



Halon-free fire extinguisher.

The lightest & smallest out-there.



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 as amended by (EU) 744/2010 the use of halon is no longer permitted **after 2025.**

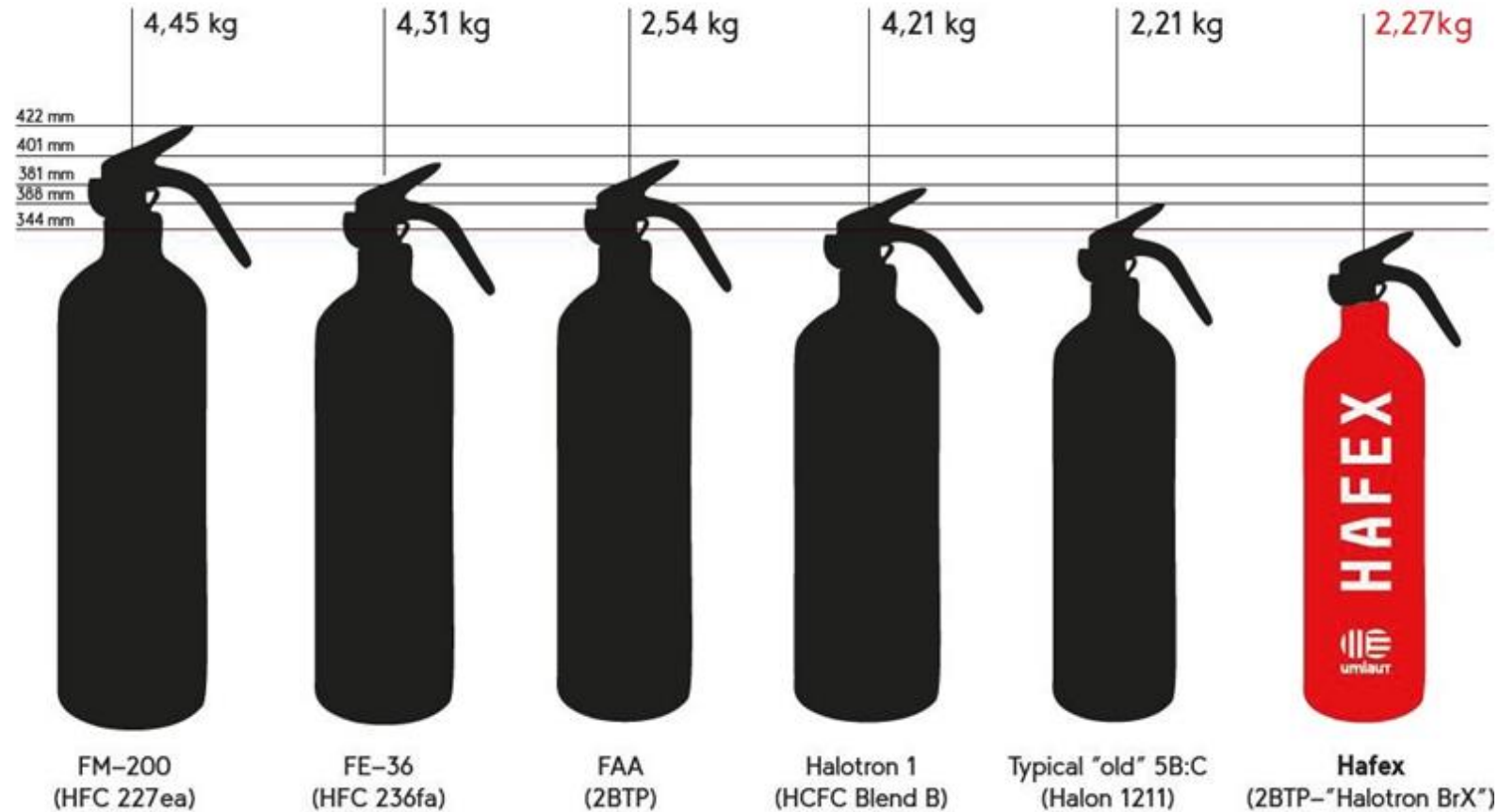
umlaut solution:

- 2BTP (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.





Our umlaut solution.

The halon alternative fire extinguisher.

