F-GHYF

Ref

Piper Aircraft Corporation, Vero Beach, Florida
Airplane Serial Number 8516052
Report: VB-1180 FAA Approved by Ward Evans
Issued: August 13, 1982, Revised: June 9, 2017

FAA APPROVED IN NORMAL AND UTILITY CATEGORIES BASED ON CAR 3.

F-GHYF

Table of contents | Page number

F-GHYF

SECTION 1
Specifications

POWER PLANT

Engine (4 cylinders, Direct Drive)	Lycoming
Rated Horsepower	160CV
Rated Speed	2700 Rpm
Compression Ratio	8.5:1
Propeller	

PROPELLERS

a.	Number of Propellers		**1**
b.	Propeller Manufacturer		Sensenich
c.	Model		74DM6-0-60
	or		74DM6-0-58
d.	Number of Blades		**2**
e.	Propeller Diameter		
		Maximum	**1,88 m** (74 inches)
		Minimum	**1,82 m** (72 inches)
f.	Propeller Type		Fixed Pitch

FUEL AVGAS ONLY

Fuel Capacity	189 L (50 USG)
Minimum Octane	100 Green or 100LL Blue Aviation grade
Fuel Usable	181 L (48 USG)
Oil Capacity	7,57 L (8 qts)

Oil Viscosity per Average Temp Gradient for Starting

	Single	Multi
Above 15°C (60°F)	S.A.E 50	S.A.E 40 or 50
-1°C to **32°C** (30°F to 90°F)	S.A.E 40	S.A.E 40
-18°C to **21°C** (0°F to 70°F)	S.A.E 30	S.A.E 40 or 20W-30
Below **-12°C** (10°F°)	S.A.E 20	S.A.E 20W-30

F-GHYF

MAXIMUM WEIGHTS

		Normal	Utility
a.	Maximum Takeoff weight	**1106 kg** (2440 lbs)	**916 kg** (2020 lbs)
b.	Maximum Ramp Weight	**1109 kg** (2447 lbs)	**919 kg** (2027 lbs)
c.	Maximum Landing Weight	**1106 kg**	**916 kg**
d.	Maximum Weight baggage Compartment	**90 kg** 200 lbs	**0kg**

DIMENSIONS

Wing Span	10,68m (35ft)
Wing Area	
Length	7,29m (23,95ft)
Height	2,24m (7,36ft

LANDING GEAR

Tire Pressure	Nose	30 Psi
	Main	24 Psi

F-GHYF

SECTION 2

LIMITATIONS

2.1 General

This airplane must be operated as normal or utility category airplane in compliance with the operating limitations sated in the form of placards and markings and those given in the section of Airplane Manual and handbook.

2.3 Airspeed limitations

SPEED	KIAS	KCAS
-V_{NE} (Never Exceed Speed)	**160**kts	**153**kts
-V_{NO} (Maximum Structural Speed)	**126**kts	**122**kts
Do not exceed this speed except in smooth air and then only with caution		
-V_{FE} (Maximum Flaps Extended Speed)	**103**kts	**100**kts
Do not exceed this speed with the flaps extended		
-V_{A} (Design Maneuvering Speed)		
Do not make full or abrupt control movements above this speed		
At **1106 kg G.W**	**111**	**108**
At **694 kg G.W** (1531 lbs)	**88**kts	**89**kts

CAUTION

Maneuvering speed decreases at lighter weight as the effects of aerodynamic forces become more pronounced. Linear interpolation may be used for intermediate gross weights. Maneuvering speed should not be exceeded while operation in rough air.

2.5 Airspeed indicator markings

Marking	KIAS
Red Radial Line (VNE)	160 kts
Yellow Arc (Caution range-Smooth Air)	126 to 160kts
Green Arc (Normal Operating Range)	50 to 126 kts
White Arc (Flaps Down)	44 to 103 kts

2.7 Power Plant Limitations

a. Maximum Horse Power 160 CV
b. Maximum RPM 2700 RPM
c. Maximum Oil Temp 118°C (245°F)
d. Oil Pressure min Red Line 25 PSI
e. Oil Pressure Maxi Red Line 100PSI
f. Fuel pressure mini Red Line 0.5 PSI
g. Fuel PressureMaxi Red Line 8 PSI
  a. Fuel (AVGAS ONLY Mimimum grade 100 or 100LL
h. Propeller

Maximum diameter 1,88 m (74 inches)
Minimum diameter 1,82 m (72 inches)
Propeller Tolerance at sea level
Not above 2430 RPM
Not below 2330 RPM

2.9 POWER PLANT INSTRUMENTS MARKING

a. *-TACHOMETER*

Green Arc (normal operating range). 500 to 2700 Rpm
Red Line maxi 2700 Rpm

b. *-OIL Temperature*

Green Arc (normal operating range) 23,8°C to 118°C (75°F to 245°F)
Red Line 118°C (245°F)

c. *-OIL pressure*

Red Line min 25 Psi
Green Arc (normal operating range) 60 Psi to 90 Psi
Yellow Arc (Caution range) (idle) 25 Psi to 60 Psi
Yellow Arc (Ground Warm-Up) 90 Psi to 100 Psi
Red Line maxi 100 Psi

d. *-FUEL pressure*

Red Line min 0.5 Psi
Green Arc (normal operating range) 0.5 Psi to 8 Psi
Red Line maxi 8 Psi

F-GHYF

2.11 Weight Limits

		Normal	Utility
a.	Maximum weight	**1106 kg**	**916 kg**
		(2440 lbs)	(2020 lbs)
b.	Maximum Ramp Weight	**1109 kg**	**919 kg**
		(2447 lbs)	(2027 lbs)
c.	Maximum baggage	**90 kg**	**0kg**
		200 lbs	

2.15 Maneuver Limits

a. Normal Category-all acrobatic maneuvers including spins PROHIBITED

b. Utility Aircraft- Approved Maneuvers for bank angles exceeding 60°:

	Entry Speed KIAS
Steep Turns	111 kts
Lazy Eights	111 kts
Chandelles	111 kts

2.17 Flight Load Factors

		Normal	Utility
a.	Positive load factor (Maximum)	3.8 G	4.4 G
b.	Negative load factor (maximum)	NO INVERTED maneuvers approved	

2.19 Kinds of Operation Equipment List

This airplane may be operated in day or night VFR.
Refer to Airplane manual

2.21 Fuel Limitations

a.	Total Capacity	189 L (50 USG)
	Unusable fuel	7,57 L (2 USG)
b.	Fuel Usable	181,7 L (48 USG)

2.23 Noise Level

The noise level of this aircraft is 72.9 dB(A)

F-GHYF

F-GHYF

SECTION 3
EMERGENCY PROCEDURES

SECTION 3

EMERGENCY PROCEDURES

3.1 GENERAL

The recommended procedures for coping with various types of emergencies and critical situations are provided by this section. All of required (FAA regulations) emergency procedures and those necessary for operation of the airplane as determined by the operating and design features of the airplane are presented.

Emergency procedures associated with those optional systems and equipment which require handbook supplements are provided in Section 9 (Supplements).

The first portion of this section consists of an abbreviated emergency check list which supplies an action sequence for critical situations with little emphasis on the operation of systems.

The remainder of the section is devoted to amplified emergency procedures containing additional information to provide the pilot with a more complete understanding of the procedures.

These procedures are suggested as a course of action for coping with the particular condition described, but are not a substitute for sound judgement and common sense. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise.

Most basic emergency procedures, such as power off landings, are a normal part of pilot training. Although these emergencies are discussed here, this information is not intended to replace such training, but only to provide a source of reference and review, and to provide information on procedures which are not the same for all aircraft. It is suggested that the pilot review standard emergency procedures periodically to remain proficient in them.

F-GHYF

3.3 EMERGENCY PROCEDURES CHECKLIST

ENGINE FIRE DURING START

Starter .... crank engine
Mixture .... idle cut-off
Throttle .... open
Electric fuel pump .... OFF
Fuel selector .... OFF
Abandon if fire continues

ENGINE POWER LOSS DURING TAKEOFF

If sufficient runway remains for a normal landing, land straight ahead.

If insufficient runway remains:
Maintain safe airspeed
Make only shallow turn to avoid obstructions
Flaps as situation requires

If sufficient altitude has been gained to attempt a restart:
Maintain safe airspeed
Fuel selector .... switch to tank containing fuel
Electric fuel pump .... check ON
Mixture .... check RICH
Carburetor heat .... ON
Primer .... locked
If power is not regained, proceed with power off landing.

ENGINE POWER LOSS IN FLIGHT

Fuel selector .... switch to tank containing fuel
Electric fuel pump .... ON
Mixture .... RICH
Carburetor heat .... ON
Engine gauges .... check for indication of cause of power loss
Primer .... check locked
If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.

