Beechcraft®

SIERRA®

A24R

(Serials MC-2 thru MC-150)

Pilot's Operating Handbook
and
FAA Approved Airplane Flight Manual

FAA Approved in Normal and Utility Category based on CAR 3. This document must be carried in the airplane at all times and be kept within reach of the pilot during all flight operations.

This handbook includes the material required to be furnished to the pilot by CAR 3.

Airplane Serial Number: _____

Airplane Registration Number: _____

FAA Approved: _____

A. C. Jackson
Beech Aircraft Corporation
DOA CE-2

This handbook supersedes all BEECH published owner's manuals, flight manuals, and check lists issued for this airplane with the exception of FAA Approved Airplane Flight Manuals.

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INTRODUCTION

This Pilot's Operating Handbook and FAA Approved Airplane Flight Manual is in the format and contains data recommended in the GAMA (General Aviation Manufacturers Association) Handbook Specification Number 1. Use of this specification by all manufacturers will provide the pilot the same type data in the same place in all of the handbooks.

In recent years BEECHCRAFT handbooks contained most of the data now provided, however, the new handbooks contain more detailed data and some entirely new data.

For example, attention is called to Section X SAFETY INFORMATION. While little of the information is new and every pilot has been exposed to the basic fundamentals, BEECHCRAFT feels it is highly important to have SAFETY INFORMATION in a condensed form in the hands of the pilots. The SAFETY INFORMATION should be read and studied. Periodic review will serve as a reminder of good piloting techniques.

WARNING

Use only genuine BEECHCRAFT or BEECHCRAFT approved parts obtained from BEECHCRAFT approved sources, in connection with the maintenance and repair of Beech airplanes.

Genuine BEECHCRAFT parts are produced and inspected under rigorous procedures to ensure airworthiness and suitability for use in Beech airplane applications. Parts purchased from sources other than BEECHCRAFT, even though outwardly identical in appearance, may not have

had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in an airplane.

Salvaged airplane parts, reworked parts obtained from non-BEECHCRAFT approved sources, or parts, components, or structural assemblies, the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render the part, component or structural assembly, even though originally manufactured by BEECHCRAFT, unsuitable and unsafe for airplane use.

BEECHCRAFT expressly disclaims any responsibility for malfunctions, failures, damage or injury caused by use of non-BEECHCRAFT approved parts.

TABLE OF DIVISIONS

SECTION I

GENERAL

TABLE OF CONTENTS

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THANK YOU . . . for displaying confidence in us by selecting a BEECHCRAFT airplane. Our design engineers, assemblers and inspectors have utilized their skills and years of experience to ensure that the BEECHCRAFT meets the high standards 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 airplane. Suggestions and recommendations have been made within it to aid in obtaining maximum performance without sacrificing economy. Be familiar with, and operate the airplane in accordance with the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual, and/or placards which are located in the airplane.

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

All limits, procedures, safety practices, time limits, servicing, and maintenance requirements contained in

this handbook are considered mandatory for 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 HANDBOOK

The Pilot's Operating Handbook is designed so that necessary documents may be maintained for the safe and efficient operation of the airplane. 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 I	General
Section II	Limitations
Section III	Emergency Procedures
Section IV	Normal Procedures
Section V	Performance
Section VI	Weight and Balance/Equipment List
Section VII	Systems Description
Section VIII	Handling, Servicing and Maintenance
Section IX	Supplements
Section X	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 BEECHCRAFT Service Bulletins

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 information 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 Bulletin No. 2001.

BEECH AIRCRAFT CORPORATION EXPRESSLY RESERVES THE RIGHT TO SUPERSEDE, CANCEL, AND/OR DECLARE OBSOLETE, WITHOUT PRIOR NOTICE, ANY PART, PART NUMBER, KIT OR PUBLICATION REFERENCED IN THIS HANDBOOK.

The owner/operator should always refer to all supplements, whether STC Supplements or 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

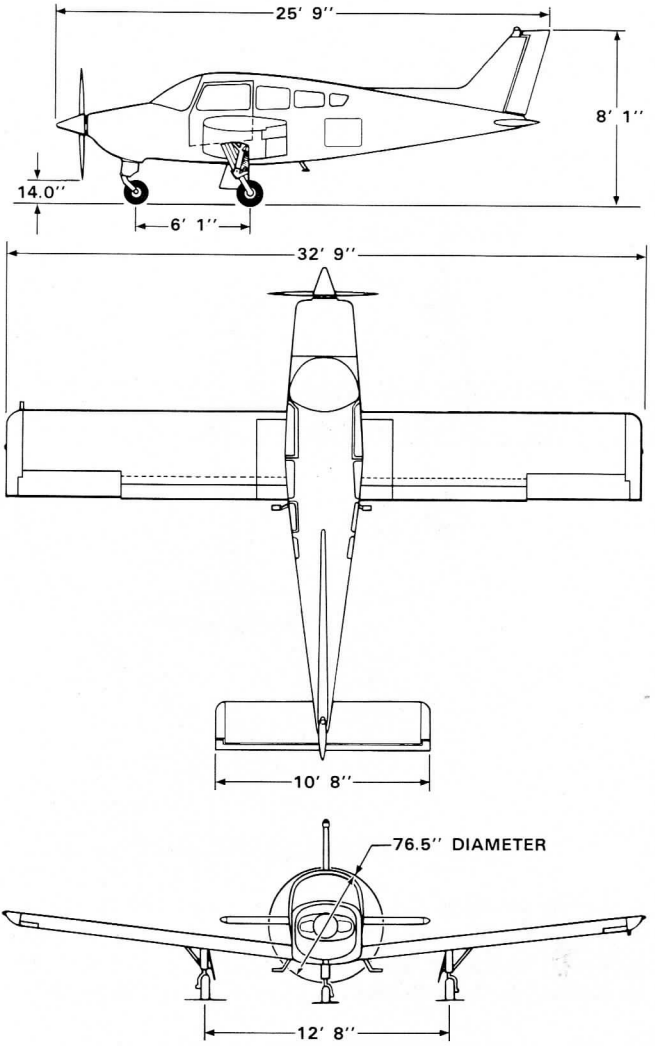
Section IX contains the FAA Approved Airplane Flight Manual Supplements headed by a Log of Supplements page. On the "Log" page is a listing of the FAA Approved Supplemental Equipment available for installation on the airplane. When new supplements are received or existing supplements are revised, a new "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

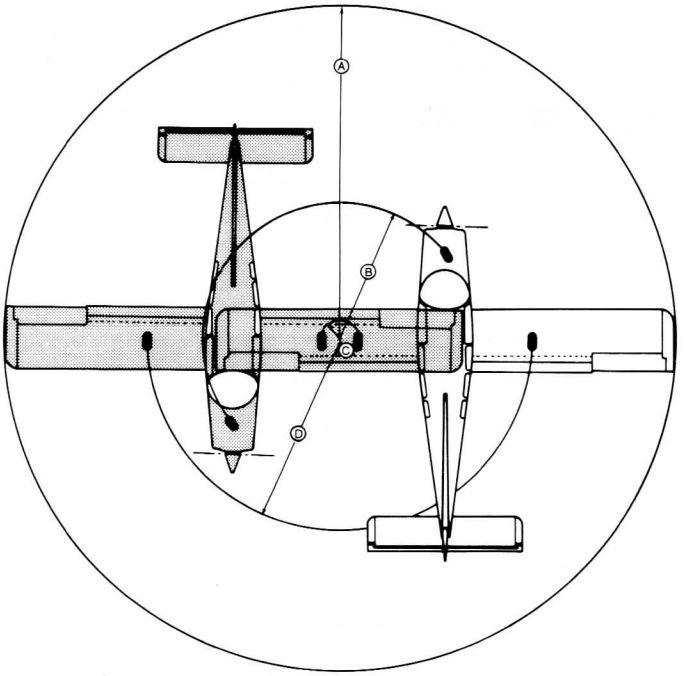
Upon receipt of a new or revised supplement, compare the "Log" page just received with the existing "Log" page in the manual. Retain the "Log" page with the later date on the bottom of the page and discard the other log.

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.



AIRPLANE THREE-VIEW



GROUND TURNING CLEARANCE

Ⓐ Radius for Wing Tip	26 ft. 10 in.
Ⓑ Radius for Nose Wheel	12 ft. 1 in.
Ⓒ Radius for Inside Gear	4 ft. 1 in.
Ⓓ Radius for Outside Gear	16 ft. 9 in.

TURNING RADII ARE CALCULATED USING FULL STEERING, ONE BRAKE AND PARTIAL POWER.

DESCRIPTIVE DATA

ENGINE

One Avco Lycoming engine model IO-360-A1B or IO-360-A1D. It is a fuel-injected, direct-drive, air-cooled, horizontally-opposed, 4 cylinder, 200-hp-rated engine.

Take-off and maximum continuous operation (sea level): 2700 rpm, full throttle.

PROPELLER

McCauley constant-speed, two-blade, aluminum-alloy propeller using 2D34C9 hub with 78FBM-1.5 blades. Diameter is 76.5 inches. No additional cutoff permitted.

FUEL

Aviation Gasoline 100 (green), or 100LL (blue) minimum grade.

*59.8-gallon system
(29.9 gallons each tank) ..... *58.8 gallons usable

Each tank has provisions for partial filling to:

20 gallons each tank ..... 38.2 gallons usable
15 gallons each tank ..... 28.2 gallons usable

After compliance with BEECHCRAFT S.I. No. 0624-281:

*59.8-gallon system
(29.9 gallons each tank) ..... *52.2 gallons usable

Each tank has provisions for partial filling to:

20 gallons each tank ..... 32.2 gallons usable
15 gallons each tank ..... 22.2 gallons usable

*Value given is nominal. Tank capacity will vary with temperature and manufacturing tolerances.

OIL CAPACITY

The oil capacity is 8 quarts.

APPROVED OIL TYPES

Avco Lycoming Specification Number 301E approves for use lubricating oils which conform to both MIL-L-6082B straight mineral type and MIL-L-22851 ashless dispersant lubricants for airplane engines. Refer to the Approved Engine Oils table in the HANDLING, SERVICING AND MAINTENANCE section for a list of approved products.

MAXIMUM CERTIFICATED WEIGHTS

NORMAL CATEGORY

Maximum Ramp Weight	2758 lbs
Maximum Take-Off Weight	2750 lbs
Maximum Landing Weight	2750 lbs

UTILITY CATEGORY

Maximum Ramp Weight	2383 lbs
Maximum Take-Off Weight	2375 lbs
Maximum Landing Weight	2375 lbs

ALL CONFIGURATIONS

Maximum Zero Fuel Weight	No Structural Limit
Maximum Weight in Baggage Compartment	270 lbs.

CABIN AND ENTRY DIMENSIONS

Length (maximum)	7 ft 11 in.
Height (maximum)	4 ft 0 in.
Width (maximum)	3 ft 8 in.
Cabin Door	36 in. wide by 38 in. high

BAGGAGE SPACE AND ENTRY DIMENSIONS

Compartment Volume	19.5 cu ft
Door Width (Minimum)	23.6 in.
Door Height (Minimum)	18.5 in.

SPECIFIC LOADINGS (2750 lbs.)

Wing Loading	18.84 lbs/sq ft
Power Loading	13.75 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.

GENERAL 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. IAS values published in this handbook assume zero instrument error.

KCAS Calibrated Airspeed expressed in "knots".

KIAS Indicated Airspeed expressed in "knots".

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

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

V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V_{LE}	Maximum Landing Gear Extended Speed is the maximum speed at which an airplane can be safely flown with the landing gear extended.
V_{LO}	Maximum Landing Gear Operating Speed is the maximum speed at which the landing gear can be safely extended or retracted.
V_{NE}	Never Exceed Speed is the speed limit that may not be exceeded at any time.
V_{NO} or V_C	Maximum Structural Cruising Speed is the speed that should not be exceeded except in smooth air and then only with caution.
V_S	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V_{SO}	Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
V_Y	Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.
Cruise Climb	Recommended Climb Speed for enroute climb.

