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Beechcraft Bonanza V35B

Pilot Handbook

Revised
April 2010

BEECHCRAFT Bonanza V35B

THANK YOU ... for displaying confidence in us by selecting our V35B Bonanza for Microsoft Flight Simulator. Our design and technical team have utilized their skills and years of experience to ensure that the Bonanza meets the high standards of quality and performance for which FlightSim Developers airplanes have become famous throughout the world.

IMPORTANT NOTICE

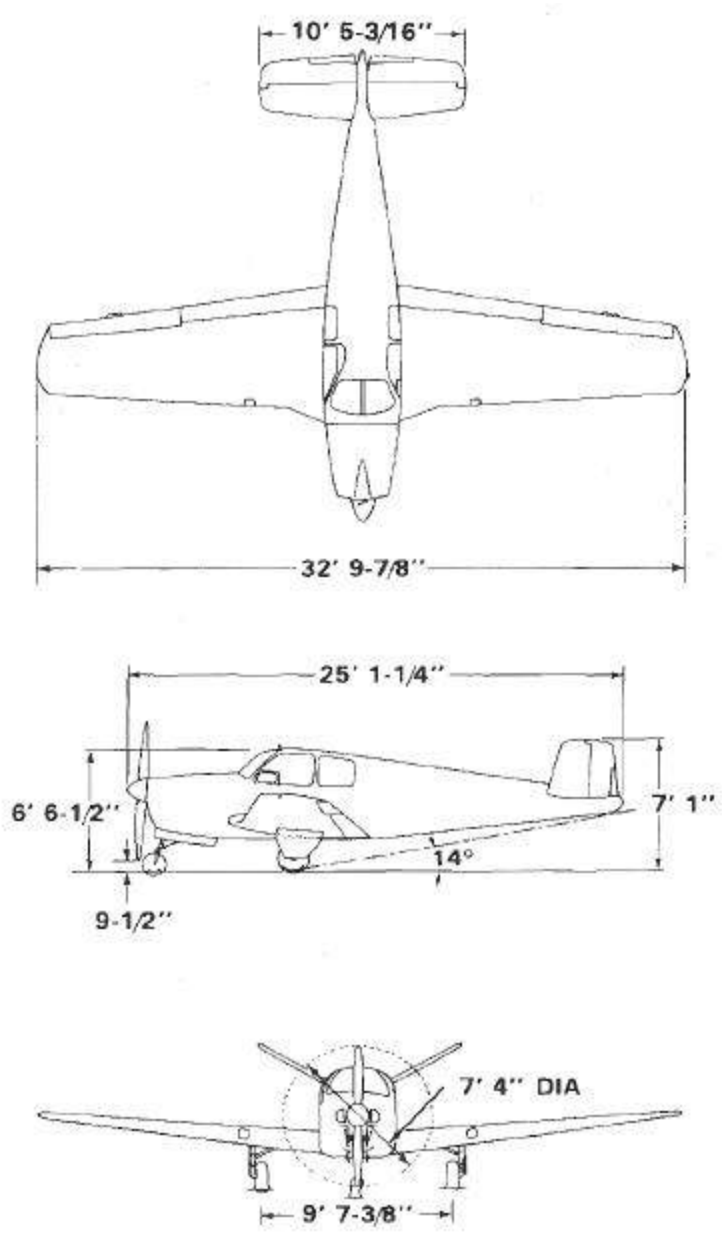
This handbook must be read carefully by the owner and operator in order to become familiar with the operation of the V35B Bonanza. The handbook presents suggestions and recommendations to help enhance your simulation experience and efficiently operate the aircraft.

EULA

USE OF THE HANDBOOK

The Pilot's Operating Handbook is designed to maintain documents necessary for the safe and efficient operation of the Bonanza.

3-View Diagram



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Section I General

DESCRIPTIVE DATA

ENGINE

The V35B Bonanza is powered by either a Continental E185-1 or E185-8 six cylinder engine rated for a maximum take-off power of 185 hp at 2300 rpm (max. one minute). The maximum continuous rating is 165 hp at 2050 rpm.

PROPELLER

Beech electrically controlled variable pitch, two blade, 88¬inch diameter propeller with Beech pitch control motor and spinner. The propeller uses a Beech R203-100 hub with either R201-217-88 or R203-218-88 blades.

FUEL

Aviation Gasoline 80/87 (red) minimum grade or alternate grades 100LL (blue) or 100/130 (green).

Standard fuel system: Two 20-gallon tanks in wings. Total 34 gallons usable.
Optional fuel system: Two 20 gallon main tanks in wings and either one 10 gallon or one 20 gallon auxiliary tank installed in the baggage compartment. All of the capacity of the 10 gallon tank is usable. The 20 gallon tank adds 19 gallons usable fuel to the system.

OIL CAPACITY

The oil capacity is 10 quarts.

WEIGHTS

Maximum Ramp Weight	2660 lbs
Maximum Take-Off Weight	2650 lbs
Maximum Landing Weight	2650 lbs

CABIN DIMENSIONS

Length	6 ft 11 in.
Height	4 ft 2 in,
Width	3 ft 6 in.
Entrance Door	36 in. x 37 in.

BAGGAGE

Volume	16.5 cu ft
Capacity	270 lbs
Baggage Door	22.5 in. x 18.5 in.

TERMINOLOGY AND SYMBOLS

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 when corrected for instrument error. IAS values published in this handbook assume zero instrument error.

KCAS — Calibrated Airspeed expressed in "knots".

KIAS — Indicated Airspeed expressed in "knots".

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

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

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 ot altitude in the shortest possible horizontal distance.

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

METEOROLOGICAL TERMINOLOGY

ISA International Standard Atmosphere in which

(1) The air is a dry perfect gas;
(2) The temperature at sea level is 15° Celsius (59° Fahrenheit);
(3) The pressure at sea level is 29.92 inches Hg. (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 in-flight temperature indications adjusted for instrument error and compressibility effects, or ground meteorological sources.
Indicated Pressure Altitude	The number actually read from an altimeter when the barometric sub¬scale has been set to 29.92 inches of mercury (1013.2 millibars).
Pressure Altitude	Altitude measured from standard sea-level pressure (29.92 in. Hg) by a pressure or barometric altimeter.
Station Pressure	It is the indicated pressure altitude corrected for position and instrument error. In this Handbook, altimeter instrument errors are assumed to be zero. Position errors may be obtained from the Altimeter Correction Chart. Actual atmospheric pressure at field elevation.
Wind	The wind velocities recorded as variables on the charts of this handbook are to be understood as the headwind or tailwind components of the reported winds.

POWER TERMINOLOGY

Take off	Maximum power rating, limited by time.
Maximum Continuous	Highest power rating not limited by time.
Cruise Climb	Power recommended for cruise climb.

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 gauge.
Mixture Control	This control is used to set fuel to air ratio 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/air mixtures for various power settings.
Tachometer	Indicates the rpm of the engine/ propeller.
ADI	Automatic Direction Indicator (artificial horizon)
RMI	Radio Magnetic Indicator

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 flu ids 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.

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Section II Limitations

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 VNE	176	202	177	204	Do not exceed this speed in any operation
Maximum Structural Cruising V_{NO} or Vc	139	160	140	161	Do not exceed this speed except in smooth air and then only with caution
Maneuvering VA	113	130	114	131	Do not make full or abrupt control movements above this speed
Maximum Flap Extension/Extended VFE	91	105	91	105	Do not extend flaps or operate with flaps extended above this speed
Maximum Landing Gear Operating! Extended VLO and VLE	109	125	110	127	Do not extend, retract or operate with landing gear extended above this speed except in emergency

AIRSPEED INDICATOR MARKINGS

MARKING	CAS		IAS		SIGNIFICANCE
	KNOTS	MPH	KNOTS	MPH	
White Arc	49-91	56-105	45-91	52-105	Full Flap Operating Range
Green Arc	58-139	67-160	54- 140	62-161	Normal Operating Range
Yellow Arc	139-176	160-202	140-1 77	161-204	Operate with caution only in
					smooth air
Red Line	176	202	177	204	Maximum speed for ALL operations

POWER PLANT LIMITATIONS

ENGINE

A35 Continental E 185-1 or E 185-8
Take-off
(one minute) ..... 2300 rpm, Full throttle

Maximum continuous
operation ..... 2050 rpm, Full throttle

B35 Continental E185-8 (S/N 51220 and above)
Take-off
(one minute)..... 2450 rpm, Full throttle

Maximum continuous
operation ..... 2050 rpm, Full throttle

NOTE
Other engines are approved for this model Bonanza but not installed as original equipment. These are listed in the FAA Aircraft Specification A-777 or approved by Supplemental Type Certificate.

FUEL

Aviation Gasoline 80/87 (red) minimum grade or alternate grades 100LL (blue) or 100/130 (green). See Engine Manufacturer's Bulletin.

OIL

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

PROPELLER

Beech - two blade. 88 inch diameter (max.) propeller.

POWER PLANT INSTRUMENT MARKINGS

OIL TEMPERATURE	
Caution (Yellow Radial)	100°F/38°C
Operating Range (Green Arc)	100° to 225°F/38° to 107°C
Maximum (Red Radial)	225°F/107°C
OIL PRESSURE	
Minimum Pressure (Red Radial)	30 psi
Operating Range (Green Arc)	30 to 60 psi
Maximum Pressure (Red Radial)	80 psi
TACHOMETER	
Operating Range (Green Arc)	1300 to 2050 rpm
Cautionary Range (Yellow Arc)	2050 to 2300 rpm
Maximum RPM (Red Radial)	2300 rpm
CYLINDER HEAD TEMPERATURE	
Operating Range (Green Arc)	300° to 460°Fj149° to 238°C
Maximum Temperature (Red Radial)	525°F;274°C
MANIFOLD PRESSURE	
Operating Range (Green Arc)	15 to 29.6 in. Hg
Maximum (Red Radial)	29.6 in. Hg
FUEL PRESSURE	
Minimum (Red Radial)	9 psi
Operating Range (Green Arc)	11 to 14 psi
Maximum (Red Radial)	14 psi

WEIGHT AND CENTER OF GRAVITY

Maximum Take-off and Landing Weight	2650 lbs
Maximum Ramp Weight	2660 lbs
Zero Fuel Weight	No Structural Limitation

Datum is 83.1 inches forward of center line through forward jack points.

MAC leading edge is 66.7 inches aft of datum. MAC length is 65.3 inches.

CG LIMITS (Gear Down)	
Forward:	75.9 inches aft of datum to 2140 lbs with straight line variation to 83.7 inches at 2650 lbs.
Aft:	85.4 inches aft of datum to 2405 lbs with straight line variation to 84.4 inches at 2650 lbs.

APPROVED MANEUVERS (2650 POUNDS)

MANEUVER	ENTRY SPEED (CAS)
Chandelle	113 kts/130 mph
Steep Turn	113 kts/130 mph
Lazy Eight	113 kts/130 mph
Stall (Except Whip)	Use slow deceleration

Spins are prohibited.

FLIGHT LOAD FACTORS (2650 POUNDS)

4.4G positive maneuvering load factor with flaps up. 2.0G positive maneuvering load factor with flaps down.

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 aircraft such as galley equipment, entertainment systems, passenger convenience items, etc. However, it is important to note that ALL ITEMS WHICH ARE RELATED TO THE AIRWORTHINESS OF THE AIRPLANE AND NOT INCLUDED ON THE LIST ARE AUTOMATICALLY REQUIRED TO BE OPERATIVE.

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

NOTE
FLIGHT IN KNOWN ICING CONDITIONS PROHIBITED.

Emergency Procedures

EMERGENCY AIRSPEEDS

Emergency Descent	110 kts/127 mph
Glide	105 kts/121 mph
Emergency Landing Approach	70-76 kts/81-87 mph

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

1. Mixture - IDLE CUT-OFF
2. Fuel Selector Valve - OFF
3. Battery, Generator and Ignition Switches - OFF
4. Extinguish with Fire Extinguisher.

