



SEMINOLE

PA-44-180

PILOT'S CHECKLIST

2024

SEMINOLE PA-44-180

(These figures are for standard airplanes flown at gross weight under standard conditions at sea level.)

GEAR

Up.....109 KIAS
Down.....<140 KIAS

TAKE OFF

Normal Rotation(Vr).....75 KIAS
Normal Climb Out(Vy).....88 KIAS
Short Field Rotation.....70 KIAS
Short Field Takeoff, Flaps 0, Speed at 50'
.....82 KIAS

CRUISE CLIMB

Best Angle of Climb(Vx).....82 KIAS
Best Rate of Climb (Vy).....88 KIAS
En Route Climb.....105 KIAS

BALKED LANDING, GO AROUND

Maximum Power, Flaps 25°.....88 KIAS

MANEUVERING SPEED

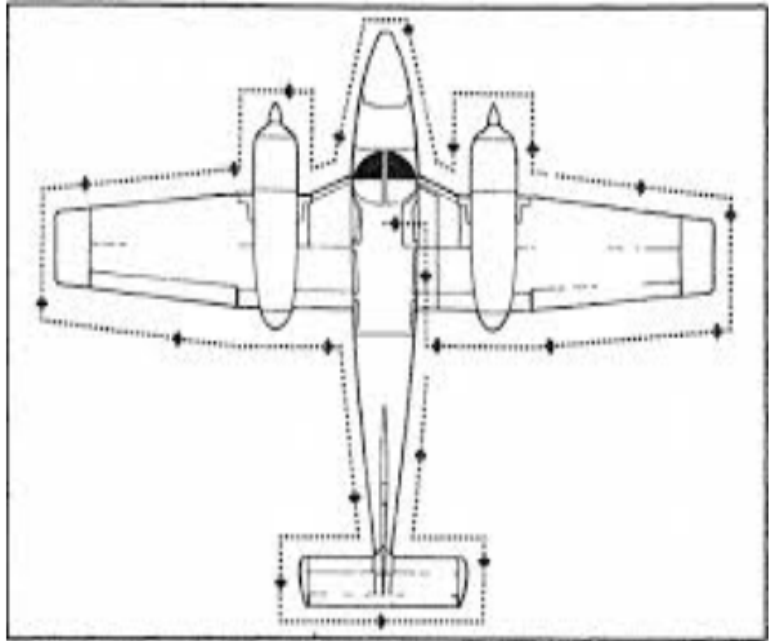
3800 LBS.....135 KIAS
2700 LBS.....112 KIAS

MAXIMUM DEMONSTRATED CROSSWIND

17 KTS

INTENTIONAL ONE ENGINE INOPERATIVE SPEED

88 KTS (VSSE 82KTS)



PREFLIGHT EXTERIOR

RIGHT WING

Fuel Sump Drains.....DRAIN
Surface Condition.....CLEAR OF ICE, FROST, SNOW
Flap and Hinges.....CHECK
Aileron, Hinges and Freedom of Movement.....CHECK
Static Wicks.....CHECK
Wing Tip and Lights.....CHECK
Scupper Drain.....CLEAR
Fuel Tank Vent.....CLEAR
Wing Tie Down and/or.....REMOVE
Fuel Quantity.....CHECK with dipstick
Nacelle Fuel Filler Cap and Door.....CHECK & SECURE
Engine Oil.....CHECK (6 TO 8 QUARTS)
Engine Oil Inspection Door.....SECURE
Propeller and Spinner.....CHECK
Engine Cooling Air Inlets.....CLEAR
Cowl Flap Area.....CHECK
Main Gear StrutCHECK (2.5 in)
Main Wheel Tire.....CHECK
Brake, Block and Disc.....CHECK

PREPARATION

Weather.....SUITABLE
Weight and C.G.....WITHIN LIMITS
Navigation.....PLANNED
Charts and Nav Equipment.....ON BOARD
Performance.....COMPUTED AND SAFE
Baggage.....WEIGHED, STOWED, TIED

PREFLIGHT INTERIOR

Control Wheel.....RELEASE RESTRAINTS
Static System.....DRAIN
Alternate Static Source.....NORMAL
Magneto Switches.....OFF
Parking Brake.....SET
Fuel Pump Switches.....OFF
Gear Selector.....DOWN
Throttles.....IDLE
Mixtures.....IDLE CUT-OFF
Cowl Flaps.....OPEN
Flight Controls.....FREE AND CORRECT
Stabilator & Rudder Trim.....NEUTRAL
Fuel Selectors.....ON
Radio Master Switch.....OFF
Electrical Switches (Fans, Pitot Heat, ect).....OFF
Battery Master Switch.....ON
Fuel Gauges.....CHECK QUANTITY
Annunciator Panel.....PRESS TO TEST
Landing Gear Lights.....3 GREEN
Battery Master Switch.....OFF
Emergency Exit.....CHECK
Flaps.....EXTEND
Windows.....CHECK CLEAN
Baggage.....STOWED/ PROPERLY SECURED

