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MODEL 310

OWNER'S MANUAL

CONGRATULATIONS . . . .

Cessna

FAA APPROVED
Supplemental Airplane Flight Manual

FOR

MODELS	SERIALS
310	35772 thru 310R1434
320	320-0001 thru 320F0045
340	340-0001 thru 340A0562

Serial No. 310Q0958
Registration No. 69749

This Supplemental Airplane Flight Manual must be carried in the airplane when the Auxiliary Fuel Pump Switching System is installed in accordance with Cessna Multi-Engine Service Bulletin MEB88-3.

The information contained herein supplements or supersedes the information contained in the form of placards, markings, manuals and checklists. For limitations and procedures not contained in this Supplemental Airplane Flight Manual, consult the original placards, markings, manuals and checklists.

See Pages 1-13
1-14
2-32
3-22

FAA APPROVED
[redacted] Executive Engineer
Cessna Aircraft Co., Aircraft Div.
Delegation Option Manufacturer, CE-3

Date 2-10-89

Original Issue - 20 December 1988
Revision 1 - 10 February 1989

Member of GAMA
D1626-1-13-RPC-6000-2/89

NOTE

When using an external power source, do not turn on battery or alternator switches until external power is disconnected, to avoid damage to the alternators and a weak battery draining off part of the current being supplied by the external source.

(12) Lighting Rheostats - AS REQUIRED.
(13) Altimeter and Clock - SET.
(14) Heater Overheat and T & B - PRESS-TO-TEST.
(15) Landing Gear Position Indicator Lights - CHECK (press to test as required).
(16) Cabin Air Controls - AS REQUIRED.
(17) Fuel Quantity - CHECK.
(18) Throttles - OPEN ONE INCH.
(19) Propellers - FULL FORWARD.
(20) Mixtures - FULL RICH.
(21) Fuel Selectors - Left Engine - LEFT MAIN (feel for detent).
Right Engine - RIGHT MAIN (feel for detent).
(22) Alternate Air Controls - IN.

TARTING ENGINES (Left Engine First)

ORMAL START (NO EXTERNAL POWER)

(1) Propeller - CLEAR.
(2) Magneto Switches - ON.
(3) Engine - START.
(a) Starter Button - PRESS.
(b) Primer Switch - Left Engine - LEFT.
Right Engine - RIGHT.

Serial No. 310Q0958 Registration No. 69749

AUXILIARY FUEL PUMP SWITCHING SYSTEM IN THIS AIRPLANE HAS BEEN MODIFIED IN COMPLIANCE WITH SERVICE BULLETIN MEB88-3. OPERATE THE AUXILIARY FUEL PUMPS PER SEPARATE SUPPLEMENT FURNISHED RATHER THAN PROCEDURES IN THIS PUBLICATION. SEE PAGE 1-13 & 14

Signature [redacted] Date 3/27/96
(OWNER)

Address

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*This manual describes the operation and performance of both the Cessna 310 and 310 II aircraft. Equipment described as "Optional" denotes that the subject equipment is optional on the 310 aircraft. Much of this equipment is standard on the 310 II.

(7) Wing Flaps - UP.
(8) Cabin Door and Window - CLOSED and LOCKED.
(9) Fuel Quantity - CHECK.
(10) If Electric Gyro Horizon is installed, Gyro Horizon - PULL to erect.
(11) Flight Instruments and Radios - SET.
(12) Lights - AS REQUIRED.
(13) Auxiliary Fuel Pumps - ON.
(14) Brakes - RELEASE.

THE AUXILIARY FUEL PUMP SYSTEMS IN THIS AIRPLANE HAVE BEEN MODIFIED BY SERVICE BULLETIN MEB88-3.

AUX PUMP LOW FOR TAKEOFF, LANDING AND VAPOR CLEARING.
AUX PUMP HIGH FOR ENGINE DRIVEN PUMP FAILURE (VERY LOW OR NO FUEL PRESS).
SEE POH OR AFM SUPPLEMENT OR SUPPLEMENTAL AFM.
2505059-6

TAKEOFF

NORMAL TAKEOFF

(1) Power - FULL THROTTLE and 2625 RPM.

NOTE

Apply full throttle smoothly to avoid propeller surging.

(2) Mixtures - LEAN for field elevation.

NOTE

Leaning during the takeoff roll is normally not necessary; however, should maximum takeoff or subsequent engine-out performance be desired, fuel flow should be adjusted to match field elevation.

(3) Elevator Control - Raise nosewheel at 78 KIAS.
(4) Minimum Control Speed - 75 KIAS.
(5) Break Ground at 90 KIAS.

(8) Magneto Switches - OFF, after engines stop.
(9) Battery and Alternators - OFF.
(10) Parking Brake - SET.
(11) Control Lock(s) - INSTALL.
(12) Cabin Door - CLOSE.

NOTE

To securely latch the cabin door from the outside, the exterior door handle must be rotated clockwise to its stop.

