or the BEECHCRAFT International Owners Notification Service List, and then only if listed by airplane serial number for the model for which this handbook is applicable. For detailed in- formation on how to obtain "Revision Service" applicable to this handbook or other Beechcraft Service Publications, consult a BEECHCRAFT Aero or Aviation Center, International Distributor or Dealer, or refer to the latest revision of BEECHCRAFT Service Instructions No. 0250-01 0.

BEECH AIRCRAFT CORPORATION EXPRESSLY RESERVES THE RIGHT TO SUPERCEDE, 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 Beech Supplements, for possible placards, limitations, normal, emergency and other operational procedures for proper operation of the airplane with optional equipment installed.

REVISING THE HANDBOOK

Immediately following the title page is the "Log of Revisions" page(s). The Log of Revisions pages are used for maintaining a listing of all effective pages in the handbook (except the SUPPLEMENTS section), and as a record of revisions to these pages. In the lower right corner of the outlined portion of the Log of Revisions is a box containing a capital letter which denotes the issue or reissue of the handbook. This letter may be suffixed by a number which indicates the numerical revision. When a revision to any information in the handbook is made, a new Log of Revisions will be issued. All Logs of Revisions must be retained in the handbook to provide a current record of material status until a reissue is made.

WARNING

When this handbook is used for airplane operational purposes, it is the pilot's responsibility to maintain it in current status.

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 grouping in accordance with the descriptive listing.

NOTE

Upon receipt of a new or revised supplement, compare the "Log" page just received with the existing "Log" page in the manual. Retain the "Log" page with the latest date on the bottom of the page and discard the other log.

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.

Aircraft Three View

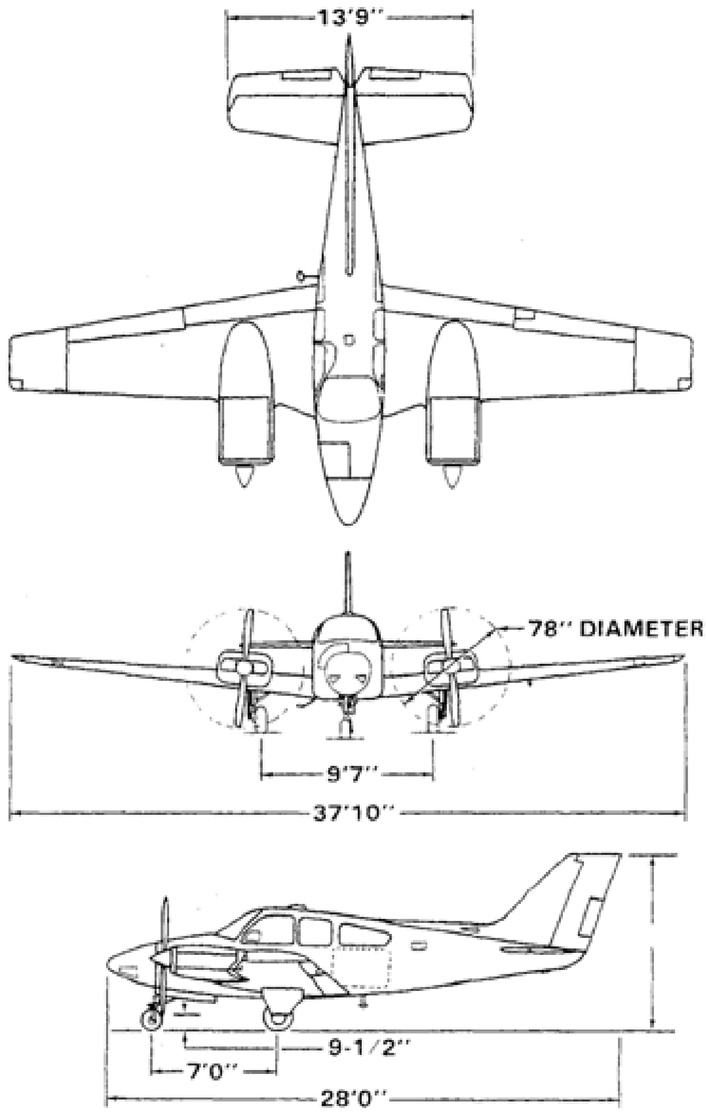


Figure 1

Aircraft Turning Clearance

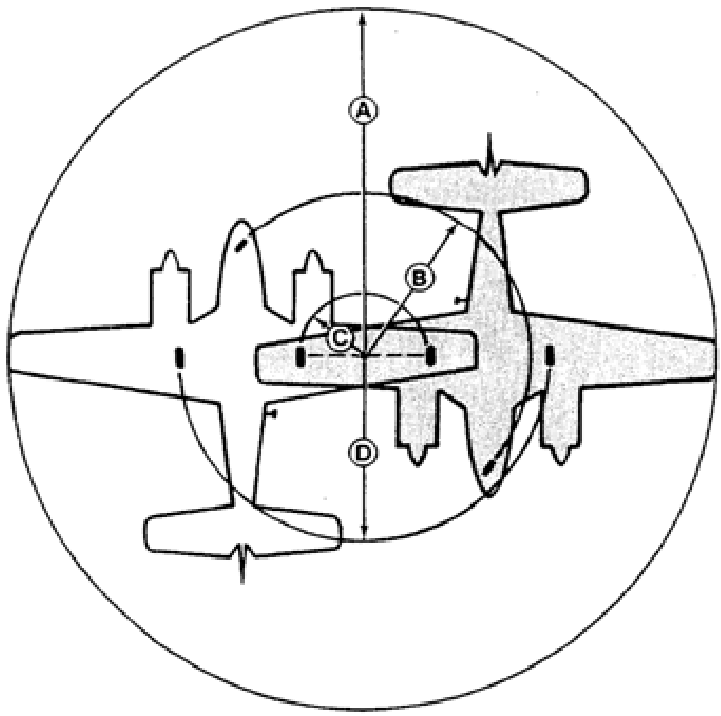
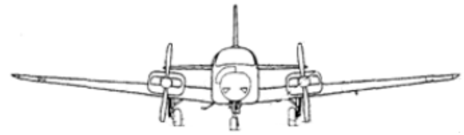


Figure 2

A. Radius for Wing Tip ……………………………………. 29 feet, 6 inches
B. Radius for Nose Wheel ………………………………. 12 feet, 2 inches
C. Radius for Inside Gear ………………………………… 5 feet, 9 inches
D. Radius for Outside Gear …………………………….. 15 feet, 7 inches



DESCRIPTIVE DATA

ENGINES

Two Continental IO-520-C fuel injected, air cooled six cylinder, horizontally-opposed engines each rated at 285 horsepower at 2700 rpm.

Take-off and Maximum Continuous Power	Full throttle and 2700 rpm
Maximum One-Engine Inoperative Power	Full throttle and 2700 rpm
Cruise Climb Power	25.0 in. Hg at 2500 rpm
Maximum Cruise Power	24.5 in. Hg at 24 50 rpm

PROPELLERS

HARTZELL

2 Blade Hubs: BHC-C2YF-2CHF
Blades: FC846 5-6
Pitch Setting at 30 inch Station: Low 16.0°; Feathered 80.0°
Diameter: 78 inches, cut-off permitted to 76.5 inches

or

3 Blade Hubs: BHC-C2YF-2CH Blades: C846 5-6
Pitch Setting at 30 inch Station: Low 16.0°;
Feathered 80.0°
Diameter: 78 inches, cut-off permitted to 76.5 inches

or

HARTZELL

3 Blade Hubs: PHC-C3YF-2F Blades: FC7663-2R
Pitch Setting at 30 inch Station: Low 13. 5°; Feathered 84.0° Diameter: 76 inches, cut-off permitted to 74.5 inches

or

3 Blade Hubs: PHC-C3YF-2
Blades: C7663-2R
Pitch Setting at 30 inch Station: Low 13.5°; Feathered 84.0°
Diameter: 76 inches, cut-off permitted to 74.5 inches

or

McCAULEY

2 Blade Hubs: 2AF34C55
Blades: 78FF-O
Pitch setting at 30 inch Station: Low 1 5°; high 79° Diameter: Maximum 78 inches. Minimum 76 inches

FUEL

Aviation Gasoline 1OOLL (blue) preferred. 100 (green) minimum grade.

STANDARD SYSTEM:	
Total Capacity	106 Gallons
Total Usable	100 Gallons
OPTIONAL SYSTEM:	
Total Capacity	142 Gallons
Total Usable	136 Gallons

OIL

The oil capacity is 12 quarts for each engine.
1-10

WEIGHTS

95-B55	
Maximum Ramp Weight	5121 lbs
Maximum Take -Off Weight	5100 lbs
Maximum Landing Weight	5100 lbs
95- B55A	
Maximum Ramp Weight	5011 lbs
Maximum Take-Off Weight	4990 lbs
Maximum Landing Weight	4990 lbs

CABIN DIMENSIONS

Length	10 ft 1 in.
Height (Max.)	4 ft 2 in.
Width (Max.)	3 ft 6 in.
Entrance Door	37 in. x 36 in.
Standard Baggage Door	18. 5 in. x 22.5 in.
Optional Baggage Door	38 in. x 22.5 in.

BAGGAGE

Aft cabin compartment	35 cu ft STD Aft
Hatshelf	1. 7 cu ft
Extended rear compartment	10 cu ft
Nose compartment	12 cu ft

SPECIFIC LOADINGS

Wing Loading	25.6 lbs/sq ft
Power Loading	9.8 lbs;hp

SYMBOLS, ABBREVIATIONS AND TERMINOLOGY

The following Abbreviations and Terminologies have been listed for convenience and ready interpretation where used within this handbook. Whenever possible, they have been categorized for ready reference.

AIRSPEED TERMINOLOGY

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

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.

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

VMCA 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 be coming inoperative and windmilling; a 5° bank towards the operative engine; takeoff power on operative engine; landing gear up; flaps up; and most rearward e. g. For some conditions of weight and altitude, stall can be encountered at speeds above VMCA as established by the certification procedure described above, in which event stall speed must be regarded as the limit of effective directional control.

Vsse The Intentional One-Engine-Inoperative Speed is a speed above both VMCA 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.

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

Vf Design flap speed is the highest speed permissible at which wing flaps may be actuated.

Vfe Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.

Vle Maximum Landing Gear Extended Speed is the maximum speed at which an airplane can be safely flown with the landing gear extended.

Vlo Maximum Landing Gear Operating Speed is the maximum speed at which the landing gear can be safely extended or retracted.

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

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

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

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

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

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

METEOROLOGICAL TERMINOLOGY

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 Hg. (1 013.2 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 inflight temperature indications adjusted for instrument error and compressibility effects, or ground meteorological sources.

Indicated Pressure Altitude: The number actually read from an altimeter when the barometric sub-scale has been set to 29.92 inches of mercury (10 13. 2 millibars).

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

Station Pressure: Actual atmospheric pressure at field elevation.

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

POWER TERMINOLOGY

Takeoff/Max. Continuous …… The highest power rating not limited by time.

Cruise Climb ……………………… Power recommended for cruise climb.

Maximum Cruise ………………. The highest power settings recommended for cruise.

Recommended Cruise ………. Intermediate power settings presented for cruise power settings.

Economy Cruise ………………… The lowest power setting for which cruise power settings are presented.

ENGINE CONTROLS AND INSTRUMENTS TERMINOLOGY

Throttle Controls ………………. The lever used to control the introduction of a fuel-air mixture into the intake passages of an engine.

Propeller Controls ……………. This lever requests the governor to maintain rpm at a selected value and, in the maximum decrease rpm, position, feathers the propellers.

Mixture Controls …………….. This lever, in the idle cut-off position, stops the flow of fuel at the injectors and in the intermediate thru the full rich positions. Regulates the fuel air mixture.

Propeller Governors ……….. The governors maintain the selected rpm requested by the propeller control levers.

Manifold Pressure Gage ….. An instrument that measures the absolute pressure in the intake manifold of an engine, expressed in inches of mercury (in. Hg).

Tachometers ……………………. An instrument that indicates the rotational speed of the propeller (and engine) in revolutions per minute (rpm).

AIRPLANE PERFORMANCE AND FLIGHT PLANNING TERMINOLOGY

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

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

Accelerate- Go Distance ……… The distance required to accelerate to a specified speed and, assuming failure of an engine at the instant that speed is attained, feather inoperative propeller and continue takeoff on the remaining engine to a height of 50 feet.

MEA ………………………………… Minimum enroute IFR altitude.

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

GPH ……………………………….. U.S. Gallons per hour.

WEIGHT AND BALANCE TERMINOLOGY

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

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

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

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

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

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

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

Usable Fuel ……………………… Fuel available for flight planning.

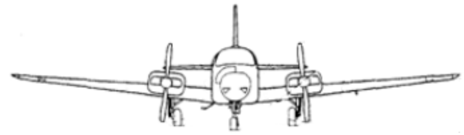
Unusable Fuel …………………. Fuel remaining after a runout test has been completed in accordance with governmental regulations.

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

Basic Empty Weight ………… Standard empty weight plus optional equipment.

Payload …………………………… Weight of occupants, cargo and baggage.

Useful Load ……………………… Difference between ramp weight and basic empty weight.

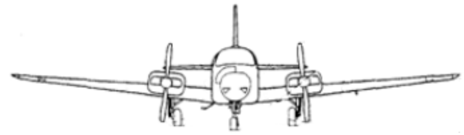


Maximum Ramp Weight …… Maximum weight approved for ground maneuvering. (It includes weight of start, taxi, and run up fuel).

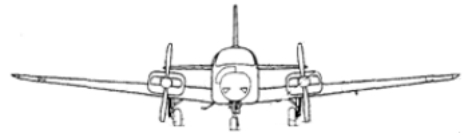
Maximum Takeoff Weight …. Maximum weight approved for the start of the take off run.

Maximum Landing Weight …. Maximum weight approved for the landing touchdown.

Zero Fuel Weight ………………. Weight exclusive of usable fuel.



SECTION 2
LIMITATIONS
TABLE OF CONTENTS



The limitations included in this section have been approved by the Federal Aviation Administration.

The following limitations must be observed in the operation of this airplane.

AIRSPEED LIMITATIONS

SPEED	CAS KNOTS	CAS MPH	IAS KNOTS	IAS MPH	REMARKS
Never Exceed V_{NE}	223	257	224	258	Do not exceed this speed in any operation
Maximum Structural Cruising V_{NO} or V_C	182	210	183	211	Do not exceed this speed except in smooth air and then only with caution
Maneuvering V_A	156	180	157	181	Do not make full or abrupt control movements above this speed
Maximum Flap Extension/ Extended V_{FE} (Full down 30°)	122	140	122	140	Do not extend flaps or operate with flaps extended above this speed
Maximum Landing Gear Operating/ Extended V_{LO} and V_{LE}	152	175	153	176	Do not extend, retract or operate with landing gear extended above this speed
Air Minimum Control Speed V_{MCA}	80	92	78	90	Minimum speed for directional controllability after sudden loss of engine

Figure 3

*AIRSPEED INDICATOR MARKINGS

MARKING	CAS KNOTS	CAS MPH	IAS KNOTS	IAS MPH	SIGNIFICANCE
White Arc	68-122	78-140	69-122	79-140	Full Flap Operating Range
Blue Radial	101	116	100	115	Single-Engine Best Rate-of-Climb Speed
Green Arc	76-182	87-210	79-183	91-211	Normal Operating Range
Yellow Arc	182-223	210-257	183-224	211-258	Operate with caution only in smooth air
Red Radial	223	257	224	258	Maximum speed for ALL operations

*The Airspeed Indicator is marked in CAS values

Figure 4

POWER PLANT LIMITATIONS

ENGINES

Two Continental IO-520-C fuel injected, air-cooled six cylinder, horizontally-opposed engines each rated at 285 horsepower at 2700 rpm.

Take-off and Maximum continuous power	Full throttle, 2700 rpm
Maximum Cylinder Head Temperature	460°F
Maximum Oil Temperature	22 5°F
Minimum Take-off Oil Temperature	75°F
Minimum Oil Pressure (Idle)	30 psi
Maximum Oil Pressure	80 psi

FUEL

Aviation Gasoline	1OOLL (blue) preferred, 100 (green)

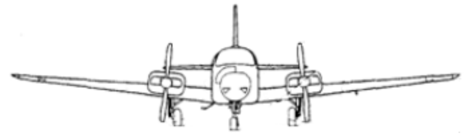
OIL

Ashless dispersant oils must meet Continental Motors Corporation Specification MHS-24 8.

PROPELLERS

HARTZELL

2 Blade Hubs: BHC-C2YF-2 CHF
Blades: FC846 5-6



Pitch Setting at 30 inch Station: Low 1 6.0°; Feathered 80. 0°
Diameter: 78 inches, cut-off permitted to 76. 5 inches or

2 Blade Hubs: BHC- C2YF-2CH Blades: C8465-6
Pitch Setting at 30 inch Station: Low 1 6.0°; Feathered 80.0°
Diameter: 78 inches, cut-off permitted to 76.5 inches

HARTZELL

1 3 Blade Hubs: PHC-C3YF-2F Blades: FC7663-2R
Pitch Setting at 30 inch Station: Low 13.5°; Feathered 84.0°
Diameter: 76 inches, cut-off permitted to 74.5 inches or

3 Blade Hubs: PHC- C3YF-2
Blades: C7663-2R
Pitch Setting at 30 inch Station: Low 1 3. 5°; Feathered 84.0°
Diameter: 76 inches, cut-off permitted to 74.5 inches

McCAULEY

2 Blade Hubs: 2AF34C55
Blades: 78F F-O
Pitch Setting at 30 inch Station: Low 1 5°; high 79°
Diameter: Maximum 78 inches, minimum 76 inches

STARTERS - TIME FOR CRANKING

Do not operate starter continuously for more than 30 seconds. Allow starter to cool before cranking again.

POWER PLANT INSTRUMENT MARKINGS

OIL TEMPERATURE

Caution (Yellow Radial)	75°F
Operating Range (Green Arc)	75° to 225°F
Maximum (Red Radial)	225°F

OIL PRESSURE

Minimum Pressure (Red Radial)	30 psi
Operating Range (Green Arc)	30 to 60 psi
Maximum Pressure (Red Radial)	80 psi

FUEL PRESSURE

Minimum (Red Radial)	1.5 psi
Operating Range (Green Arc)	5 to17 psi
Cruise Power (Heavy Green Arc)	5 to 9.5 psi
Maximum (Red Radial)	1 7.5 psi

MANIFOLD PRESSURE

Operating Range (Green Arc)	15 to 29 .6 in.Hg
Maximum (Red Radial)	29.6 in.Hg

TACHOMETER

Operating Range (Green Arc)	2000 to 2700 rpm
Maximum (Red Radial)	2700 rpm

CYLINDER HEAD TEMPERATURE

Operating Range (Green Arc)	200 ° to 460°F
Maximum Temperature (Red Radial)	460°F

MISCELLANEOUS INSTRUMENT MARKINGS

SUCTION (VACUUM)

Minimum (Red Radial)	3. 75 in.
Hg Operating Range (Green Arc)	3.75 to 5.25 in. Hg
Maximum (Red Radial)	5.25 in. Hg
Red Button Source Failure Indicators or	
Operating Range (Green Arc)	4.3 to 5.9 in. Hg

PROPELLER DEICE AMMETER

Normal Operating Range (Green Arc)	7 to 12 amps (2 blade)
Normal Operating Range (Green Arc)	14 to 18 amps (3 blade)

FUEL QUANTITY

Yellow Arc	E to 1/ 8 Full

WEIGHTS

95-B55

Maximum Ramp Weight	5121 lbs
Maximum Take-Off Weight	5100 lbs
Maximum Landing Weight	5100 lbs

Maximum Baggage/Cargo Compartment Weights:

Aft Cabin compartment (less occupants and equipment)	400 lbs
Extended Rear Compartment	120 lbs
Nose Compartment (baggage less equipment)	300 lbs

CG LIMITS
Forward Limits: 74 inches aft of datum at 3800 lbs and under, then straight line variation to 77. inches aft of datum at 4740 lbs, then straight line variation to 8 1 .0 inches aft of datum at gross weight of 51 00 lbs.

Aft Limits: 86 inches aft of datum at all weights.

Baron 95-B55A

Forward Limits: 74 inches aft of datum at 3800 lbs and under, then straight line variation to 77.5 inches aft of datum at 4740 lbs, then straight line variation to 79.9 inches aft of datum at gross weight of 4990 lbs.

Aft Limits: 86 inches aft of datum at all weights.

Datum is 83 .1 inches forward of center line through forward jack points.

MAC leading edge is 67.2 inches aft of datum. MAC length is 63.1 inches.

MANEUVERS
This is a normal category airplane. Acrobatic maneuvers, including spins, are prohibited.

FLIGHT LOAD FACTORS (5100 POUNDS)
Positive maneuvering load factors:
Flaps Up: 4. 4G
Negative maneuvering load factor:
Flaps Up: 3.0G

MINIMUM FLIGHT CREW
One pilot

KINDS OF OPERATION
This airplane is approved for the following type operations when the required equipment is installed and operational, as defined herein:

1. VFR day and night

2. IFR day and night

REQUIRED EQUIPMENT FOR VARIOUS CONDITIONS OF FLIGHT
Federal Aviation Regulations 91.3(a), 91.24, 91.25, 91.32, 91.33, 91.52, 91.90, 91.97, 91.1 70) specify the minimum numbers and types of airplane instruments and equipment which must be installed and operable for various kinds of flight conditions. This includes VFR day, VFR night, IFR day and IFR night.

Regulations also require that all airplanes be certificated by the manufacturer for operations under various flight conditions. At certification, all required equipment must be in operating condition and should be maintained to assure continued airworthiness. If deviations from the installed equipment were not permitted, or if the operating rules did not provide for various flight conditions, the airplane could not be flown unless all equipment was operable. With appropriate limitations, the operation of every system or component installed in the airplane is not necessary, when the remaining operative instruments and equipment provide for continued safe operation. Operation in accordance with limitations established to maintain airworthiness, can permit continued or uninterrupted operation of the airplane temporarily.

For the sake of brevity, the Required Equipment listing does not include obviously required items such as wings, rudders, flaps, engine, landing gear, etc. Also the list does not include items which do not affect the airworthiness of the aircraft such as galley equipment, entertainment systems, passenger convenience items, etc. However, it is important to note that ALL ITEMS WHICH ARE RELATED TO THE AIRWORTHINESS OF THE AIRPLANE AND NOT INCLUDED ON THE LIST ARE AUTOMATICALLY REQUIRED TO BE OPERATIVE

To enable the pilot to rapidly determine the FAA equipment requirements necessary for a flight into specific conditions, the following equipment requirements and exceptions are presented. It is the final responsibility of the pilot to determine whether the lack of/or inoperative status of a piece of equipment on his airplane, will limit the conditions under which he may operate the airplane.

WARNING

Ice protection equipment which may be installed on this airplane has not been demonstrated to meet requirements for flight into known icing conditions.

LEGEND

(-) Indicates that the item may be inoperative for the specified condition.

(*) Refers to the REMARKS AND/OR EXCEPTIONS column for explicit information or reference.

FUEL

TOTAL FUEL with left and right wing fuel systems full:

Standard Fuel System
Capacity: 106 Gallons
Usable: 100 Gallons

Do not take off if Fuel Quantity Gages indicate in Yellow Arc or with less than 13 gallons in each wing fuel system.

The fuel cross feed system is to be used during emergency conditions in level flight only.

Maximum slip duration: 30 seconds

OXYGEN REQUIREMENTS

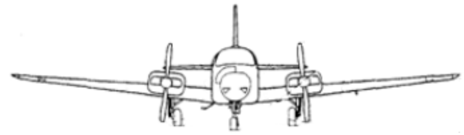
One mask for minimum crew and one mask passengers with an adequate supply of oxygen when operating above 12,500 feet (MSL). Refer to FAR 91 .32 for variations concerning supplemental oxygen requirements for a particular flight.

MAXIMUM PASSENGER SEATING CONFIGURATION

Five (5) passengers and one (1) pilot

SEATING

All seats must be in the upright position for takeoff and landing.



SECTION 3
EMERGENCY PROCEDURES
TABLE OF CONTENTS

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

EMERGENCY AIRSPEEDS (5100 LBS)

One-Engine - Inoperative BestAngle-of -Climb (Vx)	91 kts/105 mph
One-Engine -Inoperative Best Rate-of -Climb (Vy)	100 kts/115 mph
Air Minimum Control Speed (VMCA)	78 kts/90 mph
One-Engine -Inoperative Enroute Climb	100 kts/115 mph
Emergency Descent	153 kts/176 mph
One-Engine-Inoperative Landing:	
Manoeuvring to Final Approach	100 kts/115 mph
Final Approach (Flaps Down)	90 kts/104 mph
Intentional One-Engine-Inoperative Speed (Vsse)	84 kts/97 mph
Maximum Glide Range	120 kts/138 mph

The stall warning horn is inoperative when the battery and generator/alternator switches are turned off. The following information is presented to enable the pilot to form, in advance, a definite plan of action for coping with the most probable emergency situations which could occur in the operation of the airplane. Where practicable, the emergencies requiring immediate corrective action are treated in check list form for easy reference and familiarization. Other situations, in which more time is usually permitted to decide on and execute a plan of action, are discussed at some length. In order to supply one safe speed for each type of emergency situation, the airspeeds presented were derived at 5100 lbs.

ONE ENGINE OPERATION

Two major factors govern one engine operations; airspeed and directional control. The airplane can be safely maneuvered or trimmed for normal hands-off operation and sustained in this configuration by the operative engine AS LONG AS SUFFICIENT AIRSPEED IS MAINTAINED.

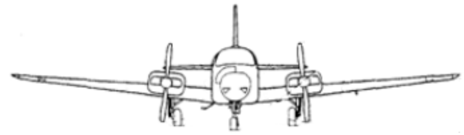
DETERMINING INOPERATIVE ENGINE

The following checks will help determine which engine has failed.

1. DEAD FOOT - DEAD ENGINE. The rudder pressure required to maintain directional control will be on the side of the good engine.

2. THROTTLE. Partially retard the throttle for the engine that is believed to be inoperative; there should be no change in control pressures or in the sound of the engine if the correct throttle has been selected. AT LOW ALTITUDE AND AIRSPEED THIS CHECK MUST BE ACCOMPLISHED WITH EXTREME CAUTION.

Do not attempt to determine the inoperative engine by means of the tachometers or the manifold pressure gages. These instruments often indicate near normal readings.



ONE-ENGINE INOPERATIVE PROCEDURES

ENGINE FAILURE DURING TAKE-OFF

1. Throttle - CLOSED
2. Braking - MAXIMUM

If insufficient runway remains for stopping:

3. Fuel Selector Valves - OFF
4. Battery, Generator/Alternator, and Magneto/Start Switches - OFF

ENGINE FAILURE AFTER LIFT-OFF AND IN FLIGHT

An immediate landing is advisable regardless of take-off weight. Continued flight cannot be assured if take-off weight exceeds the weight determined from the TAKE-OFF WEIGHT graph. Higher take-off weights will result in a loss of altitude while retracting the landing gear and feathering the propeller. Continued flight requires immediate pilot response to the following procedures.

1. Landing Gear and Flaps - UP
2. Throttle (inoperative engine) - CLOSED
3. Propeller (inoperative engine) - FEATHER
4. Power (operative engine) - AS REQUI RED
5. Airspeed - MAINTAIN SPEED AT ENGINE FAILURE (100 KTS (115 MPH) MAX.) UNTIL OBSTACLES ARE CLEARED

After positive control of the airplane is established:

6. Secure inoperative engine:
    a. Mixture Control - IDLE CUTOFF
    b. Fuel Selector - OFF
    c. Auxiliary Fuel Pump - OFF
    d. Magneto/Start Switch - OFF
    e. Generator/Alternator Switch - OFF Cowl Flap - CLOSED
7. Electrical Load - MONITOR (Maximum load of 1 .0 on remaining engine)

NOTE

The most important aspect of engine failure is the necessity to maintain lateral and directional control. If airspeed is below 78 kts (90 mph), reduce power on the operative engine as required to maintain control.