NOSE SECTION

General Condition.....CHECK
Windshield.....CLEAN
Heater Intake and Exhaust.....CLEAR
Battery Vents.....CLEAR
Landing Lights.....CHECK
Nose Gear Strut.....CHECK (2.75 in)
Nose Wheel Tire.....CHECK

LEFT WING

Surface Condition.....CLEAR OF ICE,
FROST, SNOW
Main Gear Strut.....CHECK (2.5 in)
Main Wheel Tire.....CHECK
Brake, Block and Disc.....CHECK
Cowl Flap Area.....CHECK
Fuel Quantity.....CHECK VISUALLY with dipstick
Nacelle Fuel Filler Cap and Door.....CHECK
& SECURE
Engine Oil.....CHECK (6 TO 8 QUARTS)
Engine Oil Inspection Door.....SECURE
Propeller and Spinner.....CHECK
Engine Cooling Air Inlets.....CLEAR
Scupper Drain.....CLEAR
Fuel Tank Vent.....CLEAR
Wing Tie Down and/or Chocks.....REMOVE
Stall Warning Vanes.....CHECK
Pitot/Static Head.....CLEAR
Wing Tip and Lights.....CHECK
Aileron, Hinges and Freedom of
Movement.....CHECK
Flap and Hinges.....CHECK
Static Wicks.....CHECK

FUSELAGE (LEFT SIDE)

General Condition.....CHECK
Emergency Exit.....CHECK
Antennas.....CHECK
Fresh Air Inlet.....CLEAR

EMPENNAGE

Surface Condition.....CLEAR OF ICE,
FROST, SNOW
Stabilator, Trim Tab & Freedom of
Movement.....CHECK
Rudder, Trim Tab.....CHECK
Static Wicks.....CHECK
Tail Tie Down.....REMOVE

FUSELAGE (RIGHT SIDE)

General Condition.....CHECK
Baggage Door.....SECURE AND LOCKED
Cabin Door.....CHECK
Final Walk Around.....COMPLETE
& VERIFY PITOT/STATIC AND ENGINE AIR INLET
COVERS ARE REMOVED

MISCELLANEOUS

Flaps.....RETRACT
Battery Master Switch.....ON
Interior lighting.....ON & CHECK
Pilot Heat Switch.....ON
Exterior Lighting Switches.....ON & CHECK
Pilot/Static Head.....CHECK – WARM
All Lighting Switches.....OFF
Pilot Heat Switch.....OFF
Battery Master Switch.....OFF
Passengers.....BOARD

BEFORE STARTING ENGINE

Preflight Inspection.....COMPLETED
Passenger Briefing.....COMPLETED
Seats.....ADJUSTED & LOCKED
Seatbelts/Harness.....FASTEN / ADJUST
Parking Brake.....SET
Gear Selector.....DOWN
Throttles.....IDLE
Propeller Controls.....FULL FORWARD
Mixtures.....IDLE CUT-OFF
Friction Handle.....AS DESIRED
Carburetor Heat/Alternate Air.....OFF
Cowl Flaps.....OPEN
Trim.....SET
Fuel Selectors.....ON
Radio Master Switch.....OFF
Electrical Switches (Fans, Pitot Heat, etc.).....OFF
Heater Switch.....OFF
Circuit Breakers.....CHECK/IN

ENGINE START – GENERAL

NOTE: *When starting at temperatures of 20F and below, operate first engine with alternator ON (at max charging rate not to exceed 1500 RPM) for 5 minutes minimum before initiating start on second engine.*

STARTING ENGINE

Emergency Battery (if equipped)ON
E-Volts.....at least 23.3
Battery Master Switch.....ON
Alternators.....ON
Strobe Lights (Fin Strobes if equipped)ON
Gear Lights.....3 GREEN
Throttles.....1/4" OPEN
Propeller Controls.....FULL FORWARD
Electric Fuel Pump..... ON
Propeller Area.....CLEAR
Magneto Switches.....ON

CARBURETED:

Throttle..... 1/4" OPEN
Mixture.....FULL RICH
Primer.....AS REQUIRED
Starter.....ENGAGE

FUEL INJECTED: COLD ENGINE

Throttle..... 1/4" OPEN
Mixture.....PRIME THEN CUT OFF
Starter.....ENGAGE
Mixture.....ADVANCE

FUEL INJECTED: HOT ENGINE

Throttle..... 1/2" OPEN
Mixture.....CUTOFF
Starter.....ENGAGE
Mixture.....ADVANCE
IF ENGINE DOES NOT START.....PRIME

