Emergency and Abnormal Procedures

Cirrus SR-20 Transition Training

7/25/05

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Methodology

- **Maintain Aircraft Control**
- **Analyze the Situation**
- **Take Appropriate Action**
- **Land as soon as Condition Permits**

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Definitions

Abnormal Condition – System failure or malfunction that while not immediately threatening may effect safety of flight if not addressed

Emergency Condition – System failure or malfunction that is an immediate threat to safety of flight.

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Use of Checklists

Abnormal Procedures

- **Do-Lists – Refer to checklist and complete**

Emergency Procedures

- **Time Critical**
- **Memory Items – Execute procedure from memory**
- **Refer to checklist if time permits**

NOTE

The Pilot in Command must determine which procedures they feel should be handled as emergencies vs. abnormal conditions.

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Emergency Airspeeds

- **Maneuvering Speed**
  - **(3000 lbs) 131 KIAS**
  - **(2600 lbs) 122 KIAS**
  - **(2200 lbs) 111 KIAS**

- **Best Glide**
  - **3000 lbs 96 KIAS**
  - **2500 lbs 87 KIAS**

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Emergency Airspeeds

Emergency Landing (Engine Out)

- **Flaps Up** — **86 KIAS**
- **Flaps 50%** — **81 KIAS**
- **Flaps 100%** — **75 KIAS**

WARNING

Use of flaps in an engine out situation reduces the changes of a tail strike

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Emergency Procedures and System Malfunctions

Ground Emergencies

In-Flight Emergencies

Landing Emergencies

System Malfunctions

Ground Emergencies

Engine Fire During Start

Brake Failure During Taxi

Aborted Takeoff

Emergency Engine Shutdown on Ground

Emergency Ground Egress

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Engine Fire During Start

A fire during engine start may be caused by fuel igniting in the fuel induction system. If this occurs, attempt to draw the fire back into the engine by continuing to crank the engine.

1. Mixture.....CUTOFF
2. Fuel Selector .....OFF
3. Power Lever .....FORWARD
4. Starter……CRANK
5. If flames persist, perform:
***Emergency Engine Shutdown on Ground* checklists.**
***Emergency Ground Egress* checklists.**

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Brake Failure During Taxi

Ground steering is accomplished by differential braking. However, increasing power may allow some rudder control due to increased groundspeed and airflow over the rudder.

1. Engine Power .....AS REQUIRED
To stop airplane - REDUCE
If necessary for steering – INCREASE

2. Directional Control.....MAINTAIN WITH RUDDER
3. Brake Pedal(s).....PUMP

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Aborted Takeoff

Use as much of the remaining runway as needed to safely bring the airplane to a stop or to slow the airplane sufficiently to turn off the runway.

1. Power Lever..... IDLE

2. Brakes.....AS REQUIRED

CAUTION

Bring the airplane to a stop by smooth, even application of the brakes to avoid loss of control and/or a blown tire.

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Emergency Engine Shutdown on Ground

1. **Power Lever.....IDLE**
2. **Mixture.....CUTOFF**
3. **Fuel Selector.....OFF**
4. **Ignition Switch.....OFF**
5. **Bat-Alt Master Switches.....OFF**

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Emergency Ground Egress

WARNING

While exiting the airplane, make sure evacuation path is clear of other aircraft, spinning propellers, and other hazards.

1. Engine ..... SHUTDOWN
2. Seat belts .....RELEASE

Note: **If the engine is left running, set the Parking Brake prior to evacuating the airplane.**

3. Airplane .....EXIT

NOTE

If the doors cannot be opened, break out the windows with egress hammer, located in the console between the front seats, and crawl through the opening.

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In Flight Emergencies

- Engine Failure on Takeoff (low altitude)
- Maximum Glide
- Engine Failure in Flight
- Engine Air Start
- Engine Partial Power loss
- Low Oil pressure
- Propeller Governor Failure
- Smoke and Fume Elimination
- Engine Fire in Flight
- Wing Fire in Flight
- Cabin Fire in Flight
- Inadvertent Icing Encounter
- Emergency Descent
- Inadvertent IMC Encounter
- Inadvertent Spiral Dive During IMC Flight
- Door Open In flight
- Inadvertent Spin Entry
- CAPS Deployment

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Engine Failure on Takeoff (Low Altitude)

If the engine fails immediately after becoming airborne, abort on the runway if possible. If altitude precludes a runway stop but is not sufficient to restart the engine, lower the nose to maintain airspeed and establish a glide attitude. In most cases, the landing should be made straight ahead, turning only to avoid obstructions. After establishing a glide for landing, perform as many of the checklist items as time permits.

WARNING

If a turn back to the runway is elected, be very careful not to stall the airplane.

