

Carenado

Normal & Emergency Checklist





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

AIRSPEEDS FOR SAFE OPERATION

Take-off

Lift-off	71 kts/82 mph
50 Ft.	77 kts/89 mph

Maximum Climb

Best Rate (V_y)	96 kts/110 mph
Best Angle (V_x)	77 kts/89 mph

Cruise Climb 107 kts/123 mph

Maximum Turbulent Air

Penetration	134 kts/154 mph
Balked Landing	70 kts/81 mph
Landing Approach	70 kts/81 mph
Maximum Demonstrated	
Crosswind	17 kts/20mph

PREFLIGHT INSPECTION

Emergency Locator Transmitter - ARMED

Location may vary with individual airplanes

1. CABIN:

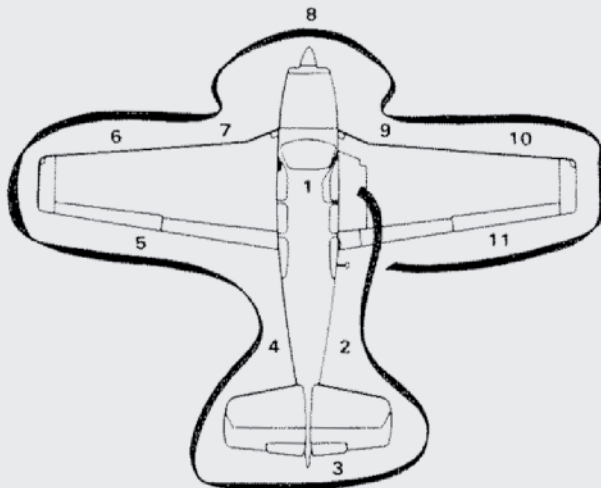
- Parking Brake - SET
- Control Lock - REMOVE
- All Switches - OFF

2. RIGHT FUSELAGE:

- Baggage Compartment Door - SECURE
- Static Pressure Button - UNOBSTRUCTED



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3. EMPENNAGE:

- a. Control Surfaces - CHECK
- b. Tie Down - REMOVE
- c. Position Light - CHECK
- d. Cabin Air Intake - CHECK

4. LEFT FUSELAGE:

- a. Static Pressure Button - UNOBSTRUCTED
- b. All Antennas - CHECK

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5. LEFT WING TRAILING EDGE:

- a. Flap - CHECK
- b. Aileron - CHECK
- c. Wing Tip - CHECK
- d. Position Light - CHECK

6. LEFT WING LEADING EDGE:

- a. Stall Warning - CHECK
- b. Pitot Tube - CHECK (Remove Cover)
- c. Fuel Tank - CHECK QUANTITY; Filler Cap - SECURE
- d. Cabin Air Intake - CHECK
- e. Tie Down and Chocks - REMOVE

7. LEFT LANDING GEAR:

- a. Wheel Well Door, Tire and Strut - CHECK
- b. Fuel Vent - CHECK
- c. Fuel Sump - DRAIN
- d. Fuel Selector Valve Sump - DRAIN; Cover - SECURE

8. NOSE SECTION:

- a. Left Cowl Flap - CHECK
- b. Engine Oil - CHECK (see Servicing, Section 8), Cap and Dipstick - SECURE
- c. Left Cowl - SECURE
- d. Propeller - CHECK, General Condition, Nicks, etc.
- e. Wheel Well Doors, Tire and Strut - CHECK
- f. Induction Air Intake - CLEAR
- g. Landing Lights - CHECK
- h. Engine - CHECK GENERAL CONDITION
- i. Right Cowl - SECURE
- j. Right Cowl Flap - CHECK
- k. Chocks - REMOVE



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11. Fuel Selector Valve - CHECK OPERATION; SELECT TANK MORE NEARLY FULL
12. Battery and Alternator Switches - ON (If external power is used, turn Alternator Switch - OFF. See Section 7 and the precautions below)
13. Fuel Quantity Indicators - CHECK QUANTITY

WARNING

Do not take off if gages indicate in yellow arc or with less than 13 gallons in each tank.

EXTERNAL POWER

When using external power, it is very important that the following precautions be observed.

1. The airplane has a negative ground system. Exercise care to avoid reversed polarity. Be sure to connect the positive lead of the external power unit to the positive terminal of the airplane's external power receptacle and the negative lead to the negative terminal of the external power receptacle. A positive voltage must also be applied to the small guide pin.
2. To prevent arcing, make certain no power is being supplied when the connection is made.
3. Make certain that the battery switch is ON, all avionics and electrical switches OFF, and a battery is in the system before connecting an external power unit. This protects the voltage regulators and associated electrical equipment from voltage transients (power fluctuations).



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STARTING ENGINE USING AUXILIARY POWER UNIT

1. Battery Switch - ON
2. Alternator, Electrical, and Avionics Equipment - OFF
3. Auxiliary Power Unit - CONNECT
4. Auxiliary Power Unit - SET OUTPUT (13.5 to 14.25 volts)
5. Auxiliary Power Unit - ON
6. Engine - START using normal procedures
7. Auxiliary Power Unit - OFF (after engine has been started)
8. Auxiliary Power Unit - DISCONNECT
9. Alternator Switch - ON

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 - HIGH RPM
3. Throttle - FULL OPEN

NOTE

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

4. Auxiliary Fuel Pump - On until fuel flow peaks then OFF

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5. Throttle - Approximately 1/4 inch open.
6. Magneto/Start Switch - START position; release to BOTH position when engine fires

CAUTION

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

7. In Event of Overprime Condition:
 - a. Mixture - IDLE CUT-OFF
 - b. Throttle - OPEN
 - c. Magneto/Start Switch - START position
 - d. As engine fires, reduce throttle to IDLE and advance the mixture control to FULL RICH

NOTE

During hot starts, the Auxiliary Fuel Pump is turned on momentarily after starting to purge system, then turned off.

8. Throttle - 1000 to 1200 RPM
9. Oil Pressure - CHECK
10. External Power (if used) - DISCONNECT
11. Alternator Switch - ON; CHECK FOR CHARGING
12. All Engine Indicators - CHECK

CAUTION

The ammeter indication should be less than 25% of full charge at 1000 to 1200 rpm within two minutes, with no additional electrical equipment on. If not, turn off the battery and alternator switches and do not take off.



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AFTER STARTING, AND TAXI

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

CAUTION

Do not operate engine above 1200 RPM until oil temperature reaches 75°F (24°C).

BEFORE TAKEOFF

1. Parking Brake - SET
2. Seat Belts and Shoulder Harnesses - CHECK

NOTE

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

3. Avionics - CHECK
4. Engine Instruments - CHECK
5. Flight Instruments - CHECK AND SET

NOTE

To ensure adequate gyro pressure when operating two air-driven gyros during ground operation and/or holding prior to takeoff, maintain an engine speed of 700-800 rpm in order to hold a value in the green arc on the instrument pressure gage. With a requirement of three or more air-driven gyros, maintain an engine speed of 1200 rpm.

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6. Ammeter - CHECK - for stabilized indication between 0 and 25% of full charge at 1000 to 1200 rpm.
7. Auxiliary Fuel Pump - CHECK OFF
8. Throttle - 1700 RPM
9. Propeller - EXERCISE to obtain approximately 300 to 400 rpm drop; return to high rpm
10. Magnetos - CHECK at 1700 rpm (variance between individual magnetos should not exceed 50 rpm, maximum drop not to exceed 150 rpm.)
11. Trim - SET
 - a. Aileron - NEUTRAL (if installed)
 - b. Elevator - 0° (3° nose up if only front seats are occupied)
12. Flaps - Check operation, then UP
13. Door and Windows - SECURE
14. Flight Controls - CHECK PROPER DIRECTION, FULL TRAVEL AND FREEDOM OF MOVEMENT
15. Mixture - FULL RICH (or as required by field elevation)
16. Brakes - RELEASED
17. Instruments - CHECK (Make final check of manifold pressure, fuel flow, and rpm at the start of the take-off run.)



