

4-13 APPROACH AND LANDING**4-13.1 Pre-Landing Check List**

A suggested pre-landing check list has the acronym **GUMP**:

GAS:

- Fuel boost pump on.
- Check fuel quantity.
- Select proper tank. Verify that handle engages detent.
- Throttle reduced as necessary.
- Carb heat on. (if installed)

UNDERCARRIAGE:

- Extend landing gear (below 140 mph IAS).
- Check for hydraulic pressure and three green lights.

MIXTURE:

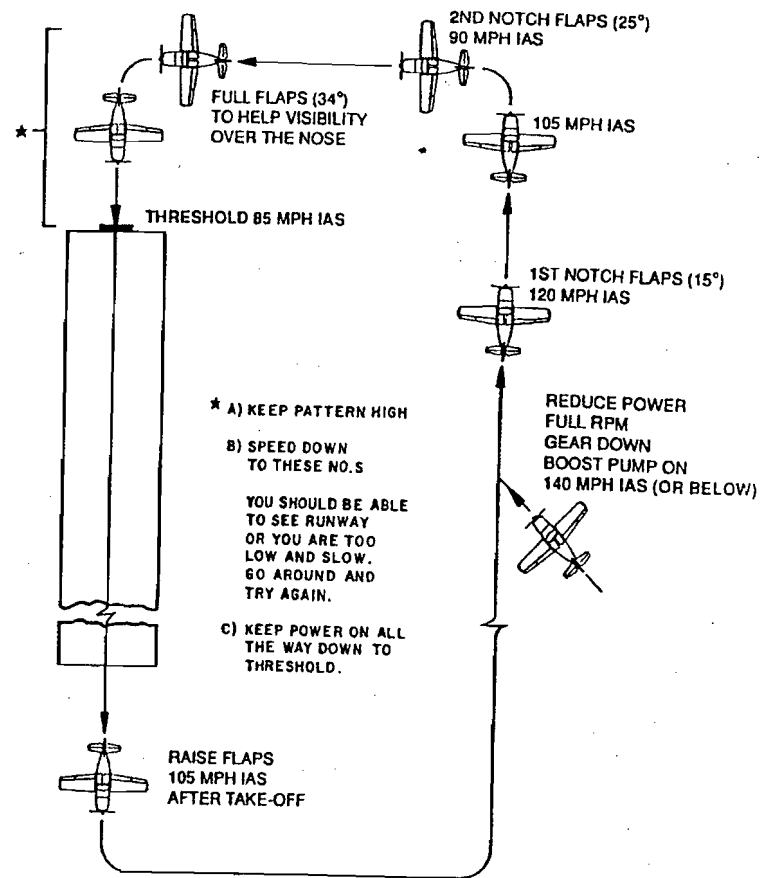
- Push to full rich position.

PROP:

- Move prop control to high rpm, flat pitch (forward) position.

NOTE

We recommend completing the pre-landing check list before entering the pattern so that the pilot's attention can be directed outside the airplane to clear for traffic while in the pattern. Some of our pilots like to go to full flaps early in the approach (before turning onto the downwind leg) to provide maximum visibility over the nose and also to reduce their work load while in the pattern.

NORMAL OPERATING PROCEDURES**4-13.2 Approach****FIGURE (4-1)**

If the landing gear has been retracted, keep it retracted, unless you are assured of returning to the runway or another hard surface landing area. A belly landing on the runway is acceptable if it guarantees making it to the runway. Soft surface forced landings should always be made with the gear up to minimize airframe damage and to reduce the possibility of flipping over the nose.

Only if there is time and you have maintained control of the aircraft should you attempt to restart the engine. Check for adequate fuel pressure and switch on the electric fuel pump. Make sure the mixture control is in the full rich position. Check the fuel quantity and move the fuel selector valve to the fullest tank. Make sure the magneto switch is in the "BOTH" position.