SECTION 1
GENERAL

AUXILIARY FUEL PUMP SWITCHING SYSTEM

To improve the reliability of the auxiliary fuel pump systems in Cessna conventional twin-engine airplanes (except Model 310 airplanes prior to Model 310C which are not affected by this change), the automatic fuel pressure sensing switch and auxiliary fuel pump switch for each engine have been removed and replaced with new three-position, lever lock, toggle-type auxiliary fuel pump switches and circuitry. This modification provides direct pilot control of the output pressure of the two auxiliary fuel pumps. The switches are labeled AUX PUMP, L (left engine) and R (right engine) and switch positions are LOW, OFF, and HIGH. The LOW position operates the auxiliary pumps at low speed and can be used, when required, to provide supplementary fuel pressure for all normal operations. The switches are OFF in the middle position. The HIGH position is reserved for emergency operation, and operates the pumps at high speed. The HIGH position supplies sufficient fuel flow to sustain partial engine power in the event of an engine-driven fuel pump failure. The switches are locked out of the HIGH position and the switch toggle must be pulled out to clear a detent before it can be moved to the HIGH setting. The toggle need not be pulled to return the switch to OFF.

In Models 340A, 414, 421, 421A and 421B, additional fuel tank selector logic is added to activate the auxiliary fuel tank system in-line fuel pumps when the auxiliary fuel tanks are selected, thereby making the auxiliary tank in-line pump operation independent of the auxiliary fuel pump switches.

Notes

SWITCH OPERATION

Operation of the new switching system is simple and straightforward. The new LOW position of the auxiliary fuel pump switches should be used whenever an original manual/handbook or checklist procedure specifies either LOW (PRIME in early 310 or 320 airplanes) or ON. The LOW position is also used anytime there are indications of vapor, as evidenced by a "nervous" fuel flow needle. Auxiliary fuel pumps, if needed, are to be operated on LOW in all conditions except when an engine-driven fuel pump fails.

The new HIGH position supplies sufficient fuel flow to sustain partial engine power and should be used solely to sustain the operation of an engine in the event its engine-driven fuel pump fails. Failure of an engine-driven fuel pump will be evidenced by a sudden reduction in the fuel flow indication **immediately prior to a loss of power** while operating from a fuel tank containing adequate fuel. In an emergency where loss of an engine-driven fuel pump is involved, pull out on the applicable auxiliary fuel pump switch to clear the detent and select the HIGH position. Then adjust the throttle and mixture controls to obtain satisfactory operation. At high manifold pressure and RPM, auxiliary fuel pump output may not be sufficient for normal engine operation. In this case, reduce manifold pressure to a level compatible with the indicated fuel flow. At low powers, the mixture may have to be leaned as necessary for smooth engine operation. If HIGH auxiliary pump output does not restore adequate fuel flow, a fuel leak may exist and the auxiliary pump should be shut off, the engine secured and propeller feathered, and the flight terminated on the remaining engine.

On rare occasions, such as during engine starting in cold weather, the HIGH position (instead of LOW) may be needed for a few seconds to ensure a good ground start or restart in flight.

CAUTION

If the auxiliary fuel pump switches are placed in the HIGH position with the engine-driven fuel pump(s) operating normally, total loss of engine power may occur.

When performing training in single-engine operations, the auxiliary fuel pump of the engine to be shutdown should be turned OFF (if it was on LOW) prior to any simulated engine failure or prior to any intentional engine shutdown to preclude fuel accumulation in the engine intake system.

The following limitations and procedures apply only to the operational changes of the auxiliary fuel pump switches and not the entire procedure.

SECTION 2
LIMITATIONS

The following new placard is provided to identify that the airplane has been modified and show the proper switch positions for normal operation. It is located on the left cabin sidewall near the auxiliary fuel pump switches and must be installed when the airplane is modified in accordance with Cessna Multi-Engine Service Bulletin MEB88-3.

SECTION 4
NORMAL PROCEDURES

BEFORE TAKEOFF

Auxiliary Fuel Pumps - LOW.

AFTER TAKEOFF, CLIMB OR LOW ALTITUDE CRUISE

Auxiliary Fuel Pumps - OFF (LOW if necessary to suppress vapor).

CRUISE (Above 12,000 Feet)

Auxiliary Fuel Pumps - LOW for 5 minutes after leveling off to suppress vapor tendencies.

DESCENT

Auxiliary Fuel Pumps - LOW.

BEFORE LANDING

Auxiliary Fuel Pumps - LOW.

AFTER LANDING

Auxiliary Fuel Pumps - OFF (LOW if necessary to suppress vapor).

PRACTICE SINGLE ENGINE PROCEDURES

Auxiliary Fuel Pumps - OFF.

SWITCHING FUEL TANKS

Auxiliary Fuel Pumps - LOW.

ENGINE INOPERATIVE PROCEDURES

ENGINE FAILURE DURING TAKEOFF - SPEED BELOW 90 KIAS (With Sufficient Runway Remaining)

(1) Throttles - CLOSE immediately.
(2) Brakes - AS REQUIRED.

> NOTE
>
> The distance required for the aircraft to be accelerated from a standing start to 90 KIAS on the ground, and then decelerate to a stop with heavy braking is presented in the Accelerate Stop Distance Chart in Section VI for various combinations of conditions.