When power is restored:
Carburetor heater .... OFF
Electric fuel pump .... OFF

If power is not restored, prepare for power off landing.
Trim for 73 KIAS

POWER OFF LANDING

Locate suitable field.
Establish spiral pattern.
1000 ft. above field at downwind position for normal landing approach.
When field can easily be reached slow to 63 KIAS for shortest landing.

Touchdowns should normally be made at lowest possible airspeed with full flaps.

When committed to landing to landing:
Ignition .... OFF
Master switch .... OFF
Fuel selector .... OFF
Mixture .... idle cut-off
Seat belts and harnesses .... tight

FIRE IN FLIGHT

Source of fire .... check

Electrical fire (smoke in cabin):
Master switch .... OFF
Vents .... open
Cabin heat .... OFF
Land as soon as practical.

Engine fire:
Fuel selector .... OFF
Throttle .... CLOSED
Mixture .... idle cut-off
Electric fuel pump .... check OFF
Heater .... OFF
Defroster .... OFF
Proceed with POWER OFF LANDING procedure.

LOSS OF OIL PRESSURE

Land as soon as possible and investigate cause.
Prepare for power off landing.

LOSS OF FUEL PRESSURE

Electric fuel pump ....ON
Fuel selector ....check on full tank

HIGH OIL TEMPERATURE

Land at nearest airport and investigate the problem.
Prepare for power off landing.

ELECTRICAL FAILURES

NOTE

When operating with light electrical load and a fully charged battery, the Alternator Inop. light may illuminate due to minimal alternator output. If the alternator is functional a slight increase in electrical load should extinguish the Inop. indication.

ALT annunciator light illuminated:
Ammeter ....Check to verify inop. alt.

If ammeter shows zero:
ALT switch ....OFF

Reduce electrical loads to minimum:
ALT circuit breaker ....Check and reset as required
ALT switch ....ON

If power not restored:
ALT switch ....OFF

If alternator output cannot be restored, reduce electrical loads and land as soon as practical. The battery is the only remaining source of electrical power.

ELECTRICAL OVERLOAD (Alternator over 20 amps above known electrical load)

ALT switch ....ON
BATT switch ....OFF

If alternator loads are reduced:
Electrical load .... Reduce to Minimum

Land as soon as practical.

NOTE

Due to increased system voltage and radio frequency noise, operation with ALT switch ON and BATT switch OFF should be made only when required by an electrical system failure.

If alternator loads are not reduced:
ALT switch .... OFF
BATT switch .... As required

Land as soon as possible. Anticipate complete electrical failure.

SPIN RECOVERY

Throttle .... idle
Ailerons .... neutral
Rudder .... full opposite to direction of rotation
Control wheel .... full forward
Rudder .... neutral (when rotation stops)
Control wheel .... as required to smoothly regain level flight attitude

OPEN DOOR

If both upper and lower latches are open, the door will trail slightly open and airspeeds will be reduced slightly.

To close the door in flight:
Slow airplane to 89 KIAS
Cabin vents .... close
Storm window .... open

If upper latch is open .... latch
If side latch is open .... pull on arm rest while moving latch handle to latched position.

If both latches are open .... latch side latch then top latch

ENGINE ROUGHNESS

Carburetor heat .... ON

If roughness continues after one min:
Carburetor heat .... OFF
Mixture .... adjust for max. smoothness
Electric fuel pump .... ON
Fuel selector .... switch tanks
Engine gauges .... check
Magneto switch .... L then R then BOTH

If operation is satisfactory on either one, continue on that magneto at reduced power and full RICH mixture to first airport.

Prepare for power off landing.

CARBURETOR ICING

Carburetor heat .... ON
Mixture .... adjust for max. smoothness

3.5 AMPLIFIED EMERGENCY PROCEDURES (GENERAL)

The following paragraphs are presented to supply additional information for the purpose of providing the pilot with a more complete understanding of the recommended course of action and probable cause of an emergency situation.

3.7 ENGINE FIRE DURING START

Engine fires during start are usually the result of overpriming. The first attempt to extinguish the fire is to try to start the engine and draw the excess fuel back into the induction system.

If a fire is present before the engine has started, move the mixture control to idle cut-off, open the throttle and crank the engine. This is an attempt to draw the fire back into the engine.

If the engine has started, continue operating to try to pull the fire into the engine.

In either case (above), if fire continues more than a few seconds, the fire should be extinguished by the best available external means.

The fuel selector valves should be OFF and the mixture at idle cut-off if an external fire extinguishing method is to be used.

3.9 ENGINE POWER LOSS DURING TAKEOFF

The proper action to be taken if loss of power occurs during takeoff will depend on the circumstances of the particular situation.

If sufficient runway remains to complete a normal landing, land straight ahead.

If insufficient runway remains, maintain a safe airspeed and make only a shallow turn if necessary to avoid obstructions. Use of flaps depends on the circumstances. Normally, flaps should be fully extended for touchdown.

If sufficient altitude has been gained to attempt a restart, maintain a safe airspeed and switch the fuel selector to another tank containing fuel. Check the electric fuel pump to insure that it is ON and that the mixture is RICH. The carburetor heat should be ON and the primer locked.

If engine failure was caused by fuel exhaustion, power will not be regained after switching fuel tanks until the empty fuel lines are filled. This may require up to ten seconds.

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency check list and paragraph 3.13).

3.11 ENGINE POWER LOSS IN FLIGHT

Complete engine power loss is usually caused by fuel flow interruption, and power will be restored shortly after fuel flow is restored. If power loss occurs at a low altitude, the first step is to prepare for an emergency landing (refer to paragraph 3.13). An airspeed of at least 73 KIAS should be maintained.

If altitude permits, switch the fuel selector to another tank containing fuel and turn the electric fuel pump ON. Move the mixture control to RICH and the carburetor heat to ON. Check the engine gauges for an indication of the cause of the power loss. Check to insure the primer is locked. If no fuel pressure is indicated, check the tank selector position to be sure it is on a tank containing fuel.

When power is restored move the carburetor heat to the OFF position and turn OFF the electric fuel pump.

If the preceding steps do not restore power, prepare for an emergency landing.

If time permits, turn the ignition switch to L then to R then back to BOTH. Move the throttle and mixture control levers to different settings. This may restore power if the problem is too rich or too too lean a mixture or if there is a partial fuel system restriction. Try other fuel tanks. Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power. If power loss is due to water, fuel pressure indications will be normal.

If engine failure was caused by fuel exhaustion, power will not be restored after switching fuel tanks until the empty fuel lines are filled. This may required up to ten seconds.

If power is not regained, proceed with the Power Off Landing procedure (refer to the emergency checklist and paragraph 3.13).

3.13 POWER OFF LANDING

If loss of power occurs at altitude, trim the aircraft for best gliding angle (73 KIAS) and look for a suitable field. If measures taken to restore power are not effective, and if time permits, check your charts for airports in the immediate vicinity; it may be possible to land at one if you have sufficient altitude. If possible, notify the FAA by radio of your difficulty and intentions. If another pilot or passenger is aboard, let him help.

When you have located a suitable field, establish a spiral pattern around this field. Try to be at 1000 feet above the field at the downwind position to make a normal landing approach. When the field can easily be reached, slow to 63 KIAS for the shortest landing. Excess altitude may be lost by widening your pattern, using flaps or slipping, or a combination of these.

Touchdown should normally be made at the lowest possible airspeed.

When committed to a landing, shut OFF the master and ignition switches. Flaps may be used as desired. Turn the fuel selector valve to OFF and move the mixture to idle cut-off. The seat belts and shoulder harnesses should be tightened. Touchdown should be normally made at the lowest possible airspeed.

3.15 FIRE IN FLIGHT

The presence of fire is noted through smoke, smell and heat in the cabin. It is essential that the source of the fire be promptly identified through instrument readings, characteristics of the smoke, or other indications since the action to be taken differs somewhat in each case.

Check for the source of the fire first.

If an electrical fire is indicated (smoke in the cabin), the master switch should be turned OFF. The cabin vents should be opened and the cabin heat turned OFF. A landing should be made as soon as possible.

If an engine fire is present, switch the fuel selector to OFF and close the throttle. The mixture should be at idle cut-off. Turn the electric fuel pump OFF. In all cases, the heater and defroster should be OFF. If radio communication is not required, select master switch OFF. Proceed with power off landing procedure.

NOTE

The possibility of an engine fire in flight is extremely remote. The procedure given is general and pilot judgement should be the determining factor for action in such an emergency.

3.17 LOSS OF OIL PRESSURE

Loss of oil pressure may be either partial or complete. A partial loss of oil pressure usually indicates a malfunction in the oil pressure regulating system, and a landing should be made as soon as possible to investigate the cause and prevent engine damage.

