



## Ground Handling and Servicing Operations



**G**round handling and servicing operations, in mishap event type description, is defined as mishaps resulting from improper ground handling, refueling or servicing, or as the result of failure of ground handling or servicing equipment.

### **Ground-ops, unmanned aerial vehicle.**

Includes: Towing and cargo loading/unloading events. Ground servicing mishaps (e.g., jacking, craning, refueling, deicing, etc).

In a review of aviation ground mishaps, the research concluded that 43% of aviation mishaps are ground mishaps. The leading event in aviation ground mishaps is ground handling and servicing operations, caused by improper maintenance or inadequate ground handling. These mishaps are more identifiable as servicing the aircraft, tugging/towing and cargo loading/unloading operations.

With ground handling and service operations, 94% are human errors, these are Army Aviation's most preventable accidents. To attack this trend

and get after prevention strategies, we identified performance-based errors as the leading indicator. Performance-based errors are factors that occur when an individual performs a specific action in a manner that leads to a mishap. Performance-based errors include unintended operation of equipment, checklist not followed correctly, a procedure not followed correctly, over-controlled/under-controlled aircraft/vehicle, breakdown in visual scan, and rushed or delayed a necessary action.

Servicing operations is 33.7% of ground handling and service operation mishaps. This is more widely known as improper maintenance procedures, directly associated with procedures not being followed correctly. The Interactive Electronic Technical Manual (IETM) contains work packages (WP) that are detailed procedures for performing specific maintenance tasks on specific aircraft. There are also general maintenance manuals (TM-1-1500-204 series) that contain general maintenance practices and furnish maintenance personnel with a source of information about how to perform various maintenance practices on all aircraft. Individuals must follow procedures and perform by-the-book maintenance. It is imperative for first-line supervisors and team leaders to teach/train subordinates to

the standard. This single task coupled with a strong technical inspector (TI) program can reduce the number of ground maintenance mishaps.

Ground handling is 31.6% of ground handling and service operations and is related to tugging/towing and cargo loading/offloading operations. During ground handling operations, the review identified in almost every case that procedures were not followed correctly, had inadequate personnel to perform the task and presented a breakdown in the visual scan. These factors directly led to the mishaps that involved the tugged/towed aircraft contacting other stationary objects or cargo and cargo loading equipment to contact the aircraft resulting in damage to equipment. Reviewing the appropriate manuals and procedures and having trained personnel will directly influence successful aircraft ground handling operations.

The following information is relevant to tugging/towing aircraft and is best practices that may assist your team during ground movement operations.

Ensure tow vehicle drivers are trained to tow all types of aircraft prior to towing and exercise supervision when necessary. For specific instructions on a particular aircraft, refer to the applicable maintenance manual.

**General Procedures.**

The following procedures are for all ground movements:

The minimum personnel for ground handling an aircraft by position is a team leader (NCO), tow vehicle driver, brake operator, and wing walkers (for each contact point) on both sides of the aircraft. The team leaders will position themselves to view the entire operation while communicating directly with the driver. When aircraft are pushed, personnel actively pushing will not perform any of the positions above.

- Disconnect and move clear all ground support, ground servicing, and maintenance equipment not essential to the movement of the aircraft.
- Assign an authorized ground crewmember to operate aircraft brakes, as required, from the time chocks are removed until they are reinstalled.
- Assign a ground crewmember to stand near the tip of each wing to act as a guide during ground movements.



**WARNING**

During ground handling, wing walkers must not approach the aircraft and remain on the outside of the rotor system. Vehicle drivers will come to a complete stop if anyone approaches the aircraft while towing.

- Assign a qualified ground crewmember to direct departure from, or approach to, a parking position.

**Towing.**

Tow aircraft in accordance with the applicable maintenance manual. The following procedures are for general towing of all aircraft.

- Prior to towing aircraft, ensure that towing attachments, lines, and bars are of adequate capacity, serviceable, and secured firmly to designated tow fittings of aircraft and tow vehicles.
- Do not exceed the walking speed of the slowest team member, with a maximum speed of 5 mph. Tow with extreme care over ice, snow, rough, rocky or muddy ground and in congested areas.
- Use caution when towing aircraft in extremely low temperatures to prevent damage to hydraulic seals which would result in strut leakage.

**Pushing.**

Push aircraft by hand in accordance with the applicable maintenance manual. The following procedures are for general hand moving of all aircraft:

- Position ground handling wheels (when applicable) in a down-and-locked position.
- Apply physical pressure for pushing, lifting, and turning only at authorized pressure points as designated in the applicable maintenance manual.
- Push by hand at proper pressure points.
- Senior person will brief duties and dangers of ground handling aircraft.



Standard Visual Signals. Visual signals for movement of the Army aircraft are contained in TC 3-21.60.

Ground handling and servicing operations account for 65% of ground mishaps and present multiple areas for error, with an environment full of distractions. Maintainers and leaders have to remain focused on the task being performed. Every task presents an opportunity to teach/mentor our next-generation warfighters. Demonstrating the standard, educating by-the-book procedures, and identifying mistakes will reduce these types of mishaps. ■

**Keep 'em Safe!**

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