



Preventing Falls from Height

Falling from an aircraft can cause serious injuries to people. Specific safety equipment is installed on Airbus aircraft, and when used correctly, can prevent falls from height. This article describes the available safety equipment for Airbus aircraft and recalls the basic safety precautions that will help to avoid falling from height injuries to everyone on the aircraft.

The Falls From Height (FFH) hazard at aircraft level can be categorized into two main categories: (i) falling from the aircraft doors and (ii) falling from the aircraft's structure. This article provides an overview of the various servicing equipment that are available for Airbus aircraft and the associated recommendations.

FALLS FROM THE AIRCRAFT'S DOORS

Any person entering the aircraft is exposed to the hazard of falling from the doors. This includes Airlines' personnel (flight crew, cabin crew, maintenance personnel) as well as passengers, and external ground staff such as servicing, cleaning and catering personnel. Aircraft doors refer to passenger doors, cargo doors and ground service access doors to various areas of the fuselage.

During transit or during maintenance visits, the aircraft doors may need to remain open for a number of reasons. In such cases, safety equipment must be used and certain precautions followed.



“ The safety strap is a device used for indication purposes. ”

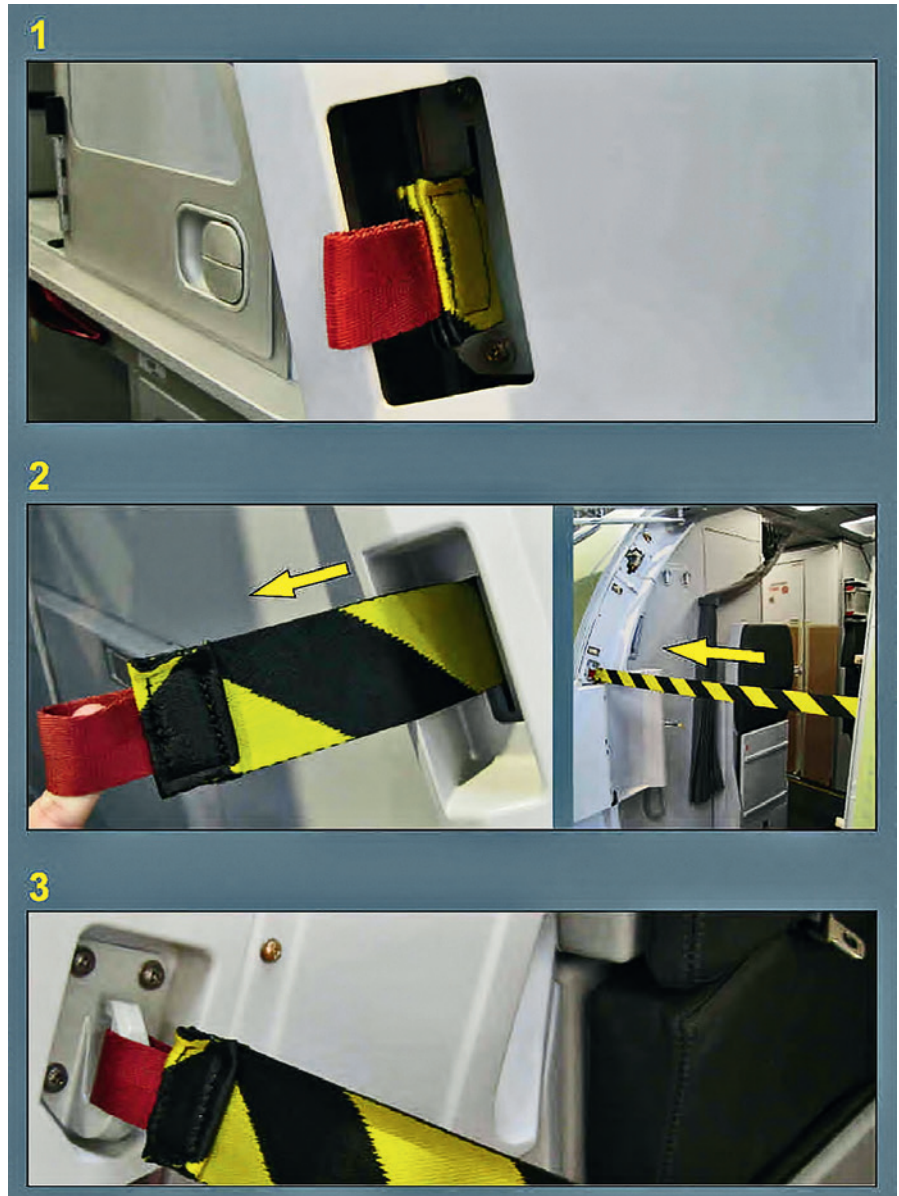
Cabin Door Safety Strap

All passenger doors of Airbus aircraft are equipped with a safety strap **(fig. 1)**. The safety strap, rolled and stowed in each cabin door frame, is a device used for indication purposes only. It should only be used for a limited time pending the closure of the door. A safety strap does not prevent from a fall. The Cabin Crew Operating Manual (CCOM), states that whenever a cabin door is open with no stairs or no gateway in position, the safety strap should be installed and the door should not be left unattended.

(fig.1)

Safety Strap Operation. Extract of the A330 Cabin Crew Operating Manual (CCOM)

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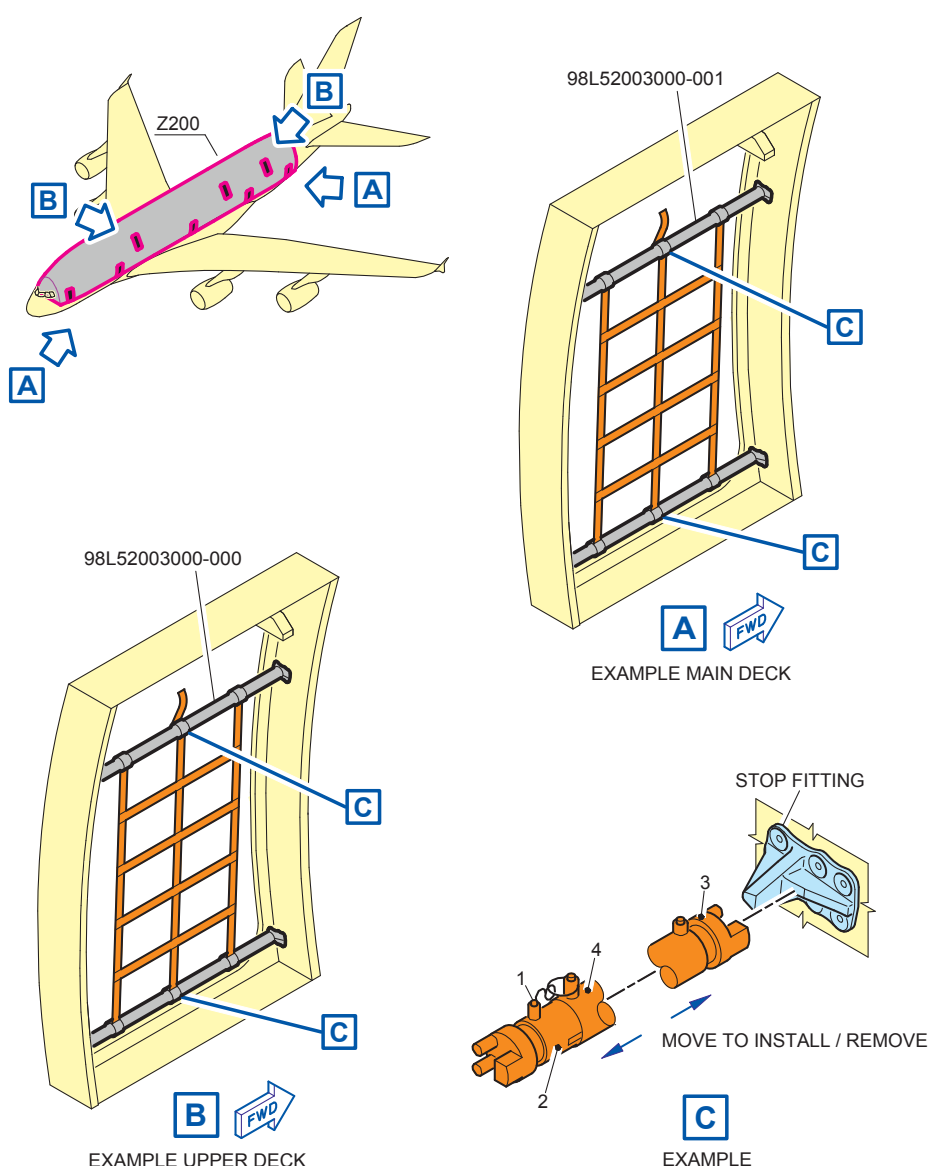
Door Safety Barrier (Door Net)

