

N123AX - Piper Saratoga II HP (PA-32R-301)**Checklist**

(v29 - Revision 29 May 2018)

AIRSPEEDS FOR SAFE OPERATIONS

Best Rate of Climb (gear down, flaps up)	85 KIAS
Best Rate of Climb (gear up, flaps up)	93 KIAS
Turbulent Air Operating Speed	134 KIAS
Maximum Flap Speed	111 KIAS
Downwind Speed (10° Flaps)	100 KIAS
Base Leg Speed (25° Flaps)	90 KIAS
Landing Final Approach Speed (Full Flaps)	80 KIAS
Power Off Glide Speed (3600lbs, Gear Up, 0° Flaps)	83 KIAS
Maximum Demonstrated Crosswind Velocity	17 KTS

PREFLIGHT CHECK**COCKPIT**

Fuel Strainer	drain & check for water & sediment
Control Wheel	release restraints
Gear Handle	down
Parking Brake	set
Radio Master Switch	OFF
All Switches	OFF
Mixture	IDLE / OFF
Magneto Switches	OFF
Battery Master Switch	ON
Fuel Gauges	check quantity
Fuel Selector	SET LOWEST TANK
Annunciator Panel	check
Flaps	extend
Battery Master Switch	OFF
Primary Flight Controls	proper operation
Trim	neutral
Pitot & Static System	drain
Windows	check clean
Required Papers and POH	check on board
Tow Bar and Baggage	stow properly - secure
Baggage door-Rear	close and secure

RIGHT WING

Surface Condition	clear of ice, frost, snow
Flap and hinges	check
Aileron and hinges	check
Static wicks	check - secure
Wing tip and lights	check
Fuel Tank	check supply visually - secure cap

Fuel Quantity gauge	check
Fuel Tank Vent	clear
Fuel Tank sumps	drain and check for water, sediment and proper fuel
Tie down and chock	remove
Main gear strut	proper Inflation (4.5 ± .5 in)
Tire	check
Brake block and disc	check
Fresh air inlet	check

NOSE SECTION

Baggage door	close and secure
General condition	check
Cowling	secure
Windshield	clean
Propeller and spinner	check
Air Inlets	clear
Engine baffle seals	check
Chock	remove
Nose gear strut	proper Inflation (3.25 ± .25 in)
Nose gear doors	check
Nose gear tire	check
Landing light	secure
Oil	check quantity (6qt minimum. Only add if <8qt. Not above 9qt)
Dipstick	properly seated
Oil filler cap	secure

LEFT WING

Surface Condition	clear of ice, frost, snow
Fresh air inlet	check
Fuel Tank sump	drain and check for water, sediment and proper fuel
Tie down and chock	remove
Main gear strut	proper Inflation (4.5 ± .5 in)
Tire	check
Brake block and disc	check
Fuel Tank Vent	clear
Fuel Quantity gauge	check
Fuel Tank	check supply visually – secure cap
Stall warning vanes	check
Pitot head	remove cover – holes clear
Wing tip and lights	check
Aileron and hinges	check
Flap and hinges	check
Static wicks	check - secure

FUSELAGE

Antennas.....	check
Static vents.....	clear
Empennage.....	clear of ice, frost, snow
Stabilator and trim tab.....	check
Tie down.....	remove

MISCELLANEOUS

Battery master switch.....	ON
Flaps.....	retract
Interior lighting.....	ON and check
Pitot heat switch.....	ON
Exterior lighting switches.....	ON and check
Pitot.....	check - warm
Stall warning horn.....	check
All lighting switches.....	OFF
Pitot heat switch.....	OFF
Battery master switch.....	OFF
Passengers.....	board
Doors.....	closed and secure
Seats.....	adjusted & locked
Seat belts and harness.....	fasten/adjust/check inertia reel

BEFORE STARTING ENGINE

Fire Extinguisher	CHECKED
CO Detector	Push to Check
Flaps	UP
Altimeter & Instruments	CHECKED
Alternator Switch	OFF
Circuit Breakers	check IN
Alternate Air	CLOSED
Propeller	MAX RPM
Alternate Static	check closed