ENGINE FAILURE ON TAKE-OFF

DURING GROUND ROLL

1. Throttle - CLOSED
2. Braking - MAXIMUM
3. Fuel Selector Valve - OFF
4. Battery and Generator Switches - OFF

If airborne and insufficient runway remains for landing:

1. Fuel Selector Valve - SELECT OTHER MAIN TANK
2. Auxiliary (Wobble) Fuel Pump - PUMP (9 TO 10 P.S.I.)
3. Mixture - FULL RICH
4. Ignition - CHECK, ON BOTH

IF NO RESTART

1. Select most favorable landing site.
2. See EMERGENCY LANDING procedure.
3. The use of landing gear is dependent on the terrain where landing must be made.

ENGINE MALFUNCTION IN FLIGHT

ENGINE FAILURE

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

DISCREPANCY CHECKS

(Rough running engine, loss of engine power, loss of fuel flow, etc.)

1. Rough Running Engine
   a. Mixture - FULL RICH, then lean as required
   b. Ignition Switch - CHECK on BOTH position

2. Loss of Power
   a. Fuel Pressure Gage - CHECK (fuel pressure abnormally low)
   (1) Mixture - FULL RICH
   (2) Auxiliary (Wobble) Fuel Pump - MAINTAIN FUEL PRESSURE
   (3) Auxiliary (Wobble) Fuel Pump - STOP if performance does not improve in a few moments

   b. Fuel Quantity Indicator - CHECK (fuel tank being used is empty)
   (1) Select other tank (check to feel detent)

   c. Carburetor Heat - Pull full carburetor heat and check for manifold pressure drop. Push carburetor heat to cold position - manifold pressure should return to original position.
3. Propeller Overspeed
a. Retard throttle to reduce RPM to red line.
b. Propeller switch to manual LO RPM.
c. Reduce speed to assist in maintaining altitude.
d. Select nearest landing site, follow emergency landing procedures.

AIR START PROCEDURE
a. Mixture - IDLE CUT-OFF
b. Fuel Selector Valve - OFF to clear engine then TO MAIN TANK MORE NEARLY FULL

NOTE
If the failure was due to the fuel metering valve sticking in the full open position, the carburetor will deliver an excess of fuel, with constant flooding. Shutting off fuel momentarily will clear the engine and may restore normal operation by allowing the spring in the carburetor to reseat the valve.

c. Throttle - 1/4 INCH OPEN
d. Mixture - FULL RICH
e. Auxiliary (Wobble) Fuel Pump - MAINTAIN FUEL PRESSURE
f. Throttle - ADVANCE to desired power

ENGINE FIRE (FLIGHT)

The red VENT SHUTOFF control on the outboard side of the right lower subpanel is used to close off all heating system outlets so that smoke and fumes will not enter the cabin. In the event of engine fire, shut down the engine as follows and make a landing:

1. Vent Shutoff Control - PULL TO CLOSE
2. Mixture - IDLE CUT-OFF
3. Fuel Selector Valve - OFF
4. Battery, Generator, and Ignition Switches - OFF (Extending the landing gear can be accomplished manually if desired.)
5. Do not attempt to restart engine.

EMERGENCY DESCENT

1. Power - IDLE
2. Propeller - HI RPM
3. Landing Gear - DOWN
4. Airspeed - ESTABLISH 110 kts/127 mph

MAXIMUM GLIDE CONFIGURATION

1. Landing Gear - UP
2. Flaps - UP
3. Cowl Flaps - CLOSED
4. Propeller - LO RPM
5. Airspeed - 105 kts/121 mph

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

EMERGENCY LANDING

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

1. Airspeed - Establish 70 to 76 kts;81 to 87 mph
2. Fuel Selector Valve - OFF
3. Mixture - IDLE CUT-OFF
4. Flaps - AS REQUIRED
5. Landing Gear - DOWN OR UP, DEPENDING ON TERRAIN
6. Battery, Generator and Ignition Switches - OFF

GEAR-UP LANDING

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. Mixture - IDLE CUT-OFF
3. Battery, Generator and Ignition Switches - OFF
4. Fuel Selector Valve - OFF
5. Keep wings level during touchdown.
6. Get clear of the airplane as soon as possible after it stops.

UNLATCHED DOOR IN FLIGHT

If the cabin door is not locked it may come unlatched in flight. This may occur during or just after take-off. The door will trail in a position approximately 3 inches open, but the flight characteristics of the airplane will not be affected. except that rate of climb will be reduced. 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.

GENERATOR OUT PROCEDURE

A failure of the generator will place the entire electrical operation of the aircraft on the battery. Generator failure may be indicated by the ammeter. When a generator failure occurs in flight, all non-essential electrical load should be discontinued to conserve the battery life.

SPINS

Spins are prohibited. 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.

INDUCTION SYSTEM ICING

The possibility of fuel icing is reduced by the design of the pressure carburetor. Under certain conditions, however, impact ice can form at several points in the induction system. As with fuel ice, the first indication of impact ice formation probably will be a slight drop in manifold pressure. During possible icing conditions, any such drop should be investigated immediately.

To check for carburetor ice in possible icing conditions:

a. Note manifold pressure, then, apply full carburetor heat. Manifold pressure will drop slightly. Do not correct for this drop.
b. After one or two minutes, switch back to cold air. If manifold pressure rises higher than the point observed before applying carburetor heat, carburetor icing is indicated.
c. Apply carburetor heat immediately until icing conditions no longer exist. Use high power settings and lean mixtures to produce maximum heat under possible icing conditions.

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 maintenance manual procedures is required, with repair as necessary.

Normal Procedures

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

SPEEDS FOR SAFE OPERATION

Take-off	64 kts
Lift-off 50 Ft.	70 kts
Maximum Climb	
Best Rate	89 kts
Best Angle	72 kts
Cruise Climb	104 kts/120 mph
Maximum Turbulent Air Penetration	114 kts
Balked Landing	65 kts
Landing Approach	65 kts
Maximum Demonstrated Crosswind	17 Kts

PREFLIGHT INSPECTION

1. CABIN:
   a. Parking Brake - SET
   b. Control Lock - REMOVE
   c. All Switches - OFF
   d. Emergency Locator Transmitter - ARMED
2. RIGHT FUSELAGE:
   a. Baggage Compartment Door - SECURE
   b. Static Pressure Button - UNOBSTRUCTED
3. EMPENNAGE:
   a. Control Surfaces - CHECK
   b. Tie Down - REMOVE
   c. Position Light - CHECK

BEFORE STARTING

1. Seat Belts and Shoulder Harnesses - FASTEN
2. Parking Brake - SET
3. All Avionics - OFF
4. Circuit Breakers - IN
5. Landing Gear Handle - DOWN
6. Flaps - UP
7. Cowl Flaps - OPEN
8. Light Switches - OFF
9. Battery and Generator Switches - ON (If external power is used, turn Generator Switch - OFF)
10. Ignition Switch - BATTERY
11. Fuel Quantity Indicators - CHECK QUANTITY

WARNING
Do not take off if gauges indicate in yellow arc or with less than 10 gallons in each main tank.

12. Activate the selector valve several times by rotating the handle from tank to tank to ensure that the se• lector valve is free.
13. Fuel Selector Valve - SELECT LEFT MAIN TANK.

STARTING

CAUTION
Vernier-type engine controls should not be rotated clockwise after being advanced to the full forward position.

1. Mixture - FULL RICH
2. Propeller - HI RPM

NOTE
On governor equipped propeller, switch in AUTO and governor control at TAKE-OFF.

3. Throttle - OPEN (2 or 3 turns of vernier.)
4. Ignition Switch - BOTH
5. Auxiliary (wobble) Fuel Pump - Pump and maintain 9 to 10 P.S.I.
6. Starter Button - Press until engine starts.
7. Primer - Brief shots until engine starts firing

NOTE
If a false start occurs or the starter button is released after the ignition switch has been turned to the BOTH position, the ignition switch must be turned to the BATT position before the starter button will again energize the starter.

NOTE
If starting fuel pressure is low, maintain pressure with auxiliary (wobble) fuel pump until pressure stabilizes.

8. In the Event of Overprime Condition:
   a. Mixture - IDLE CUT-OFF
   b. Throttle - OPEN
   c. Starter Button - PRESS
   d. As engine starts reduce throttle to IDLE and advance mixture to FULL RICH
9. Oil Pressure - CHECK
10. External Power (if used) - DISCONNECT. Battery and Generator Switches ON.
11. Warm up - 1000 to 1200 rpm.

NOTE
Do not operate engine above warm-up speed until oil temperature reaches 100°F (38°C).

12. All Engine Indicators - CHECK
13. Avionics Equipment - AS REQUIRED
14. Lights - AS REQUIRED

BEFORE TAKE-OFF

1. Parking Brake - SET
2. Radios - CHECK
3. Engine Instruments - CHECK
4. Flight Instruments - CHECK and SET
5. Throttle - 1900 RPM
6. Propeller - Hold Propeller Control Switch in LO RPM position until a decrease in RPM is noted, and then hold switch to HI RPM until RPM is regained.
    1. Check Automatic Propeller Control by moving propeller switch to the AUTO position and turning APC knob full left until RPM starts to decrease, then turn knob to the Take-Off position (full right),
7. Magnetos - CHECK at 1600 rpm. Drop should not exceed 75 rpm on either magneto, and should be within 50 rpm of each other.
8. Carburetor Heat - CHECK and return to COLD
9. Trim - SET
    a. Aileron - NEUTRAL
    b. Elevator - 00 (30 nose down for aft loading)
10. Flaps - UP
11. Door and Windows - SECURE
12. Seat Belts and Shoulder Harnesses - SECURE

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

13. Controls - FREE
14. Mixture - FULL RICH (or as required by field elevation)
15. Brakes - RELEASED
16. Instruments - CHECK, make final check of manifold pressure, fuel pressure, and rpm at the start of the take-off run. Oil temperature less than 215°F.

TAKE-OFF

Take-Off Power (B35)
(1 min.) Full throttle, 2450 rpm

1. Power - SET TAKE-OFF POWER AND RELEASE BRAKES
2. Airspeed - ACCELERATE TO RECOMMENDED SPEED
3. Landing Gear - RETRACT (when positive rate of climb is established)
4. Airspeed - ESTABLISH DESIRED CLIMB SPEED (when clear of obstacles)
5. Propeller - 2050 rpm.

CLIMB

Climb Full throttle, 2050 rpm

1. Engine Temperatures - MONITOR
2. Power - SET AS DESIRED.

CRUISE

1. Cowl Flaps - CLOSED
2. Power - SET
3. Mixture - ADJUST

DESCENT

1. Power - SET AS DESIRED (Avoid prolonged idle setting and low cylinder head temperatures)
2. Mixture - Enrich as required.
3. Carburetor Heat - As required.

BEFORE LANDING

1. Seat Belts and Shoulder Harnesses - SECURE

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

2. Fuel Selector Valve - SELECT MAIN TANK MORE NEARLY FULL
3. Cowl Flaps - AS REQUIRED
4. Mixture - FULL RICH
5. Carburetor Heat - COLD

NOTE
If icing conditions are indicated, carburetor heat may be carried: however, less power will be available for a go-around.

6. Landing Gear - DOWN and CHECK. (Maximum extension speed 110 kts/127 mph)
7. Flaps - DOWN (Maximum extension speed 92 kts/106 mph)
8. Airspeed - ESTABLISH NORMAL LANDING AP¬PROACH SPEED.
9. Propeller
    a. Manual - Hold to HI RPM until maximum is attained.
    b. Automatic Propeller Control (APC) - Select AUTO CLIMB.

NOTE
For Balked Landing, advance throttle, retract gear and flaps, select AUTO TAKE-OFF, moni¬tor engine RPM and do not exceed red line.