A complete loss of oil pressure indication may signify oil exhaustion or may be the result of a faulty gauge. In either case, proceed toward the nearest airport, and be prepared for a forced landing. If the problem is not a pressure gauge malfunction, the engine may stop suddenly. Maintain altitude until such time as a dead stick landing can be accomplished. Don't change power settings unnecessarily, as this may hasten complete power loss.

Depending on the circumstances, it may be advisable to make an off airport landing while power is still available, particularly if other indications of actual oil pressure loss, such as sudden increases in temperatures, or oil smoke, are apparent, and an airport is not close.

If engine stoppage occurs, proceed with Power Off Landing.

3.19 LOSS OF FUEL PRESSURE

If loss of fuel pressure occurs, turn ON the electric fuel pump and check that the fuel selector is on a full tank.

If the problem is not an empty tank, land as soon as practical and have the engine-driven fuel pump and fuel system checked.

F-GHYF

3.21 HIGH OIL TEMPERATURE

An abnormally high oil temperature indication may be caused by a low oil level, an obstruction in the oil cooler, damaged or improper baffle seals, a defective gauge, or other causes. Land as soon as practical at an appropriate airport and have the cause investigated.

A steady, rapid rise in oil temperature is a sign of trouble. Land at the nearest airport and let a mechanic investigate the problem. Watch the oil pressure gauge for an accompanying loss of pressure.

3.23 ELECTRICAL FAILURES

NOTE

When operating with light electrical load and a fully charged battery, the Alternator Inop. light may illuminate due to minimal alternator output. If the alternator is functional a slight increase in electrical load should extinguish the Inop. indication.

Loss of alternator output is detected through zero reading on the ammeter. Before executing the following procedure, ensure that the reading is zero, and not merely low, by actuating an electrically powered device, such as the landing light. If no increase in the ammeter reading is noted, alternator failure can be assumed.

The electrical load should be reduced as much as possible. Check the alternator circuit breakers for a popped circuit.

The next step is to attempt to reset the overvoltage relay.This is accomplished by moving the ALT switch to OFF for one second and then to ON. If the trouble was caused by a momentary overvoltage condition (16.5 volts and up) this procedure should return the ammeter to a normal reading.

If the ammeter continues to indicate ZERO output, or if the alternator will not remain reset, turn off the ALT switch, maintain minimum electrical load and land as soon as practical. All electrical load is being supplied by the battery.

3.24 ELECTRICAL OVERLOAD (Alternator over 20 amps above known electrical load)

If abnormally high alternator output is observed (more than 20 amps above known electrical load for the operating conditions), it may be caused by a low battery, a battery fault or other abnormal electrical load. If the cause is a low battery, the indication should begin to decrease toward normal within 5 minutes. If the overload condition persists, attempt to reduce the load by turning off non-essential equipment.

Turn the BATT switch OFF and the ammeter should decrease. Turn the BATT switch ON and continue to monitor the ammeter. If the alternator output does not decrease within 5 minutes, turn the BATT switch OFF and land as soon as possible. All electrical loads are being supplied by the alternator.

NOTE

Due to higher voltage and radio frequency noise, operation with the ALT switch ON and the BATT switch OFF should be made only when required by an electrical failure.

3.25 SPIN RECOVERY

Intentional spins are prohibited in this airplane. If a spin is inadvertently entered, immediately move the throttle to idle and the ailerons to neutral.

Full rudder should then be applied opposite to the direction of rotation followed by control wheel full forward. When the rotation stops, neutralize the rudder and ease back on the control wheel as required to smoothly regain a level flight attitude.

3.27 OPEN DOOR

The cabin door on the Cherokee is double latched, so the chance of it springing open in flight at both the top and side are remote. However, should you forget the upper latch, or not fully engage the side latch, the door may spring partially open. This will usually happen at takeoff or soon afterward. A partially open door will not affect normal flight characteristics, and a normal landing can be made with the door open.

If both upper and side latches are open, the door will trail slightly open, and airspeed will be reduced slightly.

To close the door in flight, slow the airplane to 89 KIAS, close the cabin vents and open the storm window. If the top latch is open, latch it. If the side latch is open, pull on the arm rest while moving the latch handle to the latched position. If both latches are open, close the side latch then the top latch.

3.29 CARBURETOR ICING

Under certain moist atmospheric conditions at temperatures of -5°C to 20°C, it is possible for ice to form in the induction system, even in summer weather. This is due to the high air velocity through the carburetor venturi and absorption of heat from this air by vaporization of the fuel.

To avoid this, carburetor preheat is provided to replace the heat lost by vaporization. Carburetor heat should be full on when carburetor ice is encountered. Adjust mixture for maximum smoothness.

3.41 ENGINE ROUGHNESS

Engine roughness is usually due to carburetor icing which is indicated by a drop in RPM, and may be accompanied by a slight loss of airspeed or altitude. If too much ice is allowed to accumulate, restoration of full power may not be possible; therefore, prompt action is required.

Turn carburetor heat on (See Note). RPM will decrease slightly and roughness will increase. Wait for a decrease in engine roughness or an increase in RPM, indicating ice removal. If there is no change in approximately one minute, return the carburetor heat to OFF.

If the engine is still rough, adjust the mixture for maximum smoothness. The engine will run rough if the mixture is too rich or too lean. The electric fuel pump should be switched to ON and the fuel selector switched to the other tank to see if fuel contamination is the problem. Check the engine gauges for abnormal readings. If any gauge readings are abnormal, proceed accordingly. Move the magneto switch to L then to R, then back to BOTH. If operation is satisfactory on either magneto, proceed on that magneto at reduced power, with mixture full RICH to a landing at the first available airport.

If roughness persists, prepare for a precautionary landing at pilot's discretion.

NOTE

Partial carburetor heat may be worse than no heat at all, since it may melt part of the ice which will refreeze in the intake system. Therefore when using carburetor heat always use full heat; and, when ice is removed, return the control to the full cold position.

SECTION 4

NORMAL PROCEDURES

SECTION 4 (cont)

F-GHYF

4.1 GENERAL

Refer to Airplane Manual

4.3 AIRSPEEDS FOR SAFE OPERATIONS

The following airspeeds are those which are significant to the operation of the airplane. These figures are for standard airplanes flown at gross weight under standard conditions at sea level.

Performance for a specific airplane may vary from published figures depending upon the equipment installed; the condition of the engine, airplane and equipment; atmospheric conditions and piloting technique.

(a)	Best Rate of Climb Speed	79 KIAS
(b)	Best Angle of Climb Speed	63 KIAS
(c)	Turbulent Air Operating Speed (See Subsection 2.3)	111 KIAS
(d)	Maximum Flap Speed	103 KIAS
(e)	Landing Final Approach Speed (Flaps 40°)	63 KIAS
(f)	Maximum Demonstrated Crosswind Velocity	17 KTS

4.5 NORMAL PROCEDURES CHECKLIST

PREPARATION

Airplane status .... airworthy, papers on board
Weather .... suitable
Baggage .... weighed, stowed, tied
Weight and C.G. .... within limits
Navigation .... planned
Charts and navigation equipment .... on board
Performance and range .... computed and safe

F-GHYF

PREFLIGHT CHECK

COCKPIT

Control wheel	release belts
Avionics	OFF
Parking brake	Set
Electric switches	OFF
Magneto switch	OFF
Mixture	idle cut-off
Master switch	ON
Fuel quantity gauges	check
Annunciator panel	check
Master switch	OFF
Flight controls	check
Flaps	check
Trim	check, set neutral
Pitot drain	DRAIN, close
Static drain	DRAIN, close
Windows	check, clean
Tow bar	stow
Baggage	secure
Baggage door	close, secure

RIGHT WING

Wing	free of ice, snow, frost
Control surfaces	check for interference - free of ice, snow, frost
Hinges	check for interference
Static wicks	check
Wing tip and lights	check
Fuel tank	check supply visually - secure caps
Fuel tank sump	drain, check for water, sediment and proper fuel
Fuel vent	clear
Tie down and chock	remove
Main gear strut	proper inflation (4.50 in.)
Tire	check
Brake block and discs	check
Fresh air inlet	clear

NOSE SECTION

Fuel and oil .... check for leaks
Cowling .... secure
Windshield .... clean
Propeller and spinner .... check
Air inlets .... clear
Alternator belt .... check tension
Landing light .... check
Nose chock .... remove
Nose gear strut .... proper
inflation (3.25 in.)
Nose wheel tire .... check
Oil .... check level
Dipstick .... properly seated
Fuel strainer .... drain, check for water, sediment and proper fuel

LEFT WING

Wing .... free of ice, snow, frost
Fresh air inlet .... clear
Main gear strut .... proper
inflation (4.50 in.)
Tire .... check
Brake block and discs .... check
Fuel tanks .... check supply
visually - secure caps
Fuel tank sumps .... drain, check for water, sediment and proper fuel
Fuel vents .... open
Tie down and chock .... remove
Pitot head .... remove cover - holes clear
Wing tip and lights .... check
Control surfaces .... check for interference - free of ice, snow, frost
Hinges .... check for interference
Static wicks .... check

FUSELAGE

Antennas .... check
Empennage .... Free of ice, snow, frost

Fresh air inlet .... clear
Stabilator and trim tab .... check for interference
Tie down .... remove
Master switch .... ON
Cockpit lighting .... check
Nav and strobe lights .... check
Stall warning .... check
Pitot heat .... check
All switches .... OFF
Passengers .... board
Cabin door .... close and secure
Seat belts and harnesses .... fasten - check interia reel

BEFORE STARTING ENGINE

Brakes .... set
Carburetor heat .... full OFF
Fuel selector .... desired tank
Radios .... OFF

STARTING ENGINE WHEN COLD

Throttle .... 1/4" open
Master switch .... ON
Electric fuel pump .... ON
Mixture .... full RICH
Starter .... engage
Throttle .... adjust
Oil pressure .... check

If engines does not start within 10 sec., prime and repeat starting procedure.