NORMAL START – COLD ENGINE

Throttle	1/2inch OPEN
Battery Master Switch	ON
EFIS switch (Aspen)	ON
G4 Engine Monitor	Check/Set initial fuel
Alternator Switch	ON
LEFT Magneto Switch	ON
Electric Fuel Pump	ON
Mixture	PRIME then IDLE CUT-OFF
Propeller Area	CLEAR
Fuel Pump	OFF
Start	MAX 15 SEC
RIGHT Magneto Switch	ON (When engine is running)
Mixture	RICH
Throttle	1200 rpm
Mixture	REDUCE for MAX RPM (up to 1300 rpm)
Throttle	1000 rpm

HOT START

Throttle	1/2inch OPEN
Battery Master Switch	ON
EFIS switch (Aspen)	ON
G4 Engine Monitor	Check/Set initial fuel
Alternator Switch	ON
LEFT Magneto Switch	ON
Electric Fuel Pump	ON
Mixture	IDLE CUT-OFF
Propeller Area	CLEAR
Fuel Pump	OFF
Start	MAX 15 SEC
RIGHT Magneto Switch	ON (When engine is running)
Mixture	RICH
Throttle	1000 rpm

FLOODED START

Throttle	FULL OPEN
Battery Master Switch	ON
EFIS switch (Aspen)	ON
G4 Engine Monitor	Check/Set initial fuel
Alternator Switch	ON
LEFT Magneto Switch	ON
Electric Fuel Pump	ON
Mixture	IDLE CUT-OFF
Propeller Area	CLEAR
Fuel Pump	OFF
Start	MAX 15 SEC
RIGHT Magneto Switch	ON (When engine is running)
Mixture	RICH
Throttle	1000 rpm

AFTER START

Oil Pressure	GREEN SECTOR
Nav. & Strobe Light	AS REQUIRED
Radio Master Switch	ON
Marker Lights	CHECKED
Autopilot	TEST (after EFIS Annunciator is OFF)
EFIS Gyro	Crosscheck to Compass
Fuel Selector	SET FULLEST TANK
Aux Vacuum Pump	ON - check AUX ON light on
	Check increase electrical load of approx 15 amps on ammeter
Ammeter	CHECK increased charge
Aux Vacuum Pump	OFF - check AUX ON light off

TAXI

Parking Brake	RELEASE
Propeller	full INCREASE
Throttle	apply slowly
Brakes	check
Steering	check
Flight Instruments	CHECKED
Take-Off Briefing	REVIEWED

GROUND CHECK

Parking Brake	SET
Propeller	full INCREASE
Mixture	RICH
Electric Fuel Pump	ON
Throttle	2000 rpm
Magnetos	max drop 175 RPM
	max diff 50 RPM
Vacuum	4.8 – 5.2 inch Hg
Oil Temperature	check
Oil Pressure	check
Propeller	exercise – then full INCREASE
	max 500 RPM drop
Alternate Air	check & close
Electric Fuel Pump	OFF
Fuel flow	check
Compass	READ & Crosscheck to EFIS
Throttle	IDLE - then 1000 rpm
Gyro	RESET
Annunciator Panel + EFIS	check

BEFORE TAKE-OFF

Battery Master Switch	Verify ON
Alternator Switch	Verify ON
Magneto Switches	Verify ON
Flight Instruments	check
Engine gauges	check
Mixture	set
Propeller	set
Flaps	set
Elevator Trim	set slightly aft
Rudder Trim	set to the right
Flight Controls	free & correct
Doors	closed and latched
Cabin Fan	OFF
Landing Light	ON
Pilot Heat	AS REQUIRED
Electric Fuel Pump	ON
Altimeter(s)	SET / CHECKED
Transponder	AS REQUIRED

NORMAL TAKEOFF

Flaps retracted
 Trim set
 Rotate 84 to 88 KIAS depending on weight
 Landing Gear UP – 110 KIAS max
 when straight away landing on runway not possible

Power Settings Full Throttle / 2700 RPM

SHORT FIELD, OBSTACLE CLEARANCE

Flaps 25°
 Trim slightly aft of neutral
 Throttle full power prior to brake release
 Rotate 69 to 72 KIAS depending on weight
 After breaking ground, accelerate to 74 to 77 KIAS
 depending on aircraft weight
 Landing Gear UP – 110 KIAS max
 Accelerate to climb speed
 Flaps retract slowly