SHUTDOWN

1. 1, Cowl Flaps - OPEN
2. Brakes - SET
3. Electrical and Radio Equipment - OFF
4. Flaps - UP
5. Propeller - HI RPM
6. Carburetor Heat - COLD
7. Throttle - CLOSE
8. Mixture - IDLE CUT-OFF
9. Ignition Switch - OFF, after engine stops
10. Battery and Generator Switches - OFF
11. Control lock - INSTALL, if conditions warrant.
12. Install wheel chocks and release brakes if the airplane is to be left unattended.

Systems Description

TRIM CONTROL

Elevator trim is controlled by a handwheel located to the left of the throttle. An elevator tab indicator dial is located immediately below the control column.

WING FLAPS

The flaps are raised and lowered electrically by jackscrew actuators driven through flexible shafts from a single motor and gearbox under the front seat.

INSTRUMENT PANEL

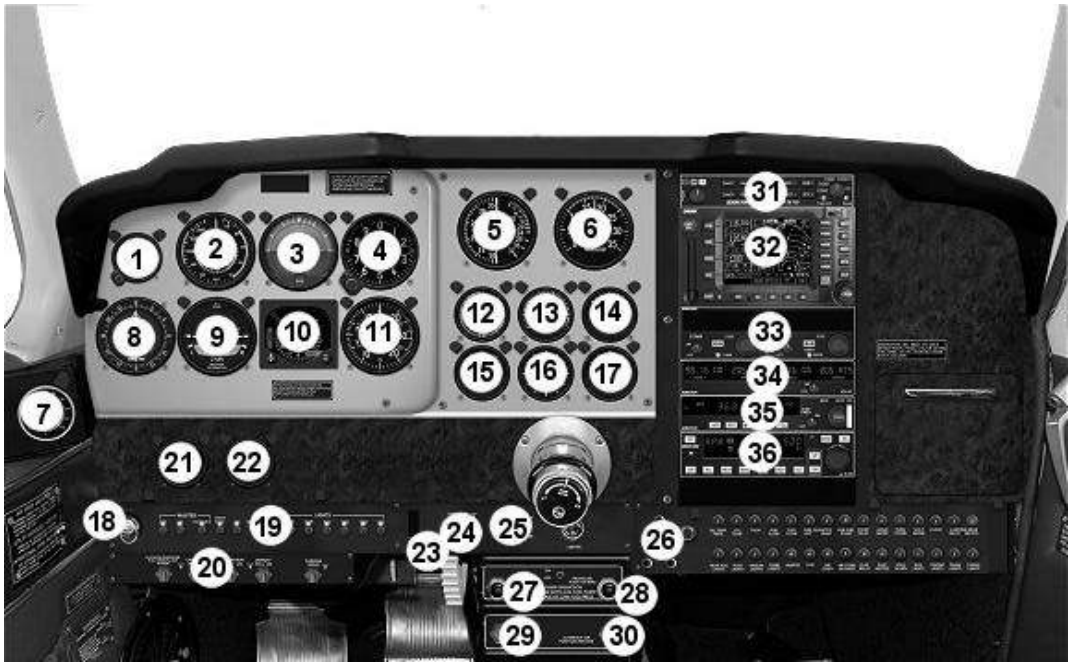
The instrument panel for this airplane consists of fixed and floating panels, an engine instrument cluster on the center of the instrument panel above the control column, a radio grouping on the left side of the instrument panel and subpanels which provide a compact circuit breaker group on the right side, and switch panels on both sides.

Standard instrumentation on the Bonanza includes an airspeed indicator, altimeter and electric turn-and-bank indicator mounted in the instrument panel; magnetic compass mounted on the windshield divider; a clock mounted in the instrument panel, and outside air thermometer at the top of the divider. In addition to several radio-navigation combinations, optional instruments for which openings are provided in the instrument panel include a vacuum-operated directional gyro and attitude gyro, and the suction gauge necessary when these instruments are installed.

The battery master switch and generator switches are located under a door in a panel under the right side of the instrument panel. The key operated battery ignition switch is located below the control column.

Toggle type key switches on the right and left subpanels operate landing gear, flaps, exterior lighting, fuel gauge selectors, and radios.

The Bonanza is powered by a Continental E185-8 six-cylinder, horizontally opposed engine rated at 185 hp at 2300 rpm for take-off (max. one minute).



1. Clock
2. Airspeed
3. ADI
4. Altimeter
5. Manifold Pressure
6. Tachometer
7. OAT Gauge
8. RMI
9. Turn Coordinator
10. HSI
11. Vertical Speed
12. Oil Gauge
13. CHT Gauge
14. Battery Bus Amps
15. Left Fuel Qty
16. Wing Tanks Qty
17. Right Fuel Qty
18. Starter/Magnetos
19. Switch Panel
20. Heat/AC Ctrls
21. Vacuum Gauge
22. Batter Bus Volts
23. Elevator Trim
24. Cowl Flaps Ctrl
25. Flaps Ctrl
26. Gear Ctrls
27. Throttle
28. Prop RPM Ctrl
29. Fuel Mixture
30. Alt Air Source
31. Audio Panel
32. GNS 480 GPS
33. NAV/COM Radio
34. DME Radio
35. ADF Radio
36. Autopilot

ENGINE INSTRUMENTS

The engine instruments include: cylinder head temperature, oil temperature, oil pressure indicators, tachometer, manifold pressure, fuel pressure, and fuel quantity indicators, and an ammeter.

Except for the tachometer and manifold pressure gauge, the power plant instruments are grouped together immediately above the control console. The engine gauge cluster includes the fuel quantity and fuel pressure gauges, oil pressure gauge, the oil temperature and cylinder head temperature indicators and ammeter.

MANIFOLD PRESSURE GAUGE AND TACHOMETER

The manifold pressure gauge and tachometer are mounted in the instrument panel proper. The tachometer is driven by a flexible shaft from the engine accessory section. Incorporated in the tachometer is an engine hour meter which automatically records the total engine operating time.

ENGINE CONTROLS

THROTTLE, MIXTURE AND PROPELLER

The push-pull throttle and mixture controls are located on and to the left of the control console respectively. These controls are released for repositioning by pushing a button on the knob. With the button extended.

On the mixture control, releasing the knob locks the control. The control is pushed in for full rich and pulled out to the end of its travel for idle cut-off.

Propeller pitch is controlled by a three-position toggle switch on the control console, just to the left of the throttle.

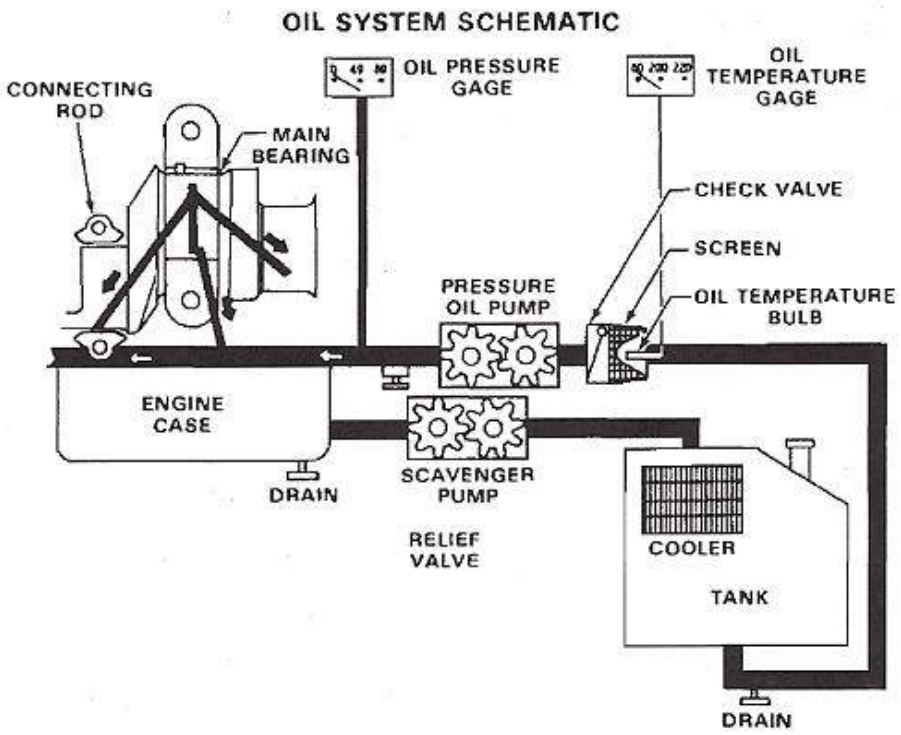
COWL FLAPS

The push-pull cowl flap control is located to the left of the control console on the subpanel. Except in extremely low temperatures. The cowl flaps should be open during ground operation, take-off, and climb.

OIL SYSTEM

In the Bonanza's oil system, oil is fed to the engine oil pump from a supply tank mounted just above and behind the engine. The return oil is picked up by a scavenging pump and returned to the supply tank, passing through a cooler which is an integral part of the tank. The oil tank capacity is 2-1;2 gallons. The filler neck of the A35 is accessible by raising the left engine cowling. The B35 has an access door on the left upper cowl. The level should be checked after each flight using the dipstick fastened to the filler cap. The normal oil operating level should be maintained at 8 to 10 quarts. Both oil pumps, the oil screen and a check valve to prevent oil from draining from the tank into the engine sump are incorporated in the engine accessory section. There is no engine oil shut-off valve and the system is so designed that oil bypass arrangements are unnecessary.

OIL SYSTEM SCHEMATIC



STARTER

The starter is relay-controlled to minimize the length of heavy cable required to carry the high amperage of the starter circuit. The starter is actuated by a key type, momentary-on switch located on the left of the control column. To energize the starter circuit, rotate the ignition switch to the START position and hold. Before starting it is necessary that the subpanel battery switch be turned on.

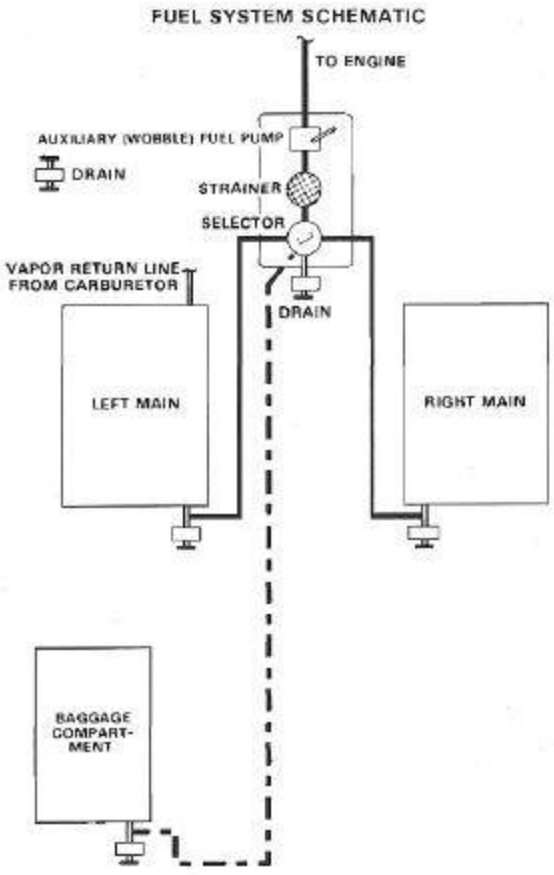
PROPELLER

Beech electrically controlled variable pitch, two blade, 88 inch diameter propeller with Beech pitch control motor and spinner. The propeller uses a Beech R203-100 hub with either R201 -217 -88 or R203-218-88 blades.

FUEL SYSTEM

The airplane is designed for operation on 80A37 grade (red) aviation gasoline. In the event this grade is not available only a higher rated fuel shall be used.

CAUTION
Before refueling, make certain the airplane and fuel dispensing unit are properly grounded. Failure to do so creates a fire hazard.



FUEL QUANTITY

Fuel quantity is measured by float operated sensors, located in each fuel tank. These transmit electrical signals to the indicator through selector switches on the panel that indicate fuel remaining in the tank selected. There are sensors in each fuel tank connected to the switches and indicator.
The fuel level of the fuselage auxiliary cell may be read by switching the auxiliary fuel gauge selector switch on the subpanel to Aux position.