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 in Hg. (1013.2 millibars); (4) The temperature gradient from sea level to the altitude at which the temperature is -56.5° C (-69.7° F) is -0.00198° C (-0.003566° F) per foot and zero above that altitude.
OAT	Outside Air Temperature is the free air static temperature, obtained either from 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 subscale has been set to 29.92 in Hg. (1013.2 millibars).
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.

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 Graph.

POWER TERMINOLOGY

Take off and Maximum Continuous	Highest power rating not limited by time.

ENGINE CONTROLS AND INSTRUMENTS

Throttle Control	Used to control power by introducing fuel-air mixture into the intake passages of the engine. Settings are reflected by readings on the manifold pressure gage.
Propeller Control	This control requests the propeller governor to maintain engine/propeller rpm at a selected value by controlling propeller blade angle.
Mixture Control	This control is used to set fuel flow in all modes of operation and cuts off fuel completely for engine shut down.
EGT (Exhaust Gas Temperature Indicator)	This indicator is used to identify the lean and best power fuel flow for various power settings.

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

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 Velocity	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.
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.
PPH	Pounds 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 (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
C.G. Arm	The arm obtained by adding the airplane's individual moments and dividing the sum by the total weight.
C.G. Limits	The extreme center of gravity locations within which the airplane must be operated at a given weight.
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 take-off weight, or ramp weight if applicable, and basic empty weight.
Maximum Ramp Weight	Maximum weight approved for ground maneuvering. (It includes weight of start, taxi, and run-up fuel).
Maximum Take-off 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.
Tare	The weight of chocks, blocks, stands, etc., used on the scales when weighing an airplane.
Leveling Points	Those points which are used during the weighing process to level the airplane.
Jack Points	Points on the airplane identified by the manufacturer as suitable for supporting the airplane for weighing or other purposes.

SECTION II

LIMITATIONS

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

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		IAS		REMARKS
	KNOTS	MPH	KNOTS	MPH	
Never Exceed V_{NE}	168	193	168	193	Do not exceed this speed in any operation
Maximum Structural Cruising V_{NO} or V_C	143	165	143	165	Do not exceed this speed except in smooth air and then only with caution
Maneuvering V_A	125	144	125	144	Do not make full or abrupt control movements above this speed
Maximum Flap Extension/ Extended V_{FE}	96	110	96	110	Do not extend flaps or operate with flaps extended above this speed
Maximum Landing Gear Operating/ Extended V_{LO} and V_{LE}	135	155	135	155	Do not extend or operate with landing gear extended above this speed
Maximum Landing Gear Retraction	113	130	113	130	Do not retract landing gear above this speed.

*AIRSPEED INDICATOR MARKINGS

MARK-ING	CAS		IAS		SIGNIF-ICANCE
	KTS	MPH	KTS	MPH	
White Arc	56-96	65-110	56-96	65-110	Full Flap Operating Range
Green Arc	65-143	75-165	65-143	75-165	Normal Operating Range
Yellow Arc	143-168	165-193	143-168	165-193	Operate With Caution, Only in Smooth Air
Red Line	168	193	168	193	Maximum Speed For All Operations

* The limits of the arcs on the airspeed indicator are marked in CAS values.

POWER PLANT LIMITATIONS

ENGINE

One Avco Lycoming engine model IO-360-A1B or IO-360-A1D.

Take-off and Maximum
Continuous Power ..... Full throttle or 2700 rpm whichever occurs first.

OPERATING LIMITATIONS

Engine Speed ..... 2700 rpm
*Oil Temperature ..... 245°F
Oil Pressure
Minimum ..... 25 psi
Maximum ..... 100 psi
Fuel Pressure
Minimum ..... 0.5 psi
Maximum ..... 12.0 psi
Mixture - Set per leaning instructions on performance charts.

*All temperatures are established for a 100°F day.

FUEL GRADES

Aviation Gasoline 100 (green), or 100LL (blue) minimum grade.

FUEL ADDITIVES

Alcor TCP Concentrate mixed according to the instructions provided by Alcor, Inc.

APPROVED OIL TYPES

Avco Lycoming Specification Number 301E approves for use lubricating oils which conform to both MIL-L-6082B straight mineral type and MIL-L-22851 ashless dispersant lubricants for airplane engines. Refer to the Approved Engine Oils table in the HANDLING, SERVICING AND MAINTENANCE section for a list of approved products.

PROPELLER SPECIFICATIONS

McCauley constant speed, two-blade aluminum-alloy propeller using 2D34C9 hub with 78FBM-1.5 blades. Pitch settings at 30-inch station, Low 14.2°, High 27.5°. Diameter is 76.5 inches, no additional cutoff permitted.

Avoid continuous operation between 2000 and 2150 rpm above 20 in. Hg manifold pressure.

POWER PLANT INSTRUMENT MARKINGS

OIL TEMPERATURE

Caution (Yellow Arc)	60° to 120°F
Operating Range (Green Arc)	120° to 245°F
Maximum (Red Line)	245°F

OIL PRESSURE

Minimum Pressure (Yellow Arc)	25 to 60 psi
Operating Range (Green Arc)	60 to 90 psi
Maximum Pressure (Red Line)	100 psi

FUEL FLOW

Minimum (Red Line)	0.5 psi
Operating Range (Green Arc)	4.0 to 16.6 gph
Maximum (Red Line)	12.0 psi

TACHOMETER

Engine Warm-up	800 to 1200 rpm
Restricted Operation (Red Band)	2000 to 2150 rpm
Normal Operating Range (Green Arc)	2200 to 2700 rpm
Maximum RPM (Red Radial)	2700 rpm

MANIFOLD PRESSURE

Operating Range (Green Arc)	15 to 28.7 in. Hg
Maximum (Red Line)	28.7 in. Hg

MISCELLANEOUS INSTRUMENT MARKINGS

INSTRUMENT AIR

Operating Range (Green Arc) ..... 4.3 to 5.9 in. Hg

FUEL QUANTITY

After compliance with BEECHCRAFT S.I. No. 0624-281

Yellow Band ..... E to 3/8 full

WEIGHT LIMITS

NORMAL CATEGORY

Maximum Ramp Weight ..... 2758 lbs

Maximum Take-off and Landing Weight ..... 2750 lbs

UTILITY CATEGORY

Maximum Ramp Weight ..... 2383 lbs

Maximum Take-off and Landing Weight ..... 2375 lbs

ALL CONFIGURATIONS

Zero Fuel Weight ..... No Structural Limitation

Maximum Baggage Compartment Load ..... 270 lbs

CENTER OF GRAVITY LIMITS (Gear Down)

NORMAL CATEGORY (2750 POUNDS)

Forward: 110 inches aft of datum to 2375 lbs with straight line variation to 113 inches at 2750 lbs.

Aft: 118.3 inches aft of datum at all weights.

UTILITY CATEGORY (2375 POUNDS)

Forward: 110 inches aft of datum to 2375 lbs.

Aft: 113.0 inches aft of datum to 2375 lbs.

REFERENCE DATUM

Datum is 103 inches forward of wing leading edge.

MAC length is 52.7 inches.

MANEUVER LIMITS

This is a normal and utility category airplane. Spins are prohibited. No acrobatic maneuvers are approved except those listed below. Maximum slip duration is 30 seconds.

APPROVED MANEUVERS (2750 POUNDS)

MANEUVER	*ENTRY SPEED (CAS)*
(Bank angles, no more than 60°)	
Chandelle	125 kts/144 mph
Steep Turn	125 kts/144 mph
Lazy Eight	125 kts/144 mph
Stall (Except Whip)	Use slow deceleration

FLIGHT LOAD FACTORS

NORMAL CATEGORY (2750 POUNDS)

Flight maneuvering load factor

Flaps Up	+3.8, -1.9
Flaps Down	+1.9

UTILITY CATEGORY (2375 POUNDS)

Flight maneuvering load factor

Flaps Up	+4.4, -2.2
Flaps Down	+2.2

MINIMUM FLIGHT CREW

One (1) Pilot

KINDS OF OPERATION LIMITS

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, 91.170) 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 airplane such as 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

FLIGHT IN KNOWN ICING CONDITIONS PROHIBITED.

LEGEND

Numbers refer to quantities required to be operative for a specified condition.

(-) Indicates that the item may be inoperative for the specified condition.
(*) Refer to the REMARKS AND/OR EXCEPTIONS column for explicit information or reference.

SYSTEM and/or COMPONENT	VFR Day	VFR Night	IFR Day	IFR Night	Remarks and/or Exceptions
GENERAL					
Overwater flight	*	*	*	*	-*Per FAR 91.33
COMMUNICATIONS					
VHF communications system	*	*	*	*	-*Per FAR 91.33
ELECTRICAL POWER					
Battery	1	1	1	1	
DC alternator	1	1	1	1	

SYSTEM and/or COMPONENT	VFR Day	VFR Night	IFR Day	IFR Night	Remarks and/or Exceptions
EQUIPMENT AND FURNISHING					
Seat belts	1	1	1	1	- Per Person or Per FAR 91.33
Emergency locator transmitter	1	1	1	1	- Per FAR 91.52
FIRE PROTECTION					
Portable fire extinguisher	*	*	*	*	-*Optional

FLIGHT CONTROLS					
Stabilator trim tab indicator	1	1	1	1	- May be inoperative for ferry flight provided tabs are visually checked in the neutral position prior to takeoff and checked for full range of operation.
Flap position indicator (On electric flap system)	1	1	1	1	- May be inoperative provided flap travel is visually inspected prior to takeoff.
Stall warning	1	1	1	1	
FUEL EQUIPMENT					
Auxiliary fuel pump	1	1	1	1	
Engine driven fuel pump	1	1	1	1	
Fuel quantity indicator	2	2	2	2	- One may be inoperative provided other side is operational and amount of fuel on board can be established to be adequate for the intended flight.
Fuel flow indicator	1	1	1	1	

SYSTEM and/or COMPONENT	VFR Day	VFR Night	IFR Day	IFR Night	Remarks and/or Exceptions
ICE AND RAIN PROTECTION					
Emergency static air source	*	*	*	*	-*Optional
Pitot heater	*	*	1	1	-*Optional
LANDING GEAR					
Landing gear motor	1	1	1	1	- May be inoperative provided operations are continued only to a point where repairs can be accomplished. Gear must be left down. Do not retract gear with hand crank.
Landing gear position lights	4	4	4	4	
Landing gear warning horn	1	1	1	1	

LIGHTS					
Cockpit and instrument lights	-	*	-	*	-*Lights must be operative.
Taxi light	-	-	-	-	
Landing light	-	*	-	*	-*Per FAR 91.33
Rotating beacon	*	1	*	1	-*Optional
Position light	-	3	-	3	
NAVIGATION INSTRUMENTS					
Altimeter	1	1	1	1	
Airspeed indicator	1	1	1	1	
Vertical speed	-	-	-	-	
Magnetic compass	1	1	1	1	
Attitude indicator	-	-	1	1	
Turn coordinator	-	-	1	1	
Directional gyro	-	-	1	1	
Clock	-	-	1	1	
Transponder	*	*	*	*	-*Per FAR 91.24, 91.90, 91.97
Navigation equipment	-	-	*	*	-*Per FAR 91.33

SYSTEM and/or COMPONENT	VFR Day	VFR Night	IFR Day	IFR Night	Remarks and/or Exceptions
VACUUM					
Vacuum system for instrument air	-	-	1	1	
Vacuum gage	-	-	1	1	
ENGINE INDICATING INSTRUMENTS					
Engine tachometer indicator	1	1	1	1	
Exhaust gas temperature indicator	*	*	*	*	-*Optional
Manifold pressure indicator	1	1	1	1	

ENGINE OIL INSTRUMENTS						
Oil pressure indicator	1	1	1	1	1	
Oil temperature indicator	1	1	1	1	1	

PLACARDS

On Left Side Panel (MC-2 thru MC-96) or on Left Cabin Door (MC-97 thru MC-150) (CAS):

THIS AIRPLANE MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS.