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TAKE-OFF

Take-Off Power Full Throttle, 2700 rpm

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

Maximum Continuous Full Throttle, 2700 rpm

Cruise Climb 25 in. Hg (or full throttle) 2500 rpm

1. Engine Temperatures - MONITOR
2. Power - SET AS DESIRED.
3. Mixture - SET FUEL FLOW

CRUISE

See Cruise Charts in PERFORMANCE Section.

1. Cowl Flaps - CLOSED
2. Power - SET
3. Mixture - SET FUEL FLOW

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LEANING USING THE EXHAUST GAS TEMPERATURE INDICATOR (EGT)

A thermocouple-type exhaust gas temperature (EGT) probe is mounted in the exhaust system. This probe is connected to an indicator on the instrument panel. The indicator is calibrated in degrees Fahrenheit. Use EGT system to lean the fuel/air mixture when cruising at 75% power or less 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 - Increases the mixture until the EGT shows a drop of 25°F below peak on the rich side of peak.
 - b. BEST POWER MIXTURE - Increase the mixture until the EGT shows a drop of 100°F below peak on the rich side of peak.

CAUTION

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

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



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BALKED LANDING

1. Power - FULL THROTTLE, 2700 RPM
2. Airspeed - 70 kts/81 mph until clear of obstacles, then trim to normal climb speed
3. Flaps - UP
4. Landing Gear - UP
5. Cowl Flaps - OPEN

AFTER LANDING

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

SHUTDOWN

1. Brakes - SET
2. Electrical and Radio Equipment - OFF
3. Propeller - HIGH RPM
4. Throttle - CLOSE
5. Mixture - IDLE CUT-OFF
6. Magneto/Start Switch - OFF, after engine stops
7. Battery and Alternator Switches - OFF
8. Control Lock - INSTALL, if conditions warrant.
9. Install wheel chocks and release brakes if the airplane is to be left unattended.



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EMERGENCY AIRSPEEDS

Emergency Descent	154 kts/177 mph
Glide	105 kts/121 mph
Emergency Landing Approach	83 kts/96 mph

CAUTION

The approach airspeed is higher than normal to assure the availability of control during flare without power.

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
3. Fuel Selector Valve - OFF
4. Battery and Alternator Switches - OFF

AFTER LIFTOFF AND IN FLIGHT

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

1. Fuel Selector Valve - SELECT OTHER TANK (Check to feel detent)
2. Auxiliary Fuel Pump - ON
3. Mixture - FULL RICH, then LEAN as required
4. Magnetos - CHECK LEFT and RIGHT, then BOTH
5. Alternate Air T-handle - PULL AND RELEASE

NOTE

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

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 DISCREPANCY CHECKS

CONDITION: ROUGH RUNNING ENGINE

1. Mixture - FULL RICH, then LEAN as required
2. Magneto/Start Switch - CHECK LEFT and RIGHT, then BOTH
3. Alternate Air T-handle - PULL AND RELEASE

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
 3. Alternate Air T-handle - PULL AND RELEASE

If tank being used is empty:

Fuel Tank Selector Valve - SELECT OTHER FUEL TANK
(feel for detent and check visually)

AIR START PROCEDURE

- a. Fuel Selector Valve - SELECT TANK MORE NEARLY FULL (check to feel detent)
- b. Throttle - RETARD
- c. Mixture - FULL RICH
- d. Auxiliary Fuel Pump - ON until power is regained, then OFF. (Leave on if engine driven fuel pump is inoperative.)
- e. Throttle - ADVANCE to desired power
- f. Mixture - LEAN as required

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ENGINE FIRE

IN FLIGHT

The red VENT SHUTOFF (V35, V35A)/FIREWALL AIR (V35B) control on the outboard side of the left 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/Firewall Air Control - PULL TO CLOSE
2. Mixture - IDLE CUT-OFF
3. Fuel Selector Valve - OFF
4. Battery, Alternator, and Magneto/Start Switches - OFF
(Extending the landing gear can be accomplished manually if desired.)
5. Do not attempt to restart engine.

ON THE GROUND

1. Mixture - IDLE CUT-OFF
2. Fuel Selector Valve - OFF
3. Battery, Alternator and Magneto/Start Switches - OFF
4. Extinguish with Fire Extinguisher.

MAXIMUM GLIDE CONFIGURATION

1. Landing Gear - UP
2. Flaps - UP
3. Cowl Flaps - CLOSED
4. Propeller - PULL for LOW 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 DESCENT

1. Power - IDLE
2. Propeller - HIGH RPM
3. Landing Gear - DOWN
4. Airspeed - ESTABLISH 154 kts/177 mph

LANDING EMERGENCIES

LANDING WITHOUT POWER

The approach speed is higher than normal to assure the availability of control during flare without power. When assured of reaching the landing site selected, and on final approach:

1. Airspeed - 83 kts/96 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 and Alternator 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. Mixture - IDLE CUT-OFF
3. Battery, Alternator and Magneto/Start 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.

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SYSTEMS EMERGENCIES

PROPELLER OVERSPEED

1. Throttle - RETARD TO RED LINE
2. Airspeed - REDUCE
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.

4. Land - SELECT NEAREST SUITABLE SITE and follow LANDING EMERGENCIES procedure.

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 the illumination of the ALT OUT warning light, located on the instrument panel below the flight instruments. When an alternator failure occurs in flight, all nonessential electrical load should be discontinued to conserve the battery life.

ALTERNATOR OVERVOLTAGE

If an alternator overvoltage condition occurs in flight:

1. Battery Switch and Alternator Switch - OFF MOMENTARILY, THEN ON (this resets overvoltage relay)

If overvoltage condition does not recur, continue to use the alternator.





If overvoltage condition persists:

2. Alternator Switch - OFF
3. Nonessential Electrical Equipment - OFF to conserve battery power.

ENGINE INSTRUMENT MALFUNCTION

In event of engine instrument malfunction, maintain the last known rpm and manifold pressure setting and proceed to the nearest suitable airfield and land. If a higher power setting is required, select maximum rpm and enrichen mixture appropriately.

CAUTION

At high altitudes and low power settings, full rich mixtures may result in poor engine operation. Adjust the mixture for smooth engine operation upon power reduction.

UNSCHEDULED ELECTRIC ELEVATOR TRIM

1. Airplane Attitude - MAINTAIN using elevator control.
2. Elevator Trim Thumb Switch (On Control Wheel) - MOVE IN DIRECTION OPPOSITE UNSCHEDULED PITCH TRIM to open circuit breaker.
3. Elevator Trim ON-OFF Switch (On Instrument Panel) - OFF
4. Manual Elevator 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 Circuit Breaker - OFF (PULL OUT)
2. Landing Gear Switch Handle - DOWN position
3. Handcrank Handle Cover (at rear of front seats) - REMOVE
4. Handcrank - ENGAGE and TURN COUNTERCLOCKWISE AS FAR AS POSSIBLE (approximately 50 turns)

CAUTION

The manual extension system is designed to lower the landing gear only. **DO NOT ATTEMPT TO RETRACT THE GEAR MANUALLY.**

5. If electrical system is operative, check landing gear position lights and warning horn (check LDG GEAR INDICATOR and LDG GEAR WARNING circuit breakers engaged).
6. Check mechanical landing gear indicator - DOWN (V35, V35A)
7. Handcrank - DISENGAGE. Always keep it stowed when not in use.

