

accenture



Halon-free fire extinguisher

Change in extinguishing agent.

Need for halon alternatives.

halon used as extinguishing agent has to be banished due to governmental request:

- The Montreal Protocol on Substances that Deplete the Ozone Layer'
- ICAO statement

schedule for halon-free handheld fire extinguisher introduction on new large aircraft:

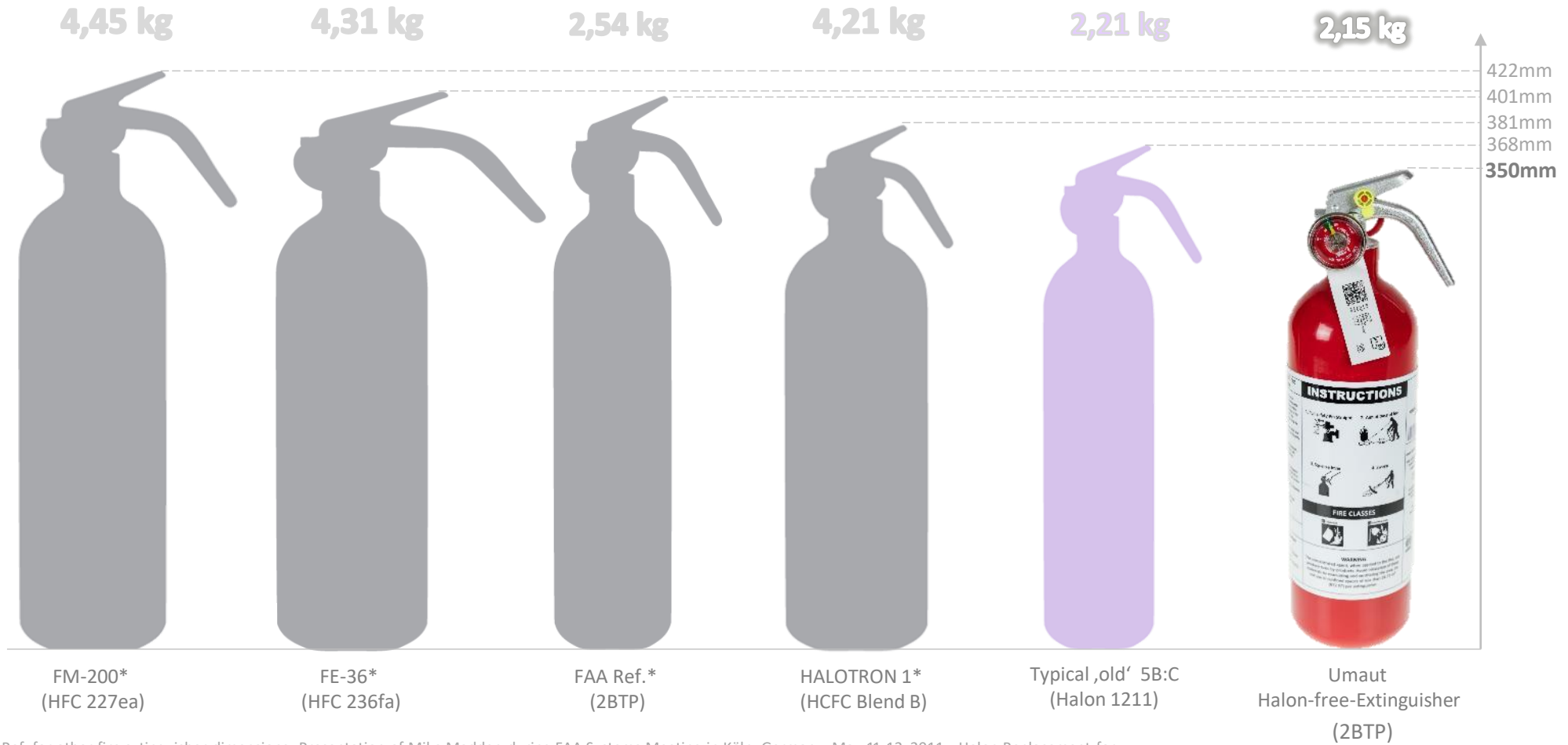
- according ICAO amdt. to Annex 6, Aircraft Operations: 31st Dec. 2018
- according EASA Commission Implementing Regulation (EU) 2019/133: 18th May 2019
- retrofit: as per EASA Regulation (EC) No 1005/2009 and amended by (EU) 744/2010, the use of halon is no longer permitted after 2025.

