DEPARTMENT OF AEROSPACE ENGINEERING

19ASB303 AIRCRAFT MAINTENANCE ENGINEERING

UNIT-1 AIRCRAFT GROUND HANDLING AND SUPPORT EQUIPMENT

Levelling and Towing Operations

Define Levelling and towing operations of an aircraft.

1.Levelling Operations:

Levelling refers to the process of ensuring that the aircraft is in a horizontal position, with the nose and wings at equal levels, usually when parked on the ground or being serviced. It's a critical step for a few key reasons:

- **Maintenance and Safety**: Levelling the aircraft ensures proper distribution of weight, especially when performing maintenance tasks such as refueling, loading/unloading, or system checks.
- **Aircraft Systems**: Some aircraft systems (e.g., fuel systems, hydraulic systems) rely on the aircraft being level to function correctly. For example, sensors or indicators might need to read level to provide accurate data.
- **Passenger Comfort**: Ensuring the aircraft is level when parked at the gate or maintenance area prevents unwanted strain on components, which can improve the safety and comfort of passengers when they board or disembark.

2. Towing Operations:

Towing is the process of moving an aircraft on the ground, typically with a specialized tug or tractor. This operation is essential when the aircraft needs to be moved to or from gates, hangars, maintenance areas, or runways. There are two main types:

- **Pushback (Forward Towing)**: Moving the aircraft away from the gate, usually involving a tug attached to the aircraft's nose gear. This is commonly done when the aircraft is ready for departure.
- **Tow-in (Reverse Towing)**: Moving the aircraft into a parking spot or hangar. This operation is generally done in reverse, using a towbar or tow vehicle.

Importance of Levelling and Towing:

- **Aircraft Protection**: Both operations help protect the aircraft from damage. Levelling ensures the aircraft is in a stable condition during maintenance, and towing operations prevent collisions or damage during ground movement.
- **Safety**: Properly towing and levelling ensures the aircraft remains stable on the ground, which is crucial in busy airports with a lot of aircraft movement. This minimizes the risk of accidents or mishaps.
- **Operational Efficiency**: Proper towing ensures that aircraft are moved quickly and safely between locations, helping to keep flight schedules on time. Likewise, levelling ensures that essential pre-flight checks and maintenance tasks are performed efficiently and accurately.

List the equipment used for aircraft towing operations

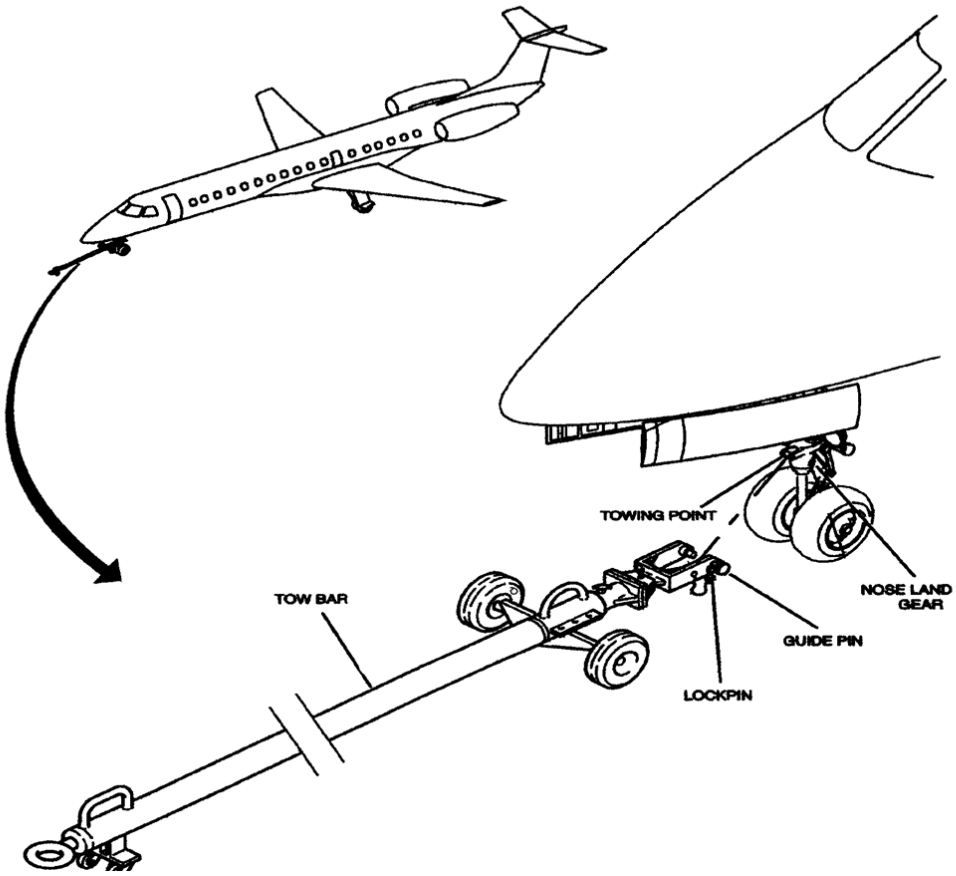
Aircraft Towing

Equipment Used:

- **Towbar**: A rigid or telescoping bar used to connect the aircraft's nose gear to the towing vehicle. It allows for controlled movement and steering.
- **Tow Tractor**: A powerful vehicle used to tow the aircraft. It has a strong engine and a low center of gravity to handle the aircraft's weight.
- **Towbarless Tractor**: A specialized towing vehicle that connects directly to the aircraft's nose wheel, eliminating the need for a towbar.
- **Headset Communication**: Used by ground personnel to communicate with the cockpit and towing team, ensuring safe and coordinated movement.
- **Wheel Chocks**: Placed around the aircraft's wheels to prevent movement when the aircraft is parked.
- **Safety Cones**: Placed around the towing area to mark safe zones and prevent accidents.
- **Reflective Vests**: Worn by ground personnel for visibility and safety.

Procedure for Towing an Aircraft:

- **Attach Towbar**: Connect the towbar to the aircraft's nose gear and the tow tractor.
- **Communicate**: Ensure clear communication between ground personnel and the cockpit.
- **Release Brakes**: Release the aircraft's brakes before starting the towing operation.
- **Tow the Aircraft**: Gradually move the tow tractor, towing the aircraft to the desired location.
- **Place Wheel Chocks**: Once the aircraft is in position, place wheel chocks around the wheels to prevent movement.
- **Disconnect Towbar**: Disconnect the towbar and secure the aircraft.



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