CLIMB

After 500ft AGL
 MAP reduce to 25 MAP
 RPM reduce to 2500 RPM
 Mixture rich side of 75%
 6 divisions (150°F) rich of peak for engine cooling
 Best Rate (3600lbs – Gear DOWN – flaps up) 85 KIAS
 Best Rate (3600lbs – Gear UP – flaps up) 93 KIAS
 En route 105 KIAS
 Electric Fuel Pump OFF at desired altitude

CRUISE

Power Settings 65% (cf. power setting table)
 Mixture Peak EGT
 Keep CHT below 400°F – Oil Temp between 165°F and 220°F

DESCENT

Power Settings as required
 Mixture richer as required
 Avoid Fast Cooling of the Engine. Strive for 50°F per minute

APPROACH AND LANDING

Fuel Selector.....	FULLEST TANK
Electric Fuel Pump.....	ON
Mixture.....	set
Landing Gear.....	down – 132 KIAS max
Flaps.....	set – 110 knots max
App. Set Up & Briefing.....	PERFORMED
Altimeter (Transition Level).....	SET

Power Settings..... 19 MAP / 2100 RPM

..... Try to maintain at least 15" MAP during approach

BEFORE LANDING

Auto Pilot.....	OFF
Mixture.....	RICH
Propeller.....	MAX RPM
Landing Gear.....	DOWN / 3 GREENS
Flaps.....	AS REQUIRED
Landing Light.....	ON
Speed Full Flaps.....	80 KIAS

AFTER LANDING

Flaps.....	UP
No Essential Avionics.....	OFF
Electric Fuel Pump.....	OFF
Landing Light.....	AS REQUIRED
Pilot Heater.....	OFF
Trim.....	TAKE-OFF
Transponder.....	7000 and Ground