umlaut solution:

- 2-BTP (trade name 'Halotron BrX') as Halon-1211 alternative:
 - best performing halon alternative agent compared to required volume and to environmental impacts [ozone depleting potential (ODP)=0.0028 & global warming potential (GWP)=0.23-0.26]
 - allows to maintain most installation locations

Our solution:

The smallest & lightest halon-free 5B:C cabin fire extinguisher.



* Ref. for other fire extinguisher dimensions: Presentation of Mike Madden during FAA Systems Meeting in Köln, Germany, May 11-12, 2011: „Halon Replacement for Airplane Portable Fire Extinguishers - Progress Report“, File: Madden-0511-BTP.pdf

Our solution:

The halon alternative fire extinguisher.

Our 'UL 5B:C' handheld extinguisher is the smallest and lightest Halon-alternative product known to us, to have achieved the FAA-MPS tests and the only handheld fire extinguisher having the ETSO 2C515A1-approval.



Firefighting performance	UL711 5B:C
Qualification standard	UL2129 and ETSO 2C515 A1
Dimensions	343,6x112,7x89
Max. weight	2270 grams
Extinguishing agent	Halotron BrX™
Operation pressure	9 bar @ 21°C

Qualification & certification.

Qualification in accordance with:

- ETSO 2C515 A1
- CFR-Title 49, Part 173, §173.309 (DOT)
- 2014/68/EU Pressure Equipment Directive
- UL 2129
- SAE AS6271

Fulfills the recommendations of AC20-42D for handheld fire extinguishers (qualification, throw-range, rating, agent, toxicity).



Certification:

- EASA and FAA certification per AML-STC for all major CS-25 aircraft, including Airbus, Boeing, Bombardier, Embraer by umlaut.
- Service Bulletin by umlaut for replacement of Halon fire extinguishers in Airbus and Boeing aircraft with same or slightly less weight.
- EASA and FAA certification for AIRBUS A320-family, A330/A340, A350, A380 by TC-holder
- EASA certification for ATR 42 and ATR 72 by TC-holder
- ANAC certification for EMBRAER E-Jet & E2 family, Phenom family, Legacy family by TC-holder

Further planned certification:

- EASA and FAA certification for many CS-23 aircraft

Performance.

Fire classes:

- 5B:C as per UL 711
- 2B at -40°C
- usable on energized electrical devices with Li-Ion batteries

Minimum performance standard:

- DOT/FAA/AR-01/37 MPS
 - Seat Fire Toxicity
 - Hidden Fire Test



Weight & dimensions.

Non-rechargeable with lifetime of:

12 years for extinguisher

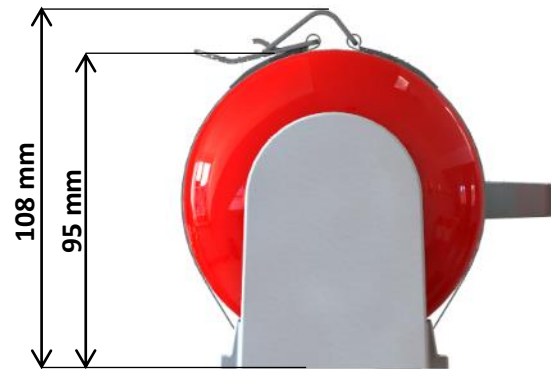
A/C lifetime for bracket

Extinguisher max. weight:

2.27 kg

Max. weight of extinguisher & standard polymeric bracket):