AIR START

CAUTION

The pilot should determine the reason for engine failure before attempting an air start.

1. Fuel Selector Valve - ON
2. Throttle - SET approximately 1/4 travel
3. Mixture Control - FULL RICH, below 5000 ft (1; 2 travel above 5,000 ft)
4. Aux Fuel Pump - L OW
5. Magnetos - CHECK ON
6. Propeller:

WITHOUT UNFEATHERING ACCUMULATORS:

a. Move propeller control forward of the feathering detent to midrange
b. Engage Starter to accomplish unfeathering
c. If engine fails to run, clear engine by allowing it to windmill with mixture in IDLE CUT-OFF. When engine fires, advance mixture to FULL RICH

WITH UNFEATHERING ACCUMULATORS:

a. Move propeller control full forward to accomplish unfeathering. Use starter momentarily if necessary.
b. Return control to high pitch (low rpm) position, when windmilling starts, to avoid overspeed.

7. When Engine Starts - ADJUST THROTTLE, PROPELLER and MIXTURE CONTROLS
8. Aux Fuel Pump - OFF (when reliable power has been regained)
9. Generator/Alternator Switch - ON
10. Oil Pressure - CHECK
11. Warm Up Engine (approximately 2000 rpm and 15 in. Hg)
12. Set power as required and trim

ENGINE FIRE (GROUND)

1. Mixture Controls - IDLE CUT-OFF
2. Continue to crank affected engine
3. Fuel Selector Valves - OFF
4. Battery and Generator/Alternator Switches - OFF
5. Extinguish with Fire Extinguisher

ENGINE FIRE IN FLIGHT

Shut down the affected engine according to the following procedure and land immediately. Follow the applicable single-engine procedures in this section.

1. Fuel Selector Valve - OFF
2. Mixture Control - IDLE CUT-OFF
3. Propeller - FEATHERED
4. Aux Fuel Pump - OFF
5. Magneto/Start Switch - OFF
6. Generator/Alternator Switch - OFF

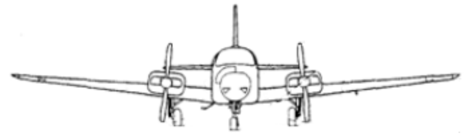
EMERGENCY DESCENT

1. Propellers - 2700 RPM
2. Throttles - CLOSED
3. Airspeed - 153 kts (176 mph)
4. Landing Gear - DOWN
5. Flaps - 10°

GLIDE

1. Propellers - FEATHER
2. Flaps -UP
3. Landing Gear - UP
4. Cowl Flaps - CLOSED

The glide ratio in this configuration is approximately 2 nautical miles of gliding distance for each 1000 feet of altitude above the terrain at an airspeed of 120 kts (138 MPH)



LANDING EMERGENCIES

GEAR-UP LANDING

If possible, choose firm sod or foamed runway. When assured of reaching landing site:

1. Cowl Flaps - CLOSED
2. Wing Flaps - AS DESIRED
3. Throttles - CLOSED
4. Fuel Selector Valves - OFF
5. Mixture Controls - IDLE CUT-OFF
6. Battery, Generator/Alternator and Magneto/ Start Switches - OFF
7. Keep wings level during touchdown.
8. Get clear of the airplane as soon as possible after it stops.

NOTE

The gear up landing procedures are based on the best available information and no actual tests have been conducted.

ONE ENGINE INOPERATIVE LANDING

On final approach and when it is certain that the field can be reached:

1. Landing Gear - DOWN
2. Flaps - AS REQUIRED
3. Airspeed - NORMAL LANDING APPROACH SPEED (90 kts/104 mph)
4. Power - AS REQUIRED to maintain 800ft;'min rate of descent

When it is certain there is no possibility of go-around:

5. Flaps - DOWN (30°)
6. Execute normal landing

ONE ENGINE INOPERATIVE GO-A ROUND WARNING

Level flight might not be possible for certain combinations of weight, temperature and altitude. In any event, DO NOT attempt a one engine inoperative go-around after flaps have been fully extended.

1. Power - MAXIMUM ALLOWABLE
2. Landing Gear - UP
3. Flaps - UP (0°)
4. Airspeed - MAINTAIN 100 KTS (115 MPH)

SYSTEMS EMERGENCIES

ONE-ENGINE INOPERATIVE OPERATION ON CROSSFEED

NOTE

The fuel cross-feed system is to be used only during emergency conditions in level flight only.

Left engine inoperative:

1. Right Aux Fuel Pump - LOW
2. Left Fuel Selector Valve - OFF
3. Right Fuel Selector Valve - CROSSFEED
4. Right Aux Fuel Pump - LOW or OFF as required

Right engine inoperative:

1. Left Aux Fuel Pump - LOW
2. Right Fuel Selector Valve - OFF
3. Left Fuel Selector Valve - CROSSFEED
4. Left Aux Fuel Pump - LOW or OFF as required

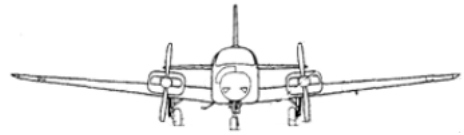
ELECTRICAL SMOKE OR FIRE

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

1. Battery and Generator/Alternator Switches - OFF WARNING electrically driven flight instruments will become inoperative.
2. Oxygen - AS REQUIRED
3. All Electrical Switches - OFF
4. Battery and Generator/Alternator Switches - ON
5. Essential Electrical Equipment - ON (Isolate defective equipment)

NOTE

Ensure fire is out and will not be aggravated by draft. Turn off CABIN HEAT switch and push in the CABIN AIR control. Open pilot's storm window, if required.



ILLUMINATION OF ALTERNATOR OUT LIGHT

In the event of the illumination of a single ALTERNATOR OUT light:

1. Check the respective loadmeter for load indication
   a. No Load - Turn off affected alternator
   b. Regulate load

In the event of the illumination of both ALTERNATOR OUT lights:

1. Check loadmeters for load indication
   a. No load indicates failure of regulator
      (1) Switch regulators
      (2) System should indicate normal
   b. If condition recurs
      (1) Switch to original regulator
      (2) System returns to normal, indicates overload condition causing malfunction
      (3) Reduce load
   c. If condition indicates malfunction of both alternator circuits
      (1) Both ALT Switches - OFF
      (2) Minimize electrical load since only battery power will be available
4. Battery and Generator/Alternator Switches - ON
5. Essential Electrical Equipment - ON (Isolate defective equipment:

NOTE

Ensure fire is out and will not be aggravated by draft. Turn off CABIN HEAT switch and push in the CABIN AIR control. Open pilot's storm window, if required.

ILLUMINATION OF ALTERNATOR OUT LIGHT

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   b. Regulate load

In the event of the illumination of both ALTERNATOR OUT lights:

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   a. No load indicates failure of regulator
      (1) Switch regulators
      (2) System should indicate normal
   b. If condition recurs
      (1) Switch to original regulator
      (2) System returns to normal. Indicates overload condition causing malfunction
      (3) Reduce load
   c. If condition indicates malfunction of both alternator circuits

(1) Both ALT Switches - OFF
(2) Minimize electrical load since only battery power will be available

LANDING GEAR MANUAL EXTENSION

Reduce airspeed before attempting manual extension of the landing gear.

1. LDG GR MOTOR Circuit Breaker - PULL
2. Landing Gear Handle - DOWN
3. Remove cover from handcrank at rear of front seats. Engage handcrank and turn counter clockwise as far as possible (approximately 50 turns). Stow handcrank.
4. Check mechanical indicator to ascertain that gear is down.
5. If electrical system is operative, check landing gear position lights and warning horn (check LDG GR RELAY circuit breaker engaged.)

CAUTION

The manual extension system is designed only to lower the landing gear; do not attempt to retract the gear manually.

WARNING

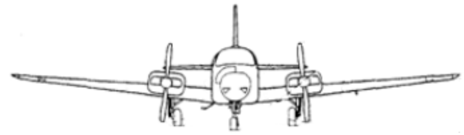
Do not operate the landing gear electrically with the handcrank engaged, as damage to the mechanism could occur.

After emergency landing gear extension, do not move any landing gear controls or reset any switches or circuit breakers until airplane is on jacks, as failure may have been in the gear-up circuit and gear might retract with the airplane on the ground.

LANDING GEAR RETRACTION AFTER PRACTICE MANUAL EXTENSION

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

1. Handcrank - CHECK, STOWED
2. Landing Gear Motor Circuit Breaker - IN
3. Landing Gear Handle - UP



ICE PROTECTION

SURFACE DEICE SYSTEM

a. Failure of AUTO Operation
(1) Surface Deice Switch - MANUAL (Do not hold more than 8 seconds)

CAUTION

The boots will inflate only as long as the switch is held in the MANUAL position. When the switch is released the boots will deflate.

b. Failure of boots to deflate
(1) Pull circuit breaker on lower left instrument panel

ELECTROTHERMAL PROPELLER DEICE SYSTEM

1. Loss of one alternator; turn off unnecessary electrical equipment. Turn the prop deice system off while operating the cabin heater blower or the landing gear motor. Monitor electrical loads so as not to exceed alternator capacity of 1.0 on the loadmeter.

An abnormal reading on the Propeller Deice Ammeter indicates need for the following action:

a. Zero Amps: Check prop deice circuit breaker. If the circuit breaker has tripped, a wait of approximately 30 seconds is necessary before resetting. If ammeter reads 0 and the circuit breaker has not tripped or if the ammeter still reads 0 after the circuit breaker has been reset, turn the switch off and consider the prop deice system inoperative.

b. Zero to 7 Amps, 2 Blade Propeller; Zero to 14 Amps, 3 Blade Propeller: If the prop deice system ammeter occasionally or regularly indicates less than 7 amps for 2 blade, (or 14 amps for 3 blade), operation of the prop deice system can continue unless serious propeller imbalance results from irregular ice throw-offs.

c. 12 to 15 Amps, 2 Blade Propeller; 18 to 23 Amps, 3 Blade Propeller: If the prop de-icing system ammeter occasionally or regularly indicates 12 to 15 amps for 2 blade (or 18 to 23 amps for 3 blade), operation of the prop deice system can continue unless serious propeller imbalance results from irregular ice throw-offs.

d. More than 15 Amps, 2 Blade Propeller. More than 23 amps, 3 Blade Propeller: If the prop deice system ammeter occasionally or regularly indicates more than 15 amps for 2 blade, or more than 23 amps for 3 blade, the system should not be operated unless the need for prop de-icing is urgent.

EMERGENCY STATIC AIR SOURCE SYSTEM

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 obstructions 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. Emergency Static Air Source - Switch to ON EMERGENCY (lower sidewall adjacent to pilot)

2. For Airspeed Calibration and Altimeter Corrections, refer to the PERFORMANCE section.

CAUTION

The emergency static air valve should remain in the OFF NORMAL position when system is not needed.

EMERGENCY EXITS

Emergency exits, provided by the openable window on each side of the cabin, may be used for egress in addition to the cabin door and the optional cargo door. An emergency exit placard is installed below the left and right middle windows.

To open each emergency exit:

1. Lift the latch.
2. Pull out the emergency release pin and push the window out.

NOTE

On TC-1947 and after, for access past the 3rd and/or 4th seats, rotate the red handle, located on the lower inboard side of the seat back, and fold the seat back over.

UNLATCHED DOOR IN FLIGHT

If the cabin door is not locked it may come unlatched in flight. This may occur during or just after take-off. The door will trail in a position approximately 3 to 4 inches open. Flight characteristics of the airplane will not be affected except for a reduction in performance. Return to the field in a normal manner. If practicable, during the landing flare-out have a passenger hold the door to prevent it from swinging open.

SIMULATED ONE ENGINE INOPERATIVE

ZERO THRUST (Simulated Feather)

Use the following power setting (only on one engine at a time) to establish zero thrust. Use of this power setting avoids the difficulties of restarting an engine and preserves the availability of engine power.

The following procedure should be accomplished by alternating small reductions of propeller and then throttle, until the desired setting has been reached.

1. Propeller Lever - RETARD TO FEATHER DETENT
2. Throttle Lever - SET 12 in. Hg MANIFOLD PRESSURE

NOTE

This setting will approximate Zero Thrust using recommended One-Engine Inoperative Climb speeds.

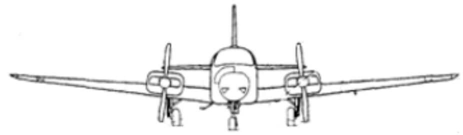
SPINS

If a spin is entered inadvertently:

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.

NOTE

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



SECTION 4
NORMAL PROCEDURES
TABLE OF CONTENTS

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

AIRSPEEDS FOR SAFE OPERATION (5100 LBS)

Maximum Demonstrated Crosswind Component	22kts/25mph
Takeoff:	
Lift-off	84kts/97mph
50-ft Speed	91kts/105mph
Two-Engine Best Angle-of-Climb (Vx)	84kts/97mph
Two-Engine Best Rate-of-Climb (Vy)	107kts/123mph
Cruise Climb	122kts/140mph
Turbulent Air Penetration	157kts/181mph
Landing Approach:	
Flaps DN	90kts/104mph
Flaps 0°	97kts/112mph
Balked Landing Climb	90kts/104mph
Intentional One-Engine-Inoperative Speed (Vsse)	84kts/97mph
Air Minimum Control Speed (Vmca)	78kts/90mph

PREFLIGHT INSPECTION

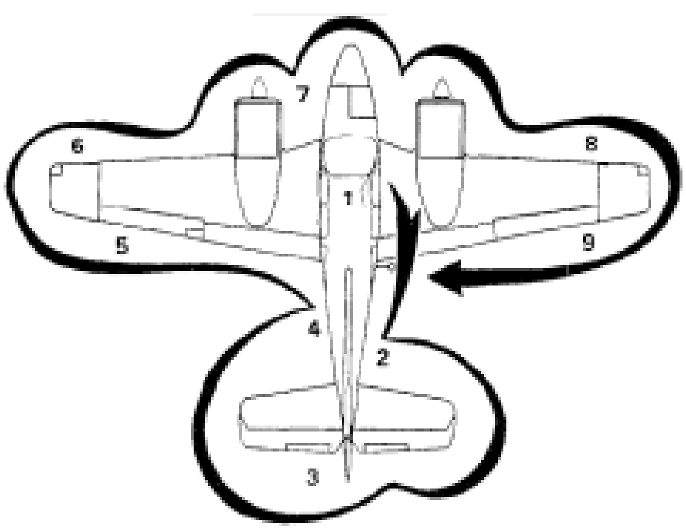


Figure 5

1. COCKPIT:
  a. Control Lock - REMOVE AND STOW
  b. Parking Brake - SET
  c. All Switches - OFF
  d. Trim Tabs - SET TO ZERO

2. RIGHT FUSELAGE:
  a. Load Distribution - CHECK AND SECURED

b. Baggage Door - SECURE
c. Static Port - UNOBSTRUCTED
d. Emergency Locator Transmitter - ARMED

3. EMPENNAGE:
a. Control Surfaces, Tabs and Deice Boots - CHECK CONDITION, SECURITY, AND ATTACHMENT
b. Tail Cone, Tail Light, and Rudder Beacon - CHECK
c. Tie Down - REMOVE
d. Cabin Air Inlet - CHECK

4. LEFT FUSELAGE:
a. Cabin Air Outlet - CHECK
b. Static Port - UNOBSTRUCTED
c. All Antennas and Lower Beacon - CHECK

5. LEFT WING TRAILING EDGE:
a. Fuel Sump Aft of Wheel Well - DRAIN
b. Fuel Vents - CHECK
c. Flaps - CHECK GENERAL CONDITION
d. Aileron - CHECK CONDITION AND FREEDOM OF MOVEMENT, TAB NEUTRAL WHEN AILERON NEUTRAL

6. LEFT WING LEADING EDGE
a. Lights and Deice Boot - CHECK FOR CONDITION
b. Stall Warning Vane - CHECK FREEDOM OF MOVEMENT
c. Fuel - CHECK QUANTITY AND CAP SECURE
d. Fuel Sight Gage - CHECK
e. Pitot - REMOVE COVER, EXAMINE FOR OBSTRUCTIONS
f. Tie Down, Chocks - REMOVE
g. Engine Oil - CHECK QUANTITY, CAP AND DOOR SECURE
h. Engine Cowling and Doors - CHECK CONDITION AND SECURITY
i. Engine Air Intake - EXAMINE FOR OBSTRUCTIONS
j. Propeller - EXAMINE FOR NICKS, SECURITY AND OIL LEAKS
k. Cowl Flap - CHECK
l. Wheel Well Doors, Tire, Brake Line and Shock Strut - CHECK
m. Landing Gear Uplock Roller - CHECK
n. Fuel Drains - DRAIN

7. NOSE SECTION
a. Wheel Well Doors, Tire and Shock Strut- CHECK
b. Taxi Light- CHECK
c. Heater Air Inlets - CLEAR
d. Oxygen - CHECK
e. Baggage Door- SECURE

8. RIGHT WING LEADING EDGE
a. Wheel Well Doors, Tire, Brake Line, and Shock Strut - CHECK
b. Landing Gear Uplock Roller - CHECK Cowl Flap - CHECK

d. Fuel Drains -DRAIN
e. Engine Oil - CHECK QUANTITY, CAP AND DOOR SECURE
f. Engine Cowling and Doors - CHECK CONDITION AND SECURITY
g. Propeller - EXAMINE FOR NICKS, SECURITY AND OIL LEAKS
h. Engine Air Intake - EXAMINE FOR OBSTRUCTIONS
i. Fuel Sight Gage - CHECK
j. Fuel - CHECK QUANTITY AND SECURE CAP
k. Tie Down and Chocks - REMOVE
l. Lights and Deice Boot - CHECK FOR CONDITION

9. RIGHT WING TRAILING EDGE
a. Aileron - CHECK CONDITION AND FREEDOM OF MOVEMENT
b. Fuel Vents - CHECK
c. Fuel Sump Ah of Wheel Well - DRAIN
d. Flaps - CHECK GENERAL CONDITION

NOTE

Check operation of lights if night flight is anticipated.

CAUTION

Do not taxi with a flat shock strut.

BEFORE STARTING

1. Seats - POSITION AND LOCK SEAT BACKS UPRIGHT
2. Seat Belts and Shoulder Harnesses - FASTEN
3. Parking Brake - SET
4. All Avionics - OFF
5. Oxygen - CHECK QUANTITY AND OPERATION
6. Landing Gear Handle - DOWN
7. Cowl Flap - CHECK, OPEN
8. Fuel Selector Valves - CHECK OPERATION THEN ON
9. All Circuit Breakers, Switches and Equipment Controls - CHECK
10. Battery Switch - ON

CAUTION

The generator/alternator control switches must be turned OFF prior to connecting an auxiliary power unit for starting, battery charging or electrical equipment check-out. This procedure protects the voltage regulators and system electrical equipment from voltage transients (power fluctuations).

11. Fuel Quantity Indicators - CHECK QUANTITY (See LIMITATIONS for take-off fuel)
12. Landing Gear Position Lights - CHECK

STARTING

1. Throttle Position - APPROXIMATELY 1/2 IN. OPEN
2. Propeller Control - LOW PITCH (high rpm)
3. Mixture Control - FULL RICH

NOTE

If the engine is hot and the ambient temperature is 90°F or above, place mixture control in IDLE CUT-OFF, switch aux fuel pump to HIGH for 30 to 60 seconds, then OFF. Return mixture control to FULL RICH.

4. Aux Fuel Pump - HIGH (until pressure stabilizes then - OFF)
5. Magneto/Start Switch - START (Observe Starter Limits)

CAUTION

Do not engage starter for more than 30 seconds in any 4-minute period.

NOTE

In the event of a balked start (or over-prime condition) place mixture controls in IDLE CUT-OFF and open the throttle; operate the starter to remove excess fuel. As engine starts, reduce the throttle to idle rpm and place the mixture control in FULL RICH.

6. Warm-up - 800 to 1200 RPM
7. Oil Pressure - 25 PSI WITHIN 30 SECONDS
8. External Power (if used) - DISCONNECT

WARNING

When using external power, start the right engine first. Disconnect external power before starting left engine.

9. Generator Alternator Switch - ON
10. All Engine Indicators - CHECK

CAUTION

If the total of both loadmeters exceeds .2 after two minutes at 1000-1200 rpm, with no additional electrical equipment on, and the indication shows no signs of decreasing, an electrical malfunction is indicated. The battery master and both generator/alternator switches should be placed in the OFF position. Do not take off.

CAUTION

Low voltage, high ammeter or loadmeter readings, dimming of lights, or excessive noise in radio receivers could be indications that problems are developing in the starter system. A noted change in such normal conditions could indicate prolonged starter motor running and the engine should be shut down. No further flight operations should be attempted until the cause is determined and repaired.

11. Using the same procedure, start other engine.

AFTER STARTING AND TAXI

CAUTION

Do not operate engine above 1200 RPM until oil temperature reaches 75°F.

1. Brakes - RELEASE AND CHECK
2. Avionics - ON, AS REQUIRED
3. Exterior Lights - AS REQUIRED

BEFORE TAKEOFF

1. Seat Belts and Shoulder Harnesses - CHECK
2. Parking Brake - SET
3. Aux Fuel Pumps - OFF (If ambient temperature is 90°F or above, use LOW pressure boost)
4. All Instruments - CHECKED
5. Fuel Indicators - CHECK QUANTITY
6. Mixture - FULL RICH (or as required by field elevation)
7. Propellers - EXERCISE AT 2200 RPM

CAUTION

When exercising propellers in their governing range, do not move the control lever aft past the detent. To do so will allow the propeller to change rapidly to the full feathered position, imposing high stresses on the blade shank and engine.

8. Loadmeters - CHECK for proper indication
9. Throttles - 1700 RPM
10. Magnetos - CHECK (Variance between individual magnetos should not exceed 50 rpm, max. drop 150 rpm)
11. Throttles- 1500 RPM
12. Propellers- FEATHERING CHECK (Do not allow an rpm drop of more than 500 rpm)
13. Throttles - IDLE
14. Friction - ADJUST

15. Trim- AS REQUIRED FOR TAKE-OFF
16. Flaps - CHECK AND SET FOR TAKE-OFF
17. Flight Controls - CHECK PROPER DIRECTION, FULL TRAVEL AND FREEDOM OF MOVEMENT
18. Doors and Windows - LOCKED
19. Parking Brake - OFF

TAKE-OFF

Take-Off Power ………………………………………………………… Full throttle, 2700 RPM

Minimum Take-Off Oil Temperature ………………………. 75°F

1. Power - SET TAKE- OFF POWER (MIXTURE - SET FUEL PRESSURE TO ALTITUDE) BEFORE BRAKE RELEASE
2. Airspeed - ACCELERATE TO AND MAINTAIN RECOMMENDED SPEED
3. Landing Gear - RETRACT (when positive rate of climb is established)
4. Airspeed - ESTABLISH DESIRED CLIMB SPEED (when clear of obstacles)

MAXIMUM PERFORMANCE CLIMB

1. Power - SET MAXIMUM CONTINUOUS POWER
2. Mixtures - LEAN TO APPROPRIATE FUEL PRESSURE
3. Cowl Flaps - OPEN
4. Airspeed - ESTABLISH 107KTS/123MPH

CRUISE CLIMB

1. Power - SET (25. 0in. Hg or Full Throttle - 2500RPM)
2. Mixture Controls - LEAN TO APPROPRIATE FUEL PRESSURE
3. Airspeed - 122KTS/140MPH
4. Cowl Flaps - AS REQUIRED

NOTE

In high ambient temperatures, low pressure boost may be required to prevent excessive fuel flow fluctuations.

CRUISE

Maximum Cruise Power ………………………………………… 24.5 in. Hg at 2450 rpm
Recommended Cruise Power Recommended ………. 24.0 in. Hg at 2300 rpm

Cruise Power ………………………………………………………… 22.0 in. Hg at 2200 rpm
Economy Cruise Power ………………………………………… 20.0 in. Hg at 2100 rpm

1. Power - SET AS DESIRED (Use Tables in PERFORMANCE section)
2. Fuel Flow - LEAN AS REQUIRED
3. Cowl Flaps - AS REQUIRED

LEANING USING THE EXHAUST GAS TEMPERATURE INDICATOR (EGT)

The system consists of a thermocouple type exhaust gas temperature (EGT) probe mounted in the right side of each exhaust system. This probe is connected to an indicator on the right side of the instrument panel. The indicator is calibrated in degrees Fahrenheit. Use EGT system to lean the fuel/air mixture when cruising at maximum cru1se power or less.

1. Lean the mixture and note the point on the indicator that the temperature peaks and starts to fall
   a. CRUISE (LEAN) MIXTURE - Increase the mixture until the EGT shows a drop of 25°F below peak on the rich side of peak

   b. BEST POWER MIXTURE - Increase the mixture until the EGT shows a drop of 100°F below peak on the rich side of peak.

CAUTION

Do not continue to lean mixture beyond that necessary to establish peak temperature.

2. Continuous operation is recommended at 25°F or more below peak EGT only on the rich side of peak.
3. Changes in altitude and power settings require the peak EGT to be rechecked and the mixture reset.

DESCENT

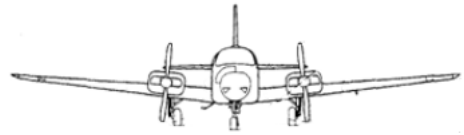
1. Altimeter - SET
2. Cowl Flaps - CLOSED
3. Windshield Defroster - AS REQUIRED
4. Power - AS REQUIRED (avoid prolonged idle settings and low cylinder head temperatures)

Recommended descent speeds:

Smooth air …………………………………… 172 kts/198 mph
Rough air ……………………………………. (Max.) 15 7 kts/181 mph

BEFORE LANDING

1. Seat belts and Shoulder Harnesses - FASTENED, SEAT BACKS UPRIGHT
2. Fuel Selector Valves - CHECK ON
3. Aux. Fuel Pumps - OFF, OR LOW AS PER AMBIENT TEMPERATURE
4. Cowl Flaps - AS REQUIRED
5. Mixture Controls - FULL RICH (or as required by field elevation)
6. Landing Gear - DOWN (Gear extension speed 153kts/176mph)
7. Flaps DOWN (Maximum extension speed 122kts/140mph)
8. Airspeed - ESTABLISHE NORMAL LANDING APPROACH SPEED.
9. Propellers - LOW PITCH (high rpm)



BALKED LANDING

1. Propellers - LOW PITCH (high rpm)
2. Power - MAXIMUM ALLOWABLE
3. Airspeed - BALKED LANDING CLIMB SPEED (90KTS/104MPH)
4. Flaps - UP
5. Landing Gear - UP
6. Cowl Flaps - AS REQUIRED

AFTER LANDING

1. Landing and Taxi Lights - AS REQUIRED
2. Flaps - UP
3. Trim Tabs - SET TO ZERO
4. Cowl Flaps - OPEN
5. Aux Fuel Pumps - AS REQUIRED

SHUT DOWN

1. Parking Brake - SET
2. Propellers - HIGH RPM
3. Throttles - 1000 RPM
4. Aux Fuel Pumps - OFF
5. Electrical and Avionics Equipment - OFF
6. Mixture Controls - IDLE CUT-OFF
7. Magneto/Start Switches- OFF, AFTER ENGINES STOP
8. Battery and Generator/Alternator Switches - OFF
9. Controls - LOCKED
10. If airplane is to be parked for an extended period of time, install wheel chocks and release the parking brake as greatly varying ambient temperatures may build excessive pressures on the hydraulic system

OXYGEN SYSTEM

NOTE

The optional onboard oxygen system is not modeled in the MilViz Beechcraft Baron 55.