When a door remains open and unattended for a long period of time, Airbus recommends the installation of a safety barrier **(fig.2)** in absence of stairs or gateway. This same recommendation is made in IATA's Airport Handling Manual (AHM). The safety barrier is designed to prevent people from falling through the open doorway. It is the most efficient protection against falls from an open door. All Airbus aircraft have a safety barrier available for each door type including passenger doors, emergency doors and cargo doors. The Safety barrier is not stored on board the aircraft. It is installed by maintenance personnel and its reference can be found in the Tool and Equipment Manual (TEM) for each aircraft type.

“ When a door is remains open and unattended for a long period of time Airbus recommends the installation of a safety barrier in absence of stairs or gateway. ”

(fig.2)

Example of an A380 Door Safety Barrier.
Extract from the A380 AMM.



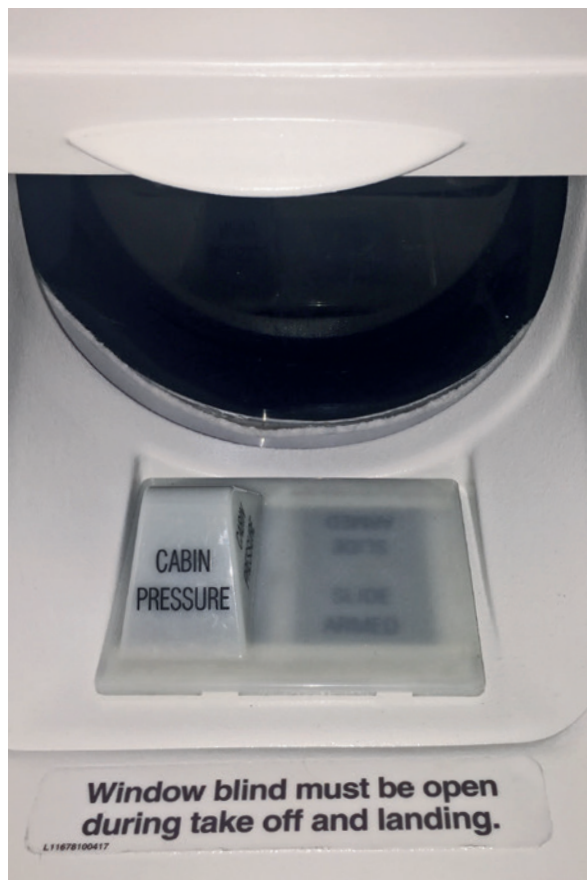
Airbus Recommendations to Avoid Falls from the Passenger Doors

» Opening a passenger door

To open a passenger door, the procedure and associated safety precautions listed in the Aircraft Maintenance Manual (AMM) or CCOM must be followed. A check that the Residual Pressure Warning System (RPWS) does not flash **(fig.3)** confirms that there is no residual air pressure in the cabin to avoid potential injuries or falls due to an unexpected violent opening of the passenger door. Refer to the Article “Residual Cabin Pressure” from the issue #3 of the Safety first magazine.

(fig.3)

Example of a RPWS on an A350 cabin door



» General recommendations

When approaching an open door whilst on board the aircraft, flight crew, cabin crew and ground personnel should confirm the presence and correct positioning of an aerobridge, stairs or access platform. If none are present, either close the door, if it is not necessary for the door to remain open or install the safety strap and monitor the open door until the stairs, access platform or gateway are put in place.