Throttle.....ADJUST TO 1000RPM
Oil Pressure.....CHECK
Electric Fuel Pump.....OFF AND CHECK

REPEAT ABOVE PROCEDURE() FOR SECOND
ENGINE*

Ammeter..... CHECK

STARTING ENGINE WHEN FLOODED

Battery Master Switch.....ON
Mixture.....IDLE CUT-OFF
Propeller Control.....FULL FORWARD
Throttle.....OPEN FULL
Electric Fuel Pump.....OFF
Strobe Lights (Fin Strobes if equipped).....ON
Propeller Area.....CLEAR
Magneto Switches.....ON
Starter.....ENGAGE
Mixture.....ADVANCE
Throttle.....REDUCE
Oil Pressure.....CHECK
Mixtures.....RICH below 5000'

ENGINE START WITH EXTERNAL POWER SOURCE/ ENGINE START - COLD WEATHER (BELOW 10F)

Refer to POH

ENGINE FIRE DURING START

ENGINE NOT STARTED:

Mixture.....IDLE CUT-OFF
Throttle.....FULL OPEN
Starter.....CONTINUE TO CRANK ENGINE

If engine has already started and is running, continue operating starter to try pulling the fire into the engine.

IF FIRE CONTINUES:

Fuel Selectors.....OFF
Electric Fuel Pumps.....OFF
Mixtures.....IDLE CUT-OFF
Throttles.....FULL OPEN
External Fire Extinguisher.....USE
Airplane.....EVACUATE

NOTE: *If fire continues, shut down both engines and evacuate.
If fire is on the ground, it may be possible to taxi away.*

AFTER START

Battery Master Switch.....ON
Strobe Lights.....(FIN IF EQUIPPED)...OFF
Radio Master Switch.....ON
Radios.....SET AND TEST
Avionics.....SET AND TEST
Transponder.....GROUND
Lights.....AS REQUIRED
Fuel Selectors.....MOVE TO CROSSFEED
Dispatch.....RAMP OUT
Parking Brake.....RELEASE

TAXIING

Taxi Area.....CLEAR
Throttles.....APPLY SLOWLY
Brakes.....CHECK
Steering.....CHECK
Instruments.....CHECK

RUN UP

Parking Brake.....SET
Fuel Selectors.....ON
Mixtures.....RICH
Propeller Controls.....FULL FORWARD
Engine Instruments.....CHECK
Throttles.....1500 RPM
Propeller Controls.....FEATHER CHECK (500 RPM
MAX. DROP)
Throttles.....2000 RPM
Magnetos.....CHECK (175 MAX.
DROP & 50 RPM MAX DIFF.)
Propeller Controls.....EXERCISE (MAX.
DROP 300 RPM)
Governors.....CHECK
Carburetor Heat/ Alternate Air.....CHECK
Alternator Output.....CHECK
Annunciator Panel Lights.....OUT
Engine Gauges.....IN THE GREEN
Throttles.....IDLE CHECK (500-600 RPM)
Throttles.....1000 RPM
Auto-PilotCHECK
a. Heading left, right, center
b. Altitude climb, descent, level, and overpower
c. Check auto trim can be turned off
d. AP disconnect

BEFORE TAKEOFF

Flight Instruments.....CHECK
Engine Gauges.....CHECK
Fuel Quantity.....SUFFICIENT
Electric Fuel Pumps.....ON
Mixtures.....RICH
Propeller Controls.....FULL FORWARD
Fuel Selectors.....ON
Stabilator And Rudder Trims.....SET
Controls.....FREE
Wing Flaps.....SET
Cowl Flaps.....OPEN
Carburetor Heat/Alternate Air.....OFF
Friction Handle.....SET
Warning Lights.....CHECK
Radios and Avionics.....SET
Transponder.....SET
Seat Belts/Shoulder Harness.....FASTENED
Crew Takeoff Briefing.....COMPLETED
Strobe Lights (Wing tip).....ON
Landing Light & Recog Lights.....ON
Parking Brake.....RELEASE
Door.....LATCHED

NORMAL TAKEOFF

Flaps.....0°
Stabilator And Rudder Trims.....CHECK SET
Power.....2700 RPM, FULL THROTTLE
Engine Instruments.....CHECK IN THE GREEN
Rotate Speed.....75 KIAS
Climb Speed.....88 KIAS
Gear.....UP

SHORT FIELD PERFORMANCE TAKEOFF

Flaps.....0°
Stabilator And Rudder Trims.....CHECK SET
Brakes.....HOLD
Power.....2700 RPM, FULL THROTTLE
Mixtures.....RICH
Engine Instruments.....CHECK IN THE GREEN
Brakes.....RELEASE
Rotate Speed.....70 KIAS
Obstacle Clearance Speed.....82 KIAS
Gear.....UP
Climb Speed (past obstacles).....88 KIAS