WARNING

NO SMOKING permitted when using oxygen.

PREFLIGHT

1. Check Oxygen Pressure Gage for pressure reading.
2. Determine percent of full system.
3. Multiply oxygen duration in minutes by percent of full system.

EXAMPLE

People ………………………….……………….. 5
Gage Pressure ……………………….……… 1500psi
Percent Capacity (from chart) …..….. 80%
Cylinder Capacity (full) ………………….. 49 cu. ft.
Altitude (planned flight) ………………. 15,000 ft
Duration (full cylinder) ………………….. 149 minutes
Duration (80% full) ……………………….. 119 minutes

INFLIGHT

The recommended masks are provided with the system. They are designed to be adjustable to fit the average person, with minimum leakage of oxygen.

WARNING

Since 90% of the system efficiency is determined by the fit of the oxygen mask, make certain the masks fit properly and are in good condition.

The use of oxygen is recommended to be in accordance with current FAR operating rules.

1. Oxygen Control Valve - OPEN SLOWLY

2. Mask - INSERT FITTING, DON MASK (adjust mask for proper fit)

3. Oxygen Flow Indicator - CHECK (red plunger lifts from its seat when the hose is inserted into the oxygen coupling)

AFTER USING

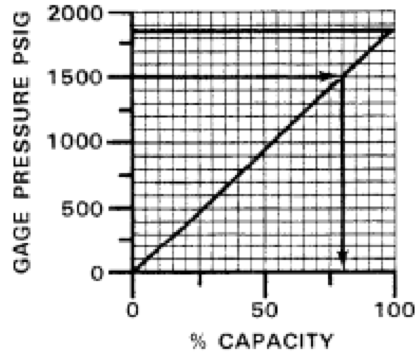
1. Discontinue use by unplugging mask from outlet.

NOTE

Closing the control valve while in flight is not necessary due to automatic sealing of the outlet when the mask is unplugged.

2. Oxygen Control Valve - CLOSE (may be accomplished during shut-down).

Oxygen Capacity and Duration



OXYGEN DURATION CHART

Duration in minutes at the following altitudes:

	Persons Using	12,500	15,000	20,000
49 cu ft	1	1014	746	507
	2	507	373	253
	3	338	248	169
	4	253	186	126
	5	202	149	101
	6	169	124	84
66 cu ft	1	1344	988	672
	2	672	494	336
	3	448	329	224
	4	336	247	168
	5	268	197	134
	6	224	164	112

Figure 6

COLD WEATHER OPERATION

PREFLIGHT INSPECTION

In addition to the normal preflight exterior inspection, remove ice, snow and frost from the wings, tail, control surfaces and hinges, propellers, windshield, fuel cell filler caps and fuel vents. If you have no way of removing these formations of ice, snow, and frost leave the airplane on the ground, as these deposits will not blow off. The wing contour may be changed by these formations sufficiently that its lift qualities are considerably disturbed and sometimes completely destroyed. Complete your normal preflight procedures. Check the flight controls for complete freedom of movement. Conditions for accumulating moisture in the fuel tanks are most favourable at low temperatures due to the condensation increase and the moisture that enters as the system is serviced. Therefore, close attention to draining the fuel system will assume particular importance during cold weather.

ENGINES

Use engine oil in accordance with Consumable Materials in the SERVICING section. Always pull the propeller through by hand several times to clear the engine and "limber up" the cold, heavy oil before using the starter. This will also lessen the load on the battery if an auxiliary power unit is not used.

Under very cold conditions, it may be necessary to preheat the engine prior to a start. Particular attention should be applied to the oil cooler, and engine sump to insure proper preheat. A start with congealed oil in the system may produce an indication of normal pressure immediately after the start, but then the oil pressure may decrease when residual oil in the engine is pumped back with the congealed oil in the sump. If an engine heater capable of heating both the engine sump and cooler is not available, the oil should be drained while the engines are hot and stored in a warm area until the next flight. If there is no oil pressure within the first 30 seconds of running, or if oil pressure drops after a few minutes of ground operation, shut down and check for broken oil lines, oil cooler leaks or the possibility of congealed oil.

NOTE

It is advisable to use external power for starting in cold weather. During warm-up, watch engine temperatures closely, since it is quite possible to exceed the cylinder head temperature limit in trying to bring up the oil temperature. Exercise the propellers several times to remove cold Oil from the pitch change mechanisms. The propellers should also be cycled occasionally in flight. During letdown and landing, give spec1al attention to engine temperatures, since the engines will have a tendency toward overcooling.

EXTERNAL POWER

It is very important that the following precautions be observed while using external power.

1. The airplane has a negative ground system. Be sure to connect the positive lead of the auxiliary power unit to the positive terminal of the airplane's external power receptacle and the negative lead of the auxiliary power unit to the negative terminal of the external power receptacle. A positive voltage must also be applied to the small guide pin.

2. To prevent arcing, make certain no power is being supplied when the connection is made.

3. Make certain that the battery switch is ON, all avionics and electrical switches OFF, and a battery is in the system before connecting an external power unit. This protects the voltage regulators and associated electrical equipment from voltage transients (power fluctuations).

STARTING ENGINES USING AUXILIARY POWER UNIT

1. Battery switch - ON
2. Generators/Alternators, Electrical, and Avionics Equipment - OFF
3. Auxiliary Power Unit - CONNECT

4. Auxiliary Power Unit - SET OUTPUT (27.0 to 28.5 volts)
5. Auxiliary Power Unit - ON
6. Right Engine - START (use normal start procedures)
7. Auxiliary Power Unit - OFF (after engine has been started)
8. Auxiliary Power Unit - DISCONNECT (before starting left engine)
9. Generator/Alternator Switches - ON

TAXIING

Avoid taxiing through water, slush or muddy surfaces if possible. In cold weather, water, slush or mud, when splashed onto landing gear mechanisms or control surface hinges may freeze, preventing free movement and resulting in structural damage.

ICE PROTECTION SYSTEMS

The following equipment, when installed and operable, will provide a degree of protection when icing conditions are inadvertently encountered. Since this equipment has not been demonstrated to meet current requirements for flight into known icing conditions, the pilot must exit such conditions as soon as possible if ice accumulates on the airplane.

1. Equipment required for IFR flight
2. Beech approved emergency static air source
3. Beech approved surface deice system
4. Beech approved propeller deice or anti-ice system
5. Beech approved pitot heat
6. Beech approved heated stall warning
7. Beech approved heated fuel vents
8. Beech approved windshield defogging and openable storm window
9. Beech approved alternate induction air
10. Beech approved external antenna masts (capable of withstanding ice loads)

WARNING

Stalling airspeeds should be expected to increase due to the distortion of the wing airfoil when ice has accumulated on the airplane. For the same reason, stall warning devices are not accurate and should not be relied upon. With ice on the airplane, maintain a comfortable margin of airspeed above the normal stall airspeed.

1. EMERGENCY STATIC AIR SOURCE

If the Emergency Static Air Source is desired for use:

a. Emergency Static Air Source - ON EMERGENCY (lower sidewall adjacent to pilot)

b. For Airspeed Calibration and Altimeter Corrections, refer to PERFORMANCE section

CAUTION

The emergency static air valve should be in the OFF NORMAL position when the system is not needed.

2. SURFACE DEICE SYSTEM

a. BEFORE TAKE-OFF

(1) Throttles - 2000 RPM
(2) Surface Deice Switch - AUTO (UP)
(3) Deice Pressure - 9 to 20 PSI (while boots are inflating)
(4) Wing Boots - CHECK VISUALLY FOR INFLATION AND HOLD DOWN

b. IN FLIGHT

When ice accumulates 1/2 to 1 inch

(1) Surface Deice Switch - AUTO (UP)
(2) Deice Pressure - 9 to 20 PSI (while boots are inflating)
(3) Repeat - AS REQUIRED

CAUTION

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. Stall speeds are increased 4 kts/5 mph in all configurations with surface deice system operating.

NOTE

Either engine will supply sufficient vacuum and pressure for deice operation.

c. For Emergency Operation refer to the EMERGENCY PROCEDURES section.

3. ELECTROTHERMAL PROPELLER DEICE

CAUTION

Do not operate the propeller deice when propellers are static.

a. BEFORE TAKEOFF

(1) Propeller Deice Switch - ON
(2) Propeller Deice Ammeter - CHECK, 7 to 12 amps (2 Blade), 14 to 18 amps (3 Blade)

b. IN FLIGHT

(1) Propeller Deice Switch - ON. 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 return1ng to the desired setting. Repeat as necessary.

CAUTION

If the propeller deice ammeter indicates abnormal reading, refer to the Emergency Procedures section.

4. PROPELLER AND WINDSHIELD ANTI-ICE SYSTEM (FLUID FLOW)

CAUTION

This anti-ice system is designed to PREVENT the formation of ice. Always turn the system ON before entering icing conditions.

a. PREFLIGHT

(1) Check the quantity in reservoir
(2) Check slinger ring and lines for obstructions
(3) Check propeller boots for damage

b. INFLIGHT

(1) Prop Anti-ice Switch - ON
(2) Windshield Anti-ice Switch - CYCLE AS REQUIRED
(3) Anti-ice Quantity Indicator - MONITOR

NOTE

See SYSTEM description for endurance.

5. PITOT HEAT AND HEATED STALL WARNING

a. Pitot Heat Switch(es) - ON (Note deflection on Loadmeter) Heated Stall Warning is activated by the left pitot heat switch.

NOTE

Switches may be left on throughout flight. Prolonged operation on the ground could damage the Pitot Heat System.

6. FUEL VENT HEAT

a. Fuel Vent Switch - ON (If ice is encountered)

7. WINDSHIELD DEFOGGING

a. Defrost Control - PUSH ON

b. Pilots Storm Window - OPEN, AS REQUIRED

ENGINE BREAK-IN INFORMATION

Refer to Systems section.

PRACTICE DEMONSTRATION OF Vmca

Vmca 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.

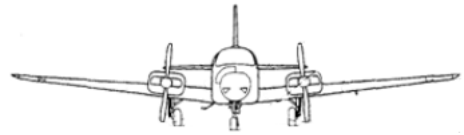
WARNING

INFLIGHT ENGINE CUTS BELOW Vsse SPEED OF 84KTS/97MPH ARE PROHIBITED.

1. Landing Gear - Up
2. Flaps - Up
3. Airspeed - Above 84kts/97mph (Vsse)
4. Propeller Levers - High RPM
5. Throttle (Simulated inoperative engine) - Idle
6. Throttle (Other engine) - Maximum Manifold Pressure
7. Airspeed - Reduce approximately 1 knot per second until either VMCA 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 VMCA 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 Vsse.



SECTION 5
PERFORMANCE
TABLE OF CONTENTS

INTRODUCTION TO PERFORMANCE AND FLIGHT PLANNING

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

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. FAA approved performance information is included in this section. Examples are presented on all performance graphs. In addition, the calculations for flight time, block speed, and fuel required are presented using the conditions listed.

Performance with a gross weight of 4990 lbs (Baron B55A) will be equal to or better than that of the higher gross weight Baron B55.

CONDITIONS

At Denver:

Outside Air Temperature	15°C (59°F)
Field Elevation	5330ft
Altimeter Setting	29.60 in.Hg
Wind	270° at 10 kts
Runway 26L length	10,010ft

Route of Trip
*DEN-V81-AMA

For VFR Cruise at 11,500 feet

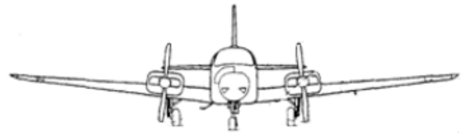
ROUTE SEGMENT	MAGNETIC COURSE	DIST NM	WIND 11500 FEET DIR/KTS	OAT 11500 FEET °C	ALT SETTING IN.HG
DEN-COS	161°	55	010/30	-5	29.60
COS-PUB	153°	40	010/30	-5	29.60
PUB-TBE	134°	74	100/20	0	29.56
TBE-DHT	132°	87	200/20	9	29.56
DHT-AMA	125°	65	200/20	10	29.56

Figure 7

*REFERENCE: Enroute Low Altitude Chart L-6

At Amarillo:

Outside Air Temperature	25°C (77°F)
Field Elevation	3605ft
Altimeter Setting	29.56in.Hg
Wind	180°at 10kts



Runway 21 Length	10,000ft

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 DEN: 29.92 - 29.60 = .32 in. Hg

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

5330 + 320 = 5650 ft
5-4

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

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

3605 + 360 = 3965 ft

NOTE

For flight planning, the difference between cruise altitude and cruise pressure altitude has been ignored.

Maximum Allowable Take-off Weight= 5100lbs

Ramp Weight= 5100 + 21 = 5121lbs

NOTE

Fuel for start, taxi and take-off is normally 21 pounds.

Enter the Take-Off Weight graph at 5650 feet pressure altitude and 15°C.

The take-off weight to achieve a positive rate-of-climb at lift-off for one engine inoperative is: Take-off Weight = 4550 pounds

Enter the Take-Off Distance graph at 1 5°C, 5650 feet pressure altitude, 5100 pounds, and 9.5 knots headwind component.

Ground Roll	2000ft
Total Distance over 50 ft Obstacle	3200ft
Lift-off Speed	84kts/97mph
50 Foot Speed	91kts/105mph

Enter the Accelerate-Stop graph at 15°C, 5650 feet pressure altitude, 5100 pounds, and 9.5 knots headwind component:

Accelerate-Stop Distance	4100ft
Engine Failure Speed	84kts/97mph

NOTE

Since 4100 feet is less than the available field length (10,010 ft), the accelerate-stop procedure can be performed at any weight.

Take-off at 5100lbs can be accomplished. However, if an engine failure occurs before becoming airborne, the accelerate-stop procedure must be performed.

The following example assumes the airplane is loaded so that the take-off weight is 4550 pounds.

Although not required by regulations, information has been presented 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 Accelerate-Go graph at 15°C, 5650 feet pressure altitude, 4550 pounds, and 9.5 knots headwind component:

Ground Roll	1800 ft
Total Distance Over 50 ft Obstacle	7100 ft
Lift-off Speed	84kts/97mph
50 Foot Speed	91kts/105mph

Enter the graph for Take-off Climb Gradient - One Engine Inoperative at 15 °C, 5650 feet pressure altitude, and 4550 pounds.

Climb Gradient	2.2%
Climb Speed	91kts/105mph

A 2.2% climb gradient is 22 feet of vertical height per 1000 feet of horizontal distance.

NOTE

The Climb Gradient - One Engine Inoperative graph assumes zero wind conditions. Climbing into a headwind will result in higher angles of climb, and hence, better obstacle clearance capabilities.

Calculation of horizontal distance to clear an obstacle 90 feet above the runway surface:

Horizontal distance used to climb from 50 feet to 90 feet = (90-50) (1000 -:- 22) = 1818 feet

Total Distance= 7100 + 1818 = 8918 feet

The above results are illustrated below:

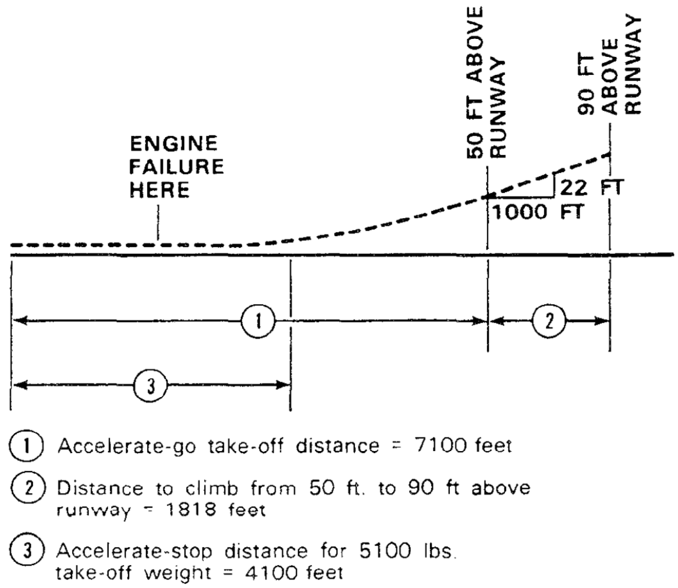


Figure 8

The following calculations provide information for the flight planning procedure. All examples are presented on the performance graphs. A take-off weight of 5100 pounds has been assumed.

Enter the Time, Fuel, and Distance to Climb graph at 15°C to 5650 feet and to 5100 pounds. Also enter at -5°C to 11,500 feet and to 5100 pounds. Read:

Time to Climb = (10-4) = 6 min
Fuel Used to Climb = (5.7-2.5) = 3.2gal
Distance Traveled = (22-9) = 13NM

The temperatures for cruise are presented for a standard day (ISA); 20°C (36°F) above a standard day (ISA + 20°C); and 20°C (36°F) below a standard day (ISA - 20°C). These should be used for flight planning. The IOAT values are true temperature values which have been adjusted for the compressibility effects. OAT should be used for setting cruise power while enroute.

Enter the graph for ISA conversion at 11,500 feet and the temperature for the route segment:

DEN-PUB	OAT	= -5°C
	ISA Condition	= ISA + 3°C
PUB-TBE	OAT	= 0°C
	ISA Condition	= ISA + 8°C
TBE-DHT	OAT	= 9°C
	ISA Condition	= ISA + 17°C
DHT-AMA	OAT	= 10°C
	ISA Condition	= ISA + 1 8°C

Enter the table for recommended cruise power - 24 in. Hg, 2300 rpm at 10,000ft 12,000 ft. ISA and ISA + 20°C.

	TEMPERATURE					
	ISA			ISA + 20°C		
ALTI-TUDE FEET	MAN. PRESS. IN. HG	FUEL FLOW GPH/ ENG	TAS KTS/ MPH	MAN. PRESS. IN. HG	FUEL FLOW GPH/ ENG	TAS KTS/ MPH
10000	20.2	10.9	176/ 203	20.2	10.6	177/ 204
12000	18.7	10.2	173/ 199	18.7	10.0	174/ 200

Figure 9

Interpolate for 11,500 feet and the temperature for the appropriate route segment. Results of the interpolations are:

ROUTE SEGMENT	MAN. PRESS. IN. HG	FUEL FLOW GPH/ENG	TAS KTS/ MPH
DEN-PUB	19.1	10.4	175/ 201
PUB-TBE	19.1	10.3	175/ 201
TBE-DHT	19.1	10.2	174/ 200
DHT-AMA	19.1	10.2	174/ 200

Figure 10

NOTE

The preceding are exact values for the assumed conditions.

Enter the graph for Descent at 11,500 feet to the descent line, and enter again at 3965 feet to the descent line, and read:

Time to Descend = (23-8) = 15 min
Fuel Used to Descend = (6.9- 2.2) = 4.7 gal.
Descent Distance = (72-24) = 48 NM

Time and fuel used were calculated at Recommended Cruise Power - 24 in. Hg. 2300RPM as follows

Time = Distance/Ground Speed
Fuel Used = (Time) x (Total Fuel Flow)

Results are:

ROUTE SEGMENT	DISTANCE NM	EST GROUND SPEED KTS/MPH	TIME AT CRUISE ALTITUDE HRS: MIN	FUEL USED FOR CRUISE GAL
DEN-COS	*42	203/234	:12	4.2
COS-PUB	40	201/231	:12	4.0
PUB-TBE	74	159/183	:28	9.4
TBE-DHT	87	163/188	:32	10.6
DHT-AMA	*17	165/190	:06	2.0

Figure 11

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

TIME - FUEL - DISTANCE

ITEM	TIME HRS: MINS	FUEL GAL	DISTANCE NM
Start, Runup, Taxi and Take-off	0:00	3.3	0
Climb	0:06	3.2	13
Cruise	1:30	30.2	260
Descent	0:15	4.7	48
Total	1:51	41.4	321

Figure 12

Total Flight Time: 1 hour, 51 minutes
Block Speed: 321 NM-:- 1 hour, 51 minutes= 174kts/200mph
Reserve Fuel: (45 minutes at Economy Cruise Power):

Enter the cruise power settings table for Economy Cruise Power at 11,500 feet for ISA (assume ISA Fuel Flow Rate).

Fuel Flow per Engine = 9.0 gal/hr
Total Fuel Flow = 18.0 gal/hr (108lb/hr)
Reserve Fuel= (45 min) (108lb/hr) = 81lbs (13.5gal)
Total Fuel = 41.4 + 13.5 = 54.9 gallons

The estimated landing weight is determined by subtracting the fuel required for the flight from the ramp weight:

Assumed ramp weight = 5121 lbs
Estimated fuel from DEN to AMA = 41.4 gal (248lbs)
Estimated landing weight = 5121 - 248 = 4873lbs

Examples have been provided on the performance graphs. The above conditions have been used throughout. Rate of climb was determined for the initial cruise altitude conditions.

Enter the graph for Landing Distance - Flaps 30 degrees at 25°C, 3965 feet pressure altitude, 4873 pounds and 9.5 kts headwind component:

Ground Roll	1500ft Total
Distance over 50 ft Obstacle	2100ft
Approach Speed	87kts/100mph

Enter the graph for Climb-Balked Landing at 25°C, 3965 feet pressure altitude and 4873 pounds:

Rate-of-Climb	570 ft/min
Climb Gradient	6.0%

COMMENTS PERTINENT TO THE USE OF PERFORMANCE GRAPHS

1. The example, in addition to presenting an answer for a particular set of conditions, also presents the order in which the graphs should normally be used, i.e., 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, and then follow the guide lines to the next known item.

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

4. 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 specified conditions exist.

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

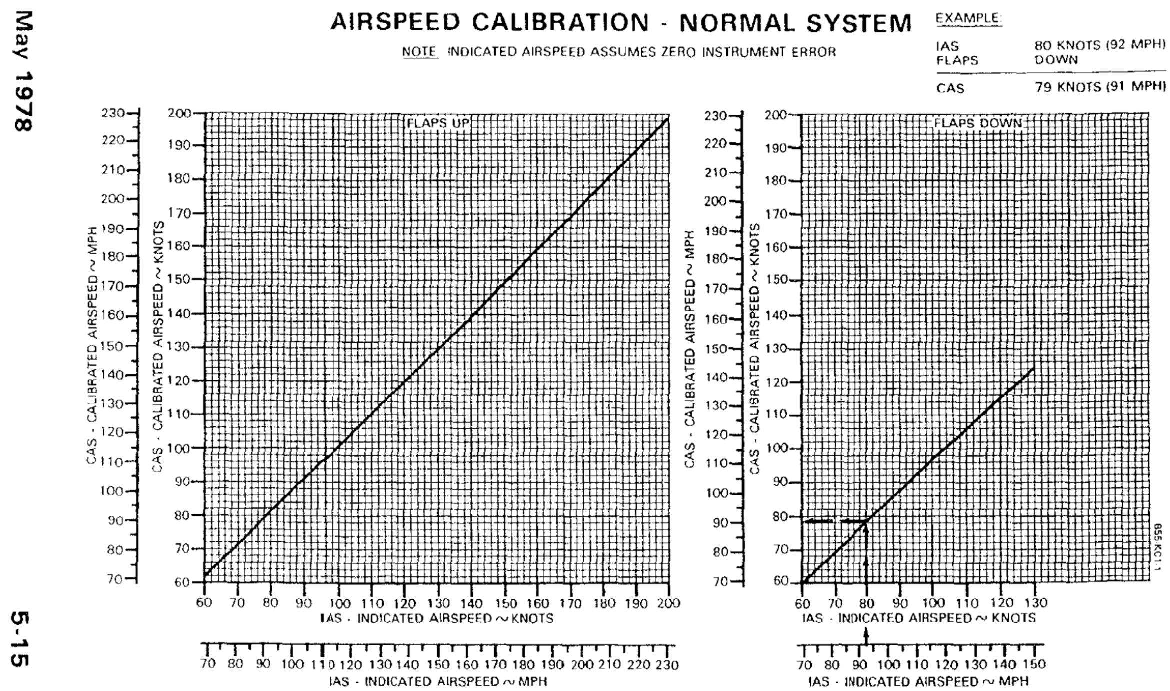

May 1978
AIRSPEED CALIBRATION - NORMAL SYSTEM
NOTE INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR
EXAMPLE:
IAS 80 KNOTS (92 MPH)
FLAPS DOWN
CAS 79 KNOTS (91 MPH)
FLAPS UP
FLAPS DOWN
CAS - CALIBRATED AIRSPEED ~ MPH
CAS - CALIBRATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ MPH
5-15

Figure 13

`

ALTIMETER CORRECTION - NORMAL SYSTEM

NOTE
INDICATED ALTITUDE AND INDICATED AIRSPEED
ASSUME ZERO INSTRUMENT ERROR

EXAMPLE

IAS	80 KNOTS (92 MPH)
FLAPS	DOWN
INDICATED PRESSURE ALTITUDE	5000 FT
ALTIMETER CORRECTION	- 14 FT
ACTUAL PRESSURE ALTITUDE	(5000 - 14) = 4986 FT

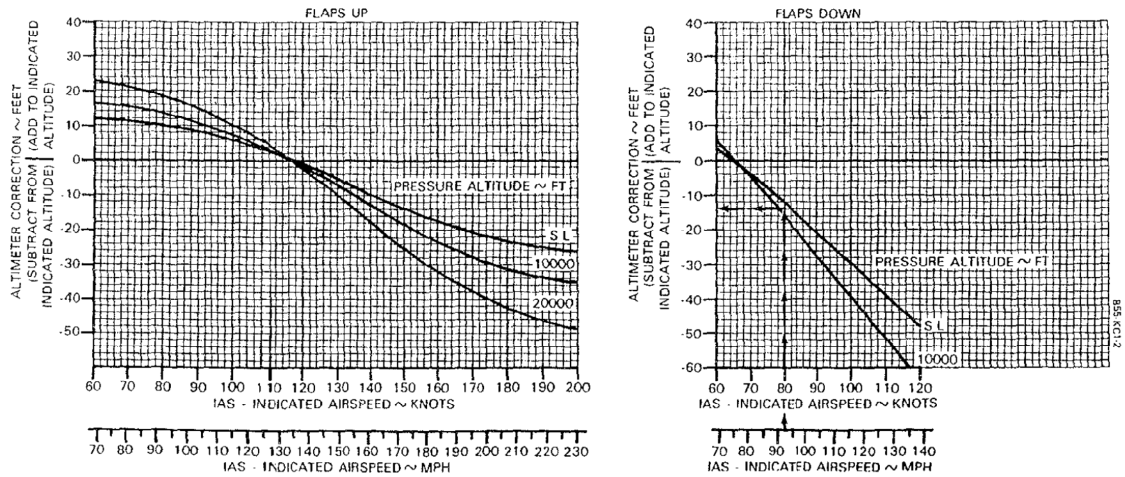


Figure 14

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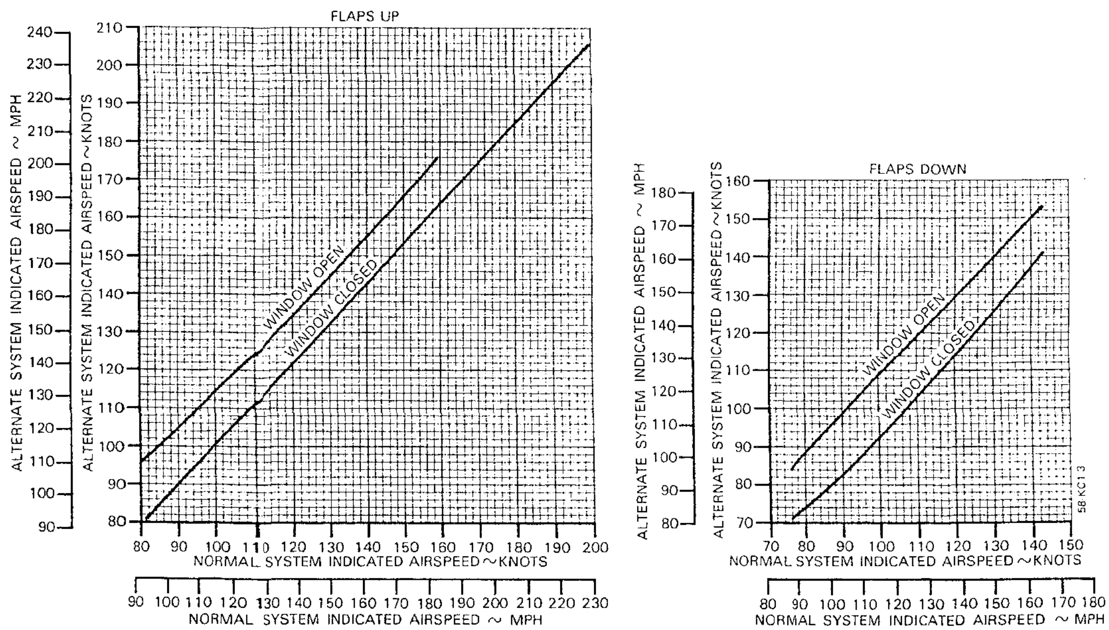
AIRSPEED CALIBRATION - ALTERNATE SYSTEM