STARTING ENGINE WHEN HOT

Throttle .... 1/2" open
Master switch .... ON
Electric fuel pump .... ON
Mixture .... full RICH
Starter .... engage

Throttle .... adjust
Oil pressure .... check

STARTING ENGINE WHEN FLOODED

Throttle .... open full
Master switch .... ON
Electric fuel pump .... OFF
Mixture .... idle cut-off
Starter .... engage
Mixture .... advance
Throttle .... retard
Oil pressure .... check

STARTING WITH EXTERNAL POWER SOURCE

Master switch .... OFF
All electrical equipment .... OFF
Terminals .... connect
External power plug .... insert in fuselage
Proceed with normal start
Throttle .... lowest possible RPM
External power plug .... disconnect from fuselage
Master switch .... ON - check ammeter
Oil pressure .... check

WARM-UP

Throttle .... 800 to 1200 RPM

TAXIING

Chocks .... removed
Taxi area .... clear
Throttle .... apply slowly
Brakes .... check
Steering .... check

GROUND CHECK

Throttle .... 2000 RPM
Magnetos .... max. drop 175 RPM
-max. diff. 50 RPM
Vacuum .... 4.8" - 5.1" HG
Oil temp .... check
Oil pressure .... check
Air conditioner .... check
Annunciator panel .... press-to-test
Carburetor heat .... check
Engine is warm for takeoff when throttle can be opened without engine faltering.
Electric fuel pump .... OFF
Fuel pressure .... check
Throttle .... retard

BEFORE TAKEOFF

Master switch .... ON
Flight instruments .... check
Fuel selector .... proper tank
Electric fuel pump .... ON
Engine gauges .... check
Carburetor heat .... OFF
Seat backs .... erect
Mixture .... set
Primer .... lock
Belts/harness .... fastened/check
Empty seats .... seat belts
snugly fastened
Flaps .... set
Trim tab .... set
Controls .... free
Doors .... latch
Air conditioner .... OFF

TAKEOFF

NORMAL

Flaps .... set
Trim .... set
Accelerate to 45 to 55 KIAS
Control wheel .... back pressure to rotate to climb attitude

0° FLAPS TAKEOFF PERFORMANCE

Flaps .... UP
Accelerate to 40-52 KIAS (depending on weight)
Control Wheel .... back pressure to rotate to climb attitude

Accelerate to and maintain 44 to 57 KIAS (depending on weight) until obstacle clearance is achieved and climb out at 79 KIAS.

25° FLAPS TAKEOFF PERFORMANCE

Flaps .... 25° (second notch)
Accelerate to 40-52 KIAS (depending on weight)
Control Wheel .... back pressure to rotate to climb attitude

Accelerate to and maintain 44 to 57 KIAS (depending on weight) until obstacle clearance is achieved and climb out at 79 KIAS.

Flaps .... retract slowly

SOFT FIELD, OBSTACLE CLEARANCE

Flaps .... 25° (second notch)
Accelerate and lift off nose gear as soon as possible. Lift off at lowest possible airspeed. Accelerate just above ground to 52 KIAS to climb past obstacle height. Continue climbing while accelerating to best rate of climb speed, 79 KIAS.

Flaps .... retract slowly

SOFT FIELD, NO OBSTACLE

Flaps .... 25° (second notch)
Accelerate and lift off nose gear as soon as possible. Lift off at lowest possible airspeed. Accelerate just above ground to best rate of climb speed, 79 KIAS.
Flaps .... retract slowly

CLIMB

Best rate (flaps up) .... 79 KIAS
Best angle (flaps up) .... 63 KIAS
En route .... 87 KIAS
Electric fuel pump .... OFF at desired altitude

CRUISING

Reference performance charts and Lycoming Operators Manual.
Normal max power 75%
Power .... set per power table
Mixture .... adjust

DESCENT

NORMAL

Throttle .... 2500 rpm
Airspeed .... 126 KIAS
Mixture .... rich
Carburetor heat .... ON if required

POWER OFF

Carburetor heat .... ON if required
Throttle .... close
Airspeed .... as required
Mixture .... as required
Power .... verify with throttle every 30 seconds

APPROACH AND LANDING

Fuel selector .... proper tank
Seat backs .... erect
Belts/harness .... fasten/check
Electric fuel pump .... ON
Mixture .... set
Flaps .... set - 103 KIAS max
Air conditioner .... OFF
Trim to 70 KIAS
Final approach speed (flaps 40°) .... 63 KIAS

STOPPING ENGINE

Flaps .... retract
Electric fuel pump .... OFF
Air conditioner .... OFF
Radios .... OFF
Throttle .... full aft
Mixture .... idle cut-off
Magnetos .... OFF
Master switch .... OFF

PARKING

Parking brake .... set
Control wheel .... secure with belts
Flaps .... full up
Wheel chocks .... in place
Tie downs .... secure

F-GHYF

SECTION 5

PERFORMANCE

SECTION 5

PERFORMANCE

5.1 GENERAL

All of the required (FAA regulations) and complementary performance information applicable to this aircraft is provided by this section.

Performance information associated with those optional systems and equipment that require handbook supplements is provided by Section 9 (Supplements).

5.3 INTRODUCTION - PERFORMANCE AND FLIGHT PLANNING

The performance information presented in this section is based on measured Flight Test Data corrected to I.C.A.O. standard day conditions and analytically expanded for the various parameters of weight, altitude, temperature, etc.

The performance charts are unfactored and do not make any allowance for varying degrees of pilot proficiency or mechanical deterioration of the aircraft. This performance, however, can be duplicated by following the stated procedures in a properly maintained airplane.

Effects of conditions not considered on the charts must be evaluated by the pilot, such as the effect of soft or grass runway surface on takeoff and landing performance, or the effect of winds aloft on cruise and range performance. Endurance can be grossly affected by improper leaning procedures, and inflight fuel flow and quantity checks are recommended.

REMEMBER! To get chart performance, follow the chart procedures.

The information provided by paragraph 5.5 (Flight Planning Example) outlines a detailed flight plan using the performance charts in this section. Each chart includes its own example to show how it is used.

WARNING

Performance information derived by extrapolation beyond the limits shown on the charts should not be used for flight planning purposes.