ENGINE FAILURE DURING TAKEOFF

BEFORE ROTATION:

Throttles.....IMMEDIATELY CLOSE
Brakes.....AS REQUIRED
Elevator Control.....FULL AFT

ENGINE FAILURE DURING TAKEOFF

AFTER ROTATION:

GEAR DOWN:

Directional Control.....MAINTAIN
Throttles.....IMMEDIATELY CLOSE
Aircraft.....LAND STRAIGHT AHEAD
Brakes.....AS REQUIRED

GEAR IN TRANSIT/UP:

Throttles.....FULL FORWARD
Propeller Controls.....FULL FORWARD
Mixture Controls.....FULL FORWARD
Flaps.....CHECK UP
Gear.....CHECK UP
Inoperative Engine.....IDENTIFY
Throttle (inop. engine).....VERIFY BY CLOSING
Propeller (inop. engine).....FEATHER
Mixture (inop. engine).....IDLE CUT-OFF
Establish Zero Side Slip.....2 TO 3 DEGREES
INTO OPERATIVE ENGINE
Climb Speed.....88 KIAS

CLIMB- AT 1000'AGL

Gear.....UP
Flaps..... 0°
Mixtures.....FULL RICH
Power.....25" Hg
Propellers.....2500 RPMS
Climb Speed.....105 KIAS
Cowl Flaps.....AS REQUIRED
Landing Light.....OFF

ENGINE FAILURE DURING CLIMB

Airspeed.....MAINTAIN 88 KIAS
Directional Control.....MAINTAIN
Mixture Controls.....FULL FORWARD
Propeller Controls.....FULL FORWARD
Throttles.....FULL FORWARD
Inoperative Engine.....IDENTIFY & VERIFY
Inoperative Engine.....SECURE
Trim.....ADJUST TO 2 TO 3° BANK
TOWARD OPERATIVE ENGINE WITH 1/2 BALL
SLIP INDICATED
Cowl Flap.....AS REQUIRED
**LAND AS SOON AS PRACTICAL AT THE NEAREST
SUITABLE AIRPORT**

CRUISE

Cruise Power.....SET
(PER POWER SETTING CHART)
Mixture.....FULL RICH BELOW 5000ft.
Cowl Flaps.....AS REQUIRED
Electric Fuel Pumps.....OFF
Fuel Pressure.....CHECK

DESCENT

Mixtures.....ADJUST
Descent Power.....SET
Cowl Flaps.....AS REQUIRED

APPROACH

ATIS/AWOS.....CHECK
Altimeter.....SET
Nav Instruments.....SET
Stations.....IDENTIFY
HSI.....SET
Mode.....VLOC or GPS
Comm Radios.....SET
Approach Briefing.....COMPLETE
Before Landing Checklist.....COMPLETE
Backup Nav & Radios.....AS DESIRED

BEFORE LANDING

Seat Belts/Seat.....ADJUST/SECURE
Heater (If operating).....OFF (Fan for 15 sec)
Electric Fuel Pumps.....ON
Fuel Selectors.....ON
Landing Gear.....DOWN (BELOW 140 KIAS)
Landing Gear Lights.....3 GREEN
Mixtures.....RICH
Propeller Controls.....FULL FORWARD
Carburetor Heat/
Alternate Air.....AS REQUIRED
Landing Light and Recog Light.....ON

NORMAL LANDING

GUMPS Check.....COMPLETED
Flaps.....0° TO 40° (BELOW 111 KIAS)
Airspeed.....ABOVE 88KIAS UNTIL LANDING ASSURED
Trim.....AS REQUIRED
Throttles.....AS REQUIRED
Touchdown.....MAIN WHEELS FIRST
Braking.....MINIMUM REQUIRED

SHORT FIELD PERFORMANCE LANDING

GUMPS Check.....COMPLETED
Flaps.....40° (BELOW 111 KIAS)
Airspeed (at Max. Weight).....88KIAS
Once landing is assured.....75 KIAS
Trim.....AS REQUIRED
Throttles.....IDLE
Touchdown.....MAIN WHEELS FIRST
Braking.....MAX WITHOUT SKIDDING
Elevator Control.....FULL AFT
Flaps.....RETRACT AFTER TOUCHDOWN

GO – AROUND

Throttles.....FULL POWER
Control Wheel.....BACK PRESSURE TO
OBTAIN POSITIVE CLIMB ATTITUDE
Propeller Controls.....VERIFY-FULL FORWARD
Mixtures.....VERIFY-FULL RICH
Flaps.....25°
After Positive Climb Rate.....GEAR UP
Flaps.....RETRACT SLOWLY
Cowl Flaps.....AS REQUIRED

AFTER LANDING

Flaps.....RETRACT
Cowl Flaps.....OPEN
Carburetor Heat/Alternate Air.....OFF
Electric Fuel Pumps.....OFF
Landing Light and Recog Lights.....OFF
Strobe Lights.....Switch to FIN
Pitot Heat.....OFF
Transponder.....GROUND
Mixture.....FULL RICH BELOW 5000ft.
Heater (If On).....OFF -Then
FAN for 2 MIN.

