The ground handling challenge

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Saving time and money

Over the last 20 years, turnaround time has become a strategic challenge in operations due to increasing competition between airlines and due to airport congestion; less time on the ground means more time generating income, and subsequently greater profitability of the airlines.

Ensuring training and best practices of ground handling staff can help eliminate many issues, in particular those relating to service and cargo doors, thus avoiding unnecessary time and costs of aircraft on the ground.

The risk in the race to reduce turnaround time is that corners may be cut, correct procedures not respected, and consequences may actually be time-consuming and expensive to fix.

The most spectacular examples are collisions with Ground Support Equipment (GSE) such as stairs, catering trucks and cargo loaders.

Damage caused by collision with Ground Support Equipment

However, thanks to new generation GSE and ground personnel training, these major occurrences are decreasing. Despite this, statistics show that an increasing number of less obvious incidents concerning the access/service doors and cargo doors are starting to emerge, with incorrect ground handling practices being the cause.

Isolated minor mishandling procedures do not appear particularly serious, and yet when repeated cycle after cycle, they create fatigue and eventually damage the aircraft.

A better knowledge of the precise areas most commonly damaged by non-respected ground handling procedures will help to alleviate these costly repairs.

Damage to a fuel panel following incomplete latch engagement

Access/service doors

Access/service doors are used for various purposes such as refuelling, hydraulic fluid servicing, potable water/toilet/waste servicing and cabin air conditioning. They are mainly located under the belly of the aircraft and therefore highly exposed to ground personnel, carts and GSE traffic.

Without being specific to any type of aircraft family, there are 2 main types of damage:

- **Damage to latches due to the use of sharp tools.**

Using sharp tools such as screwdrivers to open latches is a commonly ‘accepted’ practice for ground handling personnel. However, this practice gradually damages the latch which, if it eventually breaks, renders the door inoperative and often leads to delays until it can be replaced.

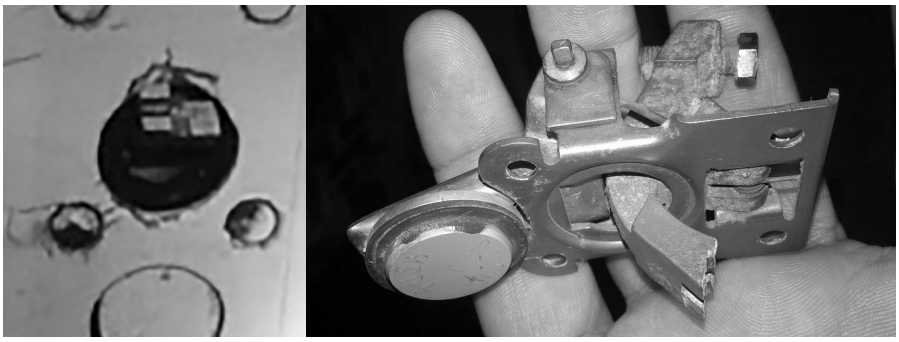
- **Incomplete closure of access/service doors.**

Incomplete latch engagement due to dirt accumulation/latch damage/human error may lead to the door opening in flight and potential damage/loss of the door.

Airbus maintenance data shows that each aircraft family has specific areas that suffer from irregular ground handling practices:

A320 Family

- Waste service panel 172AL is experiencing latch corrosion and failure.

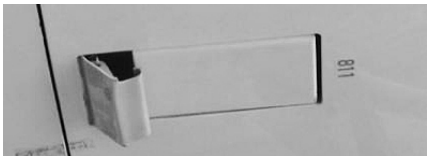


This is caused by improper cleaning after servicing. The corrosive deposits/spillage left during waste servicing slowly attack the latch/hinge material and potentially lead to their failure.

Airbus recommends rinsing the whole waste servicing area with water to remove all contamination.

A330/A340 Family

- Avionics door flap is found deformed, which may disenable the locking system; in turn, this may trigger an ECAM* open flap warning which could potentially lead to an in-flight turn back.

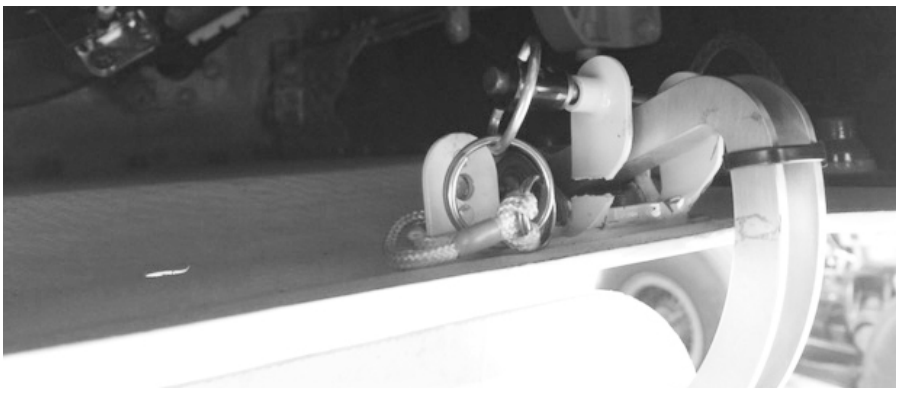


Airbus recommends operating the handle as shown in the Aircraft Maintenance Manual (AMM) to avoid damage.

