Airbus A330, **Picture from wikipedia website**

Aircraft Landing Gear

Landing Gear Failure

Picture from www.foxnew.com

Airbus A320's Landing Gear failure in 2005

Landing Gear Failure

Picture from
www.foxnew.com

Landing Gear Failure

Picture from www.allstar.fiu.edu/aero/flight14.htm

Improperly loaded Boeing 747

Three common types of landing gear

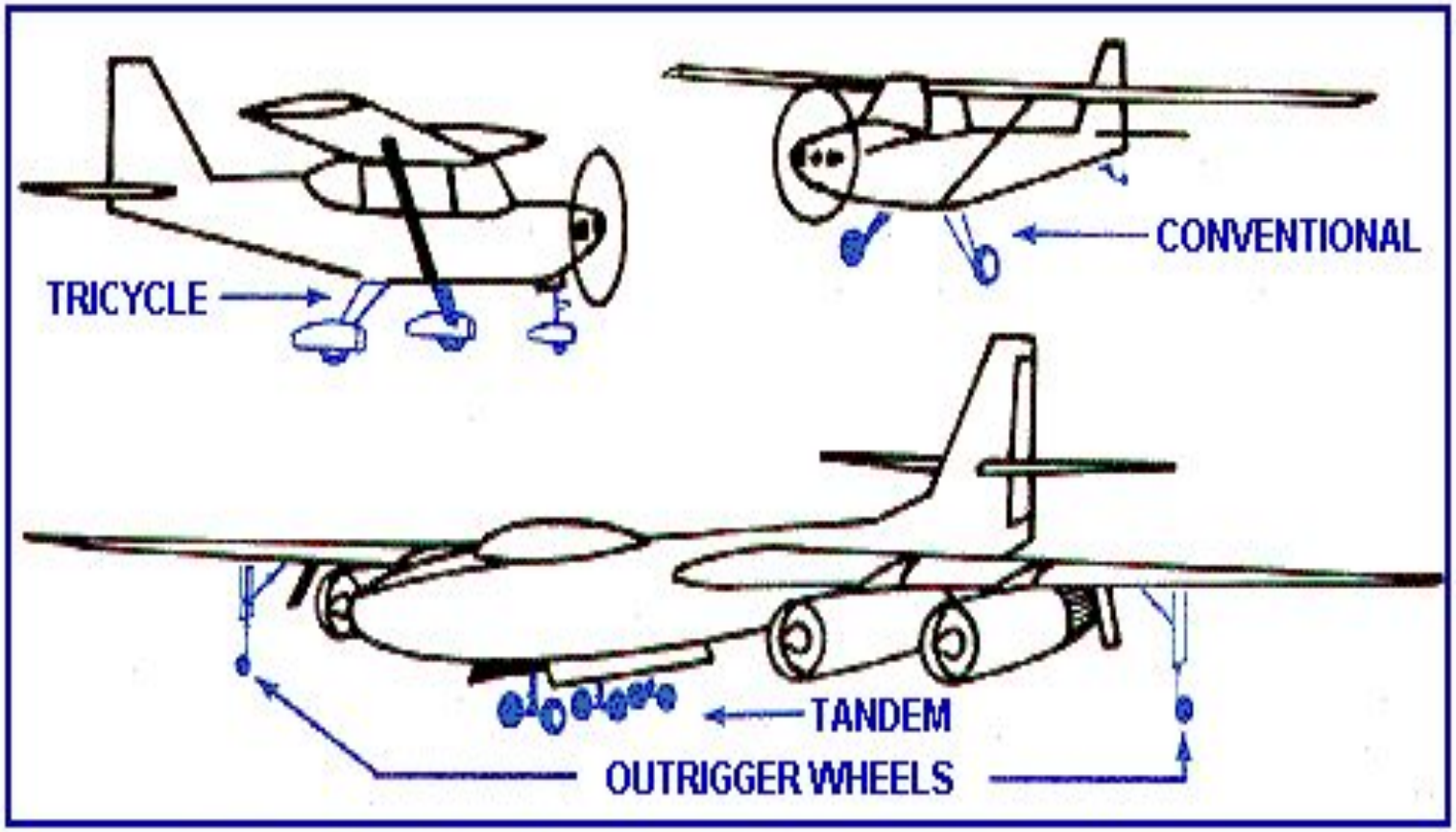
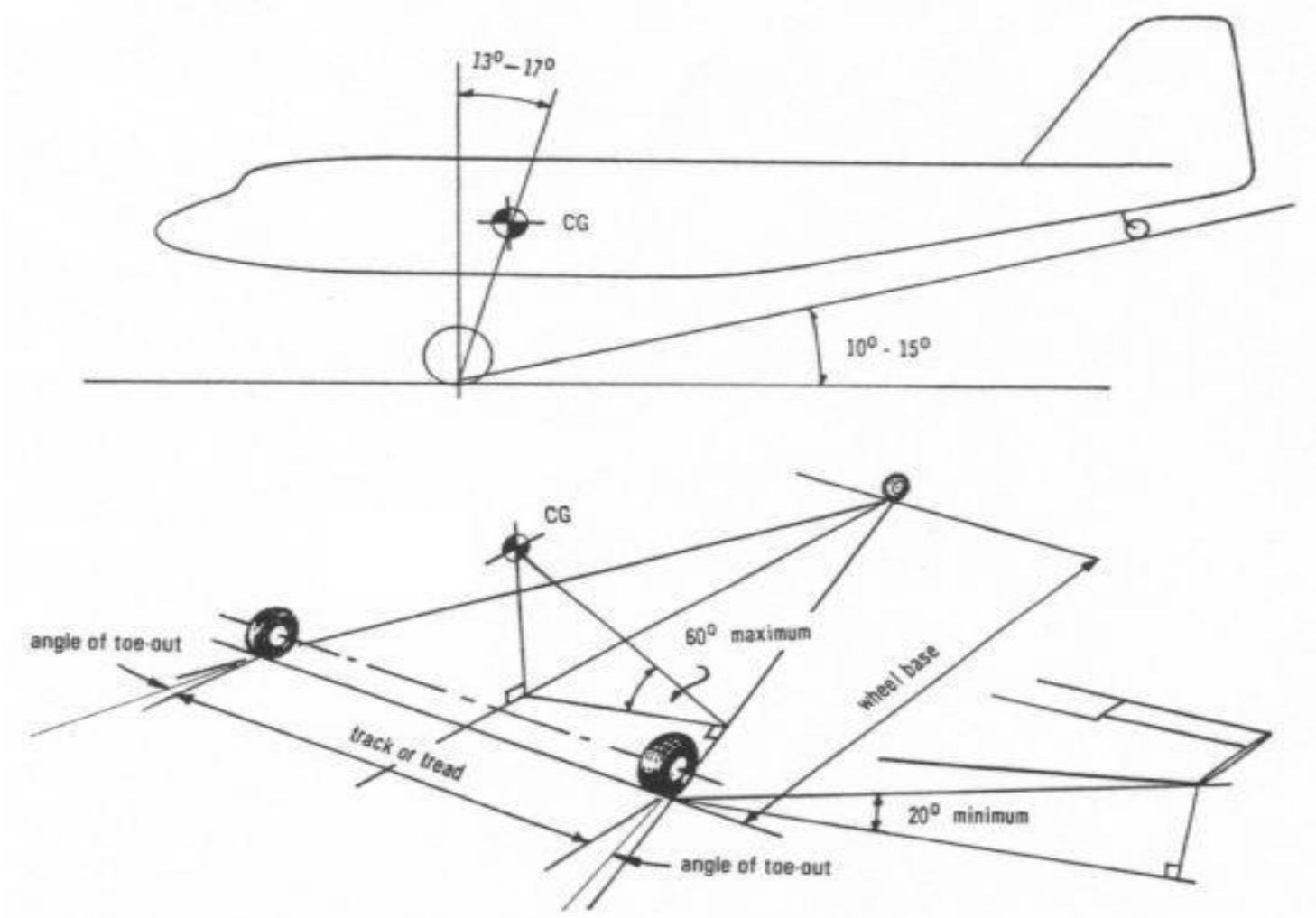