5-17

Figure 15

ALTIMETER CORRECTION - ALTERNATE SYSTEM

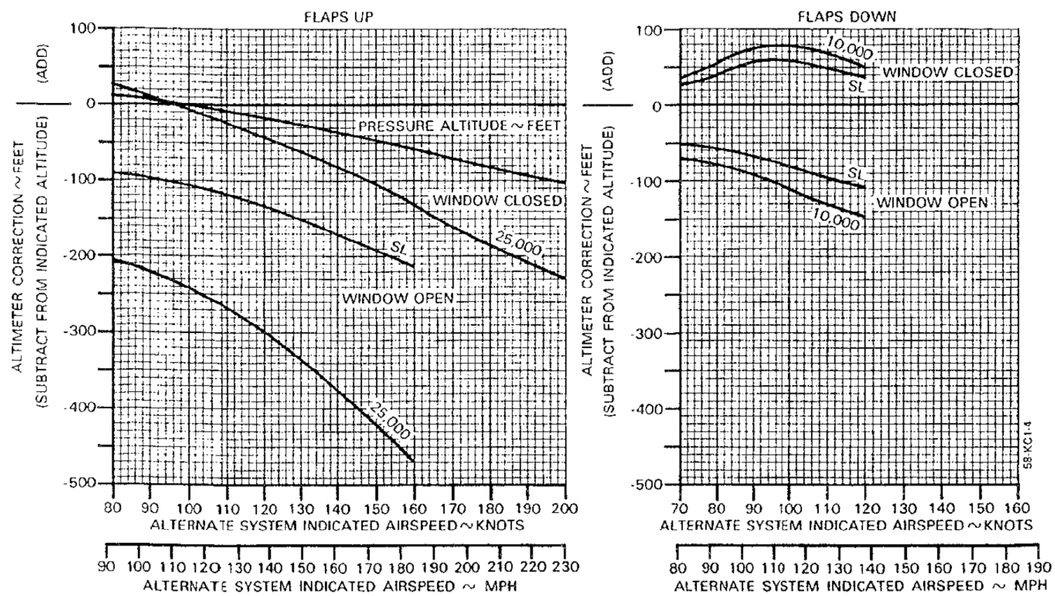


Figure 16

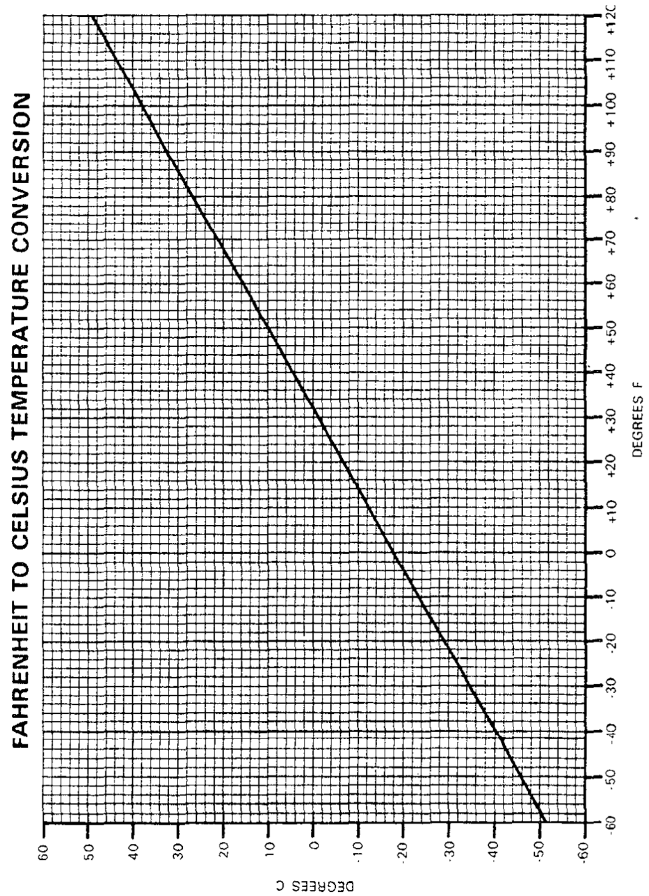


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Figure 17

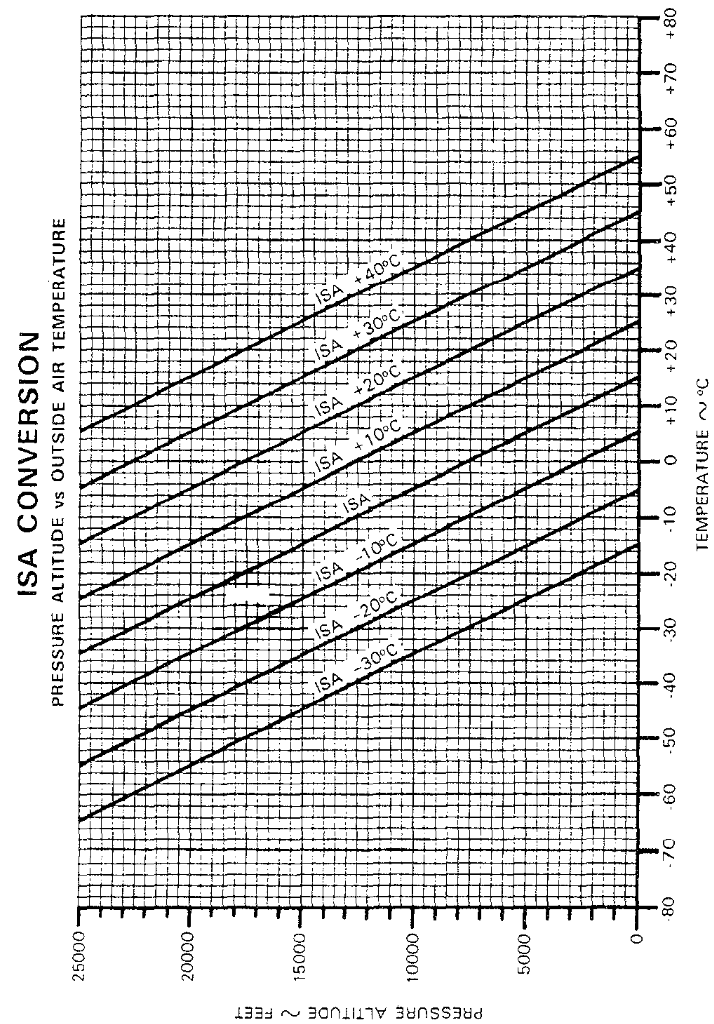

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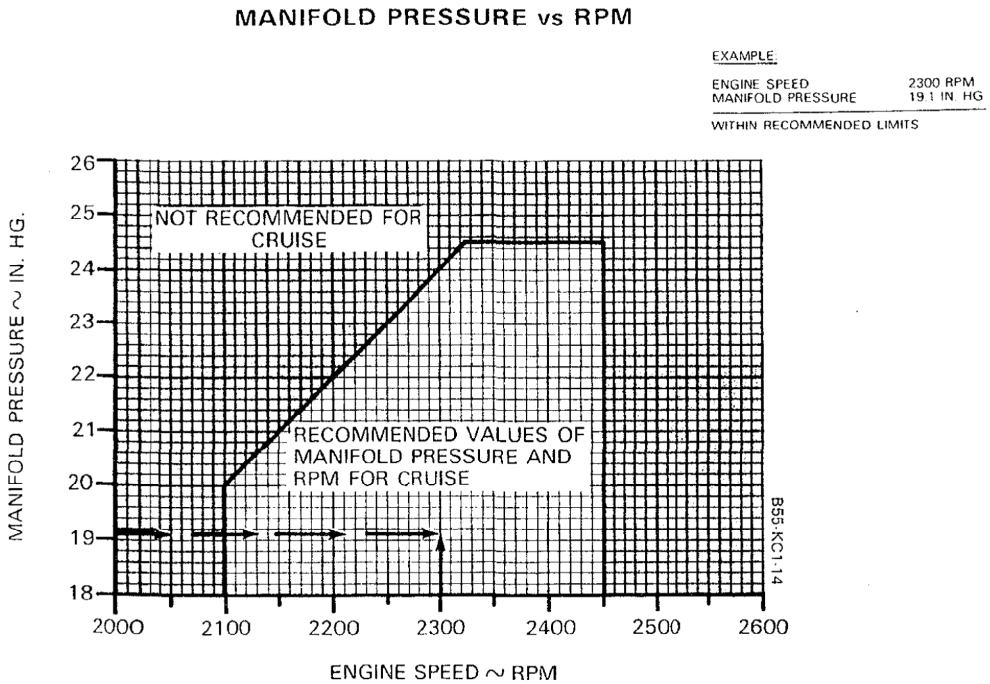
Figure 18

May 1978



5-21

Figure 19

TAKE-OFF WEIGHT

TO ACHIEVE POSITIVE SINGLE ENGINE RATE-OF-CLIMB AT LIFT-OFF

ASSOCIATED CONDITIONS	
AIRPLANE	AIRBORNE
POWER	TAKE-OFF AT 2625 RPM
FLAPS	UP
LANDING GEAR	DOWN
INOPERATIVE PROPELLER	FEATHERED

EXAMPLE	
PRESSURE ALTITUDE	5650 FT
OAT	15°C
TAKE-OFF WEIGHT	4550 LBS

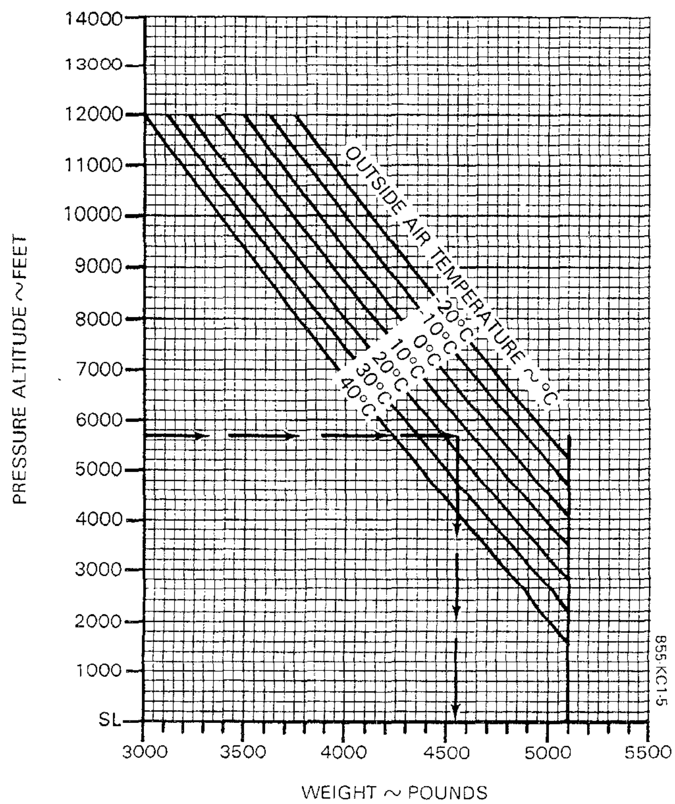


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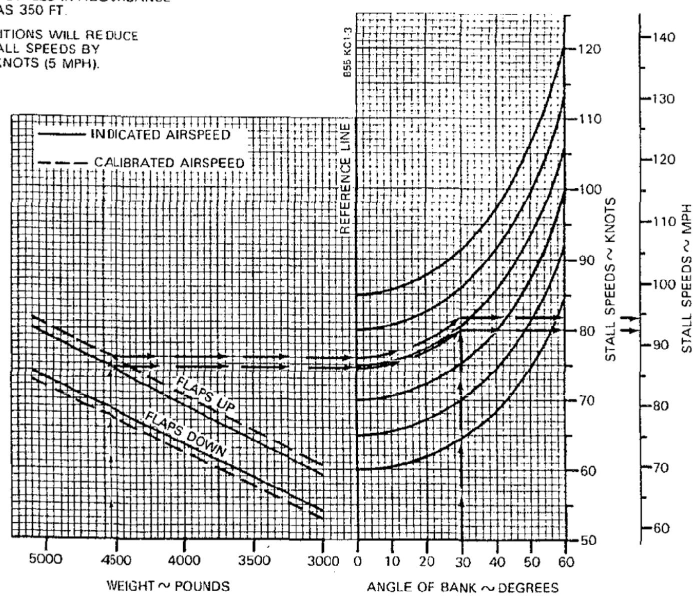
Figure 20

May 1978

STALL SPEEDS - POWER IDLE

NOTES:

1. THE MAXIMUM ALTITUDE LOSS EXPERIENCED WHILE CONDUCTING STALLS IN ACCORDANCE WITH CAM 3.120 WAS 350 FT.
2. ZERO THRUST CONDITIONS WILL REDUCE THE POWER-OFF STALL SPEEDS BY APPROXIMATELY 4 KNOTS (5 MPH).



EXAMPLE

WEIGHT	4550 LBS
FLAPS	UP
ANGLE OF BANK	30°
STALL SPEED	CAS 82 KTS 94 MPH IAS 80 KTS 92 MPH

5-23

Figure 21

WIND COMPONENTS

Demonstrated Crosswind Component is 22 kts

EXAMPLE:

WIND SPEED	20 KTS
ANGLE BETWEEN WIND DIRECTION AND FLIGHT PATH	50°
HEADWIND COMPONENT	13 KTS
CROSSWIND COMPONENT	15 KTS

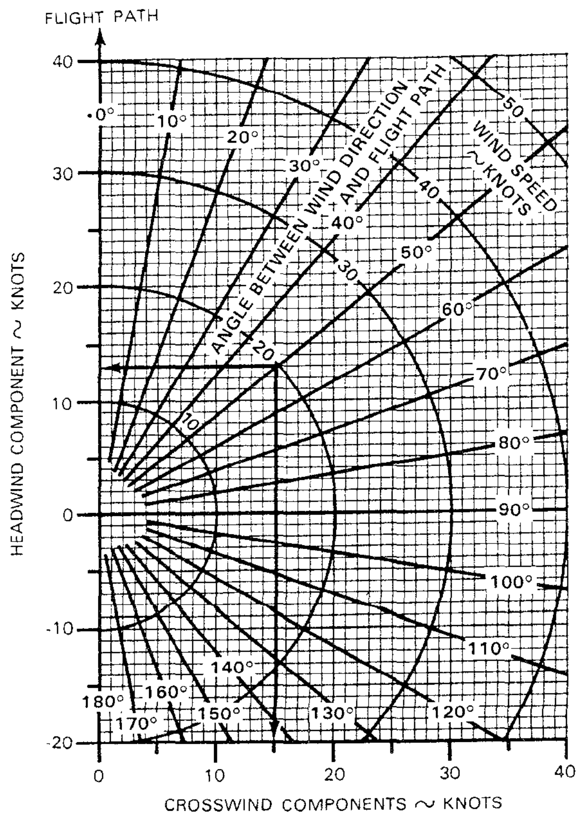


Figure 22

May 1978

ASSOCIATED CONDITIONS:

POWER	TAKE-OFF AT 2625 RPM
MIXTURE	LEAN TO APPROPRIATE FUEL FLOW
FLAPS	UP (0°)
LANDING GEAR	RETRACT AFTER POSITIVE CLIMB ESTABLISHED
COWL FLAPS	OPEN
RUNWAY	PAVED, LEVEL, DRY SURFACE

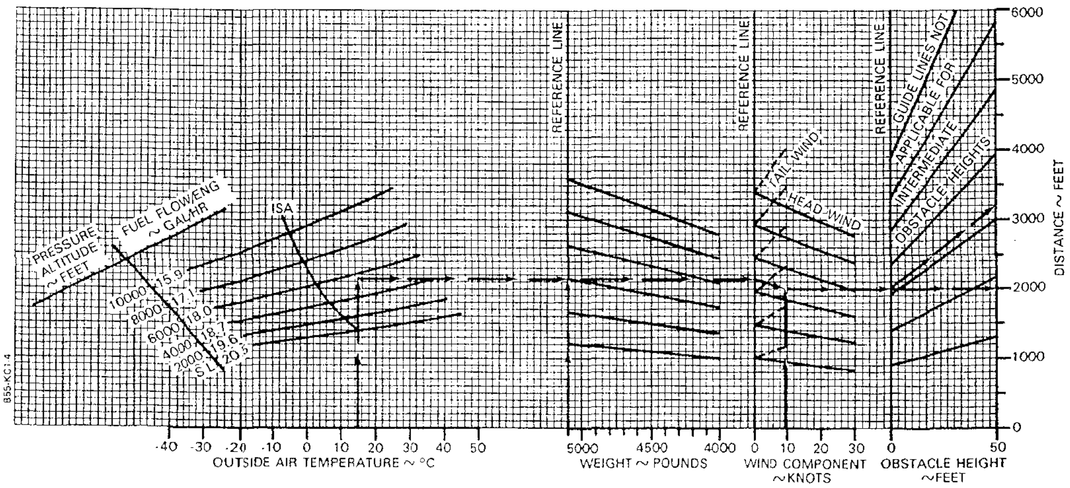
TAKE-OFF DISTANCE

LIFT-OFF SPEED (ALL WEIGHTS)
84 KNOTS/97 MPH

50 FT SPEED (ALL WEIGHTS)
91 KNOTS/105 MPH

EXAMPLE:

OAT	15°C
PRESSURE ALTITUDE	5650 FT
TAKE-OFF WEIGHT	5100 LBS
HEAD WIND COMPONENT	9.5 KTS
GROUND ROLL	2000 FT
TOTAL DISTANCE OVER 50 FT OBSTACLE	3200 FT
TAKE-OFF SPEED AT	
LIFT-OFF	84 KTS/97 MPH
50 FT	91 KTS/105 MPH



5-25

Figure 23

5-26

ACCELERATE - STOP DISTANCE

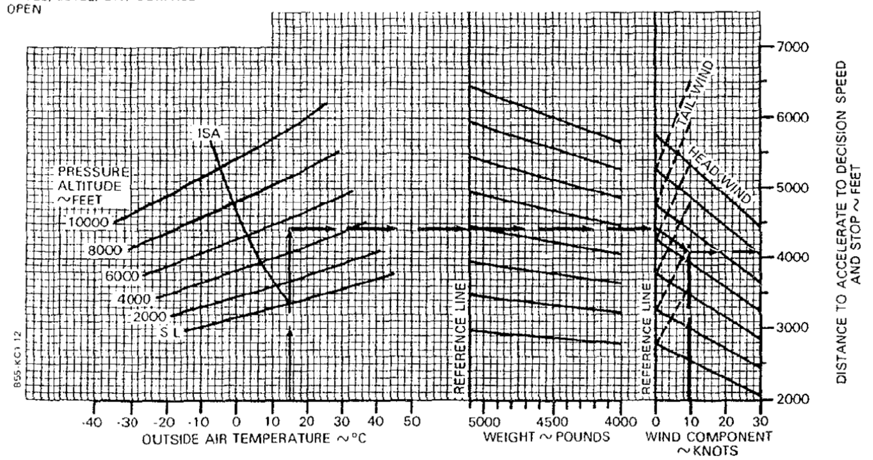
ASSOCIATED CONDITIONS

POWER	1 TAKE-OFF POWER AT 2625 RPM SET BEFORE BRAKE RELEASE 2 ENGINES IDLE AT DECISION SPEED	
MIXTURE	LEAN TO APPROPRIATE FUEL FLOW	
FLAPS	UP (0°)	
RUNWAY	PAVED, LEVEL, DRY SURFACE	
COWL FLAPS	OPEN	

DECISION SPEED (ALL WEIGHTS)
84 KNOTS/97 MPH

EXAMPLE:

OAT	15°C
PRESSURE ALTITUDE	5650 FT
TAKE-OFF WEIGHT	5100 LBS
HEAD WIND	9.5 KTS
ACCELERATE AND STOP DISTANCE	4100 FT
IAS DECISION SPEED	84 KTS/97 MPH



May 1978

Figure 24

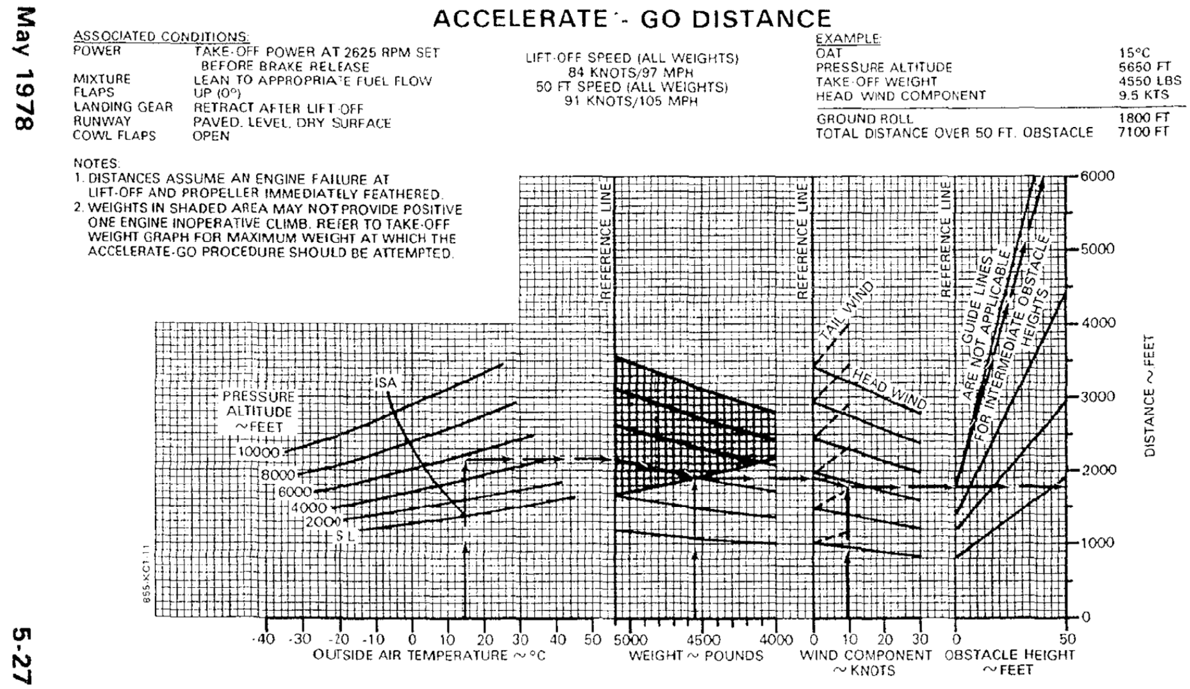

May 1978
ACCELERATE - GO DISTANCE
ASSOCIATED CONDITIONS:
POWER TAKE-OFF POWER AT 2625 RPM SET BEFORE BRAKE RELEASE
MIXTURE LEAN TO APPROPRIATE FUEL FLOW
FLAPS UP (0°)
LANDING GEAR RETRACT AFTER LIFT-OFF
RUNWAY PAVED, LEVEL, DRY SURFACE
COWL FLAPS OPEN
LIFT-OFF SPEED (ALL WEIGHTS)
84 KNOTS/97 MPH
50 FT SPEED (ALL WEIGHTS)
91 KNOTS/105 MPH
EXAMPLE:
OAT 15°C
PRESSURE ALTITUDE 5650 FT
TAKE-OFF WEIGHT 4550 LBS
HEAD WIND COMPONENT 9.5 KTS
GROUND ROLL 1800 FT
TOTAL DISTANCE OVER 50 FT. OBSTACLE 7100 FT
NOTES:
1. DISTANCES ASSUME AN ENGINE FAILURE AT LIFT-OFF AND PROPELLER IMMEDIATELY FEATHERED.
2. WEIGHTS IN SHADED AREA MAY NOT PROVIDE POSITIVE ONE ENGINE INOPERATIVE CLIMB. REFER TO TAKE-OFF WEIGHT GRAPH FOR MAXIMUM WEIGHT AT WHICH THE ACCELERATE-GO PROCEDURE SHOULD BE ATTEMPTED.
REFERENCE LINE
REFERENCE LINE
REFERENCE LINE
TAIL WIND
HEAD WIND
GUIDE LINES ARE NOT APPLICABLE FOR INTERMEDIATE OBSTACLE HEIGHTS
ISA
PRESSURE ALTITUDE ~FEET
10000
8000
6000
4000
2000
S L
6000
5000
4000
3000
2000
1000
0
DISTANCE ~ FEET
-40 -30 -20 -10 0 10 20 30 40 50
OUTSIDE AIR TEMPERATURE ~ °C
5000 4500 4000
WEIGHT ~ POUNDS
0 10 20 30
WIND COMPONENT ~ KNOTS
0 50
OBSTACLE HEIGHT ~ FEET
5-27

Figure 24

5-28

CLIMB - TWO ENGINE

ASSOCIATED CONDITIONS:

POWER	MAXIMUM CONTINUOUS AT 2625 RPM
FLAPS	UP
LANDING GEAR	UP
COWL FLAPS	OPEN
MIXTURE	LEAN TO APPROPRIATE FUEL FLOW

CLIMB SPEED 107 KNOTS (ALL WEIGHTS)
123 MPH

EXAMPLE:

OAT	-5°C
PRESSURE ALTITUDE	11500 FT
WEIGHT	5081 LBS
RATE-OF-CLIMB	720 FT/MIN
CLIMB GRADIENT	5.5%

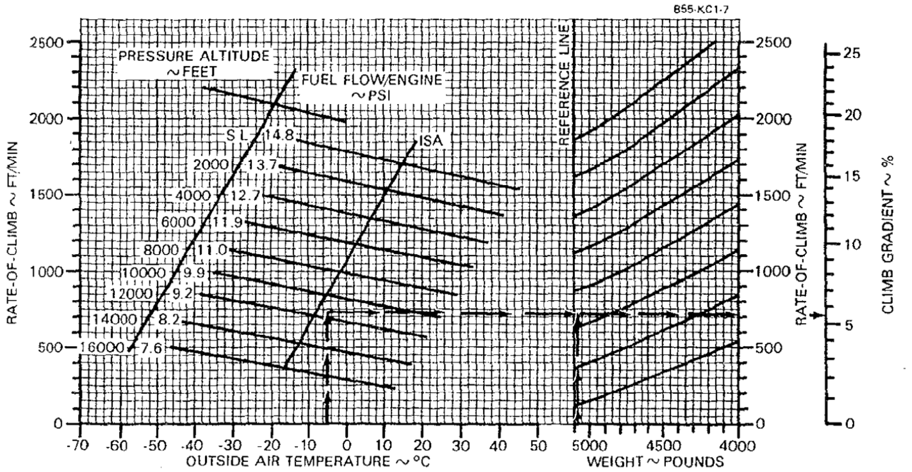


Figure 25

May 1978

May 1978

TAKE-OFF CLIMB GRADIENT - ONE ENGINE INOPERATIVE

ASSOCIATED CONDITIONS:

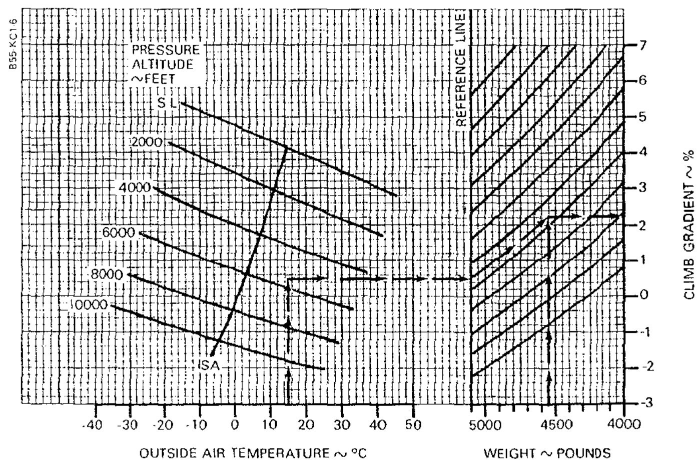
POWER	TAKE-OFF AT 2625 RPM
LANDING GEAR	UP
FLAPS	UP
INOPERATIVE PROPELLER	FEATHERED
COWL FLAPS	OPEN

CLIMB SPEED (ALL WEIGHTS)

91 KNOTS/105 MPH

EXAMPLE:

OAT	15°C
PRESSURE ALTITUDE	5650 FT
WEIGHT	4550 LBS
GRADIENT OF CLIMB	2.2%
CLIMB SPEED	91 KTS/105 MPH



5-29

Figure 26

5-30

TIME, FUEL AND DISTANCE TO CLIMB

ASSOCIATED CONDITIONS

POWER 25 IN. HG OR FULL THROTTLE 2500 RPM
FUEL DENSITY 6.0 LB/GAL
MIXTURE LEAN TO APPROPRIATE FUEL FLOW
COWL FLAPS AS REQUIRED

CLIMB SPEED - 122 KNOTS 140 MPH

EXAMPLE

OAT AT TAKE OFF	15°C
OAT AT CRUISE	-5°C
AIRPORT PRESSURE ALTITUDE	5650 FT
CRUISE PRESSURE ALTITUDE	11500 FT
INITIAL CLIMB WEIGHT	5100 LBS
TIME TO CLIMB	10 - 4 = 6 MIN
FUEL TO CLIMB	5.7-2.5 = 3.2 GAL
DISTANCE TO CLIMB	22 - 9 = 13 N.M.

