

A close-up photograph of the front left side of a white Airbus A320 aircraft. The view includes the cockpit windows, the nose landing gear, and the large blue Pratt & Whitney PW6000 turbofan engine. The aircraft is positioned on a dark tarmac, with a range of green hills and mountains visible in the background under a clear sky.

The Airbus safety magazine

#30

# Safety first

AIRBUS

# Safety first

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# editorial



## **YANNICK MALINGE**

SVP & Chief  
Product Safety Officer

Dear Aviation colleagues,

In response to the massive fleet grounding caused by the global pandemic, it is vitally important to continue sharing safety information. All actors in commercial air transport redoubled efforts to promote the relevant guidance materials for the massive task of parking and storing aircraft, and subsequently supporting Operators to prepare for a safe return to the skies. This showed that our industry's well-established procedures provide the necessary safeguards for maintaining safe aircraft and operating safe flights, especially during this particular period. With this spirit, the articles in this edition highlight some key safety considerations and provide references to the relevant publications already shared with Operators of the Airbus fleet worldwide.

With so many aviation professionals affected by the downturn caused by the pandemic, it is a time to recall the basics of safety for flight crews, cabin crews and ground crews. The "*Mind the OEBs*" article prompts pilots to check if there are OEBs applicable to their aircraft when preparing for a flight, and to make sure that they are familiar with their application conditions. It is also an opportunity, when aircraft are not at peak utilisation, to encourage Operators to limit the number of applicable OEBs on their aircraft by installing OEB cancellation modifications as soon as possible. The "*Safe Aircraft Refuelling*" article shares why safety precautions and procedures must be strictly followed when refuelling an aircraft, which requires close coordination between the ground crew, the flight crew and cabin crew.

With so many aircraft grounded, some adaptation is required, but it is best to avoid using improvised or unapproved items to protect the aircraft and its components. In situations where procedures cannot be correctly applied, Operators should contact Airbus and seek advice. By working together through the challenges brought about by this crisis, the entire air transport system can emerge with a strengthened level of safety.

A handwritten signature in black ink, appearing to read "Y. Malinge".

# Safety first

The Airbus Safety magazine

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SEARCH... SEARCH

Managing Severe Turbulence

November 2019 | Airbus has encountered severe turbulence in flight, which may cause injuries to passengers and cabin crew. If turbulence is unavoidable, using best practices, applying recommended techniques and following procedures will help to reduce the risk of injuries.

Takeoff Surveillance and Monitoring Functions

October 2019 | Airbus has continuously improved its safety culture since the "100 Days to Safety" initiative was first implemented on A320 and A310 aircraft, and with the development of the Takeoff Surveillance (TOS1 & TOS2) and Takeoff Monitoring (TOM) functions.

GNSS Interference

September 2019 | Operators report an increasing number of events related to the loss of GNSS signals due to Radio Frequency Interference (RFI) during operations around the world. This article explains the causes of RFI, the effects on the aircraft systems...

Over-speed Event with Crew Take over and DEB49 Application

June 2019 | While flying at FL380, an A320 aircraft encountered a strong and abrupt tailwind decrease that triggered significant MMA overshoot and overspeed. The crew disconnected the AP, took over and successfully applied the DEB49.

Management of Overspeed Events in Cruise

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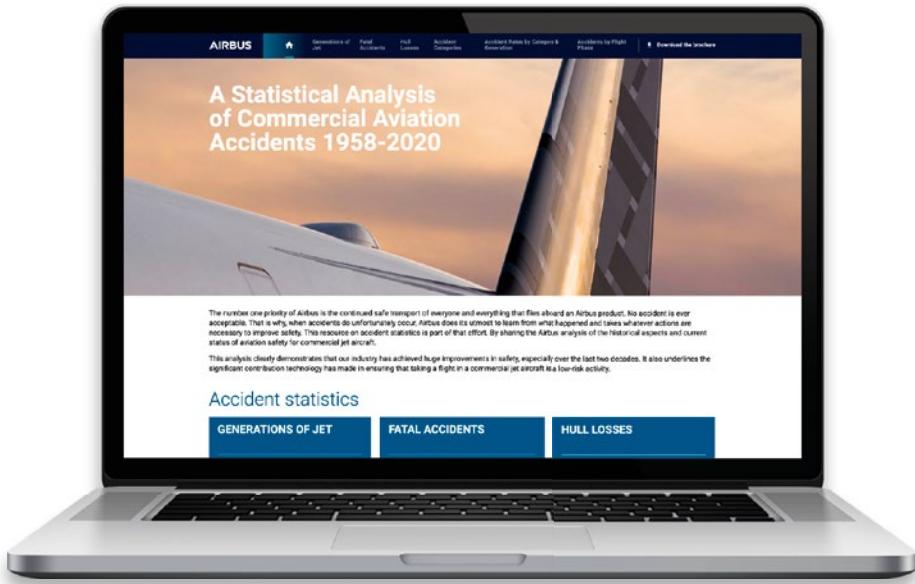
Available on a dedicated website [accidentdata.airbus.com](http://accidentdata.airbus.com)

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## The annual “Statistical Analysis of Commercial Aviation Accidents” is now available to view online and to download the brochure.

The website provides an analysis of commercial aviation accidents for jet aircraft from 1958 to 2020. It shows significant improvements of the safety record for our industry. This is also underlined by the contribution that technology has made in further enhancing the level of safety for commercial aircraft flights today.



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# Safety first #30



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-  Cabin Operations
-  Ground Operations
-  Maintenance

## ■ OPERATIONS

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Mind the OEBs!

## OPERATIONS

Avoiding Fuel Spills on A320 Family Aircraft



# Avoiding Fuel Spills on A320 Family Aircraft

Cases of fuel spillage have been reported to Airbus on A320 family aircraft equipped with fuel transfer jet-pumps in the center tank.

This article recalls the protections available against tank overfill. It explains why fuel spillage happened on the reported events and provides recommendations on how to avoid it.

# OVERFILL AND OVERFLOW PROTECTION AND MONITORING

Fuel tanks on Airbus aircraft are designed so that fuel spills into the vent tank through their vent line in the event of a tank overfill. Each vent tank is equipped with a NACA duct where fuel can flow out and onto the ground if the vent tank is full.

## Refuel valves automatic closure

On A320 family aircraft, the refuel valve for a fuel tank will automatically close when the targeted fuel quantity is reached, or fuel is detected by the high level sensor fitted in the tank during refuelling.

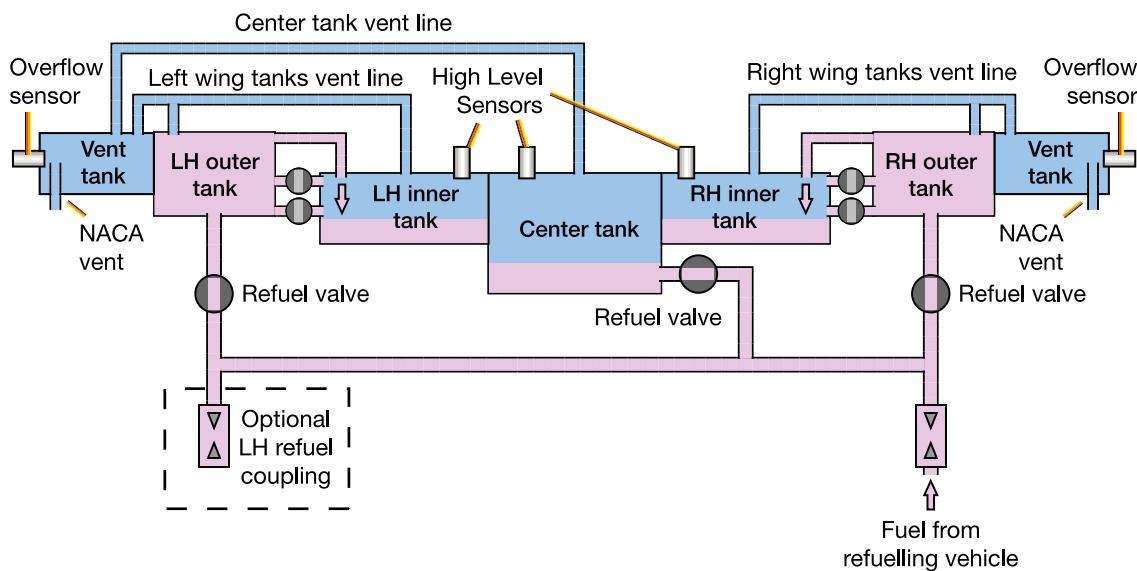


## NOTE

The test of overfill protection must be done before every refuelling operation by pushing the TEST switch of the refuel/defuel panel, first to the LTS position to check the integrity of the indication lights, and then to the HI LVL position to test the protection and the overflow sensor located in each vent tank.

