N123AX – Piper Saratoga II HP (PA-32R-301)
Checklist
(v22 - Revision 20 July 2009)

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
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 (9 Quarts Min)
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
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
Alternator Switch	ON
Magneto Switches	ON
Electric Fuel Pomp	ON
Mixture	PRIME then IDLE CUT-OFF
Propeller Area	CLEAR
Fuel Pomp	OFF
Start	MAX 15 SEC
Mixture	RICH
Throttle	1000 rpm

HOT START

Throttle	1/2inch OPEN
Battery Master Switch	ON
Alternator Switch	ON
Magneto Switches	ON
Electric Fuel Pomp	ON
Mixture	IDLE CUT-OFF
Propeller Area	CLEAR
Fuel Pomp	OFF
Start	MAX 15 SEC
Mixture	RICH
Throttle	1000 rpm

FLOODED START

Throttle	FULL OPEN
Battery Master Switch	ON
Alternator Switch	ON
Magneto Switches	ON
Electric Fuel Pomp	OFF
Mixture	IDLE CUT-OFF
Propeller Area	CLEAR
Start	MAX 15 SEC
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
Gyro	check lining up
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
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
Mixture	RICH
Propeller	exercise – then full INCREASE
	max 500 RPM drop
Alternate Air	check & close
Electric Fuel Pomp	OFF
Fuel flow	check
Compass	READ
Throttle	IDLE - then 1000 rpm
Gyro	RESET

BEFORE TAKE-OFF

Battery Master Switch	Verify ON
Alternator Switch	Verify ON
Magneto Switches	Verify ON
Flight Instruments	check
Electric Fuel Pump	ON
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
Altimeter	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 Pomp	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

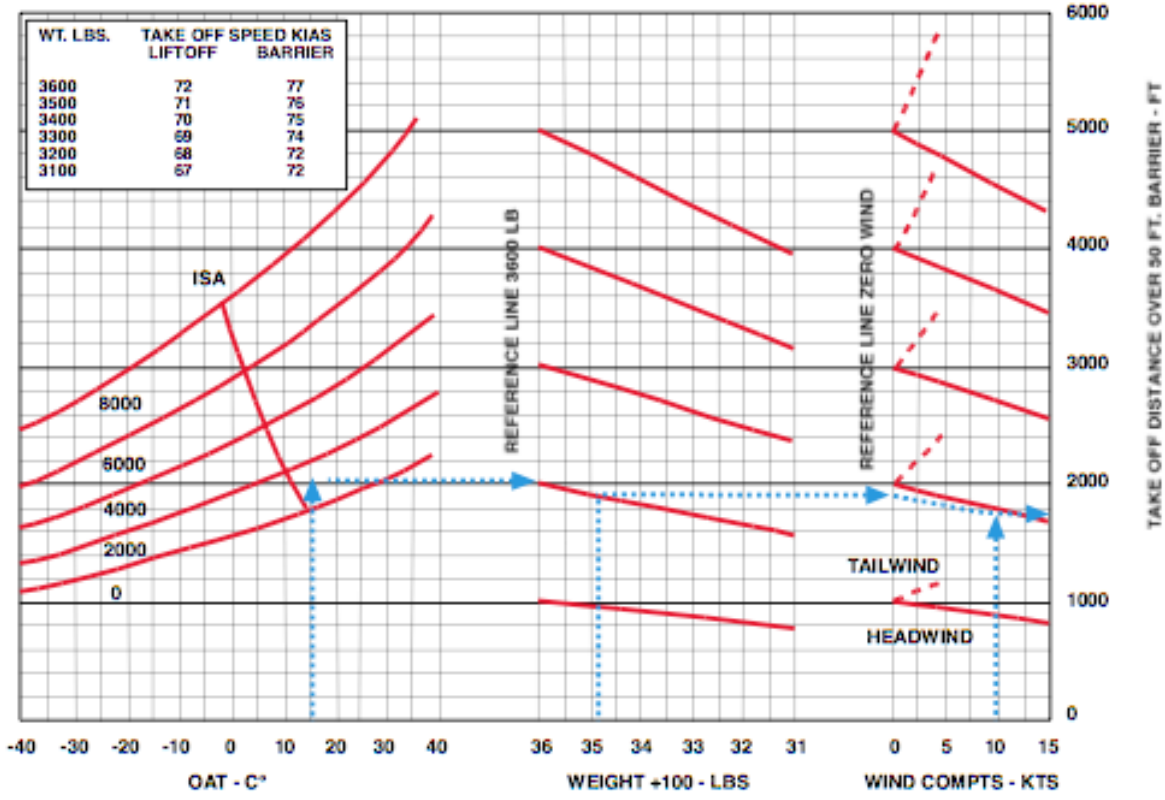
SHUT DOWN

Radio Master Switch	OFF
Electric Switches	OFF
Throttle	closed
Mixture	idle cut-off
Magneto switches	OFF
Alternator switch	OFF
Battery Master Switch	OFF