1. Best Glide or Landing Speed (as appropriate)..... ESTABLISH
2. Mixture.....CUTOFF
3. Fuel Selector .....OFF
4. Ignition Switch .....OFF
5. Flaps.....AS REQUIRED

If time permits:

6. Power Lever ..... IDLE
7. Fuel Pump..... BOOST OFF
8. Bat-Alt Master Switches .....OFF
9. Seat Belts .....ENSURE SECURED

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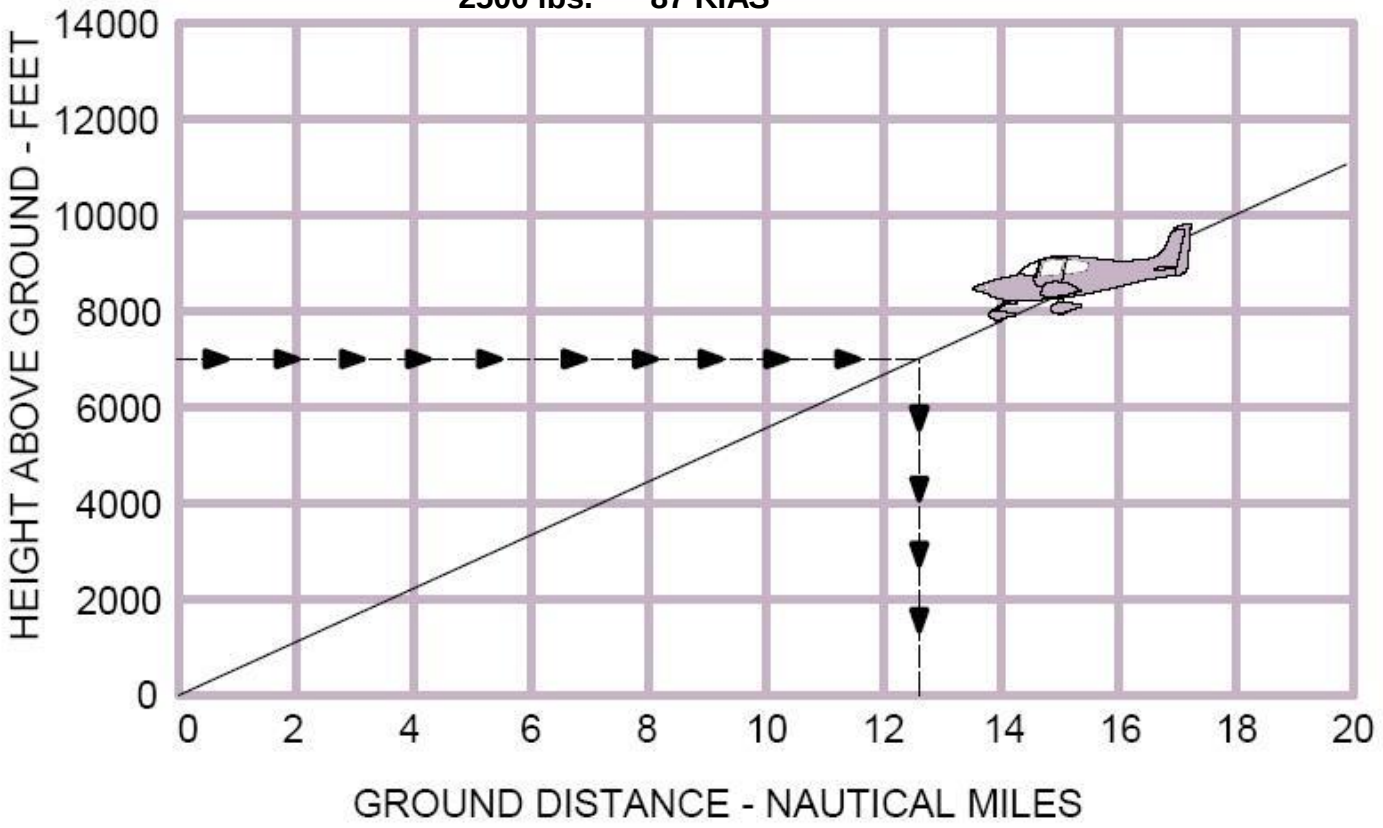
Maximum Glide

Maximum Glide Ratio ~ 10.9 : 1

Blest Glide Speeds

3000 lbs. 96 KIAS

2500 lbs. 87 KIAS



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Engine Failure In Flight

If the engine fails at altitude, pitch as necessary to establish best glide speed. While gliding toward a suitable landing area, attempt to identify the cause of the failure and correct it.

WARNING

If engine failure is accompanied by fuel fumes in the cockpit, or if internal engine damage is suspected, move Mixture Control to CUTOFF and do not attempt a restart.

1. Best Glide Speed ..... …..ESTABLISH

NOTE

With a seized or failed engine, the distance that the airplane will glide will be more than the distance it would glide with the engine at idle, such as during training. If the propeller is windmilling, some additional glide range may be achieved by moving the Power Lever to idle and increasing airspeed by 5 to 10 knots.

2. Mixture.....FULL RICH
3. Fuel Selector ..... ……..SWITCH TANKS
4. Fuel Pump.....BOOST
5. Ignition Switch .....CHECK, BOTH
6. If engine does not start, proceed to *Engine Airstart Checklist*
or *Forced Landing checklist*, as required.

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Engine Airstart

The following procedures address the most common causes for engine loss. Switching tanks and turning the boost pump on will indicate if fuel contamination was the cause of the failure. Leaning the mixture and then slowly enriching mixture will indicate a faulty lean.