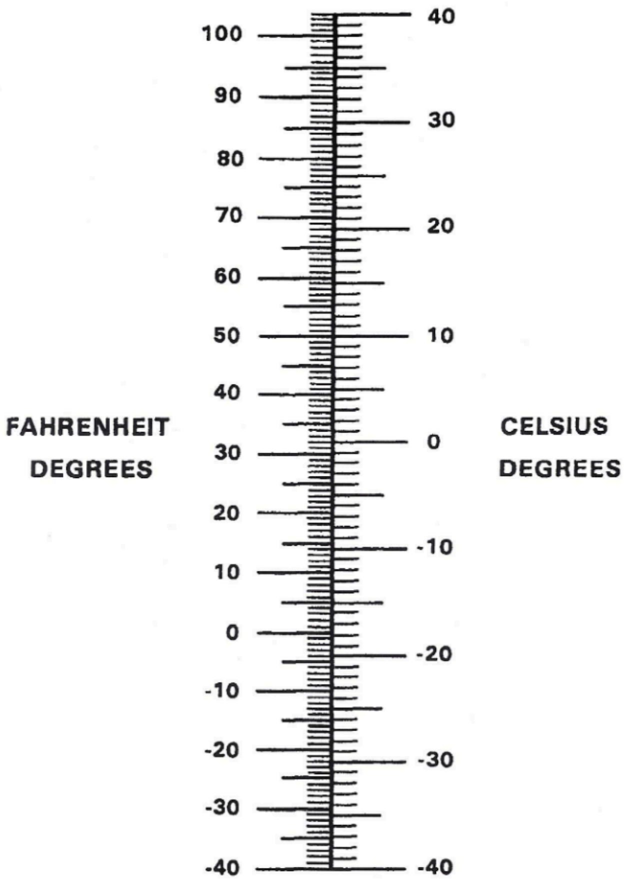
F-GHYF

Refer to Airplane Manual

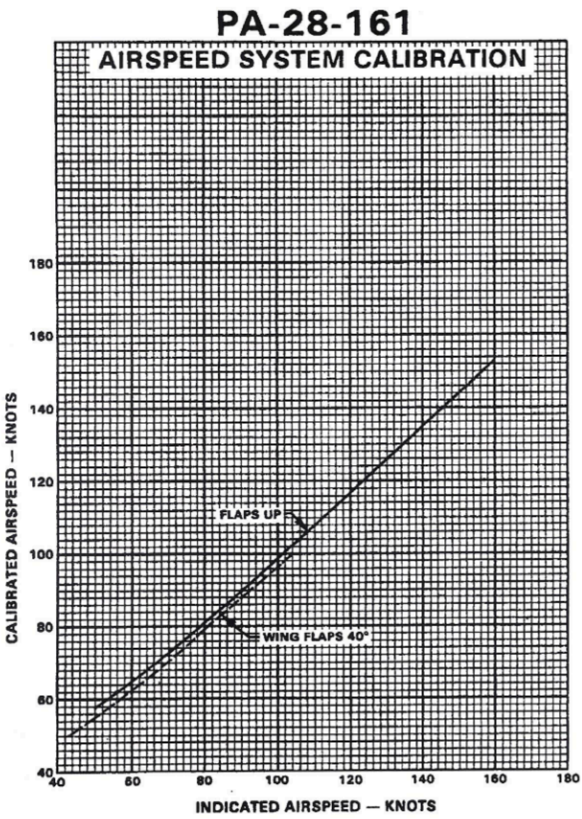
5.7 PERFORMANCE GRAPHS

LIST OF FIGURES

F-GHYF

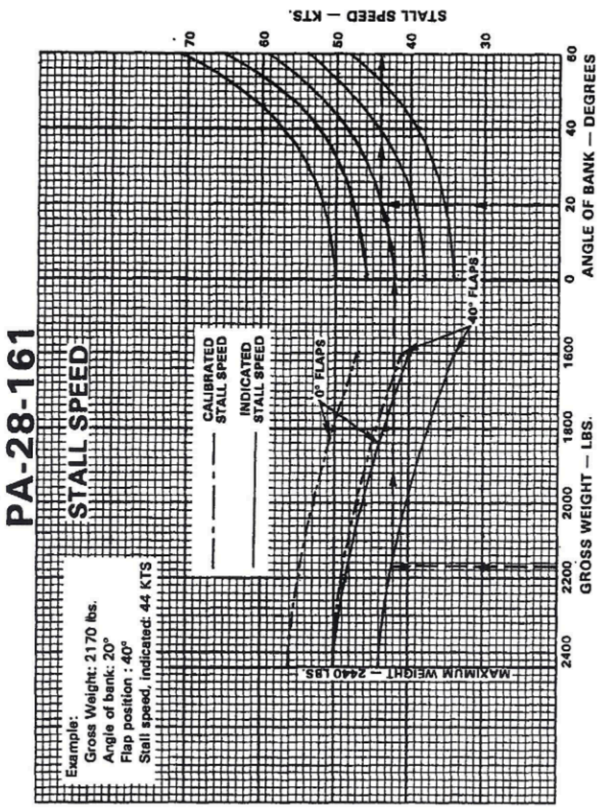


TEMPERATURE CONVERSION
Figure 5-1



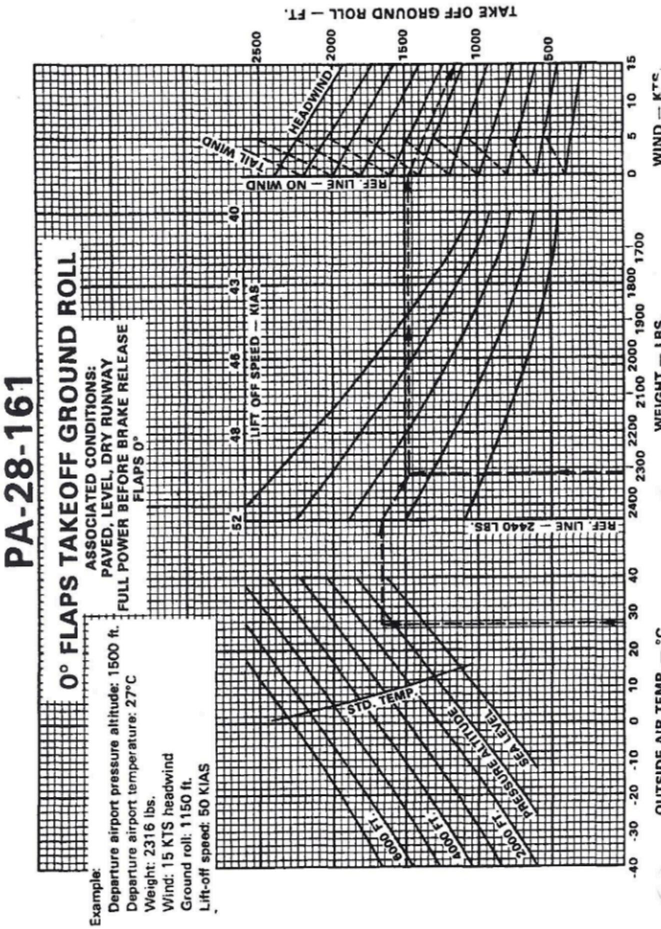
AIRSPEED SYSTEM CALIBRATION
Figure 5-3

F-GHYF



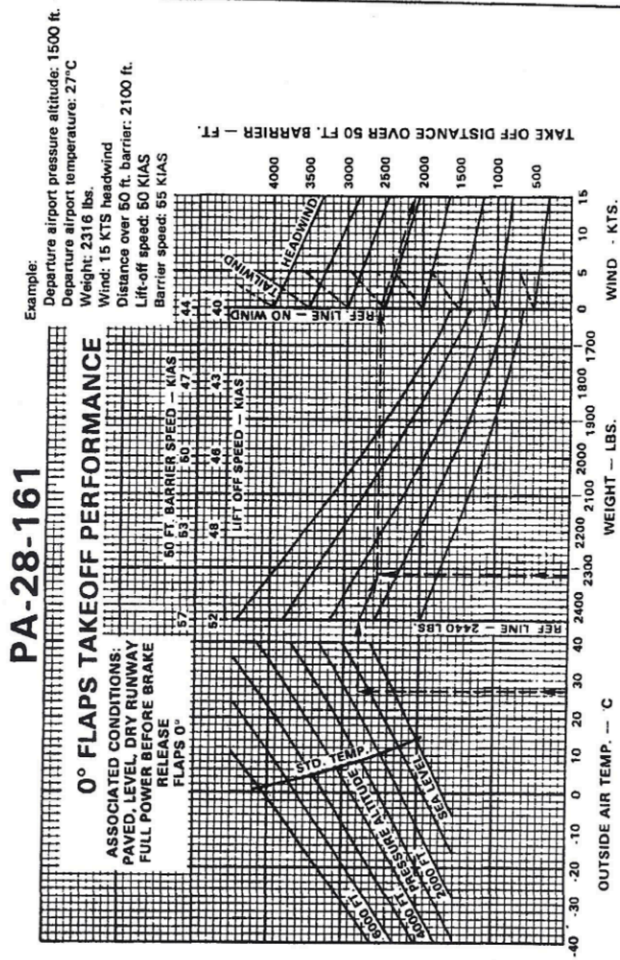