NORMAL CATEGORY

MAXIMUM DESIGN WEIGHT	2750 LBS
REFER TO WEIGHT AND BALANCE DATA FOR LOADING INSTRUCTIONS	
FLIGHT MANEUVERING LOAD FACTOR	FLAPS UP +3.8 -1.9 DOWN +1.9
MAXIMUM MANEUVERING SPEED	144 MPH

NO ACROBATIC MANEUVERS INCLUDING SPINS APPROVED

UTILITY CATEGORY

MAXIMUM DESIGN WEIGHT	2375 LBS
REFER TO WEIGHT AND BALANCE DATA FOR LOADING INSTRUCTIONS	
FLIGHT MANEUVERING LOAD FACTOR	FLAPS UP +4.4 —2.2 DOWN +2.2

NO ACROBATIC MANEUVERS APPROVED EXCEPT THOSE LISTED BELOW:

MANEUVER	MAXIMUM ENTRY SPEED
CHANDELLES	144 MPH
LAZY EIGHTS	144 MPH
STEEP TURNS	144 MPH
STALLS (EXCEPT WHIP STALLS)	SLOW DECELERATION
NOTE: MAXIMUM ALTITUDE LOSS DURING STALL	300 FT

LANDING GEAR

MAXIMUM GEAR EXTENDED SPEED	155 MPH
MAXIMUM GEAR OPERATING SPEED	EXTENSION 155 MPH RETRACTION 130 MPH

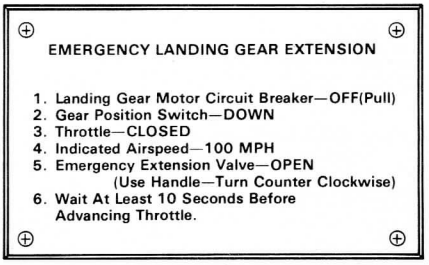
On Left Cabin Side Wall:

EMERGENCY GEAR EXTENSION HANDLE

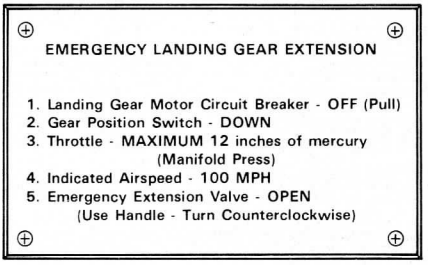
PLACARDS (Cont'd)

On Floorboard in Front of Pilot's Seat:

On Inside of Emergency Gear Extension Access Door (MC-2 thru MC-95):



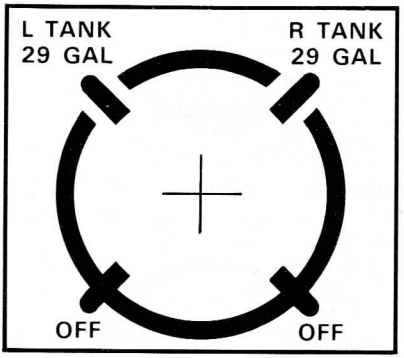
On Inside of Emergency Gear Extension Access Door (MC-2 thru MC-95 on airplanes after compliance with BEECHCRAFT S.I. No. 0438-211) (MC-96 thru MC-150) (CAS):



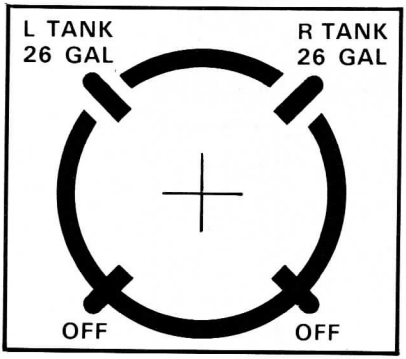
Adjacent to Engine Instrument Cluster (after compliance with BEECHCRAFT S.I. No. 0624-281):

DO NOT TAKE OFF WHEN FUEL QUANTITY GAUGE INDICATES IN YELLOW OR WITH LESS THAN 11 GALLONS IN EACH MAIN TANK. MAXIMUM SLIP DURATION IS 30 SECONDS

On Fuel Selector Panel (airplanes after compliance with BEECHCRAFT S.I. No. 0838):

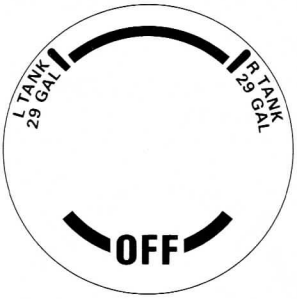


On Fuel Selector Panel (airplanes after compliance with BEECHCRAFT S.I. Nos. 0624-281 and 0838):



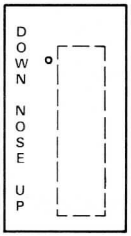
PLACARDS (Cont'd)

On Fuel Selector Panel (airplanes after compliance with BEECHCRAFT S.I. No. 1095):



On Fuel Selector Panel (airplanes after compliance with BEECHCRAFT S.I. No. 1095 and S.I. No. 0624-281):

On Pedestal Between Front Seats:



On Flap Extension Handle (CAS):

FLAPS PULL TO EXTEND, MAX SPEED 110 MPH

RETRACTED	0°
FIRST NOTCH	15°
SECOND NOTCH	25°
THIRD NOTCH	35°

On Instrument Panel:

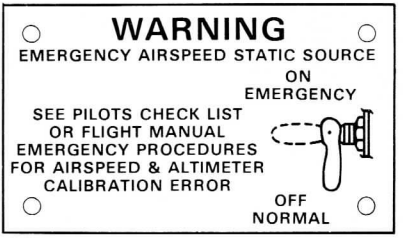
RAISE FLAPS

TO INCREASE BRAKE EFFECTIVENESS

On Instrument Panel Near Flap Switch if Electric Flaps Are Installed (CAS):

PLACARDS (Cont'd)

On Lower Sidewall Adjacent to Pilot (when installed):



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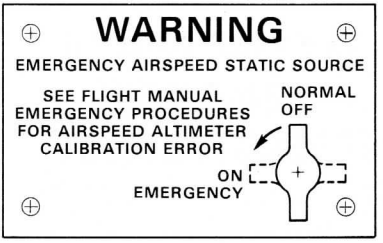
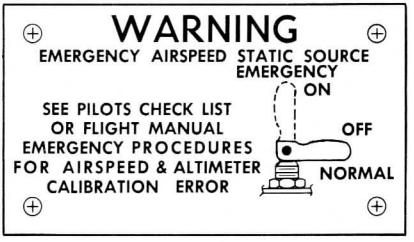


or



On Baggage Compartment Door:

TO LEVEL AIRCRAFT – LEVEL
BAGGAGE COMPARTMENT FLOOR

On Baggage Compartment Door:

BAGGAGE COMPARTMENT
270 POUNDS
MAXIMUM CAPACITY

On Aft Cabin Bulkhead:

HAT SHELF
NO HEAVY OBJECTS

PLACARDS (Cont'd)

On Bulkhead Below Hatshelf When Fifth and Sixth Seats Are Installed:

MAXIMUM FIFTH AND SIXTH SEAT
STRUCTURAL CAPACITY 250 POUNDS
REFER TO WEIGHT AND BALANCE FOR
LOADING INSTRUCTIONS

On Bulkhead Below Hatshelf When Fifth and Sixth Seats Are Installed:

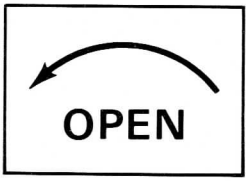
NO SMOKING IN FIFTH AND SIXTH SEAT
MAXIMUM OCCUPANT WEIGHT 250 POUNDS

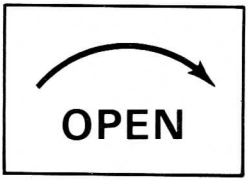
On Left Cabin Door:

EMERGENCY EXIT

1. NORMAL OPERATION-HANDLE UP OR DOWN TO OPEN
2. IN THE EVENT OF DOOR JAMMING THE DOOR MAY BE OPENED BY MEANS OF A HARD KICK TO THE CENTER SECTION OF THE DOOR

Above Right and Left Cabin Doors:





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SECTION III

EMERGENCY PROCEDURES

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

All airspeeds quoted in this section are indicated airspeeds (IAS).

EMERGENCY AIRSPEEDS

Emergency Descent ..... 135 kts/155 mph
Glide ..... 91 kts/105 mph
Emergency Landing Approach ..... 74 kts/85 mph

Stall warning horn is inoperative when BATTERY & ALT switch is turned off.

NOTE

On airplanes which have complied with BEECHCRAFT S.I. No. 1095, a fuel selector stop has been added to the fuel selector valve guard. The fuel selector stop minimizes the possibility of inadvertently turning the fuel selector valve to the OFF detent position. The stop is a spring which must be depressed before the selector valve handle can be rotated to the OFF position.

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.

ENGINE FAILURE

DURING TAKE-OFF GROUND ROLL

1. Throttle - CLOSED
2. Braking - MAXIMUM

NOTE

Conduct the following procedures immediately if it appears certain that the airplane will run off the runway. (Otherwise conduct these procedures at the pilot's discretion.)

3. Fuel Selector Valve - OFF
4. BATTERY & ALT, ALT, and FUEL BOOST switches - OFF
5. Magneto/Start Switch - OFF

AFTER LIFTOFF AND IN FLIGHT

Landing straight ahead is usually advisable. If sufficient altitude is available for maneuvering, accomplish the following:

1. Mixture - FULL RICH, then LEAN as required
2. Fuel Boost Pump - ON
3. Fuel Selector Valve - SELECT OTHER TANK (Check to feel detent and check visually)
4. Magnetos - CHECK LEFT and RIGHT, then BOTH

NOTE

The most probable cause of engine failure would be loss of fuel flow or improper functioning of the ignition system.

IF NO RESTART:

1. Establish maximum glide configuration
2. Throttle - CLOSE
3. Fuel Selector Valve - OFF
4. Mixture - IDLE CUT-OFF
5. Magneto/Start Switch - OFF
6. FUEL BOOST switch - OFF

When certain of reaching the selected landing site:

7. Airspeed - 74 kts/85 mph
8. Flaps - AS REQUIRED
9. Landing Gear - DOWN or UP (depending on terrain)
10. BATTERY & ALT and ALT switches - OFF

ENGINE DISCREPANCY CHECKS

CONDITION: ROUGH RUNNING ENGINE

1. Mixture - FULL RICH, then LEAN as required
2. Magneto/Start Switch - CHECK LEFT and RIGHT, then BOTH

CONDITION: LOSS OF ENGINE POWER

1. Fuel Flow Gage - CHECK

If fuel flow is abnormally low:

a. Mixture - FULL RICH
b. Auxiliary Fuel Pump - ON (Lean as required)
c. Auxiliary Fuel Pump - OFF if performance does not improve in a few moments

2. Fuel Quantity Indicator - CHECK for fuel supply in tank being used

If tank being used is empty:
Fuel Tank Selector Valve - SELECT OTHER FUEL TANK (feel for detent and check visually)

AIR START PROCEDURE

1. Fuel Selector Valve - SELECT TANK MORE NEARLY FULL (check to feel detent and check visually)
2. Throttle - AS REQUIRED
3. Mixture - FULL RICH
4. Propeller - AS REQUIRED
5. Fuel Boost Pump - ON OR OFF as required
6. Magneto/Start switch - BOTH

NOTE

When engine starts, adjust throttle, propeller, and mixture controls.

ENGINE FIRE

IN FLIGHT

The ventilation controls must be closed to shut off all heating system outlets so that smoke and fumes will not enter the cabin. The control labeled CABIN AIR must be pulled aft to close. The control labeled DEFROST must be pushed forward to close. In the event of an engine fire, shut down the engine as follows and make a landing:

1. Fuel Selector Valve - OFF
2. Mixture - IDLE CUT-OFF
3. Propeller - FULL FORWARD position
4. Throttle - CLOSE
5. Cabin Air Control - pull OFF
6. Defrost Valve - push OFF
7. BATTERY & ALT switch - OFF (Extending the gear can be accomplished manually if desired)
8. Magneto/Start Switch - OFF
9. Do not attempt to restart engine

ON THE GROUND

1. Fuel Selector Valve - OFF
2. Throttle - CLOSED
3. Mixture - IDLE CUT-OFF
4. BATTERY & ALT Switch - OFF
5. Magneto/Start Switch - OFF
6. Extinguish with Fire Extinguisher.