FUEL TANK SELECTION

The fuel selector unit handle is located forward and to the left of the pilot's seat. Take-offs should be made using the left main tank and landings should be made using the main tank that is more nearly full. In no case should a take-off be made if the fuel indicators are in the yellow band or, with less than 10 gallons of fuel in each main tank.

SWITCHING FUEL TANKS
When switching fuel tanks, if one tank is allowed to run completely dry, it may be necessary to place the mixture control to Full Rich position and maintain fuel pressure with the Auxiliary Fuel Pump switch to aid in restarting the engine. Close the throttle as necessary to prevent engine overspeed on starting. As soon as the engine is running normally, discontinue the Auxiliary Fuel Pump and reset the mixture control.

The pressure type carburetor returns about 3 gallons per hour of excess fuel to the left main cell regardless of the cell selected. To provide space for the returned fuel, the left main cell should be used to approximately half full before switching. If the engine is allowed to stop firing due to insufficient fuel refer to the EMERGENCY PROCEDURES section for the Air Start procedures.

FUEL REQUIRED FOR FLIGHT

It is the pilot's responsibility to ascertain that the fuel quantity indicators are functioning and maintaining a reasonable degree of accuracy, and be certain of ample fuel for a flight. Takeoff is prohibited if the fuel quantity indicators do not indicate above the yellow arc. An inaccurate indicator could give an erroneous indication of fuel quantity. A minimum of 10 gallons of fuel is required in each main tank before takeoff.

LANDING GEAR SYSTEM

CAUTION
Never taxi with a flat strut.
The landing gears are operated through adjustable linkage connected to an actuator assembly mounted beneath the front seats. The actuator assembly is driven by an electric motor. The landing gears may be electrically retracted and extended, and in an emergency may be extended manually.

CONTROL SWITCH

The landing gear is controlled by a two-position switch on the right side of the subpanel. A latch on the control switch must be moved aside to place the switch in the up position.

POSITION INDICATORS

Landing gear position indicator lights on the right side of the control console show red when the gear is up, or green when it is down, illuminating only when the actuator assembly reaches either extreme. In addition, a mechanical indicator on the floorboard beneath the control console shows the position of the nose gear. Its pointer is linked by a cable to the actuating mechanism and moves simultaneously with it. Limit switches and a dynamic brake automatically stop the retract mechanism when the gear reaches it's full up or full down position.

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

WARNING HORN

With the landing gear retracted, if the throttle is retarded below approximately 12 in. Hg manifold pressure, a warning horn will sound intermittently.

BRAKES

The brakes on the main landing gear wheels are operated by applying toe pressure to the rudder pedals. The parking brake handle is located on the left side of the control console. To set the parking brakes, pull handle back and depress both toe pedals until firm. Push the handle forward to release the brakes.

NOTE
The parking brake should be left off and wheel chocks installed if the airplane is to be left unattended. Changes in ambient temperature can cause the brakes to release or to exert excessive pressures.

GROUND CONTROL

Steering is accomplished by use of the rudder pedals through a linkage arrangement which connects the nose strut to the rudder pedal shaft. Nose wheel straightening is accomplished by engagement of a roller with a track as the nose wheel is retracted. The steering link attaches to the steering mechanism on the nose strut with a swivel connection which permits the mechanism to disengage when the nose gear is retracted and operation of the rudder pedals will have no tendency to turn the nose wheel with the gear retracted.

ELECTRICAL SYSTEM

The system circuitry is the single wire, ground return type, with the aircraft structure used as the ground return. The battery ON-OFF switch and the generator ON-OFF switch are located on the switch subpanel on the pilot's lower panel.

GENERATOR

Direct-current electric power is supplied by a 25 ampere engine-driven generator controlled by a voltage-current regulator which automatically adjusts generator output to its load, including recharging the battery.

The ammeter is of the conventional charge-discharge type, showing the rate of charge or discharge of the battery. A zero reading, which should be the normal condition in cruising flight, indicates that the battery is fully charged and the generator output has been adjusted by the regulator to balance the load of electrical equipment then in use.

LIGHTING SYSTEM

The **Light Control Panel** is located on the switch panel on the lower section of the pilot's instrument panel.

INTERIOR LIGHTING

Lighting for the instrument panel is furnished by a light in the cabin ceiling. It is controlled by the INST switch on the Light Control Panel.

EXTERIOR LIGHTING

The switches for all of the exterior lights are located on the Light Control Panel. The exterior lights consist of navigation lights and landing lights. For longer battery and lamp life, use the landing lights sparingly; avoid prolonged operation which could cause overheating during ground maneuvering.

HEATING AND VENTILATION SYSTEM CABIN HEATING

A heater muffler on the left exhaust stack provides for heated air to five outlets in forward and aft areas of the cabin. Two forward outlets are located above and forward of each set of rudder pedals. One aft outlet is installed behind the right front seat. Two outlets provide heated air for windshield defrosting.

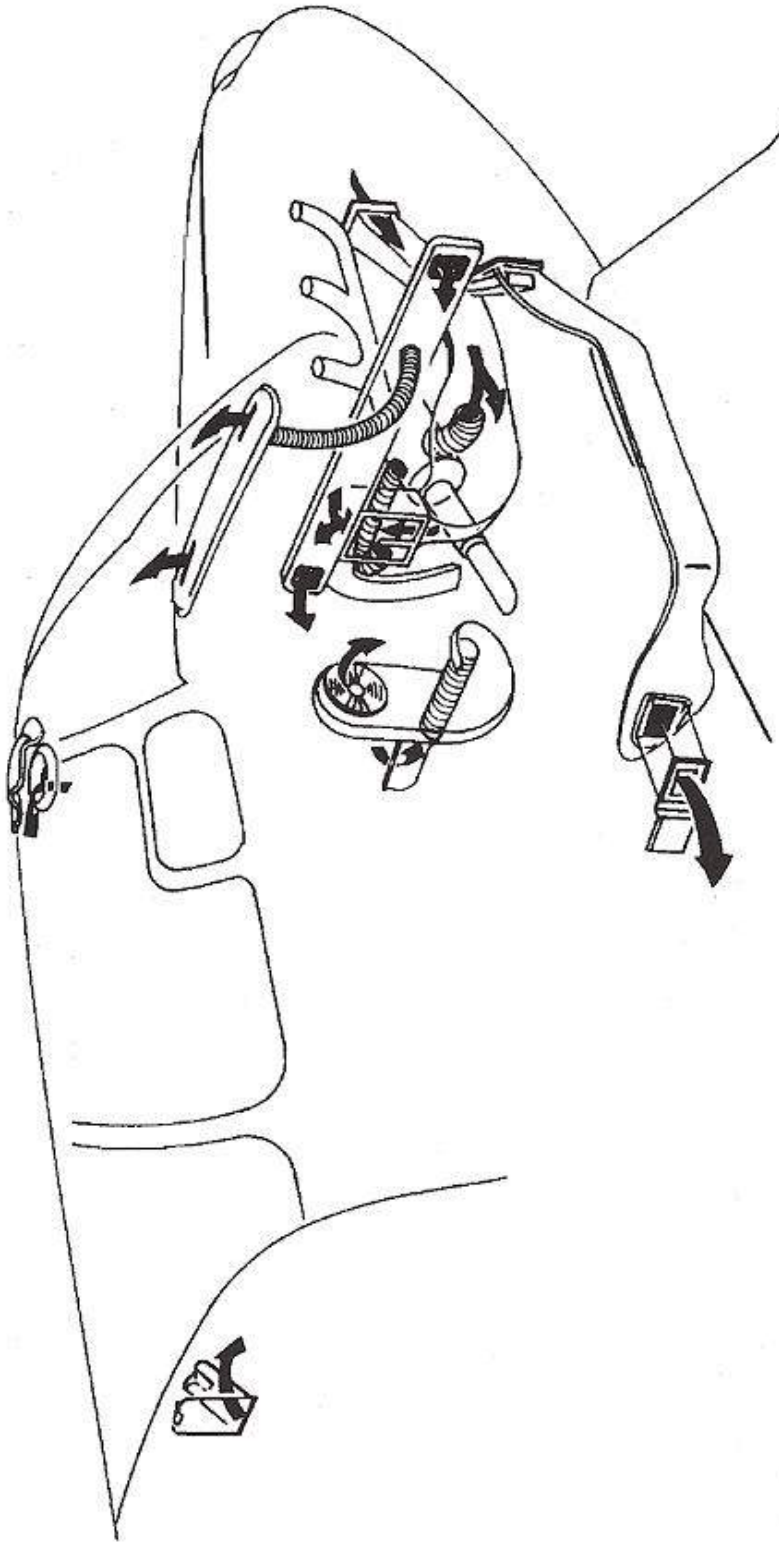
HEATER OPERATION

The cabin heat control is located on the lower pilot's subpanel. To obtain heated air to the cabin outlets, pull the CABIN HEAT control. The control regulates the amount of cold air that is mixed with the air from the heater muff. When the control is pulled fully out, the cold air is shut off and only heated air enters the cabin.

The forward vents, located on the firewall forward of the rudder pedals, deliver heated air to the forward cabin when the CABIN HEAT control is pulled out. For maximum heat the control is pulled fully out. To obtain increased heated air for defrosting the windshield close the toe-pedal type valves at the front hot air outlets.

CABIN VENTILATION

In moderate temperatures, ventilation air can be obtained from the same outlets used for heating, by pushing the CABIN HEAT control full forward.



HEATING AND VENTILATION SYSTEM SCHEMATIC

PITOT AND STATIC SYSTEM

The pitot and static system provides a source of impact and static air for the operation of the altimeter, rate of climb and airspeed indicator. The pitot mast is located on the leading edge of the left wing. The static system provides a source of static air to the flight instruments through a flush static fitting on each side of the airplane fuselage.

Heating the Pitot element is essential. The heater switch is located on the switch panel on the pilot's lower instrument panel.

VACUUM SYSTEM

Vacuum for air driven gyroscopic flight instruments and other air driven equipment is supplied by an engine driven vacuum pump. An adjustable relief valve controls suction by bleeding outside air into the vacuum pump. The relief valve and an oil separator, which removes oil from the air, are located on the forward side of the firewall.

A suction gauge indicates system vacuum in inches Hg. This instrument is located on the instrument panel; exact location may vary according to panel configuration. The vacuum should be maintained within 4-6 In.Hg. for proper operation of the air driven instruments.

STALL WARNING

To help prevent accidental stalls, a warning horn sounds as an incipient stall develops, while there is time for the pilot to correct the attitude. The horn, triggered by a sensing vane forward of the flap on the left wing, is effective in all flight attitudes and at all weights and airspeeds.

Performance

INTRODUCTION TO PERFORMANCE AND FLIGHT PLANNING

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 all performance graphs. In addition, the calculations for flight time, block speed and fuel required for a proposed flight are detailed below. All examples and calculations utilize 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-V81-AMA
For VFR Cruise at 11, 500 feet

ROUTE SEGMENT	MAGNETIC COURSE	DIST NM	WIND 11500 FEET DIR/KTS	OAT 11500 FEET °C	ALT SETTING IN.HG
DEN-COS	1610	55	010/30	-5	29.60
COS-PUB	1530	40	010/30	-5	29.60
PUB-TBE	1340	74	100/20	0	29.56
TBE-DHT	1320	87	200/20	9	29.56
DHT-AMA	1250	65	200/20	10	29.56

At Amarillo:

Outside Air Temperature	25°C (77°F)
Field Elevation	3605 ft
Altimeter Setting	29.56 in. Hg
Wind	180° at 10 kts
Runway 21 Length	13,500 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 AMA:
29.92 - 29.56 = .36 in. Hg

The pressure altitude at AMA is 360 feet above the field elevation.
3605 + 360 = 3965 ft

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

Calculations for flight time, block speed and fuel requirement:

Cruise Climb:
Enter the graph for CRUISE CLIMB at 15°C to 5,650 ft and to 2650 lbs. Enter at -5°C to 11,500 ft and to 2650 lbs. Read:

Time to Climb = (21.1 - 8) = 13.1 min
Fuel Used to Climb = (4 - 1.5) = 2.5 gal
Distance Traveled = (39 - 14) = 25 NM

The cruise power setting is assumed to be at 2050 rpm. Since cruise at 11,500 feet requires full throttle. The manifold pressure and fuel flow may be read from either the cruise power setting table for 139 HP or 120 HP.

