



Procedure Checklists

Emergency Procedures

This section provides the recommended procedures for coping with various emergency or critical situations.

Pilots should familiarize themselves with the procedures given in this section and should be prepared to take the appropriate action should an emergency situation arise. The procedures are offered as a course of action for coping with the particular situation or condition described.

Most basic emergency procedures are a normal part of pilot training. This information is intended to provide a source of reference for the procedures which are applicable to this airplane. The pilot should review standard emergency procedures periodically to remain proficient in them.

AIRSPEDS FOR SAFE OPERATIONS

One engine inoperative air minimum control (VMCA).....	66 KIAS
One engine inoperative best rate of climb (VYSE).....	88 KIAS
One engine inoperative best angle of climb (VXSE).....	83 KIAS
Maneuvering (VA - 4750 lbs.).....	139 KIAS
Never exceed (VNE).....	204 KIAS

Emergency Procedures Checklist

IDENTIFYING DEAD ENGINE – VERIFYING POWER LOSS

Loss of thrust -Nose of aircraft will yaw in direction of dead engine (with coordinated controls). Rudder pedal force will be required in the direction away from the dead engine to maintain straight flight.

Engine Securing Procedure (Feathering Procedure)

Throttle.....	CLOSE
Propeller.....	FEATHER (800 RPM MIN.)
Mixture.....	IDLE CUTOFF
Cowl Flap.....	CLOSE
Fuel Selector.....	OFF
Alternator.....	OFF
Fuel Pump.....	OFF
Magneto Switches.....	OFF
Prop Sync.....	OFF
Electrical Load.....	REDUCE
Crossfeed.....	AS REQUIRED



Engine Failure During Takeoff (Speed Below 85 KIAS or Gear Down)

If engine failure occurs during takeoff and 85 KIAS has not been attained:

Throttles.....IMMEDIATELY CLOSE
 Brakes.....AS REQUIRED
 Stop straight ahead

If insufficient runway remains for a complete stop:

Throttles.....IMMEDIATELY CLOSE
 Mixtures.....IDLE CUT.OFF
 Fuel SelectorsOFF
 Magneto Switches.....OFF
 Fuel Pumps.....OFF
 Battery Master Switch.....OFF
 Brakes apply max. braking

MAINTAIN DIRECTIONAL CONTROL, MANEUVERING TO AVOID OBSTACLES IF NECESSARY.

Engine Failure During Takeoff (Speed Above 85 KIAS)

If sufficient runway remains for a complete stop:

Directional
 Control.....MAINTAIN
 Throttles.....IMMEDIATELY CLOSE

LAND IFAIRBORNE AND STOP STRAIGHT AHEAD

Brakes.....AS REQUIRED

If runway remaining is inadequate for stopping and the decision is made to continue:

WARNING: Negative climb performance may result from an engine failure occurring after liftoff and before the failed engines propeller has been feathered, the gear has been retracted, the cowl flap on the failed engine is closed and a speed of 88 KIAS has been attained.

In many combinations of aircraft weight, configuration, ambient conditions and speed, negative climb performance may result.

Throttles.....38 In. Hg. MP
 Propeller controls.....FULL FORWARD
 Mixture controls.....FULL FORWARD
 Directional Control.....MAINTAIN
 Flaps.....FULL UP
 Landing Gear (in level or climbing flight).....RETRACT
 Inoperative Engine.....CLOSE THROTTLE
 Propeller (Inoperative Engine).....FEATHER
 Climb Speed.....88 KIAS
 LAND AS SOON AS PRACTICAL AT THE NEAREST SUITABLE AIRPORT



Normal Procedures

AIRSPEEDS FOR SAFE OPERATION

The following airspeeds are those that are significant to the operation of the airplane. These airspeeds are for standard-equipped airplane, flown at gross weight under standard conditions at sea level.

Performance for a specific airplane may vary from published figures depending upon the equipment installed, the condition of the engines, airplane and equipment, atmospheric conditions and piloting technique.

Best Rate of Climb Speed (VY).....	88 KIAS
Best Angle of Climb Speed (VX).....	83 KIAS
Turbulent Air Operating Speed.....	139 KIAS
Maximum Flap Speed.....	113 KIAS
Landing Final Approach Speed (Flaps 40°) Short Field Effort.....	80 KIAS
Intentional One Engine Inoperative Speed.....	85 KIAS
Maximum Demonstrated Crosswind Velocity.....	17 KTS