EMERGENCY DESCENT

1. Propeller - FULL FORWARD position
2. Throttle - IDLE
3. Landing Gear - DOWN
4. Airspeed - ESTABLISH 135 kts/155 mph

MAXIMUM GLIDE CONFIGURATION

1. Landing Gear - UP (Landing gear safety switch OFF if safety system is installed)
2. Flaps - UP
3. Propeller - FULL AFT position
4. Airspeed - 91 kts/105 mph

Glide distance (Zero Wind Condition) is approximately 1.7 nautical miles (2 statute miles) per 1000 feet of altitude above the terrain.

LANDING EMERGENCIES

LANDING WITHOUT POWER

When assured of reaching the landing site selected, and on final approach:

1. Airspeed - 74 kts/85 mph
2. Fuel Selector Valve - OFF
3. Mixture - IDLE CUT-OFF
4. Magneto/Start Switch - OFF
5. Flaps - AS REQUIRED
6. Landing Gear - DOWN or UP, DEPENDING ON TERRAIN
7. BATTERY & ALT, ALT, and FUEL BOOST Switches - OFF

LANDING GEAR RETRACTED - WITH POWER

If possible, choose firm sod or foamed runway. Make a normal approach, using flaps as necessary. When you are sure of making the selected landing spot:

1. Throttle - CLOSED
2. Airspeed - NORMAL APPROACH SPEED
3. Fuel Selector Valve - OFF
4. Mixture - IDLE CUT-OFF
5. Flaps - AS REQUIRED
6. BATTERY & ALT, ALT and Magneto/Start Switches - OFF
7. Keep wings level during touchdown.
8. Get clear of the airplane as soon as possible after it stops.

SYSTEMS EMERGENCIES

PROPELLER OVERSPEED

1. Throttle - RETARD TO MINIMUM CRUISE RPM
2. Airspeed - REDUCE (initiate climb to load propeller if time permits)
3. Oil Pressure - CHECK

WARNING

If loss of oil pressure was the cause of overspeed, the engine will seize after a short period of operation. If this occurs:

4. Land - SELECT NEAREST SUITABLE SITE and follow ENGINE FAILURE AFTER LIFTOFF AND IN FLIGHT procedures.

ALTERNATOR-OUT PROCEDURE

A failure of the alternator will place the entire electrical operation of the airplane on the battery. Alternator failure will be indicated by a discharging or fluctuating ammeter.

1. ALT switch - OFF
2. All nonessential electrical loads - OFF (to conserve the battery life)

WARNING

Deactivation of the battery switch, alternator switch, or alternator circuit breaker during flight is prohibited, except as required by an actual emergency.

UNSCHEDULED ELECTRIC STABILATOR TRIM

1. Airplane Attitude - MAINTAIN using stabilator control.
2. Stabilator Trim Thumb Switch (On Control Wheel) - MOVE IN DIRECTION OPPOSITE UNSCHEDULED PITCH TRIM to open circuit breaker.
3. Stabilator Trim ON-OFF Switch (On Instrument Panel) - OFF
4. Manual Stabilator Trim Control Wheel - RETRIM AS DESIRED.

NOTE

Do not attempt to operate the electric trim system until the cause of the malfunction has been determined and corrected.

LANDING GEAR MANUAL EXTENSION

Manual extension of the landing gear can be facilitated by first reducing airspeed. Then proceed as follows:

1. LDG GEAR MOTOR Circuit Breaker - OFF (PULL OUT)
2. Landing Gear Switch Handle - DOWN position
3. Throttle - 12 in. Hg (or less) of manifold pressure
4. Airspeed - 87 kts/100 mph
5. Emergency Extension Valve - OPEN (Use Emergency Gear Extension Wrench - Turn Counterclockwise)

WARNING

After landing 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 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. Emergency Extension Valve - CLOSE (use Emergency Gear Extension Wrench, turn clockwise)
2. Landing Gear Motor Circuit Breaker - PUSH IN
3. Landing Gear Switch Handle - UP

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 Correction, refer to PERFORMANCE section.

CAUTION

Be certain the emergency static air valve is in the OFF - NORMAL position when system is not needed.

UNLATCHED DOOR IN FLIGHT

If the cabin door latch is not fully engaged it may come unlatched in flight. This may occur during or just after take-off. The door will trail in a position approximately 3 inches open. A buffet may be encountered with the door open in flight. 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.

SPINS

WARNING

Intentional spins are prohibited.

RECOVERY

If a spin is entered inadvertently:

Immediately move the control column full forward and simultaneously apply full rudder opposite to the direction of the spin; continue to hold this control position until rotation stops and then neutralize all controls and execute a smooth pullout. Ailerons should be neutral and throttle in idle position at all times during recovery.

EMERGENCY SPEED REDUCTION

In an emergency, the landing gear may be used to create additional drag. Should disorientation occur under instrument conditions, the lowering of the landing gear will reduce the tendency for excessive speed build-up. This procedure would also be appropriate for a non-instrument rated pilot who unavoidably encounters instrument conditions or in other emergencies such as severe turbulence.

Should the landing gear be used at speeds higher than the maximum extension speed, a special inspection of the gear doors in accordance with shop manual procedures is required, with repair as necessary.

SECTION IV

NORMAL PROCEDURES

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

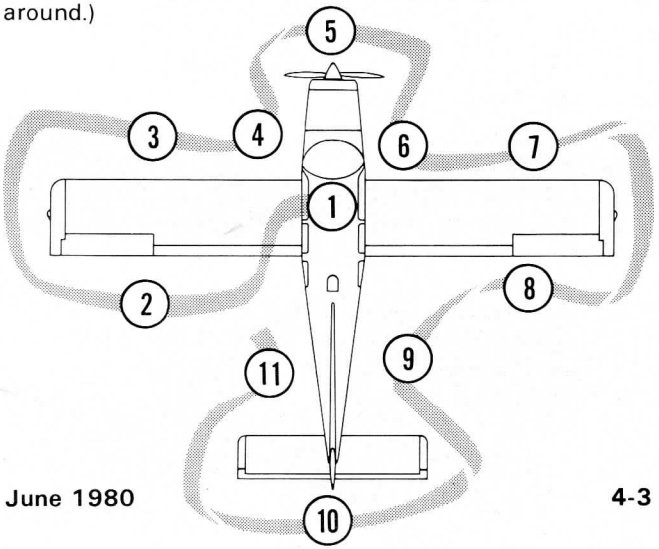
All airspeeds quoted in this section are indicated airspeeds (IAS)

AIRSPEEDS FOR SAFE OPERATION

Take-off	
Lift-off	70 kts/80 mph
50 Ft.	73 kts/84 mph
Maximum Climb	
Best Rate (V_Y)	84 kts/96 mph
Best Angle (V_X)	72 kts/83 mph
Cruise Climb	96 kts/110 mph
Maximum Turbulent Air Penetration	125 kts/144 mph
Balked Landing	74 kts/85 mph
Landing Approach	74 kts/85 mph
Maximum Demonstrated Crosswind	17 kts/20 mph

PREFLIGHT INSPECTION

Walk-around for 2-door A24R
(See Pilot's Operating Handbook and FAA Approved Airplane Flight Manual Supplement for single-door walk-around.)



1. *CABIN:*
   a. Parking Brake - SET
   b. Control Lock - REMOVE
   c. Landing Gear Handle - DOWN
   d. All Switches - OFF

2. *LEFT WING TRAILING EDGE:*
   a. Flap - CHECK
   b. Fuel Vent Line - UNOBSTRUCTED
   c. Aileron - CHECK
   d. Wing Tip - CHECK
   e. Position Light - CHECK

3. *LEFT WING LEADING EDGE:*
   a. Pitot Tube - CHECK, (Remove Cover)
   b. Landing Light - CHECK
   c. Tie Down and Chocks - REMOVE
   d. Stall Warning - CHECK for movement of vane
   e. Fuel Tank - CHECK QUANTITY; Filler Cap - SECURE.

4. *LEFT LANDING GEAR:*
   a. Wheel Well, Tire and Brake - CHECK
   b. Fuel Sump - DRAIN

5. *NOSE SECTION:*
   a. Left Cowl - SECURE
   b. Induction Air Intake - CLEAR, Filter - CHECK for condition and security of attachment.
   c. Propeller - CHECK, General Condition, Nicks, etc.
   d. Tire and Nose Gear - CHECK
   e. Engine Oil - CHECK (See Servicing, Section 8) Cap and Dipstick - SECURE
   f. Right Cowl - SECURE
   g. Fuel Strainer - DRAIN
   h. Chocks - REMOVE

6. *RIGHT LANDING GEAR:*
   a. Fuel Sump - DRAIN
   b. Wheel Well, Tire and Brake - CHECK

7. *RIGHT WING LEADING EDGE:*
   a. Fuel Tank - CHECK QUANTITY; Filler Cap SECURE
   b. Tie Down and Chocks - REMOVE
   c. Taxi Light - CHECK
   d. Wing Tip - CHECK
   e. Position Light - CHECK

8. *RIGHT WING TRAILING EDGE:*
   a. Aileron - CHECK
   b. Flap - CHECK
   c. Fuel Tank Vent Line - UNOBSTRUCTED

9. *RIGHT FUSELAGE:*
   a. Static Pressure Button - UNOBSTRUCTED
   b. Emergency Locator Transmitter - ARMED

10. *EMPENNAGE:*
   a. Control Surfaces - CHECK
   b. Tie Down - REMOVE
   c. Position Light - CHECK

11. *LEFT FUSELAGE:*
   a. Static Pressure Button - UNOBSTRUCTED
   b. All Antennas - CHECK
   c. Baggage Door - CHECK

BEFORE STARTING

1. Seats - POSITION AND LOCK; Seat Backs - UPRIGHT
2. Seat Belts - FASTEN
3. Parking Brake - SET
4. All Avionics - OFF
5. Circuit Breakers - IN

6. Landing Gear Handle - DOWN
7. Flaps - UP
8. Light Switches - AS REQUIRED
9. Electric Stabilator Trim Switch - OFF (if installed)
10. BATTERY & ALT Switch - ON
11. ALT Switch - ON (If external power is used, turn ALT Switch - OFF)
12. Fuel Boost Pump - ON (Check for operation, then OFF)
13. Fuel Selector - ROTATE thru 360° and check for freedom of movement, set on tank more nearly full (feel for detent and check visually)

NOTE

On airplanes which have complied with BEECHCRAFT S.I. No. 1095, a fuel selector stop has been added to the selector valve guard. The fuel selector stop minimizes the possibility of inadvertently turning the fuel selector valve to the OFF detent position. The stop is a spring which must be depressed before the selector valve handle can be rotated to the OFF position.

WARNING

Do not take off if gages indicate in yellow arc on either gage (airplanes after compliance with BEECHCRAFT S.I. No. 0624-281).

EXTERNAL POWER

The following precautions shall be observed while using external power:

1. The BATTERY/ALT switch shall be ON. The ALT switch as well as all avionics and electrical switches should be OFF. This protects the voltage regulator and associated electrical equipment from transients (power fluctuations).

2. The airplane has a negative ground system. Connect the positive and negative leads of the external power cable to the corresponding positive and negative terminals of the auxiliary power source.

3. In order to prevent arcing, no power shall be supplied while the connection is being made.

STARTING ENGINE USING AUXILIARY POWER UNIT

1. Alternator, Electrical, and Avionics Equipment - OFF
2. Auxiliary Power Unit - CONNECT
3. Auxiliary Power Unit - SET OUTPUT (13.75 to 14.25 volts)
4. Auxiliary Power Unit - ON
5. Engine - START using normal procedures
6. Auxiliary Power Unit - OFF (after engine has been started)
7. Auxiliary Power Unit - DISCONNECT
8. Alternator Switch - ON

STARTING

1. Propeller - FULL FORWARD (High rpm)
2. Engine Start

CAUTION

Starter cranking period should be limited to a maximum of 30 seconds, with at least 2 minutes between cranking periods.

