accenture

# Air safety solutions

Cabin products







# **Cabin products**

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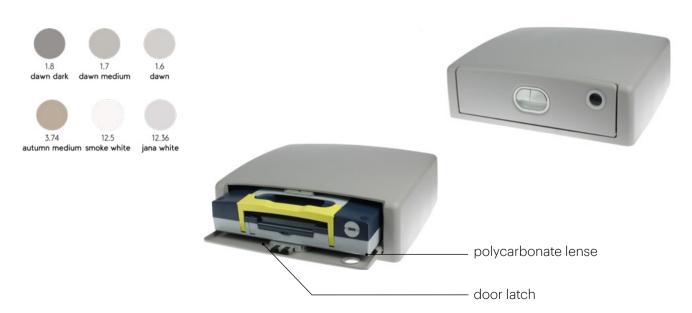
# **Adapter Plates Solutions**

- In compliance with FAR/CS 25.853.
- In compliance with RTCA/DO-160G, environmental conditions and test procedures for airborne equipment.



# Stowage box Protective Breathing Equipment (PBE)

#### P3APP000003\_





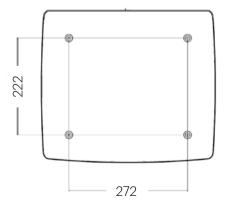
- Lightweight composite stowage box
- Polycarbonate lense allows visual check of PBE status indicator
- Double latching door
- Fixable to any partition wall etc. with 4 screws
- Suitable for: B/E Aerospace E28180-20-0011 and Air Liquide 15-40F80

#### Main dimensions

Length: 400 mm Width: 350 mm Height: 125 mm

Weight (without equipment): 1,71 kg

#### Fixation points



# Adapters for the Overhead Stowage Compartment

P3APP000070\_ • P3APP000071\_ • P3APP000072\_







- Composite stowage rack for emergency equipment
- Available in various options and sizes
- Any equipment fixable with straps and brackets inside the rack
- Adaptable for any overhead stowage compartment
- Suitable for:
   differrent equipment
   (e.g. First Aid Kit, Emergency
   Medical Kit, Fire Extinguisher,
   Megaphone)

#### Fixation points

Rack and fixation points developed for AIRBUS A350XWB

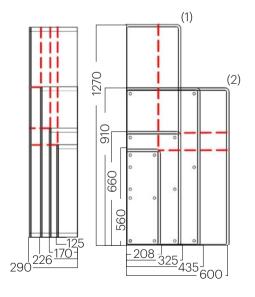


## Wallmounted Stowages

P3APP000100 - P3APP000155



#### Stowage dimensions





- Modular composite stowage box
- Aluminium corner profile protects the stowage box against damage from trolleys
- Optional protective bumper on door available to protect the stowage box against damage from trolleys
- Optional polycarbonate window to allow visual check of equipment indicators i.e. pressure gauge on oxygen bottle
- · Double latching door
- Suitable for: fire extinguisher, O2 bottle ...

#### Main dimensions

Minimum

Length: 125 mm Width: 208 mm Height: 560 mm Weight\*: 2,52 kg

Maximum 1

Length: 290 mm Width: 325 mm Height: 1270 mm Weight\*: 5,83 kg

Maximum 2

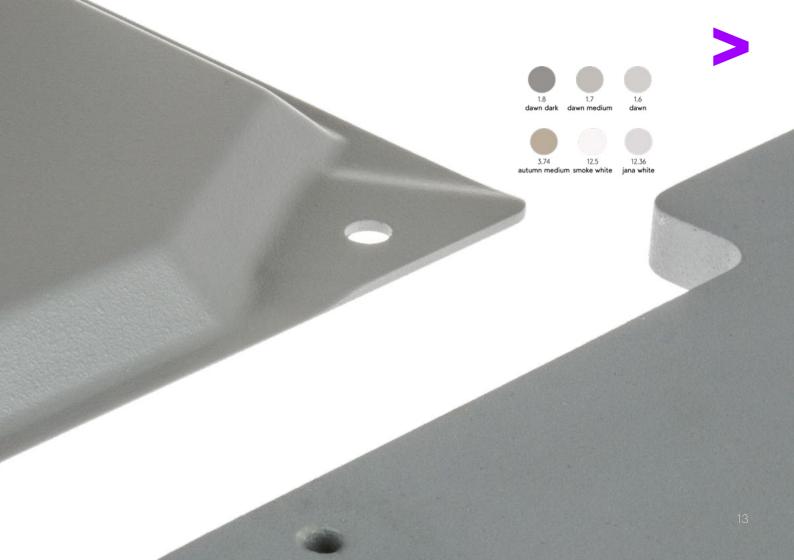
Length: 290 mm Width: 600 mm Height: 910 mm Weight\*: 5,81 kg