ENGINE FAILURE AFTER TAKEOFF - SPEED ABOVE 90 KIAS (Without Sufficient Runway Ahead)

(1) Mixture - AS REQUIRED for altitude.
(2) Propellers - FULL FORWARD.
(3) Throttles - FULL FORWARD.
(4) Landing Gear - UP.
(5) Inoperative Engine:
  (a) Throttle - CLOSE.
  (b) Mixture - IDLE CUT-OFF.
  (c) Propeller - FEATHER.
(6) Establish Bank - 5° toward operative engine.
(7) Climb to Clear Obstacle - 90 KIAS.
(8) Climb at Best Single-Engine Climb Speed - 102 KIAS.
(9) Wing Flaps - UP (if extended) in small increments.

(10) Trim Tabs - ADJUST (5° bank toward operative engine).

(11) Inoperative Engine - SECURE as follows:

(a) Fuel Selector - OFF.

(b) Auxiliary Fuel Pump - OFF.

(c) Magneto Switches - OFF.

(d) Alternator Switch - OFF.

(12) As Soon as Practical - LAND.

SUPPLEMENTARY INFORMATION CONCERNING ENGINE-OUT DURING TAKEOFF

The most critical time for an engine-out conditon in a multi-engine aircraft is during a two or three second period late in the takeoff run while the aircraft is accelerating to a safe engine-failure speed. A detailed knowledge of recommended single-engine airspeeds, see Figure 3-1, is essential for safe operation of this aircraft.

The airspeed indicator is marked with a red radial line at the minimum single-engine control speed and a blue radial line at the best single-engine rate-of-climb speed to facilitate instant recognition. The following paragraphs present a detailed discussion of the problems associated with engine failures during takeoff.

SINGLE-ENGINE AIRSPEED NOMENCLATURE		KIAS
(1)	Minimum Single-Engine Control Speed (red radial) .	75
(2)	Recommended Safe Single-Engine Speed	90
(3)	Best Single-Engine Angle-of-Climb Speed	93
(4)	Best Single-Engine Rate-of-Climb Speed (Flaps Up) (blue radial)	102

Figure 3-1

MINIMUM SINGLE-ENGINE CONTROL SPEED. The multi-engine aircraft must reach the minimum control speed (75 KIAS) before full control deflections can counteract the adverse rolling and yawing tendencies associated with one engine inoperative and full power operation on the other engine. This speed is indicated by a red radial line on the airspeed indicator.

RECOMMENDED SAFE SINGLE-ENGINE SPEED. Although the aircraft is controllable at the minimum control speed, the aircraft performance is so far below optimum that continued flight near the ground is improbable. A more suitable recommended safe single-engine speed is 90 KIAS since at this speed, altitude can be maintained more easily while the landing gear is being retracted and the propeller is being feathered.

BEST SINGLE-ENGINE ANGLE-OF-CLIMB SPEED. The best single-engine angle-of-climb speed becomes important when there are obstacles ahead on takeoff. Once the best single-engine angle-of-climb speed is reached, altitude becomes more important than airspeed until the obstacle is cleared. The best single-engine angle-of-climb speed is approximately 93 KIAS with flaps up.

BEST SINGLE-ENGINE RATE-OF-CLIMB SPEED (FLAPS UP). The best single-engine rate-of-climb speed becomes important when there are no obstacles ahead on takeoff, or when it is difficult to maintain or gain altitude in single-engine emergencies. The best single-engine rate-of-climb speed is 102 KIAS with flaps up. This speed is indicated by a blue radial line on the airspeed indicator. The variation of flaps-up best rate-of-climb speed with altitude is shown in Section VI. For best climb performance, the wings should be banked 5° toward the operative engine.

Upon engine failure after reaching 90 KIAS on takeoff, the multi-engine pilot has a significant advantage over a single-engine pilot, for he has the choice of stopping or continuing the takeoff. This would be similar to the choice facing a single-engine pilot who has suddenly lost slightly more than half of his takeoff power. In this situation, the single-engine pilot would be extremely reluctant to continue the takeoff if he had to climb over obstructions. However, if the failure occurred at an altitude as high or higher than surrounding obstructions, he would feel free to maneuver for a landing back at the airport.

Fortunately the aircraft accelerates through this "area of decision" in just a few seconds. However, to make an intelligent decision in this type of an emergency, one must consider the field length, obstruction height, field elevation, air temperature, headwind, and the gross weight. The flight paths illustrated in Figure 3-2 indicate that the "area of decision" is bounded by: (1) the point at which 90 KIAS is reached and (2) the point where the obstruction altitude is reached. An engine failure in this area requires an immediate decision. Beyond this area, the aircraft, within the limitations of single-engine climb performance shown in Section VI, may be maneuvered to a landing back at the airport.