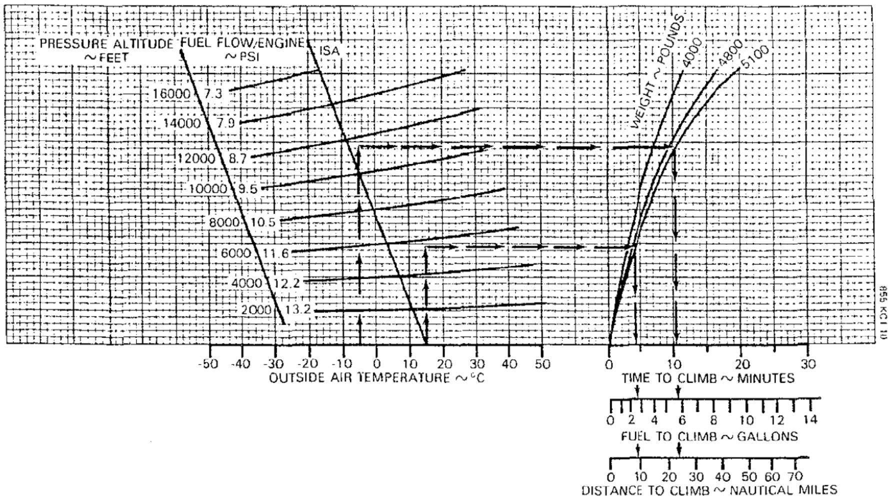


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Figure 27

CLIMB - ONE ENGINE INOPERATIVE

ASSOCIATED CONDITIONS:

POWER	MAXIMUM CONTINUOUS AT 2625 RPM
FLAPS	UP
LANDING GEAR	UP
INOPERATIVE PROPELLER	FEATHERED
COWL FLAPS	OPEN
MIXTURE	LEAN TO APPROPRIATE FUEL FLOW

CLIMB SPEED 100 KNOTS (ALL WEIGHTS)
115 MPH

EXAMPLE

OAT	15°C
PRESSURE ALTITUDE	5650 FT
WEIGHT	4550 LBS
RATE OF CLIMB	230 FT/MIN
CLIMB GRADIENT	2.3%

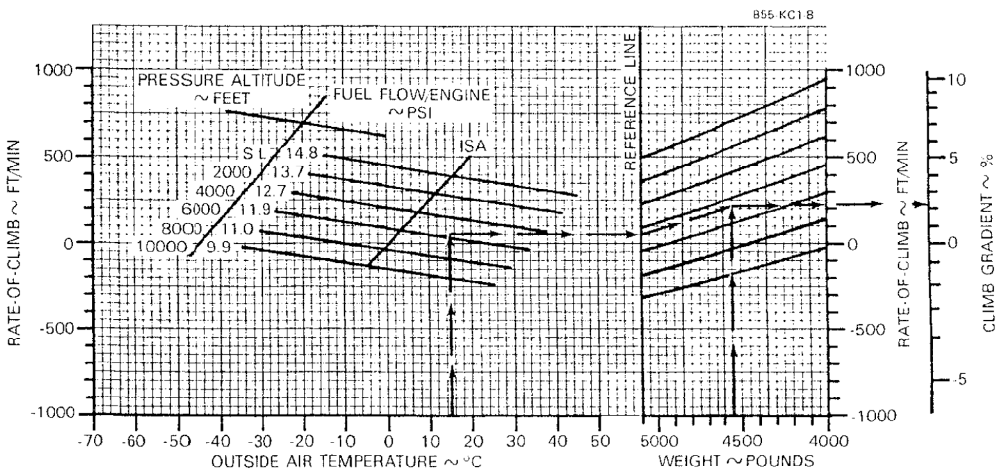

Figure 28

ASSOCIATED CONDITIONS		EXAMPLE	
POWER	MAXIMUM CONTINUOUS AT 2625 RPM	OAT	5°C
LANDING GEAR	UP	WEIGHT	4550 LBS
INOPERATIVE PROPELLER	FEATHERED	SERVICE CEILING	9000 FT
FLAPS	UP		

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

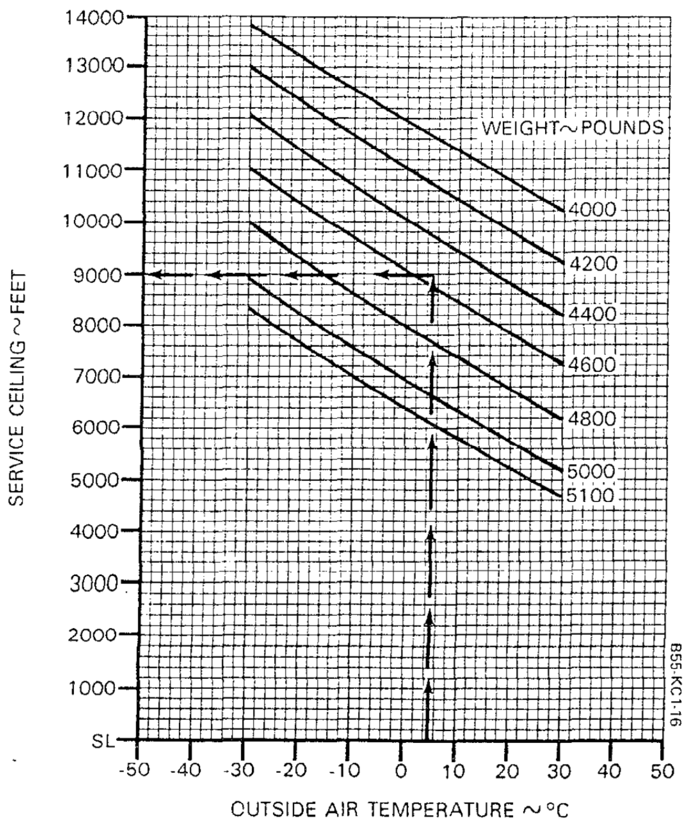

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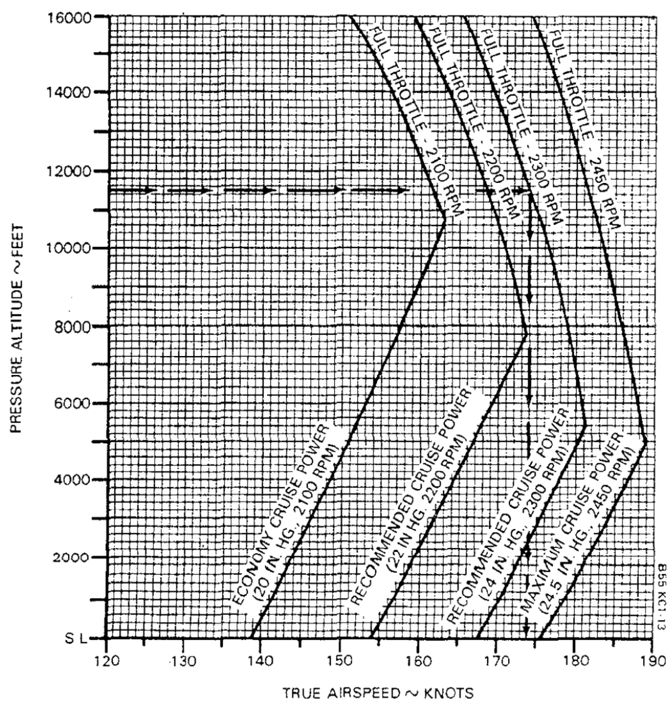
Figure 29

CRUISE SPEEDS

ASSOCIATED CONDITIONS:		EXAMPLE:	
AVERAGE CRUISE WEIGHT	4900 LBS	PRESSURE ALTITUDE	11500 FT
TEMPERATURE	STANDARD DAY (ISA)	POWER SETTING	FULL THROTTLE 2300 RPM
		TRUE AIRSPEED	174 KNOTS 200 MPH



Revised: March 1983 5-33

Figure 30

FUEL FLOW vs BRAKE HORSEPOWER

EXAMPLE:

FUEL FLOW/ENGINE CONDITION	10.2 GAL/HR LEVEL FLIGHT CRUISE LEAN
BRAKE HORSEPOWER PER ENGINE	144 HP

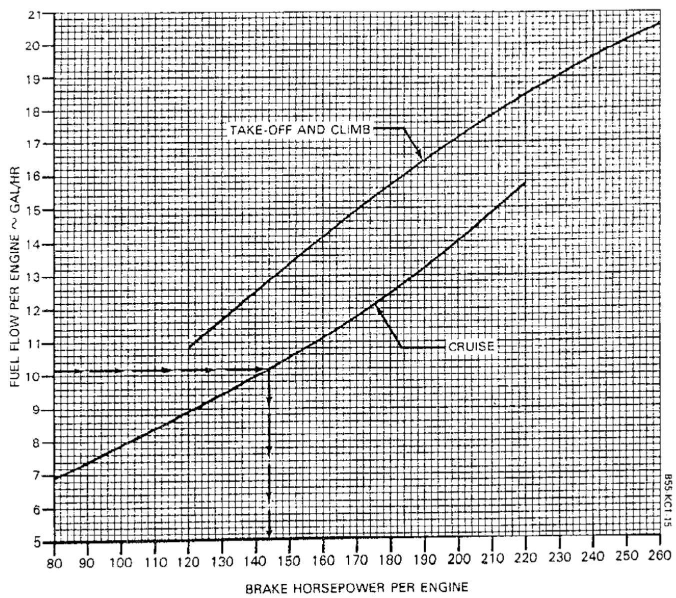


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Figure 31

FUEL FLOW vs FUEL PRESSURE

EXAMPLE:

FUEL FLOW/ENGINE	10.2 GAL/HR
FUEL PRESSURE	5.8 PSI

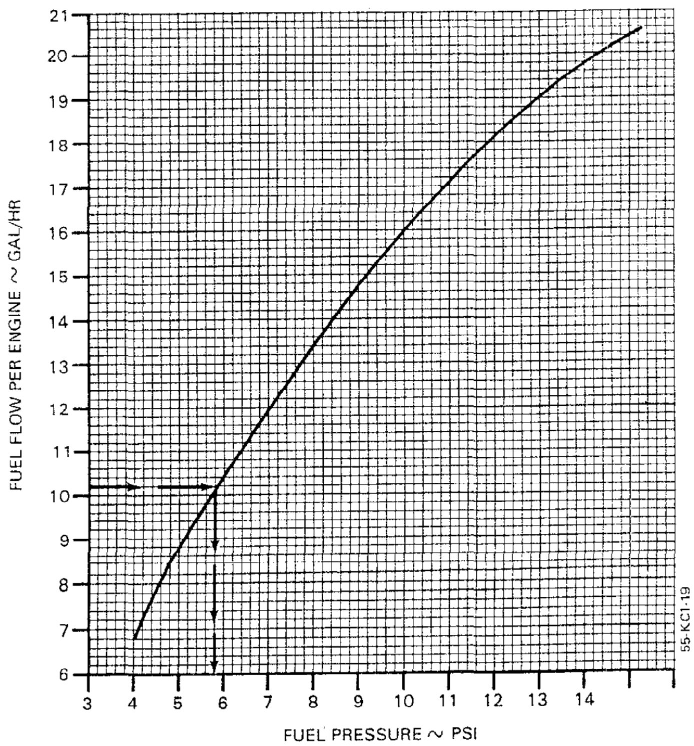

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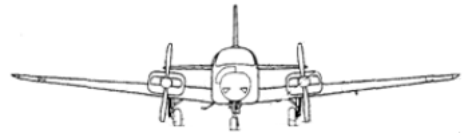
Figure 32



5-36

CRUISE POWER SETTINGS

MAXIMUM CRUISE POWER
24.5 IN. HG. 2450 RPM (OR FULL THROTTLE)
4900 LBS.

PRESS ALT.	ISA −36°F (−20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS
FEET	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS
SL	28	−2	2450	24.5	8.6	14.2	174	180	64	18	2450	24.5	8.2	13.7	176	175	100	38	2450	24.5	7.8	13.1	177	171
2000	21	−6	2450	24.5	9.0	14.7	180	181	58	14	2450	24.5	8.6	14.2	182	176	94	34	2450	24.5	8.2	13.7	183	172
4000	15	−10	2450	24.5	9.3	15.2	185	181	51	10	2450	24.5	8.9	14.6	187	176	87	31	2450	24.5	8.4	14.0	188	172
6000	8	−14	2450	23.3	8.9	14.6	186	177	44	7	2450	23.3	8.4	14.0	188	172	80	27	2450	23.3	8.1	13.6	189	167
8000	0	−18	2450	21.6	8.0	13.4	184	170	37	3	2450	21.6	7.6	12.9	186	165	73	23	2450	21.6	7.3	12.4	187	161
10000	−7	−22	2450	20.1	7.2	12.3	182	163	29	−2	2450	20.1	6.9	11.9	184	158	66	19	2450	20.1	6.7	11.5	186	154
12000	−14	−26	2450	18.7	6.6	11.4	179	166	22	−6	2450	18.7	6.4	11.1	181	151	58	14	2450	18.7	6.2	10.8	182	146
14000	−22	−30	2450	17.2	6.1	10.7	177	149	15	−10	2450	17.2	5.9	10.4	178	144	51	10	2450	17.2	5.7	10.1	178	139
16000	−29	−34	2450	16.1	5.7	10.0	173	142	7	−14	2450	16.1	5.6	9.8	174	137	43	6	2450	16.1	5.4	9.6	174	131

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE
2. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE

May 1978

Figure 33

CRUISE POWER SETTINGS

RECOMMENDED CRUISE POWER
24.0 IN. HG. 2300 RPM (OR FULL THROTTLE)
4900 LBS.

ISA −36°F (−20°C)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ ENGINE PSI	FUEL FLOW/ ENGINE GPH	TAS KTS	CAS KTS
SL	28	−2	2300	24.0	7.2	12.3	166	172
2000	21	−6	2300	24.0	7.5	12.7	171	172
4000	14	−10	2300	24.0	7.8	13.1	176	173
6000	7	−14	2300	23.4	7.7	13.0	179	170
8000	−1	−18	2300	21.7	7.0	12.0	177	163
10000	−7	−22	2300	20.2	6.6	11.2	176	157
12000	−15	−26	2300	18.7	6.0	10.6	172	149
14000	−22	−30	2300	17.3	5.7	9.9	170	142
16000	−29	−34	2300	16.0	5.3	9.3	165	135

STANDARD DAY (ISA)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ ENGINE PSI	FUEL FLOW/ ENGINE GPH	TAS KTS	CAS KTS
SL	64	18	2300	24.0	6.9	11.9	168	168
2000	57	14	2300	24.0	7.2	12.3	173	168
4000	50	10	2300	24.0	7.4	12.6	178	168
6000	43	6	2300	23.4	7.3	12.6	181	166
8000	36	2	2300	21.7	6.7	11.6	179	159
10000	29	−2	2300	20.2	6.3	10.9	176	152
12000	21	−6	2300	18.7	5.8	10.2	173	145
14000	14	−10	2300	17.3	5.5	9.7	170	137
16000	7	−14	2300	16.0	5.2	9.1	165	129

ISA +36°F (+20°C)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ ENGINE PSI	FUEL FLOW/ ENGINE GPH	TAS KTS	CAS KTS
SL	100	38	2300	24.0	6.7	11.6	169	163
2000	93	34	2300	24.0	6.9	11.8	174	163
4000	86	30	2300	24.0	7.1	12.2	179	163
6000	79	26	2300	23.4	7.0	12.1	182	161
8000	72	22	2300	21.7	6.5	11.3	180	154
10000	65	18	2300	20.2	6.1	10.8	177	147
12000	58	14	2300	18.7	5.7	10.0	174	140
14000	50	10	2300	17.3	5.3	9.4	170	133
16000	43	6	2300	16.0	6.1	8.9	165	124

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE
2. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE

Figure 34

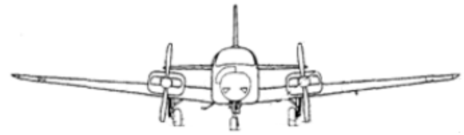
CRUISE POWER SETTINGS

RECOMMENDED CRUISE POWER
22.0 IN. HG. 2200 RPM (OR FULL THROTTLE)
4900 LBS.

PRESS ALT.	ISA −36°F (−20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW/ ENGINE		TAS	CAS
FEET	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS	°F	°C	RPM	IN HG	PSI	GPH	KTS	KTS
SL	27	−3	2200	22.0	5.9	10.3	152	158	63	17	2200	22.0	5.7	10.0	154	154	99	37	2200	22.0	5.6	9.8	155	150
2000	20	−7	2200	22.0	6.1	10.6	157	158	56	14	2200	22.0	5.9	10.3	159	155	92	34	2200	22.0	5.7	10.0	160	150
4000	13	−10	2200	22.0	6.3	10.9	162	159	49	10	2200	22.0	6.1	10.6	165	155	86	30	2200	22.0	5.9	10.3	165	151
6000	7	−14	2200	22.0	6.8	11.1	167	159	43	6	2200	22.0	6.2	10.8	169	155	79	26	2200	22.0	6.0	10.5	170	151
8000	0	−18	2200	21.8	6.5	11.2	171	158	36	2	2200	21.8	6.3	10.9	173	154	72	22	2200	21.8	6.1	10.6	174	150
10000	−8	−22	2200	20.2	6.1	10.6	169	151	28	−2	2200	20.2	5.9	10.3	171	147	65	18	2200	20.2	5.7	10.0	172	143
12000	−15	−26	2200	18.7	5.7	10.0	166	144	21	−6	2200	18.7	5.6	9.7	168	140	57	14	2200	18.7	5.4	9.5	168	135
14000	−22	−30	2200	17.3	5.4	9.4	161	136	14	−10	2200	17.3	5.2	9.1	164	132	50	10	2200	17.3	5.1	8.9	163	127
16000	−30	−34	2200	16.0	5.1	8.9	157	128	6	−14	2200	16.0	4.9	8.7	159	125	42	6	2200	16.0	4.9	8.5	158	119

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE
2. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE

Figure 35



CRUISE POWER SETTINGS

ECONOMY CRUISE POWER
20.0 IN. HG. 2100 RPM (OR FULL THROTTLE)
4900 LBS.

ISA −36°F (−20°C)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ENGINE PSI	FUEL FLOW/ENGINE GPH	TAS KTS	CAS KTS
SL	26	−3	2100	20.0	4.9	8.7	138	143
2000	19	−7	2100	20.0	5.1	8.9	143	144
4000	13	−11	2100	20.0	5.2	9.1	148	144
6000	6	−15	2100	20.0	5.3	9.3	152	145
8000	−1	−18	2100	20.0	5.4	9.5	157	145
10000	−8	−22	2100	20.0	5.5	9.7	161	144
12000	−15	−26	2100	18.7	5.3	9.3	160	139
14000	−23	−30	2100	17.3	5.0	8.8	166	132
16000	−30	−34	2100	16.0	4.8	8.5	152	124

STANDARD DAY (ISA)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ENGINE PSI	FUEL FLOW/ENGINE GPH	TAS KTS	CAS KTS
SL	62	17	2100	20.0	4.8	8.5	139	139
2000	55	13	2100	20.0	4.9	8.7	144	139
4000	49	9	2100	20.0	5.1	8.9	148	140
6000	42	5	2100	20.0	5.2	9.1	153	140
8000	35	2	2100	20.0	5.3	9.3	157	140
10000	28	−2	2100	20.0	5.4	9.4	162	139
12000	21	−6	2100	18.7	5.2	9.1	161	134
14000	13	−10	2100	17.3	4.9	8.6	166	126
16000	6	−14	2100	16.0	4.7	8.3	161	118

ISA +36°F (+20°C)

PRESS ALT. FEET	IOAT °F	IOAT °C	ENGINE SPEED RPM	MAN. PRESS IN HG	FUEL FLOW/ENGINE PSI	FUEL FLOW/ENGINE GPH	TAS KTS	CAS KTS
SL	98	37	2100	20.0	4.7	8.3	139	134
2000	92	33	2100	20.0	4.8	8.5	144	135
4000	85	29	2100	20.0	4.9	8.7	148	135
6000	78	25	2100	20.0	5.1	8.9	153	135
8000	71	22	2100	20.0	5.2	9.0	158	135
10000	64	18	2100	20.0	5.2	9.2	162	135
12000	57	14	2100	18.7	5.1	8.9	160	129
14000	49	10	2100	17.3	4.8	8.5	166	121
16000	42	6	2100	16.0	4.8	8.1	148	112

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE
2. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE

Figure 36

5-40

RANGE PROFILE - 100 GALLONS

ASSOCIATED CONDITIONS

STANDARD DAY (ISA)

WEIGHT	5121 LBS BEFORE ENGINE START
FUEL	AVIATION GASOLINE
FUEL DENSITY	6.0 LBS/GAL
INITIAL FUEL LOADING	100 U.S. GAL (600 LBS)

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

EXAMPLE:

PRESSURE ALTITUDE	11500 FT
POWER SETTING	FULL THROTTLE 2300 RPM
RANGE	680 N.M.

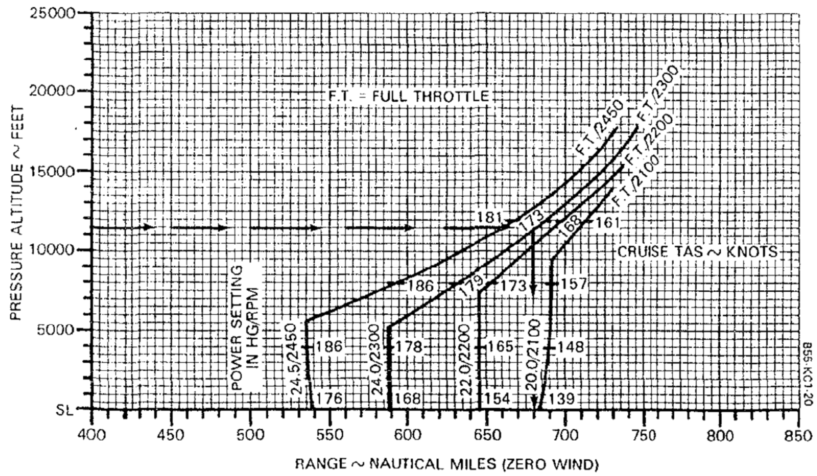


Figure 37

May 1978

May 1978

ENDURANCE PROFILE - 100 GALLONS

ASSOCIATED CONDITIONS:

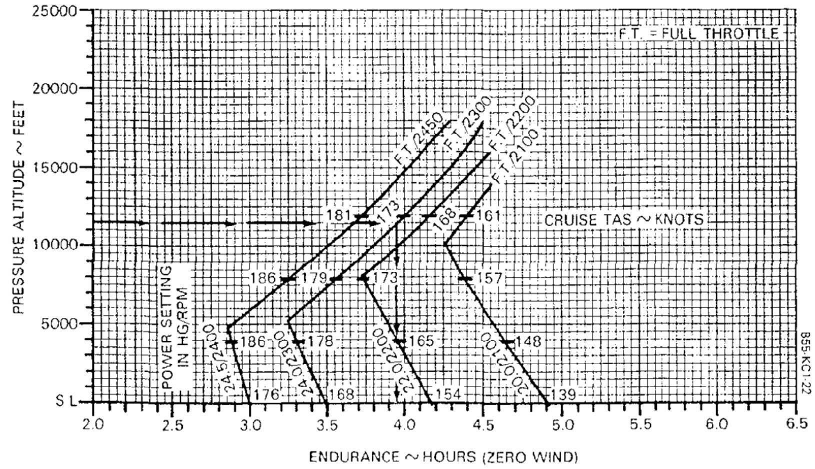
STANDARD DAY (ISA)

WEIGHT	5121 LBS BEFORE ENGINE START
FUEL	AVIATION GASOLINE
FUEL DENSITY	6.0 LBS/GAL
INITIAL LOADING	100 U.S. GAL (600 LBS)

NOTE:
ENDURANCE INCLUDES START, TAXI, CLIMB AND DESCENT WITH 45 MINUTES RESERVE FUEL AT ECONOMY CRUISE

EXAMPLE:

PRESSURE ALTITUDE	11500 FT
POWER SETTING	FULL THROTTLE 2300 RPM
ENDURANCE	3.95 HRS 3 HRS 58 MIN



5-41

Figure 38

RANGE PROFILE - 136 GALLONS

ASSOCIATED CONDITIONS:

WEIGHT	5121 LBS BEFORE ENGINE START
FUEL	AVIATION GASOLINE
FUEL DENSITY	6.0 LBS/GAL
INITIAL FUEL LOADING	136 U.S. GAL (816 LBS)

STANDARD DAY (ISA)

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

EXAMPLE:

PRESSURE ALTITUDE	11500 FEET
POWER SETTING	FULL THROTTLE 2300 RPM
RANGE	980 N.M.