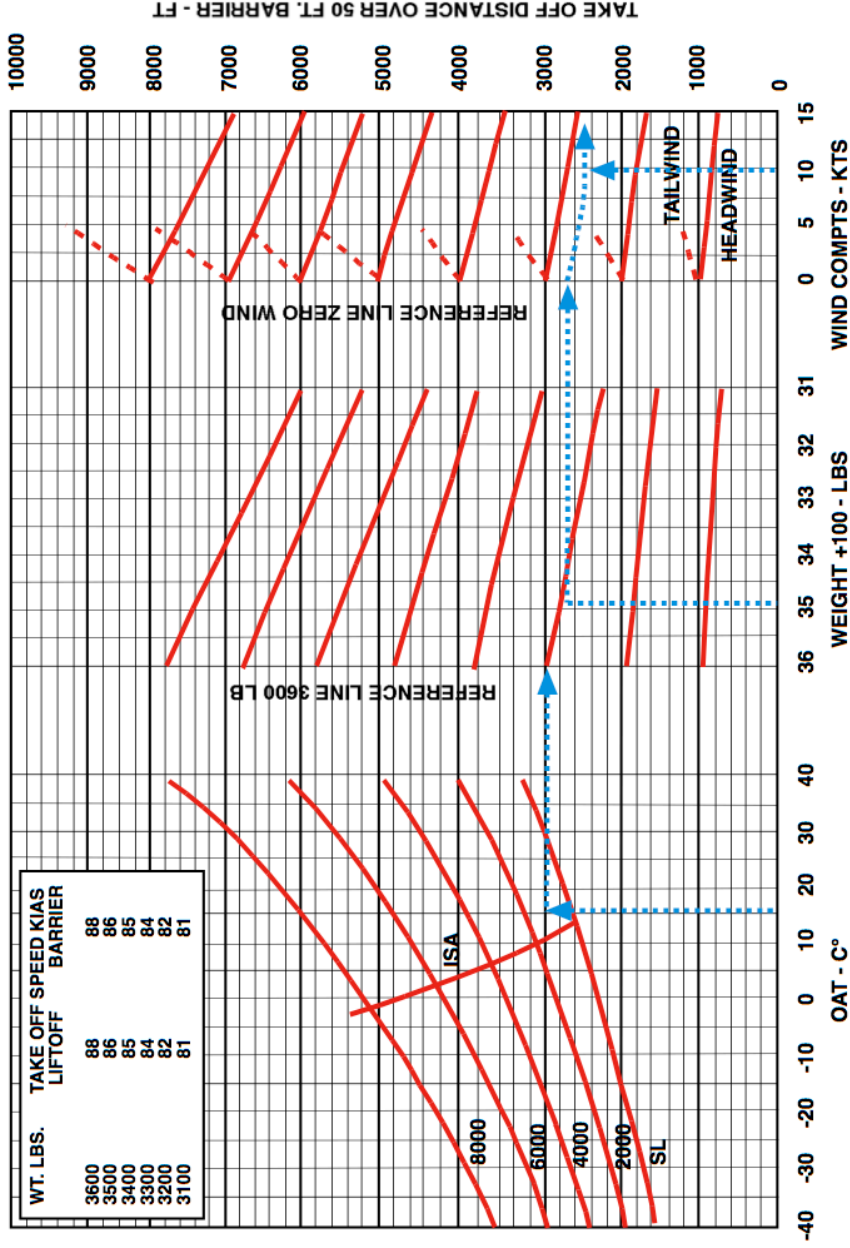
SHUT DOWN

Radio Master Switch.....	OFF
Electric Switches.....	OFF
Throttle.....	1200rpm
Mixture.....	idle cut-off
Magneto switches.....	OFF
Alternator switch.....	OFF
EFIS switch.....	OFF
Battery Master Switch.....	OFF
Flight Plan.....	Check Closed

NORMAL PROCEDURE TAKEOFF PERFORMANCE

ASSOCIATED CONDITIONS:
2700 RPM AND FULL THROTTLE
BEFORE BRAKE RELEASE
FLAPS 0 DEGREES
PAVED, LEVEL, DRY RUNWAY

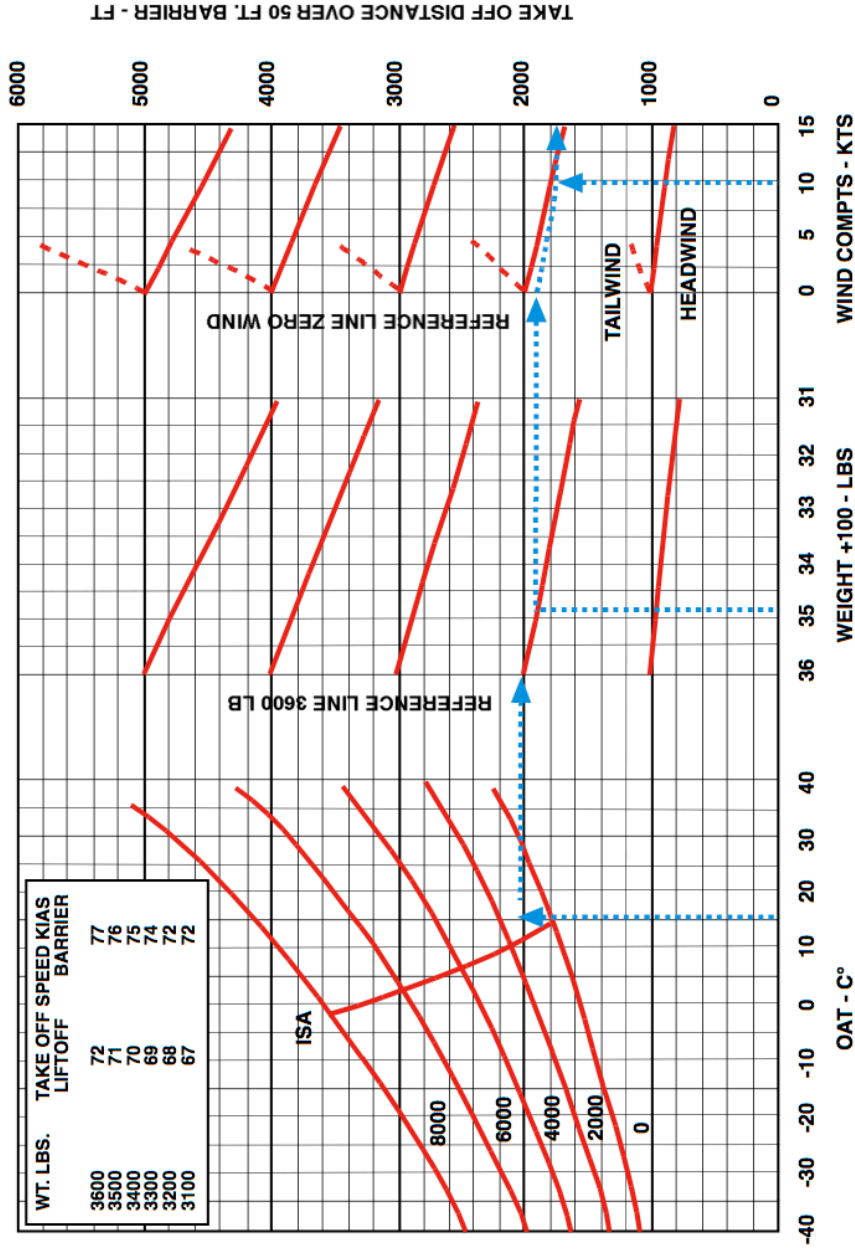
EXAMPLE:
PRESS. ALTITUDE: 1200 FT
OAT: 16°C
GROSS WEIGHT: 3480 LBS
WIND: 10 KNOT HEADWIND
TAKE OFF DISTANCE: 2598 FT.
LIFTOFF / BARRIER SPEED: 86 / 86 KIAS