**(fig.1)**

Functional schematic of the refuelling and venting system of an A320 aircraft



## Fuel Overflow monitoring function

A monitoring function was first introduced on A321 aircraft to trigger a **FUEL L(R) WING TK OVERFLOW** ECAM alert in the case of a fuel overflow detected in the vent tank by the overflow sensor. The ECAM alert (Modification 154427) is now also installed in production on A319/A320 aircraft since May 2013 (aircraft serial number 5597 and onward). It can be installed on previously built A318/A319/A320 aircraft with Service Bulletin A320-28-1216. ■

## OPERATIONS

Avoiding Fuel Spills on A320 Family Aircraft

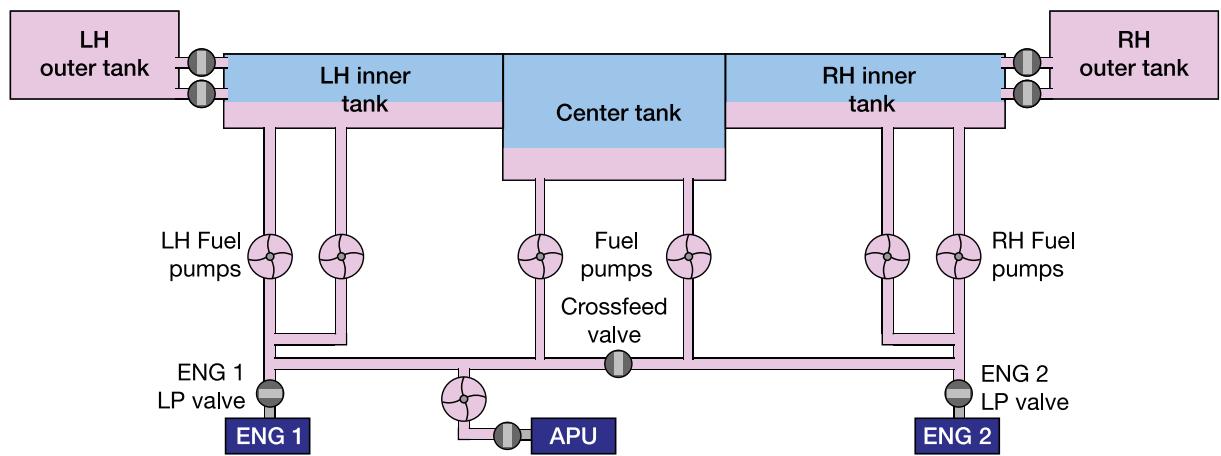
# A319/A320/A321 AIRCRAFT FITTED WITH TRANSFER JET-PUMPS IN THE CENTER TANK

(fig.2)

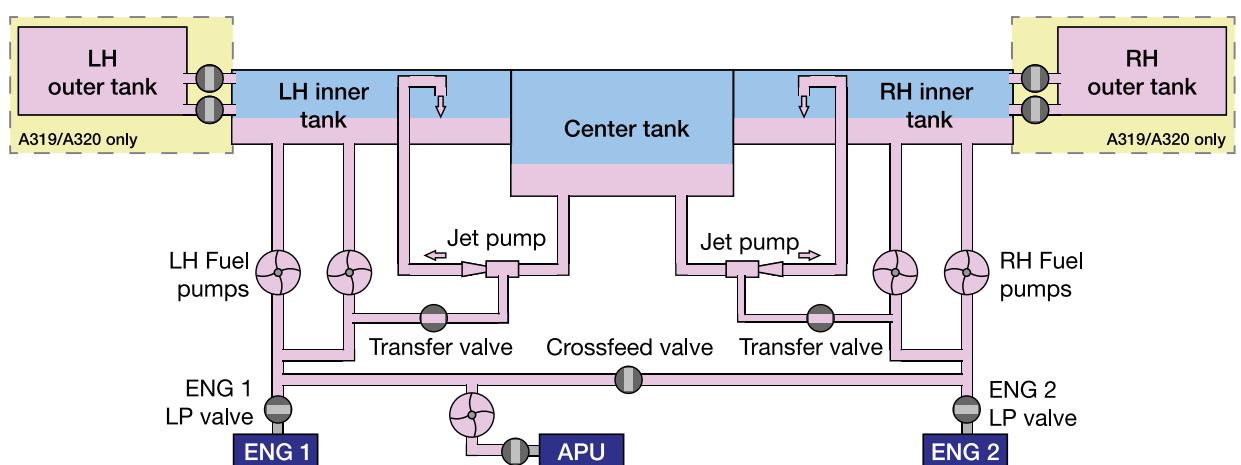
Comparison of the fuel feeding system of A320 family aircraft equipped with or without fuel transfer jet-pumps

Transfer jet-pumps were introduced on the A321 aircraft at its entry into service to simplify the fuel system, replacing the center tank electrical fuel boost pumps previously used on A320 family aircraft (fig.2). To take advantage of this simplification, the transfer jet-pumps were introduced in the center tank of A319ceo and A320ceo aircraft delivered from 2014, and are standard on all A319neo, A320neo, and A321neo aircraft.

## A318/A319/A320 aircraft without fuel transfer jet pumps



## A321 and A319/A320 aircraft with fuel transfer jet pumps



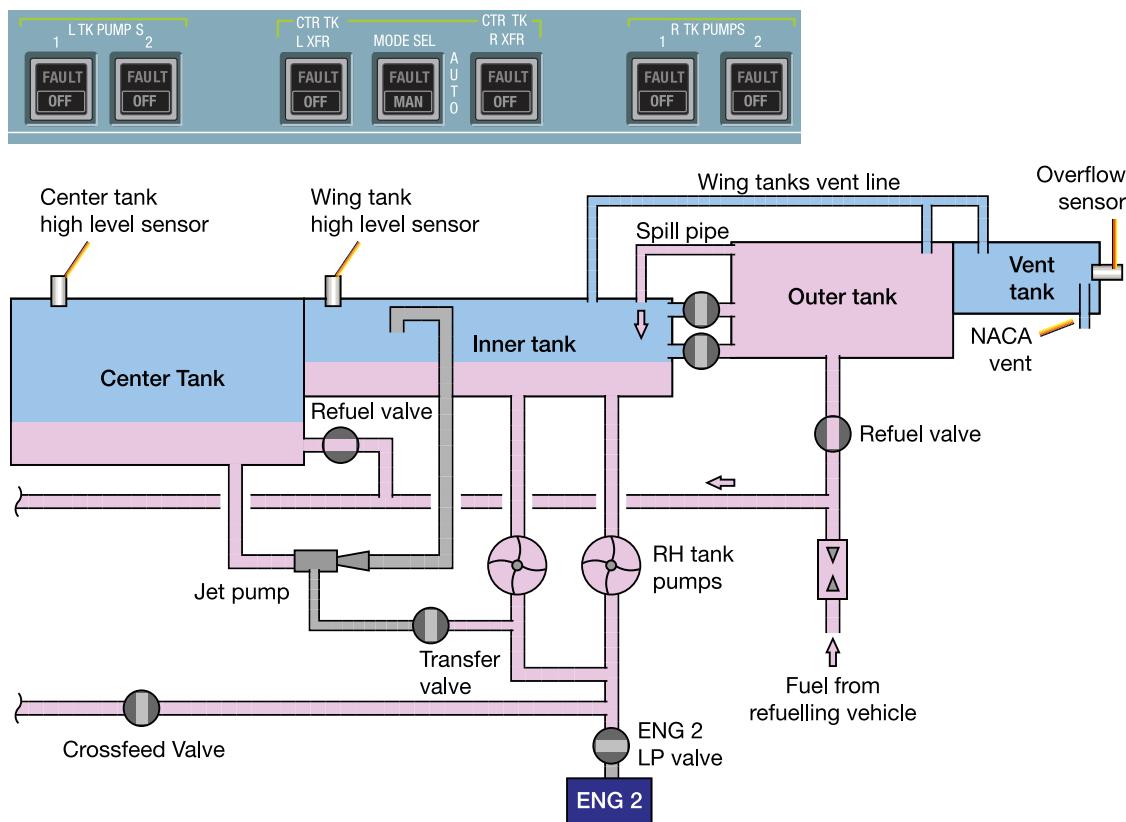
## Refuelling operation

The center tank transfer mode selector should be in the AUTO position (no light) during the refuelling operation. This means the left and right transfer valves will remain closed. The fuel pumps and the Left and Right CTR TK XFR pushbutton switches can be ON or OFF. The switches will be OFF (no light) if the flight crew has already performed their cockpit preparation.

The center tank and the outer wing tanks are filled first in a normal refuelling operation. Once the outer tank is full of fuel, the inner wing tank will be filled with fuel passing through the spill pipe (**fig.3**).