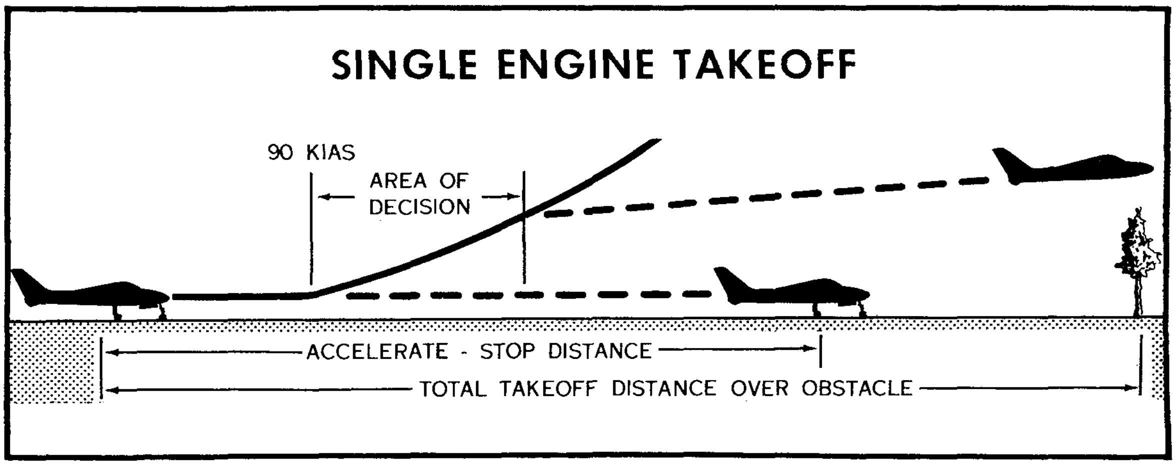
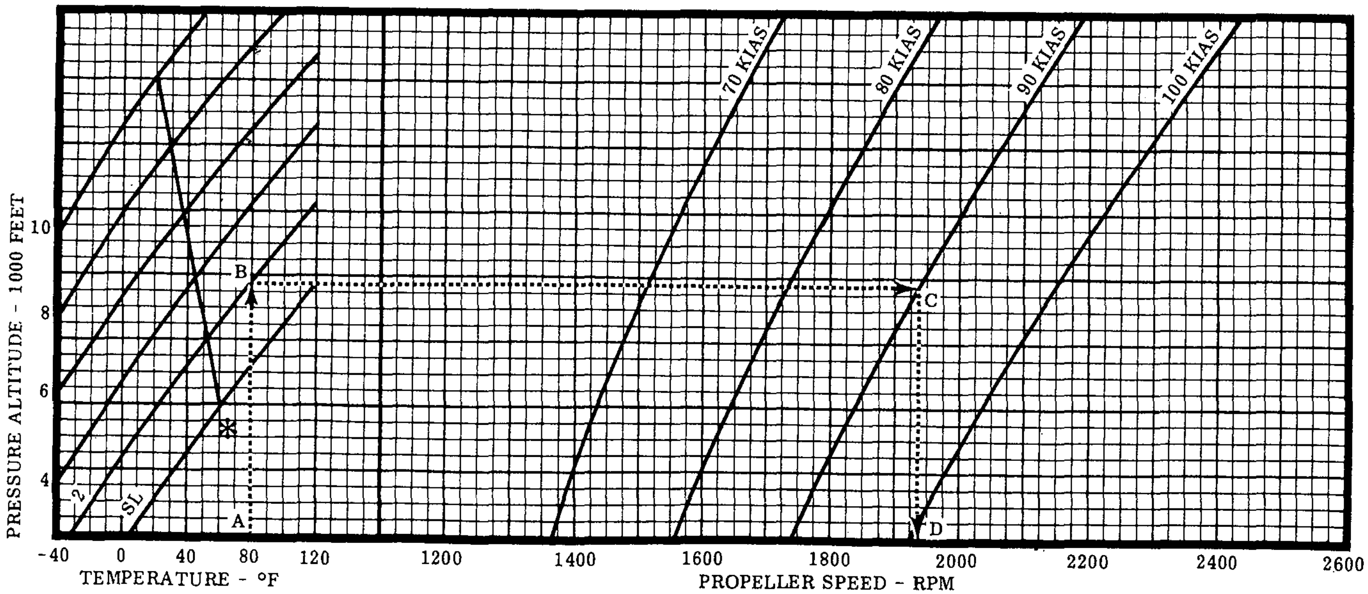


Figure 3-2

At sea level standard day with zero wind and 5300 pounds gross weight, the distance to accelerate to 90 KIAS and stop is 3400 feet, while the total unobstructed area required to takeoff and climb over a 50 foot obstacle after an engine failure at 90 KIAS is 4600 feet. This total distance over an obstacle can be reduced slightly under more favorable conditions of gross weight, headwind, or obstruction height. However, it is recommended that in most cases it would be better to discontinue the takeoff, since any slight mismanagement of the single-engine procedure would more than offset the small distance advantage offered by continuing the takeoff. The advantage of discontinuing the takeoff is even more obvious at higher altitudes where the corresponding distances are 3850 and 8340 respectively, at 2000 feet. Still higher field elevations will cause the single-engine takeoff distance to lengthen disproportionately until an altitude is reached where a successful takeoff is improbable unless the airspeed and height above the runway at engine failure are great enough to allow a slight deceleration and altitude loss while the aircraft is being prepared for a single-engine climb.