SECURING AIRCRAFT

Radio Master Switch.....OFF
Electrical Equipment ...(LIGHTS).....OFF
Emergency Battery.....OFF
Throttles.....(1000 RPM) IDLE
Mixtures.....IDLE CUT-OFF
Magneto Switches.....OFF
Alternator Switches.....OFF
Battery Master Switch.....OFF
Parking Brake.....OFF
Trash.....REMOVE
Tiedowns or Chocks.....SECURE

EMERGENCY PROCEDURES

ENGINE FAILURE PROCEDURE

(Above 56 KIAS)

Mixtures.....FULL RICH
Propellers.....FULL FORWARD
Throttles.....FULL FORWARD
Flaps.....RETRACT
Gear.....RETRACT
Inoperative Engine.....IDENTIFY: Dead
Foot /Dead Engine
Throttle Inop. Engine.....CLOSE/VERIFY

IF AIRSPEED & ALTITUDE PERMIT:

Fuel Selectors.....ON or CROSSFEED
Carburetor Heat/Alternate Air.....ON
Electric Fuel Pump.....ON
Fuel Quantity.....CHECK
Oil Pressure.....CHECK
Oil Temperature.....CHECK
Magneto Switches.....CHECK

IF TIME CRITICAL SITUATION OR ENGINE REMAINS INOP.

Throttle.....VERIFY CLOSED
Propeller.....FEATHER
Mixture.....IDLE CUT-OFF
Fuel Selector.....OFF
Cowl Flap.....CLOSE
Carburetor Heat/Alternate Air.....OFF
Alternator.....OFF
Magneto Switches.....OFF
Electric Fuel Pump.....OFF
Electrical Load.....REDUCE
Operating Engine.....COWL FLAP OPEN
Cross feed.....IF REQUIRED

IDENTIFY

TROUBLESHOOT

SECURE

RESTART (AIRSTART) PROCEDURE

UNFEATHERING PROCEDURE:

Unfeathering Accumulator Functioning

NOTE: *With the propeller unfeathering system installed, the propeller will usually windmill automatically when the propeller control is moved forward.*

ON INOPERATIVE ENGINE:

Fuel Selector.....ON
Magneto Switches.....ON
Electric Fuel Pump.....ON

CARBURETED:

Mixture.....RICH
Throttle.....1/4 INCH OPEN
Propeller Control.....FULL FORWARD

FUEL INJECTED:

Throttle.....1/4 INCH OPEN
Propeller Control.....FULL FORWARD
ONCE WINDMILLING
Mixture.....ADVANCE
Throttle.....REDUCE POWER UNTIL
ENGINE IS WARM
Alternator.....ON

NOTE: *Starter assist is required if the propeller is not windmilling freely within 5-7 seconds after the propeller control has been moved forward.*

(When propeller unfeathering occurs, it may be necessary to retard the prop control slightly to not overspeed the prop.)

ENGINE FAILURE DURING TAKEOFF

BEFORE ROTATION:

Throttles.....IMMEDIATELY CLOSE
Brakes.....AS REQUIRED
Elevator Control.....FULL AFT

ENGINE FAILURE DURING TAKEOFF

AFTER ROTATION:

GEAR DOWN:

Directional Control.....MAINTAIN
Throttles.....IMMEDIATELY CLOSE
Aircraft.....LAND STRAIGHT AHEAD
Brakes.....AS REQUIRED

GEAR IN TRANSIT/UP:

Throttles.....FULL FORWARD
Propeller Controls.....FULL FORWARD
Mixture Controls.....FULL FORWARD
Flaps.....CHECK UP
Gear.....CHECK UP
Inoperative Engine.....IDENTIFY
Throttle (INOP. engine).....VERIFY BY CLOSING
Propeller (INOP. engine).....FEATHER
Mixture (INOP. engine).....IDLE CUT-OFF
Establish Zero Side Slip.....2 TO
3 DEGREES INTO OPERATIVE ENGINE
Climb Speed.....88 KIAS