MAXIMUM EFFORT TAKEOFF PERFORMANCE

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

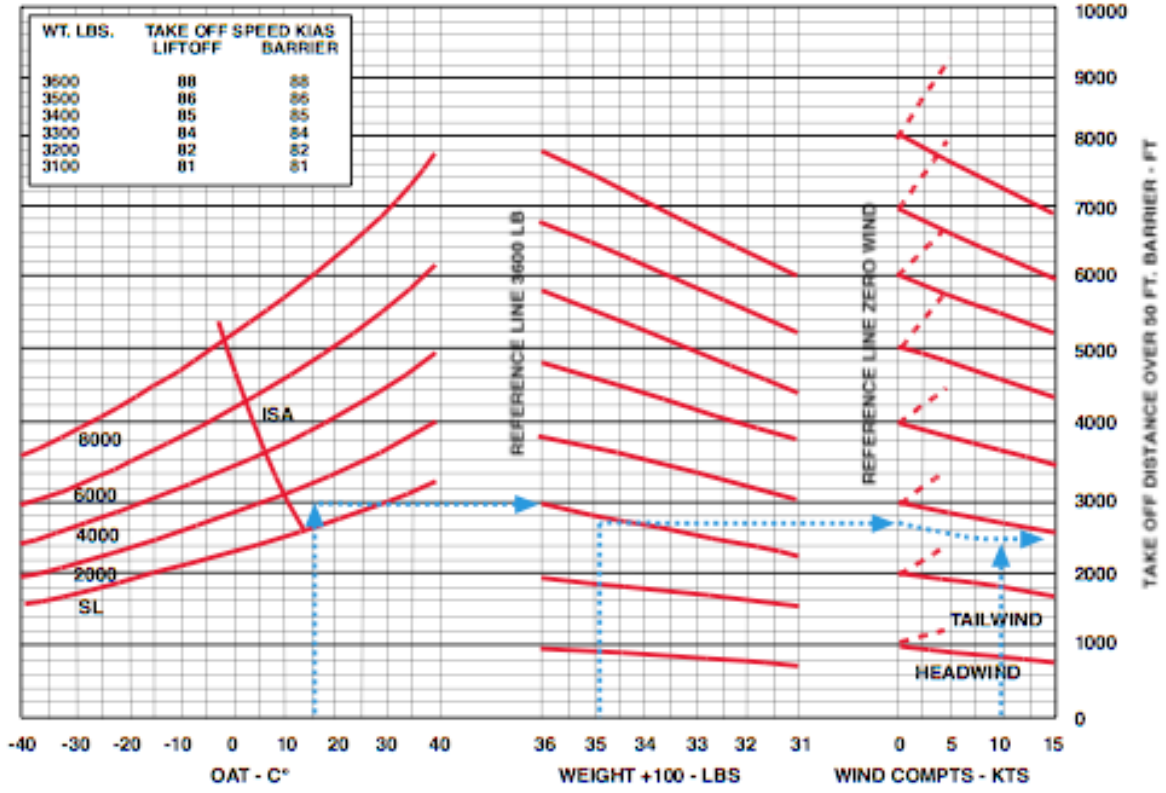
EXAMPLE:
PRESS. ALTITUDE:1200 FT
OAT: 16°C
GROSS WEIGHT: 3480 LBS
WIND: 10KNOT HEADWIND
TAKE OFF DISTANCE: 1734 FT.
LIFTOFF / BARRIER SPEED: 73 / 76 KIAS



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

NORMAL PROCEDURE TAKEOFF PERFORMANCE

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



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					
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									

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

N123AX Circuit Breaker Panel

Revision 20 July 2009

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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14
5	10	5	0.5	2	10	10	15	1	5	5	5	5	1
PITCH TRIM	AUTO PILOT	COMPASS	BOSE	AUDIO AMP/MKR	NAV-COM 1	NAV-COM 2	EXTERN. GPS POWER	SPARE	GPS/NAV	ADF	DME	TRANS-PONDER	STRIKE FINDER

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

Emergency Checklist

(v22 - Revision 20 July 2009)

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