WARNING

Do not operate the landing gear electrically with the handcrank engaged, as damage to the mechanism could occur. After emergency landing gear extension, do not move any landing gear controls or reset any switches or circuit breakers until airplane is on jacks as failure may have been in the gear up circuit and gear might retract on the ground.





LANDING GEAR RETRACTION AFTER PRACTICE MANUAL EXTENSION

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

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

INDUCTION SYSTEM BLOCKAGE

An alternate induction air door, spring-loaded to the closed position, is located downstream from the induction air filter. If the induction air filter becomes blocked (e.g., ice, etc.), the differential air pressure normally opens the alternate induction air door to provide induction air from the bottom of the engine compartment. If the alternate induction air door becomes stuck in the closed position, it can be opened by pulling and releasing the T-handle located directly below the propeller control knob. This T-handle is placarded **ALTERNATE AIR PULL AND RELEASE**.

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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. Pilot's Emergency Static Air Source - Switch to ON EMERGENCY.
2. For Airspeed Calibration and Altimeter Correction, refer to PERFORMANCE section.

CAUTION

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



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EMERGENCY EXITS

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

To open each emergency exit:

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

NOTE

On D-9862 and after, for access past the 3rd and/or 4th seats, rotate the red handle, located on the lower inboard side of the seat back, and fold the seat back over.

UNLATCHED DOOR IN FLIGHT

If the cabin door is not locked it may come unlatched in flight. This may occur during or just after take-off. The door will trail in a position approximately 3 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.

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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.

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.



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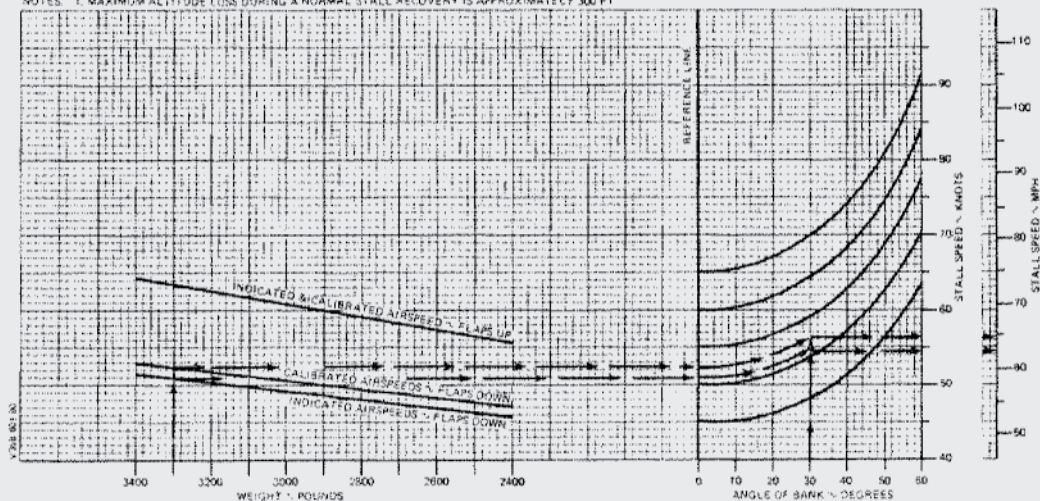


STALL SPEEDS — POWER IDLE

EXAMPLE

WEIGHT	3300 LBS
FLAPS	DOWN
ANGLE OF BANK	30°
STALL SPEEDS	CAS: 56 KTS (65 MPH) IAS: 55 KTS (63 MPH)

NOTES: 1. MAXIMUM ALTITUDE LOSS DURING A NORMAL STALL RECOVERY IS APPROXIMATELY 300 FT



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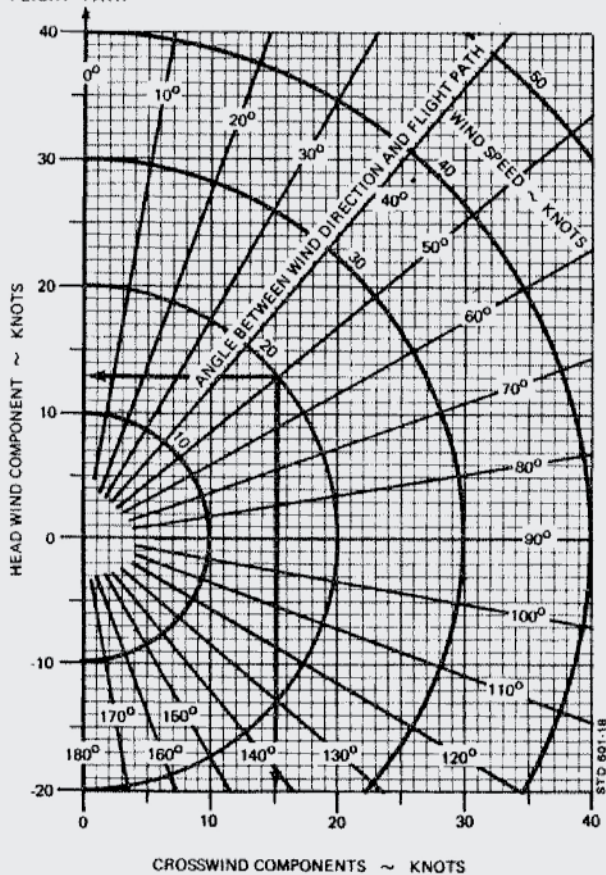


Demonstrated Crosswind Component is 17 kts

EXAMPLE:

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

FLIGHT PATH



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ASSOCIATED CONDITIONS

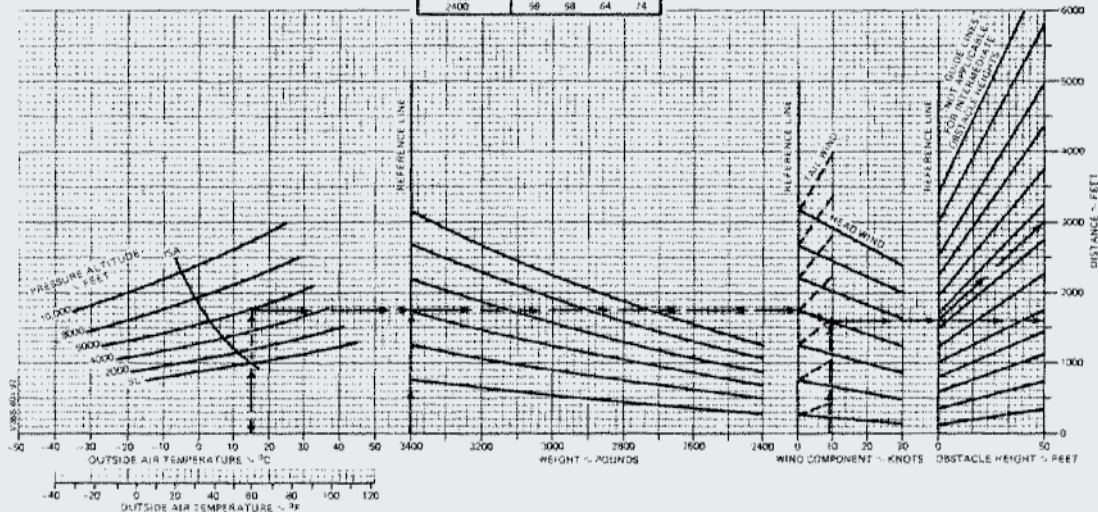
POWER FULL THROTTLE AT 2700 RPM
MIXTURE LEAN TO APPROPRIATE FUEL FLOW
FLAPS UP
LANDING GEAR RETRACT AFTER POSITIVE CLIMB ESTABLISHED
COWL FLAPS OPEN