\*without equipment

# Standard & Lightweight Design Adapters

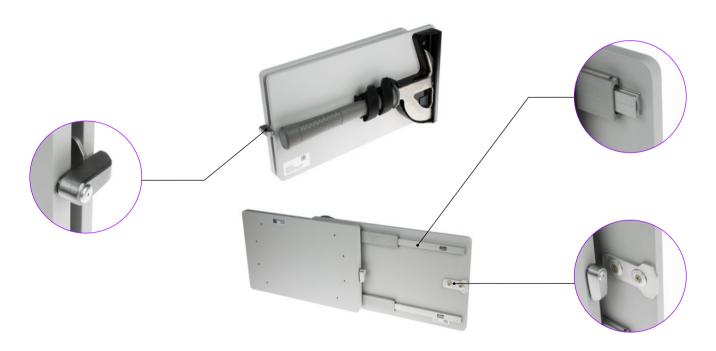
#### Technical features

- · Lightweight composite adapter plate
- Up to 30% less weight compared to common composite adapter plates
- Different sizes and shapes for all purposes possible
- E.g. for doghouse, Cabin Attendant Seat and other compartments



# Sliding Adapter

P3APP000030\_





- Sliding composite adapter plate assembly for easier removal of equipment from deep compartments
- Lockable with latch
- Stepless and noisless sliding
- Suitable for various aeronautic equipment

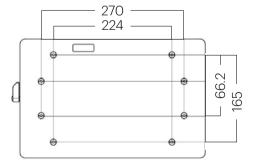
#### Main dimensions

Retracted

Length: 410 mm Width: 225,3 mm Height: 71,9 mm

Weight (without equipment): 1,39 kg

#### Fixation points



# **Brackets Solutions**

- In compliance with FAR/CS 25.853
- In compliance with RTCA/DO-160G, environmental conditions and test procedures for airborne equipment



### Bracket for Crash Axes

P3APP000005\_





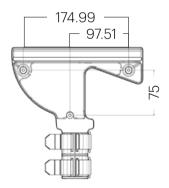
- Lightweight injection moulded crash axe bracket
- Suitable for 4 crash axes, allowing a standard hole pattern whatever the OEM is
- Secure double latching
- Quick and easy release due to the use of hook and loop fastening straps
- Suitable for: Thales 680-0040-000 Gemtor 42D8331 and 56D6221 E.I.S Aircraft EIS76014-10000

#### Main dimensions

Length: 218,6 mm Width: 218,1 mm Height: 37 mm

Weight (without equipment): 0,154 kg

#### Fixation points



# Brackets for Oxygen Cylinders

P3APP00008X







- Lightweight injection moulded oxygen bottle brackets
- · Lowest installation height
- Upper bracket available with and without bottle neck support
- Variable clip postions possible
- Up to 35% lighter than competitor bracket
- Suitable for various aeronautic oxygen bottles

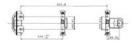
#### Bracket weights

Lower: 0,032 kg Center: 0,048 kg

Upper with NS\*: 0,058 kg Upper without NS\*: 0,055 kg

\*NS = Neck Support

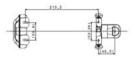
#### Fixation points



17 (17)

Holepattern for 11,0 cft oxygen bottle

Holepattern for 4,25 cft oxygen bottle



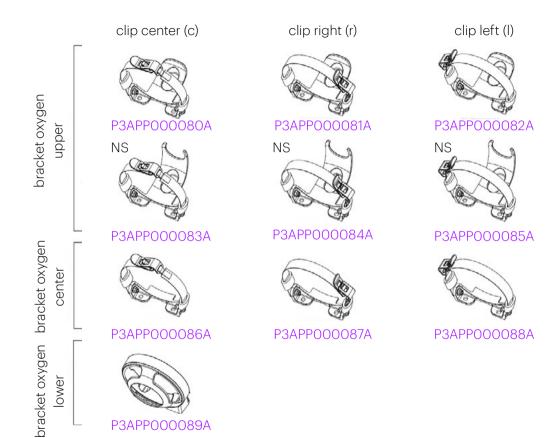
Holepattern for 7,15 cft oxygen bottle

# Clip positions









P3APP000089A

# Bracket for Megaphones

P3APP0000093\_





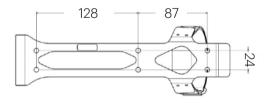
- Aluminium bracket with hook and loop fastener
- Designed to accommodate various aeronautic megaphones