Figure 1-8 Three basic types of landing gear arrangements

Purpose of Landing Gear

- To provides structural support to the aircraft for ground operation
- To provides maneuverability for ground operation
- To provides a mean to absorb unusually loads incurred during landing and ground operation

Design considerations



Picture from
www.allstar.fiu.edu

Design considerations

- Maximum strength
- Minimum weight
- High reliability
- Overall aircraft integration
- Low cost
- Airfield compatibility

Design consideration

- Landing Gear should locate near the center gravity (CG) of the plane
- CG location are depended on aircraft configuration, loading, fuel state.

Landing Gear Developments

Noise Reduction

- As engines become quieter, landing gear is now making a dominating component of noise in large commercial aircraft
- European co-financed research project Silencer is trying to create low noise landing gear design
- Desires 10db reduction in landing gear noise by 2020, has only dropped 3db so far

Gear up landing prevention system

- NTSB reports that the majority of gear up landings are due to equipment malfunctions.
- Gear up landing prevention systems will disengage autopilot and alarm at a preset safety altitude if every piece of landing gear is not extended and locked.
- It can be disengaged if a belly landing is the only option.

Materials

- Composites will be integrated into gear because they are stronger and cheaper than the current used high strength steels and titanium

Materials

- Ultra-High Tensile Steels are already being integrated into the A400M and the B-787 landing gear, replacing the low-alloy steels.
- Research into organic matrix composites and metal matrix composites using titanium are promising, though still very expensive.

Corrosion

- Many modern aircraft have cadmium in the landing gear to prevent corrosion and chrome plating to reduce friction wear.
- Advancements in stainless steels and titanium will replace the cadmium in landing gear.