**(fig.3)**

Normal refuelling on A320 family aircraft equipped with transfer jet-pumps (Cockpit preparation already done in this example)



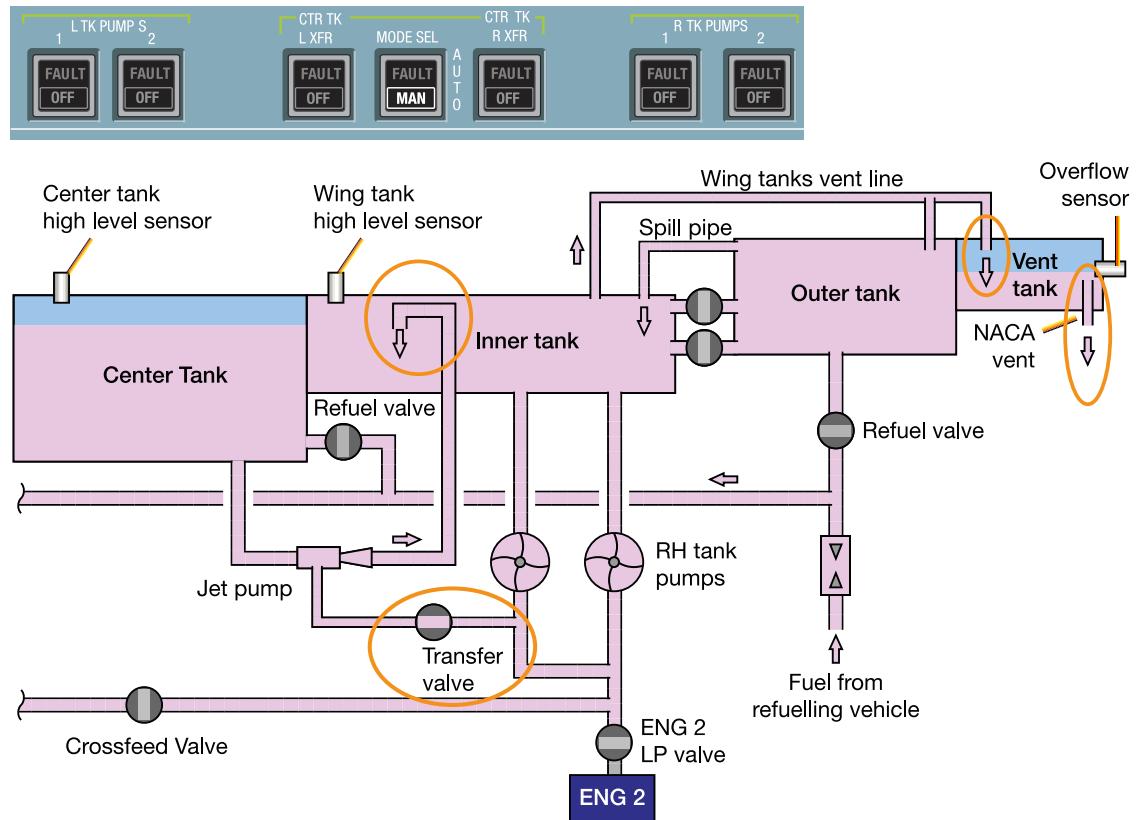
## Scenario of fuel spill incidents due to transfer mode selector in manual mode during automatic refilling operations

Cases of fuel spillage were reported to Airbus during refuelling of A320 family aircraft equipped with transfer jet-pumps in the center tank. The transfer mode selector was left in the **MAN** position during the refuelling operation of the reported events. This condition forced the transfer valves to open and fuel was supplied to the jet-pumps (**fig.4**). With the jet pumps ON and fuel flow provided by the fuel pumps, fuel was moved from the center tank to the wing tanks. Even though the refuel valves automatically closed when the preselected quantity of fuel was reached, the transfer valves remained open and the jet-pumps continued to transfer the fuel out of the center tank into the inner tank. When the wing tanks were completely full, fuel was pushed through the wing tank vent lines into the vent tanks and eventually overflowed from the NACA vent causing fuel to spill to the ground.

**“** The center tank transfer mode selector should be in the AUTO position (no light) during the refuelling operation. **”**

# OPERATIONS

Avoiding Fuel Spills on A320 Family Aircraft



(fig.4)

**Fuel spillage due to mode selector left on the manual position on A320 family aircraft equipped with transfer jet-pumps**

**Adherence to SOP prevents leaving the FUEL MODE SEL in MAN position**

## PARKING procedure

The parking SOP requests the flight crew to set the fuel pumps and center transfer valves OFF. This means that the fuel pumps and the Left and Right CTR TK XFR pushbutton switches should be in the **OFF** position. The fuel mode selector should be in AUTO mode.

(fig.5)

## Configuration of the FUEL Overhead panel as per PARKING SOP



## **COCKPIT PREPARATION procedure**

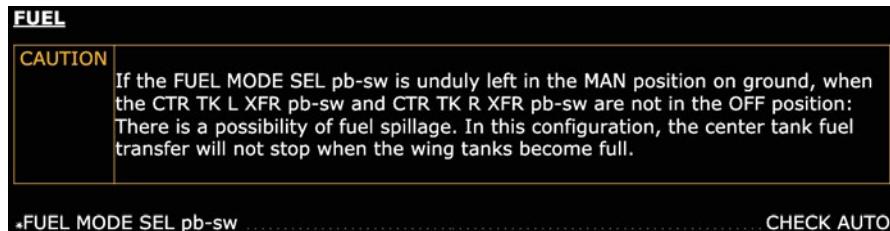
Before the next flight, the flight crew must extinguish all white lights from the overhead panel during the cockpit preparation following the “dark cockpit” philosophy. The fuel pumps are switched ON and the Left and Right CTR TK XFR pushbutton switches should be pushed to extinguish their OFF light **(fig.6)**. If the flight crew observes the FUEL MODE SEL **MAN** light ON, it must be switched OFF at this stage.

(fig.6)

Configuration of the FUEL Overhead panel as per COCKPIT PREPARATION SOP (all lights OFF)



In addition, SOP requests specifically to check that the FUEL MODE SEL is set to AUTO in the FUEL section of the cockpit preparation (**fig.7**). A dedicated caution warns the flight crew of the potential fuel spillage if the FUEL MODE SEL is set to **MAN** position on ground with the CTR TK L XFR and TR TK R XFR pushbutton switches not in the **OFF** position. ■

**(fig.7)**

Extract from the A320 FCOM  
PRO-NOR-SOP Cockpit preparation - Fuel

## WHAT TO DO IN THE CASE OF A FUEL SPILLAGE?

In the event of a fuel spillage, Airbus recommends the following actions:

1. Perform TSM Task "Refuel - Fuel Spillage From NACA Vent During Refuel" to identify the root cause of the spillage
2. Notify Airbus about the fuel spillage event and provide the following information:
  - Fuel Spillage Sheet (available in the TSM task)
  - Fault Reports
  - Shop Reports of replaced components if any, including Part Number and Serial Number. ■



# OPERATIONS

## Avoiding Fuel Spills on A320 Family Aircraft

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Fuel System / Fuel Tank Safety  
Design Office

Protection is available to prevent fuel spill incidents from Airbus aircraft during refuelling. Sensors fitted to the center tank and wing tanks will automatically close the refuel valves to stop the refuelling operation in the case of overfill. Fuel spills are avoided if these protections are operating correctly and this should be checked by a quick test just before refuelling the aircraft.

Fuel spillages were reported to Airbus on A320 family aircraft fitted with transfer jet pumps where the fuel transfer mode selection was mistakenly left in MANUAL. Ensuring that the FUEL MODE SELector is set to AUTO before refuelling the aircraft will avoid a fuel spill incident.





# Safe Aircraft Refuelling

Safe refuelling operations require strict adherence to procedures and careful application of the safety precautions, not only by the refuelling operators but also flight crew, the cabin crew and the other ground operators.

This article highlights the safety precautions that must be considered when refuelling an aircraft. It also describes supplementary tasks that are necessary if refuelling when passengers are on-board.



# FIRE PREVENTION

The main threat during refuelling operation is the fire threat.

The general safety precautions for refuelling/defuelling are available in:

- the A220 AMP SERVICING – REPLENISHING AND DEPLETING - FUEL REPLENISHING AND DEPLETING
- the A300/A310 AMM SERVICING - REPLENISHING OF FUEL TANKS
- the A320/A330/A340 AMM SERVICING - FUEL - FUEL SYSTEM - SERVICING
- General Refuel/Defuel Safety Procedures
- the A380 AMM FUEL - REFUEL/DEFUEL SYSTEM - SERVICING - General Refuel/Defuel Safety Procedures
- the A350 MP FUEL - DISTRIBUTION - REFUEL/DEFUEL SYSTEM - MAINTENANCE PROCEDURES - General Refuel/Defuel Safety Procedures

In addition to the availability of the firefighting equipment and use of personal protection by the fuelling operator, bonding the aircraft and respecting fuelling safety zones is essential.

## Bonding and grounding during refuelling/defuelling

### Bonding

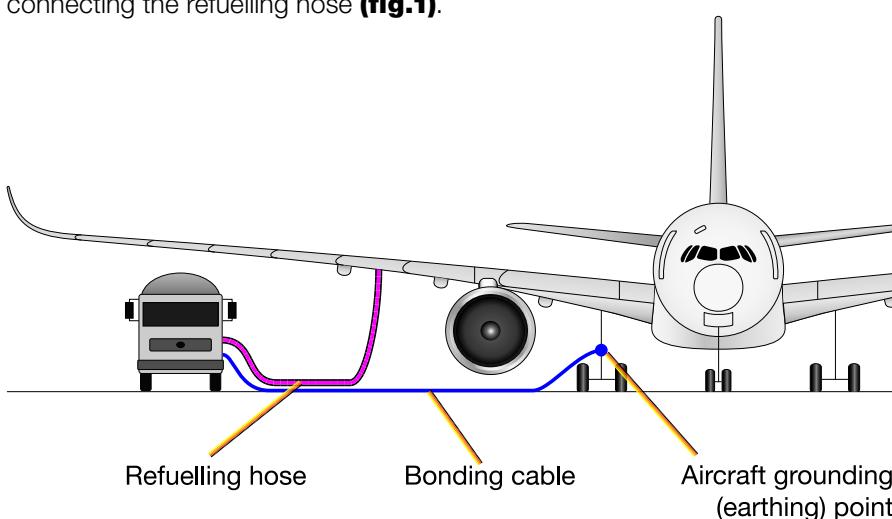
Bonding ensures electrical continuity between the aircraft and the refuelling vehicle, preventing any spark to appear when the ground operator connects the refuelling hose to the aircraft coupling.