2.44 kg

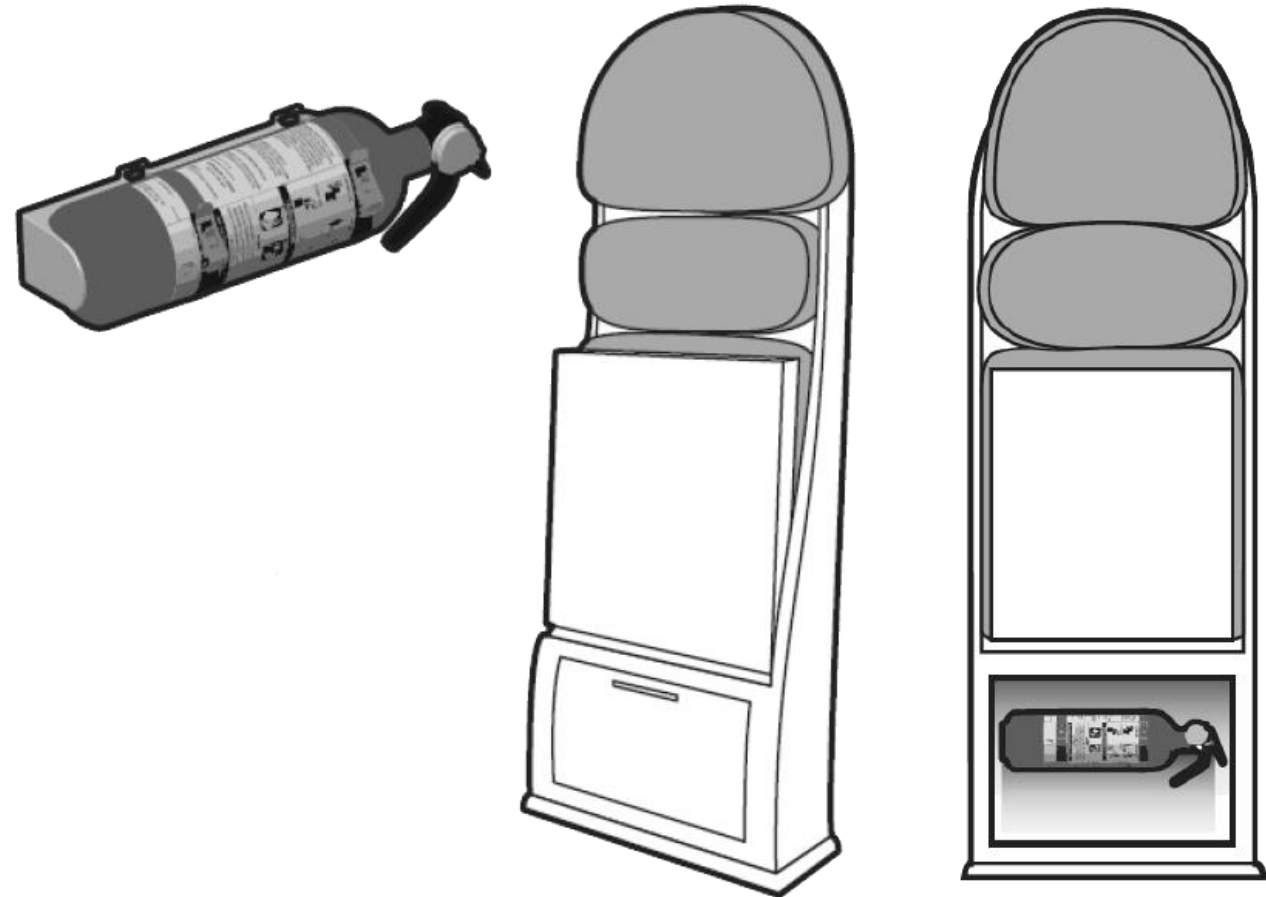


Easy retrofit.

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.