PREFLIGHT CHECKLIST

COCKPIT

Throttles.....	IDLE
Mixture Controls.....	IDLE CUTOFF
Cowl Flaps.....	OPEN
Elevator and Rudder Trim.....	NEUTRAL
Fuel Selectors.....	ON
Radio Master Switch.....	OFF
All Electrical Switches.....	OFF
Battery Master Switch.....	ON
Annunciator Panel.....	ON
Fuel Gauges.....	CHECK QUANTITY
Landing Gear Lights.....	3 GREEN
Flaps.....	EXTEND
Battery Master Switch.....	OFF
POH.....	CHECK ON BOARD
Baggage.....	STOW - PROPERLY - SECURE



MISCELLANEOUS

Battery Master Switch.....ON
 Flaps.....RETRACT
 Interior Lighting (Night Flight).....ON & CHECK

CAUTION - Care should be taken when an operational check of the heated pitot tube is being performed. The unit becomes very hot. Ground operation should be limited to 3 minutes maximum to avoid damaging the heating elements.

Pitot Heat Switch.....ON
 Exterior Lighting Switches.....ON & CHECK
 All Lighting Switches.....OFF
 Battery Master Switch.....OFF
 Passengers.....BOARD

BEFORE STARTING ENGINE

Preflight Check.....COMPLETED
 Flight Planning.....COMPLETED
 Aft Cabin Doors.....CLOSE & SECURE
 Forward Cabin Door.....CLOSE & SECURE
 Seats.....ADJUSTED & LOCKED

CAUTION - With the shoulder harness fastened and adjusted, a pull test of its locking restraint feature should be performed.

Seatbelts and Harness.....FASTEN/ADJUST
 Empty Seats.....SEAT BELTS SNUGLY FASTENED
 Alternators.....ON

Warning - No braking will occur if knob is pulled before brake application.

Parking BrakeSET
 Gear Selector.....GEAR DOWN
 Throttles.....IDLE
 Propeller Controls.....FULL FORWARD
 Mixture.....IDLE CUT-OFF
 Alternate Air Controls.....OFF
 Cowl Flaps.....OPEN
 Elevator and Rudder Trim.....SET
 Fuel Selectors.....ON
 Radio Master Switch.....OFF
 Electrical Switches.....OFF
 Circuit Breakers.....CHECK IN

CAUTION - For cold weather starting, ensure magneto and master switches are off and mixture controls are in idle cut-off before turning propeller manually.



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

To prevent starter damage, limit starter cranking to 30-second periods. If the engine does not start within that time, allow a cooling period of several minutes before engaging starter again. Do not engage the starter immediately after releasing it. This practice may damage the starter mechanism.

NORMAL START – COLD ENGINE

- Throttles..... 1-INCH OPEN
- Propeller Controls..... FULL FORWARD
- Battery Master Switch..... ON
- Gear Lights..... 3 GREEN
- *Fuel Pumps..... ON
- *Magneto Switches..... ON
- *Mixture..... RICH - THEN IDLE CUTOFF

NOTE - The amount of prime depends on engine temperature. Familiarity and practice will enable the operator to estimate the amount of prime required.

- *Propellers Area..... CLEAR
- *Starter..... ENGAGE
- *Mixture (when engine fires)..... ADVANCE
- *Throttle..... ADJUST
- *Oil Pressure..... CHECK

Repeat Above Procedure (*) for Second Engine Start

- Gyro Vacuum..... CHECK

Engine Start – Cold Weather

- Throttles..... 1/2-INCH OPEN
- Propeller Controls..... FULL FORWARD
- Battery Master Switch..... ON
- Gear Lights..... 3 GREEN
- *Fuel Pumps..... ON
- *Magneto Switches..... ON
- *Mixture..... FULL RICH
- *Propellers Area..... CLEAR
- *Starter..... ENGAGE
- *Throttle..... ADJUST
- *Oil Pressure..... CHECK

Repeat Above Procedure (*) for Second Engine Start

- Gyro Vacuum..... CHECK



Before Tailing Checklist

WARMUP

External Power Source Unit.....REMOVE (IF APPLIED)
Throttles.....1000 to 1200 RPM

BEFORE TAXIING

Battery Master
Switch.....ON
Gyros.....SET
Altimeter and Clock.....CHECK & SET
Radio Master Switch.....ON
Lights.....AS REQUIRED
Heater and Defroster.....AS DESIRED
Fuel Selectors.....ON, CHECK CROSSFEED
Radios.....CHECK & SET
Autopilot.....TEST & OFF
Trim.....CHECK
Passenger Briefing.....COMPLETE
Parking Brake.....RELEASE

Taxi Checklist

TAXIING

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



Ground Check Checklist

GROUND CHECK

CAUTION - Alternate air is unfiltered. Use of alternate air during ground or flight operations, when dust or other contaminants are present, may result in engine damage from particle ingestion.

