

SECTION III

EMERGENCY AND MALFUNCTION PROCEDURES

TABLE OF CONTENTS

PARAGRAPH	PAGE
3-1. General	3-1
3-2. Warning and Caution Indicators	3-2
Figure 3-1. Warning and Caution Indicators	3-2
3-3. Engine Failure	3-3
Complete Power Loss	3-3
Partial Power Loss	3-5
3-4. Air Restart - Engine	3-6
3-5. Low Rotor Speed	3-7
3-6. Emergency Landing Procedures	3-7
Water Landing	3-7
3-7. Fire	3-9
Engine Fire on the Ground	3-10
Engine Fire During Flight	3-11
Cabin Fire/Smoke	3-12
3-8. Engine Fuel Control System Malfunctions	3-14
Fuel Control or Power Turbine governor Failure	3-14
3-9. Other Engine Caution Indications	3-16
Engine Chip Detector	3-16
3-10. Main Rotor and Tail Rotor Transmission Malfunctions	3-16
M/R Transmission Oil Pressure	3-16
M/R Transmission Oil Temperature	3-16
M/R Transmission Chip Detector	3-17
Tail rotor Transmission Chip Detector	3-17
3-11. Flight Control Malfunctions	3-18
Anti-Torque Failure	3-18
One Way Lock Failure	3-19
Cyclic Trim Failure	3-20
3-12. Abnormal Vibrations	3-22

3-3. ENGINE FAILURE

COMPLETE POWER LOSS

Indications: Red

ENGINE OUT

 warning indicator ON and audible warning in headset.

Left yaw (due to a reduction in torque)

Drop in engine speed.

Drop in rotor speed.

Change in noise level.

NOTE: The amount of yaw is dependent upon the amount of torque at the moment of power loss. High torque will cause a large yaw while low torque will cause a relatively small yaw.

WARNING Respond immediately to the ENGINE OUT/low rotor RPM warning by adjusting collective to maintain rotor RPM within limits, then check engine instruments and other indications to confirm engine trouble.

Conditions: The failure indicators are actuated when N_1 falls below 55% or N_R falls below $468 N_R$ (Ref. $98 \pm 1\% N_2$).

Procedures: Engine Failure – In Cruise at 500 Feet AGL or Above

- Adjust collective pitch according to altitude and airspeed to maintain rotor speed between 410 and 523 RPM.
- Apply pedal pressure as necessary to control aircraft yaw.
- Adjust cyclic control as necessary to control airspeed and flight path. Allow airspeed to stabilize at 131 Knots IAS or lower (refer to V_{NE} placards).

NOTE: At airspeeds above maximum autorotational V_{NE} (131 KIAS or less Ref. Section II V_{NE} Placards), use aft cyclic to maintain aircraft's attitude and slow to desired airspeed as collective pitch is lowered. Increase collective as necessary after entering autorotation to prevent rotor overspeed. If desired, operate at minimum rotor speed to reduce rate of descent and/or extend glide distance.



NOTE: The minimum rate of descent with power off will be attained at 60 KIAS and 410 N_R .

The maximum glide distance with power off will be attained at 80 KIAS and 410 N_R .

Glide distances attained during an actual engine out autorotation may be less than the glide distances achieved during practice autorotations when operating at reduced RPM (N_2/N_R needles joined).

- After confirming complete loss of power, time and altitude permitting, place twistgrip in cutoff and close fuel shutoff valve.
- Select landing area and maneuver as required.
- If operating at reduced rotor RPM to extend glide or reduce rate of descent, restore rotor RPM by lowering collective prior to flare out.
- Flare as required for the terrain to reduce forward speed and rate of descent. Level aircraft before ground contact.
- Touch down in a level attitude, increasing collective pitch to cushion landing.
- Avoid the use of aft cyclic or rapid lowering of the collective pitch during initial ground contact or any subsequent ground slide.

Procedures: Engine Failure - Above 12 Feet and Below 500 Feet AGL

The Height - Velocity Diagram (Ref. Section V) depicts the combinations of airspeeds vs. altitudes wherein a successful autorotation landing can be made in the event of an engine failure. Flight within the cross-hatched regions represent airspeed/altitude combinations from which a successful autorotation landing may be difficult to perform. Operation within the cross-hatched area should be undertaken with caution.

- In the event of a power failure during takeoff/low level flight, the collective pitch must be initially lowered to maintain rotor speed. The amount and duration of collective reduction depends upon the airspeed and height above the ground at which the power loss occurs.
- As the ground is approached, flare as required to reduce forward speed and rate of descent.
- Touch down in a level attitude, increasing collective pitch to cushion landing.
- Avoid the use of aft cyclic or rapid lowering of the collective during initial ground contact or during ground slide.

Procedures: Engine Failure - Hovering Flight Below 12 Feet AGL

- Do not reduce collective pitch.
- Apply right pedal to prevent yawing.
- Increase collective pitch as necessary to cushion landing.

PARTIAL POWER LOSS

Indications: Under partial power conditions, the engine may operate smoothly with reduced power or it may operate erratically with intermittent surges of power.

Procedures:

- Turning the start pump ON may smooth out an erratic operating engine and/or restore power enabling the pilot to fly to a favorable landing area. However, do NOT disregard the need to land.
- If possible, fly at reduced power to the nearest safe landing area and land as soon as possible. Be prepared for a complete power loss at any time.