*ECAM - Electronic centralised aircraft monitor

A350

- Belly fairing access panels with a ‘hold open’ device are being damaged on the internal hold open bracket. Investigations have shown that the locking pin is not removed prior to door closure and that the bracket’s lugs are sheared off.



Airbus recommends removing the locking pin before door closure, as shown in the AMM.

Cargo doors

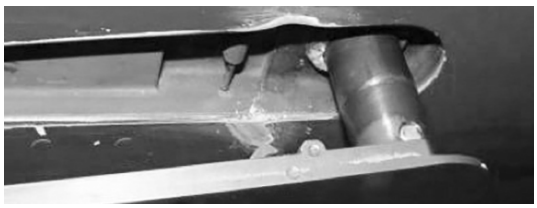
Cargo doors (including the bulk cargo door) and their surroundings are recognised as frequently damaged areas by cargo loader collisions during turnaround time.

In some cases, however, mishandling by ground personnel can damage specific areas on the following aircraft:

A320 Family

- The bulk cargo door handle housing sustains chaffing damage when the handle is rotated and stowed at the same time. This mishandling could be caused by the access platform being too small.

If this action is repeated and not repaired, then the door skin may be damaged and the handle housing could puncture, leading to cabin pressure leaks.



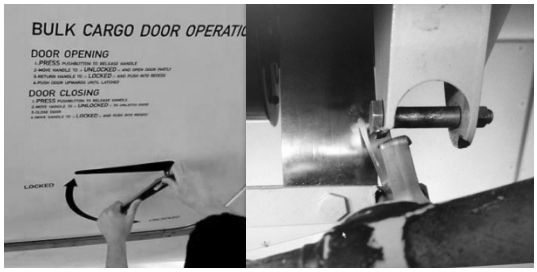
- Cargo door proximity sensor is displaced.
  During loading the cargo loader bumper may touch the proximity sensor and its bracket, bending it slightly and/or unseating the wiring connector from the sensor.

This may generate ‘cargo door open’ warnings during taxi/climb and subsequent delays/in flight turnback.

A330/A340 Family

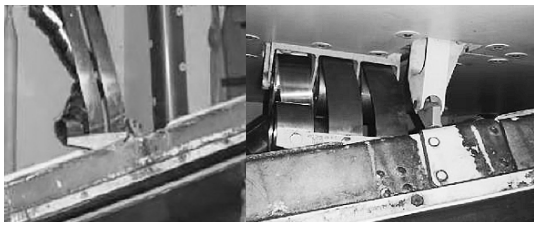
- The bulk cargo door ‘hold open’ mechanism is damaged due to mishandling. When opening and stowing the bulk cargo door, the handle is not positioned back to the LOCKED position and is thrown open with excessive force, striking the ‘hold open’ mechanism.

Once the damage has been initiated, it will worsen at each opening. If the damage is left unrepaired and is repeated, the ‘hold open’ mechanism could be completely destroyed and the bulk cargo door primary structure will be affected, potentially leading to costly repairs or its replacement.



- The bulk cargo door balance mechanism springs are found entangled and consequently inoperative.

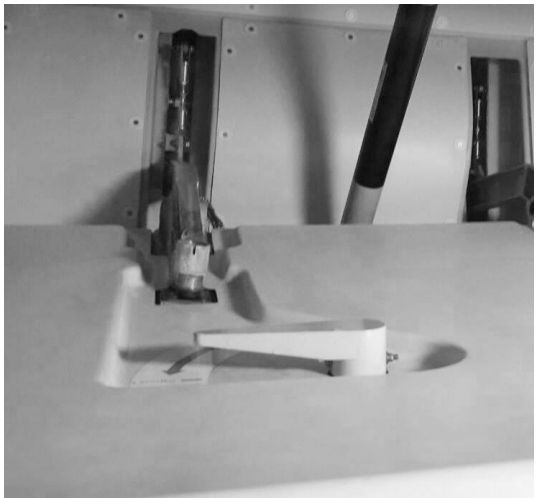
This happens when cargo hold area divider nets are not used, allowing cargo items to fall on the balance mechanism and/or when the bulk cargo door is opened too fast without care.



A380 and A350

- The bulk cargo door experiences a hinge arm disconnection.
  This happens during the door closing sequence.

This type of event may happen if the ‘hold open’ mechanism is locked and the bulk cargo door is forced down for closure.



CONCLUSION

Good ground handling practices are essential to ensure smooth aircraft operations without interruption and without incurring additional operating costs.

Attention needs to be focused on the fact that 'bad habits create big burdens'. Actions such as opening a latch using a screwdriver, or skipping waste service panel cleaning to save time may be regarded as 'acceptable and common' practices, but they often result in a grounded aircraft because of the damage they cause. Inappropriate handling and/or lack of training can lead to extremely costly issues; a wrongly handled A330/A340 bulk cargo door may lead to its replacement (up to 280,000 USD). Regular deterioration to latches leads to replacement and may eventually result in an access/service door detachment in flight.

In addition to the recommendations listed above, the Airbus Training Centre provides a ground handling course to help airlines and ground service providers improve the quality of ground handling.

For further information on ground handling training, contact Airbus Training at commercial.training@airbus.com