

## 29.1 Purpose and Components

- The landing gear supports the aircraft on the ground, absorbs landing shocks, and allows for taxiing and steering.
- ☐ Oleo-Pneumatic Strut: The most common type of shock absorber. It consists of a cylinder containing both hydraulic fluid and compressed nitrogen gas.
- During compression (landing), the fluid is forced through a small orifice, which damps the impact.
- The compressed nitrogen acts as a spring, supporting the aircraft's weight and re-extending the strut.
- ☐ Torque Links (Scissors): A hinged link that connects the inner and outer cylinders of the strut, allowing it to compress while preventing it from rotating.
- ☐ Nose Wheel Steering: Allows the pilot to steer the aircraft on the ground using tiller wheels or rudder pedals.
- ☐ Shimmy Damper: A small hydraulic damper on the nose gear that prevents rapid, unstable scissions (shimmy) of the nose wheel during takeoff and landing.

## 29.2 Retraction Systems

- ☐ Operation: Retractable landing gear systems are typically operated hydraulically. When the gear is selected UP, hydraulic pressure is directed to actuators that retract the gear into wheel wells, which are then covered by doors to maintain aerodynamics.
- ☐ Locks: Up-locks and down-locks are mechanical locks that ensure the gear is held securely in the extended or retracted position.
- ☐ Safety Devices:
  - A selector lock prevents the gear lever from being moved to the UP position while the aircraft is on the ground. This is controlled by weight-on-wheels switches (also known as squat switches or an air/ground logic system).

- Ground locks (safety pins with red flags) are inserted manually on the ground to prevent
- accidental gear retraction.
- ☐ Emergency Extension: In case of a hydraulic failure, an emergency system allows the gear
- to be lowered. This often involves mechanically releasing the up-locks and allowing the gear
- to free-fall into the down-and-locked position due to gravity and air loads.

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