During single-engine takeoff procedures over an obstacle, only one condition presents any appreciable advantage; this is headwind. A decrease of approximately 1% in ground distance required to clear a 50 foot obstacle can be gained for each 1 knot of headwind. Excessive speed above best single-engine climb speed at engine failure is not nearly as advantageous as one might expect since deceleration is rapid and ground distance is used up quickly at higher speeds while the aircraft is being cleaned up for climb. However, the extra speed is important for controllability.

RPM TO SIMULATE CRITICAL (LEFT) ENGINE FEATHERED



*STANDARD TEMPERATURE

CONDITIONS

1. Propeller Control Full High RPM - Full Low Pitch
2. Manifold Pressure Adjust to Obtain Proper RPM

EXAMPLE

A. Temperature - 80°F
B. Pressure Altitude - 2000 Feet
C. Airspeed - 90 KIAS
D. Propeller Speed - 1935 RPM

Figure 3-3

The following facts should be used as a guide at the time of engine failure: (1) discontinuing a takeoff upon engine failure is advisable under most circumstances; (2) altitude is more valuable to safety after takeoff than is airspeed in excess of the best single-engine climb speed since excess airspeed is lost much more rapidly than is altitude; (3) climb or continued level flight at moderate altitude is improbable with the landing gear extended and the propeller windmilling; (4) in no case should the airspeed be allowed to fall below the engine-out best angle-of-climb speed, even though altitude is lost, since this speed will always provide a better chance of climb, or a smaller altitude loss, than any lesser speed. The single-engine best rate-of-climb speed will provide the best chance of climb or the least altitude loss, and is preferable unless there are obstructions which make a steep climb necessary.

Single-engine procedures should be practiced in anticipation of an emergency. This practice should be conducted at a safe altitude, with full power operation on both engines, and should be started at a safe speed of at least 105 KIAS. As recovery ability is gained with practice, the starting speed may be lowered in small increments until the feel of the aircraft in emergency conditions is well known. Practice should be continued until: (1) an instinctive corrective reaction is developed, and the corrective procedure is automatic; and (2) airspeed, altitude, and heading can be maintained easily while the aircraft is being prepared for a climb. In order to simulate an engine failure, set both engines at full power operation, then at a chosen speed, pull the mixture control of one engine into IDLE CUT-OFF, and proceed with single-engine emergency procedures. Simulated single-engine procedures can also be practiced by setting propeller RPM to simulate critical engine inoperative as shown in Figure 3-3.

ENGINE FAILURE DURING FLIGHT

(1) Inoperative Engine - DETERMINE (idle engine same side as idle foot).
(2) Power - INCREASE as required.
(3) Mixture - ADJUST for altitude.

Before securing inoperative engine:

(4) Fuel Flow - CHECK, if deficient, position auxiliary fuel pump switch to ON.

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Signature [redacted] Date 3/27/90

Address

WARNING

FOR THIS AIRPLANE TO CONTINUE FLIGHT WITH AN INOPERATIVE ENGINE, THE GEAR AND FLAPS MUST BE RETRACTED, THE PROPELLER ON THE INOPERATIVE ENGINE MUST BE FEATHERED, AIR SPEED MUST BE MAINTAINED AT OR ABOVE BEST RATE OF CLIMB SPEED, AND THE AIRPLANE MAINTAINED AND OPERATED IN ACCORDANCE WITH ALL OTHER SPECIFIED REQUIREMENTS. THE PILOT MUST BE RATED AND CURRENT IN MULTI-ENGINE PROCEDURES

0890018-4

NOTE

If fuel selector valve is in AUXILIARY TANK position, switch to MAIN TANK and feel for detent.

(5) Fuel Quantity - CHECK, and switch to opposite MAIN TANK if necessary.
(6) Oil Pressure and Oil Temperature - CHECK, shutdown engine if oil pressure is low.
(7) Magneto Switches - CHECK.

If proper corrective action was taken, engine will restart. If it does not, secure as follows:

(8) Inoperative Engine - SECURE.
  (a) Throttle - CLOSED.
  (b) Mixture - IDLE CUT-OFF.
  (c) Propeller - FEATHER.
  (d) Fuel Selector - OFF.
  (e) Auxiliary Fuel Pump - OFF.
  (f) Magneto Switches - OFF.
  (g) Alternator Switch - OFF.
(9) Operative Engine - ADJUST.
  (a) Power - AS REQUIRED.
  (b) Mixture - ADJUST for power.
  (c) Fuel Selector - MAIN TANK (feel for detent).
  (d) Auxiliary Fuel Pump - ON.
(10) Trim Tabs - ADJUST (5° bank toward operative engine).
(11) Electrical Load - DECREASE to minimum required.
(12) As Soon as Practical - LAND.