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

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

DEN-PUB	OAT	=	-5°C
	ISA Condition	=	ISA + 3°C
PUB- TBE	OAT	=	0°C
	ISA Condition	=	ISA + 8°C
TBE-DHT	OAT	=	9°C
	ISA Condition	=	ISA + 8°C
DHT-AMA	OAT	=	10°C
	ISA Condition	=	ISA + 18°C

Enter the cruise power settings table for 139 HP (or full throttle) at 10,000 ft, 12,000 ft, ISA and ISA + 20°C.

ALTITUDE FEET	TEMPERATURE ISA			TEMPERATURE ISA + 20°C		
	MAN PRESS	FUEL FLOW PPH/GPH	TAS KNOTS	MAN PRESS	FUEL FLOW PPH/GPH	TAS KNOTS
10,000	19.9	56.0/9.3	141	19.9	54.2/9.0	141
12,000	18.4	52.7/8.8	138	18.4	51.3/8.6	138

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

ROUTE SEGMENT	MAN PRESS	FUEL FLOW PPH/GPH	TAS KNOTS
DEN-PUB	18.8	53.3/8.9	139
PUB-TBE	18.8	52.9/8.8	139
TBE-DHT	18.8	52.2/8.7	139
DHT -AMA	18.8	52.2/8.7	139

NOTE
The preceding are exact values for the assumed conditions.

Time and fuel used were calculated as follows:

Time = Distance ÷ Ground Speed

Fuel Used = (Time) x (Fuel Flow)

Results are:

ROUTE SEGMENT	DISTANCE NM	EST GROUND SPEED KNOTS	TIME AT CRUISE ALTITUDE HRS: MIN	FUEL USED FOR CRUISE GAL
DEN-COS	*30	168	0:13	1.9
COS-PUB	40	167	0:14	2.1
PUB-TBE	74	125	0:35	5.1
TBE-DHT	87	128	0:41	5.9
DHT-AMA	65	131	0:30	4.4

"Distance required to climb has been subtracted from segment distance.

TIME - FUEL - DISTANCE

ITEM	TIME HRS: MINS	FUEL GAL	DISTANCE NM
Start, Runup, Taxi and Take-off acceleration	0:05	1.4	0
Climb	0:13	2.5	25
Cruise	2:13	19.4	296
Total	2:31	23.3	321

Total Flight Time: 2 hours, 31 minutes

Block Speed: (321 NM .;- 2 hours, 31 minutes) = 128 knots

Reserve Fuel (45 minutes at 83 HP)

Enter the cruise power settings table for 83 HP (or full throttle). The fuel flow for 83 HP is 7.1 gallons per hour.

Reserve fuel = (45 min) (7.1 GPH) = 5.3 gallons

Total Fuel = (23.3 + 5.3) = 28.6 gallons

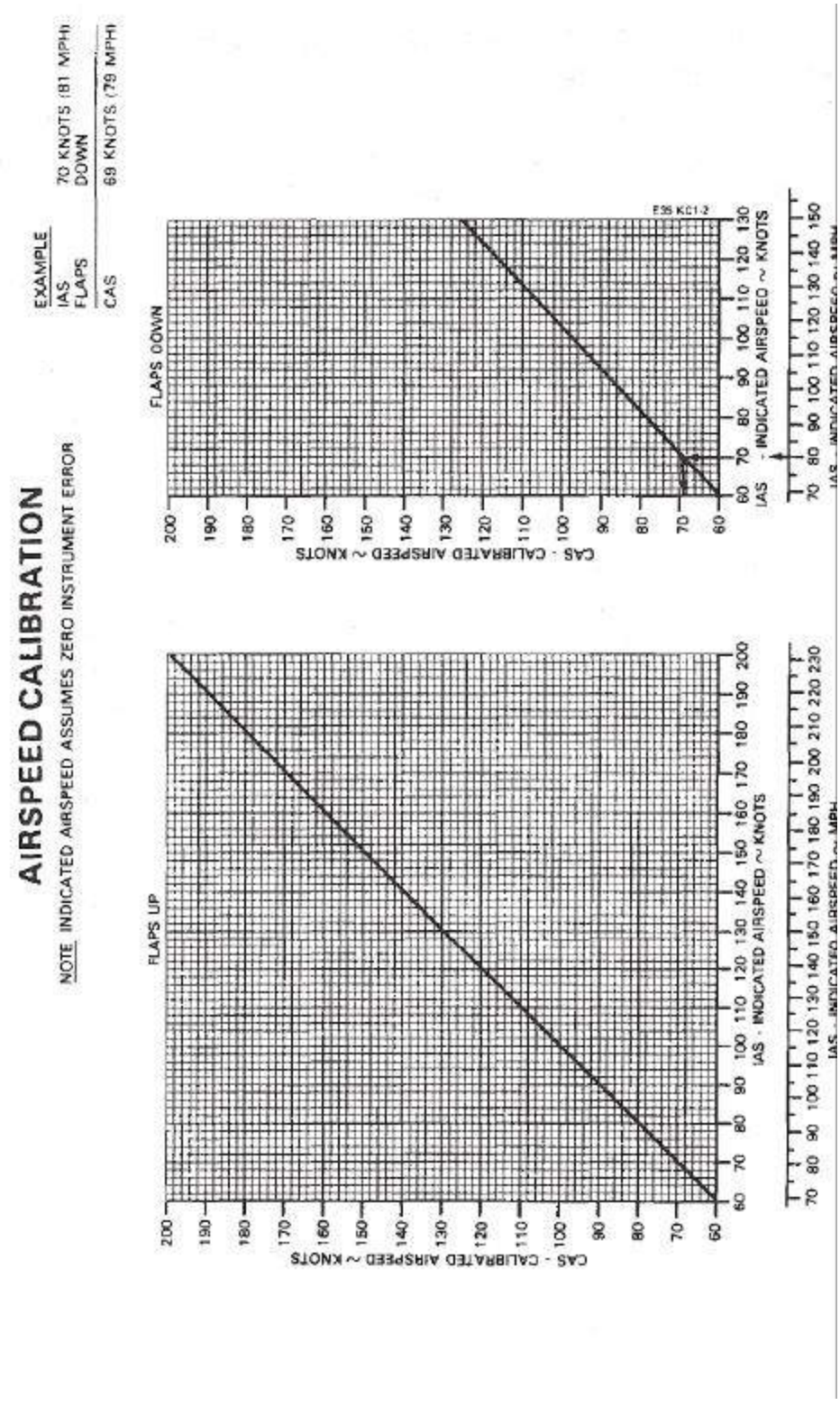
The estimated landing weight is determined by subtracting the fuel required for the trip from the ramp weight:

Assumed ramp weight = 2660 lbs
Estimated fuel from DEN to AMA = (28.6 gal) (6Ibsjgal) = 171 lbs
Estimated landing weight = (2660 - 171) = 2489 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. The example, in addition to presenting an answer for a particular set of conditions, also presents the order in which the graphs should normally be used, Le., if the first item in the example is OAT, then enter the graph at the known OAT.
2. The reference lines indicate where to begin following guide lines. Always project to the reference line first, and then follow the guide lines to the next known item.
3. Indicated airspeeds (IAS) were obtained by using the AIRSPEED CALIBRATION Graph.
4. The associated conditions define the specific conditions from which performance parameters have been determined. They are not intended to be used as instructions.
5. The full amount of usable fuel is available for all approved flight conditions.


AIRSPEED CALIBRATION
NOTE INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR
EXAMPLE
IAS 70 KNOTS (81 MPH)
FLAPS DOWN
CAS 69 KNOTS (79 MPH)
FLAPS DOWN
CAS - CALIBRATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ MPH
E35 KC1-2
FLAPS UP
CAS - CALIBRATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ KNOTS
IAS - INDICATED AIRSPEED ~ MPH