» When removing aerobridge or stairs

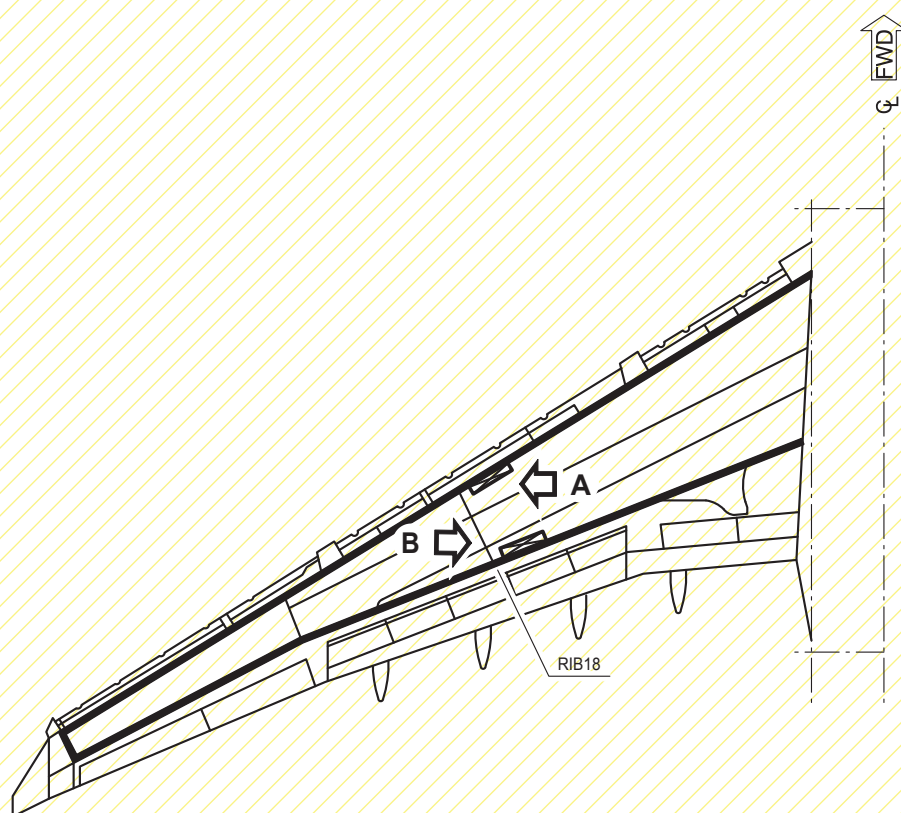
Inform anyone on the aircraft when ground personnel remove the aerobridge, stairs or access platform from the aircraft's passenger door to ensure they are aware to not use that door to exit the aircraft. Then ensure the door is secured by either closing it, or installing a safety barrier prior to removing the stairs. ■

FALLS FROM THE AIRCRAFT'S STRUCTURE

Working at height represents a common working situation for the maintenance staff with the risk of fall from the aircraft structure if the proper precautions are not followed. Falls can be from the aircraft's external structure (wings, horizontal stabilizer) or with the aircraft's internal structure including the non-pressurized section of the aft fuselage, landing gear bays, and the avionics bay. Several safety devices are available on Airbus aircraft and the AMM provides specific instructions and procedures that must be followed to prevent falls from height.

“NO STEP” Areas

On Airbus aircraft, visible markings identify “NO STEP” areas. These are visible on the aircraft's external structure on the wings (**fig.4**), and horizontal stabilizers. “NO STEP” zones are also marked on areas inside the aircraft where there are fuselage compartment access doors. Stepping on these areas is prohibited due to risks of falling and causing injury or damaging critical areas. A description of the “NO STEP” areas for each airbus aircraft can be found in the AMM.



(fig.4)