MAXIMUM EFFORT TAKEOFF PERFORMANCE

ASSOCIATED CONDITIONS
2700 RPM AND FULL THROTTLE
BEFORE BRAKE RELEASE
FLAPS 25 DEGREES
PAVED, LEVEL, DRY RUNWAY

EXAMPLE:
PRESS. ALTITUDE: 1200 FT
OAT: 16°C
GROSS WEIGHT: 3480 LBS
WIND: 10KNOT HEADWIND
TAKE OFF DISTANCE: 1734 FT.
LIFT OFF / BARRIER SPEED: 73 / 76 KIAS



Power Setting Table

Saratoga II HP

Press Alt Feet	Std Alt Temp. °C	Long Range RPM				Economy RPM				Normal RPM				High Speed
		2100	2200	2300	2400	2100	2200	2300	2400	2200	2300	2400	2500	2700
MANIFOLD PRESSURE - INCHES MERCURY														
SL	15	23.2	22.7	22.2	21.7	25.6	25.0	24.4	23.8	28.0	27.2	26.5	25.9	27.0
1000	13	22.9	22.3	21.9	21.4	25.2	24.6	24.0	23.5	27.6	26.9	26.2	25.6	26.8
2000	11	22.5	22.0	21.5	21.1	24.9	24.3	23.7	23.2	27.3	26.6	25.9	25.3	26.5
3000	9	22.2	21.7	21.2	20.8	24.6	23.9	23.4	22.9	26.8	26.2	25.6	24.9	26.2
4000	7	21.9	21.4	20.9	20.5	24.3	23.7	23.1	22.6	-	25.8	25.3	24.7	25.8
5000	5	21.6	21.1	20.6	20.2	24.0	23.4	22.8	22.3	-	-	25.0	24.4	
6000	3	21.3	20.8	20.3	19.9	23.7	23.1	22.5	22.0	-	-	-	24.1	
7000	1	21.0	20.5	20.0	19.6	23.3	22.8	22.3	21.7	-	-	-	-	
8000	-1	20.7	20.2	19.8	19.3	-	22.4	22.0	21.4	Approx. Fuel Flow / Mixture Long Range 14.5 gph/50° rich of Peak EGT Economy 16.5 gph/50° rich of Peak EGT Normal 18.5 gph/50° rich of Peak EGT High Speed 29.0 gph/Full Rich				
9000	-3	20.5	20.0	19.5	19.1	-	-	-	21.2					
10000	-5	20.2	19.7	19.2	18.8	-	-	-	-					
11000	-7	19.9	19.4	19.0	18.5									
12000	-9	-	19.0	18.7	18.3									
13000	-11	-	-	-	18.0									