TAKE - OFF DISTANCE

WEIGHT ~ LBS	TAKE OFF SPEED			
	50 FT		50 FT	
	KTS	MPH	KTS	MPH
3400	71	82	77	89
3200	68	79	74	86
3000	66	76	73	84
2800	64	74	70	81
2600	61	70	67	77
2400	59	68	64	74

EXAMPLE

OAT 15°C (59°F)
PRESSURE ALTITUDE 3050 FT
TAKE OFF WEIGHT 3400 LBS
HEAD WIND COMPONENT 9.5 KTS
GROUND ROLL 1900 FT
TOTAL DISTANCE OVER A 50 FT OBSTACLE 3000 FT
TAKE OFF SPEED AT LIFT OFF 77 KTS (82 MPH)
TAKE OFF SPEED AT 50 FT 77 KTS (89 MPH)



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ADJUSTABLE LENGTHS

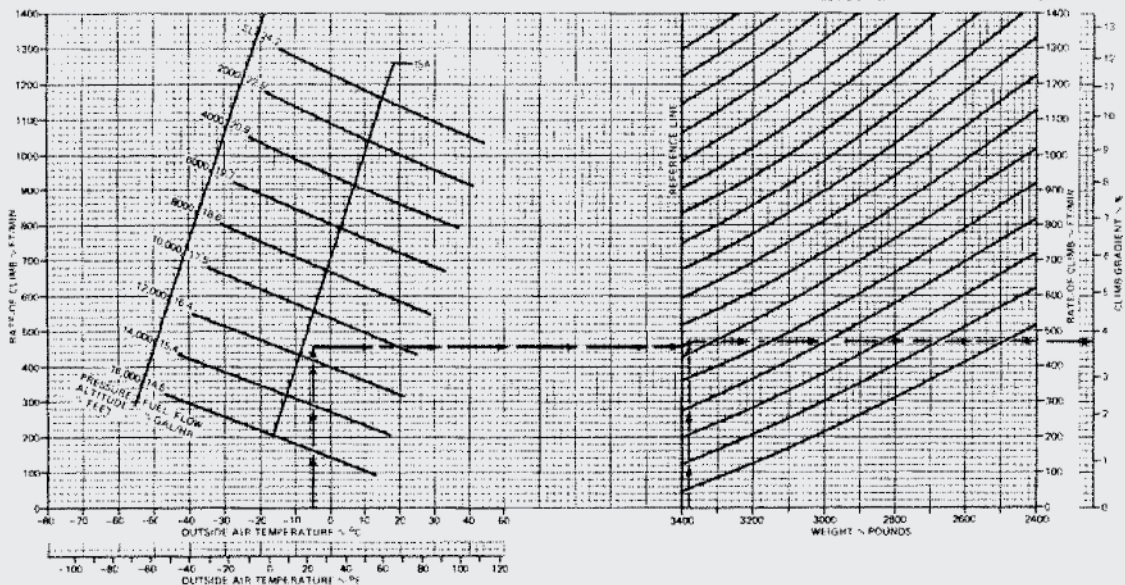
POWER: FULL THROTTLE AT 2300 RPM
MIXTURE: LEAN TO APPROPRIATE FUEL FLOW
FLAPS: UP
LANDING GEAR: UP
DOWN FLAPS: AS REQUIRED

CLIMB

CLIMB SPEED 96 KNOTS (110MPH) IAS (ALL WEIGHTS)

EXAMPLE

OAT: -5°C (23°F)
PRESSURE ALTITUDE: 11,600 FT
WEIGHT: 3880 LBS
RATE OF CLIMB: 470 FT/MIN
CLIMB GRADIENT: 3.8%
CLIMB SPEED: 96 KTS (110 MPH)



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ASSOCIATED CONDITIONS

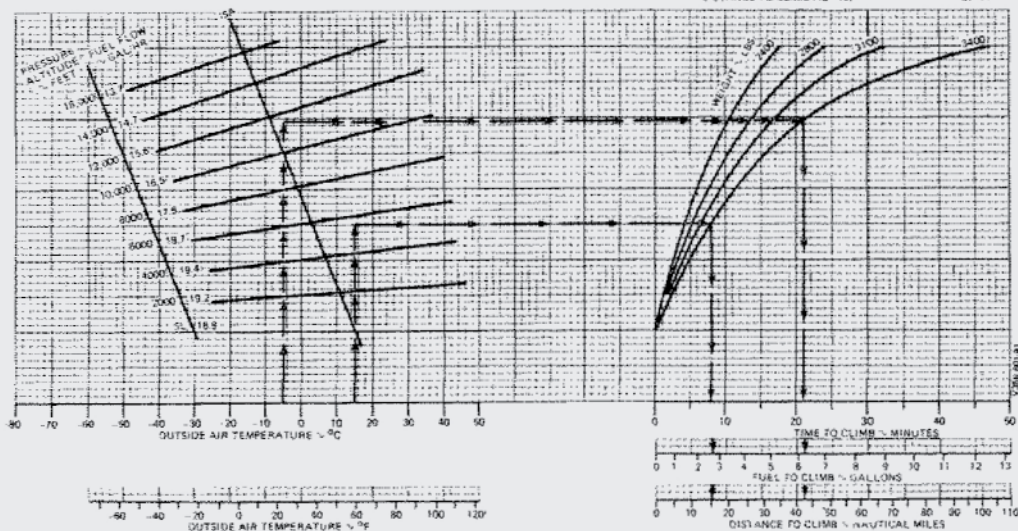
POWER 25 IN. HG. OR FULL THROTTLE 2600 RPM
 FUEL DENSITY 6.0 LBS/GAL
 MIXTURE LEAN TO APPROPRIATE FUEL FLOW
 COWL FLAPS CLOSED

TIME, FUEL, AND DISTANCE TO CLIMB

CLIMB SPEED - 107 KNOTS (123 MPH)

EXAMPLE

OAT AT TAKE-OFF 15°C
 OAT AT CRUISE -5°C
 AIRPORT PRESSURE ALTITUDE 5650 FT
 CRUISE PRESSURE ALTITUDE 11,500 FT
 INITIAL CLIMB WEIGHT 3400 LBS
 TIME TO CLIMB (21-8) 13 MIN
 FUEL TO CLIMB (8.25 - 2.55) 5.8 GALS
 DISTANCE TO CLIMB (42-15) 27 NM



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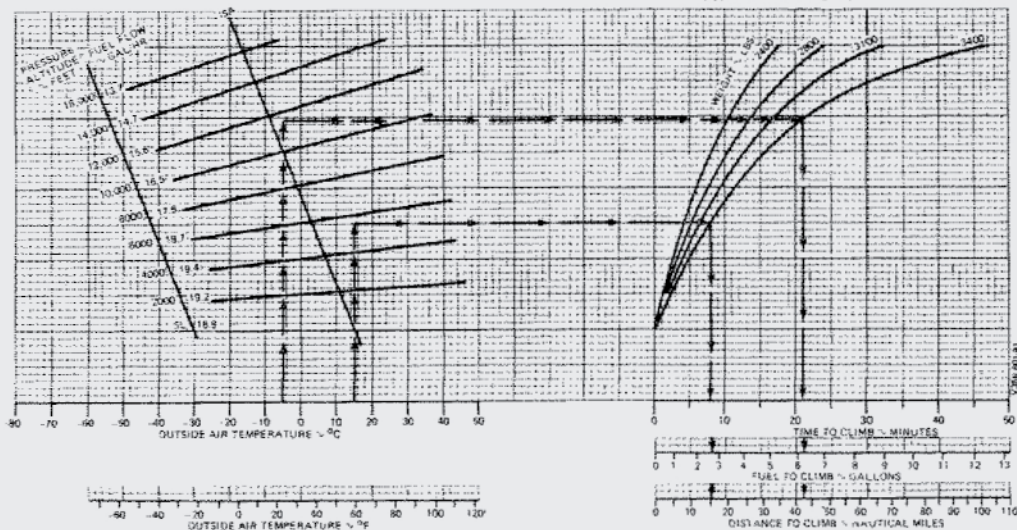
POWER 25 IN. HG OR FULL THROTTLE 2500 RPM
 FUEL DENSITY 6.0 LBS/GAL
 MIXTURE LEAN TO APPROPRIATE FUEL FLOW
 COWL FLAPS CLOSED