Note

Engine airstarts may be performed during 1g flight anywhere within the normal operating envelope of the airplane.

1. **Bat Master Switches ..... ON**
2. **Power Lever .....½" OPEN**
3. **Mixture .....CUTOFF**
4. **Fuel Selector .....SWITCH TANKS**
5. **Ignition Switch.....BOTH**
6. **Fuel Pump.....BOOST**
7. **Alt Master Switches ..... OFF**
8. **Starter (Propeller not Windmilling) ..... ENGAGE**
9. **Mixture .....Slowly INCREASE (Full Rich)**
10. **Power Lever .....Slowly INCREASE**
11. **Alt Master Switches ..... ON**
12. **If engine will not start, perform *Forced Landing checklist.***

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Engine Partial Power Loss

Indications of a partial power loss include fluctuating RPM, reduced or fluctuating manifold pressure, low oil pressure, high oil temperature, and a rough-sounding or rough-running engine. Mild engine roughness in flight may be caused by one or more spark plugs becoming fouled. A sudden engine roughness or misfiring is usually evidence of a magneto malfunction.

NOTE

Low oil pressure may be indicative of an imminent engine failure – Refer to Low Oil Pressure procedure in this section for special procedures with low oil pressure. A damaged (out-of-balance) propeller may cause extremely rough operation. If an out-of-balance propeller is suspected, immediately shut down engine and perform *Forced Landing checklist*.

If a partial engine failure permits level flight, land at a suitable airfield as soon as conditions permit. If conditions do not permit safe level flight, use partial power as necessary to set up a forced landing pattern over a suitable landing field. Always, be prepared for a complete engine failure. If the power loss is due to a fuel leak in the injector system, fuel sprayed over the engine may be cooled by the slipstream Airflow which may prevent a fire at altitude. However, as the Power Lever is reduced during descent and approach to landing the cooling air may not be sufficient to prevent an engine fire.

Engine Partial Power Loss

WARNING

If there is a strong smell of fuel in the cockpit, divert to the nearest suitable landing field. Fly a forced landing pattern and shut down the engine fuel supply once a safe landing is assured.

The following procedure provides guidance to isolate and correct some of the conditions contributing to a rough running engine or a partial power loss.

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Engine Partial Power Loss

1. Fuel Pump.....BOOST

Selecting BOOST on may clear the problem if a fuel vapor in the injection lines is the problem or if the engine-driven fuel pump has partially failed. The electric fuel pump will not provide sufficient fuel pressure to supply the engine if the engine-driven fuel pump completely fails.

2. Fuel Selector ..... CHECK fuel available to engine

Selecting the opposite fuel tank may resolve the problem if fuel starvation or contamination in one tank was the problem.

3. Mixture .....CHECK appropriate for flight conditions

4. Alternate Induction Air..... ON

A gradual loss of manifold pressure and eventual engine roughness may result from the formation of intake ice. Opening the alternate engine air will provide air for engine operation if the normal source is blocked or the air filter is iced over.

5. Ignition Switch.....BOTH, L, then R

Cycling the ignition switch from BOTH to L and then to R may help identify the problem. An obvious power loss in single ignition operation indicates magneto or spark plug trouble. Lean the mixture to the recommended cruise setting. If engine does not smooth out in several minutes, try a richer mixture setting. Return ignition switch to the BOTH position unless extreme roughness dictates the use of a single magneto.

6. Land as soon as practical.

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OIL

Low Oil Pressure

If low oil pressure is accompanied by a rise in oil temperature, the engine has probably lost a significant amount of its oil and engine failure may be imminent. Immediately reduce engine power to idle and select a suitable forced landing field.

Warning

Prolonged use of high power settings after loss of oil pressure will lead to engine mechanical damage and total engine failure, which could be catastrophic.

Note

Full power should only be used following a loss of oil pressure when operating close to the ground and only for the time necessary to climb to an altitude permitting a safe landing or analysis of the low oil pressure indication to confirm oil pressure has actually been lost. If low oil pressure is accompanied by normal oil temperature, it is possible that the oil pressure sensor, gage, or relief valve is malfunctioning. In any case, land as soon as practical and determine cause.

1. Power Lever ..... MINIMUM REQUIRED
2. Land as soon as possible.

Propeller Governor Failure

If the RPM does not respond to power lever movement or overspeeds, the most likely cause is a faulty governor or an oil system malfunction. If moving the power lever is difficult or rough, suspect a power lever linkage failure and perform the *Power Lever Linkage Failure* checklist.

Propeller RPM will not increase:

1. Oil Pressure..... CHECK

2. Land as soon as possible.

Propeller overspeeds or will not decrease:

1. Power Lever ..... ADJUST (to keep RPM in limits)

2. Airspeed ..... REDUCE to 80 KIAS

3. Land as soon as possible.

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Smoke and Fume Elimination

If smoke and/or fumes are detected in the cabin, check the engine instruments for any sign of malfunction. If a fuel leak has occurred, actuation of electrical components may cause a fire. If there is a strong smell of fuel in the cockpit, divert to the nearest suitable landing field. Perform a *Forced Landing* pattern and shut down the fuel supply to the engine once a safe landing is assured.