#### Main dimensions

Length: 269,5 mm Width: 86,3 mm Height: 91,4 mm

Weight (without equipment): 0,086 kg

#### Fixation points



# Bracket for Protective Breathing Equipment (PBE)

P3APP0000015\_

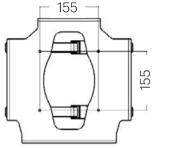




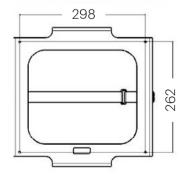


- Aluminium bracket with strap
- Foam lined bracket ensures noiseless operation and snug fitting of equipment
- Suitable for:
  AVOX 802300-14
  BE Aerospace E28180-20-0001
  BE Aerospace E28180-20-0006
  BE Aerospace E28180-20-0011
  Air Liquide 15-40F11
  Air Liquide 15-40F80
  Puritan Bennett 119003-11

#### Fixation points



(Holepattern for all Airbus aircraft)



(Holepattern for Airbus A350)

#### Bracket PBE - Variants

#### P3APP000015C

#### **Suitable for:**

Air Liquide 15-40F11 & 15-40F80 B/E Aerospace E28180-20-0011 All Airbus Aircraft



#### **Main dimensions:**

Length: 337 mm Width: 328,2 mm Height: 88,3 mm

Weight (without equipment):

0,496 kg

#### P3APP000015D

#### Suitable for:

B/E Aerospace E28180-20-0001 B/E Aerospace E28180-20-0006 All Airbus Aircraft



#### Main dimensions:

Length: 272 mm Width: 231,6 mm Height: 138,3 mm

Weight (without equipment):

0,357 kg

#### P3APP000015F

#### **Suitable for:**

AVOX 802300-14 All Airbus Aircraft



#### Main dimensions:

Length: 218,4 mm Width: 246,5 mm Height: 129,3 mm Weight\*: 0,287 kg



#### P3APP000015P

#### **Suitable for:**

Puritan Bennet 119003 All Airbus Aircraft



#### **Main dimensions:**

Length: 249,9 mm Width: 274,5 mm Height: 128,3 mm Weight\*: 0,374 kg

#### P3APP000015J

#### Suitable for:

Air Liquide 15-40F11&15-40F80, B/E Aerospace E28180-20-0011 All Airbus Aircraft

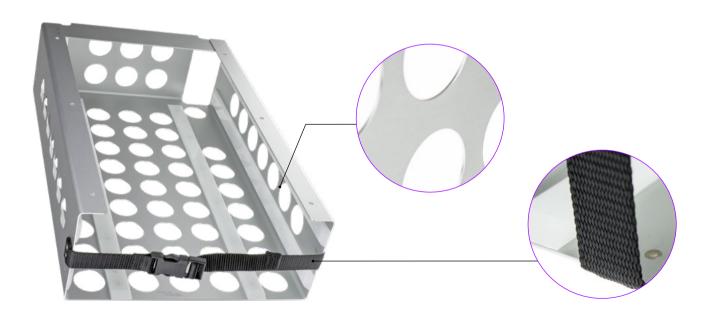


#### **Main dimensions:**

Length: 340,3 mm Width: 329 mm Height: 83,6 mm Weight\*: 0,497 kg \* without equipment

# Bracket for Emergency Medical Kits

P3APP000175\_





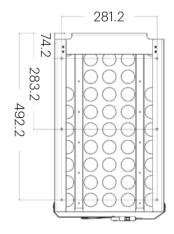
- Aluminium casing to protect various equipment in overhead stowage compartment
- Attached sliding bars ensure easy removal of equipment
- Straps for varioux aeronautic equiment
- Suitable for various aeronautic equipment

#### Main dimensions

Length: 554,3 mm Width: 328,8 mm Height: 132,9 mm

Weight (without equipment): 1,82 kg

#### Fixation points



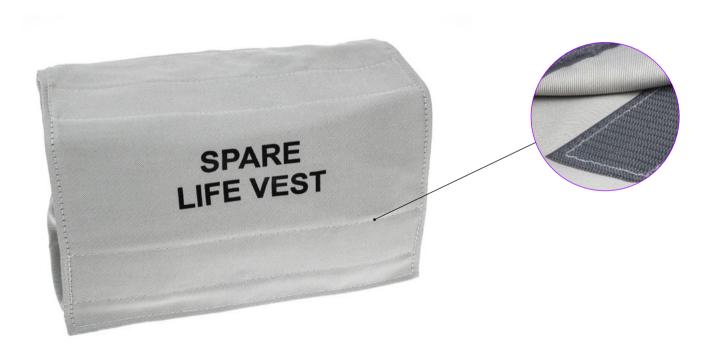
# **Fabric Solutions**

- In compliance with FAR/CS 25.853
- In compliance with RTCA/DO-160G, environmental conditions and test procedures for airborne equipment