3-3.3 Engine Failure in Flight

In the event of an engine failure during flight, maintain best glide speed (125 mph) and prepare for a forced landing. Quickly check that fuel pressure is adequate, that the mixture is full rich, that the fuel valve is on, that there is adequate fuel in the tanks, and that the mags are both on. Switch to the header tank if it is full of fuel. If time permits, and one of the above conditions is the problem, attempt a restart after the problem is resolved.

Engine roughness may be caused by a bad magneto, induction problems, improper leaning, plug fouling, fuel starvation, carburetor icing, water in the fuel, etc. If you encounter engine roughness or power loss in flight, check all engine gauges to verify that the pressures and temperatures fall within the allowable ranges. Also, check the mixture setting, fuel tank selection, carb heat, magnetos, etc. If none of these items alleviates the problem, make a precautionary landing at the next airport and troubleshoot the problem.

3-3.4 Engine Out Approach and Landing

If loss of power occurs at altitude and if your plane is equipped with a constant speed propeller, immediately (while there is still enough oil pressure to operate the prop) pull the propeller control to the full aft (coarse pitch) position to reduce drag. Trim the aircraft for best gliding speed (125 mph), and look for a suitable landing field. If measures taken to restore power are not effective, and if time permits, check your charts for airports in the immediate vicinity; it may be possible to land at one if you have sufficient altitude. If possible, notify the FSS of your location, difficulty, and intentions.

When you have located a suitable field, establish a spiral pattern around the field. Try to be at 1000 feet above the field at the downwind position, to make a normal approach. If you are forced to land away from an airport, it is advisable to fly an imaginary pattern with downwind, base, and final legs. This will help you make correct altitude and approach speed judgments for an unknown landing site.

Remember that the power-off glide will be steeper than the engine idle glide that you are used to. Always leave yourself enough altitude and airspeed to clear obstacles.

WARNING

Keep the gear and flaps retracted until you are assured of making the field. Conversely, the gear and flaps work very effectively if you are too high on approach. Engine out landings on a hard surface runway should be made with the gear down. On a soft surface keep the gear retracted to minimize airframe damage and reduce the chance of injury. Retracting the flaps at the last minute before touchdown will minimize flap damage.

Keep the airspeed relatively high (105-115 mph, depending on flap setting) throughout the approach to keep the sink rate low and to provide enough excess lift so that the descent can be arrested in the flare. Bleed off the airspeed in the flare, however, so that the actual touchdown is made at the lowest possible airspeed.

When committed to landing:

1. Throttle closed or off.
2. Mixture full lean.
3. Fuel selector off.
4. Alternator and Master switches off.
5. Ignition switches off.
6. Seat belt and shoulder harness tight.
7. Flaps as required.

Touch down at the minimum controllable airspeed, being careful not to stall and drop the airplane in. Especially if forced to land in trees, allow the airplane to fly into the trees rather than stalling it and dropping to the ground through the trees.

In very rough terrain, try to fly the airplane so that the fuselage area (passenger compartment) misses the larger objects, such as the biggest tree trunks and rocks. Sacrifice other parts of the airframe (wings, landing gear) to absorb the impact energy.

3.4 EMERGENCY LANDING GEAR EXTENSION

3.4.1 Standard Emergency Extension System

In the event of an electrical failure that prevents the normal extension of the landing gear, it will be necessary to extend the landing gear by using the manual pressure relief valve. Electrical problems that could result in failure of the gear actuation system are a low battery, or some kind of defect in the RG electrical system such as a burned-out solenoid.

To actuate the emergency gear extension system:

1. Move the gear switch to the down position.
2. Pull the large electrical hydraulic pump circuit breaker, leaving the 5 Amp control breaker in.
3. Turn the valve handle 90° to the emergency gear extension position. Watch the pressure gauge to confirm release of pressure.
4. Wait for the gear to extend. This can take several minutes due to fluid flow restrictions.
5. Check the status of the gear by means of the gear indicator lights.
6. If the green gear indicator lights do not come on, try side-slipping or pulling some Gs to promote gear extension. If the gas spring is low on pressure, stalling the aircraft may be necessary to achieve nose gear extension.