STALL SPEED
Figure 5-5

F-GHYF



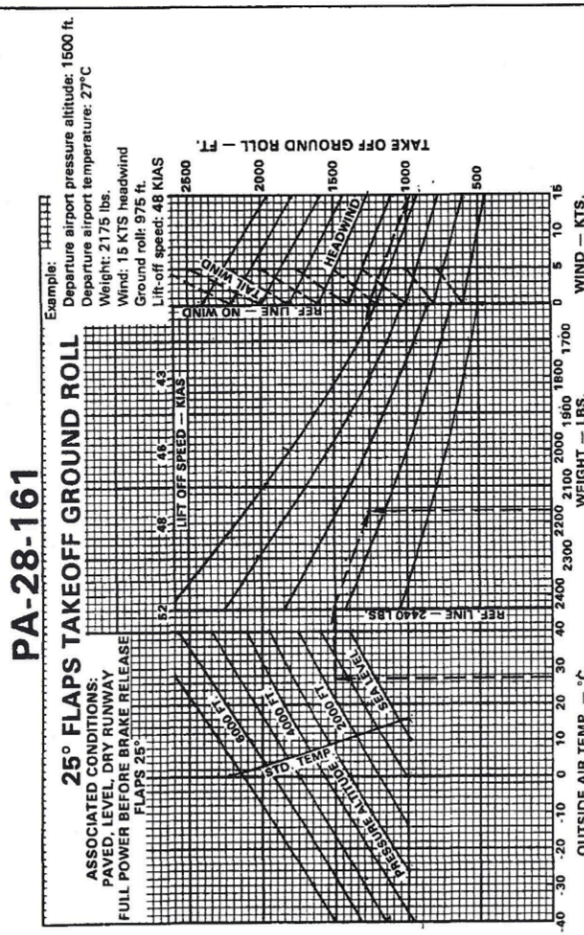
0° FLAPS TAKEOFF GROUND ROLL
Figure 5-7

F-GHYF

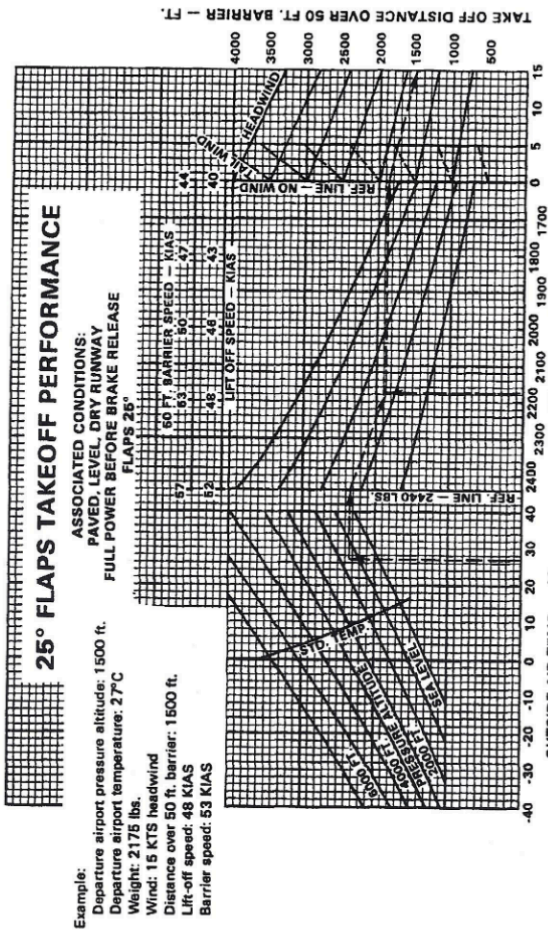


0° FLAPS TAKEOFF PERFORMANCE
Figure 5-9

F-GHYF

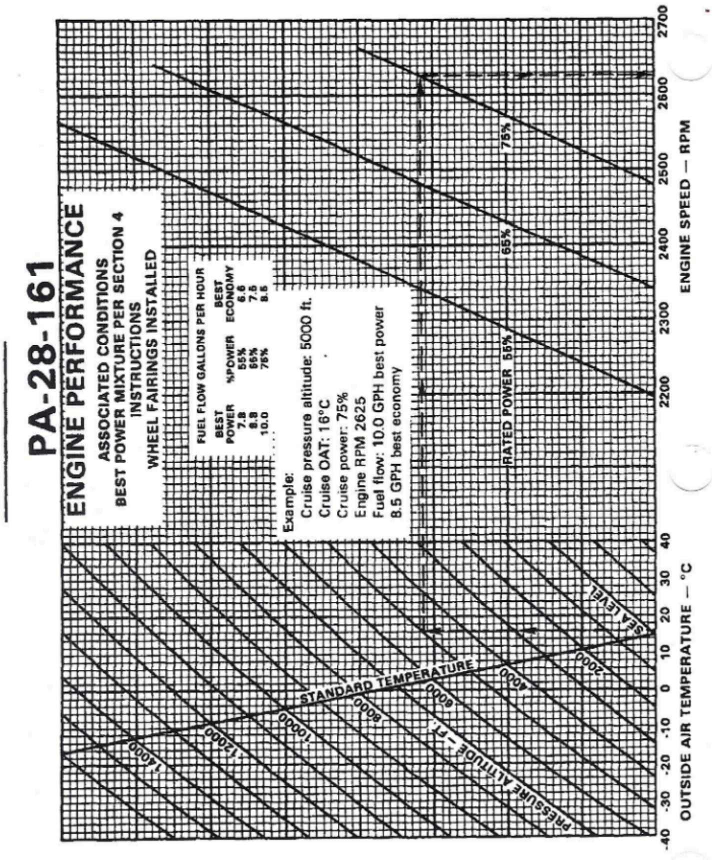


25° FLAPS TAKEOFF GROUND ROLL
Figure 5-11



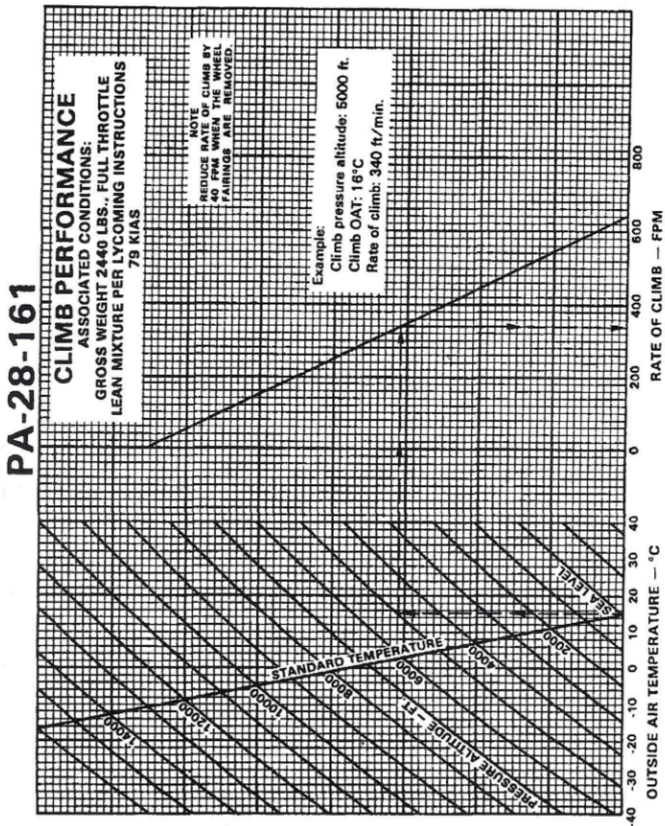
25° FLAPS TAKEOFF PERFORMANCE
Figure 5-13