N123AX Circuit Breaker Panel
Revision 29 Nov 2012

1	2	3	4	5	6	7	8	9	10	11	12	13	14
5A ALTNTR FIELD	5A ENGINE GAUGE	10A FUEL PUMP	3A FUEL QTY	25A LANDING PUMP	5A GEAR CONT / LIGHTS	5A STALL WARN	5A START & ACC (cig lighther)	5A FLAP MOTOR	5A FLAP CONT	5A ANNUN PANEL	15A G4 Engine Monitor	10A PITOT HEAT	10A A.C./AIR BLOWER

1	2	3	4	5	6	7	8	9	10	11	12	13	14
20A AUX-VAC PUMP	5A AUX-VAC LIGHTS	7.5A PANEL SWITCH LIGHTS	5A RADIO LIGHTS	5A READ/G LIGHTS	3A FLOOD LOGHTS	10A NAV LIGHTS	10A ANTICOLL LIGHTS	15A LAND / TAXI LIGHTS	X	5A TURN & BANK 1	5A TURN & BANK 2	3A C/P ATT GYRO	X

1	2	3	4	5	6	7	8	9	10	11	12	13	14
5A PITCH TRIM	10A AUTO PILOT	5A COMPASS	0.5A BOSE	2A AUDIO AMP/MKR	10A NAV- COM 1	10A NAV- COM 2	15A ext pwr + 2nd cig lighter	1A SPARE	5A GPS/NAV	5A ADF	5A DME	5A TRANS- PONDER	1A STRIKE FINDER

N123AX - Piper Saratoga II HP (PA-32R-301)

Emergency Checklist

(v29 - Revision 29 May 2018)

AIRSPEEDS FOR SAFE OPERATIONS

Stall Speeds

3600 lbs (Gear Up, 0° Flap) 67 KIAS

3600 lbs (Gear Up, 40° Flap) 63 KIAS

Maneuvering Speeds

3600 lbs 134 KIAS

2230 lbs 105 KIAS

Never Exceed Speed 191 KIAS

Power Off Glide Speed

3600 lbs (Gear Up, 0° Flap) 83 KIAS

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, leave gear DOWN land straight ahead

If area ahead is rough or if it is necessary to clear obstructions:

Gear Selector Switch UP

If sufficient altitude has been gained to attempt a restart:

Airspeed MAINTAIN SAFE

Fuel Selector SWITCH to TANK CONTAINING FUEL

Electric Fuel Pump CHECK ON

Mixture CHECK RICH

Alternate Air OPEN

If power is NOT regained, proceed with power off landing.

ENGINE POWER LOSS IN FLIGHT

If at low altitude:

Airspeed MAINTAIN 83 KIAS Minimum
Prepare for power off landing

If altitude permits:

Fuel Selector SWITCH to TANK CONTAINING FUEL
Electric Fuel Pump ON
Mixture RICH
Alternate Air OPEN
Engine Gauges
..... CHECK for INDICATION of CAUSE of POWER LOSS

If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.

When Power is restored:

Alternate Air CLOSE
Electric Fuel Pump OFF
Mixture adjust as necessary
If power is not restored, prepare for power off landing.

POWER OFF LANDING

- Trim for 83 KIAS
- Locate suitable field
- Establish spiral pattern
- 1000 ft. above field at downwind position for normal landing
- When field can easily be reached extend full flaps for shortest landing
- Touchdowns should be made at lowest possible airspeed with full flaps.

When committed to landing:

Landing Gear Selector DOWN
Flaps AS DESIRED
Throttle CLOSE
Mixture IDLE CUT-OFF
Magnetos OFF
Battery Master Switch OFF
Alternator Switch OFF
Fuel Selector OFF
Seat Belts and Harness tight
Cabin doors unlatch and open

NOTE: If master switch is OFF, the landing gear cannot be retracted.