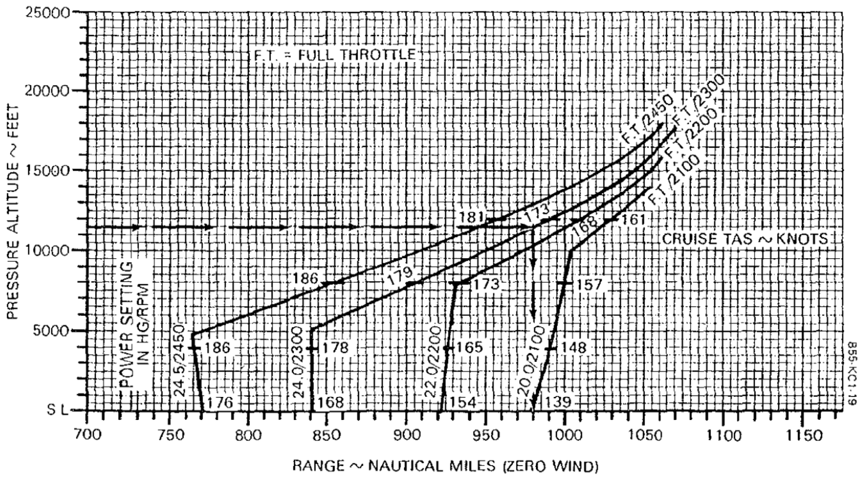


Figure 39

ENDURANCE PROFILE - 136 GALLONS

ASSOCIATED CONDITIONS:

WEIGHT	5121 LBS BEFORE ENGINE START
FUEL	AVIATION GASOLINE
FUEL DENSITY	6.0 LBS/GAL
INITIAL LOADING	136 U.S. GAL (816 LBS)

STANDARD DAY (ISA)

NOTE:
ENDURANCE INCLUDES START, TAXI, CLIMB AND DESCENT
WITH 45 MINUTES RESERVE FUEL AT ECONOMY CRUISE

EXAMPLE:

PRESSURE ALTITUDE	11500 FEET
POWER SETTING	FULL THROTTLE 2300 MPH
ENDURANCE	5.65 HRS 5 HRS 39 MIN

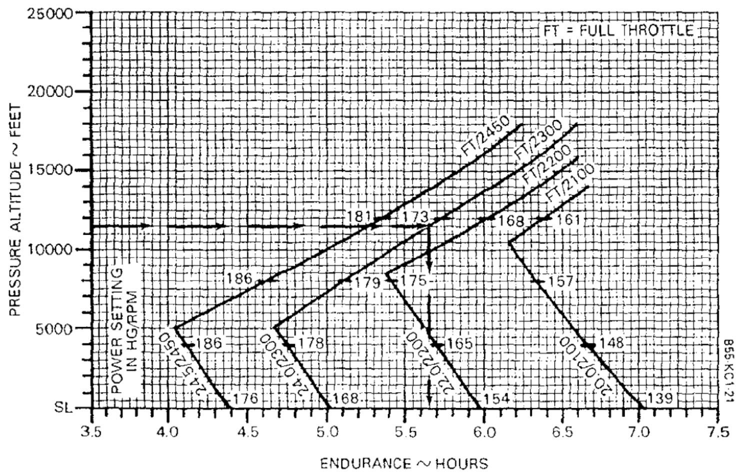


Figure 40

HOLDING TIME

ASSOCIATED CONDITIONS

POWER SETTING 20.0 IN. HG OR FULL THROTTLE 2100 RPM

EXAMPLE

FUEL AVAILABLE FOR HOLDING	200 LBS
PRESSURE ALT	5000 FT
HOLDING TIME	1.8 HRS 1 HR, 48 MIN

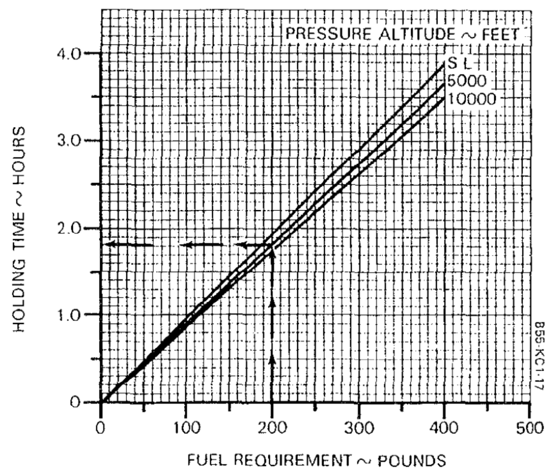


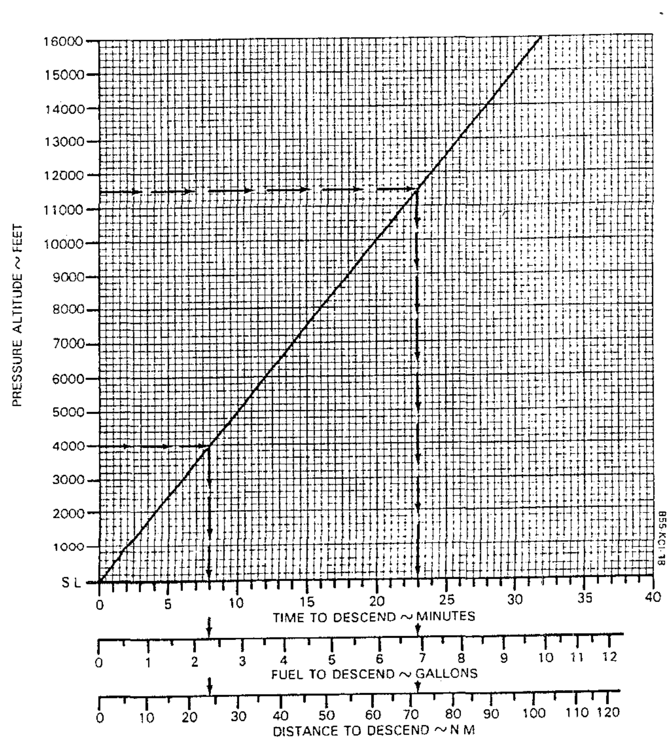
Figure 41

TIME, FUEL AND DISTANCE TO DESCEND

DESCENT SPEED 172 KIAS
198 MPH

ASSOCIATED CONDITIONS	
POWER	AS REQUIRED TO MAINTAIN 500 FT/MIN RATE-OF-DESCENT
LANDING GEAR	UP
FLAPS	UP

EXAMPLE	
INITIAL ALTITUDE	11500 FT
FINAL ALTITUDE	3965 FT
TIME TO DESCEND	23 -8 = 15 MIN
FUEL TO DESCEND	6.9 -2.2 = 4.7 GAL
DISTANCE TO DESCEND	72 -24 = 48 N M



May 1978 5-45

Figure 42

CLIMB-BALKED LANDING

ASSOCIATED CONDITIONS

POWER	TAKE-OFF
FLAPS	DOWN
LANDING GEAR	DOWN
MIXTURE	LEAN TO APPROPRIATE FUEL FLOW

CLIMB SPEED 90 KNOTS (ALL WEIGHTS)
104 MPH

EXAMPLE

OAT	25°C (77°F)
PRESSURE ALTITUDE	3965 FT
WEIGHT	4873 LBS
RATE-OF-CLIMB	570 FT/MIN
CLIMB GRADIENT	6%

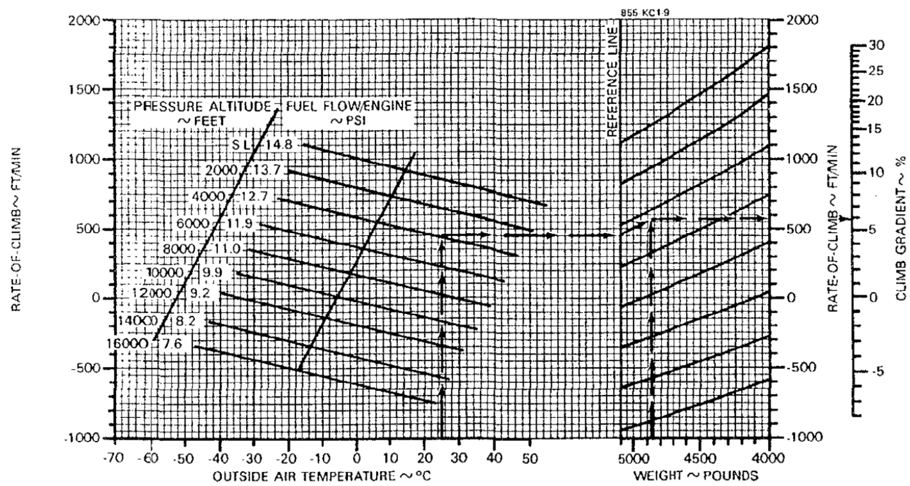


Figure 43

BEECHCRAFT Baron C55, D55, E55
TE-1 thru TE-942

Section V
Performance

LANDING DISTANCE

ASSOCIATED CONDITIONS:

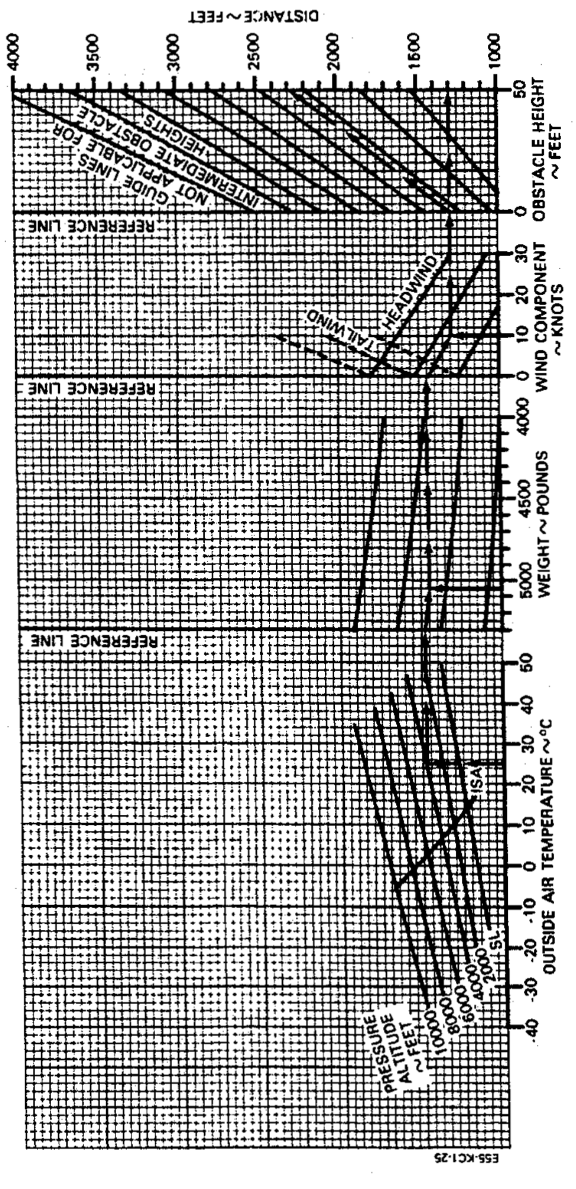
POWER: RETARDED TO MAINTAIN 800 FT/MIN ON FINAL APPROACH
FLAPS: DOWN
LANDING GEAR: DOWN
RUNWAY: PAVED, LEVEL, DRY SURFACE
APPROACH SPEED: IAS AS TABULATED
BRAKING: MAXIMUM

WEIGHT POUNDS	SPEED AT 50 FEET KTS	MPH
5300	88	101
5000	87	100
4500	85	98
4000	83	96

EXAMPLE:

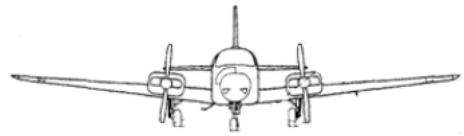
OAT: 25°C
PRESSURE ALTITUDE: 3965 FT
WEIGHT: 5044 LBS
WIND COMPONENT: 9.5 KTS

GROUND ROLL: 1300 FT
TOTAL OVER 50 FT OBSTACLE: 2290 FT
APPROACH: 87 KTS (100 MPH)



June 1983 **5-45**

Figure 44



SECTION 6
WEIGHT AND BALANCE
TABLE OF CONTENTS

WEIGHING INSTRUCTIONS

Periodic weighing of the airplane may be required to keep the Basic Empty Weight current. All changes to the airplane affecting weight and balance are the responsibility of the airplane's operator.

1. Three jack points are provided for weighing: two on the wing front spar at Fuselage Station 83.1 and one on the aft fuselage at Fuselage Station 271.0.

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, 5.7 pounds of undrainable fuel remain in the airplane at Fuselage Station 81.6. The remainder of the unusable fuel to be added to a drained system is 30.3 pounds at Fuselage Station 78.5

3. Engine oil must be at the full level or completely drained. Total engine oil when full is 45 pounds at Fuselage Station 43.

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

5. The airplane must be in a longitudinally level attitude at the time of weighing. Levelling screws are located on the left side of the fuselage at Fuselage Station 152.25 (approximately). Level attitude is determined with a plumb bob.

6. Measurement of the reaction arms for a wheel weighing is made using a steel measuring tape. Measurements are taken, with the airplane level on the scales, from the reference (a plumb bob dropped from the center of either main jack point) to the axle center line of the main gear and then to the nose 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 Fuselage Station 96.7 for main wheels and Fuselage Station 12.7 for the nose wheel.

7. Jack point weighings are accomplished by placing scales at the jack points specified in step 1 above. Since the center of gravity of the airplane is forward of Fuselage Station 83.1, the tail reaction of the airplane will be in an up direction. This can be measured on regular scales by placing ballast of approximately 200 pounds on the scales and attached to the aft weighing point by cable of adjustable length. The up reaction will then be total ballast weight minus the scale reading and is entered in the weighing form as a negative quantity.

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.

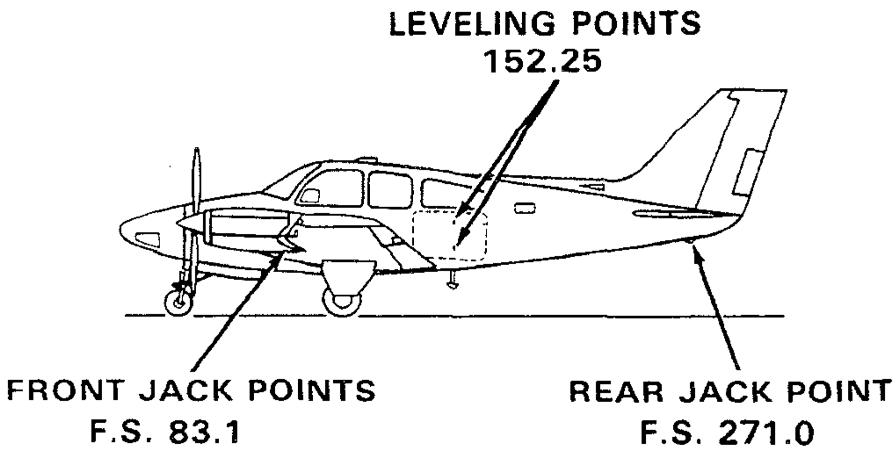


Figure 45

BEECHCRAFT Baron B55
Serial TC-1608 thru TC-2002

Section VI
Wt and Bal/Equip List

BASIC EMPTY WEIGHT AND BALANCE

BARON B55 SER. NO.__________ REG. NO.__________ DATE__________

STRUT POSITION - NOSE		MAIN	JACK POINT LOCATION		PREPARED BY
EXTENDED	+11.8	96	FORWARD	83.1	Company__________
COMPRESSED	+13.1	97	AFT	271.0	Signature__________

REACTION WHEEL - JACK POINTS	SCALE READING	TARE	NET WEIGHT	ARM	MOMENT
LEFT MAIN					
RIGHT MAIN					
NOSE OR TAIL					
TOTAL (AS WEIGHED)					
Space below provided for additions and subtractions to as weighed condition					
EMPTY WEIGHT (DRY)					
ENGINE OIL			45	-	1935
UNUSABLE FUEL			36	79	2844
BASIC EMPTY WEIGHT					

May 1978

6-5

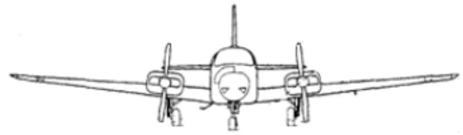
Figure 46

Version 1.0 – 15 May 2012

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 e.g. is a suitable means for meeting both requirements.

The current equipment list and empty weight and e.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 re-weighed to establish the empty weight and e.g. and that an inventory of installed equipment be conducted to create a new equipment list.



May 1978

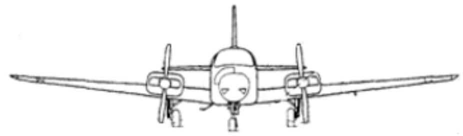
WEIGHT AND BALANCE RECORD

SERIAL NO. ________ REGISTRATION NO. ________ PAGE NO. 1

DATE	ITEM NO.		DESCRIPTION OF ARTICLE OR CHANGE	WEIGHT CHANGE ADDED (+) OR REMOVED (-)			RUNNING BASIC EMPTY WEIGHT	
	IN	OUT		WT (LBS)	ARM (IN.)	MOM/100	WT (LBS)	MOM/100

6-7

Figure 47



WEIGHT AND BALANCE RECORD

SERIAL NO. ________ REGISTRATION NO. ________ PAGE NO. 2

DATE	ITEM NO.		DESCRIPTION OF ARTICLE OR CHANGE	WEIGHT CHANGE ADDED (+) OR REMOVED (-)			RUNNING BASIC EMPTY WEIGHT	
	IN	OUT		WT (LBS)	ARM (IN.)	MOM/100	WT (LBS)	MOM/100

Figure 48

LOADING INSTRUCTIONS

It is the responsibility of the airplane operator to ensure 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 empty weight and moment of the airplane at the time of delivery are shown on the airplane 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 are indicated on the Moment Limits vs Weight 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.

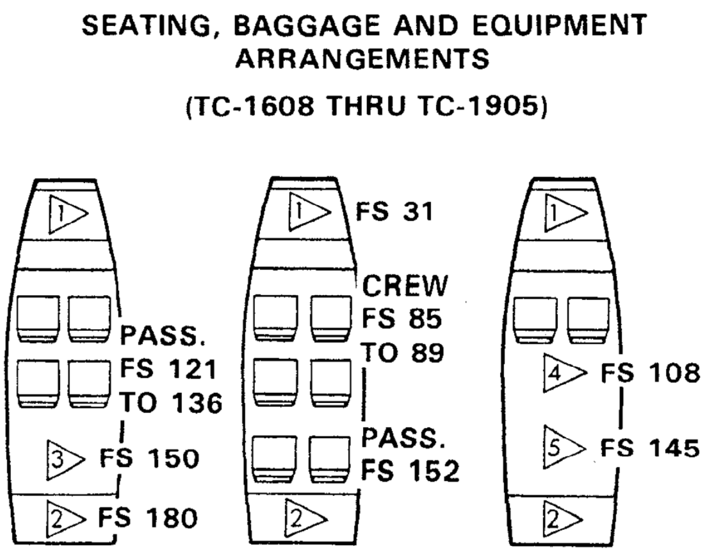
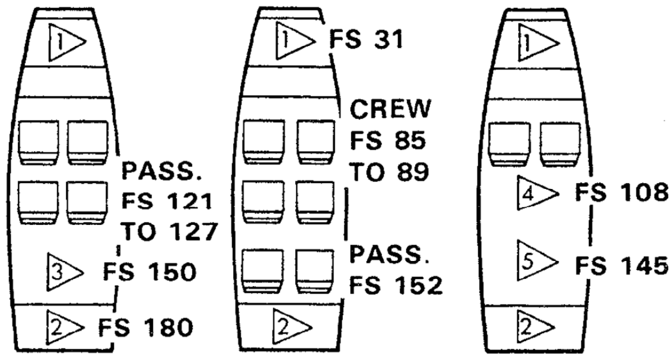


Figure 49

SEATING, BAGGAGE AND EQUIPMENT ARRANGEMENTS

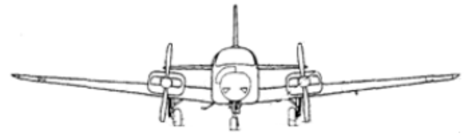
(TC-1906 THRU TC-2002)



1. MAXIMUM WEIGHT 300 POUNDS INCLUDING EQUIPMENT AND BAGGAGE.
2. MAXIMUM WEIGHT 120 POUNDS INCLUDING EQUIPMENT AND BAGGAGE.
3. MAXIMUM WEIGHT 400 POUNDS INCLUDING EQUIPMENT AND BAGGAGE WITH 5th and 6th SEATS REMOVED OR STOWED.
4. MAXIMUM WEIGHT 200 POUNDS FORWARD OF REAR SPAR INCLUDING EQUIPMENT AND CARGO WITH 3rd and 4th SEATS REMOVED.
5. MAXIMUM WEIGHT 400 POUNDS AFT OF REAR SPAR INCLUDING EQUIPMENT AND CARGO WITH 3rd, 4th, 5th and 6th SEATS REMOVED.

ALL CARGO MUST BE SECURED WITH FAA APPROVED CARGO RETENTION SYSTEMS.

Figure 50



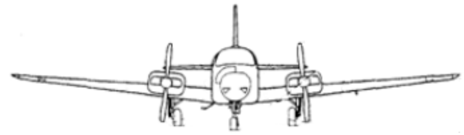
MOMENT LIMITS vs WEIGHT

Moment limits are based on the following weight and center of gravity limit data (landing gear down).

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
5100 lb. (B55 max.take-off or landing)	81.0	86.0
4990 lb. (B55A max. take-off or landing)	79.9	86.0
4740 lb.	77.5	86.0
3800 lb. or less	74.0	86.0

Weight	Minimum Moment / 100	Maximum Moment / 100
3200	2368	2752
3225	2387	2774
3250	2405	2795
3275	2424	2817
3300	2442	2838
3325	2461	2860
3350	2479	2881
3375	2498	2903
3400	2516	2924
3425	2535	2946
3450	2553	2967
3475	2572	2989
3500	2590	3010
3525	2609	3032
3550	2627	3053
3575	2646	3075

Figure 51



MOMENT LIMITS vs WEIGHT (Continued)

Weight	Minimum Moment / 100	Maximum Moment / 100
3600	2664	3096
3625	2683	3118
3650	2701	3139
3675	2720	3161
3700	2738	3182
3725	2757	3204
3750	2775	3225
3775	2794	3247
3800	2812	3268
3825	2834	3290
3850	2856	3311
3875	2878	3333
3900	2901	3354
3925	2923	3376
3950	2945	3397
3975	2967	3419
4000	2990	3440
4025	3012	3462
4050	3035	3483
4075	3057	3505
4100	3080	3526
4125	3102	3548
4150	3125	3569
4175	3148	3591
4200	3170	3612
4225	3193	3634
4250	3216	3655
4275	3239	3677
4300	3262	3698
4325	3285	3720

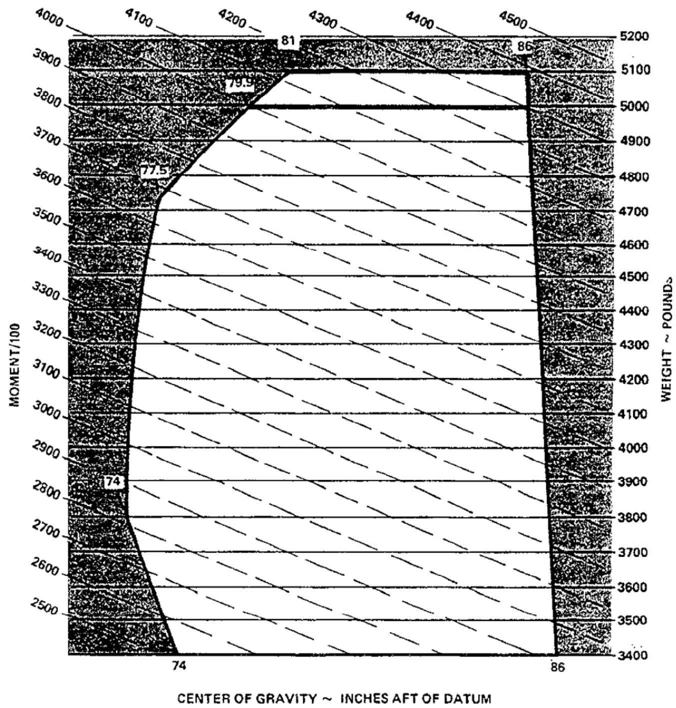
Figure 52

MOMENT LIMITS vs WEIGHT (Continued)

Weight	Minimum Moment / 100	Maximum Moment / 100
4350	3308	3741
4375	3331	3763
4400	3354	3784
4425	3377	3806
4450	3401	3827
4475	3424	3849
4500	3447	3870
4525	3471	3892
4550	3494	3913
4575	3517	3935
4600	3541	3956
4625	3564	3978
4650	3588	3999
4675	3612	4021
4700	3635	4042
4725	3659	4064
4750	3686	4085
4775	3717	4107
4800	3748	4128
4825	3779	4150
4850	3810	4171
4875	3842	4193
4900	3873	4214
4925	3905	4236
4950	3937	4257
4975	3969	4279
4990	3988	4291
5000	4001	4300
5025	4033	4322
5050	4066	4343
5075	4098	4365
5100	4131	4386

Figure 53

MOMENT LIMITS vs WEIGHT



ENVELOPE BASED ON THE FOLLOWING WEIGHT AND CENTER OF GRAVITY LIMIT DATA (LANDING GEAR DOWN)

B55

WEIGHT CONDITION	FORWARD CG. LIMIT	AFT CG. LIMIT
5100 LB (MAX TAKE-OFF OR LANDING	81.0	86.0
4740 LB	77.5	86.0
3800 LB or LESS	74.0	86.0

B55A

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
4990 LB (MAX TAKE-OFF OR LANDING)	79.9	86.0
4740 LB	77.5	86.0
3800 LB or LESS	74.0	86.0

B55-601-00

Figure 54

COMPUTING PROCEDURE

1. Record the Basic Empty Weight and Moment from the Basic Empty Weight and Balance form (or from the latest superceding form) under the Basic Empty Condition block. The moment must be divided by 100 to correspond to Useful Load Weights and Moments tables.

2. Record the weight and corresponding moment from the appropriate table of each of the useful load items (except fuel) to be carried in the airplane.

3. Total the weight column and moment column. The SUB-TOTAL is the Zero Fuel Condition.

4. Determine the weight and corresponding moment for the fuel loading to be used. This fuel loading includes fuel for the flight, plus that required for start, taxi and take-off. Add the Fuel to Zero Fuel Condition to obtain the SUB-TOTAL Ramp Condition.

5. Subtract the fuel to be used for start and taxi to arrive at the SUB-TOTAL Take-off Condition.

6. Subtract the weight and moment of the fuel to be used from the take-off weight and moment. (Determine the weight and moment of this fuel by subtracting the amount on board on landing from the amount on board on take-off.) The Zero Fuel Condition, the Take-Off Condition, and the Landing Condition moment must be within the minimum and maximum moments shown on the Moment Limit vs Weight table 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.

The following Sample Loading chart is presented to depict the sample method of computing a load. Weights used DO NOT reflect an actual airplane loading.