It is mandatory to bond the aircraft to the refuelling vehicle/device before connecting the refuelling hose (**fig.1**).

**“** It is mandatory to bond the aircraft to the refuelling vehicle/device before connecting the refuelling hose. **”**

**(fig.1)**

Mandatory bonding during refuelling/defuelling operations



One of the aircraft grounding (earthing) points must be used to connect the bonding cable. Depending on the aircraft type, the grounding (earthing) points can be located:

- On the Nose Landing Gear (NLG)
- On the Main Landing Gears (MLG)
- On the wings
- On the engine air inlet
- At the High Pressure (HP) connector.

# OPERATIONS

## Safe Aircraft Refuelling

**(fig.2)**

Examples of placard used for grounding point identification



**“** Airbus doesn't request the grounding (earthing) of the aircraft or of the refuelling vehicle during refuelling operations but some local authority regulations may request it. **”**

Grounding (earthing) points are indicated by a placard to ease their identification **(fig.2)**. The type of placard may differ depending on its location and the aircraft type.

A cable section of 20 mm<sup>2</sup> or more is recommended to ensure sufficient bonding. The total electrical resistance of the cable between the A/C and the fuel tanker must not be more than 10 ohms.

### Grounding (earthing)

Grounding ensures electrical continuity between the aircraft and the earth. Static electricity resulting from the flight or the environmental conditions on ground (wind with dust, sand, etc...) is discharged to the earth through the tires.

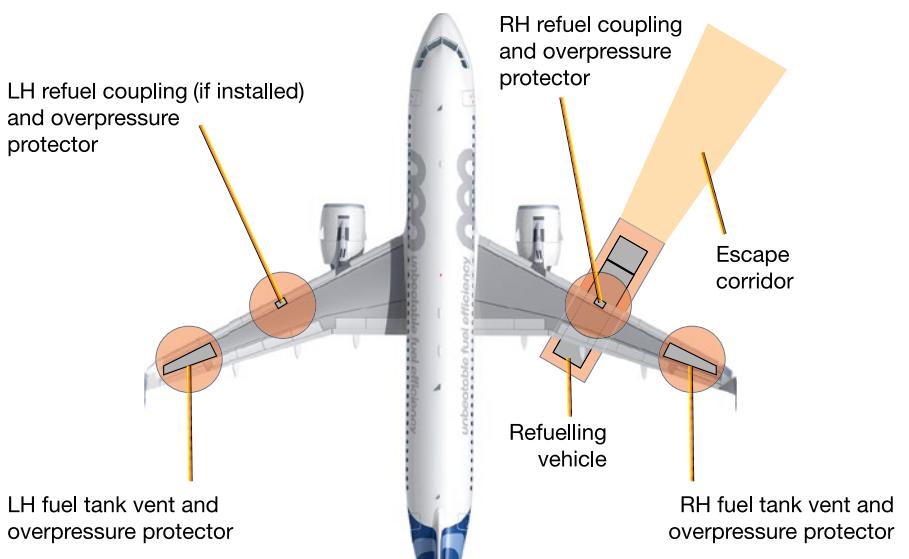
Airbus doesn't request the grounding (earthing) of the aircraft or of the refuelling vehicle during refuelling operations but some local authority regulations may request it.

### Refuelling safety zones

As an industry standard, a 3-meter safety zone must be respected around the area located under the NACA vents, overpressure protectors and refuel coupling(s) **(fig.3)**. These areas must be clear of any object or personnel. Their location can be found in the Refuel/Defuel Safety procedures of the AMM/AMP/MP. In addition, an escape corridor must be clear of obstacles so that the refuelling vehicle can leave the area in case of emergency. ■

**(fig.3)**

Example of the fuelling safety zones on an A320 aircraft



# REFUELING WITH PASSENGERS ON-BOARD

Today's short transit time used by some operators often requires refuelling operations while passengers are still -or already- on-board the aircraft.

It is essential for all actors to respect additional safety precautions and be prepared to initiate an emergency evacuation should it be required.

## Keep ground areas clear for slide deployment

Depending on the ground servicing and catering operations, the area beneath the available exits must be clear to enable proper slide deployment in the case of an evacuation.

## Cabin and passengers handling

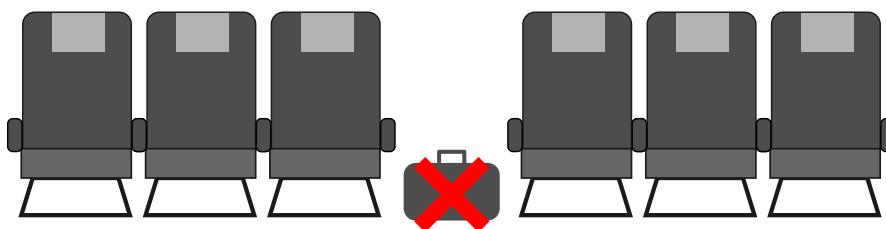
The flight crew must switch OFF the SEAT BELT signs and switch ON the NO SMOKING signs (if installed) and inform the cabin crew when the refuelling/defuelling operation starts and ends.

**“ It is essential for all actors to respect additional safety precautions and be prepared to initiate an emergency evacuation should it be required. ”**



The CCOM SOP “Refuelling/defuelling - Refuelling/defuelling with passengers onboard” provides the procedure and precaution to apply.

The cabin aisle(s) and exits must be free of obstacles that could impair the evacuation path. Cabin curtains must be secured in the open position and the cabin lighting should be ON.



The cabin crew must inform passengers that a refuelling operation is on-going and that they must not fasten their seatbelt to ease evacuation in the case of an emergency.

Each cabin crew should be prepared for an evacuation and at least one cabin crew member should be positioned at each door pair. ■

# OPERATIONS

Safe Aircraft Refuelling

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With Thanks to **Martin BENOIT**  
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Department.

For all refuelling operations, the safety of ground personnel, flight crew, cabin crew and any passengers onboard the aircraft is paramount. It is why the prevention of any unsafe conditions requires the refuelling vehicle or equipment to be bonded to the aircraft, preventing arcing or sparks. An exclusion area of 3 metres from the aircraft's vent tanks, overpressure protection or refuel coupling and equipment should be maintained during refuelling. The appropriate PPE should be worn by the operator and fire fighting equipment available with a defined escape corridor in the event of a fire.

The areas around the aircraft where escape slides deploy should be kept clear in case the flight crew or cabin crew must evacuate any passengers or personnel on board the aircraft. During refuelling operations with passengers on board, at least one cabin crew member should be positioned at each pair of aircraft doors. The cabin crew will also inform passengers when refuelling operations have commenced and instruct them to not fasten their seatbelt in case evacuation is required if there is an emergency situation.



## **OPERATIONS**

Aircraft Parking and Storage



# **Aircraft Parking and Storage**

Facing the unprecedented and massive fleet storage worldwide which is needed in the current COVID-19 pandemic, Airbus has launched an active support to all operators about the grounding, parking and storage conditions.

To complement this on-going effort, this article aims at reminding some of the key safety considerations for a proper parking and storage.



# PARKING AND STORAGE PROCEDURES

The AMM/MP/AMP provides operators with detailed procedures for parking and storage. It is essential that these procedures are followed to preserve the safety, airworthiness and value of the aircraft.

Depending on the duration of the out-of-operation period and on the need for readiness of the aircraft for return into service, several options are available for aircraft preservation in either Parking in “flight-ready” condition or storage.



## Parking

In some cases, the aircraft needs to be kept in a condition that enables quick resumption of operations. In this case, the parking procedure is applicable so that the number of tasks needed to prepare the aircraft for flight operations is minimised. It must be noted that aircraft with only parking procedures applied still require a number of recurring maintenance actions that ensures the aircraft remains in a “ready for flight” condition.

### A320 family, A330, A340, A350, A380 aircraft

Which AMM/MP to apply will depend on if the aircraft will be parked for less than one-month or more than one-month.

Here are the two AMM/MP references:

- 10-10-00 Parking and storage procedures
- 10-11-00 Parking Procedure

### A220 aircraft

Three procedures are available in the AMP depending on the duration of the parking: Parking 7 days, 15 days or 12 weeks.

AMP references:

- Parking (Maximum 7 days) BD500-A-J10-14-00-01AAA-890A-A
- Parking (Maximum 15 days) BD500-A-J10-10-00-01AAA-890A-A
- Parking (Maximum 12 weeks) BD500-A-J10-11-00-01AAA-890A-A

## **OPERATIONS**

Aircraft Parking and Storage

### **Storage**

The storage procedure is for the preservation of parked aircraft that are unlikely to return into service in the short-term. This means that the tasks in the storage procedure will have more detailed steps to follow and require more time to complete compared to the parking procedure. However, the number of recurring maintenance tasks is reduced, meaning less interventions are required on aircraft that are stored. For example, engine runs and a number of other operational checks are not required on an aircraft preserved in accordance with a storage procedure, as it is the case when engines, avionics computers or other major components are removed from the aircraft.

#### **A320 family, A330, A340, A350, A380 aircraft**

Two storage procedures are available in the AMM, one for aircraft that will be stored for less than one-year and a procedure for aircraft stored for periods more than a year.

AMM/MP references:

- 10-10-00 Parking and storage procedures
- 10-12-00 Storage Procedure

#### **A220 aircraft**

Two storage procedures are available in the AMP depending on the duration of the storage: Storage 6 months and 2 years.