Cold Start:

a. Mixture - FULL RICH
b. Throttle - FAST IDLE position
c. Fuel Boost Pump - ON (max. of 3 sec. then OFF)
d. Magneto/Start Switch - START position (release to BOTH position when engine fires)

Hot Start:

a. Mixture - IDLE CUT-OFF
b. Throttle - FAST IDLE -position
c. Magneto/Start Switch - ENGAGE
d. Mixture - ADVANCE MIXTURE SLOWLY when engine starts firing regularly

Flooded Engine:

a. Mixture - IDLE CUT-OFF
b. Throttle - FULL OPEN
c. Magneto/Starter Switch - ENGAGE
d. Mixture - ADVANCE MIXTURE SLOWLY when engine starts firing regularly
e. Throttle - RETARD (to fast idle position)

3. External Power (if used) - OFF - DISCONNECT
4. ALT switch - ON (If external power was used)
5. Oil Pressure - IN YELLOW ARC WITHIN 30 SECONDS
6. Warm-up - 1000 to 1200 RPM
7. Engine Instruments - CHECK
8. Throttle - 1500 RPM
9. Ammeter - CHECK

CAUTION

Charge indication should begin to decrease within 2 minutes after engine start and should be within 1/4 scale of zero prior to takeoff. If not, an electrical difficulty is indicated, and the airplane should be shut down.

10. Throttle - IDLE

AFTER STARTING, AND BEFORE TAXI

1. Parking Brakes - RELEASE
2. Brakes - RELEASE AND CHECK
3. Avionics Equipment - ON, AS REQUIRED
4. Lights - AS REQUIRED

BEFORE TAKEOFF

1. Parking Brake - SET
2. Seat Belts - CHECK

NOTE

All reclining seats must be in the upright position during take-off.

3. Avionics - CHECK
4. Engine Instruments - CHECK
5. Flight Instruments - CHECK AND SET
6. Throttle - 2000 RPM
7. Magnetos - CHECK at 2000 rpm, maximum drop of 50 rpm on each magneto, variance between individual magnetos should not exceed 25 rpm.
8. Propeller - EXERCISE to obtain 300 to 400 rpm drop; return to high rpm.
9. Throttle - 1500 RPM
10. Ammeter - CHECK for stabilized indication within 1/4 scale of zero.
11. Throttle - FAST IDLE
12. Stabilator Trim - TAKE-OFF RANGE (Green or White Band)
13. Flaps - CHECK and SET
14. Controls - CHECK FREE and for proper direction of travel
15. Mixture - FULL RICH (or as required by field elevation)
16. Doors and Window - SECURE
17. Parking Brake - RELEASE
18. Instruments - CHECK (make final check of manifold pressure, fuel flow, and rpm at the start of the takeoff run)

TAKEOFF

Takeoff ..... Full Throttle - 2700 RPM
Cruise Climb ..... Full Throttle - 2700 RPM

NOTE

Do not takeoff or land with the Fuel Boost Pump ON. The Fuel Boost Pump should be used only for starting and in the event of an emergency.

1. Power - SET TAKE-OFF POWER (Mixture - SET as required by field elevation)
2. Brakes - RELEASE THEN ACCELERATE to recommended speeds
3. Landing Gear - RETRACT (when positive rate of climb is established and insufficient runway remains for landing)
4. Airspeed - ESTABLISH DESIRED CLIMB SPEED (when clear of obstacles)

CLIMB

1. Flaps - UP
2. Power - AS REQUIRED
3. Mixture - LEAN AS REQUIRED
4. Temperature - MONITOR

CRUISE

1. Power - SET AS DESIRED (use tables in PERFORMANCE Section)
2. Mixture - LEAN AS REQUIRED (tighten friction on push-pull type control)

LEANING USING THE EXHAUST GAS TEMPERATURE INDICATOR (EGT)

For level flight at 75% power or less, the EGT unit should be used in the following manner:

1. Lean the mixture and note the point on the indicator that the temperature peaks and starts to fall.

   a. CRUISE (LEAN) MIXTURE - Enrich mixture until the EGT shows a drop of 25°F below peak on the rich side of peak.

   b. BEST POWER MIXTURE - Enrich mixture until the EGT shows a drop of 75°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. Power - AS REQUIRED (avoid prolonged idle settings which may cause low cylinder head temperatures).
3. Mixture - ENRICH AS REQUIRED.

BEFORE LANDING

1. Seat Belts - SECURE.

NOTE

All reclining seats must be in the upright position during landing.

2. Fuel Selector Valve - SELECT TANK MORE NEARLY FULL (feel for detent and check visually).
3. Mixture - FULL RICH (or as required by field elevation)
4. Landing Gear - DOWN and CHECK (observe maximum extension speed)
5. Landing and Taxi Lights - AS REQUIRED
6. Flaps - DOWN (observe maximum extension speed)

WARNING

The distance for a Flaps Up landing will be greater than for a Flaps Down landing.

7. Airspeed - ESTABLISH LANDING APPROACH SPEED
8. Propeller - FULL FORWARD

BALKED LANDING

1. Mixture - FULL RICH (or as required by field elevation)
2. Propeller - FULL FORWARD
3. Power - FULL THROTTLE, 2700 RPM
4. Landing Gear - UP
5. Airspeed - 74 kts/85 mph until clear of obstacles, then trim to BEST RATE-OF-CLIMB
6. Flaps - UP

AFTER LANDING

1. Landing and Taxi Lights - AS REQUIRED
2. Flaps - UP
3. Trim Tab - SET TO 0°

SHUTDOWN

1. Parking Brakes - SET
2. Electrical and Avionics Equipment - OFF
3. Throttle - CLOSE
4. Mixture - IDLE CUT-OFF
5. Magneto/Start Switch - OFF, after engine stops
6. BATTERY & ALT Switch - OFF
7. ALT Switch - OFF
8. Control Lock - INSTALL if conditions warrant.
9. Install wheel chocks and release parking brakes if the airplane is to be left unattended.

ENVIRONMENTAL SYSTEMS

HEATING AND VENTILATION

Refer to the SYSTEMS DESCRIPTION Section for operation of heating and ventilation controls.

COLD WEATHER OPERATION

PREFLIGHT INSPECTION

All accumulations of ice, snow and frost must be removed from the wings, tail, control surfaces and hinges, propeller, windshield, pitot tube, static ports, antennas, fuel cell filler caps, crankcase vents, and fuel vents. If such accumulations are not removed completely, the airplane

shall not be flown. The deposits will not blow off in flight. While an adverse weight factor is clearly involved in the case of heavy deposits, it is less obvious that even slight accumulations will disturb or completely destroy the designed aerodynamic properties of the airfoils.

The normal preflight procedures should then be completed, with particular attention given to check of flight controls for complete freedom of movement.

ENGINE

Use engine oil in accordance with Consumable Materials in the HANDLING, SERVICING AND MAINTENANCE Section.

WARNING

Ascertain that magneto switch and battery master switch are off before moving propeller by hand.

Always pull the propeller through by hand, opposite the direction of rotation, 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 external power is not used.

Under very cold conditions, it may be necessary to preheat the engine prior to a start. Particular attention should be given to the oil cooler, engine sump and propeller hub to ensure 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 engine is 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, monitor 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 propeller several times to remove cold oil from the pitch change mechanism. The propeller should be cycled occasionally in flight.

During letdown and landing, give special attention to engine temperatures, since the engine will have a tendency toward overcooling.

ICING CONDITIONS

Flight in Known Icing Conditions Prohibited.

ENGINE BREAK-IN INFORMATION

See Systems Description section

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SECTION V

PERFORMANCE

TABLE OF CONTENTS

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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 flight planning at various parameters of weight, power, altitude and temperature. Examples have been presented on some performance charts. Calculations for flight time, block speed and fuel required for a sample VFR trip from Denver to Wichita are detailed below. All examples and calculations assume the following conditions:

CONDITIONS

At Denver:

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

Route of Trip

*DEN-V4-GLD-V132-HUT-V73-ICT

For VFR Cruise at 9,500 feet

ROUTE SEGMENT	MAGNETIC COURSE	DIST NM	WIND 9500 FEET DIR/KTS	OAT 9500 FEET °C	ALT SETTING IN.HG
DEN-TXC	090°	78	010/30	-5	29.60
TXC-GLD	092°	73	010/30	-5	29.60
GLD-HUT	102°	195	220/10	0	29.56
HUT-ICT	116°	28	220/10	9	29.56

*REFERENCE: Enroute Low Altitude Chart L-6

At Wichita:

Outside Air Temperature	25°C (77°F)
Field Elevation	1332 ft
Altimeter Setting	29.56 in. Hg
Wind	180° at 10 kts
Runway 19 Length	7301 ft

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

Pressure Altitude at ICT:

29.92 - 29.56 = .36 in. Hg

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

1332 + 360 = 1692 ft

NOTE

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

Enter the Cruise Power Settings table for 65 percent maximum continuous power (or full throttle) and 2400 RPM at 9000 ft, 10,000 ft, ISA and ISA + 20°C.

	TEMPERATURE					
	ISA			ISA + 20°C		
ALTITUDE FEET	MAN. PRESS. IN. HG	FUEL FLOW GPH	TAS KNOTS	MAN. PRESS. IN. HG	FUEL FLOW GPH	TAS KNOTS
9000	20.7	9.1	133	20.8	8.8	132
10000	19.8	8.8	130	19.9	8.6	129

Interpolate for 9,500 feet and the temperature for the appropriate route segment. Results of the interpolations are:

ROUTE SEGMENT	MAN. PRESS. IN. HG	FUEL FLOW GPH	TAS KNOTS
DEN-TXC	20.3	8.8	131
TXC-GLD	20.3	8.8	131
GLD-HUT	20.3	8.9	131
HUT-ICT	20.3	8.8	131

NOTE

The above are exact values for the assumed conditions.

Time and fuel used were calculated as follows:

$$\text{Time} = \frac{\text{Distance}}{\text{Ground Speed}}$$

Fuel Used = (Time) (Fuel Flow)

Results are:

ROUTE SEGMENT	DISTANCE NM	EST GROUND SPEED KNOTS	TIME AT CRUISE ALTITUDE HRS: MIN	FUEL USED FOR CRUISE GAL
DEN-TXC	78	128	0:37	5.4
TXC-GLD	73	128	0:34	5.0
GLD-HUT	195	136	1:26	12.8
HUT-ICT	28	133	0:13	1.9

TIME - FUEL - DISTANCE

ITEM	TIME HRS: MINS	FUEL GAL	DISTANCE NM
Start, Runup, Taxi and Take-off acceleration	0:00	1.3	0
Cruise	2:50	25.1	374
Total	2:50	26.4	374

Total Flight Time: 2 hours, 50 minutes

Block Speed: 374 NM ÷ 2 hours, 50 minutes = 132 knots

Reserve Fuel (45 minutes at 55 percent maximum continuous power)

Enter the Cruise Power Settings table for 55 percent MCP (or full throttle) @ 2300 RPM. The fuel flow for 55 percent MCP is 7.9 gallons per hour.
Reserve fuel = (45 min) (7.9 GPH) = 5.9 gallons

Total Fuel = 26.4 + 5.9 = 32.3 gallons

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

Assumed ramp weight = 2758 lbs

Estimated fuel from DEN to ICT = (26.4 gal) (6 lbs/gal) = 158 lbs

Estimated landing weight = 2758 -158 = 2600 lbs

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.

COMMENTS PERTINENT TO THE USE OF PERFORMANCE GRAPHS

1. Indicated airspeeds (IAS) were obtained by using the AIRSPEED CALIBRATION NORMAL SYSTEM Table.

2. 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.