TIME, FUEL, AND DISTANCE TO CLIMB

CLIMB SPEED - 107 KNOTS (123 MPH)

EXAMPLE

OAT AT TAKE-OFF 15°C
 OAT AT CRUISE -5°C
 AIRPORT PRESSURE ALTITUDE 5000 FT
 CRUISE PRESSURE ALTITUDE 11,500 FT
 INITIAL CLIMB WEIGHT 3400 LBS
 TIME TO CLIMB (21-8) 13 MIN
 FUEL TO CLIMB (8.25 - 2.95) 5.3 GALS
 DISTANCE TO CLIMB (42 - 15) 27 NM





CRUISE POWER SETTINGS

85% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE) 2300 RPM
3200 POUNDS

PRESS. ALT.	ISA -35°F (-20°C)								STANDARD DAY (ISA)								ISA +35°F (+20°C)							
	IOAT		ENGINE SPEED	MAN. PRESS.	FUEL FLOW		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS.	FUEL FLOW		TAS	CAS	IOAT		ENGINE SPEED	MAN. PRESS.	FUEL FLOW		TAS	CAS
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTBS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTBS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTBS
SL	27	3	2300	23.3	80.0	13.3	150	156	63	17	2300	23.9	80.0	13.3	154	153	99	37	2300	24.5	80.0	13.3	156	151
1000	23	-5	2300	20.1	80.0	13.3	152	155	59	15	2300	23.6	80.0	13.3	155	153	96	35	2300	24.2	80.0	13.3	158	150
2000	20	-7	2300	22.6	80.0	13.3	153	154	56	13	2300	23.4	80.0	13.3	156	152	92	33	2300	24.0	80.0	13.3	159	149
3000	16	-9	2300	22.5	80.0	13.3	154	153	52	11	2300	23.1	80.0	13.3	157	151	89	31	2300	23.7	80.0	13.3	160	148
4000	13	-11	2300	22.3	80.0	13.3	155	152	49	9	2300	22.9	80.0	13.3	158	150	85	29	2300	23.5	80.0	13.3	161	147
5000	9	-13	2300	22.0	80.0	13.3	157	151	45	7	2300	22.6	80.0	13.3	160	148	82	28	2300	23.2	80.0	13.3	163	146
6000	6	-15	2300	21.8	80.0	13.3	158	150	42	6	2300	22.4	80.0	13.3	161	147	78	26	2300	23.0	80.0	13.3	164	145
7000	2	-17	2300	21.5	80.0	13.3	159	149	38	4	2300	22.1	80.0	13.3	162	146	75	24	2300	22.8	79.0	13.2	164	143
8000	-1	-18	2300	21.3	80.0	13.3	160	148	35	2	2300	21.7	80.0	13.3	163	144	71	22	2300	21.7	76.3	12.7	163	139
9000	-5	-20	2300	20.9	78.1	13.0	160	145	31	0	2300	20.9	78.4	12.7	161	141	67	20	2300	20.9	73.9	12.3	161	138
10000	-6	-22	2300	20.0	78.2	12.7	158	143	26	-2	2300	20.0	73.8	12.3	160	136	64	18	2300	20.0	71.4	11.9	159	132
11000	-12	-24	2300	19.2	73.8	12.3	158	139	24	-4	2300	19.2	71.4	11.9	156	134	60	16	2300	19.2	68.1	11.5	156	129
12000	-16	-27	2300	18.4	71.3	11.9	157	136	20	-7	2300	18.4	69.0	11.5	157	131	56	13	2300	18.4	66.8	11.1	156	125
13000	-19	-29	2300	17.6	68.8	11.5	155	132	17	-9	2300	17.6	66.8	11.1	155	127	53	11	2300	17.6	64.5	10.8	153	121
14000	-23	-31	2200	16.9	66.4	11.1	153	129	13	-11	2300	16.9	64.4	10.7	152	123	49	9	2300	16.9	62.4	10.4	151	117
15000	-27	-33	2300	16.1	64.0	10.7	151	125	9	-13	2300	16.1	62.1	10.4	150	119	45	7	2300	16.1	60.2	10.0	147	113
16000	-30	-35	2300	15.5	61.9	10.3	148	121	5	-15	2300	15.5	60.0	10.0	147	115								

- 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) 2100 RPM
3200 POUNDS

PRESS ALT	ISA - 36°F (- 20°C)								STANDARD DAY (ISA)								ISA + 36°F (+ 20°C)							
	IOAT	ENGINE SPEED	MAN PRESS	FUEL FLOW	TAS	CAS			IOAT	ENGINE SPEED	MAN PRESS	FUEL FLOW	TAS	CAS			IOAT	ENGINE SPEED	MAN PRESS	FUEL FLOW	TAS	CAS		
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS
SL	26	-3	2100	23.0	68.8	11.5	140	145	62	17	2100	23.6	68.8	11.5	143	143	99	37	2100	24.2	68.8	11.5	145	140
1000	23	-5	2100	22.8	68.8	11.5	141	144	59	15	2100	23.3	68.8	11.5	144	140	95	35	2100	24.0	68.8	11.5	146	136
2000	19	-7	2100	22.5	68.8	11.5	142	143	55	13	2100	23.1	68.8	11.5	145	141	91	33	2100	23.7	68.8	11.5	147	136
3000	16	-9	2100	22.3	68.8	11.5	143	142	52	11	2100	22.9	68.8	11.5	146	140	86	31	2100	23.5	68.8	11.5	148	137
4000	12	-11	2100	22.1	68.8	11.5	144	141	48	9	2100	22.6	68.8	11.5	147	138	84	29	2100	23.2	68.8	11.5	149	135
5000	9	-13	2100	21.8	68.8	11.5	145	140	45	7	2100	22.4	68.8	11.5	148	137	81	27	2100	23.0	68.8	11.5	150	134
6000	5	-15	2100	21.6	68.8	11.5	146	139	41	5	2100	22.1	68.8	11.5	148	136	77	25	2100	22.7	68.8	11.5	150	133
7000	2	-17	2100	21.3	68.8	11.5	147	136	38	3	2100	21.9	68.8	11.5	149	135	74	23	2100	22.5	68.8	11.5	151	132
8000	-2	-19	2100	21.1	68.8	11.5	148	137	34	1	2100	21.6	68.8	11.5	150	133	70	21	2100	21.9	67.5	11.3	151	129
9000	-5	-21	2100	20.9	68.4	11.4	149	135	31	-1	2100	21.0	67.3	11.2	149	131	67	19	2100	21.0	65.6	10.9	149	126
10000	-9	-23	2100	20.1	68.0	11.3	149	133	27	-3	2100	20.2	65.8	11.0	148	126	63	17	2100	20.1	63.8	10.6	147	122
11000	-13	-25	2100	19.3	66.0	11.0	147	130	23	-5	2100	19.3	64.0	10.7	147	124	59	15	2100	19.3	62.0	10.3	146	119
12000	-16	-27	2100	18.5	64.0	10.7	146	126	20	-7	2100	18.5	62.1	10.4	145	121	56	13	2100	18.5	60.2	10.0	142	114
13000	-20	-29	2100	17.7	62.0	10.3	144	123	16	-9	2100	17.7	60.2	10.0	142	117	52	11	2100	17.7	58.4	9.7	139	110
14000	-24	-31	2100	16.9	59.6	10.0	141	119	12	-11	2100	16.9	57.9	9.7	139	112								
15000	-27	-33	2100	16.2	57.6	9.6	138	114																
16000	-31	-35	2100	15.6	55.6	9.3	135	110																