Description of the “NO STEP” areas – extract from the A330 AMM

DO NOT WALK OUTSIDE THIS AREA
DO NOT WALK OUTSIDE THIS AREA

Safety Harness

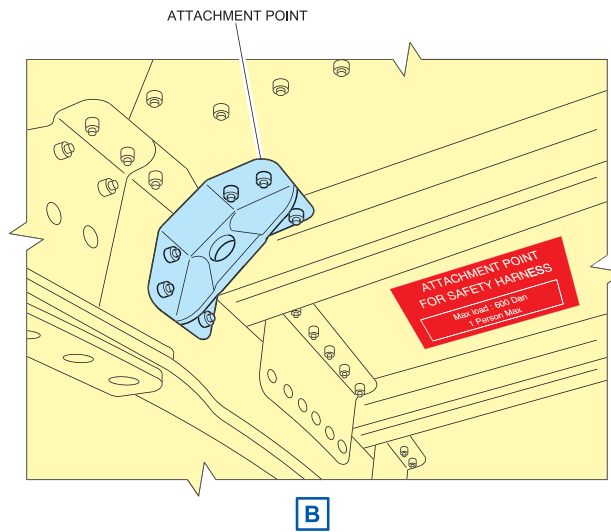
As per AMM procedures, safety harness shall be used by maintenance personnel when working from height. The safety harness is composed of the harness itself and of a safety rope that has to be attached to suitable attachment point. Safety Harness' condition is inspected regularly. A validity date is displayed on each harness. If the validity date is exceeded, the harness is considered unserviceable and must not be used.

» List of attachment points

Several attachment points are available on the aircraft structure. They are listed in the AMM and are identifiable by a placard **(fig.5)**.

(fig.5)

Description of an attachment point – extract of the A380 AMM

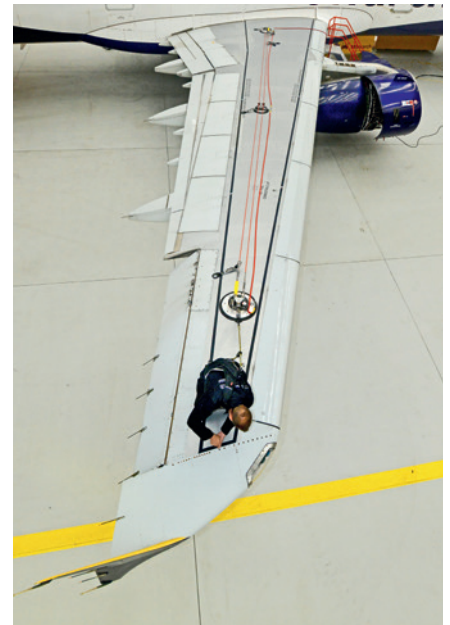


» Use of wingrip system

When working on the wings, the AMM recommends the use of wingrip, which is a system used to attach the safety rope and harness with single or multiple moveable vacuum pads **(fig.6)**. Installing and using a wingrip system must be done by specifically trained personnel. The associated procedure and safety recommendations are provided in the AMM. ■

(fig.6)

Use of a wingrip system on an A320 wing. Photos courtesy of Latchways



A380 TAIL CONE AREA SAFETY IMPROVEMENT

Following a reported injury to a mechanics performing maintenance tasks in the fuselage area aft of the rear pressure bulkhead of an A380 on the ground, Airbus responded with a mitigation to install an additional safety device in the sizeable tail cone area of this aircraft (**fig.7**).

The person who was injured initially used the access door 311AB located forward of frame 108 and then proceeded to climb through a cut-out in the frame 108 to access to the rear part of the tail cone area. The access door 313AB should normally be used to access this area. Access door 313AB is also designed as a blow-out panel by releasing its spring-loaded latch and opening if there is excessive air pressure differential pushing on the inside surface of the door in flight. When the person inadvertently stepped on the inside surface of the access door 313AB, its spring loaded latch