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

4. Engine and component cooling has been demonstrated for temperatures up to 100°F at sea level with a 3.57°F per 1000 ft lapse rate. (ISA + 41°F)

AIRSPEED CALIBRATION - NORMAL SYSTEM

INDICATED AIRSPEED		CALIBRATED AIRSPEED			
		FLAPS UP		FLAPS DOWN	
KNOTS	MPH	KNOTS	MPH	KNOTS	MPH
50	58	51	59	48	56
55	63	55	63	54	62
60	69	60	69	59	68
65	75	65	75	65	75
70	81	70	81	70	81
75	86	75	86	74	85
80	92	81	93	80	92
85	98	86	99	85	98
90	104	91	105	89	103
95	109	96	110	94	108
100	115	101	116		
105	121	106	122		
110	127	111	128		
115	132	116	133		
120	138	121	139		
125	144	126	145		
130	150	132	152		
135	155	137	157		
140	161	142	163		
145	167	147	169		
150	173	152	175		
155	178	157	180		
160	184	162	186		

AIRSPEED CALIBRATION - ALTERNATE SYSTEM

(DOES NOT VARY WITH
STORM WINDOW POSITION)

IAS (MPH)	FLAPS UP IAS (MPH)	FLAPS DOWN IAS (MPH)
70		65
80	74	73
90	83	84
100	93	95
110	104	107
120	114	
130	124	
140	134	
150	144	
160	154	
170	164	
180	174	

ALTIMETER CORRECTION - NORMAL SYSTEM

INDICATED AIRSPEED		ALTIMETER CORRECTION TO BE ADDED ~ FEET			
		FLAPS UP		FLAPS DOWN	
KNOTS	MPH	SL	10000 FT	SL	10000 FT
50	58				
55	63				
60	69			-9	-13
65	75			-7	-9
70	81	-5	-6	-8	-11
75	86	-3	-3	-11	-14
80	92	0	0	-7	-10
85	98	1	2	-5	-6
90	104	2	2	-6	-8
95	109	0	0	-12	-15
100	115	-6	-7	-20	-28
105	121	-7	-9		
110	127	-9	-11		
115	132	5	5		
120	133	4	6		
125	144	-4	-6		

ALTIMETER CORRECTION - ALTERNATE SYSTEM

(DOES NOT VARY WITH
STORM WINDOW POSITION)

IAS (MPH)	FLAPS UP (FEET)	FLAPS DOWN (FEET)
70	-37	-39
80	-45	-46
90	-50	-46
100	-54	-38
110	-58	-37
120	-62	
130	-65	
140	-68	
150	-72	
160	-76	
170	-80	

POWER OFF STALL SPEEDS

(WEIGHT 2750 LBS)

Maximum altitude loss during a normal stall recovery is approximately 300 ft.

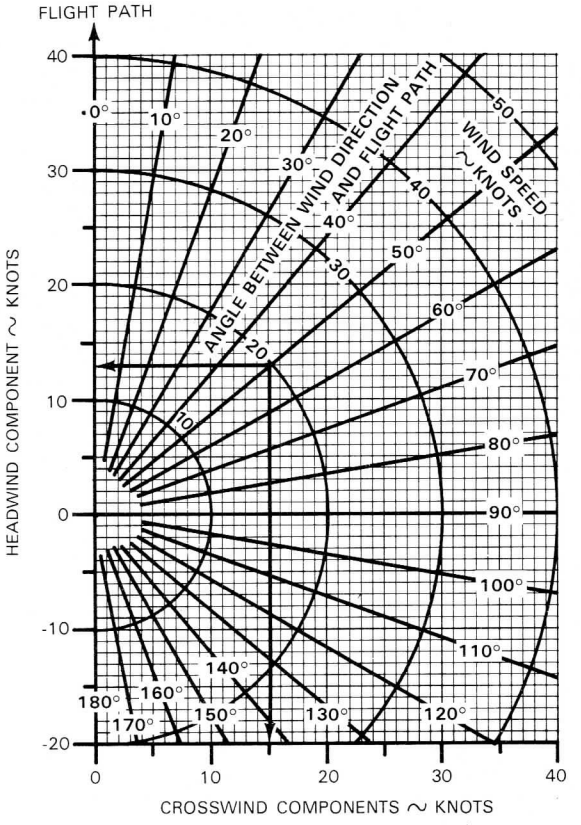
ANGLE OF BANK			
LEVEL	**30°**	**45°**	**60°**
FLAPS-UP, GEAR-UP			
75 mph 65 kts	81 mph 70 kts	89 mph 77 kts	106 mph 92 kts
FLAPS 35°, GEAR DOWN			
66 mph 57 kts	71 mph 62 kts	78 mph 68 kts	93 mph 81 kts

WIND COMPONENTS

Demonstrated Crosswind Component is 17 kts

EXAMPLE:

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



NORMAL TAKE-OFF DISTANCES

ASSOCIATED CONDITIONS

POWER	FULL THROTTLE
FLAPS	UP
GEAR	RETRACT AFTER LIFT-OFF
RUNWAY	PAVED, LEVEL, DRY SURFACE
WEIGHT	2750 LBS
TAKE-OFF SPEEDS	LIFT-OFF 80 MPH/70 KTS/IAS
	50 FT 84 MPH/73 KTS/IAS

NOTE

FOR EACH 100 POUNDS BELOW 2750 LBS, REDUCE TABULATED DISTANCES BY 8% AND TAKE-OFF SPEEDS BY 1 MPH

EXAMPLE:

PRESSURE ALTITUDE	6000 FT
OAT	56°F
WIND COMPONENT	0
GROUND ROLL	2218 FT
TOTAL OVER 50'	3408 FT

WIND COMPONENT DOWN RUNWAY KNOTS	SEA LEVEL			2000 FEET			4000 FEET			6000 FEET			8000 FEET		
	OAT °F	GROUND ROLL FEET	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	GROUND ROLL FEET	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	GROUND ROLL FEET	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	GROUND ROLL FEET	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	GROUND ROLL FEET	TOTAL OVER 50 FT OBSTACLE FEET
0	23	1079	1714	16	1265	1997	9	1486	2332	2	1748	2728	-6	2061	3198
	41	1158	1845	34	1370	2151	27	1611	2516	20	1898	2946	13	2341	3458
	59	1260	1980	52	1480	2312	45	1742	2706	38	2054	3173	31	2429	3728
	77	1356	2120	70	1594	2478	63	1879	2904	56	2218	3408	49	2624	4009
	95	1456	2265	88	1713	2650	81	2021	3108	74	2388	3651	67	2829	4300
15	23	942	1496	16	1108	1749	9	1305	2048	2	1540	2403	-6	1821	2824
	41	1021	1613	34	1201	1886	27	1417	2213	20	1674	2599	13	1983	3059
	59	1103	1734	52	1300	2031	45	1535	2384	38	1814	2803	31	2152	3303
	77	1189	1859	70	1402	2179	63	1657	2561	56	1962	3014	49	2328	3556
	95	1278	1988	88	1508	2333	81	1785	2744	74	2115	3233	67	2512	3818
30	23	805	1278	16	950	1500	9	1124	1764	2	1332	2078	-6	1580	2452
	41	874	1381	34	1032	1621	27	1223	1910	20	1450	2251	13	1724	2660
	59	946	1487	52	1120	1749	45	1327	2061	38	1574	2432	31	1875	2877
	77	1021	1597	70	1209	1880	63	1435	2218	56	1705	2620	49	2031	3103
	95	1100	1711	88	1303	2016	81	1548	2380	74	1841	2815	67	2195	3336

NORMAL CLIMB

ASSOCIATED CONDITIONS

POWER	FULL THROTTLE
FLAPS	UP
GEAR	UP

EXAMPLE:

WEIGHT	2750 POUNDS
ALTITUDE	8000 FEET
OAT	49°F
RATE OF CLIMB	363 FT/MIN
CLIMB SPEED	93 MPH/81 KTS

	SEA LEVEL			4000 FEET			8000 FEET			12000 FEET		
WEIGHT POUNDS	OAT °F	R/C FT/MIN	IAS MPH/KTS	OAT °F	R/C FT/MIN	IAS MPH/KIS	OAT °F	R/C FT/MIN	IAS MPH/KTS	OAT °F	R/C FT/MIN	IAS MPH/KTS
2750	23	984	93/81	9	748	93/81	-6	521	93/81	-20	284	93/81
	41	929		27	697		13	469		-2	234	
	59	874		45	645		31	417		16	185	
	77	820		63	591		49	363		34	134	
	95	765		81	535		67	310		52	83	
2600	23	1100	92/80	9	854	92/80	-6	618	92/80	-20	371	92/90
	41	1042		27	801		13	563		-2	320	
	59	986		45	747		31	510		16	269	
	77	929		63	691		49	454		34	216	
	95	872		81	633		67	399		52	164	
2400	23	1274	91/79	9	1013	91/79	-6	762	91/79	-20	501	91/79
	41	1213		27	957		13	705		-2	447	
	59	1153		45	900		31	649		16	394	
	77	1093		63	841		49	590		34	339	
	95	1033		81	779		67	532		52	284	

CRUISE POWER SETTINGS

75% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

MODEL A24R

PRESS ALT.	ISA -36°F (-20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN PRESS	FUEL FLOW		TAS	
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	23	-5	2500	23.8	72.6	12.1	131	151	59	15	2500	24.4	72.6	12.1	134	154	95	35	2500	25.1	72.6	12.1	136	156
1000	19	-7	2500	23.6	72.6	12.1	132	152	55	13	2500	24.2	72.6	12.1	135	155	91	33	2500	24.8	72.6	12.1	137	158
2000	16	-9	2500	23.4	72.6	12.1	133	153	52	11	2500	24.0	72.6	12.1	136	156	88	31	2500	24.6	72.6	12.1	138	159
3000	12	-11	2500	23.2	72.6	12.1	134	154	48	9	2500	23.8	72.6	12.1	136	157	84	29	2500	24.4	72.6	12.1	139	160
4000	9	-13	2500	23.0	72.6	12.1	135	155	45	7	2500	23.6	72.6	12.1	137	158	81	27	2500	24.2	72.6	12.1	140	161
5000	5	-15	2500	22.8	72.6	12.1	136	157	41	5	2500	23.4	72.6	12.1	139	160	77	25	2500	24.0	72.6	12.1	141	162
6000	2	-17	2600	22.0	73.2	12.2	137	158	38	3	2600	22.5	73.2	12.2	140	161	74	23	2600	23.1	73.2	12.2	143	164
7000	-2	-19	2600	21.8	73.2	12.2	138	159	34	1	2600	22.3	73.2	12.2	141	162	70	21	2600	22.5	72.0	12.0	142	163
8000	-5	-21	2600	21.6	73.2	12.2	139	160	31	-1	2600	21.8	72.0	12.0	141	162	67	19	2600	21.9	70.2	11.7	141	162
9000	-8	-23	2600	21.1	72.0	12.0	139	160	27	-3	2600	20.9	70.2	11.7	139	160	63	17	2600	21.0	68.4	11.4	139	160
10,000	-13	-25	2600	20.2	69.6	11.6	137	158	23	-5	2600	20.1	67.8	11.3	137	158	59	15	2600	20.2	66.0	11.0	136	157
11,000	-16	-27	2600	19.5	67.8	11.3	136	156	20	-7	2600	19.3	66.0	11.0	136	156	56	13	2600	19.4	64.2	10.7	136	156
12,000	-20	-29	2600	18.8	66.6	11.1	134	154	16	-9	2600	18.6	64.2	10.7	134	154	52	11	2600	18.8	62.4	10.4	132	152