WEIGHT AND BALANCE LOADING FORM

BARON B55 DATE ____________

SERIAL NO. TC-XXXX REG NO. NXXX

ITEM	WEIGHT	MOM/100
1. BASIC EMPTY CONDITION	3337	2634
2. FRONT SEAT OCCUPANTS	340	290
3. 3rd and 4th SEAT OCCUPANTS	340	412
4. 5th and 6th SEAT OCCUPANTS	170	258
5. NOSE BAGGAGE	78	24
6. REAR BAGGAGE	-	-
7. AFT BAGGAGE	40	72
8. CARGO	-	-
9. SUB TOTAL ZERO FUEL CONDITION	4305	3690
10. FUEL LOADING (136 GAL)	816	671
11. SUB TOTAL RAMP CONDITION	5121	4361
12. *LESS FUEL FOR START, TAXI, AND TAKE-OFF	-21	-17
13. SUB TOTAL TAKE-OFF CONDITION	5100	4344
14. LESS FUEL TO DESTINATION (112 GAL)	-675	-562
15. LANDING CONDITION	4425	3782

SAMPLE

*Fuel for start, taxi and take-off is normally 21 lbs at an average mom/100 of 17.

Figure 55

WEIGHT AND BALANCE LOADING FORM

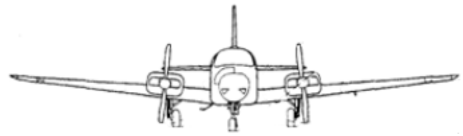
BARON ____________________ DATE ________________

SERIAL NO. ________________ REG NO. ______________

ITEM	WEIGHT	MOM/100
1. BASIC EMPTY CONDITION		
2. FRONT SEAT OCCUPANTS		
3. 3rd and 4th SEAT OCCUPANTS		
4. 5th and 6th SEAT OCCUPANTS		
5. NOSE BAGGAGE		
6. REAR BAGGAGE		
7. AFT BAGGAGE		
8. CARGO		
9. SUB TOTAL ZERO FUEL CONDITION		
10. FUEL LOADING		
11. SUB TOTAL RAMP CONDITION		
12. *LESS FUEL FOR START, TAXI, AND TAKE-OFF		
13. SUB TOTAL TAKE-OFF CONDITION		
14. LESS FUEL TO DESTINATION		
15. LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 21 lbs at an average mom/100 of 17.

Figure 56

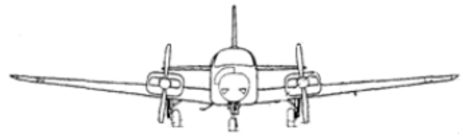


USEFUL LOAD WEIGHTS AND MOMENTS
(TC-1608 THRU TC-1905)
OCCUPANTS

	Front Seats		3rd and 4th Seats		
	Fwd Position	Aft Position	Fwd Position	Aft Position	5th and 6th Seats
WEIGHT	ARM 85	ARM 89	ARM 121	ARM 136	ARM 152
120	102	107	145	163	182
130	110	116	157	177	198
140	119	125	169	190	213
150	128	134	182	204	228
160	136	142	194	218	243
170	144	151	206	231	258
180	153	160	218	245	274
190	162	169	230	258	289
200	170	178	242	272	304

NOTE: OCCUPANT POSITIONS SHOWN ARE FOR THE SEATS ADJUSTED THE MAXIMUM RANGE. INTERMEDIATE POSITIONS WILL REQUIRE INTERPOLATION OF THE MOMENT/100 VALUES.

Figure 57



USEFUL LOAD WEIGHTS AND MOMENTS
(TC-1906 THRU TC-2002)
OCCUPANTS

	Front Seats		3rd and 4th Seats		
	Fwd Position	Aft Position	Fwd Position	Aft Position	5th and 6th Seats
WEIGHT	ARM 85	ARM 89	ARM 121	ARM 127	ARM 152
120	102	107	145	152	182
130	110	116	157	165	198
140	119	125	169	178	213
150	128	134	182	190	228
160	136	142	194	203	243
170	144	151	206	216	258
180	153	160	218	229	274
190	162	169	230	241	289
200	170	178	242	254	304

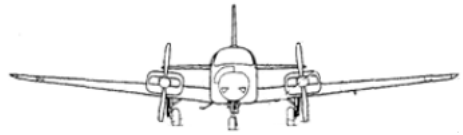
NOTE: OCCUPANT POSITIONS SHOWN ARE FOR THE SEATS ADJUSTED THE MAXIMUM RANGE. INTERMEDIATE POSITIONS WILL REQUIRE INTERPOLATION OF THE MOMENT/100 VALUES.

Figure 58

BAGGAGE

Weight	NOSE COMPT ARM 31 Mom/100	REAR FS 131 TO 170 ARM 150 Mom/100	AFT FS 170 TO 190 ARM 180 Mom/100
10	3	15	18
20	6	30	36
30	9	45	54
40	12	60	72
50	16	75	90
60	19	90	108
70	22	105	126
80	25	120	144
90	28	135	162
100	31	150	180
110	34	165	198
120	37	180	216
130	40	195	
140	43	210	
150	47	225	
160	50	240	
170	53	255	
180	56	270	
190	59	285	
200	62	300	
220	68	330	
240	74	360	
260	81	390	
280	87	420	
300	93	450	
320		480	
340		510	
360		540	
380		570	
400		600	

Figure 59



CARGO
FWD OF SPAR
(CENTER SEATS REMOVED)
ARM 108

Weight	Moment / 100	Weight	Moment / 100
10	11	110	119
20	22	120	130
30	32	130	140
40	43	140	151
50	54	150	162
60	65	160	173
70	76	170	184
80	86	180	194
90	97	190	205
100	108	200	216

CARGO
AFT OF SPAR
(CENTER & AFT SEATS REMOVED)
ARM 145

Weight	Moment / 100	Weight	Moment / 100
10	15	110	160
20	29	120	174
30	44	130	189
40	58	140	203
50	73	150	218
60	87	160	232
70	102	170	247
80	116	180	261
90	131	190	276
100	145	200	290

Figure 60

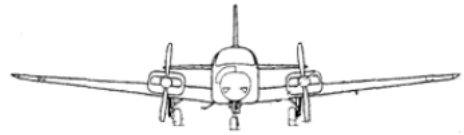
CARGO
AFT OF SPAR
(CENTER & AFT SEATS REMOVED)
ARM 145

Weight	Moment 100	Weight	Moment 100
210	305	310	450
220	319	320	464
230	334	330	479
240	348	340	493
250	363	350	508
260	377	360	522
270	392	370	537
280	406	380	551
290	421	390	566
300	435	400	580

USABLE FUEL

		100 GAL	136 GAL
Gallons	Weight	Mom/100	
10	60	45	46
20	120	90	92
30	180	135	140
40	240	180	189
50	300	225	238
60	360	270	288
70	420	315	338
80	480	360	388
90	540	406	439
100	600	452	489
110	660		539
120	720		590
130	780		641
136	816		671

Figure 61



SECTION 7
SYSTEMS
TABLE OF CONTENTS

AIRFRAME

The BEECHCRAFT BARON B-55 is a four to six place all- metal, low-wing, twin-engine airplane with retractable tricycle landing gear and a conventional horizontal and vertical stabilizer.

FLIGHT CONTROLS

CONTROL SURFACES

Control surfaces are bearing supported and operated through push-pull rods and conventional cable systems terminating in bellcranks.

CONTROL COLUMN

The throw-over type control column for elevator and aileron control can be placed in front of either front seat. Pull the T-handle latch at the back of the control arm and position the control wheel as desired. Check for full freedom of movement after repositioning the control.

NOTE

The MilViz Baron 55 models the optional dual control column; therefore the T-handle latch is removed as part of this STC upgrade.

The optional dual control column is required for flight instruction.

RUDDER PEDALS

To adjust the rudder pedals, press the spring-loaded lever on the side of each pedal arm and move the pedal to its forward or aft position. The adjustment lever can also be used to place the right set of rudder pedals against the floor, (when the copilot brakes are not installed) when not in use.

TRIM CONTROLS

All trim tabs are adjustable from the control console (figure 62). A position indicator is provided for each. The left aileron tab incorporates servo action in addition to its trimming purpose. Elevator trim is controlled by a hand wheel located immediately below the aileron and rudder trim wheels. An elevator tab indicator dial is located directly to the left and slightly above the rudder trim wheel.

Figure 62

INSTRUMENT PANEL

FLIGHT INSTRUMENTS

The flight instruments are located on a floating panel directly in front of the pilot's seat (see figure 62). Standard flight instrumentation includes attitude and directional gyros, airspeed, altimeter, vertical speed, turn coordinator and a clock. A magnetic compass is mounted above the instrument panel and an outside air temperature indicator is located on the left side panel. Located on the right side of the instrument panel is the standard pressure gage for the instrument air system.

POWER PLANT INSTRUMENTS

Figure 63

Most of the engine instruments are located in the upper center of the instrument panel (figure 63). The standard indicators for each engine are as follows: tachometers, manifold pressure, fuel pressure, fuel quantity and loadmeters. Other indicators such as the exhaust gas temperature system, the propeller deice ammeter (or propeller alcohol quantity and deice pressure) are usually installed on the right side of the instrument panel (figure 64). Two multi-purpose instruments, one for each engine, indicate cylinder head temperature, oil pressure and oil temperature are likewise located on the right side of the instrument panel (figure 65).

Figure 64

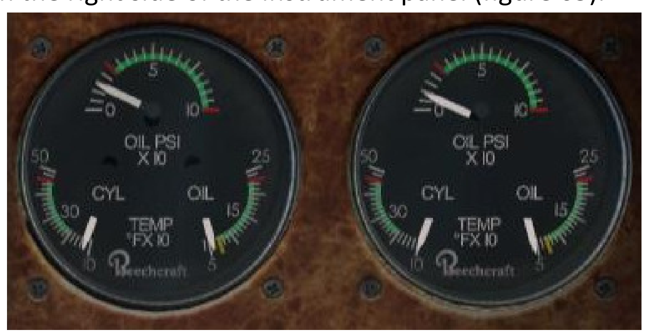


Figure 65

GROUND CONTROL

Spring-loaded linkage from the nose gear to the adjustable rudder pedals allows for nose wheel steering. Smooth turning is accomplished by allowing the airplane to roll while depressing the appropriate rudder pedal. The minimum wing tip turning radius, using partial braking action and differential power, is 29 feet 6 inches.

WING FLAPS

The wing flaps are controlled by a three position switch (figure 66) placarded UP-OFF-DOWN. The switch is located on the control console and must be pulled out of a detent before operating. Any position within flap travel may be attained by returning the switch to the OFF position. A dial-type wing flap position indicator marked UP, 10°, 20° and DN is located adjacent to the control switch.

Figure 66

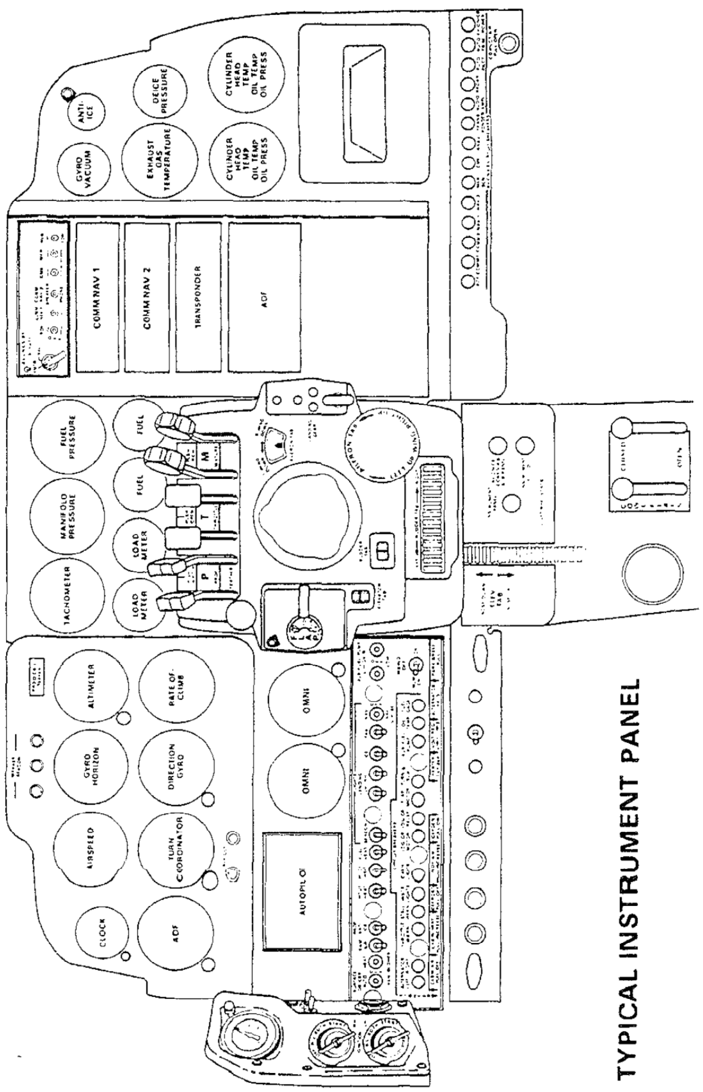


Figure 67

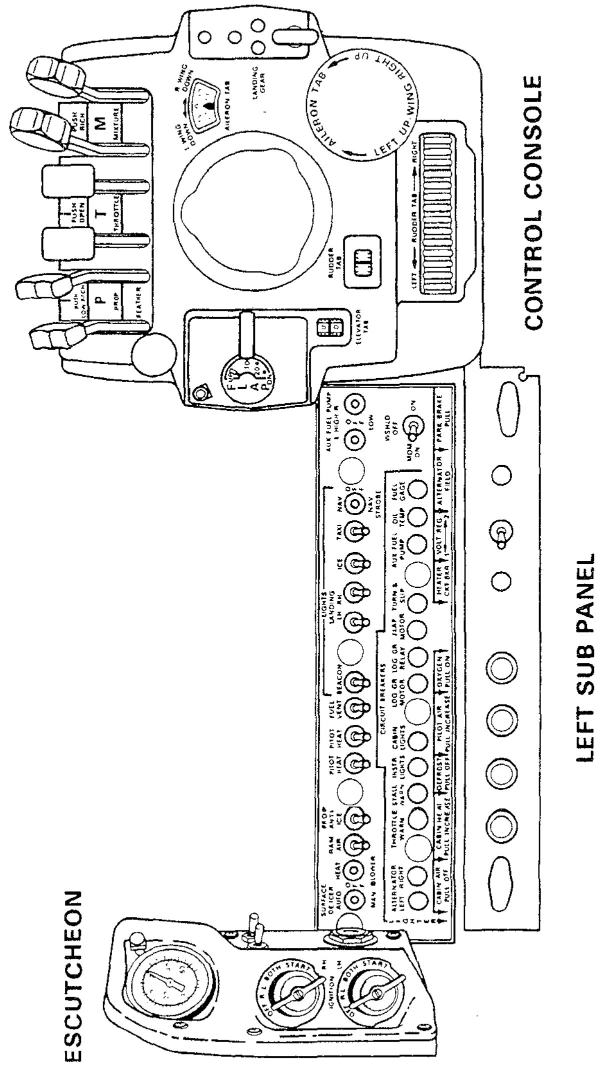


Figure 68

LANDING GEAR SYSTEM

CAUTION

If a reduced power throttle position exists when throwing over the control column, it will be necessary to momentarily move the throttle levers forward for passage of the control column.

The landing gear is operated through adjustable linkage connected to an actuator assembly mounted beneath the front seats. The actuator assembly is driven by an electric motor. The landing gear may be electrically retracted and extended, and may be extended manually.

CONTROL SWITCH

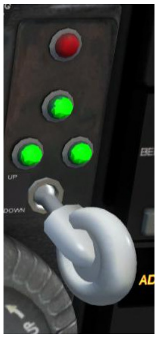


Figure 69

The landing gear is controlled by a two-position switch on the right side of the control console (figure 69). The switch handle must be pulled out of the safety detent before it can be moved to the opposite position. Never operate the landing gear electrically with the handcrank engaged.

POSITION INDICATORS

The landing gear position indicator lights are located above the landing gear switch handle (figure 69). Three green lights, one for each gear, are illuminated whenever the landing gear are down and locked. The red light illuminates anytime one or all of the landing gear are in transit or in any intermediate position. All of the lights will be extinguished when the landing gear are up and locked. Pressing the warning light test button on the instrument panel will verify the landing gear lamp bulbs are illuminating. The intensity of the lamps are automatically lowered for night flights when the navigation lights are turned on.

SAFETY SWITCH

To prevent inadvertent retraction of the landing gear on the ground, a main strut safety switch opens the control circuit when the strut is compressed.

CAUTION

Never rely on the safety switch to keep the gear down during taxi or on take-off, landing roll, or in a static position. Always make certain that the landing gear switch is in the down position during these operations.

WARNING HORN

If either or both throttles are retarded below an engine setting sufficient to sustain two engine flight with the landing gear retracted, a warning horn will sound intermittently. During one engine operation, the horn can be silenced by advancing the throttle of the inoperative engine until the throttle warning horn switch opens the circuit.

MANUAL EXTENSION

NOTE

Manual extension of the landing gear is not modeled in the MilViz Baron 55.

The landing gear can be manually extended, but not retracted, by operating the handcrank on the rear of the pilot's seat. The landing gear handle must be in the down position and the landing gear MOTOR circuit breaker must be pulled before manually extending the gear. When the electrical system is operative, the landing gear may be checked for full down with the gear position lights, provided the landing gear RELAY circuit breaker is engaged. After the landing gear is down, disengage the handcrank.

For electrical retraction of the landing gear after a practice manual extension use procedures outlined in the EMERGENCY PROCEDURES section.

If the landing gear was extended for emergency reasons, do not move any landing gear controls or reset any switches or circuit breakers until the aircraft is on jacks, to prevent a gear retraction on the ground. These procedures are outlined in the EMERGENCY PROCEDURES section.

BRAKES

The brakes on the main landing gear wheels are operated by applying toe pressure to the top of the rudder pedals.

CAUTION

Continuous brake application of either the pilot's or copilot's brake pedals in conjunction with an overriding pumping action from the opposite brake pedals could result in the loss of braking action on the side which continuous pressure is being applied. The parking brake T-handle control is located just left of the elevator tab wheel on the pilot's subpanel. To set the parking brakes, pull the control out and depress the pilot's toe pedals until firm. Push the control in to release the brakes.

NOTE

The parking brake should be left off 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.

The brakes hydraulic fluid reservoir is accessible through the nose baggage door. Fluid level is checked with the dip- stick attached to the reservoir cap. The brakes require no adjustments, since the pistons move outward to compensate for lining wear.

BAGGAGE/CARGO COMPARTMENTS

AFT BAGGAGE/CARGO COMPARTMENT

The aft baggage/cargo compartment is accessible through the baggage door on the right side of the fuselage. This area extends aft of the pilot's seats to the rear bulkhead. Because of structural limitations, this area is divided into three sections, each having a different weight limitation. Loading within the baggage/cargo compartment must be in accordance with the data in the WEIGHT AND BALANCE section. All cargo must be secured with the FAA approved cargo retention systems.

WARNING

Do not carry hazardous material anywhere in the airplane. Do not carry passengers in the baggage or cargo area unless secured in a seat.

NOSE BAGGAGE/CARGO COMPARTMENT

The forward baggage/cargo compartment is easily accessible through a large door on the right side of the nose. The door, hinged at the top, swings upward, clear of the loading area. Loading within this area must be within the limitations according to the WEIGHT AND BALANCE section. The nose baggage/cargo compartment incorporates the full width of the fuselage as usable space. This compartment also affords accessibility to the oxygen cylinder and to some of the airplane's avionics. Straps are provided and should be used to secure any baggage or cargo loaded into the nose baggage/cargo compartment.

SEATING

To adjust any of the four standard seats forward or aft, pull up on the release bar below the seat and slide the seat to the desired position. The seat backs of all standard seat s can be placed in any of four posit ions by operating a release lever on the inboard side of each seat. An option is available that provides for the seat backs on all seat s (except the pilot's) to be placed in any position from vertical to fully reclined. Outboard armrests for all standard seat s are built into the cabin sidewalls. Center armrests can be elevated or positioned flush with the seat cushions. On airplanes TC-1947 and after, the 3rd and 4th place chairs are equipped with a locking back to accommodate the shoulder harness, and the seat back can be folded over for access by rotating the red handle located on the lower in- board side of the seat back. The optional fifth and sixth seats can be folded up to provide additional floor space, or folded down to provide access to the optional extended baggage/cargo compartment.

SEAT BELTS AND SHOULDER HARNESSES

PRIOR TO TC-1947

The shoulder harness installation is available for the pilot seats only. The belt is in the "Y" configuration with the single strap being contained in an inertia reel attached to the overhead canopy structure of the cockpit. The two straps are worn with one strap over each shoulder and fastened by metal loops into the seat belt buckle. The harness should be used with the seats in the upright position. The spring loading at the inertia reel keeps the harness snug but will allow normal movement required during flight operations. The inertia reel is designed with a locking device that will secure the harness in the event of sudden forward movement or an impact action.

TC-1947 AND AFTER

The shoulder harness is a standard installation for all seats and must be used with the seats in the upright pos1tion. The spring loading at the inertia reel keeps the harness snug but will allow normal movement during flight operations. The inertia reel is designed with a locking dev1ce that will secure the harness in the event of sudden forward movement or an impact action.

The strap is worn over the shoulder and down across the body, where it is fastened by a metal loop into the seat belt buckle. For the pilot seats, the harness strap is contained in an inertia reel attached to the side canopy structure of the cockpit. The• inertia reel is covered with an escutcheon and the strap runs up from the reel location to a looped fitting attached to the window frame just aft of the pilot seats. For the third and fourth passenger seats, the inertial reel is attached into the seat back structure and is covered with the seat back upholstery. The strap runs up the seat back and over the outboard corner of the seat back   For the fifth and sixth passenger seats, the strap is contained m an inertia reel attached to the upper fuselage side structure just aft of the seat back and is covered with an escutcheon.

NOTE

The seat belt is independent of the shoulder harness, but the outboard seat belt and the shoulder harness must be connected for stowage when the seat is not occupied.

DOORS, WINDOWS AND EXITS

FORWARD CABIN DOOR

The airplane has a conventional cabin door on the forward right side of the fuselage and when closed, the outside cabin door handle is spring loaded to fit into a recess in the door to create a flat aerodynamically clean surface. The door may be locked with a key. To open the door from the outside, lift the handle from its recess and pull until the door opens. To close the cabin door from the inside, observe that the door handle is in the unlocked position. In this position, the latch handle is free to move approximately one inch in either direction before engagement of the locking mechanism. Then grasp the door and firmly pull the door closed. Rotate the door handle fully counterclockwise into the locked position. When the door is properly locked, the door latch handle is free to move approximately one inch in either direction.

NOTE

When checking the door latch handle, do not move it far enough to engage the door latch release mechanism. Press firmly outward at the top rear corner of the door. If any movement of the door is detected, completely open the door and close again following the above instructions.

Figure 70

To open the door from the inside, depress the lock button and rotate the handle clockwise (figure 70).

OPENABLE CABIN WINDOWS

To open window, release the latch front of bar, pull bar at the bottom of the window out and upward. Window will open approximately two inches.

Close window by pulling inward and down on the bar at the bottom of the window.
Resistance will be felt as the bar moves downward. Continue moving bar downward to its lowest position. Check that bar is locked by the latch.

NOTE

Windows are to be closed before takeoff and during flight. While closing window, ascertain that the emergency release pin (which allows the window to open fully for emergency exit) is securely in place.

EMERGENCY EXITS

To open the emergency exit provided by the openable middle window on each side of the cabin:

1. Lift the latch.
2. Pull out the emergency release pin and push the window out.

The above procedure is described on a placard installed below the left and right middle windows.

CONTROL LOCKS

The control column pin assembly is placarded with the installation instructions. Install the assembly with the instructions facing the instrument panel. Placard reading CONTROLS LOCKED, REMOVE BEFORE FLIGHT will be facing pilot if properly installed.

INSTALLATION INSTRUCTIONS

1. Close throttles, install pin between levers, through collar lock and control column. (Rotate control wheel approximately 12° to the right.)

2. Route cable and rudder lock around right side of control column, position pedals in aft position and install lock in rudder pedals.

POWER PLANTS

The MilViz BEECHCRAFT BARON B-55 is powered by two Continental 10-520-M six-cylinder, horizontally opposed, fuel injected engines rated at 280 hp at 2700 rpm.

POWER PLANT CONTROLS

PROPELLER, THROTILE AND MIXTURE

The control levers are grouped along the upper face of the control console. Their knobs are shaped so they can be identified by touch. A single controllable friction knob below and to the left of the control levers prevents creeping.

INDUCTION AIR

Induction air is available from filtered ram air or alternate air. Filtered ram air enters from above the engine inside the nacelle area. Should the filter become obstructed, a spring-loaded door on the side of the plenum will open automatically and the induction system will operate on alternate air taken from the nacelle area.

ENGINE ICE PROTECTION

Engine ice protection consists of electrothermal fuel vent heaters controlled by a switch on the left panel and an automatic alternate air induction system. The only significant ice accumulation is impact ice on the inlet scoop and filter. Should the induction air scoop or filter become clogged with ice, a spring-loaded door on the firewall will open automatically, and the induction system will operate on alternate air.

LUBRICATION SYSTEM

The engine oil system for each engine is the full pressure, wet sump type and has a 12-quart capacity. Oil operating temperatures are controlled by an automatic thermostat bypass control. The bypass control will limit oil flow through the oil cooler when operating temperatures are below normal and will permit the oil to bypass the cooler if it should become blocked.

The oil system may be checked through access doors in the engine cowling. A calibrated dip stick adjacent to the filler cap indicates the oil level. Due to the canted position of the engines, the dip sticks are calibrated for either right or left engines and are not interchangeable.

The oil grades listed in the Approved Engine Oils in the SERVICING section are general recommendations only and will vary with individual circumstances. The determining factor for choosing the correct grade of oil is the average ambient temperature.

COWL FLAPS

The cowl flap for each engine is controlled by a manual control lever located on the lower center console (figure 71). The cowl flap is closed when the lever is in the up position and open when the lever is down.

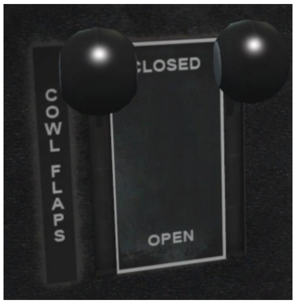


Figure 71

PROPELLERS

The engines are equipped with either a two or three blade, full feathering, constant speed, propellers. Springs aided by counterweights move the blades to high pitch. Engine oil under governor-boosted pressure moves the blades to low pitch.

The propellers should be cycled occasionally during cold weather operation. This will help maintain warm oil in the propeller hubs so that the oil will not congeal.

PROPELLER SYNCHRONIZER

The propeller synchronizer automatically matches the rpm of both propellers. The system's range of authority is limited to approximately 25 rpm. Normal governor operation is unchanged but the synchronizer will continuously monitor propeller rpm and adjust one governor as required. A magnetic pickup mounted in each propeller governor transmits electric pulses to a transistorized control box installed behind the pedestal. The control box converts any pulse rate differences into correction commands, which are transmitted to the appropriate governor.

A toggle switch installed on the pedestal turns the system on. To operate the system, synchronize the propellers in the normal manner and turn the synchronizer on. To change rpm, adjust both propeller controls at the same time. This will keep the setting within the limiting range of the system. If the synchronizer is on but unable to adjust the propeller rpm, the system has reached its range limit. Turn the synchronizer switch off, synchronize the propellers manually and turn the synchronizer switch on.

PROPELLER SYNCHROSCOPE

A propeller synchroscope, located in the tachometer case, operates to give an indication of synchronization of propellers. If the right propeller is operating at a higher rpm than the left, the face of the synchroscope, a black and white cross pattern, spins in a clockwise rotation. Counterclockwise rotation indicates a higher rpm of the left propeller. This instrument aids the pilot in accomplishing manual synchronization of the propellers.

FUEL SYSTEM

The fuel system (figure 73) is an OFF-ON-CROSSFEED arrangement. The fuel selector panel, located on the floor forward of the front seats, contains the fuel selector for each engine and a schematic diagram of fuel flow (figure 72).