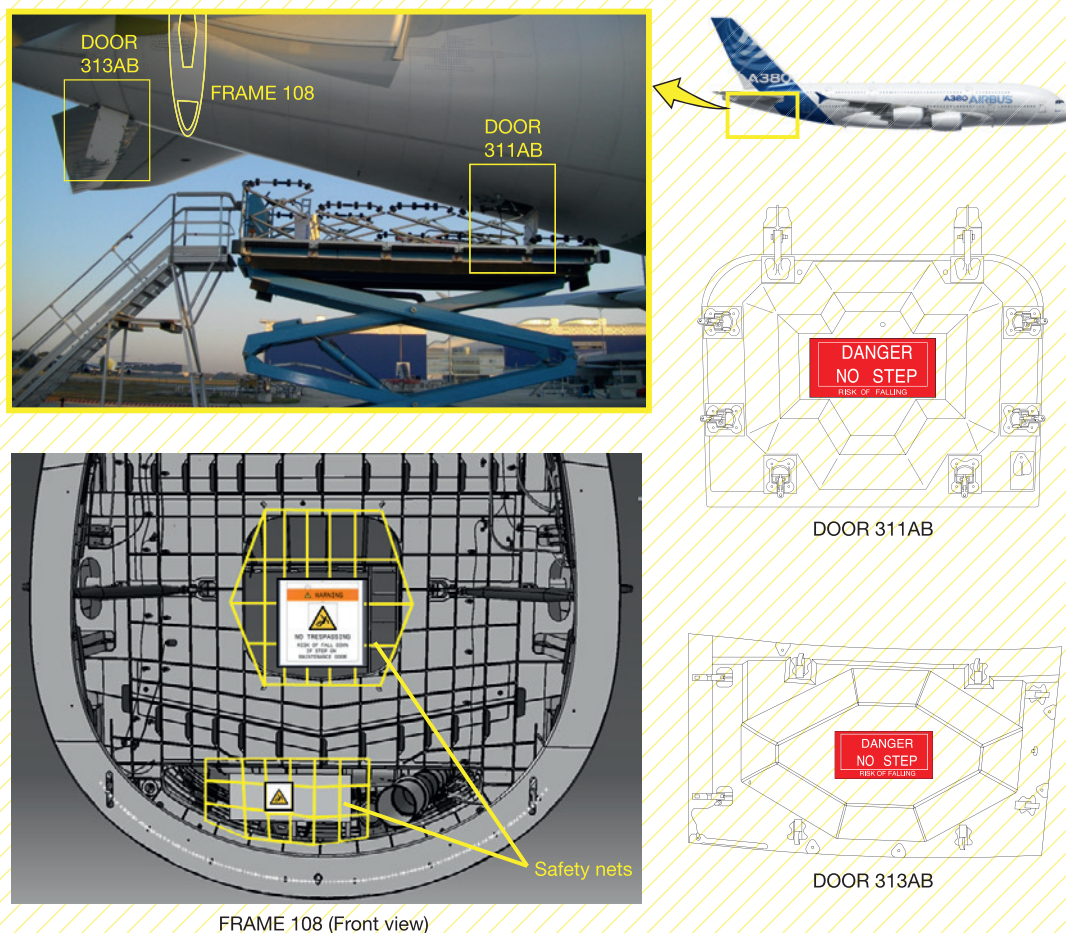
released and this access door opened causing the person to fall from the height of the tail cone to the ground level.

The Airbus modification adds two safety nets for this area, which prevents access from one compartment to the other, together with warning labels around the cut-outs of frame 108 and larger warning placards on the insides of the access doors. A monitored retrofit campaign is on-going to modify the in-service A380 fleet and these features are now included on all delivered A380 aircraft.

When accessing any compartment of the aircraft to perform maintenance or ground servicing tasks, it is important to follow the instructions of the Aircraft's Maintenance Manual (AMM) and to only gain access to specific compartments in the fuselage using the appropriate access door designated by the AMM procedure.

(fig.7)

A380 Safety Improvement



LOCAL SAFETY POLICIES

Local safety policies apply in addition to safety devices provided by Airbus described in this article with their associated procedures and recommendations. Each airline, maintenance and repair organisation, airport or country defines its own safety policy in terms of prevention of injuries caused by falls from height. These policies will account for local conditions, regulations and constraints in addition to following all of the, warnings, cautions or recommendations provided in the relevant manuals and as described by this article. ■



CONTRIBUTORS:

Andreas BEHRMANN

Customer Support -
Head of Cabin and Cargo
Systems

Uwe EGGERLING

Senior Director Safety
Engineering and Maintenance

Jean-Paul VIEU

Flight Operation Engineer -
Cabin Standards

With thanks to
Jade PELLOQUIN and
Sidney ORSOLLE
from the Health & Safety
at Airbus.

Falls from height prevention is a matter for all actors involved in the daily aircraft operations. Flight crew, cabin crew, ground personnel are all affected and must follow the local safety policy in addition to using the correct equipment and following procedures provided in the Airbus manuals to ensure that, when an aircraft is parked on the ground, nobody is falling from height.

Safety first

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Contributions, comment and feedback are welcome. Enquiries related to this publication should be addressed to:

Airbus
Product Safety department (GS)
1, rond point Maurice Bellonte
31707 Blagnac Cedex - France
Fax: +33(0)5 61 93 44 29
safetycommunication@airbus.com

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