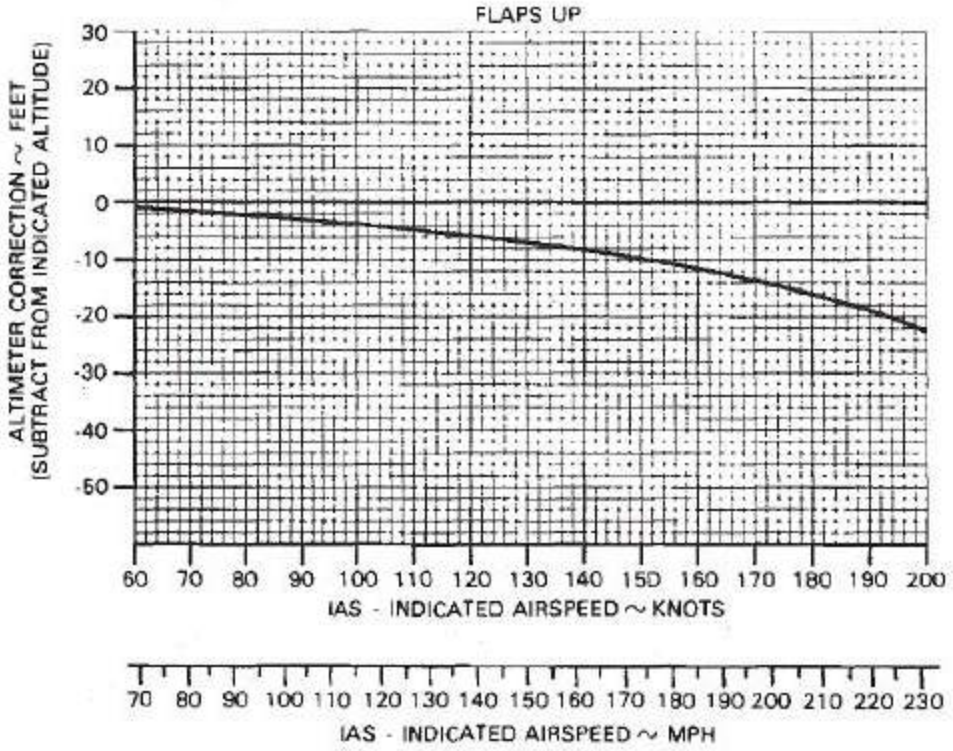
ALTIMETER CORRECTION

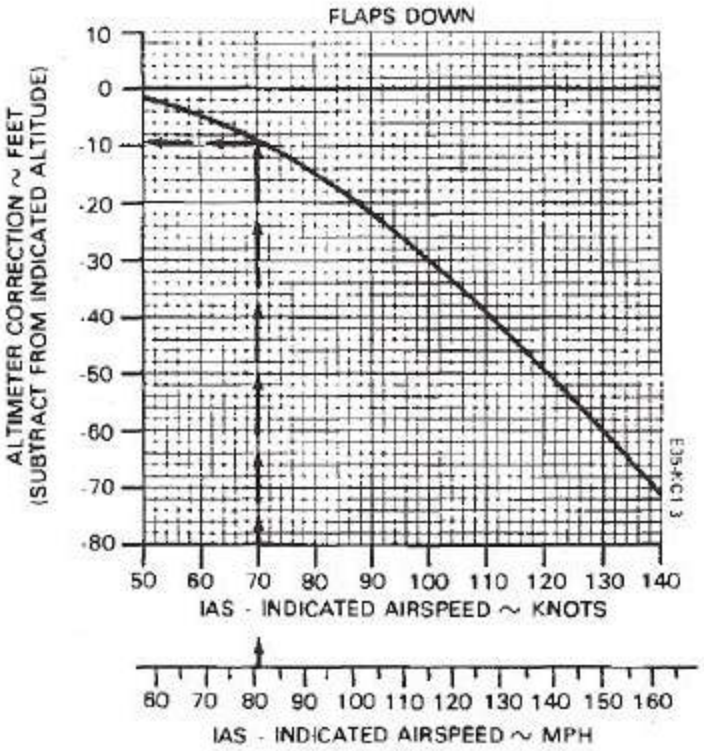
TE INDICATED AIRSPEED AND INDICATED ALTITUDE ASSUME ZERO INSTRUMENT ERROR

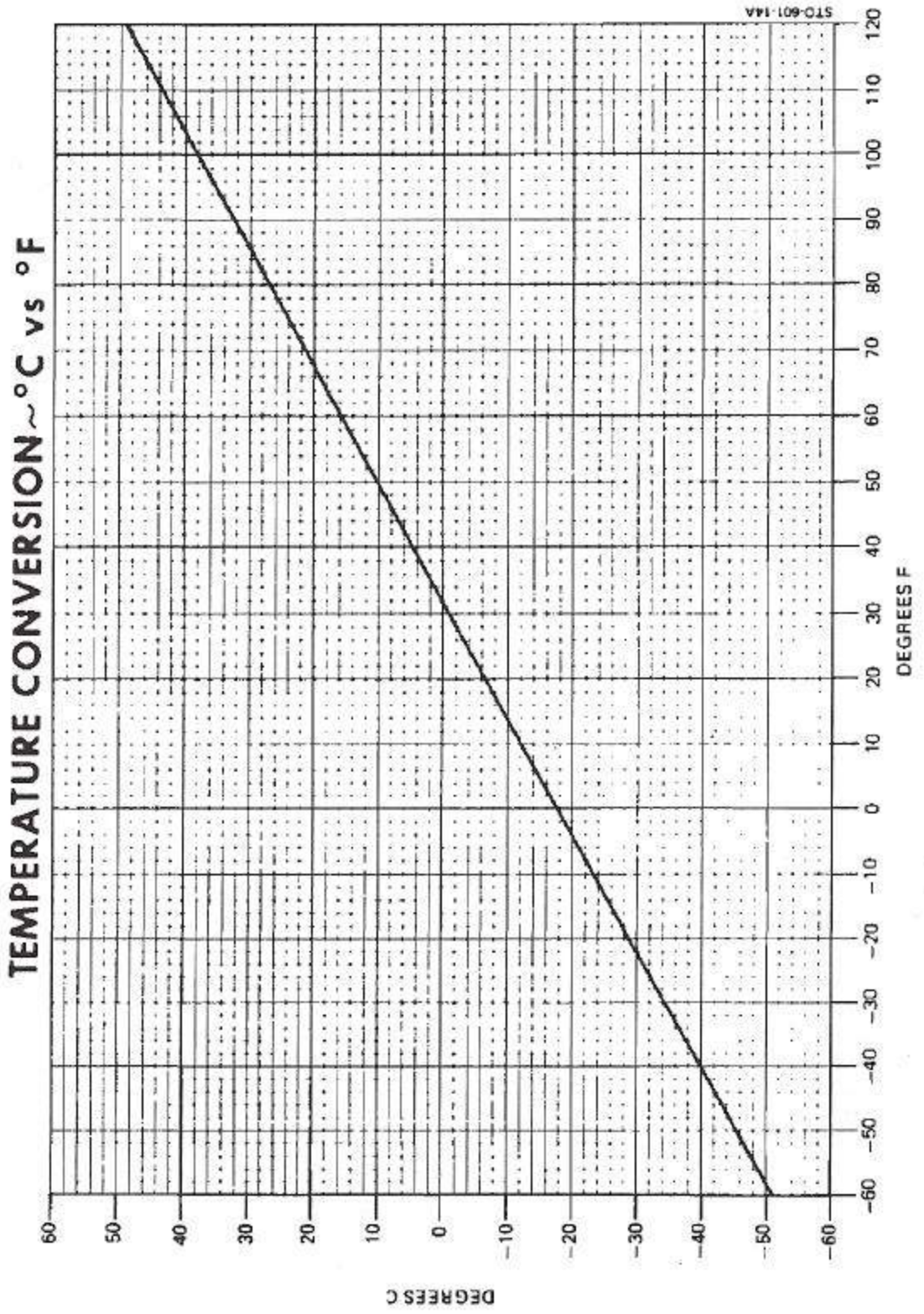
EXAMPLE

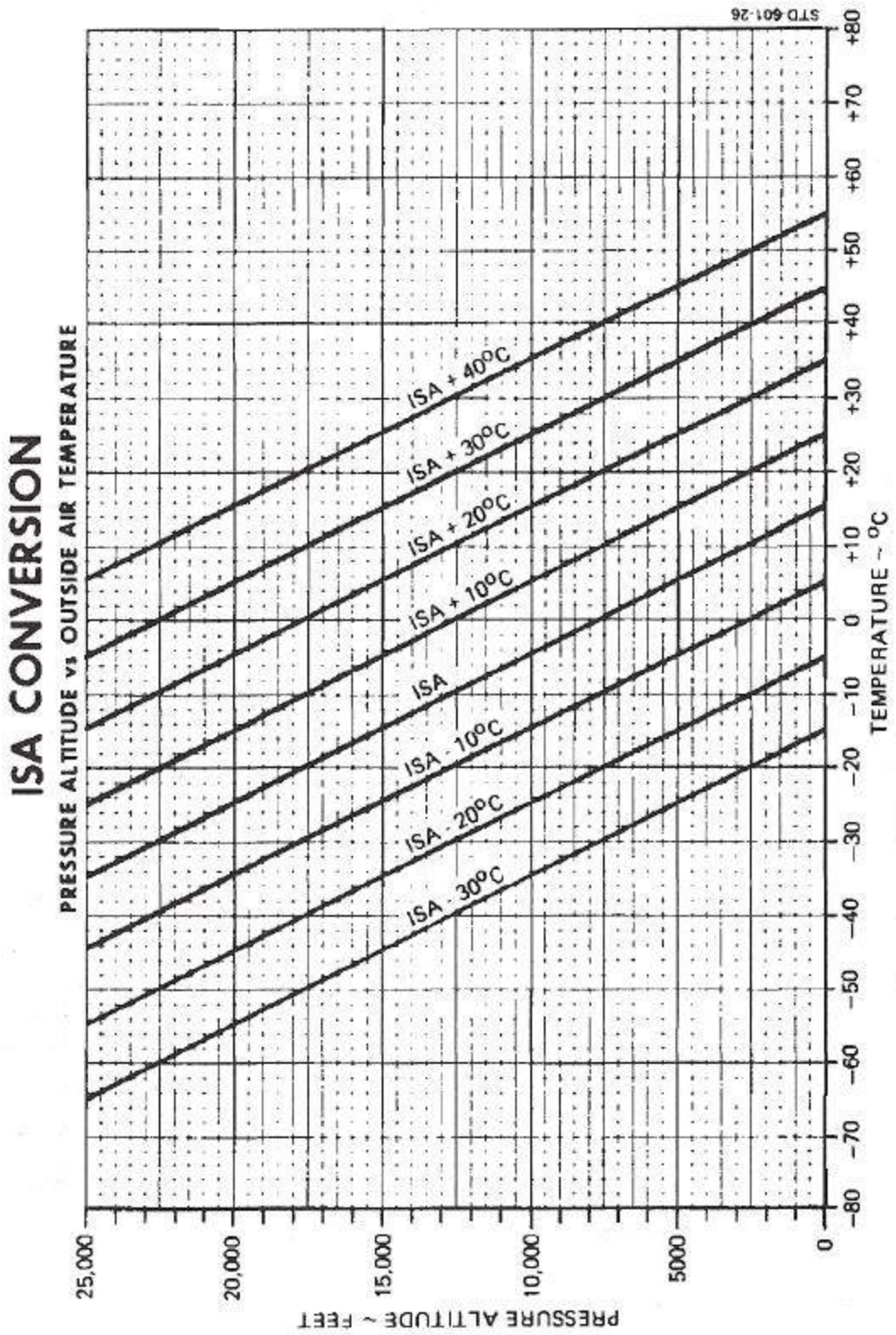
IAS	70 KNOTS (81 MPH)
FLAPS	DOWN
INDICATED PRESSURE ALTITUDE	4500 FT
ALTIMETER CORRECTION	- 9 FT

ACTUAL PRESSURE ALTITUDE
(4500 - 9) = 4491 FT





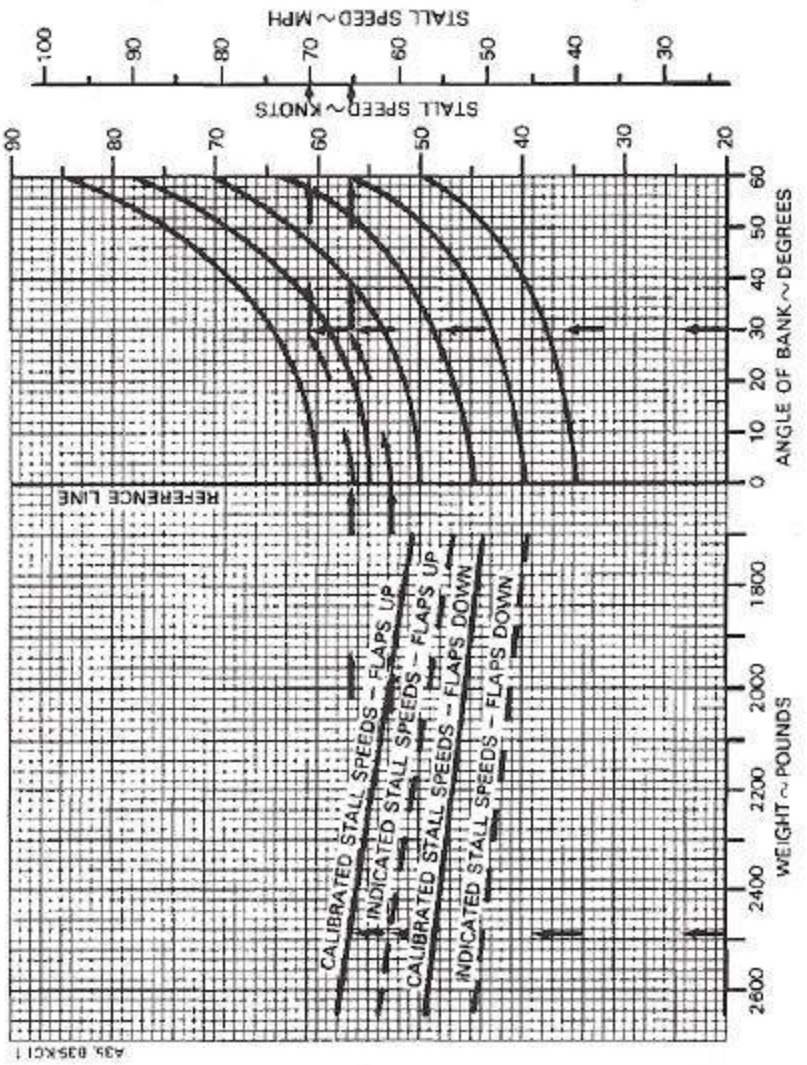

TEMPERATURE CONVERSION ~ °C vs °F
STO-601-14A
DEGREES F
DEGREES C
120
110
100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60


ISA CONVERSION
PRESSURE ALTITUDE vs OUTSIDE AIR TEMPERATURE
STD 601-26
ISA + 40°C
ISA + 30°C
ISA + 20°C
ISA + 10°C
ISA
ISA - 10°C
ISA - 20°C
ISA - 30°C
+80
+70
+60
+50
+40
+30
+20
+10
0
-10
-20
-30
-40
-50
-60
-70
-80
TEMPERATURE ~ °C
25,000
20,000
15,000
10,000
5000
0
PRESSURE ALTITUDE ~ FEET