1. Heater ..... OFF
2. Air Vents..... OPEN, FULL COLD
3. Prepare to land as soon as possible.
If airflow is not sufficient to clear smoke or fumes from cabin:
4. Cabin Doors .....UNLATCH

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Engine Fire In Flight

If an engine fire occurs during flight, do not attempt to restart the engine.

1. Mixture .....CUTOFF
2. Power Lever ..... IDLE
3. Fuel Selector ..... OFF
4. Ignition Switch..... .OFF
5. Perform *Forced Landing checklist.*

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Wing Fire In Flight

1. Pitot Heat Switch..... ..OFF
2. Navigation Light Switch..... OFF
3. Strobe Light Switch ..... OFF
4. If possible, side slip to keep flames away from fuel tank and cabin.

Note

Putting the airplane into a dive may blow out the fire.
Do not exceed VNE during the dive.

5. Land as soon as possible.

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Cabin Fire in Flight

If the cause of the fire is readily apparent and accessible, use the fire extinguisher to extinguish flames and land as soon as possible. Opening the vents may feed the fire, but to avoid incapacitating the crew from smoke inhalation, it may be necessary to rid cabin of smoke or fire extinguishant. If the cause of fire is not readily apparent, is electrical, or is not readily accessible, proceed as follows:

WARNING

Serials 1337 and subsequent: If the airplane is in IMC conditions, turn ALT1, ALT2 and BAT1 switches OFF. Power from battery 2 will keep the PFD operational for approximately 30 minutes.

1. Bat-Alt Master Switches .....OFF, As Required
With Bat-Alt Master Switches OFF, engine will continue to run.
However, no electrical power will be available.

2. Heater.....OFF
3. Air Vents.....CLOSED
4. Fire Extinguisher .....ACTIVATE

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WARNING

Halon gas used in the fire extinguisher can be toxic, especially in a closed area. After extinguishing fire, ventilate cabin by opening air vents and unlatching door (if required).

5. When fire extinguished, Air Vents ..... OPEN, FULL COLD
6. Avionics Power Switch .....OFF
7. All other switches .....OFF
8. Land as soon as possible.

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Cabin Fire in Flight

If setting master switches off eliminated source of fire or fumes and airplane is in night, weather, or IFR conditions:

WARNING

If airplane is in Day VFR conditions and turning off the master switches eliminated the fire situation, leave the master switches OFF. Do not attempt to isolate the source of the fire by checking each individual electrical component.

9. Bat-Alt Master Switches .....ON

10. Avionics Power Switch .....ON

11. Activate required systems one at a time.

Pause several seconds between activating each system to isolate malfunctioning system. Continue flight to earliest possible landing with malfunctioning system off.

Activate only the minimum amount of equipment necessary to complete a safe landing.

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Inadvertent Icing Encounter

<u>Flight into Known Icing Conditions are Prohibited</u>.
However, If icing is inadvertently encountered:

1. **Pitot Heat ..... ON**
2. **Exit icing conditions. Turn back or Change altitude.**
3. **Cabin Heat .....MAXIMUM**
4. **Windshield Defrost .....FULL OPEN**
5. **Alternate Induction Air.....ON**

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Emergency Descent

1. Power Lever .....IDLE

2. Mixture .....AS REQUIRED

Caution

If significant turbulence is expected do not descend at indicated airspeeds greater than Vno (165 KIAS)

3. Airspeed .....Vne (200 KIAS)

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Inadvertent IMC Encounter

Upon entering IMC, a pilot who is not completely proficient in instrument flying should rely upon the autopilot to execute a 180° turn to exit conditions. Immediate action should be made to turn back as follows:

1. **Airplane Control……. Establish Straight and Level Flight**
2. **Autopilot…….... Engage to hold Heading and Altitude**
3. **Heading……. Reset to initiate 180° turn**

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Inadvertent Spiral Dive During IMC Flight

1. **Power Lever .....IDLE**
2. **Stop the Spiral Dive by using coordinated aileron and rudder control while referring to the attitude indicator and turn coordinator to level the wings.**
3. **Cautiously apply elevator back pressure to bring airplane to level flight attitude.**
4. **Trim for Level Flight**
5. **Set power as required**
6. **Use Autopilot if functional otherwise keep hands off control yoke, use rudder to hold constant heading.**
7. **Exit IMC conditions as soon as possible**

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Door Open In Flight

The doors on the SR20 will remain 1-3 inches open in flight if not latched. If this is discovered on takeoff roll, abort takeoff if practical.

If already airborne:

1. Airspeed .....REDUCE TO 80 – 90 KIAS

2. Land as soon as practical.

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Inadvertent Spin Entry

The SR20 is not approved for spins, and has not been tested or certified for spin recovery characteristics. The ONLY Approved and Demonstrated Method of Spin Recovery is activation of the Cirrus Airframe Parachute System (See CAPS Deployment, of this section). Because of this, if the aircraft "departs controlled flight," the CAPS must be deployed.