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

CRUISE POWER SETTINGS

65% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

MODEL A24R

PRESS ALT	ISA 36°F (20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	OAT		ENGINE SPEED	MAN PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN PRESS	FUEL FLOW		TAS	
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	23	5	2400	22.3	54.6	9.1	123	141	59	15	2400	22.8	54.6	9.1	124	143	95	35	2400	23.5	54.6	9.1	127	146
1000	19	7	2400	22.0	54.6	9.1	123	142	55	13	2400	22.6	54.6	9.1	125	144	91	33	2400	23.2	54.6	9.1	128	147
2000	16	9	2400	21.7	54.6	9.1	124	143	52	11	2400	22.4	54.6	9.1	126	145	88	31	2400	23.0	54.6	9.1	129	148
3000	12	11	2400	21.5	54.6	9.1	125	144	48	9	2400	22.2	54.6	9.1	128	147	84	29	2400	22.8	54.6	9.1	129	149
4000	9	13	2400	21.2	54.6	9.1	126	145	45	7	2400	21.9	54.6	9.1	129	148	81	27	2400	22.5	54.6	9.1	130	150
5000	5	15	2400	20.9	54.6	9.1	127	146	41	5	2400	21.7	54.6	9.1	129	149	77	25	2400	22.3	54.6	9.1	131	151
6000	2	17	2400	20.7	54.6	9.1	128	147	38	3	2400	21.5	54.6	9.1	130	150	74	23	2400	22.1	54.6	9.1	133	153
7000	2	19	2400	20.5	54.6	9.1	129	148	34	1	2400	21.3	54.6	9.1	131	151	70	21	2400	21.9	54.6	9.1	134	154
8000	5	21	2400	20.3	54.6	9.1	129	149	31	1	2400	21.1	54.6	9.1	132	152	67	19	2400	21.6	54.6	9.1	134	154
9000	9	23	2400	20.0	54.6	9.1	130	150	27	3	2400	20.7	54.6	9.1	133	153	63	17	2400	20.8	52.8	8.8	132	152
10,000	13	25	2400	19.8	54.0	9.0	131	151	23	-5	2400	19.8	52.8	8.8	130	150	59	15	2400	19.9	51.6	8.6	129	149
11,000	16	27	2400	18.7	52.8	8.8	129	149	20	-7	2400	19.1	51.6	8.6	129	148	56	13	2400	19.1	49.8	8.3	127	146
12,000	20	29	2400	17.9	51.0	8.5	127	146	16	-9	2400	18.2	51.0	8.5	126	145	52	11	2400	18.3	47.4	7.9	125	143

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

CRUISE POWER SETTINGS

55% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)

MODEL A24R

PRESS ALT.	ISA -36°F (-20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN PRESS	FUEL FLOW		TAS	
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	23	-5	2300	20.6	47.4	7.9	112	129	59	15	2300	21.1	47.4	7.9	115	132	95	35	2300	21.6	47.4	7.9	116	134
1000	19	-7	2300	20.3	47.4	7.9	113	130	55	13	2300	20.8	47.4	7.9	116	133	91	33	2300	21.3	47.4	7.9	116	134
2000	16	-9	2300	20.1	47.4	7.9	114	131	52	11	2300	20.6	47.4	7.9	116	134	88	31	2300	21.1	47.4	7.9	117	135
3000	12	-11	2300	19.8	47.4	7.9	115	132	48	9	2300	20.4	47.4	7.9	116	134	84	29	2300	20.9	47.4	7.9	118	136
4000	9	-13	2300	19.6	47.4	7.9	116	133	45	7	2300	20.2	47.4	7.9	117	135	81	27	2300	20.7	47.4	7.9	119	137
5000	5	-15	2300	19.4	47.4	7.9	116	134	41	5	2300	19.9	47.4	7.9	118	136	77	25	2300	20.5	47.4	7.9	119	137
6000	2	-17	2300	19.2	47.4	7.9	117	135	38	3	2300	19.7	47.4	7.9	118	136	74	23	2300	20.3	47.4	7.9	120	138
7000	-2	-19	2300	18.9	47.4	7.9	117	135	34	1	2300	19.5	47.4	7.9	119	137	70	21	2300	20.1	47.4	7.9	121	139
8000	-5	-21	2300	18.7	47.4	7.9	118	136	31	-1	2300	19.3	47.4	7.9	120	138	67	19	2300	19.9	47.4	7.9	122	140
9000	-9	-23	2300	18.5	47.4	7.9	119	137	27	-3	2300	19.1	47.4	7.9	121	139	63	17	2300	19.7	47.4	7.9	123	141
10,000	-13	-25	2300	18.3	47.4	7.9	120	138	23	-5	2300	18.9	47.4	7.9	121	139	59	15	2300	19.5	47.4	7.9	123	141
11,000	-16	-27	2300	18.1	47.4	7.9	120	138	20	-7	2300	18.7	47.4	7.9	122	140	56	13	2300	19.2	46.8	7.8	122	140
12,000	-20	-29	2300	17.9	47.4	7.9	121	139	16	-9	2300	18.4	46.8	7.8	122	140	52	11	2300	17.9	46.2	7.7	—	—

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

RANGE

PRESSURE ALTITUDE ~ FEET	RANGE ~ N.M. (ZERO WIND)					
	75% POWER		65% POWER		55% POWER	
	32 GAL	52 GAL	32 GAL	52 GAL	32 GAL	52 GAL
S.L.	302	547	316	571	327	591
1000	303	550	316	573	326	592
2000	303	552	316	575	326	593
3000	303	554	316	578	325	594
4000	303	556	316	579	324	595
5000	304	558	316	581	323	595
6000	304	560	315	582	322	595
7000	303	562	314	583	321	595
8000			314	585	319	595
9000					317	594
10000					315	593
11000					310	588
12000						

ASSOCIATED CONDITIONS:

STANDARD DAY

WEIGHT 2758 POUNDS BEFORE ENGINE START

FUEL 100 OCTANE AVIATION GASOLINE

FUEL DENSITY 6.0 POUNDS/GALLON

EXAMPLE:

ALTITUDE	7000 FT
POWER	65%
FUEL LOADING	52 GALLONS
RANGE	583 NM

1. RANGE INCLUDES START, TAXI, CLIMB AND 45 MINUTES RESERVE FUEL AT 55% POWER.

ENDURANCE

PRESSURE ALTITUDE ~ FEET	ENDURANCE ~ HRS					
	75% POWER		65% POWER		55% POWER	
	32 GAL	52 GAL	32 GAL	52 GAL	32 GAL	52 GAL
S.L.	2.4	4.2	2.7	4.9	3.1	5.6
1000	2.4	4.4	2.7	4.9	3.1	5.5
2000	2.4	4.4	2.7	4.9	3.0	5.5
3000	2.4	4.4	2.7	4.9	3.0	5.5
4000	2.4	4.4	2.7	4.9	3.0	5.5
5000	2.4	4.3	2.6	4.8	3.0	5.5
6000	2.4	4.3	2.6	4.8	2.9	5.4
7000	2.4	4.3	2.6	4.8	2.9	5.4
8000			2.6	4.8	2.9	5.4
9000					2.9	5.4
10000					2.8	5.3
11000					2.8	5.3
12000						

ASSOCIATED CONDITIONS:

STANDARD DAY
WEIGHT 2758 POUNDS BEFORE ENGINE START
FUEL 100 OCTANE AVIATION GASOLINE
FUEL DENSITY 6.0 POUNDS/GALLON

EXAMPLE:

ALTITUDE 7000 FT
POWER 65%
FUEL LOADING 52 GALLONS
ENDURANCE 4.8 HOURS

NORMAL LANDING DISTANCES

ASSOCIATED CONDITIONS

POWER	OFF
FLAPS	35°
GEAR	DOWN
RUNWAY	PAVED, LEVEL, DRY SURFACE
WEIGHT	2750 POUNDS
APPROACH SPEED	85 MPH/74 KTS IAS

NOTES:

1. GROUND ROLL IS APPROXIMATELY 45% OF TOTAL DISTANCE OVER 50 FT. OBSTACLE
2. FOR EACH 100 LBS. BELOW 2750 LBS. REDUCE TABULATED DISTANCE BY 3% AND APPROACH SPEED BY 1 MPH.

EXAMPLE:

ALTITUDE	4000 FT
OAT	63°F
WIND	0 KNOTS
LANDING DIST	1899 FEET

WIND COMPONENT DOWN RUNWAY KNOTS	SEA LEVEL		2000 FT		4000 FT		6000 FT		8000 FT	
	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET	OAT °F	TOTAL OVER 50 FT OBSTACLE FEET
0	23	1578	16	1651	9	1732	2	1820	-6	1916
	41	1624	34	1701	27	1787	20	1880	13	1983
	59	1670	52	1752	45	1842	38	1942	31	2050
	77	1717	70	1804	63	1899	56	2004	49	2118
	95	1764	88	1856	81	1956	74	2066	66	2187
15	23	1329	16	1397	9	1472	2	1555	-6	1644
	41	1372	34	1444	27	1524	20	1611	13	1707
	59	1414	52	1491	45	1575	38	1668	31	1770
	77	1458	70	1540	63	1626	56	1727	49	1833
	95	1502	88	1588	81	1682	74	1784	66	1898
30	23	1079	16	1142	9	1212	2	1289	-6	1372
	41	1119	34	1186	27	1260	20	1341	13	1430
	59	1158	52	1230	45	1308	38	1395	31	1489
	77	1199	70	1275	63	1357	56	1449	49	1548
	95	1240	88	1320	81	1407	74	1502	66	1608

SECTION VI

WEIGHT AND BALANCE/ EQUIPMENT LIST

TABLE OF CONTENTS

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INTRODUCTION TO WEIGHT AND BALANCE

The necessity for proper computation of the airplane's weight and balance cannot be overemphasized. In the basic design, it is planned that under normal loading the weight distribution of pilot, passengers, baggage, and fuel will balance the airplane for flight. Since these items are all variables, it is possible to concentrate weight in such a way as to make the airplane unsafe for flight. The factors which must be considered in the weight and balance of the airplane are the installation of equipment after the airplane has been weighed, trapped or unusable fuel, engine oil, usable fuel, pilot and passenger weights, and baggage or cargo.

In order to simplify the computation of the weight and balance, Beech Aircraft Corporation has devised a form called Basic Empty Weight and Balance. When the airplane is delivered from the factory it will first be weighed and the data recorded on this form. Provision has been made on the form for listing additions of items to be installed before the delivery or subtractions of items to be removed before delivery from the "as weighed" condition. This then represents the empty weight of the airplane.

When the airplane is first fueled, a certain amount of fuel is trapped in the fuel lines and cells which cannot be drained. Also, in some regimes of flight there are certain amounts of fuel that cannot be used. The combination of these fuel amounts is classified as unusable fuel. Also, it has been found that all operators bring the oil level near full before each flight. Thus, these items are computed along with the empty weight, giving a Basic Empty Weight as a starting point to the pilot for each flight computation.

Once the Basic Empty Weight for a given airplane has been established, the pilot is then only concerned with the

variable items which will comprise his useful load. These items which are of a changing nature are: Pilot and Passengers (computed on an individual weight and the seat occupied), Baggage and/or Cargo (computed on weight and location within the airplane), and Usable Fuel (the remaining fuel after subtracting the unusable fuel from the measured fuel on board).

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 129.2 and one on the aft fuselage at Fuselage Station 285.9 (tail tie-down ring).

2. Fuel should be drained preparatory to weighing. Tanks are drained from the regular drain ports with the airplane in static ground attitude. The unusable fuel to be added to a Basic Empty Weight is: 6 lbs at Fuselage Station 125.0. 45.6 lbs (airplanes after compliance with Service Instructions No. 0624-281) at Fuselage Station 125.0.

3. Engine oil must be at the full level or completely drained. Total engine oil when full is 15 pounds at Fuselage Station 50.

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. At the time of weighing, the airplane must be level both longitudinally and laterally, and the landing gear must be fully extended. Longitudinally and laterally level attitude is determined with a level on the baggage compartment floor.

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 centerline of airplane at F.S. 126.438, forward screw in spar access cover, approximately 8 to 10 inches forward of centerline drain hole) to the axle centerline of the main gear and then to the nose wheel axle centerline. The main wheel axle centerline 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 centerline. The locations of the wheel reactions will be approximately at Fuselage Station 129.5 for main wheels and Fuselage Station 57.6 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 129.2, 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 to which the aft weighing point is attached 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.

TAIL TIE DOWN
F.S. 285.9
LEVEL POINT
BAGGAGE FLOOR
JACK POINT
F.S. 129.2
A - NOSE TO PLUMB BOB
B - DATUM TO PLUMB BOB
C - DATUM TO MAIN GEAR
F.S. 126.438
A
B
C
DATUM

BASIC EMPTY WEIGHT AND BALANCE

MODEL_____ SER. NO._____ REG. NO._____ DATE_____

JACK POINT LOCATION

FORWARD 129.2
AFT 285.9

PREPARED BY

Company_____
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			15.0	50.0	750
UNUSABLE FUEL					
MC-2 thru MC-150			6.0	125.0	750
Airplanes after compliance with S.I. No. 0624-281			45.6	125.0	5700
BASIC EMPTY WEIGHT					

NOTE

Each new airplane is delivered with a completed sample loading, basic 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 basic empty weight and c.g. is a suitable means for meeting both requirements.