ENGINE FAILURE DURING CLIMB

Airspeed.....MAINTAIN 88 KIAS
Directional Control.....MAINTAIN
Mixture Controls.....FULL FORWARD
Propeller Controls.....FULL FORWARD
Throttles.....FULL FORWARD
Inoperative Engine.....IDENTIFY & VERIFY
Inoperative Engine.....SECURE
Trim.....ADJUST TO 2 TO 3° BANK
TOWARD OPERATIVE ENGINE WITH 1/2 BALL
SLIP INDICATED
Cowl Flap.....AS REQUIRED

**LAND AS SOON AS PRACTICAL AT THE NEAREST
SUITABLE AIRPORT**

ENGINE FAILURE DURING FLIGHT

(VMC RECOVERY)

(BELOW VMCA)

Rudder.....APPLY AGAINST YAW
Throttles.....REDUCE TO STOP
Pitch Attitude.....LOWER NOSE TO ACCELERATE

ONCE ABOVE VMCA (56 KIAS)

Operative Engine.....INCREASE POWER AS AIRSPEED
INCREASES ABOVE VMCA (56 KIAS)

IF ALTITUDE PERMITS A RESTART MAY BE ATTEMPTED

**IF RESTART FAILS OR ALTITUDE DOES NOT PERMIT
RESTART:**

Inoperative Engine.....SECURE
Trim.....ADJUST TO 2 to 3° BANK
TOWARD OPERATIVE ENG. WITH 1/2 BALL SLIP INDICATED
ON THE INCLINOMETER
Cowl Flap (operative engine).....AS REQUIRED

ENGINE FAILURE DURING FLIGHT

**(SEE ENGINE FAILURE PROCEDURE FOR STEP-BY-STEP
INSTRUCTIONS**

AT BEGINNING OF EMERGENCY SECTION)

(ABOVE VMCA)

Inoperative Engine.....IDENTIFY
Operative Engine.....ADJUST POWER AS REQUIRED
Airspeed..... MAINTAIN AT LEAST 88 KIAS

Before securing inoperative engine:

Electric Fuel Pump.....ON
Fuel Quantity.....CHECK
Oil Pressure & Temperature.....CHECK
Magneto Switches.....CHECK
Air Start.....ATTEMPT

**If engine does not start, complete Engine Securing
Procedure.**

ON OPERATIVE ENGINE:

Power.....SET
Fuel Quantity.....SUFFICIENT
Electric Fuel Pump.....AS REQUIRED
Cowl FlapAS REQUIRED
Trim.....ADJUST TO 2 to 3° BANK TOWARD
OPERATIVE ENGINE WITH 1/2 BALL SLIP INDICATED ON
THE INCLONOMETER
Electrical Load.....DECREASE TO MINIMUM REQUIRED

**LAND AS SOON AS PRACTICAL AT THE NEAREST SUITABLE
AIRPORT.**

ONE ENGINE INOPERATIVE LANDING

Inoperative Engine..... SECURED
Seat Belts & Harnesses.....SECURE

ON OPERATIVE ENGINE:

Fuel Selector.....ON
Mixture.....FULL RICH
Propeller Control.....FULL FORWARD
Electric Fuel Pump.....ON
Cowl Flap.....AS REQUIRED
Altitude & Airspeed.....NORMAL APPROACH

WHEN LANDING IS ASSURED:

Gear.....DOWN
Flaps.....25 °
Final Approach Speed.....90 KIAS
Power.....REDUCE SLOWLY & FLARE
Trim.....AS POWER IS REDUCED
(AIRPLANE WILL YAW IN DIRECTION OF
OPERATIVE ENGINE)

WARNING

Under many conditions of loading and density altitude a go around may be impossible and in any event the sudden application of power during one engine inoperative operation makes control of the airplane more difficult.

ONE ENGINE INOPERATIVE GO-AROUND

(Should be avoided if at all possible)

Throttle.....OPEN SMOOTHLY
Propeller.....FORWARD
Mixture.....FORWARD
Flaps.....RETRACT SLOWLY
Gear.....RETRACT AFTER POSITIVE CLIMB
Airspeed.....88 KIAS
Trim.....ADJUST TO 2° to 3°
BANK TOWARD OPERATIVE ENGINE WITH 1/2
BALL SLIP INDICATED ON THE INCLINOMETER.
Cowl Flap (operative engine.....AS REQUIRED

ENGINE ROUGHNESS

NOTE: When using carburetor heat always use full heat; and, when ice is removed, return the control to the full cold position.