While the stall characteristics of the SR20 make accidental entry into a spin extremely unlikely, it is possible. Spin entry can be avoided by using good airmanship: coordinated use of controls in turns, Proper airspeed control following the recommendations of the POH, and never abusing the flight controls with accelerated inputs when close to the stall (see Stalls, Section 4 of POH).

If, at the stall, the controls are misapplied and abused accelerated inputs are made to the elevator, rudder and/or ailerons, an abrupt wing drop may be felt and a spiral or spin may be entered. In some cases it may be difficult to determine if the aircraft has entered a spiral or the beginning of a spin.

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Inadvertent Spin Entry

WARNING

In all cases, if the aircraft enters an unusual attitude from which recovery is not expected before ground impact, IMMEDIATE deployment of the CAPS is required.

The minimum demonstrated altitude loss for a CAPS deployment from a one-turn spin is 920 feet. Activation at higher altitudes provides enhanced safety margins for parachute recoveries. Do not waste time and altitude trying to recover from a spiral/spin before activating CAPS.

Inadvertent Spin Entry

1. CAPS ……..Activate

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CAPS Deployment

The Cirrus Airframe Parachute System (CAPS) should be activated in the event of a Life-Threatening Emergency where CAPS deployments determined to be safer than continued flight and landing.

CAPS deployment is expected to result in loss of the airframe and, depending upon adverse external factors such as high deployment speed, low altitude, rough terrain or high wind conditions, may result in severe injury or death to the occupants. Because of this, CAPS should only be activated when any other means of handling the emergency would not protect the occupants from serious injury.

Caution

Expected impact in a fully stabilized deployment is equivalent to a drop from approximately 10 feet.

Note

Several possible scenarios in which the activation of the CAPS would be appropriate are discussed in *Section 10 – Safety Information*, of the POH.

These include:

- **Mid-air collision**
- **Structural failure**
- **Loss of control**
- **Landing in inhospitable terrain**
- **Pilot incapacitation**

All pilots should carefully review the information on CAPS activation and deployment in Section 10 of POH before operating the airplane.

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CAPS Deployment

Once the decision is made to deploy CAPS, the following actions should be taken:

1. Airspeed ..... MINIMUM POSSIBLE

The maximum demonstrated deployment speed is 135 KIAS. Reducing airspeed allows minimum parachute loads and prevents structural overload and possible parachute failure.

2. Mixture (If time and altitude permit).....CUTOFF

Generally, a distressed airplane will be safer for its occupants if the engine is not running.

3. Activation Handle Cover.....REMOVE

The cover has a handle located at the forward edge. Pull cover down to expose activation T-handle.

4. Activation Handle .....PULL STRAIGHT DOWN

Pull the activation T-handle from its holder. Clasp both hands around the handle and pull straight down in a strong, steady, and continuous motion. Maintain maximum pull force until the rocket activates. Pull forces up to, or exceeding, 45 pounds may be required. Bending of the handle-housing mount is to be expected.

WARNING

Jerking or rapidly pulling the activation T-handle will greatly increase the pull forces required to activate the rocket. Use a firm and steady pulling motion – a "chin-up" type pull enhances successful activation.

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CAPS Deployment (cont)

After Deployment:

5. Mixture .....CHECK, CUTOFF

6. Fuel Selector .....OFF

Shutting off fuel supply to engine will reduce the chances of fire resulting from impact at touchdown.

7. Bat-Alt Master Switches ..... .OFF

8. Ignition Switch .....OFF

9. Fuel (Boost) Pump.....OFF

10. ELT .....ON

11. Seat Belts and Harnesses.....TIGHTEN

All occupants must have seat belts and shoulder harness securely fastened.

12. Loose Items ..... SECURE

If time permits, all loose items should be secured to prevent injury from flying objects in the cabin at touchdown.

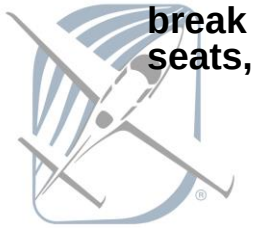
13. Assume emergency landing body position.

The emergency landing body position is assumed by placing both hands on the lap, clasping one wrist with the opposite hand, and holding the upper torso erect and against the seat backs.

See Section 10 of the POH for more information on landing body position.

14. After the airplane comes to a complete stop, evacuate quickly and move upwind.

As occupants exit the airplane, the reduced weight may allow winds to drag the airplane further. As a result of landing impact, the doors may jam. If the doors cannot be opened, break out the windows with the egress hammer, located in the console between the front seats, and crawl through the opening.



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CAPS Deployment (cont)

For more system information on CAPS click on the link below.

CAPS Presentation

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Landings Emergencies

Forced Landing (Engine Out)

Landing without Elevator Control

Landing with Failed Brakes

Landing with Flat Tire

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Forced Landing (Engine Out)

If all attempts to restart the engine fail and a forced landing is imminent, select a suitable field and prepare for the landing.

A suitable field should be chosen as early as possible so that maximum time will be available to plan and execute the forced landing. For forced landings on unprepared surfaces, use full flaps if possible. Land on the main gear and hold the nose wheel off the ground as long as possible.