The standard fuel system in the wing leading edge has a capacity of 106 gallons.

The optional fuel system has a capacity of 142 gallons. Refer to the LIMITATIONS section for the usable fuel in each system.

Figure 72

A vapor return line returns excess fuel from the engine to its respective wing system. All of the fuel cells, standard or optional, in each wing are interconnected in order to make all the usable fuel in each wing available to its engine when the fuel selector valve is ON. Each wing system is serviced through a single filler. The standard fuel system is drained at six locations, and the optional system is drained at eight locations.

Fuel quantity is measured by float type transmitter units which transmit the common level indication to a single indicator gauge for each respective wing system (figure 63).

FUEL PRESSURE INDICATOR

The fuel pressure indicator (see Figure 74) registers metered fuel pressure at the fuel injection manifold valve. It does not indicate either engine-driven fuel pump pressure or aux fuel pump pressure. Red radials are placed at the minimum and maximum allowable operating fuel pressures. The green sectors indicate normal operating range. For fuel flow conversions see PERFORMANCE section.

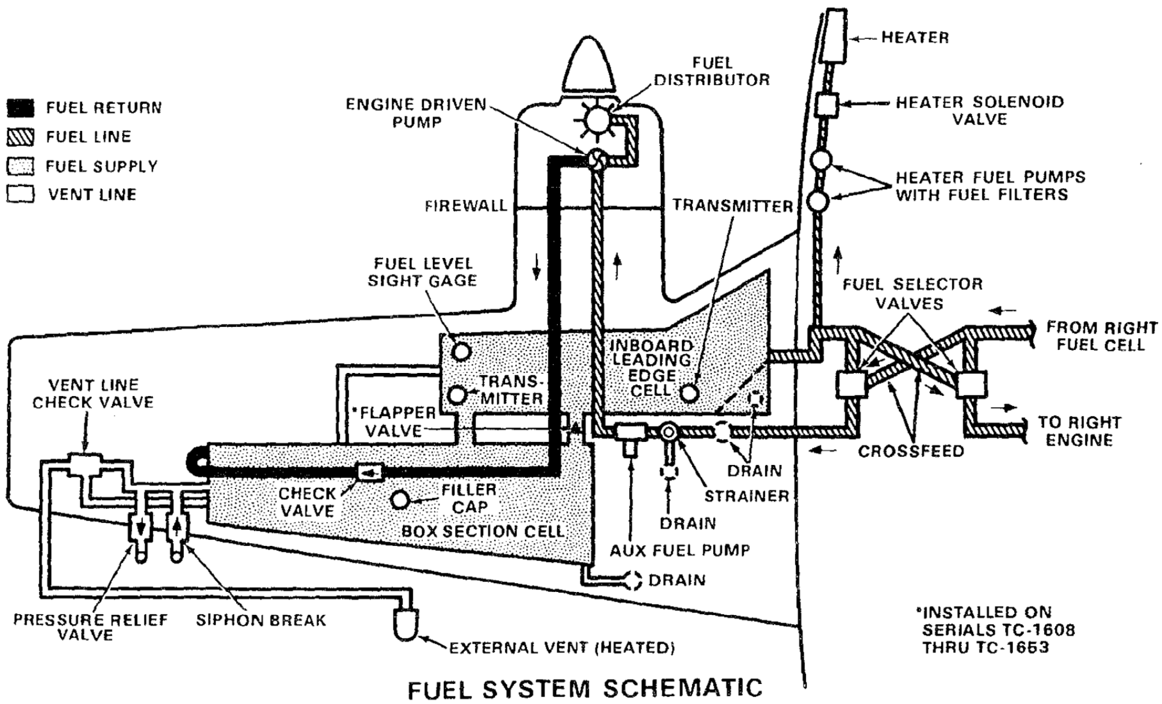


Figure 73

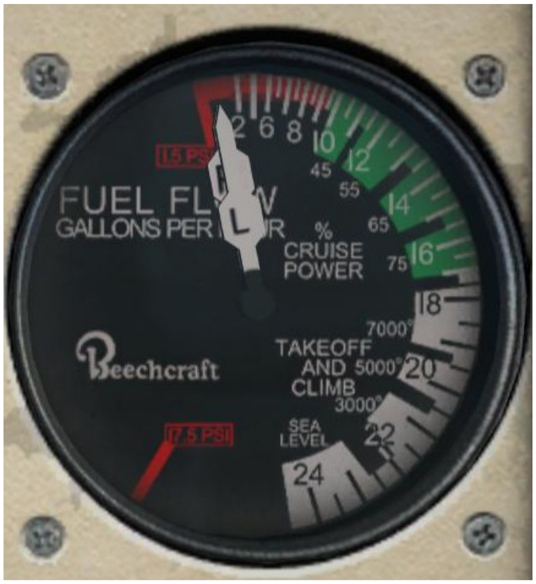


Figure 74

In the cruise power range the green sectors cover the fuel pressure required from 45% to 75% power. The lower edge of each sector is the normal-lean setting and the upper range is the best power setting for that particular power range. The takeoff and climb range is covered by green sectors for full power at various altitudes. The full power markings represent the maximum performance mixtures for the altitudes shown, permitting leaning of the mixture for maximum power and performance during high altitude takeoffs and full power climbs.

FUEL CROSSFEED

The fuel lines for the engines are interconnected by crossfeed lines. During normal operation each engine uses its own fuel pumps to draw fuel from its respective wing fuel system. However, on emergency crossfeed operations either engine can consume the available fuel from the opposite side.

The fuel crossfeed system is provided for use during emergency conditions. The system cannot be used to transfer fuel from one wing system to the other. The procedure for using the crossfeed system is described in the EMERGENCY PROCEDURES section.

AUXILIARY FUEL PUMPS

Figure 75

An individual two-speed electric auxiliary fuel pump is provided for each engine. They are located on the right half of the pilot's lower switch panel (figure 75).

HIGH pressure, OFF or LOW pressure is selected with each auxiliary fuel pump switch on the pilot's subpanel. High pressure is used for providing fuel pressure before starting, and provides near aximum engine performance should the engine-driven pump fail. Low pressure may be used in any operating mode to eliminate pressure fluctuations resulting from high ambient temperatures and/or high altitudes. The high pressure position should not be selected while the engine is operating except in the event of engine-driven pump failure since the high pressure mode supplies a greater pressure than can be accepted by the injection system during normal operation.

PARTIAL FUEL LOADING

A visual fuel level sight gage for partial loading has been provided in each wing leading edge, outboard of the engine nacelle. Its normal purpose of positive indications is (independent of fuel quantity indicators) that there are more than 40 gallons of fuel in each wing when indicating above the minimum value.

FUEL REQUIRED FOR FLIGHT

Flight planning and fuel loading is facilitated by the use of fuel quantity indicators that have been coordinated with the usable fuel supply. It is the pilot's responsibility to ascertain that the fuel quantity indicators are functioning and maintaining a reasonable degree of accuracy and be certain of ample fuel for a flight. A minimum of 13 gallons of fuel is required in each wing system before takeoff. An inaccurate indicator could give an erroneous indication of fuel quantity. If the pilot is not sure that at least 13 gallons are in each wing system, add necessary fuel so that the amount of fuel will not be less than 13 gallons per wing system at takeoff. The pilot must plan for an ample margin of fuel for any flight.

ELECTRICAL SYSTEM

Figure 76

In general, the airplane's circuitry (see Figure 78) is the single-wire, ground return type. The battery, magneto/start and generator or alternator switches are located on the left side panel (figure 76). The panel to the left of the control console contains most of the electrical system switches and circuit breakers. Each is placarded as to its function. Avionics circuit breakers are located on the right subpanel. The Master Battery switch is located on the top of a triangular arraignment of three switches. The two alternator switches are the two switches forming the base of the triangle (figure 77).

Figure 77

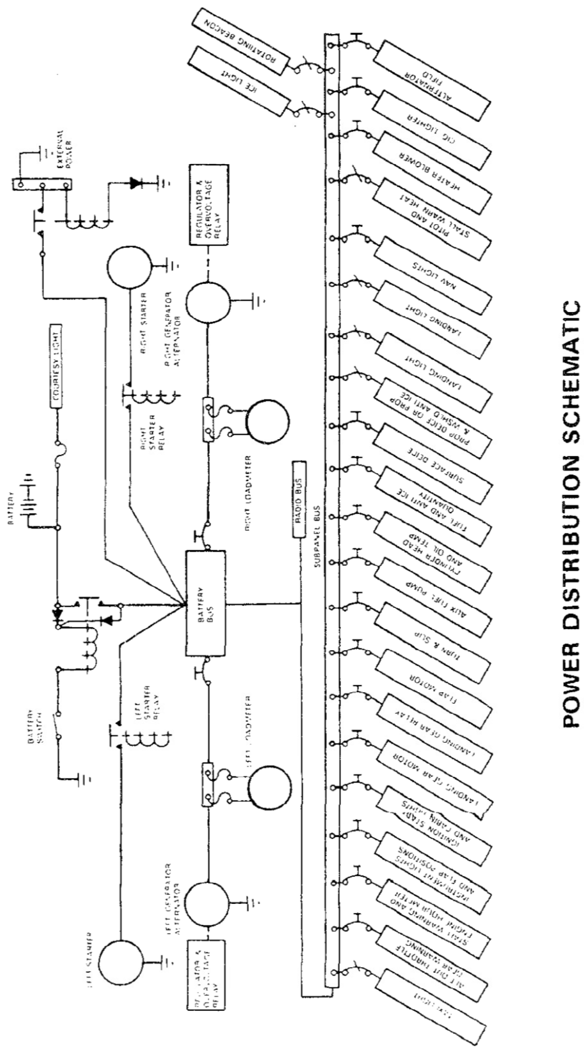


Figure 78

BATTERY

One 17 ampere-hour, 24-volt lead acid battery is standard. Two 25 ampere-hour, 12-volt lead acid batteries, connected in series are offered as options. The battery installation is located beneath the floor of the nose baggage compartment. Battery servicing procedures are described in the SERVICING section. The battery can be turned off in flight and the alternator/generators will remain online.

GENERATORS

Two 25-ampere, 24-volt generators are standard equipment. The generators are belt-driven from the engine accessory section.

The electrical output of each generator is automatically controlled by an individual voltage regulator and the system paralleling relay. Individual generator output is indicated by two loadmeters on the instrument panel. On TC-1913, TC-1936 and after, the generators are protected by current limiters instead of circuit breakers.

ALTERNATORS

Two 50-ampere, 24-volt, belt-driven alternators are controlled by two transistorized electronic voltage regulators. Only one regulator is operable in the system at any one time. The remaining regulator is used as an alternate or standby unit. When switched into the circuit, either regulator will adjust alternator output to the required electr1cal load, including battery recharging. Selection of the regulators is provided by a two-position selector switch below the pilot's subpanel. On TC-1913, TC-1 936 and after, the alternators are protected by current limiters instead of circuit breakers.

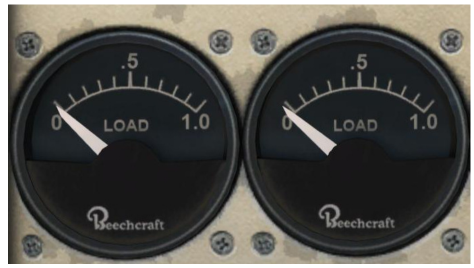


Figure 78

Individual alternator output is indicated by two loadmeters on the instrument panel (figure 78). The loadmeters give a percentage reading of the load on the system.

Two warning lights (figure 79), placarded ALTERNATOR-L-R, located in the floating instrument panel, will illuminate whenever the respective alternator is disconnected from the bus by low voltage, or an over-voltage condition, or with the switch in the OFF position. Any time a failure is detected, the appropriate alternator should be turned off. These lights can be tested by the TEST - WARN LIGHT switch, located on the floating instrument panel.


Figure 79

STARTERS

Figure 80

The starters (figure 80)are relay-controlled and are actuated by rotary type, momentary-on switches incorporated in the magneto/start switches located on the pilot's side panel. To energize the starter circuit, hold the magneto/start switch in the START position. After starting, release the switch to the BOTH position.

EXTERNAL POWER

The external power receptacle is located in the outboard side of the left nacelle and accepts a standard AN type plug. The power unit should be capable of delivering at least 300 amperes for starting. Before connecting an external power unit, turn the electrical systems and avionics off to avoid damage due to electrical surges.

If the unit does not have a standard AN type plug, check the polarity (negative ground) and connect the positive lead from the external power unit to the center and aft post of the airplane's receptacle. The negative lead connects to the front post. When external power is connected, the battery switch should be turned on. If polarity is reversed, a diode in the coil circuit will prevent contactor operation.

LIGHTING SYSTEM

INTERIOR LIGHTING

Interior lights are controlled by a series of three rheostat knobs located on the center console below the trim wheels (figure 81). A courtesy light located in the door will be illuminated any time the door is in the open position. The cabin dome light is operated by an OFF-ON switch forward of the light. Individual reading lights above the standard third and fourth or the optional fifth and sixth seats are operated by switches between the air and light outlets. Three rheostat switches are located on the control console. One switch adjusts the intensity of the instrument flood lights located under the glareshield.

Figure 81

Lighting for the instruments is controlled by the second switch. The third switch regulates the lighting for the electrical panel, avionics panel and the trim tab indicators.

The magnetic compass light, outside air temperature indicator light and map light are operated by a switch on the pilot's control wheel.

EXTERIOR LIGHTING

The switches for the navigation lights, landing lights, rotating beacons, nose gear taxi light and wing ice light(s) are grouped along the top of the pilot's subpanel. The landing lights in the leading edge of each wing tip are operated by separate switches. For longer battery and lamp service life, use the landing lights only when necessary. Avoid prolonged operation, during ground maneuvering, which could cause overheating. An optional taxi light is offered as an alternate for use during ground operation. At night, reflections from rotating anti-collision lights on clouds, dense haze, or dust can produce optical illusions and vertigo.

Figure 82

The use of these lights may not be advisable under instrument or limited VFR conditions.

HEATING AND VENTILATION SYSTEM

CABIN HEATING

A combustion heater on the nose cone supplies heated air to the cabin (see figure 83). Outlets are located forward of the pilot and copilot seats, at the rear of the copilot's seat, and at the rear of the right passenger seat. The fifth outlet provides heated air for windshield defrosting.

In flight, fresh ram air enters an intake on each side of the nose cone, passes through the heater and is distributed to the cabin outlets. For ground operation, a blower maintains airflow through the system.

If a malfunction resulting in dangerously high temperatures should occur, a heat actuated circuit breaker, located on the heater, will render the heater system, except the blower, inoperative. MAKE CERTAIN ANY MALFUNCTION CAUSING THE OVERHEAT CIRCUIT BREAKER TO POP IS CORRECTED BEFORE ATTEMPTING TO OPERATE THE HEATER AGAIN.

HEATER OPERATION

1. A three-position switch, placarded BLOWER, OFF, and HEATER, is located on the pilot's subpanel. To place the heating system in operation, move the switch to the HEATER position.

2. The CABIN AIR T-handle control, which regulates the amount of intake air, is below the left side of the pilot's subpanel. Push the CABIN AIR control full forward.

3. Pull out the CABIN HEAT control to the right of the CABIN AIR control to increase the temperature of the heated air. Push the CABIN HEAT control in to decrease temperature.

4. For windshield defrosting, push in the DEFROST control located to the right of the CABIN HEAT control.

5. To direct heated air onto the pilot's feet, pull out the PILOT AIR control to the right of the DEFROST control.

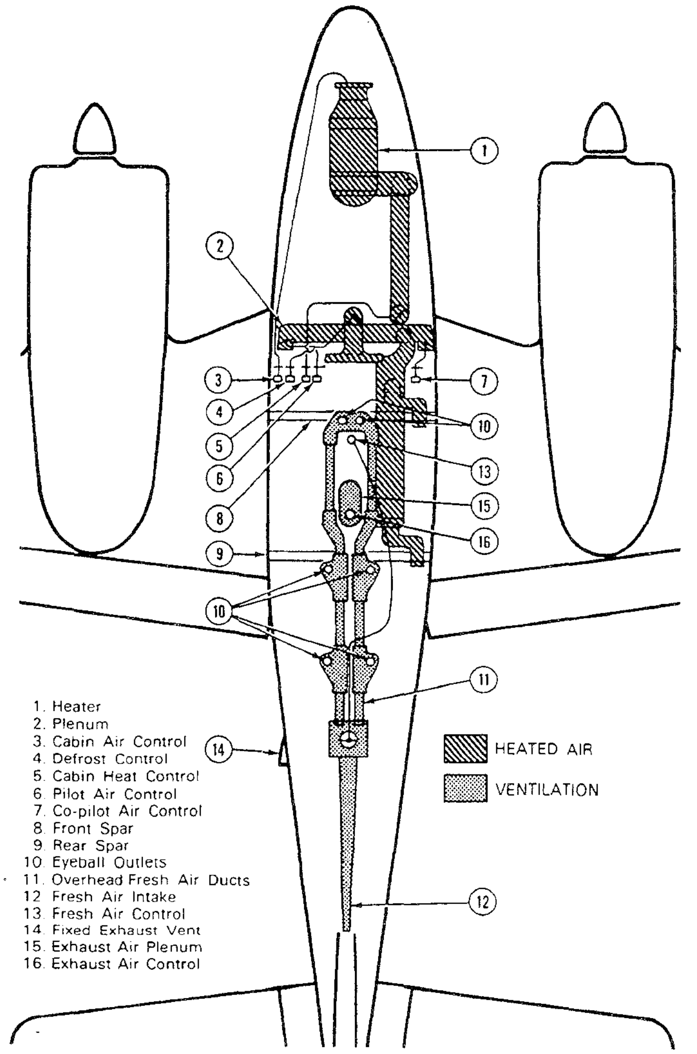
6. The COPILOT AIR control, identical to the PILOT AIR control, is located below the right side of the instrument panel.

HEAT REGULATION

For maximum heat, the CABIN AIR control can be pulled partially out to reduce the volume of incoming cold air and permit the heater to raise the temperature of the admitted air. However, if the CABIN AIR control is pulled out more than halfway, the heater will not operate.

The volume of air available for the pilot outlet and the co-pilot outlet can be divided between the two outlets as desired by adjusting each control individually. More heated air will be available for defrosting by reducing the flow of air from the pilot outlet, co-pilot outlet, or both.

The PILOT AIR and CO-PILOT AIR controls can be used to regulate the amount of air distributed to the two rear outlets.



ENVIRONMENTAL SCHEMATIC

Figure 83

HEATER BLOWER

When the three-position switch on the pilot's subpanel is placed in either the HEATER position or the BLOWER position, the blower will operate if the landing gear is in the extended position and the CABIN AIR control is more than halfway in. The blower will automatically shut off if the landing gear is retracted or the CABIN AIR control is pulled out approximately halfway.

CABIN VENTILATION

In flight, to provide unheated air for the same cabin outlets used for heating, push the CABIN AIR and CABIN HEAT controls forward.

For ventilation during ground operation, push the CABIN AIR control forward and place the three position switch on the pilot's subpanel in the BLOWER position.

EXHAUST VENTS

The adjustable cabin air exhaust vent is located aft of the radio speaker in the overhead panel. The overhead vent can be closed by a control located in the overhead panel. In addition, a fixed exhaust vent is located in the aft cabin.

INDIVIDUAL FRESH AIR OUTLETS

Fresh ram air from the intake on the left side of the dorsal fairing is ducted to individual outlets above each seat, including the optional fifth and sixth seats. A master control in the overhead panel just aft of the front air outlets enables the pilot to adjust the amount of ram air available to all outlets. The volume of air at each outlet can be regulated by rotating the outlet. Each outlet can be positioned to direct the flow of air as desired.

OXYGEN SYSTEM

NOTE

The function and operation of the onboard oxygen system is not modeled on the MilViz Baron 55.

PITOT AND STATIC SYSTEM

The pitot and static system provides a source of impact and static air for the operation of flight instruments.

PITOT SYSTEM

A standard pitot tube for the pilot's flight instruments is located under the left wing and the optional pitot tube for the copilot's instruments is located under the right wing.

Left and right pitot heat switches, located on the pilot's left subpanel, supply heat to the left and right pitot masts respectively.

The pitot system needs no drain because of the location of the components.

STATIC SYSTEM

Static air is taken from a flush static port located on each side of the aft fuselage. The static air is routed to the rate-of-climb indicator, altimeter and airspeed indicator.

The static air line is drained at the emergency static air source by raising the lever to the emergency static air source position. Return the lever to normal position after the line is completely drained.

The emergency static air source is designed to provide a source of static pressure to the instruments from inside the fuselage should the outside static air ports become blocked. An abnormal reading of the instruments supplied with static air could indicate a restriction in the outside static air ports. A lever on the lower sidewall adjacent to the pilot, is placarded OFF NORMAL, ON EMERGENCY. When it is desired or required to use this alternate source of static air, select the ON EMERG ENCY position. To recognize the need and procedures for the use of emergency static air, refer to EMERGENCY PROCEDURES. Airspeed Calibrations and Altimeter Corrections charts are in the PERFORMCNCE section.

VACUUM SYSTEM

Suction for the vacuum-operated gyroscopic flight instruments is supplied by two engine-driven vacuum pumps, interconnected to form a single system. If either pump fails, check valves automatically close and the remaining pump continues to operate all gyro instruments. A suction gage on the instrument panel (figure 84) indicates the amount of suction in the vacuum system in inches of mercury. Two red buttons on the gage serve as source failure indicators, each for its respective side of the system.

Figure 84

STALL WARNING

A stall warning horn on the cabin forward bulk head sounds a warning signal while there is time for the pilot to correct the attitude. The horn is triggered by a sensing vane on the leading edge of the left wing and is effective in all flight attitudes and at all weights and airspeeds. Irregular and intermittent at first, the warning signal will become steady as the airplane approaches a complete stall.

In icing conditions, stalling airspeeds should be expected to increase due to the distortion of the wing airfoil when ice has accumulated on the airplane. For the same reason, stall warning devices tend to lose their accuracy. The sensing vane is installed on a plate that can be electrically heated, preventing ice from forming on the vane of the transducer. A switch on the pilot's subpanel, placarded PITOT HEAT, supplies power to the heated pitot mast and to the heating plate at the stall warning transducer. However, any accumulation of ice in the proximity of the stall warning vane reduces the probability of accuracy in the stall warning system whether or not the vane itself is clear of ice. For this reason, it is advisable to maintain an extra margin of airspeed above the stall speed.

ICE PROTECTION SYSTEMS

SURFACE DEICE SYSTEM

Deice boots bonded to the leading edges of the wings and the tail surfaces are operated by engine-driven pump pressure. Compressed air, after passing through the pressure regulator, goes to the distributor valve. When the deice system is not in operation, the distributor valve applies vacuum to the boots to deflate and hold the boots flat against the surface. Then, when the deice system is operated, the distributor valve changes from vacuum to pressure and the boots inflate. After the cycle is completed, the valve returns to vacuum hold down.

The de-icing control switches are located on the left section of the pilot's lower subpanel (figure 85). A three-position, spring loaded switch, with a center OFF position, a MAN (manual) down position, and an

Figure 85

up AUTO (automatic) position, controls the system. When the switch is in the AUTO position, the deice boots inflate for a period of five to six seconds, then deflate automatically and return to the vacuum hold down position. The switch must be tripped for each complete cycle. In the MAN position the deice boots inflate as long as the switch is held in this position. When the switch is released, the boots deflate and go to the vacuum hold down condition.

Deice boots are designed to remove ice after it has accumulated, rather than prevent its formation. If the rate of ice accumulation is slow, best results are obtained by leaving the deice system off until 1/2 to 1 inch of ice accumulates. Bridging can occur if boots are actuated too early or too frequently.

The wing ice light(s), used to check for ice accumulation during night operation, illuminates the wing leading edge. The light switch is on the pilot's subpanel.

PROPELLER AND WINDSHIELD:

ANTI-ICE SYSTEM (FLUID FLOW)

NOTE

The function and operation of the fluid flow style propeller and windshield anti-ice systems are not modeled on the MilViz Baron 55.

The system is designed to prevent the formation of ice. Always place the system in operation before encountering icing conditions.

Ice is prevented from forming on the propeller blades by wetting the blade anti-ice boots with anti-icing fluid. The anti-ice pump delivers a constant flow of fluid from the supply tank to the blade boots. The pump is controlled by an ON-OFF switch located on the pilot's subpanel.

Windshield anti-ice (when installed) receives anti-ice fluid from the same source as the propeller anti-ice system. Ice is prevented from forming on the windshield by wetting the windshield surface with anti-ice fluid. This combined system is controlled by a three position switch, MOM ON-OFF-ON, located on the pilot's subpanel. The system will not function unless the propeller anti-ice pump switch is turned ON. For windshield system only, the flow is controlled by an ON-OFF switch. An indicator on the right side of the instrument panel indicates the amount of fluid in the supply tank.

With a full reservoir, system endurance is:

Windshield:	approx. 36 min.
Prop Anti-ice Only:	approx. 120 min.
Prop & Windshield:	approx. 28 min.

ELECTROTHERMAL PROPELLER DEICE (2 and 3 BLADES)

NOTE

The electrothermal propeller deice system is modeled on the MilViz Baron 55.

Propeller ice removal is accomplished by the electrically heated deice boots bonded to each propeller blade. The system uses the aircraft electrical power to heat portions of the deice boots in a sequence controlled by a timer. The system is controlled by an ON-OFF switch on the pilot's subpanel (figure 85). When the system is turned on the ammeter will register 7 to 12 amperes on the 2 blade propeller, or 14 to 18 amperes on the 3 blade propeller. The system can be operated continuously in flight; it will function automatically until the switch is turned off. Propeller imbalance can be relieved by varying rpm. Increase rpm briefly and then return to the desired setting. Repeat if necessary.

CAUTION

Do not operate the system with the engines inoperative.

PITOT HEAT

Heating elements are installed in the pitot mast(s). Each heating element is controlled by an individual switch located on the pilot's subpanel. The switches are placarded PITOT HEAT - LT - RT, and should remain off during ground operations, except for testing or for short intervals of time to remove ice or snow from the mast(s).

STALL WARNING ANTI-ICE (Optional)

The mounting pad and the stall warning vane are equipped with a heating element that is activated any time the switch placarded PITOT HEAT - LT. is on.

HEATED FUEL VENTS

The fuel system vents, one located on the underside of each wing outboard of the nacelle, are provided with heating elements controlled by the FUEL VENT switch on the pilot's subpanel.

ENGINE BREAK-IN INFORMATION

Use a straight mineral oil as recommended by the engine manufacturer throughout the break-in period. Drain the initial oil at 20 to 30 hours, replace with new mineral oil which is to be used until oil consumption stabilizes, usually a total of about 50 hours.

Drain and replace the engine oil as recommended in HANDLING, SERVICING AND MAINTENANCE. If operating conditions are unusually dusty or dirty, more frequent oil changes may be necessary. Oil changes are more critical during the break-in period than at any other time.

Use full throttle at recommended rpm for every take-off and maintain until at least 400 feet AGL, then reduce as necessary for cruise climb or cruise. Maintain the highest power recommended for cruise operations during the break-in period, avoiding altitudes above 8000 feet. Interrupt cruise power every 30 minutes or so by smoothly advancing to take-off power settings for about 30 seconds, then returning to cruise power settings.

Avoid long power-off descents especially during the break-in period. Maintain sufficient power during descent to permit cylinder head temperatures to remain in the green arc.

Minimize ground operation time, especially during warm weather. During the break-in period, avoid engine idling in excess of 15 minutes, especially in high ambient temperatures.

SECTION 8
CREDITS AND DISCLAIMER

CREDITS

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