Parking Brake.....SET
 Mixtures.....FULL RICH
 Propeller Controls.....FULL FORWARD
 Throttles.....1000 RPM
 Engine Instruments.....CHECK
 Throttles.....1500 RPM
 Propeller Controls (Max. Drop 300 RPM).....FEATHER - CHECK
 Throttles.....2300 RPM
 Propeller Controls (Max. Drop 300 RPM).EXERCISE
 Alternate Air.....CHECK ON
 Throttles.....2000 RPM
 Annunciator Engine Lights.....OUT
 Gyro Vacuum Gauge.....CHECK AS REQUIRED
 Ice Protection Equipment.....CHECK AS REQUIRED
 Throttles.....IDLE - CHECK
 Throttles......800 to 1000 RPM

BEFORE TAKEOFF

Doors.....LATCHED
 Seat Backs.....ERECT
 Seats.....ADJUSTED & LOCKED IN POSITION
 Seat Belts, Harnesses.....FASTENED & ADJUSTED
 Battery Master Switch.....ON
 Alternators.....ON
 Fuel Pumps.....ON
 Flight Instruments.....CHECK
 Engine Instruments.....CHECK

WARNING - If flight into icing conditions (in visible moisture below +5°C) is anticipated or encountered during climb, cruise or descent, activate the aircraft ice protection system, including the pilot heat, as described in supplement no. 3- Ice Protection System.

Prop Heat.....AS REQUIRED
 Windshield Heat.....AS REQUIRED
 Pilot/Stall Warning Heat.....AS REQUIRED
 Prop Controls.....FULL FORWARD
 Mixture Controls.....FULL FORWARD
 Alternate Air.....OFF
 Flaps.....SET
 Elevator and Rudder TrimSET
 Fuel Selectors.....ON
 Flight controls.....CHECK
 Parking Brake.....RELEASE



Takeoff Checklist

NOTE - Takeoffs are normally made with a manifold pressure to 38 In. Hg. maximum.

NORMAL (0° FLAP) PERFORMANCE TAKEOFF

Flaps.....UP
 Elevator & Rudder Trim.....CHECK SET
 Brakes.....HOLD
 Power.....2600 RPM, 38 in. Hg. MAN PRESS
 Mixture.....FULL RICH
 Brakes.....RELEASE
 Rotate Speed.....(Max. Takeoff weight) 81 KIAS
 Obstacle Clearance Speed.....(Max. Takeoff weight) 82 KIAS
 Gear.....UP
 Climb Speed (after obstacle clearance).....88 KIAS

SHORT FIELD PERFORMANCE TAKEOFF

Flaps.....25°
 Elevator and Rudder Trim.....CHECK SET
 Brakes.....HOLD
 Power.....2600 RPM, 38 in. Hg. MAN PRESS
 Mixture.....FULL RICH
 Brakes.....RELEASE
 Rotate Speed.....(Max. Takeoff weight) 73 KIAS
 Obstacle Clearance Speed.....(Max. Takeoff weight) 76 KIAS
 Gear.....UP
 Flaps.....RETRACT WHILE ACCELERATING
 Climb Speed (after obstacle clearance).....88 KIAS

MAXIMUM PERFORMANCE CLIMB

Best Rate (Flaps Up).....88 KIAS
 Best Angle (Flaps Up).....83 KIAS
 Cowl Flaps.....FULL OPEN
 Power.....Max. Continuous Power

CRUISE CLIMB

Mixture.....FULL RICH
 Power.....2500 RPM, 32 in. Hg. MAN PRESS
 Climb Speed.....110 KIAS
 Cowl Flaps.....CLOSED or As Required



Cruise Checklist

CRUISING

Power.....Approx. 75%
Mixture Controls.....ADJUST
Cowl Flaps.....AS REQUIRED

Descent Checklist

DESCENT

Throttles.....AS REQUIRED
Mixture Controls.....CRUISE SETTING
Cowl Flaps.....CLOSED
Altimeter.....SET
Windshield Heat.....AS DESIRED

Approach and Landing Checklist

APPROACH AND LANDING

Seat Backs.....ERECT
Seat Belt Harnesses.....FASTEN/ADJUSTED
Armrests.....STOWED
Fuel Selectors.....ON
Cowl Flaps.....AS REQUIRED
Mixture Controls.....FULL RICH
Propeller Controls.....FULL FORWARD
Landing Gear (Below 128 KIAS).....DOWN
Landing Gear Lights.....3 GREEN
Autopilot.....OFF

NORMAL LANDING

Flaps (Below 113 KIAS).....FULL DOWN
Airspeed.....90 KIAS
Trim.....AS REQUIRED
Throttles.....AS REQUIRED
Touchdown.....MAIN WHEELS
Braking.....AS REQUIRED