ENGINE RESTARTS IN FLIGHT (After Feathering)

AIRCRAFT WITHOUT OPTIONAL PROPELLER UNFEATHERING SYSTEM INSTALLED

(1) Magneto Switches - ON.
(2) Fuel Selector - MAIN TANK (feel for detent).
(3) Throttle - FORWARD approximately one inch.
(4) Mixture - FULL RICH.

(5) Propeller - FORWARD of detent.
(6) Starter Button - PRESS.
(7) Primer Switch - ACTIVATE.
(8) Starter and Primer Switch - RELEASE when engine fires.
(9) Power - INCREASE slowly until cylinder head temperature reaches 200°F.

> NOTE
>
> If start is unsuccessful, turn magneto switches OFF retard mixture to IDLE CUT-OFF, open throttle fully, and engage starter for several revolutions. Then repeat air start procedures.

AIRCRAFT WITH OPTIONAL PROPELLER UNFEATHERING SYSTEM INSTALLED

(1) Magneto Switches - ON.
(2) Fuel Selector - MAIN TANK (feel for detent).
(3) Throttle - FORWARD approximately one inch.
(4) Mixture - FULL RICH.
(5) Propeller - FULL FORWARD.

> NOTE
>
> The propeller will automatically windmill when the propeller lever is moved out of the FEATHER position.

(6) Propeller - RETARD to detent when propeller reaches 1000 RPM.
(7) Power - INCREASE slowly until cylinder head temperature reaches 200°F.

FIRE PROCEDURES

FIRE ON THE GROUND (Engine Start, Taxi, and Takeoff with Sufficient Distance Remaining to Stop)

(1) Throttles - CLOSE.
(2) Brakes - AS REQUIRED.

(3) Mixtures - IDLE CUT-OFF.
(4) Battery - OFF (use gang bar).
(5) Magnetos - OFF (use gang bar).
(6) Evacuate aircraft as soon as practical.

IN FLIGHT WING OR ENGINE FIRE

(1) Both Auxiliary Fuel Pumps - OFF.
(2) Appropriate Engine - SECURE.
 (a) Mixture - IDLE CUT-OFF.
 (b) Propeller - FEATHER.
 (c) Fuel Selector - OFF.
 (d) Alternator - OFF.
 (e) Magnetos - OFF.
(3) Cabin Heater - OFF.
(4) Land and evacuate aircraft as soon as practical.

IN FLIGHT CABIN FIRE OR SMOKE

(1) Electrical Load - REDUCE to minimum required.
(2) Attempt to isolate the source of fire or smoke.
(3) Wemacs - OPEN.
(4) Cabin Air Controls - OPEN (all vents including windshield defrost)
 If intensity of smoke increases - CLOSE.

> CAUTION
>
> Opening the foul weather window or cabin door will create a draft in the cabin and may intensify a fire.

(5) Land and evacuate aircraft as soon as practical.

SUPPLEMENTARY INFORMATION CONCERNING AIRCRAFT FIRES

With the use of modern installation techniques and material the probability of an aircraft fire occuring in your aircraft is extremely remote. However, in the event a fire is encountered, the following information will be helpful in d ing with the emergency as quickly and safely as possible.

The preflight checklist is provided to aid the pilot in detecting condition which could contribute to an aircraft fire. As a fire requires both fuel and a: ignition source, close preflight inspection should be given to the engine com partment and wing leading edge and lower surfaces. Leaks in the fuel syster oil system, or exhaust system can lead to a ground or airborne fire.

NOTE

Flight should not be atempted with known fuel, oil, or exhaust leaks. The presence of fuel, unusual oil or exhaust stains may be an indication of system leaks and should be carefully investigated prior to flight.

AIR
SYS

If an aircraft fire is discovered on the ground or during takeoff, but prio: to committed flight, the aircraft is to be landed and/or stopped and the passer gers and crew evacuated as soon as practical.

Fires originating inflight must be controlled as quickly as possible in an attempt to prevent major structural damage. Both auxiliary fuel pumps shoulc be turned off to reduce pressure on the total fuel system (each auxiliary pump pressurizes a crossfeed line to the opposite fuel selector). The engine on the wing in which the fire exists should be shut down and its fuel shut off even though the fire may not have originated in the fuel system. The cabin heater draws fuel from crossfeed system and should also be turned off. Descent for landing should be initiated immediately.

An open door or foul weather window produces a low pressure in the cabi To avoid drawing the fire into the cabin, the door and foul weather windows should be kept closed. This condition is aggravated with the landing gear anc flaps extended. Therefore, the pilot should lower the gear as late in the landi approach as possible. A no-flap landing should also be attempted if practical.

