

EMERGENCY PROCEDURES.

**Text taken from Pilots Handbooks, RSUK0011 & RSUK0043.
To be retained in the aircraft**

3.2 ENGINE FAILURE

In case of failure of the engine the following actions are recommended:

Taxying, before take-off – maintain directional control, brake and stop where safe.

Immediately after take-off - land immediately ahead.

In flight, with some height (depends on wind speed and direction) - consider the wind speed and direction. Select a suitable forced landing field, preferably up any slope, and if practical land into wind.

Landing in trees or high vegetation – take the vegetation surface as the runway, and position the landing to leave the minimum fall to the ground. Try to flare onto the surface to achieve minimum roll on speed. When the wheels contact the vegetation centre the control stick to reduce the risk of the rotor contacting the vegetation.

Rough running of the engine and power loss can be caused by carburettor icing. This is extremely unlikely on this aircraft as it is fitted with a hot water heated jacket around the carburettor inlets.

WARNING! Taking off into carb icing conditions without the engine warmed up properly may prevent the water jacket from stopping carburettor ice from forming.

3.3 ENGINE START IN THE FLIGHT

The engine should not be deliberately stopped in flight except as part of forced landing training under the supervision of a competent Instructor.

Where practical, to limit engine damage, leave the engine to idle at 3000 rpm for about 30 sec to cool before turning it off.

The engine can be restarted in flight using the starter. Use the procedure for starting described in Section 4.2, if possible allowing a 30 second period for warming up before applying full power. Note that to restart the key must be turned completely to off, and then back to start. This interlock is to prevent inadvertent starter engagement.

3.4 ABANDONING THE AIRCRAFT

In normal circumstances occupants should not leave the aircraft while either the propeller or the rotors are turning.

If abandoning the aircraft in an emergency the pilot should turn off the engine magneto switches and turn the Master switch to “OFF” if this can be done without endangering the occupants.

If abandoning the aircraft with either the propeller and/or the rotors turning the occupants should follow a path in line with the nose of the aircraft, to minimise the risk of being struck by either the rotor or the propeller.

Occupants should be briefed before flight on emergency evacuation procedures, including:

- Actions to be taken in the event of a forced landing
- Operation of the seat harness
- Disconnection of any intercom leads or other connections to the aircraft
- How to safely exit and move away from the aircraft

3.5 SMOKE AND FIRE

Indications of smoke should be treated in the same way as a fire.

Fire on the ground: exit and abandon the autogyro, call the emergency services, use local fire fighting equipment if trained to do so

Fire in the air: Make an emergency landing, exit and abandon the autogyro. Call emergency services.

3.6 GLIDING FLIGHT & FORCED LANDINGS

The best glide speed is 40mph (engine idle), giving a vertical descent rate of about 500ft/min at low aircraft loading, and 800ft/min at MTOW. The height:distance ratio with engine on tickover is approximately 1:5 (500 feet of forward movement for every 100 feet of height). With the engine stopped the ratio is approximately 1:4.

Note that the rate of descent does not increase dramatically with speed increases up to 56mph. However, with the engine off, airflow over the rudder surface reduces as airspeed drops, to the point where there is limited directional control - so take care at very low airspeeds. If there is sufficient height, take the time at best glide airspeed to make the choice of landing site, and then balance airspeed versus descent rate to make a safe landing in that area. When gliding into a headwind increasing airspeed will have a significant effect on groundspeed and noticeably improve the glide ratio. In the final approach ensure airspeed is increased to above 50mph, by lowering the nose, to give sufficient rotor energy for the deadstick flare, and airflow over the rudder for positive direction control.

Height loss with engine failure is, of course, greater than that with idle power. Ensure you understand the HV chart (5.3) to know what airspeed and height combinations are safe to operate within.

If gliding for a long distance, either keep on a little power, or increase power periodically to keep the engine warm.

3.7 PRECAUTIONARY LANDINGS

Forced landings, and Precautionary landings (eg suspected mechanical problem or weather problem).

For a landing with a deflated tyre, proceed as follows:

Approach normally, with the intent of a 0mph run on landing directly into wind (& across the runway if needed). Flare the aircraft to achieve this, and use the rotor drag/brakes to limit forward speed. Only if impossible to recover the aircraft from the landing area should it be manoeuvred under its own power, as this could further damage the tyre and wheel rim.

3.8 LOSS of CONTROL

Loss of primary control systems could be

1. Engine power control. If jammed on, use ignition switches turned on/off to reduce power, and turn off when clear to land in a suitable place. If jammed off, land as per engine off.
2. Rudder control. Use power and rotor to drive into wind, and descend for landing into as large and as soft an area as possible, flaring for minimum ground roll.
3. Rotor head control. Normally the trim device will keep the aircraft flying in pitch. Roll control failure may lead to a flat descending turn. Use rudder, trim and power to balance aircraft, and descend for immediate landing into as large and as soft an area as possible.

3.9 ALTERNATIVE METHOD OF ENGINE SHUTDOWN

Turning the engine off with the mag switches simply earths the coils. If there is an electrical fault the engine can be stopped by isolating the fuel supply. Firstly, ensure the standby electrical pump is switched off. For the turbo engine, turning the keyswitch off will also turn off the primary fuel pump, starving the engine. For the 912ULS engine, which has an engine driven mechanical pump, turn the emergency cut off valve located on the enclosure edge, on the left hand side, just rear of the front seat. It will take about 30secs min for this method to stop the engine. Alternatively, in an emergency, fully close the choke, wait a few seconds, and open the throttle suddenly. This normally chokes the engine and causes it to stop, but is not guaranteed.

3.10 What to do in the event of pitch oscillation or rotor rpm reduction due to negative G.

Never try to control pitch oscillation with the stick.

Smoothly closing the throttle whilst maintaining a level flight attitude will return the aircraft to a stable, slow speed condition very quickly, from which the pilot can recover to normal flight.

This recovery technique is safe in all such situations where there is sufficient altitude to give the pilot time to work out what to do.