



## 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 Selectors .....OFF  
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 IF AIRBORNE 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 engine's 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 Brake .....SET  
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
*Magnetos.....	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
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#### Engine Start – Cold Weather

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

Repeat Above Procedure (\*) for Second Engine Start

Gyro Vacuum.....	CHECK
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## 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 Trim .....	SET
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



## SHORT FIELD PERFORMANCE LANDING

Flaps (Below 113 KIAS).....FULL DOWN  
Airspeed (At Max. Weight).....82 KIAS  
Trim.....AS REQUIRED  
Throttles.....IDLE  
Touchdown.....MAIN WHEELS  
Flaps.....RETRACT  
Control Wheel.....BACK PRESSURE  
Braking.....MAXIMUM without SKIDDING

## Go-Around Checklist

### GO-AROUND

Mixture Controls.....FULL RICH  
Propeller Controls.....FULL FORWARD  
Throttles.....FULL POWER  
Control Wheel.....BACK PRESSURE TO OBTAIN  
POSITIVE CLIMB ATTITUDE at 85 KIAS  
Flaps.....RETRACT SLOWLY  
Gear.....UP  
Cowl Flaps.....AS REQUIRED  
Trim.....AS REQUIRED

## After Landing Checklist

### AFTER LANDING

Clear of runway.  
Flaps.....RETRACT  
Cowl Flaps.....FULL OPEN

*NOTE - During extended periods of engine idle at high ambient temperatures, fuel flow to the engine can be interrupted by the formation of fuel vapor bubbles in the fuel line.*

Strobe Lights.....OFF  
Landing and Taxi Lights.....AS REQUIRED

## Stopping Engine Checklist

### STOPPING ENGINE

Radio Master Switch.....OFF  
Electrical Equipment.....OFF  
Throttles.....IDLE  
Mixture Controls.....IDLE CUTOFF  
Magnetos Switches.....OFF  
Alternator Switches.....OFF  
Panel Lights (At Night).....OFF  
Battery Master.....OFF