### Pouch

P3PRT000006\_(3L) • P3PRT000018\_(6L) • P3PRT000024\_(12L)





- High durable, non flamable material
- Organizes & protects loose (demo-) equipment
- Available in different sizes and printing





## Straps

Strap with buckle female

P3PRT000042\_

Strap with buckle male P3PRT000041\_

Straps available in different lenghts with different screw kits.





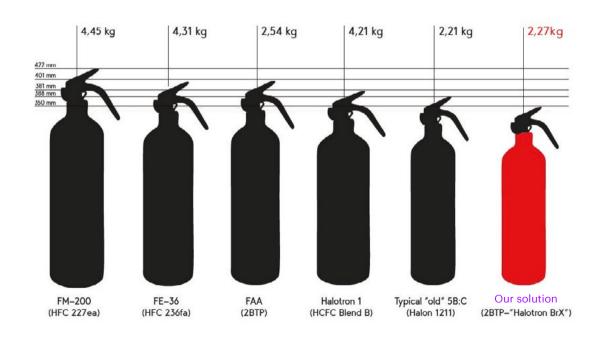
# **Halon-free Fire Extinguisher**

A minuscule, world first, custom fit, halon-free extinguisher for aircraft use.



## Our solution

The smallest & lightest halon-free 5B:C aircraft use fire extinguisher





## Easy retrofit

Easy retrofit due to different hole patterns and small size

Easy replacement of most actual available extinguishers due to different fixation possibilities and small space envelope.

TOTAL 74-20		FFE BA21741SR-5	SICLI MAIP H1-10 AIR		KIDDE 898052	
Screw		NAS1102-08-xx / NAS1	NAS1802-03-xx			
Washer	DAN125-4 / DAN 125-5				NAS1149D0332K	





## Easy handling

Safety pin with seal, Adjustable straps with rotable latch easy to identify if broken Easy and intuitive one-handed Fast and intuitive to operation (one control lever, no hose) open latch-hooks Easy retrofit bracket for multiple Easy to read UL-compliant installation possibilities pressure-gauge Seamless deep drawn lightweight RFID tag, easy to scan cylinder to ensure maximum pressure resistance Adjustable color coding for each country standard

# Fire extinguisher

#### P3APP003010D









## Customized brackets



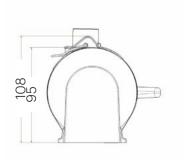


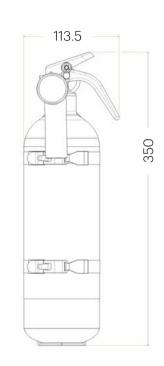


# Specification

#### Weight

Including 2-BTP 2,27kg Including 2-BTP + Bracket 2,50kg







## Change in extinguishing agent

Schedule for halon-free handheld fire extinguisher introduction on new large aircraft: Cut-off date new aircraft acc. to ICAO/EASA: 18. May 2019 Cut-off date retrofit acc. to EASA: 31. Dec 2025

#### **Accenture solution**

**UL** qualified

#### Qualification is in accordance with:

- UI 2129
- DOT/FAA/AR-01/37 MPS
- 2014/68/EU Pressure Equipment Directive

#### Fire classes:

- 5B:C as per UL 711
- 2B at -40°C
- Safely usable on fires of Personal Electronical Devices (PEDs) with Li-lon batteries, allowed to be carried by passangers on board of an aircraft.

# **Fire Extinguisher Trainer**

All airlines are obliged to train their crew for all new emergency equipment. We at Accenture can provide you with the newest training equipment for the widely installed halon-free fire extinguisher (P3APP003010D/E/F).



### Our solution

- Our Fire Extinguisher Trainer has virtually an identical look and feel as our original halonfree fire extinguishers in order to simulate real usage and provide you with an optimal training experience.
- This is done by mostly using all original parts wherever possible. The Fire Extinguisher Trainer also has the identical geometric dimensions and a similar weight as the original halon-free fire extinguishers (P3APP003010D/E/F).
- Using compressed air, provided by a robust and easy to install filling station, we have replicated the discharge time, noise and feeling making your training experience as similar as possible to the real product.