AMP references:

- Storage (Maximum 6 months) BD500-A-J10-30-00-01AAA-890A-A
- Storage (Maximum 2 years) BD500-A-J10-31-00-01AAA-890A-A

## **KEY SAFETY CONSIDERATIONS FOR PARKING & STORAGE**

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The application of the AMM/MP/AMP parking and storage procedures ensures the preservation of the aircraft systems. For example, using engines and APU inlet and outlet protection.

There are key safety aspects that are part of the AMM/MP/AMP procedures and must be considered when preparing an aircraft for parking or storage and during the recurring maintenance tasks. These are highlighted below.

### **Storage location**

Aircraft should be ideally parked or stored on a flat surface with the nose pointing in the direction of the prevailing winds to limit the effect of wind and gusts on the aircraft.

## Landing gear safety devices

Landing gear safety devices must be put in place to prevent unwanted landing gear retraction.



### Use of Chocks

On A300, A310, A320, A330, A340, A350 and A380, the parking brake will be ineffective as there will be no hydraulic pressure in the system.

The AMM/MP parking and storage procedures both recommend the use of chocks at the wheels to hold the aircraft in its parked position. The procedure for wheel chocks installation is available in the AMM/MP 10-11-00 Parking Procedure.

The A220 being equipped with an electrical brake system, Airbus recommends to apply the parking brake in addition to the chocks. The brake force will remain constant throughout the parking/storage duration. For A220 wheel chocks installation, refer to the AMP Parking Procedures previously listed above.

You will find complementary information about the design and correct use of chocks in the Safety first article titled, "Safe Aircraft Parking".

### Protection against strong winds

If the aircraft is stored in an area known to be windy, or if strong wind conditions are expected, it is necessary to check and improve aircraft's stability (AMM/MP 05-57-00) and moor the aircraft if needed (AMM/MP procedure 10-20-00 Mooring). However, if the expected winds are above the aircraft's stability limits, Airbus recommends to move the aircraft to another airport when possible.

On A220 aircraft, similar safety precautions should be followed as recommended above. In addition, the Flight By Wire architecture being susceptible to high winds, it is important to be aware of the Parking and mooring gust limits provided in AMP BD500-A-J10-20-00-02AAA-030A-A.



## OPERATIONS

### Aircraft Parking and Storage

#### **Post high-wind inspection**

It is important to perform the “post high wind event” inspection (05-51-42) when the aircraft is unmoored to ensure that the aircraft was not damaged including an assessment of the entire aircraft checking for excessive loads as well as inspections of the flight controls and landing gear structure.

For A220 aircraft, follow Severe winds on the ground - Special irregular inspection per AMP BD500-A-J05-51-32-01AAA-284A-A if limits are exceeded.

#### **What if strong winds are expected and my aircraft is parked/stored in an area with no mooring attachment point?**

Operators should contact Airbus Customer Support to define an alternate solution. At the time of authoring this article, Airbus was updating its detailed guidance for aircraft stability recommendations, which will address fuel and ballast as well as regular and alternative mooring schemes.

#### **Grounding/earthing of the aircraft**

It is highly recommended to permanently ground/earth the aircraft when parked or stored to avoid damage caused by lightning in storms.

It is mandatory to ground/earth the aircraft during the periodic ground checks to ensure safety of the maintenance personnel and avoid damage to the aircraft systems.



#### **Protecting air data probes**

Air Data probes need to be protected to prevent dust or insects from causing an obstruction. Approved probe covers must be used. They can normally be found in each aircraft’s fly-away kit.

Some precautions must be taken when using alternative means like plastic foil when the approved covers are unavailable. These materials can damage the probes. For example, using plastic foil to cover the angle-of-attack probes can cause water to ingress inside the probe when water accumulates inside the plastic foil if the foil is not properly sealed with the fuselage and not equipped with drain holes. This can result in a blocked probe in flight when the aircraft returns to service.

It was also reported that the pressure increased in the total pressure line when sliding certain unapproved protections on the pitot tubes, simulating airspeed reading. This led to an unexpected Ram Air Turbine (RAT) extension when power was applied to the aircraft.

Finally, there is a risk that the tape or foil will not be seen by the ground or flight crews and it will remain on the aircraft when it returns to service. This could lead to incorrect indications for the flight crew and the associated system effects.

#### **What if the approved air probe covers are not available?**

If the approved probe covers are not available, the advice is not to use an improvised or unapproved cover, and it is preferred that the probe remains uncovered when the aircraft is parked. It will then be necessary to carry out an inspection and/or a flushing procedure on the associated pressure line before returning to service.



#### **Closure of the outflow valves**

The parking/storage procedures request closing the outflow valves using the DITCHING pushbutton. Care should be used during maintenance on the aircraft if pre-conditioning the cabin with the aircraft doors closed using a ground cart connected to the low pressure port. The potential for pressure to build up in the cabin may cause the passenger cabin doors to open violently if operated by ground personnel. The maintenance personnel must ensure that at least one passenger door, or the forward avionics compartment access door, is open before connecting the ground cart and remains open for as long as the cart is connected to the aircraft.

Refer to the "Preventing Violent Door Opening Due to Residual Cabin Pressure" Safety first article published in October 2018. ■

## OPERATIONS

Aircraft Parking and Storage

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Certain situations will require the parking or storage of aircraft for a given period of time. The AMM/MP/AMP parking/storage procedures must be followed to ensure that the aircraft's safety, airworthiness and value is maintained during any extended period on the ground. This will ensure that any aircraft, which was parked or in storage can safely return to service when required to do so.

It is strongly advised that operators avoid using improvised or unapproved items to protect the aircraft and its components. In any situation where there are unprecedented numbers of aircraft being parked or stored around the world, it is crucial that where AMM/MP/AMP procedures cannot be correctly applied, that operators contact Airbus to seek advice on what approved alternative procedures may be applicable.



## OPERATIONS

Preparing for a Safe Return to the Skies



# Preparing for a Safe Return to the Skies

Aircraft that were parked or stored due to the impacts of the COVID-19 sanitary crisis are progressively returning to the skies. It is in this context that Airbus has already received several reports of rejected takeoff (RTO) and in-flight turn back (IFTB) events due to unreliable airspeed. All of these events had positive outcomes thanks to the actions of the flight crews. It does however illustrate the challenges for returning aircraft to flying, after they are parked or stored, and if the maintenance procedures are not followed in all cases.

This is why we take this opportunity to share all of the available Airbus information and industry guidelines that can support Operators to ensure their safe return to the skies.

## SOME WARNING SIGNS FROM THE FIELD

With the return to operations of some aircraft that were previously parked or stored due to the COVID-19 situation, Airbus received several reports of incidents that may have been caused by not applying all AMM/MP/AMP procedures for parking and storage or not completing all of the tasks required for returning an aircraft into service after Parking or Storage.

### Several Air Data Issues were Reported

Since March 2020, 15 occurrences of rejected takeoff or in-flight turn back due to unreliable airspeed were reported to Airbus. Out of 15 events, 11 of these were confirmed to have occurred during the first flight following a period where the aircraft had been parked or stored. In comparison, Airbus has received an average of one reported event of probe obstruction on ground per month for the last two years. This shows a clear warning sign with this sudden increase of reported occurrences.

14 out of 15 reported events were caused by foreign objects obstructing the Pitot air pressure line.

It is important that the air data probes are covered for the entire time an aircraft is parked or stored. Flushing the air data pressure lines (in accordance with the AMM procedure) must be done if the aircraft was parked or stored for more than one month, even if the covers were in place the entire time. Flushing may even be required earlier. For example, aircraft parked for less than one month where certain conditions may cause contamination of the Air data pressure lines or obstructions in the Pitot probes, such as nesting insects, dust or sand. Further information can be found in the following publications.

- **ISI 34.11.00026** - "A320FAM and A330/A340 Pitot probes - Description, evolutions and maintenance recommendations"
- "Pitot Probe Performance Covered on the Ground" Safety first article published in 2016

### The Importance of Following the Published Procedures

Warning signs from the field highlight the need to follow the published AMM/MP procedure for parking or storing aircraft, and also for the return into service of aircraft.

As an additional support for Operators, this article lists any information which was published by Airbus during the current COVID-19 sanitary crisis. It also recalls any materials already available with the objective of helping Operators to safely park or store their aircraft and subsequently ensure their safe return to operations. ■

“ Out of 15 reported unreliable airspeed events during takeoff since March 2020, 11 of these were confirmed to have occurred during the first flight following a period where the aircraft had been parked or stored.” ”

# **INFORMATION SHARED ABOUT PARKING & STORAGE**

## **General Information**

- **OIT 999.0019/20** - “Parking and Storage: Exceptional Procedures and Recommendations Related to COVID-19 Massive Grounding Situation”
- **A220 aircraft** - Airbus Canada “**AOM ref: CS-AOM-21-00-0001**”
- **OIT 999.0026/20** - “Scheduled Maintenance Clock Stoppage further to COVID-19 grounding situation”
- **Safety first article** - “Aircraft Parking and Storage”
- **Maintenance Briefing Note** - “Maintenance during aircraft storage”
- **Airbus Fast magazine #65** “Protecting precious assets” article
- **ISI 25.50.00115** - “Cargo Operations Guidance - Aircraft parked used as ULD storage”
- **Safety first article** - “Preventing Violent Door Opening Due to Residual Cabin Pressure”

## **Frequently Asked Questions on Parking and Storage**

- **ISI 10.00.00016** - “FAQ Table of Content”
- **ISI 10.00.00001** - “When is it necessary to park or store an aircraft? Can an aircraft out of operation be maintained with the approved maintenance programme?”
- **ISI 10.00.00002** - “Where can I find procedures for the parking or storage of aircraft? Are they mandatory?”
- **ISI 10.00.00003** - “Is it necessary to park or store an aircraft before a scheduled maintenance check, a working party or a cabin refurbishing?”
- **ISI 10.00.00004** - “What can I do when the parking or storage period has expired?”
- **ISI 10.00.00005** - “Is it possible to remove parts from an aircraft in parking or storage condition?”
- **ISI 10.00.00006** - “How shall the due dates of the periodic ground checks be calculated?”
- **ISI 10.00.00007** - “How does a parking or storage period influence the scheduled maintenance?”
- **ISI 10.00.00008** - “Who shall I ask regarding any questions related to the engines and the APU?”
- **ISI 10.00.00009** - “How can Airbus support me regarding aircraft parking or storage?”
- **ISI 10.00.00010** - “What shall I consider if I request a “Technical Adaptation” document from Airbus to cover parking or storage deviations?