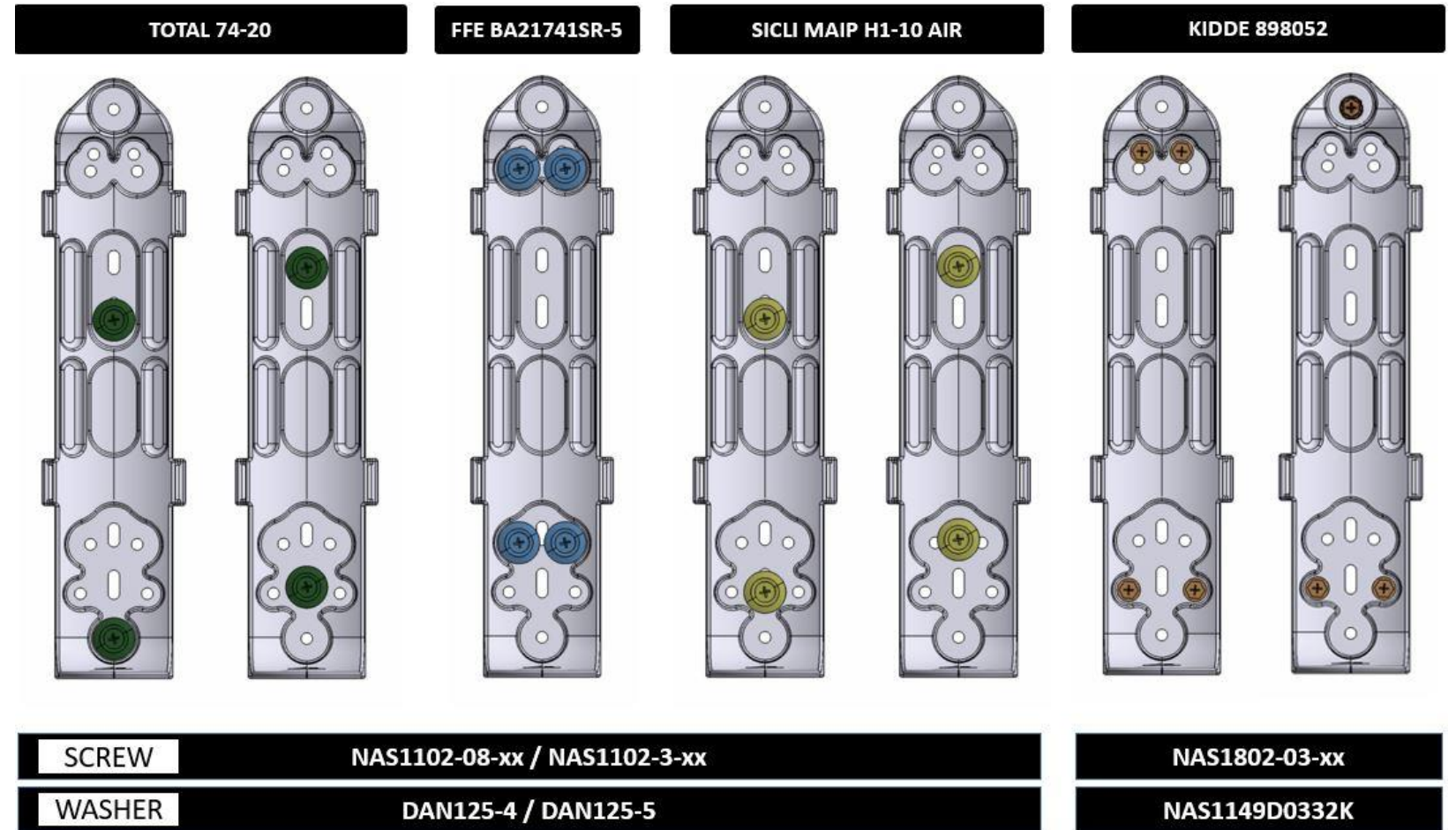
Example: installation in cabin attendant seat (CAS) bin.



Easy retrofit.