STALL SPEEDS - POWER IDLE

THE MAXIMUM ALTITUDE LOSS EXPERIENCED WHILE CONDUCTING STALLS IN ACCORDANCE WITH CAM 3 120 WAS 180 FEET

EXAMPLE	
WEIGHT	2489 POUNDS
FLAPS	UP
ANGLE OF BANK	30°
STALL SPEED	CAS 61 KNOTS (70 MPH) IAS 57 KNOTS (66 MPH)

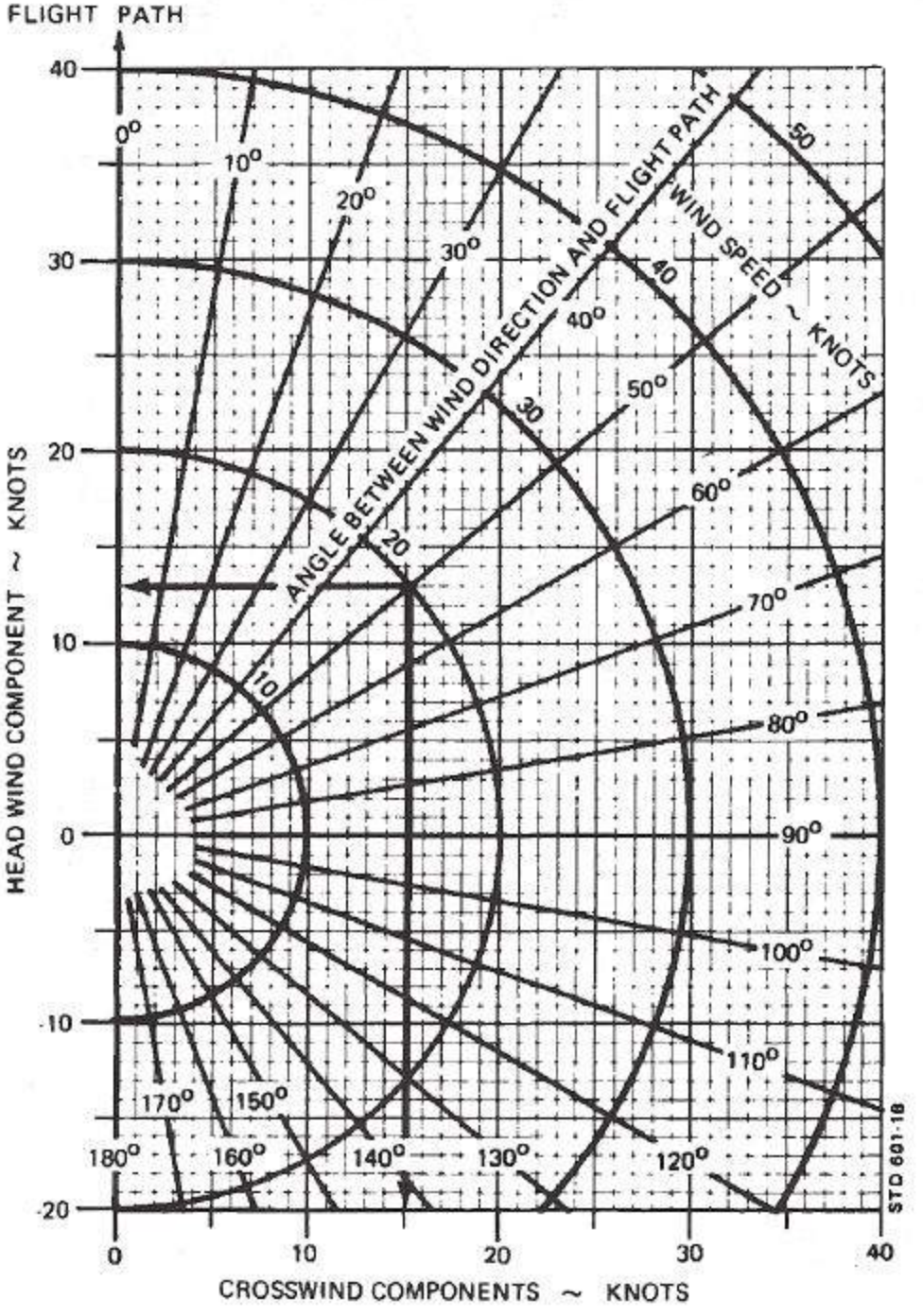


WIND COMPONENTS

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



B35
TAKE-OFF DISTANCE

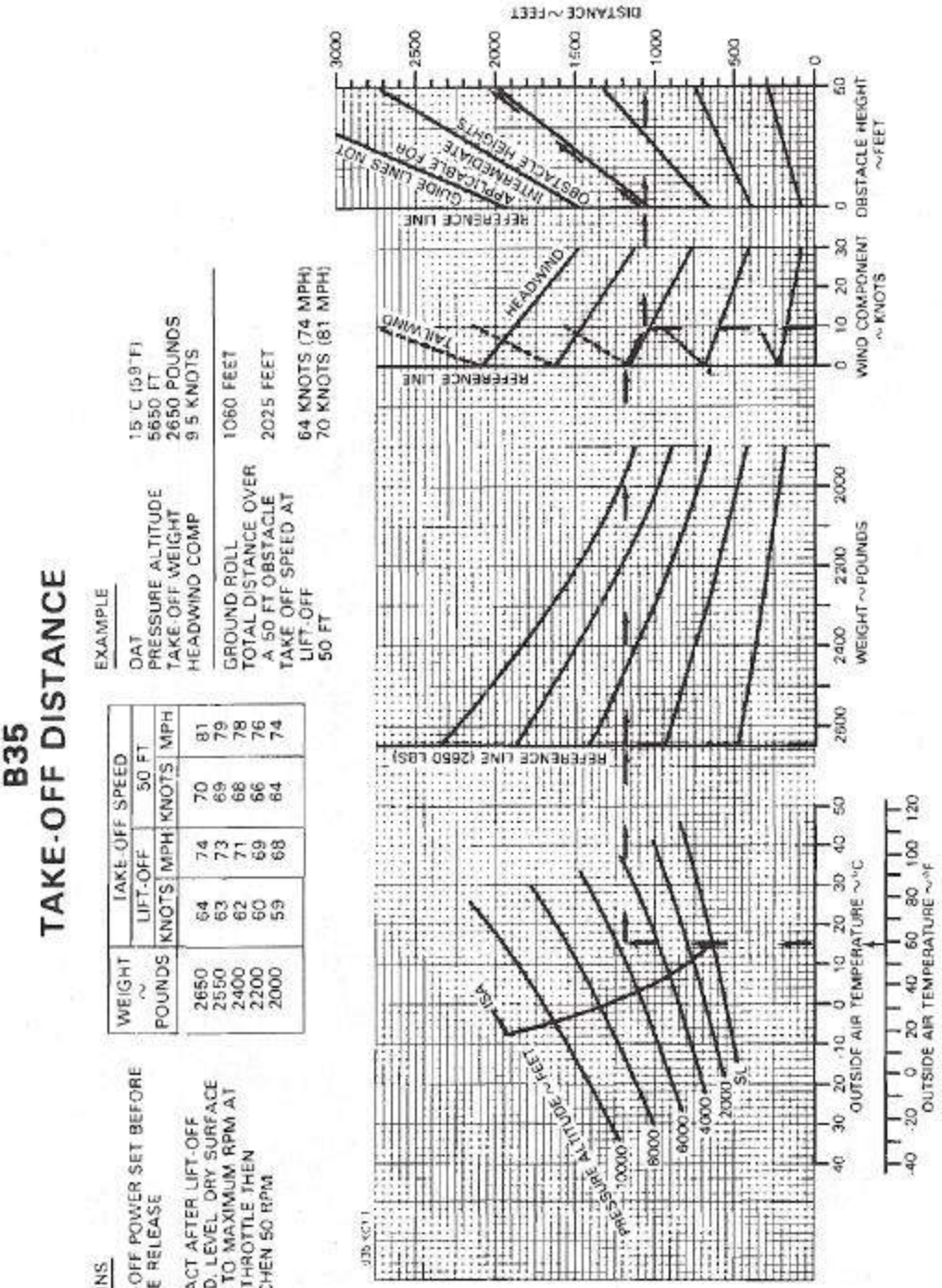
ASSOCIATED CONDITIONS

POWER	TAKE-OFF POWER SET BEFORE BRAKE RELEASE
FLAPS	UP
LANDING GEAR	RETRACT AFTER LIFT-OFF
RUNWAY	PAVED, LEVEL, DRY SURFACE
MIXTURE	LEAN TO MAXIMUM RPM AT FULL THROTTLE THEN ENRICHEN 50 RPM

WEIGHT ~ POUNDS	TAKE-OFF SPEED			
	LIFT-OFF		50 FT	
	KNOTS	MPH	KNOTS	MPH
2650	64	74	70	81
2550	63	73	69	79
2400	62	71	68	78
2200	60	69	66	76
2000	59	68	64	74

EXAMPLE

OAT	15°C (59°F)
PRESSURE ALTITUDE	5650 FT
TAKE-OFF WEIGHT	2650 POUNDS
HEADWIND COMP	9.5 KNOTS
GROUND ROLL	1060 FEET
TOTAL DISTANCE OVER A 50 FT OBSTACLE	2025 FEET
TAKE OFF SPEED AT LIFT-OFF	64 KNOTS (74 MPH)
50 FT	70 KNOTS (81 MPH)



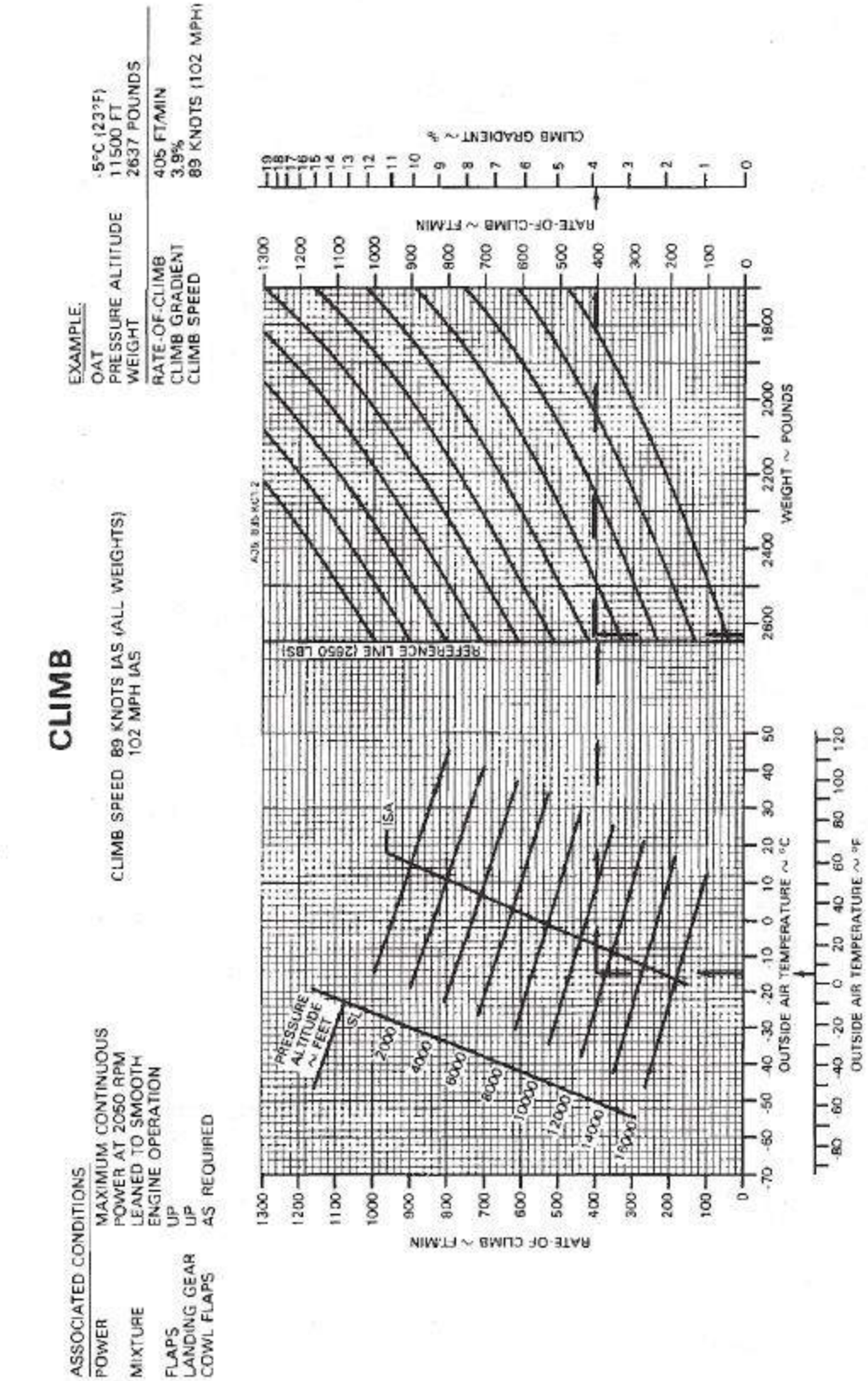
CLIMB

CLIMB SPEED 89 KNOTS IAS (ALL WEIGHTS)
102 MPH IAS

ASSOCIATED CONDITIONS	
POWER	MAXIMUM CONTINUOUS POWER AT 2050 RPM
MIXTURE	LEANED TO SMOOTH ENGINE OPERATION
FLAPS	UP
LANDING GEAR	UP
COWL FLAPS	AS REQUIRED

