Emergency Procedures

Section III

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Note:

All airspeeds quoted in this section are indicated airspeeds (IAS) and assume zero instrument error. Each aircraft should be calibrated to determine its specific error for various configurations. A Pacer method is suggested, flying against a "known" aircraft.

EMERGENCY AIRSPEEDS

(Best airspeeds will vary based on your airframe construction- verify and adjust as required.)

ITEM	CONDITION
Emer Descent (Gr Dn)	**122 kts then to 140 kts (140 - 170 mph)**
Best Glide	**104 kts (120 mph)**
Ldng Appr (w/o Pwr)	**87 kts (100 mph)**

NOTE

The following check-lists are presented to capture in a compact format those pilot tasks requiring rapid action. These check-lists should be kept handy for ready access by the pilot, and he should familiarize him/her self with them before flying the aircraft. Knowledge of the switch, control, gauge, etc. location quickly, even blindfolded, is highly desirable. "Cockpit time" prior to ever flying or after an absence is time prudently spent. Where more time would likely be available, rationale will be added and alternative choices offered. It must be remembered however that each situation will be unique in some manner and must be treated as such.

ENGINE FAILURE

During Take-off Ground Roll/Low Altitude

Maintain control of the aircraft. If runway permits, land and attempt stop on runway. If at low altitudes (less than approximately 700 ft. AGL, pick the most suitable site within ± 30° off the nose and set up the approach. If time permits, attempt engine start.

ITEM	CONDITION
Establish	**87 kts**
Declare	**EMERGENCY**
Check Fuel Pump	**ON**
Fuel transfer pumps	**ON**
Mixture	**RICH**
Magneto,Cycle, return to	**BOTH**
Flaps (when on final)	**FULL**

In Flight

Establish 104 kt glide. Climb to reduce speed if practical, pick landing site. Attempt AIR START.

ITEM	CONDITION
Check header tank for fuel	
Fuel pump	**ON**
Fuel Transfer Pumps	**ON**
Mixture	**RICH**
Mags Cycle & return to	**BOTH**

If Stopped, engage starter and attempt engine start.

Declare	**EMERGENCY**
Give position on active freq, or	**121.5**
Set transponder to	**7700**

ROUGH RUNNING ENGINE

ITEM	CONDITION
Adjust Mixture	**RICH**

If no improvement carefully lean for improvement as follows:

ITEM	CONDITION
Reduce pwr setting to approx	**2100 RMP**
Mags,Sw to LT, to BOTH,	
to RT, then to	**BEST**
Readjust mixture for	**BEST OPERATION**

NOTE

If power is restored and there is any doubt as to the cause of the engine roughness, land at the nearest airport and determine the cause.

ENGINE FIRE

In FLIGHT

Determine if fire is electrical (acrid smell).

ITEM	CONDITION
Avionics Master	**OFF**
Master Switch	**OFF**
All Radios, lights, etc.	**OFF**

If fire/smell clears, turn master switch ON then each item of equipment one at a time, waiting long enough to isolate cause. If no smell, assume an unknown source and;

Land as soon as possible, find and correct cause.

If fire continues;

ITEM	CONDITION
Throttle	**IDLE**
Mixture	**CUT-OFF**
Fuel Shut-off Vlv (Rt Passenger foot well)	**OFF**
Fuel Pump	**OFF**
Fuel Transfer Pumps	**OFF**
Transponder	**7700**
Radio	**"EMERGENCY & LOCATION"** (Use active frequency or **121.5**)

Land immediately and exit the aircraft.

On ground (engine start or taxi)

ITEM	CONDITION
Throttle to	**IDLE**
Mixture	**CUT-OFF**
Radio, (Twr, Unicom, etc.)	**"EMERGENCY" & "POSITION"**
Master Switch	**OFF**
Magnetos	**OFF**

Continue cranking if during start to pull fire back into the engine. Stop and exit aircraft if taxiing.

EMERGENCY DESCENT

ITEM	CONDITION
Power to	**IDLE**
Propeller to	**HIGH RPM**
Gear (upon slowing to 122 kts)	**DOWN**
Maintain (after gr dn & locked)	**148 KTS(170 MPH)**
Transponder	**7700 (or as requested)**

MAXIMUM GLIDE CONFIGURATION

ITEM	CONDITION
Gear	**UP**
Establish	**104 kts (120 mph)**
Flaps	**UP**
Propeller	**LOW RPM**

Glide distance is approximately 1.3 nm (1 1/2 statute miles) per 1000 feet of altitude above the terrain, however this may vary significantly. It is suggested that it be established for your individual aircraft.