If engine power is available, before attempting an "off airport" landing, fly over the landing area at a low but safe altitude to inspect the terrain for obstructions and surface conditions.

Note

Use of full (100%) flaps will reduce glide distance. Full flaps should not be selected until landing is assured.
If ditching, avoid a landing flare because of difficulty in judging height over water.

1. **Best Glide Speed ..... ESTABLISH**
2. **Radio.....Transmit (121.5 MHz) MAYDAY, giving location and intentions**
3. **Transponder .....SQUAWK 7700**
4. **If off airport, ELT .....ACTIVATE**
5. **Power Lever .....IDLE**
6. **Mixture .....CUTOFF**
7. **Fuel Selector .....OFF**
8. **Ignition Switch .....OFF**
9. **Fuel Pump .....OFF**
10. **Master Switches .....OFF**
11. **Seat Belt(s) .....SECURED**

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Landing without Elevator Control

The pitch trim spring cartridge is attached directly to the elevator and provides a backup should you lose the primary elevator control system. Set elevator trim for an 80 KIAS approach to landing. Thereafter, do not change the trim setting until in the landing flare. During the flare, the nose-down moment resulting from a power reduction may cause the airplane to hit on the nose wheel. To avoid this, move the trim button to the full nose-up position during the flare and adjust the power for a smooth landing. At touchdown, bring the power lever to idle.

1. Flaps..... SET 50%
2. Trim ..... SET 80 KIAS
3. Power .....AS REQUIRED FOR GLIDE ANGLE

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Landing with Failed Brakes

One brake inoperative

1. Land on the side of runway corresponding to the inoperative brake.
2. Maintain directional control using rudder and working brake.

Both brakes inoperative

1. Divert to the longest, widest runway with the most direct headwind.
2. Land on downwind side of the runway.
3. Use the rudder for obstacle avoidance.

Note

Rudder effectiveness will decrease with decreasing airspeed.

4. Perform ***Emergency Engine Shutdown on Ground*** **checklist**.

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Landing With Flat Tire

If a flat tire or tread separation occurs during takeoff and you cannot abort, land as soon as conditions permit.

Main Gear

1. **Land on the side of the runway corresponding to the good tire.**
2. **Maintain directional control with the brakes and rudder.**
3. **Do not taxi. Stop the airplane and perform a normal engine shutdown.**

Nose Gear

1. **Land in the center of the runway.**
2. **Hold the nose wheel off the ground as long as possible.**
3. **Do not taxi. Stop the airplane and perform a normal engine shutdown.**

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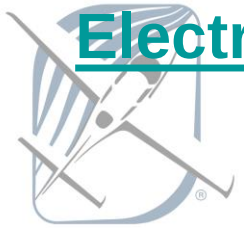
System Malfunctions



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Alternator Failure

Steady illumination of either ALT caution light in the annunciator panel indicates a failure of the corresponding alternator. The most likely the cause of the alternator failure is a wiring fault, a malfunctioning alternator, or a malfunctioning control unit. Usually, electrical power malfunctions are accompanied by an excessive rate of charge or a discharge rate shown on the ammeter.

CAUTION

Alternators in this airplane are self-exciting. These alternators require battery power for alternator starting; however, once started, the alternators will provide self-generated field power to continue operation in case of a battery failure. To assure alternator restart power is available if the alternators fail, the batteries should not be turned off during flight.

Alternator 1 Failure

ALT 1 Light Steady

Steady illumination indicates a failure of ALT 1. Attempt to bring alternator back on line. If alternator cannot be brought back, reduce loads and use Main Bus or Non-Essential loads only as necessary for flight conditions.

1. ALT 1 Master Switch .....OFF

2. Alternator 1 Circuit Breaker .....CHECK and RESET

3. ALT 1 Master Switch .....ON

If alternator does not reset:

4. Switch off unnecessary equipment on Main Bus 1, Main Bus 2, and the Non-Essential Buses to reduce loads. Monitor voltage.

6. Land as soon as practical.

Alternator 1 Failure

If it is necessary to reduce electrical loads due to an alternator malfunction, switch off electrical components and/or systems that are not essential for the current flight conditions rather than pulling circuit breakers. Load shedding in this manner will prevent accidental circuit breaker disconnection and loss of power to flight-critical systems.