- The stainless-steel design ensures longevity of the major parts so you can re-fill and reuse our trainer inside your classrooms or inside training mockups.
- Should something need replacing, we can easily provide you with the needed spare parts.



# Fire Extinguisher Trainer Air

P3APP007010B - FE Trainer Air UL

### Filling Station Air

P3APP007100A - Filling Station Air







#### Technical features

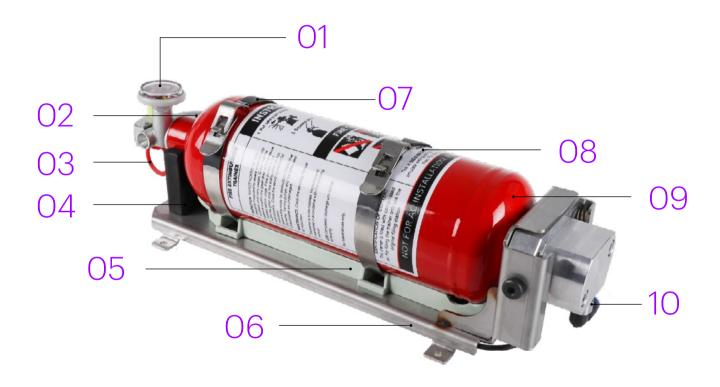
- Extinguishing Agent: Compressed Air
- Operating pressure:
   ps = 130 psi (9 bar) at 20°C
- Test pressure: pT = 217 psi (15 bar)
- Burst resistance pressure: pr > 725 psi (50 bar)
- Operating temperature range:
   10°C ≤ T ≤ 50°C
   (50°F ≤ T ≤ 122°F)
- Survival temperature range:
   -20°C ≤ T ≤ 50°C
   (-4°F ≤ T ≤ 122°F)

# Main dimensions (FE Trainer Air UL)

Length: 112,7 mm Width: 88 mm Height: 344 mm Weight: 2,70 kg

# Main dimensions (Filling Station Air)

Length: 121 mm Width: 118 mm Height: 350 mm Weight: 1,40 kg

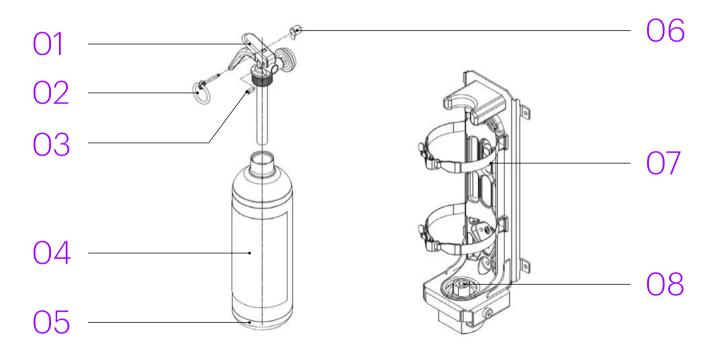




# Product description

01	Pressure Gauge	06	Filling Station
02	Lever	07	Straps
03	Safety Pin	08	Label
04	Neck Support	09	Cylinder
05	Bracket	10	Compressed air connection

# Spare parts





01	Trainer Air Head UL P3APP007011C	05	Refilling Valve FE Trainer Air UL
02	Safety Pin P3PRT003090B	06	Safety Seal P3PRT003091B
03	Set Screw ISO 4766-M6x12	07	Strap P3APP003041C
04	FE Trainer Main Label P3PRT000003AC	08	Refilling Valve Filling Station Air

# **Seat to Seat Solutions**

- In compliance with FAR/CS 25.853
- In compliance with RTCA/DO-160G, environmental conditions and test procedures for airborne equipment



# Seat-to-Seat Cable Routing Provisions

### Mini Raceway





### Transversal Raceway





#### Technical features

- Enables flat floor concept for AIRBUS A350
- Light weight and high strength
- Easy installation and removal
- Cable routing directly under the seat
- Electrical and mechanical protection of cables against floor panels and seat fittings

### Power Floor Disconnect Box Bridges



### Emergency Light Floor Disconnect Box Bridges



## Floor Covering Parts

#### Seat Rail Cover Classic



### Seat Rail Cover Flat



#### Technical features

- Enables flat floor concept
- Light weight and high strength
- · Easy installation and removal
- Clip mechanism for fixation on seat rail



# **Supplementary Survival Kit (SSK)**

A Supplementary Survival Kit is required according to Operational Requirements in CAA ANO Schedule 5, CAT.IDE.A.285 and CAT.IDE.A.305 if the airplane is operated over water or deserts in addition to the internal survival kit of the life raft.