Carburetor Heat/Alternate Air.....ON

If roughness continues after one minute:

Carburetor Heat/Alternate Air.....OFF
Mixture.....ADJUST FOR MAX SMOOTH.
Electric Fuel Pump.....ON
Engine Gauges.....CHECK
Magneto Switches.....CHECK

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

ENGINE OVERHEAT

Cowl Flaps.....OPEN
Mixture.....ENRICHEN
Power.....REDUCE
Airspeed.....INCREASE
(If altitude permits)

LOSS OF OIL PRESSURE

Oil Pressure Gauge.....VERIFY
LOSS & ENGINE AFFECTED
Engine.....SECURE
per Engine Securing Procedure

ENGINE FIRE DURING START

ENGINE NOT STARTED:

Mixture.....IDLE CUT-OFF
Throttle.....FULL OPEN
Starter.....CONTINUE TO CRANK ENGINE
If engine has already started & is running, continue operating starter to try pulling fire into the engine.

IF FIRE CONTINUES:

Fuel Selectors.....OFF
Electric Fuel Pumps.....OFF
Mixtures.....IDLE CUT-OFF
Throttles.....FULL OPEN
External Fire Extinguisher.....USE
Airplane.....EVACUATE.

NOTE: *If fire continues, shut down both engines and evacuate.*

If fire is on the ground, it may be possible to taxi away.

ENGINE FIRE IN FLIGHT

AFFECTED ENGINE:

Fuel Selector.....OFF
Throttle.....IDLE
Propeller.....FEATHER
Mixture.....IDLE CUT-OFF
Cowl Flap.....OPEN
Engine.....SECURE

IF FIRE PERSISTS:

Airspeed.....INCREASE in attempt to blowout fire
LAND AS SOON AS POSSIBLE AT THE NEAREST SUITABLE AIRPORT

ELECTRICAL FIRE

Flashlight (at night).....LOCATE
Battery Master.....OFF
Alternator Switches.....OFF
All Electrical Switches.....OFF
Radio Master Switch.....OFF
Vents.....CLOSED
Cabin Heat.....OFF

If fire persists, locate and, if practical extinguish with portable fire extinguisher. Locate and wear the smoke masks.

BUS TIE CIRCUITS BREAKERS

Both Main Bus.....PULL
Non-Essential.....PULL
Avionics Bus #1.....PULL
Avionics Bus #2.....PULL
L. Alternator.....PULL
R. Alternator.....PULL
All Main Bus Circuit Breakers.....PULL
All Avionics Bus Circuit Breakers.....PULL

NOTE: *At this point the pilot must decide if the flight can be safely continued without electrical power. If so, land at the nearest airport.*

ELECTRICAL FIRE (cont.)

If electrical power is required for safe continuation of flight, proceed as follows.

WARNING

The following procedure may reenergize the faulty system.

Reset the circuit breaker one at a time. Allow a short time period between the resetting of each breaker. If the faulty system is reinstated, its corresponding circuit breaker must be immediately pulled.

One (1) Main Bus Tie Circuit Breaker.....IN
Battery Master.....ON
L. or R. Alternator Circuit Breaker.....IN

NOTE: *Select the applicable Alternator Field Circuit Breaker and alternator switch corresponding to the Alternator circuit breaker pressed in.*

Alternator Field Circuit Breaker.....IN
Alternator Switch.....ON
Radio Master Switch.....ON

MAIN BUS CIRCUIT BREAKERS

Electric Tachometer.....IN
Gear Indicator.....IN
Compass.....IN
Audio.....IN
Comm #1.....IN
Nav #1.....IN
Vents.....OPEN

(When it is ascertained that the fire is completely extinguished)

LAND AS SOON AS PRACTICAL

The landing gear must be lowered using the emergency extension procedure.

**FUEL MANAGEMENT DURING ONE ENGINE
INOPERATIVE OPERATION
CRUISING**

**When using fuel from tank on the same side as
the operating engine:**

Fuel Selector (operative engine).....ON
Fuel Selector (inoperative engine).....OFF
Electric Fuel Pumps.....OFF
(except in case of engine driven fuel pump
failure)

**When using fuel from tank on the side
opposite the operating engine:**

Fuel Selector (operative engine).....CROSSFEED
Fuel Selector (inoperative engine).....OFF
Electric Fuel Pumps.....OFF
(except in case of engine driven fuel pump
failure)

NOTE: Use cross feed in level cruise flight only.

LANDING

Fuel Selector (operative engine).....ON
Fuel Selector (inoperative engine).....OFF

ENGINE DRIVEN FUEL PUMP FAILURE

Electric Fuel Pump(Affected Engine).....ON

MANUAL EXTENSION OF LANDING GEAR

*Check following before extending gear
manually:*

Navigation Lights.....OFF (DAYTIME)
Circuit Breakers.....CHECK
Master Switch.....ON
Alternators.....CHECK

To extend, proceed as follows:

Airspeed.....REDUCE (100 KIAS)
Gear Selector.....GEAR DOWN
LOCKED POSITION
Emergency Gear Extend Knob.....PULL
Indicator Lights.....3 GREEN

**LEAVE EMERGENCY GEAR EXTENSION KNOB
OUT.**

SPIN RECOVERY

(Intentional spins prohibited)

NOTE: The Federal Aviation Administration Regulations do not require spin demonstration of multi-engine airplanes; spin tests have not been conducted. The recovery technique presented is based on the best available information.