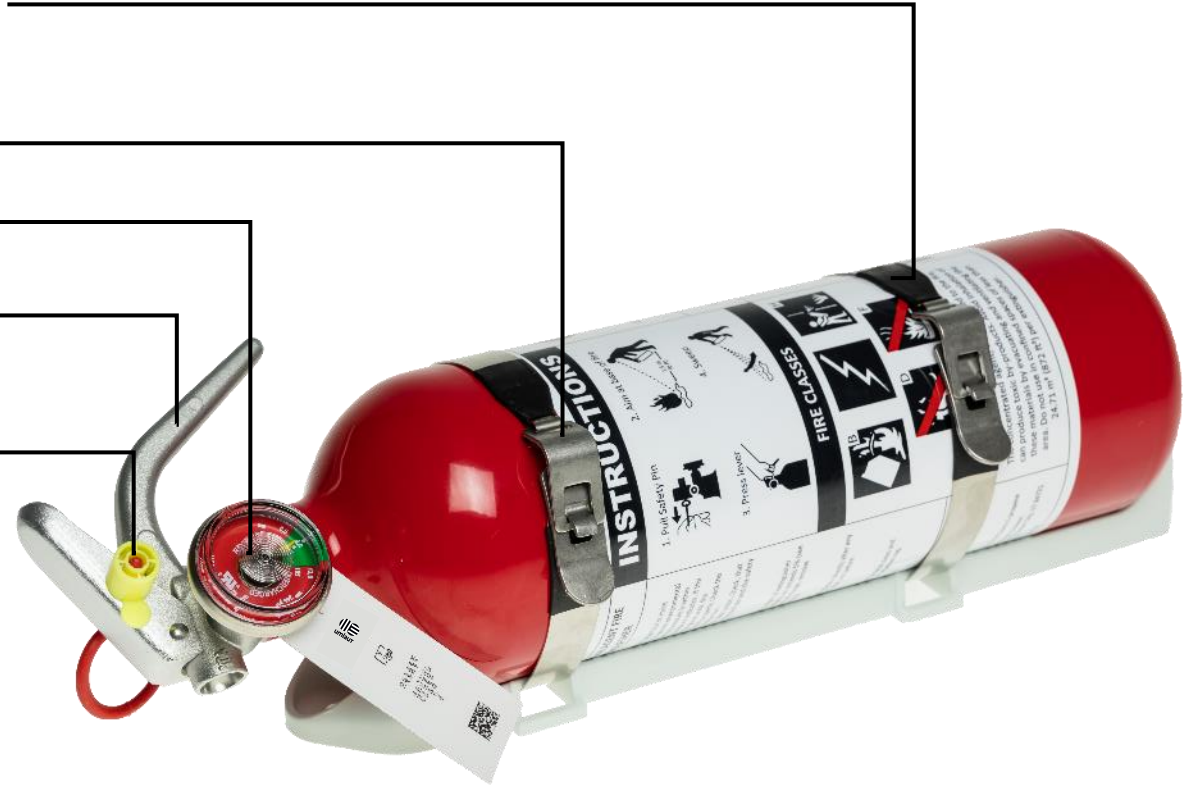
Interface connection options are such that the following existing halon units P/N can be easily exchanged* utilizing the same holes:

*shown here for bracket P3APP003020G



Easy handling.

- Adjustable straps with turnable latch-hooks for flexible and simple installation into the bracket.
- Fast and intuitively to open latch-hooks.
- Easy to read pressure-gauge.
- Easy & intuitively operable by one hand (one control lever, no hose).
- Safety pin with seal, easy to identify if broken.



Different color coding.

- Red color coding – standard configuration (Extinguisher: P3APP003010D & Bracket: P3APP003020B)
- Yellow color coding for Australian standard (Extinguisher: P3APP003010E & Bracket: P3APP003020B)
- Green color coding for British standard (Extinguisher: P3APP003010F & Bracket: P3APP003020B)