NOTES

1. Full throttle manifold pressure settings are approximate
2. Shaded area represents operation with full throttle.



CRUISE POWER SETTINGS

45% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE) 2100 RPM
3200 POUNDS

PRESS ALT	ISA -36°F (-20°C)								STANDARD DAY (ISA)								ISA +36°F (+20°C)							
	IOAT	ENGINE SPEED	MAN. PRESS.	FUEL FLOW	TAS	CAS			IOAT	ENGINE SPEED	MAN. PRESS.	FUEL FLOW	TAS	CAS			IOAT	ENGINE SPEED	MAN. PRESS.	FUEL FLOW	TAS	CAS		
FEET	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS	°F	°C	RPM	IN HG	PPH	GPH	KTS	KTS
SL	26	-4	2100	20.4	57.6	9.6	127	132	52	17	2100	20.8	57.6	9.6	130	130	96	37	2100	21.2	57.6	9.6	132	127
1000	22	5	2100	20.1	57.6	9.6	128	131	58	15	2100	20.5	57.6	9.6	131	129	94	35	2100	20.9	57.6	9.6	133	126
2000	19	7	2100	19.8	57.6	9.6	129	130	55	13	2100	20.2	57.6	9.6	131	128	91	33	2100	20.6	57.6	9.6	133	125
3000	15	-3	2100	19.4	57.6	9.6	130	129	51	11	2100	19.9	57.6	9.6	132	127	87	31	2100	20.3	57.6	9.6	134	124
4000	12	-11	2100	19.1	57.6	9.6	131	128	48	9	2100	19.6	57.6	9.6	133	126	84	29	2100	20.0	57.6	9.6	135	123
5000	8	-13	2100	18.8	57.6	9.6	132	127	44	7	2100	19.3	57.6	9.6	134	124	80	27	2100	19.7	57.6	9.6	136	122
6000	5	-15	2100	18.5	57.6	9.6	133	126	41	5	2100	19.0	57.6	9.6	135	123	77	25	2100	19.4	57.6	9.6	136	120
7000	1	-17	2100	18.2	57.6	9.6	134	125	37	3	2100	18.7	57.6	9.6	135	122	73	23	2100	19.1	57.6	9.6	137	119
8000	-3	-19	2100	17.9	57.6	9.6	134	124	34	1	2100	18.4	57.6	9.6	136	121	70	21	2100	18.8	57.6	9.6	137	118
9000	-6	-21	2100	17.6	57.6	9.6	135	123	30	-1	2100	18.1	57.6	9.6	137	120	66	19	2100	18.5	57.6	9.6	138	116
10000	-10	-23	2100	17.3	57.6	9.6	136	122	26	-3	2100	17.8	57.6	9.6	137	118	63	17	2100	18.2	57.6	9.6	138	115
11000	-13	-25	2100	17.0	57.6	9.6	136	120	23	-5	2100	17.5	57.6	9.6	138	117	59	15	2100	17.9	57.6	9.6	138	113
12000	-17	-27	2100	16.7	57.6	9.6	137	119	19	-7	2100	17.1	57.6	9.6	138	115	55	13	2100	17.6	57.6	9.6	138	111
13000	-20	-29	2100	16.4	57.6	9.6	137	117	16	-9	2100	16.8	57.6	9.6	138	113								
14000	-24	-31	2100	16.0	57.6	9.6	138	116	12	-11	2100	16.5	56.6	9.6	138	110								
15000	-27	-33	2100	15.7	57.6	9.6	138	114																
16000	-31	-35	2100	15.4	56.6	9.3	136	110																

- NOTES:
1. Full throttle manifold pressure settings are approximate.
 2. Shaded area represents operation with full throttle.

Carenado



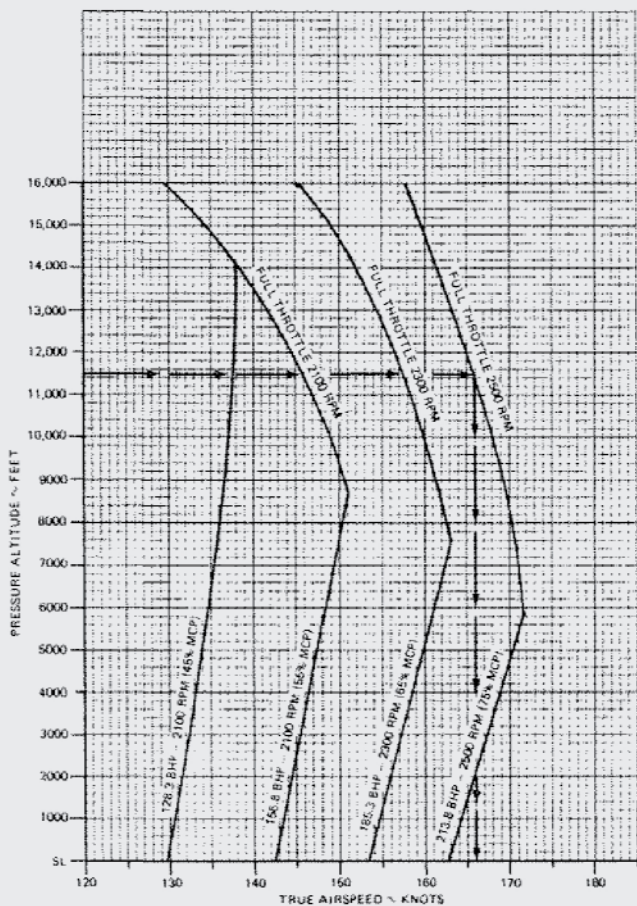
CRUISE SPEEDS

ASSOCIATED CONDITIONS:

AVERAGE CRUISE WEIGHT 3200 LBS
TEMPERATURE STANDARD DAY (ISA)

EXAMPLE:

PRESSURE ALTITUDE 11,500 FT
POWER SETTING FULL THROTTLE 2500 RPM
TRUE AIRSPEED 160 KTS



Carenado

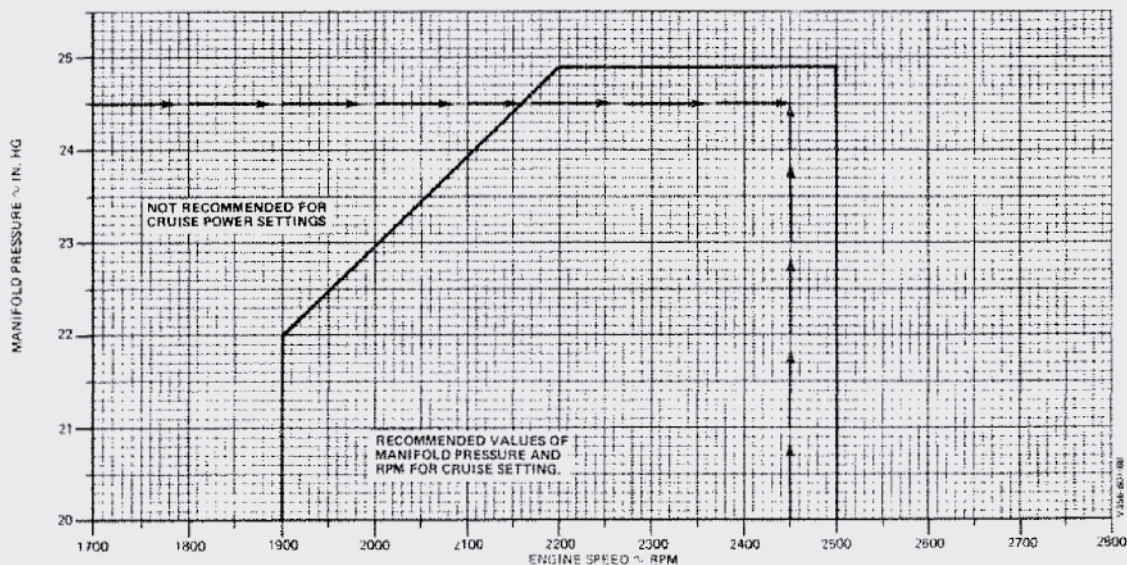


MANIFOLD PRESSURE vs. RPM

EXAMPLE:

