



**SEMINOLE**

**PA-44-180**

**PILOT'S CHECKLIST**

**2023**

### SEMINOLE PA-44-180

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

#### TAKEOFF

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
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#### MANEUVERING SPEED

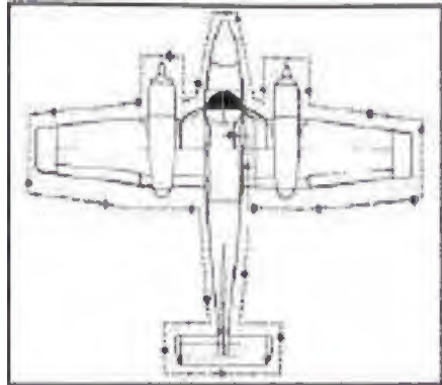
3800 LBS.....	135 KIAS
2700 LBS.....	112 KIAS

#### 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 Strut.....	CHECK (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 AND 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  
Pitot Heat Switch.....ON  
Exterior Lighting Switches.....ON & CHECK  
Pitot/Static Head.....CHECK-WARM  
All Lighting Switches.....OFF  
Pitot 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, ect).....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.*

### **NORMAL START - COLD 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  
\*Electric Fuel Pump.....OFF  
\*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

### **ENGINE START WHEN FLOODED**

Mixture.....IDLE CUT-OFF  
Propeller Control.....FULL FORWARD  
Throttle.....OPEN FULL  
Electric Fuel Pump.....OFF  
Battery Master Switch.....ON  
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-Pilot.....CHECK  
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  
UNTL 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 500ft.  
Heater (If On).....OFF  
-Then FAN for 2 MIN.

### SECURING AIRCRAFT

Radio Master Switch.....OFF  
Electrical Equipment ...(LIGHTS).....OFF  
Emergency Battery.....OFF  
Throttles.....(1000rpm)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 Flap .....AS REQUIRED  
Trim.....ADJUST TO 2 TO 3°  
BANK TOWARD OPERATIVE ENGINE  
WITH 1/2 BALL SLIP INDICATED ON  
THE INCLINOMETER  
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 impassible 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 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.*

### 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 crossfeed 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 ALTR 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.*