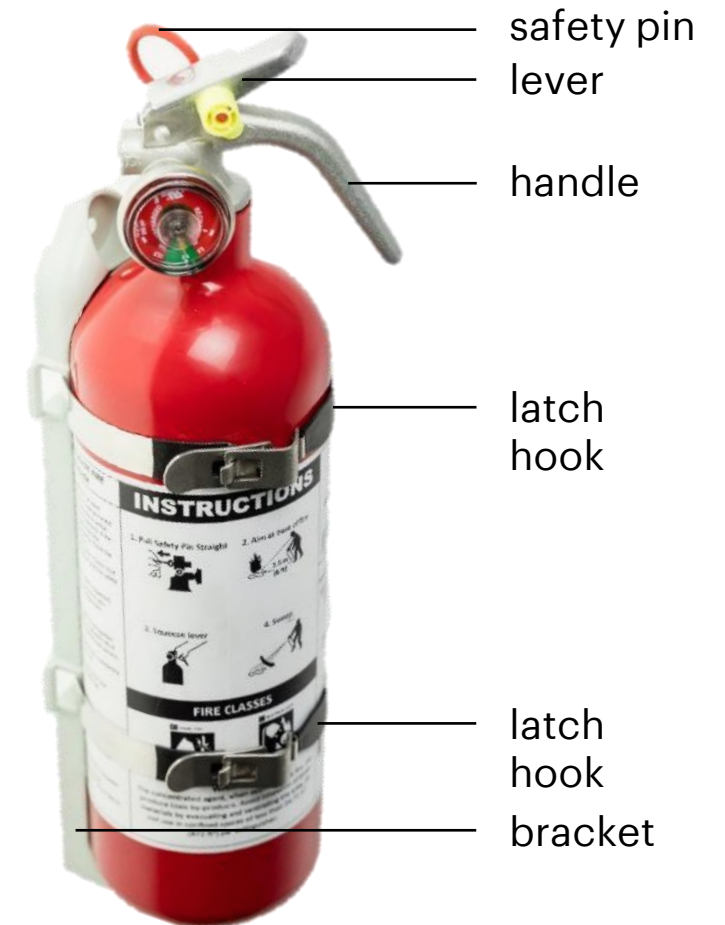


Operating instructions.

1. Open both latch hooks and remove the fire extinguisher.
2. Hold the fire extinguisher upright with one hand and remove the safety pin with the other hand.
3. Aim the nozzle of the fire extinguisher at the base of the fire. The optimal distance to the fire-base is between 1.5 – 2 meters.
4. Push the lever of the fire extinguisher. This will immediately start the flow of agent. Releasing the lever will interrupt the flow.
5. Sweep the agent stream from side to side, until the fire is extinguished.

Once the fire goes out, keep an eye on the area, and be prepared to repeat the process if the fire re-ignites.

Operating time: approx. 9 -10 seconds



Lithium ion battery fires.

Our product, using Halotron BrX as extinguishing agent, successfully stopped heat propagation on a lithium ion battery fire set-up, consisting of 4 burning and fully charged Li-Ion batteries type 18650 (U: 3,6 V; C: 2,6 Ah).

No hazardous effects by using the umlaut Fire Extinguisher on PED-fires to extinguisher the flames. Cooling of batteries to be done with water.