## **Information and Exceptional deviation from Parking and Storage AMM/MP/AMP Procedures per Aircraft System**

The Airbus design office and customer support teams developed and published some exceptional deviations from AMM/MP/AMP procedures that may be applied to address Operator difficulties and to cope with all of their needs due to the massive requirement to park and store aircraft in the context of the current sanitary crisis.

The **OIT 999.0019/20** - "Parking and Storage: Exceptional Procedures and Recommendations Related to COVID-19 Massive Grounding Situation", which was sent to Operators, is regularly updated with new information regarding any approved deviations. Certain allowable deviations are also described in several ISI articles available for download on the AirbusWorld portal. This information was recently explained in Airbus Engineering Support webinars with Operators. The presentations used during these events are available in **ISI 10.00.00020** - "Webinar presentation & MoM".

### **Electrical System**

- **ISI 24.00.00046** - "Electrical Power Generation & Distribution Systems: Recommendations for Parking & Storage during COVID19 period"

### **Flight Controls System**

- **ISI 27.00.00098** - A320Fam - "Deviations to Parking and Storage Maintenance Procedures related to ATA 27 Flight Control Systems and associated components already covered by a TA"
- **ISI 27.00.00099** - A330/A340 - "Deviations to Parking and Storage Maintenance Procedures related to ATA 27 Flight Control Systems and associated components already covered by a TA"
- **ISI 27.00.00100** - A350 - "Deviations to Parking and Storage Maintenance Procedures related to ATA 27 Flight Control Systems and associated components already covered by a TA"
- **ISI 27.00.00101** - A380 - "Deviations to Parking and Storage Maintenance Procedures related to ATA 27 Flight Control Systems and associated components already covered by a TA"

### **Fuel System**

- **ISI 28.00.00166** - "Fuel Parking and Storage Procedures deviation policy"
- **OIT 999.0053/19 ATA 28** – "Recommendation on the use of Kathon FP1.5 Biocide"

### **Hydraulic System**

- **ISI 29.00.00213** - "Deviations from Parking And Storage AMM Procedures related to ATA 29"

### **Landing Gear System**

- **ISI 32.00.00178** - "Deviations to Parking And Storage AMM Procedures related to Landing Gear"
- **ISI 32.00.00179** - "Deviations from Parking And Storage AMM Procedures"
- **ISI 32.40.00066** - "Wheels and Brakes Corrosion during Parking - request for feedback"
- **ISI 32.40.00067** - "Deviations to Parking And Storage AMM Procedures related to Braking and Steering Systems and associated components ATA 32-4X and 32-5X already covered by TA (A320)"
- **ISI 32.40.00069** - "Deviations to Parking And Storage AMM Procedures related to Braking and Steering Systems and associated components ATA 32-4X and 32-5X already covered by TA (A350)"
- **ISI 32.40.00070** - "Deviations to Parking And Storage AMM Procedures related to Braking and Steering Systems and associated components ATA 32-4X and 32-5X already covered by TA (A330/A340)"

# OPERATIONS

Preparing for a Safe Return to the Skies

- **ISI 32.40.00071** - “Deviations to Parking And Storage AMM Procedures related to Braking and Steering Systems and associated components ATA 32-4X and 32-5X already covered by TA (A380)”
- **ISI 32.41.00102** - “Mitigations to wheels removal requirement after parking / storage period exceeding 3 months / 12 weeks”

## **Lighting System**

- **ISI 33.51.00004** - “EPSU batteries storage handling and charging procedure at installation on aircraft”

## **Navigation System**

- **ISI 34.11.00026** - “A320FAM and A330/A340 Pitot probes - Description, evolutions and maintenance recommendations”
- **“Pitot Probe Performance Covered on the Ground”** Safety first article published in 2016

## **Pneumatic System**

- **OIT 999.0037/20** - “ATA36 - maintenance actions & recommendations after long parking period”

## **Auxiliary Power Unit**

- **ISI 49.00.00092** - “APU Parking Procedure deviation policy”

## **Engine System**

- **ISI 71.00.00075** - “Engine / nacelle recommendations and acceptable deviations for parking/storage and return to service (RTS)” ■



# SAFE RETURN TO OPERATIONS

## “Keep trust in Air Travel” Initiative

The COVID-19 sanitary crisis has suddenly and deeply impacted air transportation. In this context, Airbus has reacted quickly and started to provide solutions to enable a safe return to operations whilst keeping the trust of passengers and crews returning to flying.

In response, Airbus launched the “Keep trust in Air Travel” program. The objective is to find the solutions that will enable Airlines to recover as quickly as possible from the current crisis and make passengers feel that they can safely come back on board an aircraft. The various themes of “Keep trust in Air Travel” cover how to keep trust in Airbus cabin and aircraft overall - for example: with seamless hygienic travel solutions in the cabin and how to contribute with governmental and regulatory agencies to keep trust in the overall transport system. This includes the time before entering an airport or an aircraft, how to accompany airports for even safer airport operations, or how to take into account psychological aspects to keep trust in air travel.

Several webinars have already shared “*Keep Trust in Air Travel*” project’s outcome and progress with Airlines and a Facebook Live event was hosted by Jean-Brice Dumont - Airbus EVP Engineering for Q&A with the travelling public. <https://www.facebook.com/airbus/videos/582384906021127/>

An illustrative video called, “*Cabin air flow and ventilation in an Airbus aircraft: how does it work?*” is also available on the Airbus Facebook channel. <https://www.facebook.com/airbus/videos/272008560615125/?vh=e>

## Management of COVID-19

- **OIT 999.0008/20** - “ATA 21 – Virus Outbreaks - Novel Coronavirus (2019-nCov)”
- **ISI 12.00.00008** - “COVID-19 - Coronavirus / Cleaning & Disinfection / disinfectants products & procedures applicable to SARS-CoV2 (COVID-19) disinfection of aircrafts in operation”
- **ISI 21.00.00119** - “COVID-19 (CoronaVirus) and Middle East Respiratory Syndrome (MERS)”
- **ISI 00.00.00374** - “[PED] Usage of bluetooth SARS-CoV-2/COVID-19 tracking apps on AIRBUS commercial aircraft”

## Cargo Operations

- **ISI 25.50.00117** - “Cargo / General Guidance To Covid19 Situation”

# OPERATIONS

Preparing for a Safe Return to the Skies

## Cargo Transportation in the Aircraft Cabin

- **OIT 999-0033/20** - "Cargo Transportation in the cabin"
- **ISI 00.00.00370** - "How to transport cargo in the aircraft cabin during COVID-19 outbreak? communicated via **FOT 999.0028/20** Cargo Transportation in the Cabin"
- **Web Conference** - "Cargo Transport in Cabin - Latest Update/Current Airbus Solution" held on April 27, 2020. Presentation materials are available on AirbusWorld in "Events" - "Conferences and forums" - "Flight Operations Web Conferences".

## Guidelines to Flight and Cabin Crews

- **ISI 00.00.00373** - "Keep Trust in Air Travel - Flight Operations - General Guidelines for Cockpit and Cabin Crews during SARs-COV-2 (Covid-19) crisis" communicated via **FOT 999.0039/20** "Keep trust in Air Travel - Flight Operations - General Guidelines For Cockpit And Cabin Crews During Sars-cov-2 (Covid-19) Crisis"
- **ISI 00.00.00377** - "Aircraft Return into Service - Flight Operations Guidelines" (to be published by end of June) announced via FOT 999.0044/20 "Aircraft Return into Service - Flight Operations Guidelines"
- **Web Conference** - "Aircraft Return to Service - Flight Operations Guidelines" held on June 16, 2020. Presentation materials will soon be available on AirbusWorld in "Events" - "Conferences and forums" - "Flight Operations Web Conferences".

## Security

- **SIT 2020-011/01** - "Security Guidance for Aircraft Return into Service" to be published by the end of June.

