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AIRWORTHINESS
CAUTION
FAILURE DETERENCE OF RETRACTABLE LANDING GEAR

1. PURPOSE

This AIC presents information and procedures for minimising landing accidents involving aircraft with retractable landing gear.

2. GENERAL

Aircraft accidents caused by gear-up landings or collapse of the landing gear are occurring too frequently. It has been ascertained that these accidents are caused either by human error or by mechanical difficulties. Human error is difficult to eliminate entirely but can be reduced. The performance of frequent in-flight checks of the landing gear unsafe warning system, scrupulous maintenance by qualified personnel, the performance of recognised vital actions and the conscientious use of checklists by pilots, can materially reduce the number of landing accidents involving aircraft with retractable type landing gear.

3. MECHANICAL FAILURE

Failures of retractable landing gears have been caused by malfunction of warning systems, inoperative limit and safety switches, up locks that failed to release, down locks that failed to engage, defective hydraulic or electrically operated retraction mechanisms, and wheels being jammed in wheel wells. Cases are on record where slide tubes became jammed with dirt, this in many instances resulted in torque tubes and drag struts being bent, and their anchorages damaged by the application of excessive loads. Many of these problems have been the result of improper rigging or adjustment.

4. PREVENTIVE MAINTENANCE

4.1. Particular attention should be directed towards keeping the landing gear and adjacent areas clean and free from mud and dirt. Dirty switches and valves may cause a false "safe" light indication or stop the extension cycle before the landing gear is completely down. Oversize, repaired, and even tyres that are normally of the standard type may stick in wheel wells and prevent gear extension. It is of crucial importance to ensure that any new parts fitted are of the correct type and that shock struts are accurately inflated and are clean. Special attention

should be given to torque link bolts. It is also of vital importance that landing gear actuating mechanisms are lubricated in accordance with the aircraft manufacturer's instructions.

4.2. The Executive Director has ruled that all Cessna 210 aircraft shall undergo an inspection to verify that positive clearance exists between the nose gear doors and the lower engine cowling at every MPI or whenever the landing gear needs servicing. For the purpose of this inspection the aircraft will have to be placed on jacks and the procedures prescribed in the manufacturers service manual be followed.

4.3. A logbook entry or CRS is to be used to certify this inspection.

5. REQUIRED MAINTENANCE

During every inspection, the landing gear and its warning system is to be completely inspected for condition, adjustment and proper operation. Particular attention should be given to any Service Bulletins or other technical information issued by the aircraft manufacturer in this regard.

6. ADDITIONAL INSPECTIONS

When aircraft are operating from rough surfaces or are used for pilot training, it is necessary to do inspections of the landing gear more frequently to ensure continued satisfactory operation. When a hard landing is made or when the gear strikes an object during taxiing, it is imperative to inspect the landing gear carefully for damage. The landing gear may also be damaged or rendered out of adjustment by sharp turns at high taxi speeds, incorrect techniques during crosswind landings, or by taxiing off a hard surface into mud or soft sand.

Awareness of the human limitations and the proper application of good operating and maintenance practices will reduce accidents involving aircraft with retractable type landing gear and will therefore bring about an improvement in aviation safety.