It provides additional sugar, water, paddles and aerial flare accoording to the operated areas.



## General unique selling points

Our SSK products are designed to satisfy all different aircraft programs' needs in the best way. All SSKs are assembled in Germany.

#### In general our products are designed for:

- Easy retrofit of existing fleet: 1:1 exchange possible (STC can also be provided by Accenture);
   same or less weight and dimensions
- Longer maintenance intervals (up to 5 years)
- Total cost of ownership reduction of up to 80% per aircraft
- · Intuitive design of bag and contents for easy use indifficult situations



## Easy handling

The Label provides all information as readable information, QR-Code and RFID.

The bag provides two handles made of light weight and robust material.

All attatchments to the bag are reinforced for all thinkable emergency scenarios.

To ensure that all components are inside the SSK when needed, the bag is sealed by a tamper seal, which is destroyed when the bag is opened.

The SSK must be attached to the life raft with a snap hook and a lanyard.
This lanyard is attached to the bag and it is folded and tucked into a pocket.
To simplify finding of the snap hook in an emergency case, we made this pocket transparent, so the snap hook is easily visible from the outside



By selecting a wide lanyard, we added an extra function: the lanyard can be used as comfortable shoulder strap if it is necessary to carry the bag a longer distance



#### A330 SSK Variants

#### Contents, weight and main dimensions

# P3APP000510A (Pump and Paddle Variant)

Length: 475 mm Width: 190 mm Height: 114 mm Weight\*: 5,7 kg

- Glucose Toffee Tablets (1,8 kg)
- Water Packs (1,3 Liters)
- · Desalination Pump
- Telescopic Paddle
- Ground to Air Signal Card

Regulation: CAA UK compliant

# P3APP000511A (Desalination bag Variant)

Length: 280 mm Width: 270 mm Height: 70 mm Weight\*: 4,2 kg

- Glucose Tablets (1,6 kg)
- Water Packs (1,5 Liters)
- Desalination Bag
- Red Parachute Flare
- Ground to Air Signal Card

Regulation: EU OPS 1.830 compliant for standard flight route

# P3APP000512A (Pure Water Variant)

Length: 280 mm Width: 255 mm Height: 100 mm Weight\*: 5,4 kg

- Glucose Tablets (1,7 kg)
- Water Packs (2,7 Liters)
- Red Parachute Flare
- Ground to Air Signal Card

Regulation: EU OPS 1.830 & 1.835 compliant for standard flight route and flight route across desert areas



#### A350 SSK Variants

#### Contents, weight and main dimensions

#### P3APP000514A

(Dual Lane Variant)

Length: 310 mm Width: 165 mm Height: 115 mm

Weight (without equipment): 4,3 kg

- Glucose Toffee Tablets (1,7 kg)
- Water Packs (1,5 Liters)
- Desalination Bag
- Red Parachute Flare
- Ground to Air Signal Card

Regulation: EU OPS 1.830 & 1.835 compliant for standard flight route and flight route across desert areas

# P3APP000515A (Single Lane Variant)

Length: 280 mm Width: 150 mm Height: 100 mm

Weight (without equipment): 3,2 kg

- Glucose Tablets (0,8 kg)
- Water Packs (1,5 Liters)
- Desalination Bag
- · Red Parachute Flare
- · Ground to Air Signal Card

Regulation: EU OPS 1.830 & 1.835 compliant for standard flight route and flight route across desert areas





#### A380 SSK Variants

#### Contents, weight and main dimensions

#### P3APP000513A

#### (Light Variant)

Length: 260 mm Width: 180 mm Height: 100 mm Weight\*: 3,4 kg

- Glucose Tablets (1,6 kg)
- Water Packs (1 Liter)
- Desalination Bag
- Ground to Air Signal Card

Regulation: EU OPS 1.830 compliant for

standard flight route

# **PED Safety Bag**

Lithium-ion batteries are widely used in electronic devices carried by passengers on board your flights. However, in the event of a thermal runaway, these batteries can cause serious damage to the device and potentially lead to a fire and emergency landing.

That's where Accenture's solution comes in.



## Some information upfront

PED Safety Bag to manage incidents caused by thermal runaway of lithium-ion batteries used in Portable Electronic Devices (PED) like notebooks, smartphones, etc. and to lead greater safety.