Throttles.....REDUCE TO IDLE
Rudder.....FULL OPPOSITE TO DIRECTION OF SPIN
Control Wheel.....FULL FORWARD
Ailerons.....NEUTRAL
Rudder.....NEUTRALIZE WHEN ROTATION STOPS
Control Wheel.....SMOOTH BACK
PRESSURE TO RECOVER FROM DIVE

EMERGENCY EXIT

Thermoplastic Cover.....REMOVE
Emergency Exit Handle.....PULL FORWARD
Window.....PUSH OUT

TAWS WARNING

Autopilot.....DISCONNECT

Initiate a maximum performance climb:

Airspeed.....78 KIAS

After warning ceases:

Power.....MAX CONTINUOUS
Airspeed.....90 KIAS

**Climb to safe altitude and report to
ATC if applicable.**

ELECTRICAL FAILURES

SINGLE ALTERNATOR FAILURE

(Zero amps or Alternator INOP. light illuminated-annunciator panel)

NOTE: *Anytime total tie bus voltage is below approximately 12.5 Vdc, the LO BUS voltage annunciator will illuminate.*

Verify Failure.....CHECK AMMETERS
Electrical Load (if LO BUS illum)..... REDUCE
until total load is LESS THAN 60 amps & low bus
voltage annunciator EXTINGUISHED

Failed ALTR Switch.....OFF
Failed ALTR Circuit Breaker.....CHECK &
RESET AS REQUIRED

Failed ALTR Switch.....ON
(After OFF at least 1 second)

IF POWER NOT RESTORED:

Failed ALTR Switch.....OFF
Ammeter....MONITOR & MAINTAIN BELOW 60A

One alternator will supply sufficient current for minimum required avionics and cockpit lighting. Under no circumstances may the total electrical load exceed 60 amps.

The cabin recirculation blowers, and position, strobe, and landing lights should not be used unless absolutely necessary.

DUAL ALTERNATOR FAILURE

(Zero amps both ammeters or alternator inop. light illuminated-annunciator panel).

Verify Failure.....CHECK AMMETERS
Electrical Load.....REDUCED TO MIN.
REQUIRED FOR SAFE FLIGHT

Alternator Switches.....OFF
Alternator Circuit Breakers....CHECK & RESET AS REQUIRED
Alternator Switches.....ON
(One at a time after OFF at least 1 second)

If only one alternator resets

Operating Alternator Switch.....ON
Failed Alternator Switch.....OFF
Electrical Load.....MAINTAIN LESS THAN 60A
Ammeter.....MONITOR

If neither alternator resets:

Both Alternator Switches.....OFF
Continue flight with reduced electrical load on battery power only.

ONLY: LO BUS voltage annunciator will also be illuminated.
LAND AS SOON AS POSSIBLE.

Anticipate complete electrical failure. Duration of battery power available will be dependent on electrical load and battery condition prior to failure.

WARNING

Compass error may exceed 10 degrees with both alternators inoperative.

NOTE: *If the battery is depleted, the landing gear must be lowered using the emergency gear extension procedure. The gear position lights will be inoperative.*

OPEN DOOR
(entry door only)

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

To close the door in flight:

Airspeed.....SLOW TO 82 KIAS
Cabin Vents.....CLOSE
Storm Window.....OPEN
If Top Latch is Open.....LATCH
If Side Latch is Open.....PULL ON
ARMREST WHILE MOVING LATCH HANDLE TO
LATCHED POSITION
If Both Latches Are Open.....LATCH SIDE
LATCH THEN TOP LATCH

PROPELLER OVERSPEED

AFFECTED ENGINE:

Throttle.....REDUCE
Oil Pressure.....CHECK
Propeller Control.....FULL DECREASE
RPM THEN SET IF ANY CONTROL AVAILABLE
Airspeed.....REDUCE
Throttle.....AS REQUIRED
TO REMAIN BELOW 2700 RPM

GPS LOSS OF INTEGRITY

DR=Dead Reckoning
LOI=Loss of Integrity

DR means the GPS is estimating your position from your last known location. LOI means the data has become inaccurate and the signal is lost.

Navigation.....USE ALTERNATE SOURCES

If no alternate navigation means are available:

DR Mode.....USE GTN
Note: *GPS Position information will get worse over time.*

LOI Mode.....FLY TO NEAREST VFR CONDITIONS

Note: *Only your last known position will be shown on the map.*
"GPS SIGNAL LOST" will be superimposed over it.