EXAMPLE:

OAT	-5°C (23°F)
PRESSURE ALTITUDE	11500 FT
WEIGHT	2637 POUNDS
RATE-OF-CLIMB	405 FT/MIN
CLIMB GRADIENT	3.9%
CLIMB SPEED	89 KNOTS (102 MPH)



CRUISE POWER SETTINGS

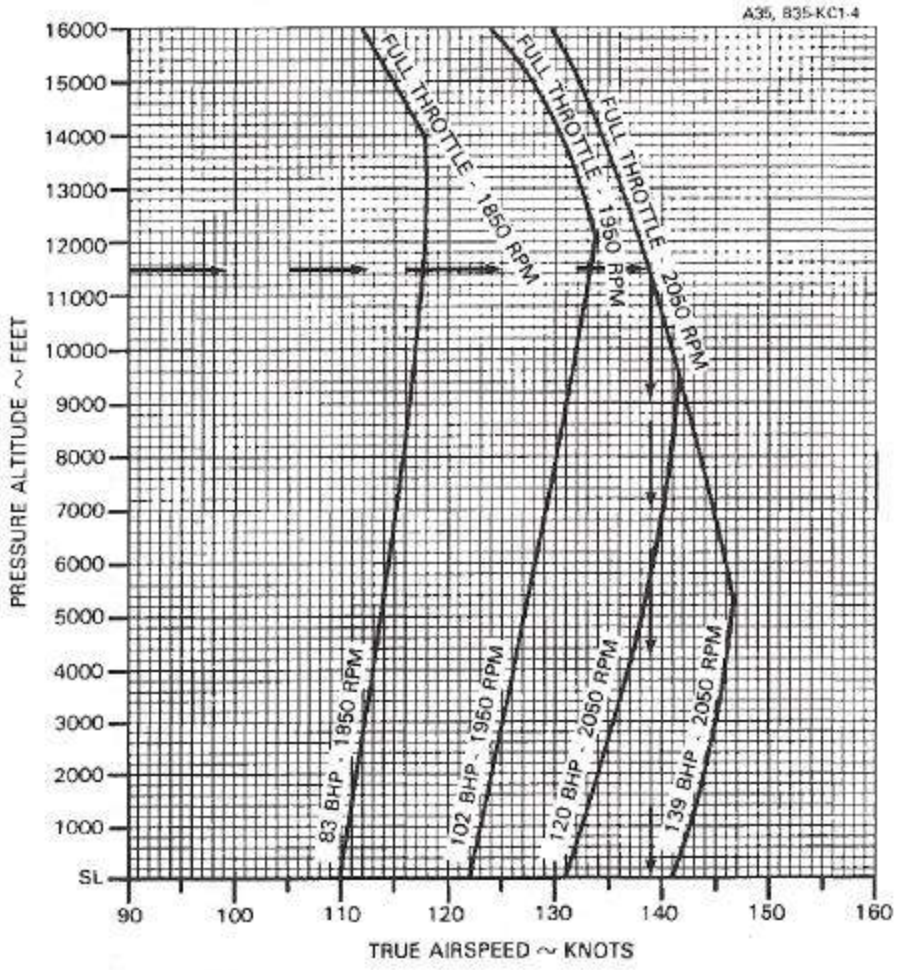
120 HP (OR FULL THROTTLE)
@ AVERAGE CRUISE WEIGHT = 2500 LBS.

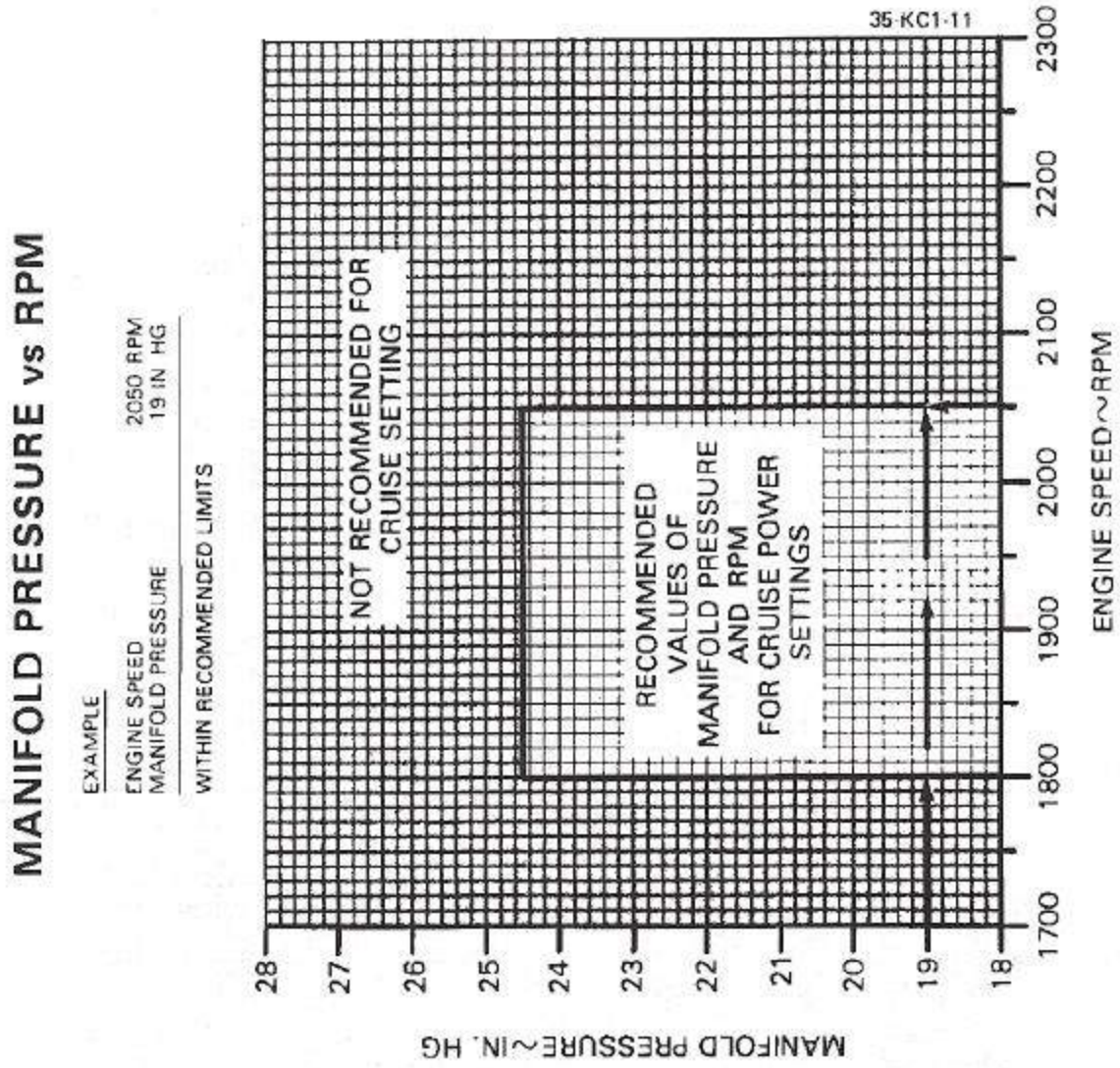
	ISA −36°F (−20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
PRESS ALT.	OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS		OAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW		TAS	
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH	°F	°C	RPM	IN HG	PPH	GPH	KTS	MPH
SL	26	3	2050	22.0	58.0	9.7	129	148	62	17	2050	22.7	58.0	9.7	132	152	98	37	2050	23.2	58.0	9.7	135	155
2000	19	−7	2050	21.6	58.0	9.7	131	151	55	13	2050	22.3	58.0	9.7	134	154	91	33	2050	22.8	58.0	9.7	137	158
4000	12	−11	2050	21.2	58.0	9.7	134	154	48	9	2050	21.8	58.0	9.7	137	158	84	29	2050	22.4	58.0	9.7	139	160
6000	5	−15	2050	20.8	58.0	9.7	136	157	41	5	2050	21.4	58.0	9.7	139	160	77	25	2050	22.0	58.0	9.7	142	163
8000	−2	−19	2050	20.4	58.0	9.7	138	159	34	1	2050	21.0	58.0	9.7	141	162	70	21	2050	21.6	58.0	9.7	144	166
10000	−9	−23	2050	19.9	57.8	9.6	141	162	27	−3	2050	19.8	56.0	9.3	141	162	63	17	2050	19.9	54.2	9.0	141	162
12000	−17	−27	2050	18.4	54.2	9.0	138	159	19	−7	2050	18.4	52.7	8.8	138	159	55	13	2050	18.4	51.3	8.6	138	159
14000	−24	−31	2050	17.0	51.1	8.5	135	156	12	−11	2050	17.0	49.7	8.3	134	154	48	9	2050	17.0	48.4	8.1	133	153
16000	−31	35	2050	15.8	47.9	8.0	130	150	5	−15	2050	15.8	46.4	7.7	129	148	41	5	2050	15.8	44.9	7.5	126	145

NOTES:
1. FULL THROTTLE MANIFOLD PRESSURE SETTINGS ARE APPROXIMATE.
2. SHADED AREA REPRESENTS OPERATION WITH FULL THROTTLE.
3. LEAN TO MAXIMUM RPM. IF ENGINE ROUGHNESS OCCURS ENRICHEN TO SMOOTH OPERATION.

CRUISE SPEEDS

ASSOCIATED CONDITIONS		EXAMPLE	
AVERAGE CRUISE WEIGHT	2500 LBS	PRESSURE ALTITUDE	11500 FT
TEMPERATURE	STANDARD DAY (ISA)	POWER SETTING	FULL THROTTLE 2050 RPM
		TRUE AIRSPEED	139 KNOTS




MANIFOLD PRESSURE vs RPM
EXAMPLE
ENGINE SPEED 2050 RPM
MANIFOLD PRESSURE 19 IN HG
WITHIN RECOMMENDED LIMITS
35-KC1-11
NOT RECOMMENDED FOR CRUISE SETTING
RECOMMENDED VALUES OF MANIFOLD PRESSURE AND RPM FOR CRUISE POWER SETTINGS
MANIFOLD PRESSURE~IN. HG
28
27
26
25
24
23
22
21
20
19
18
1700
1800
1900
2000
2100
2200
2300
ENGINE SPEED~RPM

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