FIR

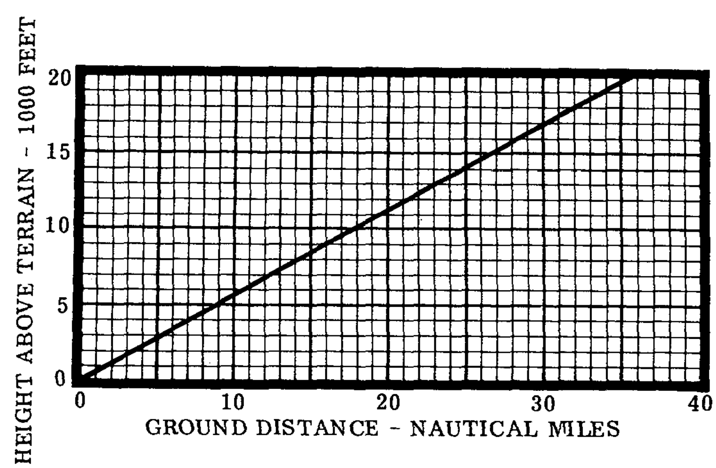
FIRE
Dist

A fire or smoke in the cabin should be controlled by identifying and shutti down the faulty system. Smoke may be removed by opening the cabin air con- trols and wemacs. If the smoke increases in intensity when the air controls ar opened they should be closed as this indicates a possible fire in the heater or nose compartment. When the smoke is intense, the pilot may choose to expell the smoke through the foul weather window. The foul weather window should be closed immediately if the fire becomes more intense when the window is opened.

MAXIMUM GLIDE

In the event of a double-engine failure condition, maximum gliding distance can be obtained by feathering both propellers, and maintaining approximately 96 KIAS with the landing gear and wing flaps up. Refer to Maximum Glide, Figure 3-4, for maximum glide data.

MAXIMUM GLIDE



WING FLAPS UP LANDING GEAR UP FEATHERED PROPELLERS ZERO WIND	
BEST GLIDE SPEED	
WEIGHT POUNDS	KIAS
4500	89
4900	94
5300	96

Figure 3-4

SINGLE-ENGINE APPROACH AND LANDING

(1) Mixture - FULL RICH.
(2) Propeller - FULL FORWARD.
(3) Approach at 94 KIAS with excessive altitude.
(4) Landing Gear - DOWN within glide distance of field.
(5) Wing Flaps - DOWN when landing is assured.
(6) Decrease speed below 89 KIAS only when landing is assured.
(7) Minimum Single-Engine Control Speed - 75 KIAS.

FORCED LANDING

(Precautionary Landing with Power)

(1) Drag over selected field with flaps 15° and 90 KIAS noting type of terrain and obstructions.
(2) Plan a wheels-down landing if surface is smooth and hard.
(3) Execute a normal landing, keeping nosewheel off ground until speed is decreased.
(4) If terrain is rough or soft, plan a wheels-up landing as follows:
  (a) Select a smooth grass-covered runway, if possible.
  (b) Landing Gear Switch - UP.
  (c) Approach at 89 KIAS with flaps down only 15°.
  (d) All Switches Except Magneto Switches - OFF.
  (e) Unlatch cabin door prior to flare-out.

> NOTE
>
> Be prepared for a mild tail buffet as the cabin door is opened.

  (f) Mixtures - IDLE CUT-OFF (both engines).
  (g) Magneto Switches - OFF.
  (h) Fuel Selectors - OFF.
  (i) Land in a slightly tail-low attitude.

> NOTE
>
> Aircraft will slide straight ahead about 500 feet on smooth sod with very little damage.

FORCED LANDING (Complete Power Loss)

(1) Mixtures - IDLE CUT-OFF.
(2) Propellers - FEATHER then rotate to HORIZONTAL position with starter if time permits.
(3) Fuel Selectors - OFF.
(4) All Switches Except Battery Switch - OFF.
(5) Approach at 94 KIAS.
(6) If field is smooth and hard, plan a landing as follows:
  (a) Landing Gear - DOWN within glide distance of field.
  (b) Wing Flaps - EXTEND as necessary when within glide distance of field.
  (c) Battery Switch - OFF.
  (d) Make a normal landing, keeping nosewheel off the ground as long as practical.
(7) If field is rough or soft, plan a wheels-up landing as follows:
  (a) Select a smooth, grass-covered runway if possible.
  (b) Landing Gear - UP.
  (c) Approach at 90 KIAS with flaps down only 15°.
  (d) Battery Switch - OFF.
  (e) Unlatch cabin door prior to flare-out.

NOTE

Be prepared for a mild tail buffet as cabin door is opened.

  (f) Land in a slightly tail-low attitude.

NOTE

Aircraft will slide straight ahead about 500 feet on smooth sod with very little damage.

GO-AROUND (SINGLE-ENGINE)

(1) If absolutely necessary and speed is above 90 KIAS, increase engine speed to 2625 RPM and apply full throttle.
(2) Landing Gear - UP.
(3) Wing Flaps - UP (if extended).
(4) Climb at 102 KIAS (93 KIAS with obstacles directly ahead).
(5) Trim aircraft for single-engine climb.

SYSTEM EMERGENCY PROCEDURES

FUEL SYSTEM

ENGINE DRIVEN FUEL PUMP FAILURE

(1) Fuel Selector - MAIN TANK (feel for detent).
(2) Auxiliary Fuel Pump - ON.
(3) Mixture - ADJUST for smooth engine operation.
(4) As Soon as Practical - LAND.
(5) Fuel in auxiliary and opposite main tank is unusable.