Lithium Ion Battery Fire after fire
without any extinguishing



Lithium Ion Battery Fire after fire
with extinguishing

Halon-free-fire-extinguisher



P/N: P3APP003010D



Bracket variants



P/N: P3APP003020B



P/N: P3APP003020F



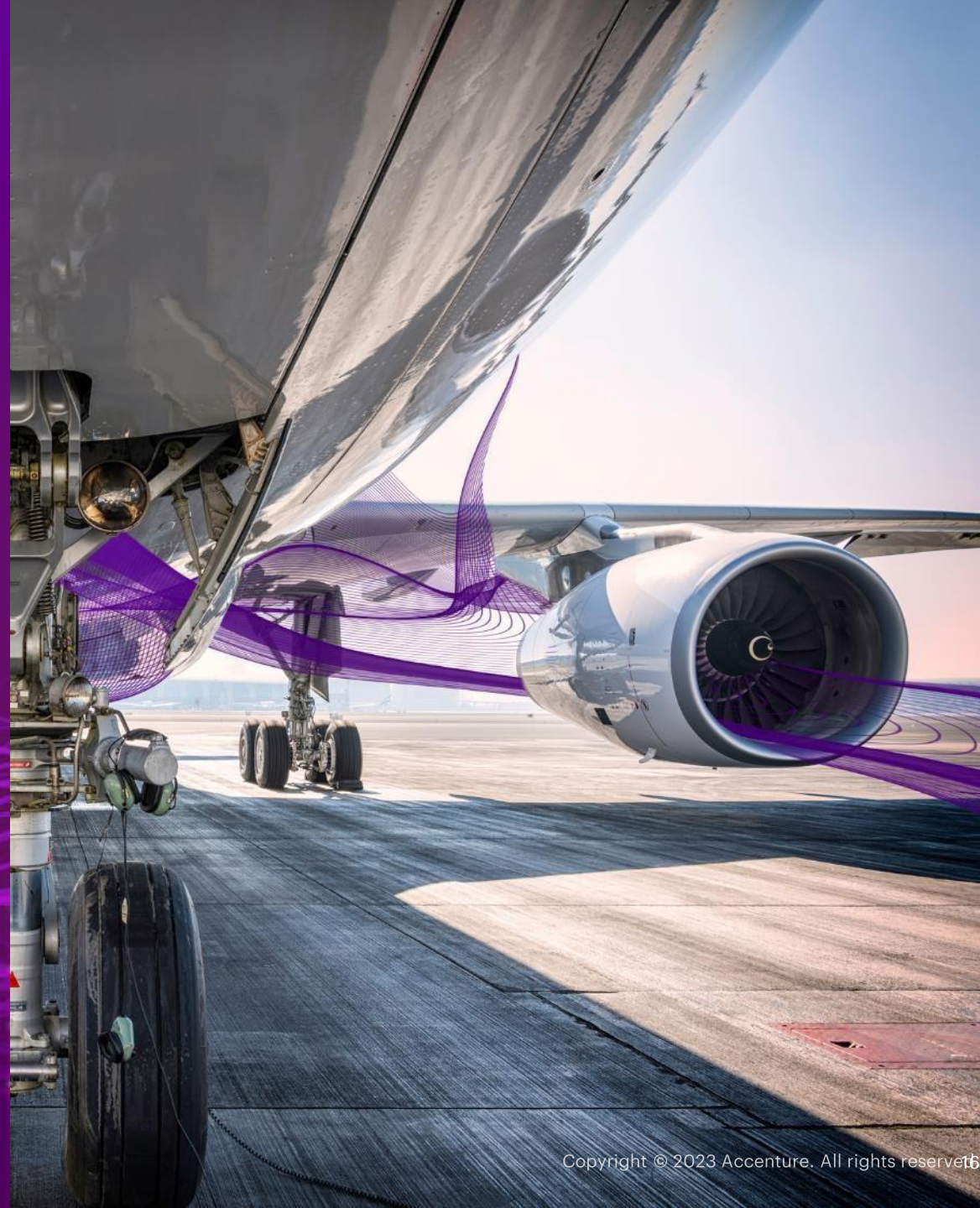
Example of a customized bracket variant



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Thank You



About Accenture

Accenture is a leading global professional services company that helps the world's leading businesses, governments and other organizations build their digital core, optimize their operations, accelerate revenue growth and enhance citizen services—creating tangible value at speed and scale. We are a talent and innovation led company with 738,000 people serving clients in more than 120 countries. Technology is at the core of change today, and we are one of the world's leaders in helping drive that change, with strong ecosystem relationships. We combine our strength in technology with unmatched industry experience, functional expertise and global delivery capability. We are uniquely able to deliver tangible outcomes because of our broad range of services, solutions and assets across Strategy & Consulting, Technology, Operations, Industry X and Accenture Song. These capabilities, together with our culture of shared success and commitment to creating 360° value, enable us to help our clients succeed and build trusted, lasting relationships. We measure our success by the 360° value we create for our clients, each other, our shareholders, partners and communities. Visit us at [accenture.com](https://www.accenture.com).