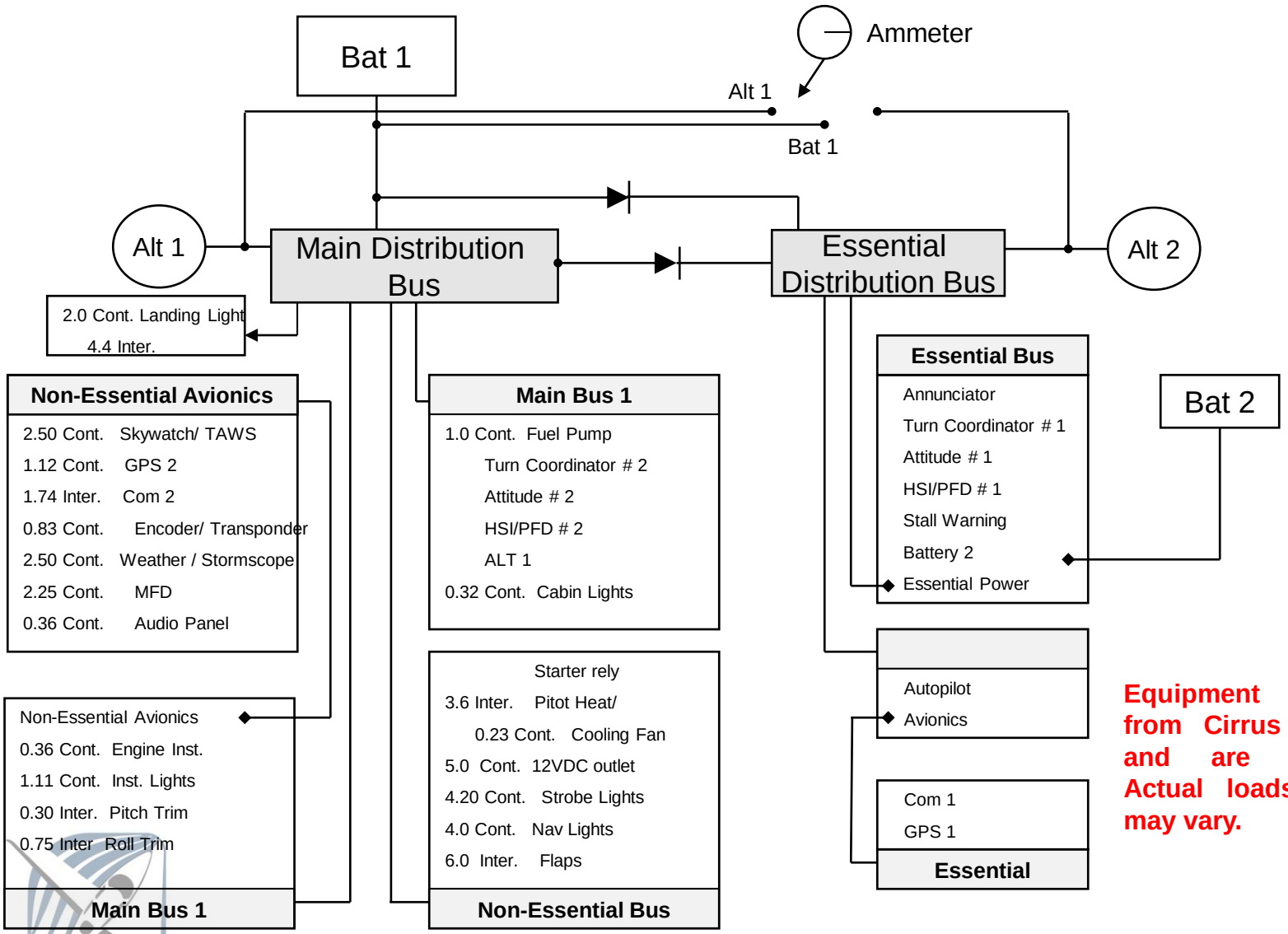
See Electrical Power Distribution on the next slide for details on electrical busses and what components/systems they power.

Individual loads on each circuit breaker panel bus are shown in the same order as they are on the panel.

Note that items on the circuit breaker panel Essential buses are powered from ALT 1, ALT 2, BAT 1, and BAT 2.

The circuit breaker panel Main buses and Non-Essential buses are powered from ALT 1 and BAT 1 only.

Alternator 1 Failure



Equipment Loads are from Cirrus MX Manual and are approximate. Actual loads in aircraft may vary.

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Alternator 1 Overcurrent

ALT 1 Light Flashing

ALT 1

The most likely cause is a severely discharged battery along with heavy equipment loads. In this event, reduce loads on Main and Non-Essential buses and monitor amperage until charging rate is within normal limits. Then loads can be added as required.

1. **Ammeter Switch.....BATT**
2. **If charging rate is greater than 30 amps, reduce load on Main Bus 1, Main Bus 2, and Non-Essential buses.**
3. **Monitor ammeter until battery charge rate is less than 15 amps.**
4. **When battery charge rate is within limits, add loads as necessary for flight conditions.**

A flashing ALT 1 light indicates an excessive charging rate. This could occur with a very low BAT 1 and heavy equipment loads.

Since the loads on ALT 2 are much lower, it is unlikely that a flashing ALT 2 light could occur, even with a very low BAT 2.

Alternator 2 Failure

ALT 2 Light Steady

ALT 2

Except during low RPM operations, steady illumination indicates a failure of ALT 2. If alternator cannot be brought back, Essential bus loads will be powered from ALT 1, BAT 1, and BAT 2.

Note

ALT 2 light will illuminate steady and ALT 2 will not come on line until 1700 - 2200 RPM.