NOTE

If both an engine-driven fuel pump and an auxiliary fuel pump fail on the same side of the aircraft, the failing engine cannot be supplied with fuel from the opposite MAIN tank since that auxiliary fuel pump will operate on the low pressure setting as long as the corresponding engine fuel pump is operative.

ELECTRICAL SYSTEM

ALTERNATOR FAILURE (SINGLE)
(Indicated by illumination of failure light)

(1) Electrical Load - REDUCE.
(2) If Circuit Breaker is Tripped:
    (a) Shut off affected alternator.
    (b) Reset affected alternator circuit breaker.
    (c) Turn on affected alternator switch.

(d) If circuit breaker reopens, turn off alternator.

(3) If Circuit Breaker does not Trip:

(a) Select affected alternator on voltammeter and monitor output.

(b) If output is normal and failure light remains on, disregard fail indication and have indicator checked after landing.

(c) If output is insufficient, turn off alternator and reduce electrical load to one alternator capacity.

(d) If complete loss of alternator output occurs, check field fuse and replace if necessary. Spare fuses are located in the glove box.

(e) If an intermittent light indication accompanied by ammeter fluctuation is observed, shut off affected alternator and reduce load to one alternator capacity.

ALTERNATOR FAILURE (DUAL)
(Indicated by illumination of failure lights)

(1) Electrical Load - REDUCE.

(2) If Circuit Breakers are Tripped:

(a) Shut off alternators.

(b) Reset circuit breakers.

(c) Turn on left alternator and monitor output on voltammeter.

(d) If alternator is charging, leave it on (disregard failure light if still illuminated).

(e) If still inoperative, shut off left alternator.

(f) Repeat steps (c) thru (e) for right alternator.

(f) If circuit breakers reopen, prepare to terminate flight.

(3) If Circuit Breakers have not Tripped:

(a) Shut off alternators.

(b) Check field fuses and replace as required. Spare fuses are located in the glove box.

(c) Turn on left alternator and monitor output on voltammeter.

(d) If alternator is charging, leave it on (disregard failure light if still illuminated).

(e) If still inoperative, shut off left alternator.

(f) Repeat steps (c) thru (e) for right alternator.

(g) If both still inoperative, shut off alternators and turn on emergency alternator field switch.

(h) Repeat steps (c) thru (e) for each alternator.

(i) If still inoperative, shut off alternators and prepare to terminate flight.

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SECTION IV
OPERATING LIMITATIONS

OPERATIONS AUTHORIZED

Your Cessna with standard equipment, exceeds the requirements of airworthiness as set forth by the United States Government, and is certified under FAA Type Certificate No. 3A10.

With standard equipment, the aircraft is approved for day and night operation under VFR. Additional optional equipment is available to increase its utility and to make it authorized for use under IFR day and night operation. Your Cessna Dealer will be happy to assist you in selecting equipment best suited to your needs.

MANEUVERS-NORMAL CATEGORY

The aircraft exceeds the requirements of the Federal Aviation Regulations, set forth by the United States Government for airworthiness. Spins and aerobatic maneuvers are not permitted in normal category aircraft in compliance with these regulations. In connection with the foregoing, the following gross weight and flight load factors apply:

Maximum Takeoff Weight	5300 lbs.
Maximum Landing Weight	5300 lbs.
*Flight Load Factor (at design gross weight)	
Flaps UP	+3.8G
	-1.52G
Flaps DOWN	+2.0G

*The design load factors are 150% of the above and in all cases the structure exceeds design loads.

Your aircraft must be operated in accordance with all FAA approved markings, placards, and checklists in the aircraft. If there is any information in this Owner's Manual that contradicts the FAA approved markings, placards, and checklists, it is to be disregarded.

AIRSPEED LIMITATIONS (CAS)

Maximum Structural Cruising Speed	
Level Flight or Climb	183 KCAS
Maximum Speed	
Flaps Extended 15°	160 KCAS
Flaps Extended 15° - 35°	140 KCAS
Gear Extended	140 KCAS
Never Exceed Speed (glide or dive, smooth air)	224 KCAS
*Maneuvering Speed	148 KCAS

*The maximum speed at which you can use abrupt control travel.

AIRSPEED INDICATOR INSTRUMENT MARKINGS

The following is a list of the calibrated airspeed limitations for the aircraft.

Never Exceed (glide or dive, smooth air) .	224 KCAS (red line)
Caution Range	183-224 KCAS (yellow arc)
Normal Operating Range	74-183 KCAS (green arc)
Flap Operating Range	64-140 KCAS (white arc)
Minimum Control Speed	75 KCAS (red radial line)
Best Single-Engine Rate of Climb . . .	102 KCAS (blue radial line)

ENGINE OPERATION LIMITATIONS

Maximum Power and Speed . . . . . . (for all operations)	260 BHP at 2625 RPM

ENGINE INSTRUMENT MARKINGS

OIL TEMPERATURE

Normal Operating Range	75° to 240°F (green arc)
Maximum Temperature	240°F (red line)

OIL PRESSURE

Idling Pressure	10 PSI (red line)
Normal Operating Range	30 to 60 PSI (green arc)
Maximum Pressure	100 PSI (red line)