FIRE IN FLIGHT

Source of Fire CHECK

Electrical Fire (Smoke in Cabin)

Battery Master Switch OFF

Alternator Switch OFF

Vents OPEN

Cabin Heat OFF

Land as soon as practicable

Engine Fire

Fuel Selector OFF

Throttle CLOSED

Mixture IDLE CUT-OFF

Electric Fuel Pump CHECK OFF

Heater and defroster OFF

Proceed with POWER OFF LANDING procedure

LOSS OF OIL PRESSURE

- Land as soon as possible and investigate cause
- Prepare of power off landing

LOSS OF FUEL FLOW

Electric Fuel Pump ON

Fuel Selector check on tank containing usable fuel

Land as soon as practicable

ENGINE DRIVEN FUEL PUMP FAILURE

Throttle retard

Electric Fuel Pump ON

Throttle reset as required

CAUTION: if normal engine operation and fuel flow is not immediately re-established, the electric fuel pump should be turned OFF. The lack of a fuel flow indication while the electric fuel pump is on could indicate a leak in the fuel system or fuel exhaustion. If fuel system leak is verified, switch fuel selector to off.

HIGH OIL TEMPERATURE

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

ELECTRICAL FAILURES

ALT annunciator is illuminated

Ammeter.....check to verify inop alt

If Ammeter shows Zero:

ALT Switch.....OFF

Reduce electrical load 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

BAT Switch.....OFF

If alternator loads are reduced

Electrical load.....reduce to minimum

Land as soon as practical

If alternator loads are not reduced

ALT Switch.....OFF

BAT Switch.....as required

Land as soon as practical. Anticipate complete electrical failure.

PROPELLER OVERSPEED

Throttle.....	RETARD
Oil Pressure.....	CHECK
Propeller Control.....	FULL DECREASE RPM
	then SET if any CONTROL AVAILABLE
Airspeed.....	REDUCE
Throttle.....	AS REQUIRED to REMAIN BELOW 2700 RPM

EMERGENCY LANDING GEAR EXTENTION

Prior to emergency extension procedure:

Battery Master Switch.....	CHECK ON
ALTR Switch.....	CHECK ON
Circuit Breakers.....	CHECK
Day/Night dimming switch (in daytime).....	day
Gear Indicator Bulbs.....	check by depressing Annunc. test

If landing gear does NOT check down and locked:

Airspeed.....	REDUCE BELOW 90 KIAS
Landing Gear Selector Switch.....	GEAR DOWN POSITION

If landing gear still does not check down and locked:

Emergency Gear knob.....	PULL, while fish tailing airplane
	(under normal conditions will take approx.
	10 seconds to be down and locked)

If all electrical power has been lost, the landing gear must be extended using the above procedures. The gear position indicator lights will not illuminate

SPIN RECOVERY

Rudder.....	FULL OPPOSITE to DIRECTION of ROTATION
Control Wheel.....	FULL FORWARD
Ailerons.....	NEUTRAL
Throttle.....	IDLE

When rotation stops:

Rudder.....	NEUTRAL
Control Wheel.....	REGAIN LEVEL FLIGHT ATTITUDE
Throttle.....	AS REQUIRED

OPEN DOOR

Airspeed	REDUCE TO 90 KIAS
Cabin Vents	CLOSE
Storm Window	OPEN

If door latch is open	LATCH
If Side Latch Open	PULL on ARMREST while Latching

ENGINE ROUGHNESS

Mixture	ADJUST for maximum smoothness
Alternate Air	OPEN
Electric Fuel Pump	ON
Fuel Selector	SWITCH TANKS
Engine Gauges	CHECK and proceed accordingly
Magneto Switch	L then R, then BOTH

If operation is satisfactory on either one, continue on that magneto at reduced power, with full RICH mixture, to a landing at the first available airport.

If roughness persists, prepare for a precautionary landing.

LOSS OF ENGINE DRIVEN VACUUM (SUCTION) PUMP

If vacuum pressure falls below 4.8 In. Hg. (and/or VAC OFF annunciator)

Auxiliary Vacuum Switch	ON
	Verify vacuum system suction 4.8 to 5.2 In. Hg.
	Compass error may exceed 10°
Monitor electrical load. If required turn off non essential electrical equipment	
Land at the earliest opportunity to have primary system repaired	