Lithium-ion battery thermal runaway occurs when a cell, or area within the cell, achieves elevated temperatures due to thermal / mechanical failure, internal / external short circuiting, and electrochemical abuse.

In case of a thermal runaway on board the PED Safety Bag can be used to avoid delays or emergency landing. It contains the heat and smoke and allows the flight to continue for 6 hours according to UL5800.

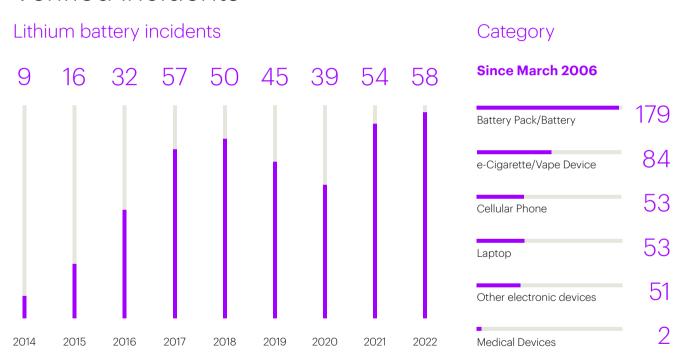
- Instructions by IATA, FAA, EASA for carriage of passenger's lithium-ion batteries onboard.
   Batteries of max. 160 Wh are allowed on board.
- Numbers of PEDs on board are increasing and so the risk of lithium-ion battery fires.
- UL Standard 5800 for PED Safety Devices has been published in December 2020 to be able to compare and to categorize products and to define minimal standard safety requirements for PED Safety Devices.

#### 411 total verified incidents

between March 2006 and November 2022 by the FAA.



### Verified incidents



Source: https://www.faa.gov/hazmat/resources/lithium\_batteries/incidents

### Overview of UL5800 classes

Standard for safety—Battery Fire & Smoke Containment Product

Many products are already on the market, but the quality and functionality are not comparable and not transparent for customers.

- NUL Standard to compare and to categorize battery fire containment products
- Standard has been published in Dez 2020
- Members of the Committee: Airlines from the US and Canada, Boeing, FAA, representatives

Added value for Customers due to standardized classification comparison of products



UL Fire Classes	Representative capacity (Wh)	Number of cells (18650 format, 3300 mAh)	Examples for PEDs
Class 1	≤ 60	5	Laptop, mobile phone, e-cigarettes Large power banks and
Class 2	≤ 100	9	extra long-life workstation batteries
Class 3	≤160	14	Up to professional camera battery
Class 4	≤300	25	Batteries of mobility chair

Performance Level 1: all visible smoke is confined within the containment product

Performance Level 2: no more than 5m² of total smoke is released from the containment product



# Example of a Lithium-ion Fire

The current procedures recommended by aviation authorities of handling the thermal runaway scenario

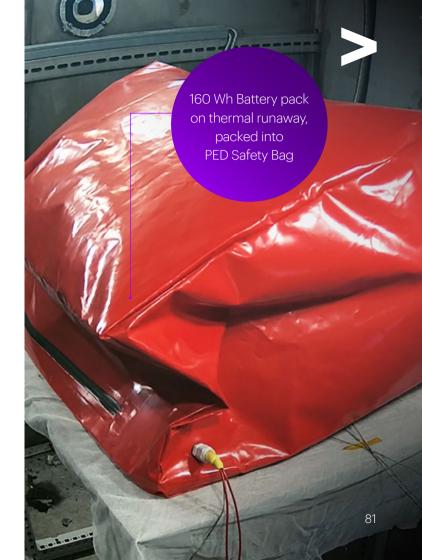
Risk of fire and smoke in the cabin, flight-safety not under control

The current procedures recommended by aviation authorities of handling the thermal runaway scenario.

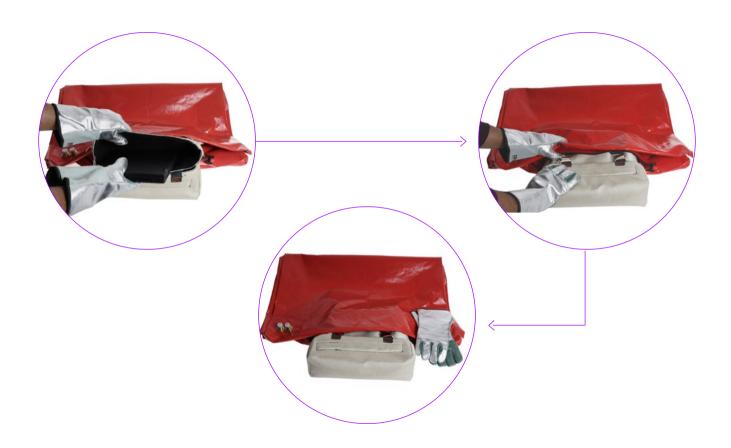
# Our solution — The Accenture PED Safety Bag Product

Fire and smoke contained, flight-safety ensured

It contains the heat and smoke and allows the flight to continue for 6 hours according to UL5800.