F-GHYF



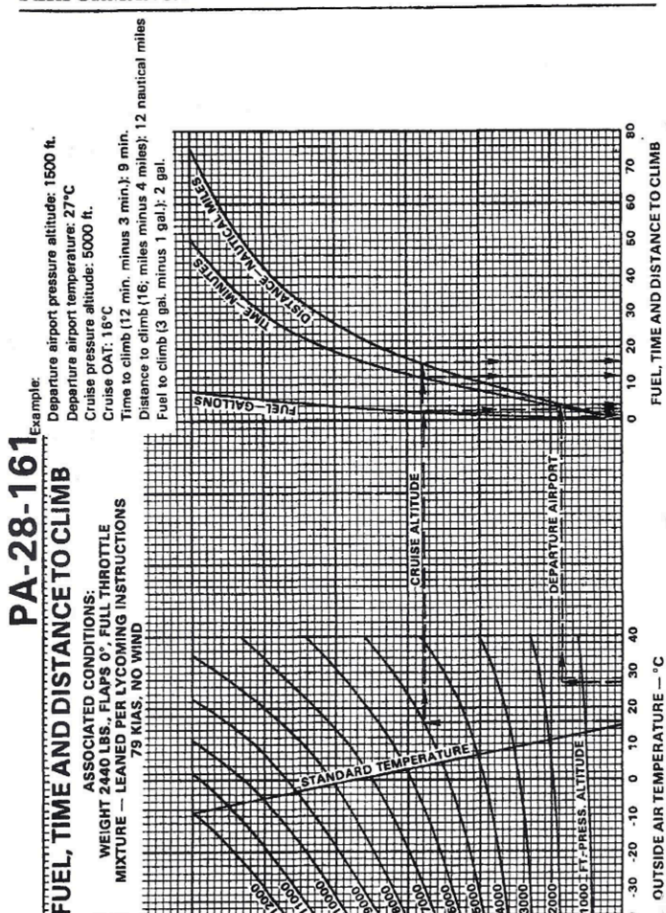
ENGINE PERFORMANCE
Figure 5-15

F-GHYF



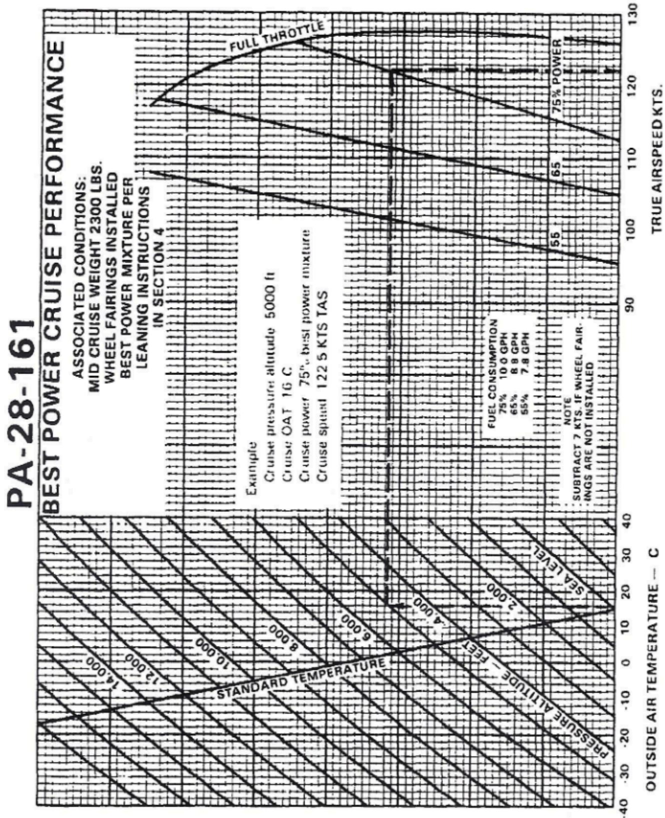
CLIMB PERFORMANCE
Figure 5-17

F-GHYF



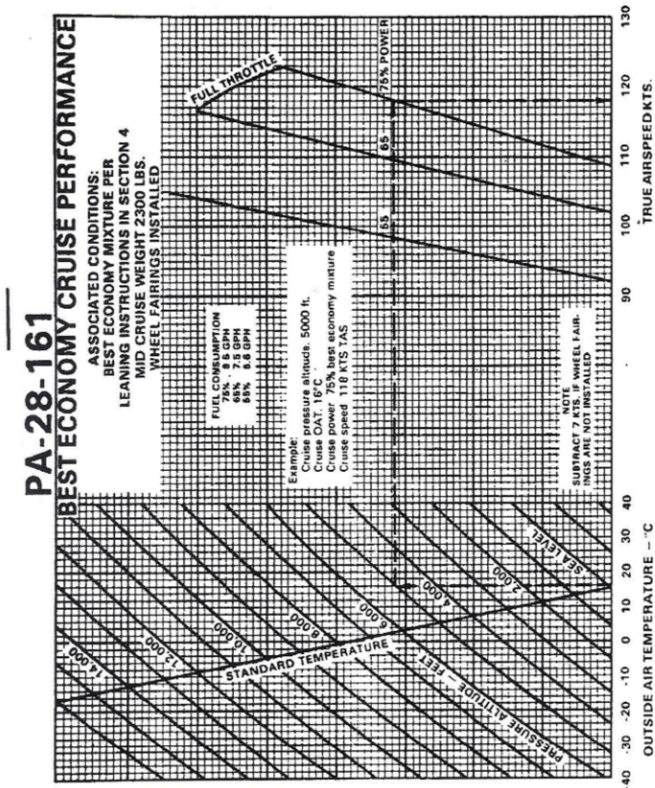
FUEL, TIME AND DISTANCE TO CLIMB
Figure 5-19

F-GHYF



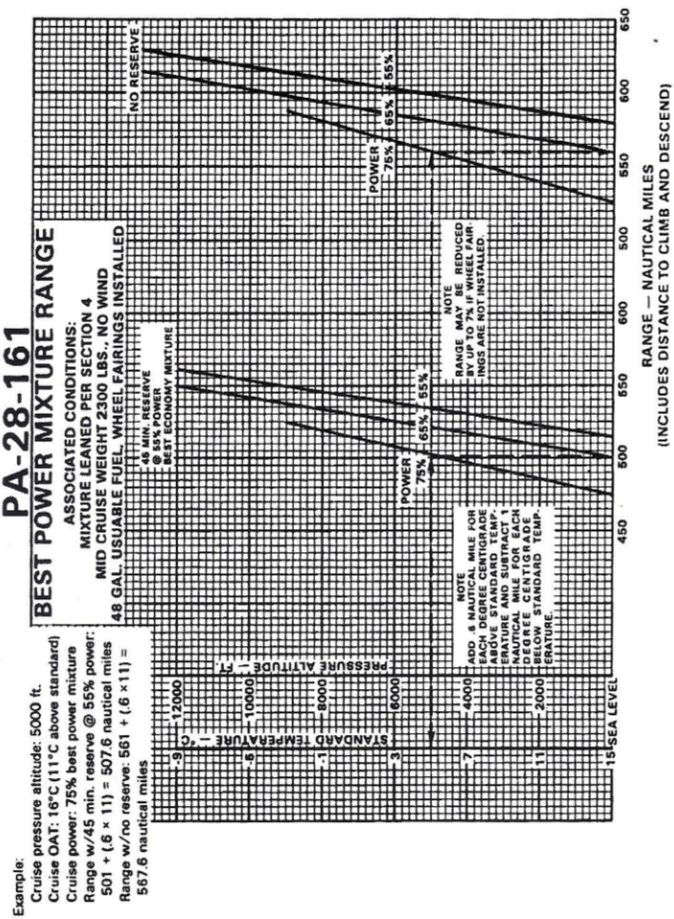
BEST POWER CRUISE PERFORMANCE
Figure 5-21

F-GHYF



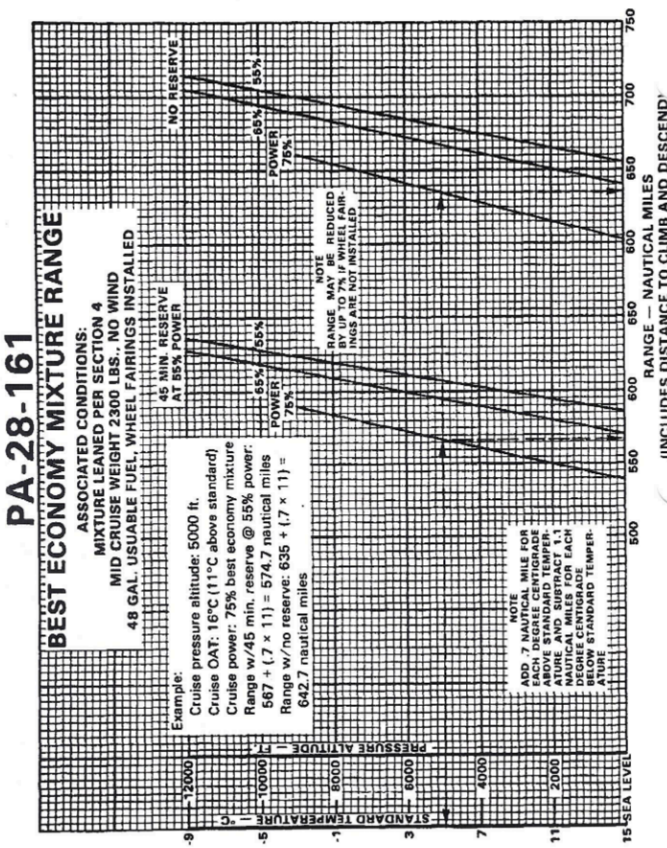
BEST ECONOMY CRUISE PERFORMANCE
Figure 5-23