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

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

WEIGHT AND BALANCE RECORD

SERIAL NO. _____ REGISTRATION NO. _____ PAGE NO. 1

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

WEIGHT AND BALANCE RECORD

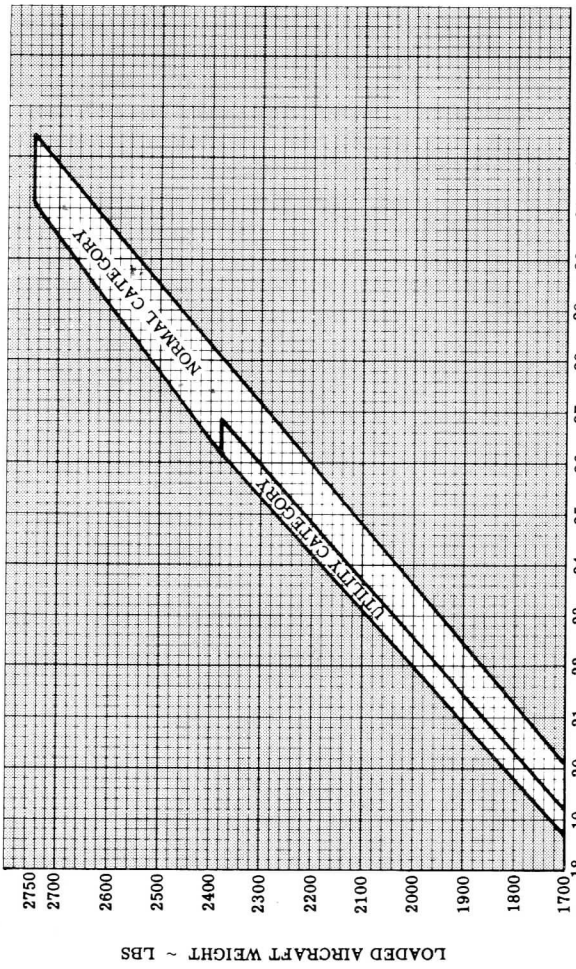
SERIAL NO. _____ REGISTRATION NO. _____ PAGE NO. 2

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

WEIGHT AND BALANCE RESPONSIBILITIES

The Basic Empty Weight and Moment of the airplane at the time of delivery are shown on the airplane Basic Empty Weight and Balance form. Useful load items which may be loaded into the airplane are shown on the Useful Load Weights and Moments tables. The minimum and maximum moments are shown on the Moment Limits vs Weight table and can also be plotted on the Moment Limits vs Weight graph as visual indication that the limit is within the operational envelope. These moments correspond to the forward and aft center-of-gravity flight limits for a particular weight. The airplane must be loaded in such a manner to keep the center-of-gravity within these limits.

GROSS WEIGHT MOMENT LIMITS



A24R-601-3

GROSS WEIGHT MOMENT LIMITS
(NORMAL CATEGORY)

Gross Weight	Minimum Moment 100	Maximum Moment 100	Gross Weight	Minimum Moment 100	Maximum Moment 100	Gross Weight	Minimum Moment 100	Maximum Moment 100
1700	1870	2011	2100	2310	2484	2500	2775	2958
1710	1881	2023	2110	2321	2496	2510	2788	2969
1720	1892	2035	2120	2332	2508	2520	2801	2981
1730	1903	2047	2130	2343	2520	2530	2814	2993
1740	1914	2058	2140	2354	2532	2540	2828	3005
1750	1925	2070	2150	2365	2543	2550	2841	3017
1760	1936	2082	2160	2376	2555	2560	2854	3028
1770	1947	2094	2170	2387	2567	2570	2867	3040
1780	1958	2106	2180	2398	2579	2580	2880	3052
1790	1969	2118	2190	2409	2591	2590	2894	3064
1800	1980	2129	2200	2420	2603	2600	2907	3076
1810	1991	2141	2210	2431	2614	2610	2920	3088
1820	2002	2153	2220	2442	2626	2620	2933	3099
1830	2013	2165	2230	2453	2638	2630	2947	3111
1840	2024	2177	2240	2464	2650	2640	2960	3123
1850	2035	2189	2250	2475	2662	2650	2973	3135
1860	2046	2200	2260	2486	2674	2660	2987	3147
1870	2057	2212	2270	2497	2685	2670	3000	3159
1880	2068	2224	2280	2508	2697	2680	3013	3170
1890	2079	2236	2290	2519	2709	2690	3027	3182
1900	2090	2248	2300	2530	2721	2700	3040	3194
1910	2101	2260	2310	2541	2733	2710	3054	3206
1920	2112	2271	2320	2552	2745	2720	3067	3218
1930	2123	2283	2330	2563	2756	2730	3081	3230
1940	2134	2295	2340	2574	2768	2740	3094	3241
1950	2145	2307	2350	2585	2780	2750	3108	3253
1960	2156	2319	2360	2596	2792			
1970	2167	2331	2370	2607	2804			
1980	2178	2342	2380	2619	2815			
1990	2189	2354	2390	2632	2827			
2000	2200	2366	2400	2645	2839			
2010	2211	2378	2410	2658	2851			
2020	2222	2390	2420	2671	2863			
2030	2233	2401	2430	2684	2875			
2040	2244	2413	2440	2697	2887			
2050	2255	2425	2450	2710	2898			
2060	2266	2437	2460	2723	2910			
2070	2277	2449	2470	2736	2922			
2080	2288	2461	2480	2749	2934			
2090	2299	2472	2490	2762	2946			

The above weight and moment limits are based on the following weight and center of gravity limit data:

NORMAL CATEGORY

WEIGHT CONDITION	FWD CG LIMIT	AFT CG LIMIT
2750 lb (Max. Take-Off or Landing)	113.0	118.3
2375 lb or less	110.0	118.3

GROSS WEIGHT MOMENT LIMITS

(UTILITY CATEGORY)

Gross Weight	Minimum Moment 100	Maximum Moment 100	Gross Weight	Minimum Moment 100	Maximum Moment 100
1700	1870	1921	2050	2255	2317
1710	1881	1932	2060	2266	2328
1720	1892	1944	2070	2277	2339
1730	1903	1955	2080	2288	2350
1740	1914	1966	2090	2299	2362
1750	1925	1978			
1760	1936	1989	2100	2310	2373
1770	1947	2000	2110	2321	2384
1780	1958	2011	2120	2332	2396
1790	1969	2023	2130	2343	2407
			2140	2354	2418
1800	1980	2034	2150	2365	2430
1810	1991	2045	2160	2376	2441
1820	2002	2057	2170	2387	2452
1830	2013	2068	2180	2398	2463
1840	2024	2079	2190	2409	2475
1850	2035	2091			
1860	2046	2102	2200	2420	2486
1870	2057	2113	2210	2431	2497
1880	2068	2124	2220	2442	2509
1890	2079	2136	2230	2453	2520
			2240	2464	2531
1900	2090	2147	2250	2475	2543
1910	2101	2158	2260	2486	2554
1920	2112	2170	2270	2497	2565
1930	2123	2181	2280	2508	2576
1940	2134	2192	2290	2519	2588
1950	2145	2204			
1960	2156	2215	2300	2530	2599
1970	2167	2226	2310	2541	2610
1980	2178	2237	2320	2552	2622
1990	2189	2249	2330	2563	2633
			2340	2574	2644
2000	2200	2260	2350	2585	2656
2010	2211	2271	2360	2596	2667
2020	2222	2283	2370	2607	2678
2030	2233	2294	2375	2613	2684
2040	2244	2305			

The above weight and moment limits are based on the following weight and center of gravity limit data:

UTILITY CATEGORY

WEIGHT CONDITION	FWD CG LIMIT	AFT CG LIMIT
2375 lb (Max. Take-Off or Landing)	110.0	113.0
2375 lb or less	110.0	113.0

COMPUTING PROCEDURE

1. Record the Basic Empty Weight and Moment from the Basic Empty Weight and Balance form (or from the latest superseding 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, taxi, and take-off to arrive at the SUB-TOTAL Take-off Condition.

6. Subtract the weight and moment of the fuel in the incremental sequence in which it is to be used from the take-off weight and moment. 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 graph for that weight. If the total moment is less than the minimum moment allowed, useful load items must be shifted aft or forward load items reduced. If the total moment is greater than the maximum moment allowed, useful load items must be shifted forward or aft load items reduced. If the quantity or location of load items is changed, the calculations must be revised and the moments rechecked.

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

MODEL A24R DATE _____

SERIAL NO. MC-XXX REG NO. NXXX

ITEM	WEIGHT	MOM/100
1. BASIC EMPTY CONDITION	1720	1912
2. FRONT SEAT OCCUPANTS	340	374
3. 3rd and 4th SEAT OCCUPANTS	340	482
4. 5th and 6th SEAT OCCUPANTS	130	222
5. BAGGAGE	-	-
6. CARGO	-	-
7. SUB TOTAL ZERO FUEL CONDITION	2530	2990
8. FUEL LOADING (32 GAL)	192	225
9. SUB TOTAL RAMP CONDITION	2722	3215
10. *LESS FUEL FOR START, TAXI, AND TAKE-OFF	-8	-9
11. SUB TOTAL TAKE-OFF CONDITION	2714	3206
12. LESS FUEL TO DESTINATION (25 GAL)	-150	-176
13. LANDING CONDITION	2564	3030

*Fuel for start, taxi and take-off is normally 8 lbs at an average mom/100 of 9.

WEIGHT AND BALANCE LOADING FORM

MODEL _____ DATE _____

SERIAL NO. _____ REG NO. NXXX

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. BAGGAGE		
6. CARGO		
7. SUB TOTAL ZERO FUEL CONDITION		
8. FUEL LOADING (GAL)		
9. SUB TOTAL RAMP CONDITION		
10. *LESS FUEL FOR START, TAXI, AND TAKE-OFF		
11. SUB TOTAL TAKE-OFF CONDITION		
12. LESS FUEL TO DESTINATION (GAL)		
13. LANDING CONDITION		

*Fuel for start, taxi and take-off is normally 8 lbs at an average mom/100 of 9.

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

WEIGHT	*FRONT SEATS	3RD AND BENCH SEAT	4TH SEATS SPLIT SEAT
	ARM **110	ARM **142	ARM **144
	MOM / 100	MOM / 100	MOM / 100
120	132	170	173
130	143	185	187
140	154	199	202
150	165	213	216
160	176	227	230
170	187	241	245
180	198	256	259
190	209	270	274
200	220	284	288

*Reclining seat with back in full-up position.

**Values computed from a C.G. criterion based on a 170 pound male. Differences in physical characteristics can cause variation in center of gravity location.

USEFUL LOAD WEIGHTS AND MOMENTS
OCCUPANTS

5th & 6th SEATS ARM 171			
Weight	Moment / 100	Weight	Moment / 100
80	137	140	239
90	154	150	257
100	171	160	274
110	188	170	291
120	205	180	308
130	222	190	325
		200	342

USABLE FUEL

ARM 117		
GALLONS	WEIGHT	MOMENT/100
5	30	35
10	60	70
15	90	105
20	120	140
22	132	154
25	150	176
27	162	189
30	180	211
32	192	225
35	210	246
37	222	259
40	240	281
45	270	316
50	300	351
52	312	365
55	330	386
57	342	400
58	348	407

USEFUL LOAD WEIGHTS AND MOMENTS

BAGGAGE
ARM 167

Weight	Moment / 100	Weight	Moment / 100
10	17	150	251
20	33	160	267
30	50	170	284
40	67	180	301
50	84	190	317
60	100	200	334
70	117	210	351
80	134	220	367
90	150	230	384
100	167	240	401
110	184	250	418
120	200	260	434
130	217	270	451
140	234		