#### **Accenture** | Air safety solutions





#### Technical features

- UL5800 class 3 (160 Wh) and performance
- Fireproof up to 1200°C
- Explosion proof
- Total smoke and invincible gas containment
- Large enough for a laptop
- Small enough to be able to store at standard stowage locations without additional fixation

# Qualification and certification pending

- UL 5800
- DO 160
- Fireworthiness (CS/FAR25.853)

# Accenture LED Flashlight Concept

- Flashlight that meets all requirements of ARP1798 Rev B
- Utilizes commercially available battery cells in lieu of supplier specific custom battery cells
- Bracket with multiple interfaces, which fit different
   OEM / supplier interface points
- More efficient maintenance concept (longer interval + cheaper batteries)
- Battery indication integrated inside the flashlight



# Design Features





# Yellow O-Rings



### Label buttons



# 3 AA commercially available batteries



# Bungy style lanyard





### RFID tag

- RFID Tag that meets Airbus requirements on flashlight
- Additional identification (no RFID) on bracket





PNR: P3APP005000A DESC: FLASHLIGHT SER: 22010001H AMDT: A DMF: 012022 MFR: CE579



# Comparison with product of current market leader

Criteria	Accenture Flashlight	Competitor	
SAE requirements	Yes	No	
Housing material	Polycarbonate	ABS	
Maintenance costs (Battery Change)	Low	High	
Maintenance interval	7 years	5 years	
Battery indicator	In flashlight	In bracket	



Criteria	Accenture Flashlight	Competitor	
Energy source	Commercial off-the-shelf batteries	Supplier specific battery pack	
Legacy cockpit support	Yes	No	
Hole pattern support	Multi interface	Single interface	
Operating temperature	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	
Candela	~3000	2100	
Operating time	~5 hours	4 Hours	
Operation	Manual On/Off Switch	Auto	

### Prototype overview

Accenture Flashlight



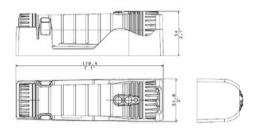


Size Comparison with Competitor

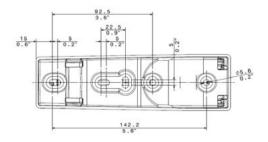




#### Flashlight P3APP005000A Bracket P3APP005001A



#### Bracket P3APP005001A interface



#### Main dimensions

Length: 180 mm Width: 52 mm Height: 54 mm Weight: ~254 g

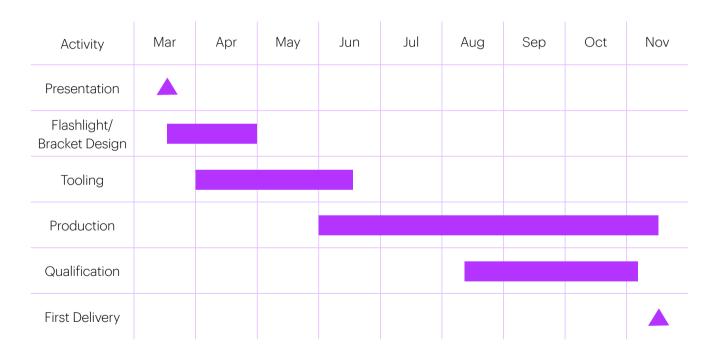
# Industry / Government specifications

Following are the Industry and Government specifications that our Flashlight is compliant to:

Reference	Document	Document Title	Source
1	14 CFR Part 25	Airworthiness Standards: Transport Category Airplanes, Code of Federal Regulations	FAA
2	CS 25	Certification Specifications for Large Airplanes	EASA
3	ARP1798	Aerospace Recommended Practice for Portable Emergency Lighting Systems for Flight Crew Members	SAE Aerospace
4	RTCA-DO 160	Environmental Conditions and Test Procedures for Airborne Equipment	RTCA
5	MIL-STD-810	Environmental Engineering Considerations and Test Methods	DEPARTMENT OF DEFENCE



# Preliminary delivery schedule - Current model



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