## Other References

ICAO Council Aviation Recovery Taskforce (CART)

<https://www.icao.int/covid/cart/Pages/default.aspx>

Includes: CART Report - Executive Summary

Guidance for Air Travel through the COVID-19 Public Health Crisis

IATA COVID-19: Resources for Airlines & Air Transport Professionals  
<https://www.iata.org/en/programs/covid-19-resources-guidelines/>

EASA guidelines on the progressive restoration of transport services and connectivity  
[https://ec.europa.eu/info/sites/info/files/communication\\_transportservices.pdf](https://ec.europa.eu/info/sites/info/files/communication_transportservices.pdf)

EASA COVID-19 Aviation Health Safety Protocol  
<https://www.easa.europa.eu/document-library/general-publications/covid-19-aviation-health-safety-protocol>

EASA SIB 2020-02R4 - 07.04.2020  
<https://ad.easa.europa.eu/ad/2020-02R4>

FAA SAFO 20009 - 11.05.2020  
[https://www.faa.gov/other\\_visit/aviation\\_industry/airline\\_operators/airline\\_safety/safo/all\\_safo/media/2020/SAFO20009.pdf](https://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo/all_safo/media/2020/SAFO20009.pdf)

WHO Operational Considerations for managing COVID-19 cases or outbreak in aviation - 18.03.2020  
<https://apps.who.int/iris/handle/10665/331488> ■

The COVID-19 crisis has led to very significant challenges for the world and the commercial aviation sector in particular. With this in mind, it remains every aviation actor's duty to reinforce our collective vigilance, ensuring that together we can achieve a successful and safe return to flying.

Let us take these reported unreliable airspeed events with positive outcomes as an opportunity to remind all of us of the need for reinforced vigilance.

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# Mind the OEBs!

Operations Engineering Bulletins (OEBs) are temporary procedures published for flight crews. They must be applied only in specific conditions to ensure safe and efficient operations of the aircraft.

This article explains why OEBs are issued, the importance of communicating them to flight crews as soon as possible, and the importance for flight crews to comply with the OEB procedures. This article also stresses the importance of applying the available modifications that will cancel an OEB as soon as possible. Airbus provides support to Operators to assess and prioritize the implementation of service bulletin modifications that can remove applicable OEBs from their fleets.

# WHAT IS AN OEB?

## A Temporary Procedure

An Operations Engineering Bulletin (OEB) is a temporary procedure published for flight crews, which must be applied in specific conditions to ensure the safe and efficient operation of the aircraft. An OEB is applicable until a permanent corrective solution is installed on the aircraft.

## Two Types of OEB

There are two types of OEB:

- **Red OEB** : Safety related OEB where non-compliance may have a significant impact on the safe operations of the aircraft
- **White OEB** : Non-compliance may have a significant impact on the efficient operations of the aircraft (e.g. diversions or delays)

## Where to Find OEBs

OEBs can be published and made applicable to any Airbus aircraft with the exception of the A220 family.

OEBs can be found in the FCOM of A350 and A380 aircraft. OEBs are currently published in both the FCOM and the QRH for the A320 family and A330/A340 aircraft. From the end of 2020, OEBs for these aircraft will only be available in the QRH. A300/A310 aircraft OEBs can be found in both the FCOM and QRH. ■

## Airbus Temporary Quick Change (ATQC)

A350 and A380 aircraft

*OEBs for A350 and A380 aircraft will only be issued to cover non-ECAM related procedures. An Airbus Temporary Quick Change (ATQC) will be issued to temporarily amend the existing ECAM procedure directly onboard these aircraft.*



# HOW FLIGHT CREWS MANAGE OEBs

When preparing for a flight, the flight crew must know the answers to the following questions:

- What are the OEBs applicable to this aircraft?
- What are the specific entry conditions for applying these OEBs?
- What are the cockpit effects and system effects of the OEBs when applied on the aircraft?

## Know the OEBs that are applicable to your aircraft

“ It is essential that flight crews know precisely which OEBs are applicable to their aircraft before each flight. ”

It is essential that flight crews know precisely which OEBs are applicable to their aircraft before each flight.

Several events with the potential of negative outcomes have occurred when flight crews inappropriately applied an OEB that was not applicable for the aircraft they were flying. This risk is higher for Operators with diverse fleets of aircraft models and of different ages. Some flight crews may fly several aircraft over a short period of time with different OEBs that are applicable.

### Review the OEBs before each flight

Airbus Standard Operating Procedures (SOPs) request flight crews to review all applicable OEBs during the preliminary cockpit preparation phase of each flight to mitigate this risk, even when in transit.

## The LEOEB from the QRH: An Efficient Tool

A300/A310, A320 family, and A330/A340 aircraft

The flight crew can use the List Of Effective OEBs (LEOEB) available in the QRH of the A300/A310, A320 family and A330/A340 aircraft to perform the review of the OEBs during the preliminary cockpit preparation. The LEOEB is representative of the aircraft configuration and displays only the OEBs that are applicable to that aircraft. It displays red OEBs first and mentions the associated ECAM entries, if any.

## Know when to apply an OEB

OEBs only apply in very specific conditions. These conditions can be either an ECAM alert or another defined event.

Flight crews must be precisely able to recognize the defined conditions that will require the application of an OEB. Any ECAM entry conditions are defined in the OEB and are also described in the LEOEB. If an OEB does not have an ECAM entry condition, the conditions of a defined event that requires application of an OEB is provided in the OEB description.

## Inappropriate application of an OEB can potentially impair safety

Events have occurred as a result of inappropriate application of an OEB following the misinterpretation of the aircraft parameters. Refer to the “Overspeed event with crew take-over and OEB49 application” Safety first article (June 2019) that describes an incident in which the flight crew improperly applied an OEB whereas the entry conditions were not met .

## Understand the OEB procedure and its effects

Flight crews must fully understand the OEB procedure and the effects of its application. A well-prepared flight crew should already know the content of the applicable OEBs before entering the cockpit or take the time to review them during the preliminary cockpit preparation phase.

The explanation of each OEB is attached to the procedure (in the FCOM today for all Airbus aircraft, but from the end of 2020 only in the QRH for A320 family and A330/A340 aircraft). The explanation provides a concise description of the context and the reason for the OEB. Flight crews must refer to these explanations, and any other supporting materials provided by Airbus, or their flight operations department, to be confident in the correct application of the OEB procedures. ■



“ Flight crews must be precisely able to recognize the defined conditions that will require the application of an OEB.” ”

## HOW TO IMPLEMENT OEBs

### Airbus Decision to Create an OEB

Airbus may decide to publish an OEB when a situation is identified that could pose a potential risk to the safe operations of the aircraft and there is no existing procedure or technical solution to manage this risk. A published OEB is applicable until a permanent corrective solution is installed on the aircraft.

Airbus will closely coordinate with Authorities throughout the OEB decision-making process and publication of the relevant documentation. As in the case of a red OEB, Authorities will issue an Airworthiness Directive (AD) and Airbus will issue the associated update of the Airplane Flight Manual (AFM).

## Airbus OEB Publication

When the decision is made to issue an OEB, the goal is to make it available to Operators as soon as possible.

### Notice of an OEB sent to Operators

Airbus Flight Operations will issue a Flight Operations Transmission (FOT) explaining the rationale for the OEB, the content of the OEB itself as an advance copy, and the AFM Temporary Revision text if required (for red OEBs).

### Operational Documentation Update

An update to the FCOM and QRH will incorporate the new applicable OEBs published since the last revision. The AFM will also be updated if required (for red OEBs).

### Continuous Support to Operators

Airbus provides Operators with supporting materials via the AirbusWorld portal and web conferences to well understand and manage the new OEB, which is key to safe application of the OEB.

“ The objective for Operators is to deploy any new OEB as soon as it is available. ”

## Operator OEB Implementation

The objective for Operators is to deploy any new OEB as soon as it is available. It is best practice that all Operators have a defined process, which will ensure rapid implementation of the OEB and its content is fully understood by flight crews. This will contribute to ensuring that the flight crew is aware of any applicable OEBs and will reduce the risk of inappropriate application of an OEB. ■

## The OEB Reminder: A Useful Function

A320 family and A330/A340 aircraft

The OEB reminder function will advise the flight crew to apply the OEB procedure instead of the ECAM procedure when it is impacted by an OEB. This function inhibits the display of the procedure and/or status of an ECAM alert. A “REFER TO QRH PROC” message will be displayed in its place. Operators can activate the OEB reminder function by entering a code corresponding to the ECAM alert in the MCDU (AMM task 31-51-00-610-001-A for A320 family aircraft, AMM task 31-51-00-610-801-A for A330/A340 aircraft). Coordination between Flight Operations and Maintenance Engineering is necessary to ensure that:

- The OEB is available in the QRH when the OEB reminder function is activated
- The OEB reminder function is deactivated when the OEB cancellation modification is installed and the OEB is removed from the QRH.

VENT EXTRACT FAULT

-REFER TO QRH PROC



## BEST PRACTICE

Operators can use the OEB advance copy sent by Airbus with the FOT to make the OEB available in the cockpit for flight crews as soon as possible.



## HOW OPERATORS REMOVE OEBs

When the decision is made to issue an OEB, Airbus takes the necessary actions at the same time to quickly find a solution to cancel this OEB. We must keep in mind that an OEB is only temporary pending the availability of a permanent solution.

### Implementing an OEB Fix

As soon as a solution is found to cancel the OEB, Airbus will publish one or several Service Bulletins (SBs) with instructions to apply the modifications on the aircraft. A Retrofit Information Letter (RIL) is usually sent to Operators to inform them of the availability of the SB.

**“**We must keep in mind that an OEB is only temporary pending the availability of a permanent solution.**”**



## KEY POINT

As soon as the fix is available to cancel an OEB, it is important to implement it in a timely manner on affected aircraft. It is always better from a safety and operational perspective to operate aircraft with the minimum possible number of OEBs.