1. ALT 2 Master Switch..... …OFF
2. Alternator 2 Circuit Breaker..... .CHECK and RESET
3. ALT 2 Master Switch..... …ON

If alternator does not reset:

4. Reduce loads on Main Bus 1, Main Bus 2, and Non-Essential buses.
5. Land as soon as practical.

LOW VOLTS Warning Light Illuminated

LOW VOLTS

Illumination of the LOW VOLTS light indicates that the voltage measured at the Essential Bus is 24.5 volts or less. Typically, this indicates that the airplane is operating on battery power only and both alternators have failed or are off.

If both alternators have failed:

1. Land as soon as practical.

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PFD – Loss of Air Data

1. **Backup Instruments (altitude, airspeed) …….. Monitor**

   If failure occurs while flying in IMC:

2. **Exit IMC**

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PFD – Loss of Attitude Data (AHRS)

Warning

Aircraft equipped with Software Version 530-00123-000 Rev 00 or higher; Any power interruption to the PFD will result in loss of attitude information until the PFD can be restarted on the ground.

Aircraft equipped with Software Version 530-00159-000 Rev 00 or higher; When subjected to a power loss of less than 20 seconds, the PFD is capable of performing a “Warm Start”. In this event, a “PLEASE STANDBY” message will be displayed for approximately 2 seconds followed by a “ ATTEMTING QUICK RESTART” message. In the event of a power loss greater than 20 seconds, a “Warm Start” is unlikely, and the power interruption will result in loss of attitude information until the PFD can be restarted on the ground.

1. **Backup Instruments (attitude, airspeed, altimeter) …….Monitor**

If failure occurs while flying in IMC:

2. **Autopilot GPSS Mode ……..….Activate**
3. **Autopilot Altitude ……Acitvate**

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Communications Failure

Communications failure can occur for a variety of reasons. If, after following the checklist procedure, communication is not restored, proceed with FAR/AIM lost communications procedures.

NOTE

In the event of an audio panel power failure the audio panel, connects Com 1 to the pilot's headset and speakers. Setting the audio panel 'Off' will also connect com 1 to the pilot's headsets and speakers.

1. Switches, Controls.....CHECK
2. Frequency .....CHANGE
3. Circuit Breakers.....CHECK
4. Headset .....CHANGE
5. Hand Held Microphone.....CONNECT

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Power Lever Linkage Failure

If the Power Lever linkage fails in flight, the engine will not respond to power lever control movements. Use power available and flaps as required to safely land the airplane.

If the power lever is stuck at or near the full power position, proceed to a suitable airfield. Fly a forced landing pattern. With landing assured, shut down engine by moving Mixture Control full aft to CUTOFF. If power is needed again, return mixture control to full RICH and regain safe pattern parameters or go-around. If airspeed cannot be controlled shut engine down and perform the *Forced Landing* checklist. After landing, bring the airplane to a stop and complete the *Emergency Engine Shutdown on Ground* checklist.

If the power lever is stuck at or near the idle position and straight and level flight cannot be maintained, establish glide to a suitable landing surface. Fly a forced landing pattern.

1. **Power Lever Movement .....VERIFY**
2. **Power ..... SET if able**
3. **Flaps ..... SET if needed**
4. **Mixture .....AS REQUIRED (full rich to cut-off)**
5. **Land as soon as possible.**

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Pitot Static Malfunction

Static Source Blocked

If erroneous readings of the static source instruments (airspeed, altimeter and vertical speed) are suspected, the alternate static source valve, on side of console near pilot's right ankle, should be opened to supply static pressure from the cabin to these instruments.

NOTE

If selecting the alternate static source does not work, in an emergency, cabin pressure can be supplied to the static pressure instruments by breaking the glass in the face of the vertical speed indicator, if equipped. When static pressure is supplied through the vertical speed indicator, the vertical speed UPDOWN indications will be reversed (i.e., the needle will indicate UP for descent and DOWN for climb).

Pitot Static Malfunction

With the alternate static source on, adjust indicated airspeed slightly during climb or approach according to the Airspeed Calibration (Alternate Static Source) table in Section 5 as appropriate for vent/ heater configuration.

1. Pitot Heat.....ON
2. Alternate Static Source.....OPEN

Pitot Tube Blocked

If only the airspeed indicator is providing erroneous information, and in icing conditions, the most probable cause is pitot ice. If setting Pitot Heat ON does not correct the problem, descend to warmer air. If an approach must be made with a blocked Pitot tube, use known Pitch and power settings and the GPS groundspeed indicator, taking surface winds into account.

1. Pitot Heat.....ON

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Electric Trim/Autopilot Failure

Any failure or malfunction of the electric trim or autopilot can be overridden by use of the controls. If runaway trim is the problem, de-energize the circuit by pulling the circuit breaker (PITCH TRIM, ROLL TRIM, or AUTOPILOT) and land as soon as conditions permit.

1. Airplane Control .....……MAINTAIN MANUALLY
2. Autopilot (if engaged).....……..DISENGAGE

If problem is not corrected:

3. Circuit Breakers.....PULL AS REQUIRED
PITCH TRIM
ROLL TRIM
AUTOPILOT

4. Power Lever .....……ADJUST TO CONTROL PITCH
5. Control Yoke .....MANUALLY HOLD PRESSURE
6. Land as soon as practical.