F-GHYF

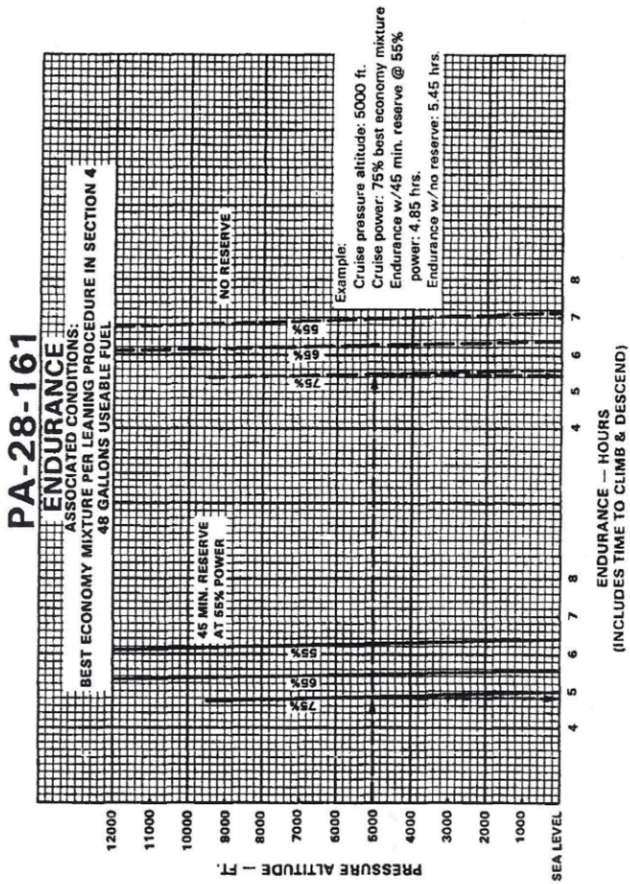


BEST POWER MIXTURE RANGE
Figure 5-25

F-GHYF

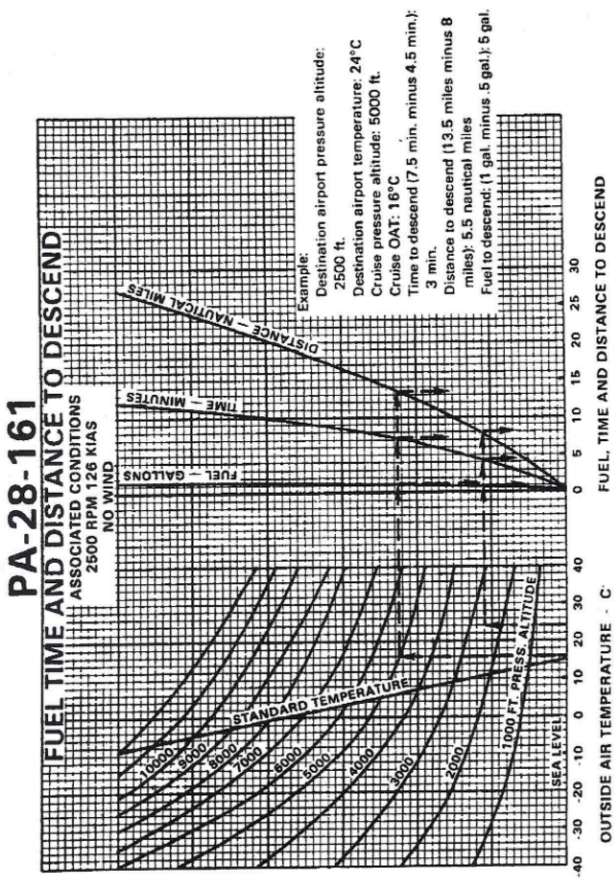


BEST ECONOMY MIXTURE RANGE
Figure 5-27



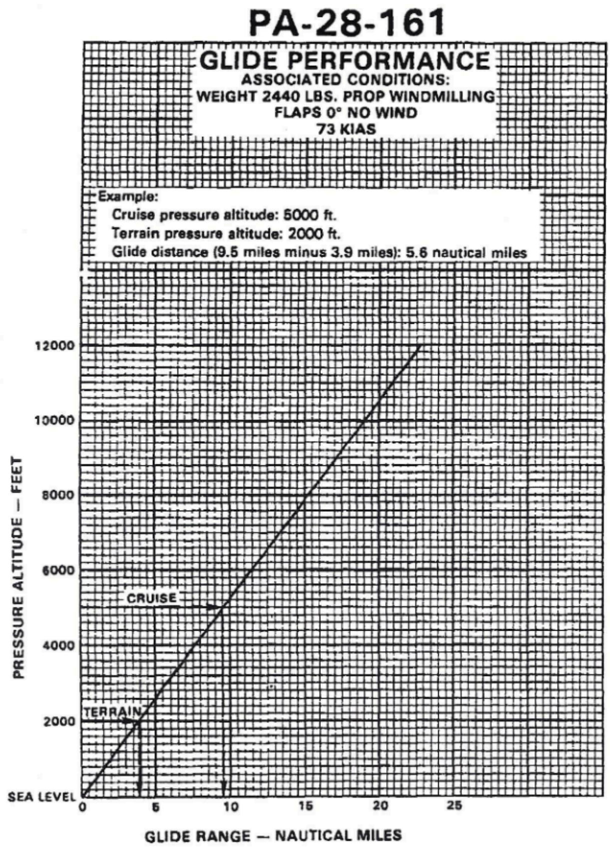
ENDURANCE
Figure 5-29

F-GHYF



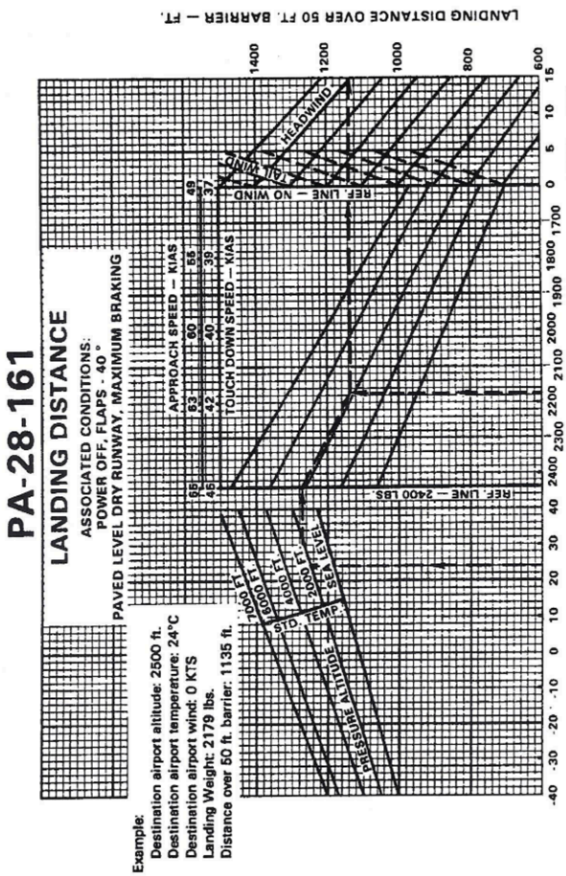
FUEL, TIME AND DISTANCE TO DESCEND
Figure 5-31

F-GHYF



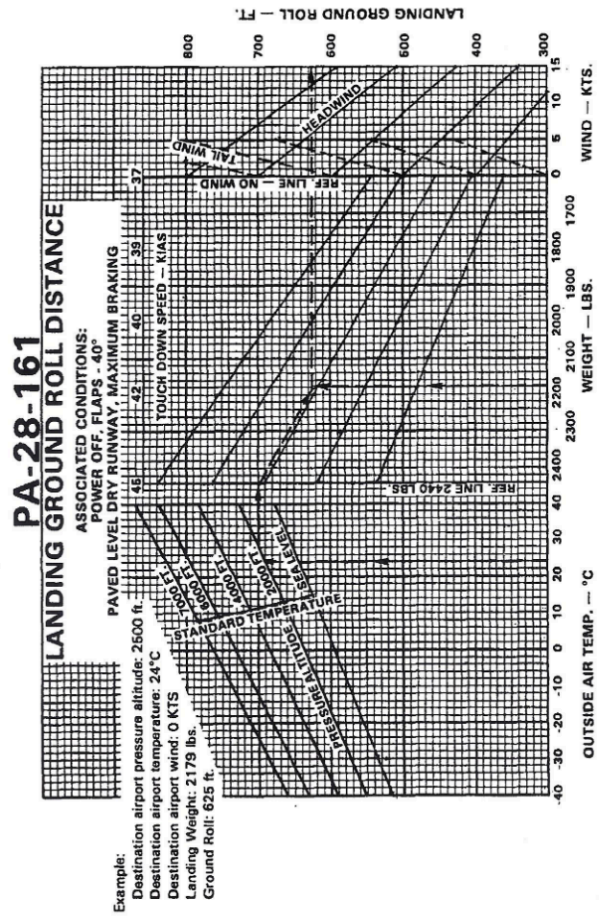
GLIDE PERFORMANCE
Figure 5-33

F-GHYF



LANDING DISTANCE
Figure 5-35

F-GHYF



LANDING GROUND ROLL DISTANCE
Figure 5-37

8.29 COLD WEATHER OPERATION

For cold weather operation a winterization plate is installed on the inlet opening of the oil cooler. This plate should be installed whenever the ambient temperature reaches 50° F or less. The plate should be removed and stored in the cockpit when the ambient temperature exceeds 50° F.

It is recommended that an optional Engine Breather Tube Winterization Kit be installed for cold weather operation. This kit is available through your Piper Dealer/Distributor.