ENGINE SPEED 2450 RPM
MANIFOLD PRESSURE 24.5 IN. HG

WITHIN RECOMMENDED LIMITS

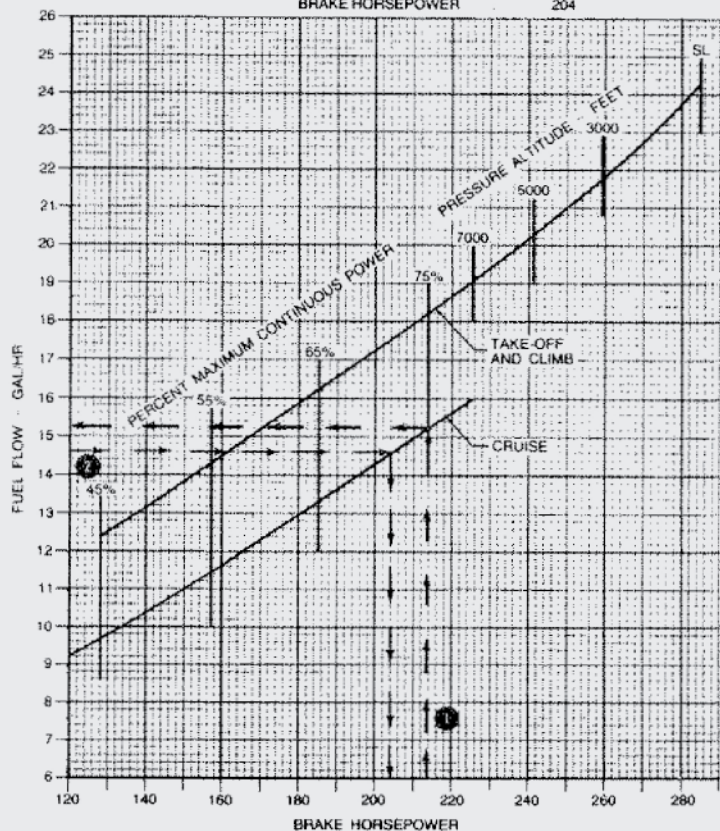




FUEL FLOW vs BRAKE HORSEPOWER

EXAMPLE

1	BRAKE HORSEPOWER	213.75
	CONDITION	75% MCP LEVEL FLIGHT CRUISE
2	FUEL FLOW	15.25 GAL/HR
	CONDITION	14.6 GAL/HR LEVEL FLIGHT CRUISE
BRAKE HORSEPOWER		204



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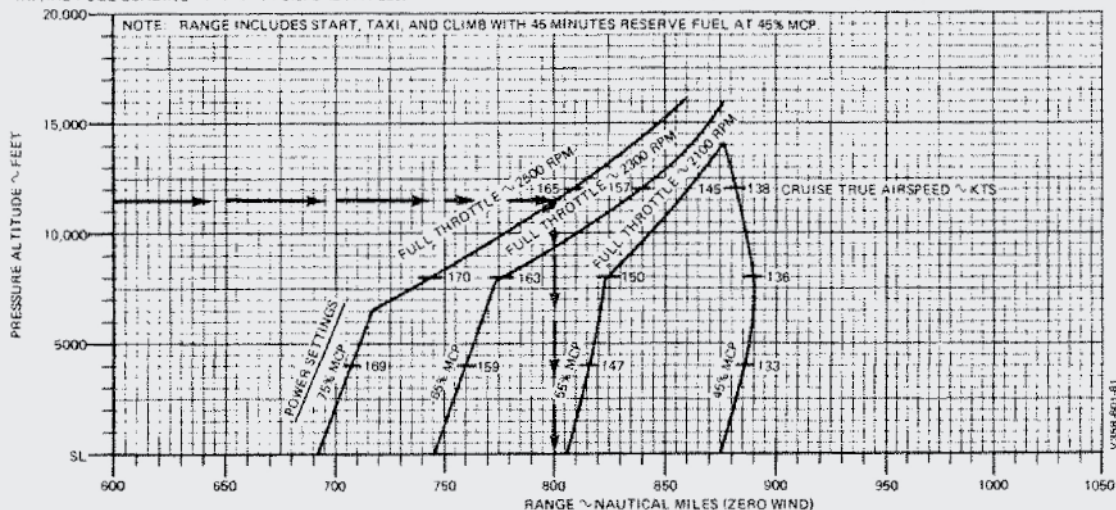
RANGE PROFILE — 74 GALLONS STANDARD DAY (ISA)

ASSOCIATED CONDITIONS:

WEIGHT 3412 LBS BEFORE ENGINE START
FUEL AVIATION GASOLINE
FUEL DENSITY 6.0 LBS/GAL
INITIAL FUEL LOADING 74 U.S. GAL (444 LBS)

EXAMPLE:

PRESSURE ALTITUDE 11,500 FT
POWER SETTING FULL THROTTLE, 2500 RPM
RANGE 800 NM





RANGE PROFILE — 44 GALLONS

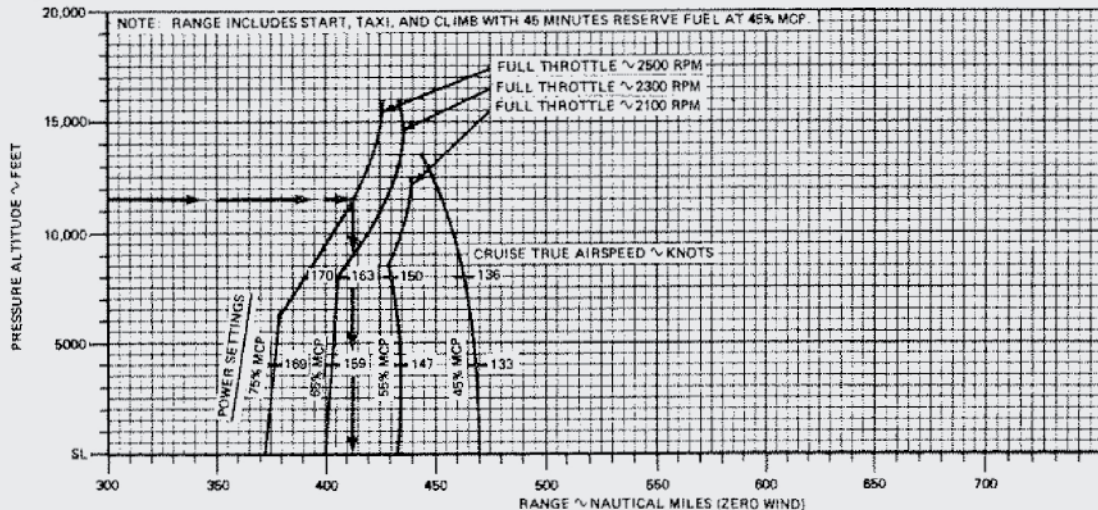
STANDARD DAY (ISA)

ASSOCIATED CONDITIONS:

