12– LANDING GEAR

- **GENERAL**

- The retractable, tricycle, cantilever-type landing gear consists of a swiveling nose gear & a right and left main gear.
- Extension and Retraction of the L/G is *electrically controlled* through the ***LDG GEAR*** *Control panel*.
- Power for the ***LDG GEAR*** *Control Pa*nel and the ***L N R*** *indicator lights* is provided by the DC Ess. bus through Cb,s **LG CTRL** & **LG POS LTS**.
- Normal OPS is provided by *Hydraulic pressure* from the *Utility Hydraulic System (#3).*The electrical power for operation of the control valves is dual powered, supply by the DC Ess. and #1 Dc Prim. through the **LG CTL** Cb's
- There is also an *Emergency pneumatic extension system.*

- **NOSE LANDING GEAR**

- The *Nose Landing Gear* consists of:
  - A shock strut;(centering cam, shimmy damper & axle with spool for attaching a tow bar)
  - Dual wheels & tires on a common shaft, &
  - A retract / extend actuator
- The wheel and tire assembly *can caster 360°* and is *non-steerable*.

- **MAIN LANDING GEAR**

- Each *Main Landing Gear* consists of:
  - A shock strut;
  - **W**eight **O**n **W**heel (**WOW**) switch (provide indications and safety interlock for various aircraft systems;
  - Dual wheels & tires on a common shaft;
  - A Hydraulically operated disc brake on each wheel, &
  - A retract / extend actuator.
- The Main Landing Gear is mechanically self-locking in both "extended" and "retracted" positions.

Shock Struts:

- Oleo-pneumatic type design to meet absorption requirements for normal and emergency landings.(nitrogen, bottom of piston and oil, top of piston)
- Each struts contains:
  - a device to prevent ground resonance;
  - an integral axle;
  - hydraulic and pneumatic servicing ports, &
  - a frangible tube which absorbs energy from a hard landing.
- A *shear fuse* switch on each shock strut activates a **HARD LANDING** caution segment, indicating that the *shear ring* has yield. (8 to 12 ft/sec., **480 to 720 ft/min**.rate of descent)

Actuators:

- Actuators are used for extension and retraction of the L/G.
- Each actuator contains:
  - Up-lock and down-lock switches;
  - A hydraulic piston;
  - A blow down system (**3000 psi** nitrogen bottle), &
  - A down lock pin receptacle.
- The actuators are interchangeable between nose and main gears.
- Hydraulic power to operate the actuators is provided by the *Utility System (#3*). Hydraulic pressure is connected to the actuator through two lines, one for extension and one for retraction. The actuator piston retracts to extend the L/G and extends to retract the L/G.
- Each actuator has a self-contained *nitrogen blow-down system for emergency landing gear extension.*

- When the **EMER DN** switch is activated the nitrogen pressure is release *into the actuator retract port.*
- A *manual reset button* on the *Utility Module* pops out when the Emergency extension is used and must be manually reset before normal operation can be resumed.
- A *down-lock pin* may be inserted into the actuator to prevent inadvertent gear retraction while on the ground

Wheel Brakes:

- Main Landing Gear wheels have disc hydraulic brakes. Brakes are interchangeable left to right.
- Brake *wear indicator pins* determine if the pucks need replacement. If the indicator pins are above the housing when the parking brake is engaged, sufficient puck remains.
- The brakes are controlled with the pilot's and co-pilot's pedals.
- When the brakes are **ON** an advisory segment **PARKING BRAKE** is illuminated.
- Pressing either the pilot's or co-pilot's left brake pedal release the parking brakes and the advisory segment extinguishes.

Landing Gear Controls and Indicators:

- The ***P/B DIMMER*** *rheostat* on the *upper console lighting panel* controls the Bright and Dim setting of the ***LDG GEAR*** *control panel* (only two settings, Bright & Dim).
- The *indicator lights* and *warning* work in conjunction with the *up-locked* and *down lock*ed *switches* installed on each landing gear.

Master Warning Panel:

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Indicates the L/G is retracted when **A/S < 60 Kts** and **Rad Alt is < 150 ft AGL** (100 ft AGL in EGPWS low altitude Mode).
- An Audio Warning "***TOO LOW GEAR***" will ***continuously*** be heard as well.

Malfunctions:

- Cruise flight with *landing gear extended* will increase the fuel flow by approximately **50 lbs/hour** if *Cruise Power* (70% Tq) is set. (See *RFM Part 2 Section III Supplemental Performance Data p: III 1-14.*)
  Decrease Best Range Speed (**137 Kts**) by **5 Kts** per **10 sq/ft** of additional drag.
  Landing Gear extended equal **7 sq/ft** of additional drag.
- WOW failure: Failure of the *WOW system* may result in the failure of the *Landing Gear* to retract.
  - AFCS #1 & #2 **ATT** Mode will not engage (SAS only)
  - Transponder;
  - Wx Radar, &
  - TCAS remain in STBY Mode.
  - ***RIPS will not function*** (not indicated in the cockpit)

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