LANDING EMERGENCIES

Landing without power

When landing site is selected and committed to landing the following checklist can be completed. The use of gear UP versus gear DOWN is a function of the landing site. If the landing is to be made on water, a foamed runway or the sod adjacent to a runway, the gear would generally be best left up. If the terrain is harsh the gear may well absorb energy and although resulting in substantial damage to the aircraft may in that process afford some protection to the occupants and thereby be the preferable option. When assured of reaching the landing area;

ITEM	CONDITION
Seat Belts/Shldr Harness	**TIGHT**
Canopy	**LATCHED ***
Gear	**UP or DOWN**
Fuel Pump	**OFF**
Fuel X-fer Pumps	**OFF**
Mixture	**CUT-OFF**
Mags	**OFF**
Flaps	**AS REQD**
Master	**OFF**
Airspeed	**Decrease to Touch Down**

Attempt to fly the aircraft and keep the wings level through the approach **and landing** until the aircraft comes to rest. **EXIT THE AIRCRAFT** and remain clear until assured there is no possibility of fire.

> * **Note: On aircraft with the parallelogram canopy system it is permissable to unlatch the rear two latches only, below 104 kts (120 mph).**

SYSTEMS EMERGENCIES

PROPELLER OVERSPEED

The controllable pitch Hartzell propellers (with Woodward governors) used on the Lancairs utilize oil pressure from the governor to increase pitch (low rpm), others operate in an opposite manner. Therefore it is the responsibility of the pilot to know his aircraft and its system specifically.

It is however dangerous to run any engine over its rated rpm and thus the method to reduce any overspeed is to **immediately reduce the throttle to idle** and reduce airspeed to the point where rpm control is regained. Slowly add throttle and hold airspeed well below that at which the overspeed occurred. Mixture may need to be adjusted also for smooth operation. If the overspeed was significant, i.e. over 200 rpm over redline, an engine inspection is called for upon landing. Engine operation for the balance of the flight must be monitored closely.

PROPELLER DAMAGE

As with any major component of an aircraft, the propeller demands proper care. Nicks, scratches and other types of damage require care. While the construction varies, all are highly stressed and these nicks cause stress concentrations to a greater or lesser degree which are dangerous. Refer to the manual for your propeller for proper limits of damage, the proper "care and feeding" of your propeller. Preflight your aircraft accordingly. The loss on any significant portion of a blade can be catastrophic.

ELECTRICAL SYSTEM FAILURE

The electrical system of your aircraft is key to safe operation in today's environment. It is required for night or IFR operations. If a voltmeter is installed it will be your key indicator of alternator failure which then places the entire electrical load on the battery. The battery will read approximately 12.4 volts on a full battery, and 14+ on the alternator. If you experience alternator failure;

ITEM	CONDITION
Master Switch	**OFF**
Avionics Master	**OFF**
Lights	**OFF**
Circuit Breakers	**CHECK**

The check of the Circuit Breakers may reveal a popped breaker indicating the source of the trouble. If so, turn all individual equipment OFF, reset the breaker and turn the Master Switch ON. If the breaker does not activate again, slowly turn various elements of your system ON one at a time watching for another malfunction attempting to isolate the problem.

If you believe the problem has been isolated and you elect to continue the flight,remain alert for another anomaly caused by the first difficulty.

LANDING GEAR

Your Lancair gear is held up by hydraulic pressure. Pressure switches shut off the electrical power to the pump in both the up and the down positions. If the gear will not remain retracted it may be discernable by loss of cruise speed and/or additional wind noise. Proper actions are:

ITEM	CONDITION
Airspeed, reduce to below	**87 kts (100 mph)**
Gear Circuit Breaker	**PULL**
Gear Switch	**DOWN**
Gear DumpValve	**OPEN**
Gear	**3-LIGHTS**
Gear Dump Value	**CLOSED**
Gear Circuit Breaker	**RESET**

It may be necessary to slip the aircraft allowing airloads to help push gear to full down. An observer (tower or aircraft) can be used to confirm its full down position.

Once lowered it is not advisable to attempt a retraction prior to landing and determining the cause of its failure to remain fully up.

WARNING

Aircraft observers must be used with caution as not all pilots have the training to safely fly "formation" and may not be sufficiently familiar with the Lancair gear to confirm its down and locked configuration.

UNLATCHED CANOPY IN FLIGHT

The Lancair has two types of canopy systems, one opening from the front, clam shell type, and the other on parallelogram hinges, opening up and forward.

Neither types of canopies can be opened in flight. Should a latch become disengaged from the locked position, slow the aircraft to approximately 85 kts (100 mph) and attempt to relock. If unable to lock, land as soon as practical.

SPINS

Spins are not recommended. If a spin is entered inadvertently or intentionally the stick should be neutralized or placed forward, the rudder full against the direction of the spin until rotation is stopped. At this point, the maneuver should be flown out of with smooth, positive load factor pull-out of no more than 4.5 g's taking particular care not to reenter an accellerated stall and another spin.

WARNING

The Lancairs are aerodynamically very clean and thus can lose a lot of altitude with such maneuvers

EMERGENCY SPEED REDUCTION

In an emergency, the landing gear can be used to assist in reducing the speed of the aircraft quickly. Gear extension should be accompanied by idle power.

A thorough gear inspection is required following such an emergency extension and the gear should never be retracted prior to this inspection.

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