WEIGHT 3412 LBS BEFORE ENGINE START
FUEL AVIATION GASOLINE
FUEL DENSITY 6.0 LBS/GAL
INITIAL FUEL LOADING 44 U.S. GAL (264 LBS)

EXAMPLE:

PRESSURE ALTITUDE 11,500 FT
POWER SETTING FULL THROTTLE, 2600 RPM
RANGE 413 NM



Carenado



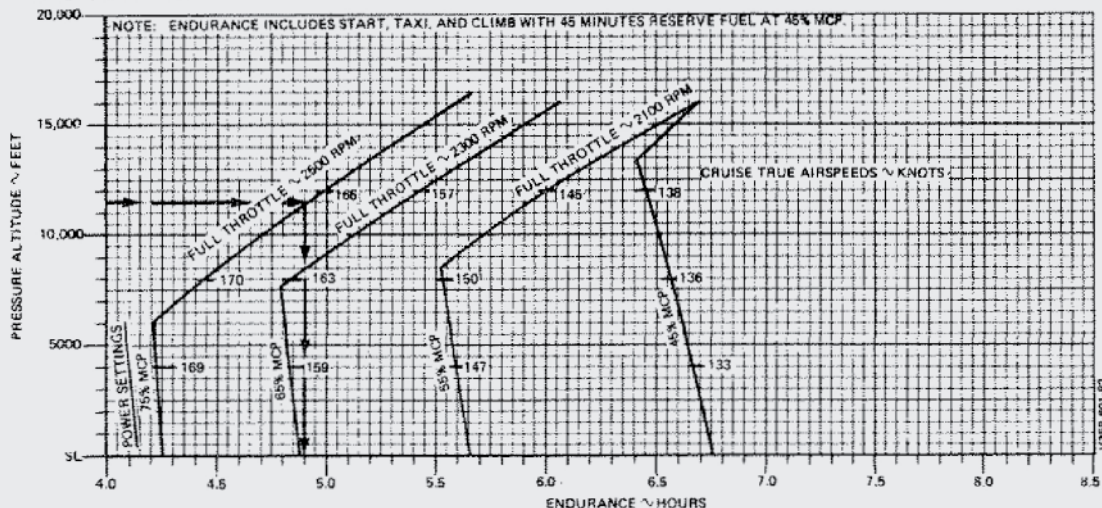
ENDURANCE PROFILE — 74 GALLONS STANDARD DAY (ISA)

ASSOCIATED CONDITIONS:

WEIGHT 3412 LBS BEFORE ENGINE START
FUEL AVIATION GASOLINE
FUEL DENSITY 6.0 LBS/GAL
INITIAL FUEL LOADING 74 U.S. GAL (444 LBS)

EXAMPLE:

PRESSURE ALTITUDE 11,500 FT
POWER SETTING FULL THROTTLE, 2500 RPM
ENDURANCE 4.9 HRS (4 HRS 54 MIN)



Carenado



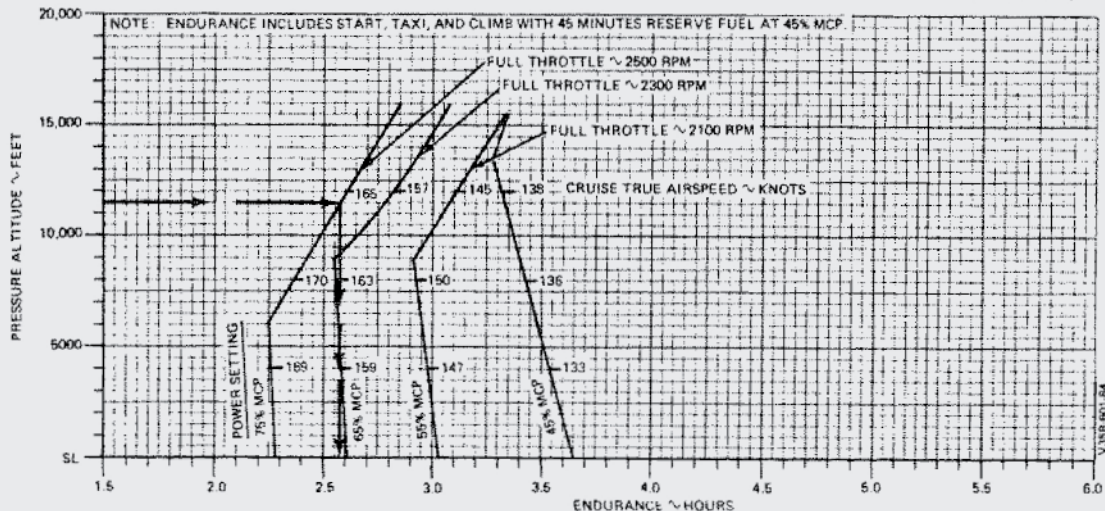
ENDURANCE PROFILE — 44 GALLONS STANDARD DAY (ISA)

ASSOCIATED CONDITIONS

WEIGHT 3412 LBS BEFORE ENGINE START
FUEL AVIATION GASOLINE
FUEL DENSITY 6.0 LBS/GAL
INITIAL FUEL LOADING 44 U.S. GAL (264 LBS)

EXAMPLE:

PRESSURE ALTITUDE 11,500 FT
POWER SETTING FULL THROTTLE, 2500 RPM
ENDURANCE 2.57 HRS (2 HRS 34 MIN)



Carenado



LANDING DISTANCE

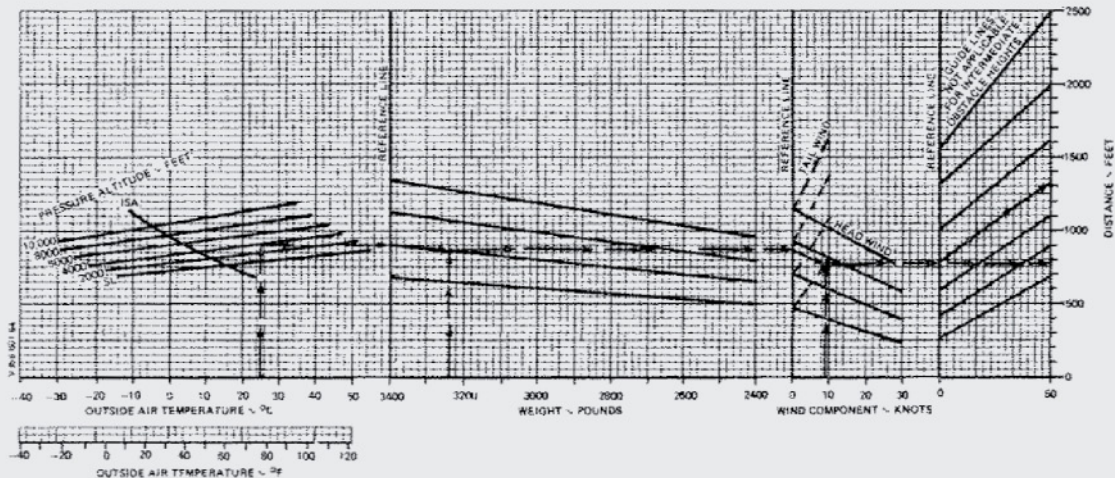
ASSOCIATED CONDITIONS

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

WEIGHT ~ LBS	SPEED AT 50 FT	
	KTS	MPH
3400	70	81
3200	68	79
3000	66	76
2800	63	73
2600	61	71
2400	59	68

EXAMPLE

DAY 25°C (77°F)
PRESSURE ALTITUDE 3405 FT
WEIGHT 3242 LBS
HEADWIND COMPONENT 9 KTS
GROUND ROLL 763 FT
TOTAL OVER 50 FT OBSTACLE 1324 FT
APPROACH SPEED 69 KTS (80 MPH)





Carenado