### Operational Documentation Update When SBs are Implemented

To prevent inappropriate application of an OEB, it is crucial that the aircraft configuration (SB installation) and the onboard operational documentation (list of applicable OEBs) are aligned. This requires close coordination between Maintenance Engineering and Flight Operations to confirm when modifications are implemented on the aircraft which will cancel an OEB. This is to avoid the risk of any significant impact to the safety of a flight if a flight crew were to attempt to apply an OEB procedure that is no longer applicable to their aircraft.

“ It is crucial that the aircraft configuration and the onboard operational documentation are aligned. ”

## Report of Service Bulletin Installation to Airbus

Service Bulletin reporting is required to ensure that Airbus and Operators share the same view of the retrofit status for the fleet and to trigger the update of all operational documentation. Operators can also request operational documentation to be updated in advance of the standard revision cycle.

Reporting is done via the Service Bulletin Reporting Online tool. (Ref. ISI 00.00.00135 available on the AirbusWorld portal)



## BEST PRACTICE

- Service Bulletin reporting should be done aircraft per aircraft and not only reported at the completion of the retrofit cycle for the entire fleet.
- Operators can manually remove the OEBs from their current versions of operational documentation pending the availability of the updated version.

“ Operators should install the OEB cancellation modifications as soon as possible after they are informed they are available. ”

## Limiting the Number of Applicable OEBs

Limiting the number of OEBs applicable to an aircraft improves safety because it enables the Operator to resume standard aircraft operations. Operators should therefore install the OEB cancellation modifications as soon as possible after they are informed they are available.

### Airbus Support for OEB Reduction Strategies

Operators should define and secure a retrofit strategy for their fleets with appropriate priority management, for example, any corrective actions mandated by an Airworthiness Directive or red OEBs.

Operators can ask Airbus Customer Support to provide them with a full status of the available solutions for their current list of effective OEBs, the retrofit priorities, instructions, and recommendations.

### For Further Information

Operators can also access information on the AirbusWorld portal with the updates of the Technical Follow-Up (TFU) associated with an OEB and the latest “Digest of Available Safety Enhancements” brochure published annually. This brochure includes information on safety enhancements, which were developed in response to the in-service experience of the Airbus fleet. Many of these enhancements will also cancel an associated OEB. ■

Inappropriate or incorrect application of an OEB could cause potentially negative outcomes for the safety of a flight. Therefore, it is important that flight crews know which OEBs are applicable to their aircraft when preparing for a flight. The applicable OEBs can be quickly and efficiently reviewed by referring to the "List of Effective OEBs" (or LEOEB) in the QRH.

There are defined entry conditions for applying the OEB procedure when it is applicable to the aircraft. This can be an ECAM alert or other specific conditions. The flight crew must apply an OEB procedure only if the pre-defined entry conditions are confirmed as present. Flight crews must also ensure that they review the entry conditions of applicable OEBs during their flight preparation and know what the expected cockpit or system effects will be when the OEB is applied.

OEBs are temporary and Operators should limit the number of OEBs applicable to an aircraft by implementing the OEB cancellation Service Bulletins as soon as possible. The operational documentation must also be updated to reflect the aircraft's configuration so the flight crews have the most up to date list of applicable OEBs. This will prevent inappropriate application of an OEB if the OEB cancellation modifications are already installed.

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## Issue 29

### January, 2020

- GNSS Interference
- Takeoff Surveillance & Monitoring Functions
- Managing Severe Turbulence
- Safe Aircraft Parkin

## Issue 28

### July, 2019

- Overspeed Event with Crew Take-over and OEB49 Application
- Management of Overspeed Event in Cruise
- The Adverse Effects of Unrealistic Simulator Scenarios
- Preventing Fan Cowl Door Loss
- Correct Escape Slides Maintenance for Successful Slides Deployment

## Issue 27

### January, 2019

- Engine Thrust Management - Thrust Setting at Takeoff
- Preventing Inadvertent Slide Deployments
- Preventing Violent Door Opening due to Residual Cabin Pressure
- Lessons Learned About the Teach-In Function

## Issue 26

### July 2018

- Look out for Ice Ridges on the Lower Nose Fuselage
- High Load Event Reporting
- Using Aircraft as a Sensor on Contaminated Runways
- Thrust Reverser Deployment in Flight

## Issue 25

### January 2018

- Are You Properly Seated?
- A Recall of the Correct Use of the MEL
- Protecting Aircraft and Passengers from Cargo Fire

## Issue 24

### July 2017

- Control your Speed... During Descent, Approach and Landing
- Troubleshooting Airframe Vibrations
- Preventing Falls from Height
- Progress to Pinpoint anAircraft's Position

## Issue 23

### January 2017

- Safely Flying Non-Precision Instrument Approaches
- Introduction to the Soft Go-Around Function
- Preparing Flight Crews to Face Unexpected Events
- Safety, Our Shared Destination

## Issue 22

### July 2016

- Pitot Probe Performance Covered On the Ground
- 180° turns on runway
- Optimum use of weather radar

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### January 2016

- Control your speed... in cruise
- Lithium batteries: safe to fly?
- Wake vortices
- A320 Family Aircraft configuration

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- Lateral runway excursions upon landing
- Fuel monitoring on A320 Family aircraft
- Hight-altitude manual flying

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- Tidy cockpit for safe flight
- Landing on contaminated runways
- Understanding weight & balance
- Wind shear: an invisible enemy to pilots?

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- Control your speed... at take-off
- Safe operations with composite aircraft
- Learning from the evidence
- A320 Family cargo Containers/ pallets movement
- Parts Departing from Aircraft (PDA)

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- Airbus Brake Testing
- Hard Landing, a Case Study for Crews and Maintenance Personnel
- Aircraft Protection during Washing and Painting
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RNP and RNP AR Approaches

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- Late Changes before Departure

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- Preventing Fan Cowl Door Loss
- Do not forget that you are not alone in Maintenance

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- The Fuel Penalty Factor
- The Airbus TCAS Alert Prevention (TCAP)
- **A380:** Development of the Flight Controls - Part 1
- Facing the Reality of everyday Maintenance Operations

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- Airbus New Operational Landing Distances
- The Go Around Procedure
- The Circling Approach
- VMU Tests on A380
- Automatic Landings in Daily Operation

**Issue 11****January 2011**

- What is Stall? How a Pilot Should React in Front of a Stall Situation
- Minimum Control Speed Tests on A380
- Radio Altimeter Erroneous Values
- Automatic NAV Engagement at Go Around

**Issue 10****August 2010**

- **A380:** Flutter Tests
- **Operational Landing Distances:** A New Standard for In-flight Landing Distance Assessment
- Go Around Handling
- **A320:** Landing Gear Downlock
- Situation Awareness and Decision Making

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### February 2010

- **A320 Family:** Evolution of Ground Spoiler Logic
- Incorrect Pitch Trim Setting at Take-Off
- Technical Flight Familiarization
- Oxygen Safety

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- The Runway Overrun Prevention System
- The Take-Off Securing Function
- **Computer Mixability:** An Important Function
- Fuel Spills During Refueling Operations

## Issue 7

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- **Airbus AP/FD TCAS Mode:** A New Step Towards Safety Improvement
- Braking System Cross Connections
- Upset Recovery Training Aid, Revision 2
- Fuel Pumps Left in OFF Position
- **A320:** Avoiding Dual Bleed Loss

## Issue 6

### July 2008

- **A320:** Runway Overrun
- FCTL Check after EFCS Reset on Ground
- **A320:** Possible Consequence of  $V_{MO}/M_{MO}$  Exceedance
- **A320:** Prevention of Tailstrikes
- Low Fuel Situation Awareness
- Rudder Pedal Jam
- Why do Certain AMM Tasks Require Equipment Resets?
- Slide/raft Improvement
- Cabin Attendant Falling through the Avionics Bay Access Panel in Cockpit

## Issue 5

### December 2007

- New CFIT Event During Non Precision Approach
- **A320:** Tail Strike at Take-Off?
- Unreliable Speed
- Compliance to Operational Procedures
- The Future Air Navigation System FANS B

## Issue 4

### June 2007

- Operations Engineering Bulletin Reminder Function
- Avoiding High Speed Rejected Take-Offs Due to EGT Limit Exceedance
- Do you Know your ATC/TCAS Panel?
- Managing Hailstorms
- Introducing the Maintenance Briefing Notes
- **A320:** Dual hydraulic Loss
- Terrain Awareness and Warning Systems Operations Based on GPS Data

## Issue 3

### December 2006

- Dual Side Stick Inputs
- Trimmable Horizontal Stabilizer Damage
- Pitot Probes Obstruction on Ground
- **A340:** Thrust Reverser Unlocked
- Residual Cabin Pressure
- Cabin Operations Briefing Notes
- **Hypoxia:** An Invisible Enemy

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### September 2005

- Tailpipe or Engine Fire
- Managing Severe Turbulence
- Airbus Pilot Transition (ATP)
- Runway Excursions at Take-Off

## Issue 1

### January 2005

- Go Arounds in Addis-Ababa due to VOR Reception Problems
- The Importance of the Pre-flight Flight Control Check
- **A320:** In-flight Thrust Reverser Deployment
- Airbus Flight Safety Manager Handbook
- Flight Operations Briefing Notes