Our 'UL 5B:C' HAFEX handheld extinguisher is the smallest and lightest product known to us to have achieved the FAA-MPS tests.

Firefighting performance	UL711 5B:C
Qualification standard	UL2129
Dimensions	346,5x112,7x89
Max. weight	2270 grams
Extinguishing agent	Halotron BrX™
Operation pressure	9 bar @ 21°C





Qualification & certification

Qualification in accordance with:

- CFR Title 49, Part 173, §173.309 (DOT)
- 2014/68/EU Pressure Equipment Directive
- UL 2129
- FAA AC20-42D
- SAE AS6271



Certification:

- EASA certification for AIRBUS A320-family, A330/A340, A350, A380
- FAA certification for AIRBUS A320 and A350
- EASA certification for Boeing B777
- EASA certification for ATR 42 and ATR 72
- ANAC certification for EMBRAER E-Jet & E2 family, Phenom family, Legacy family

Further planned certification:

- ETSO
- EASA certification for all Boeing aircrafts.
- FAA certification for all Airbus / Boeing aircrafts.



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:

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





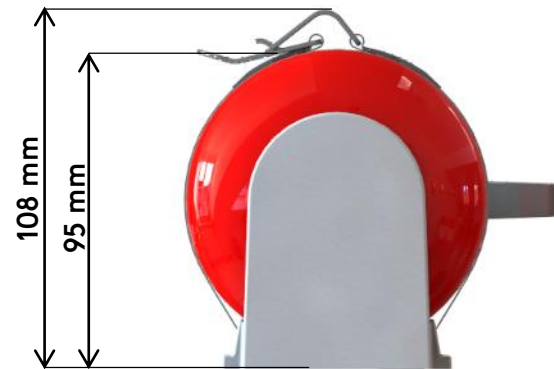
Weight & dimensions

Non-rechargeable with lifetime of:

12 years for extinguisher

Weight of filled HAFEX, including bracket:

2.45 kg (including 1.6 kg of agent)



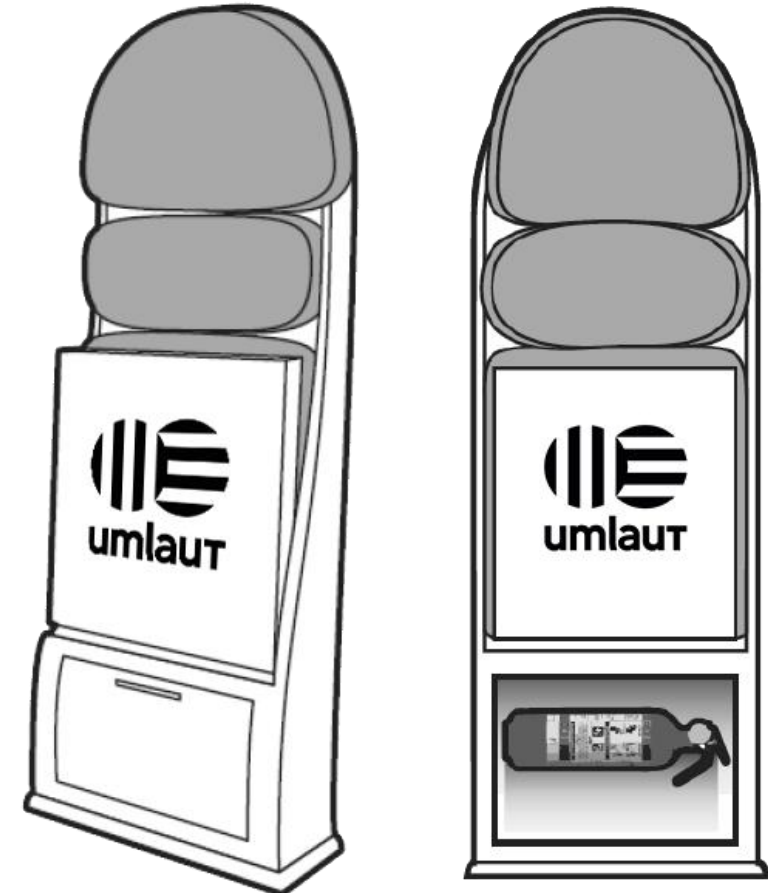


Easy retrofit.

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.

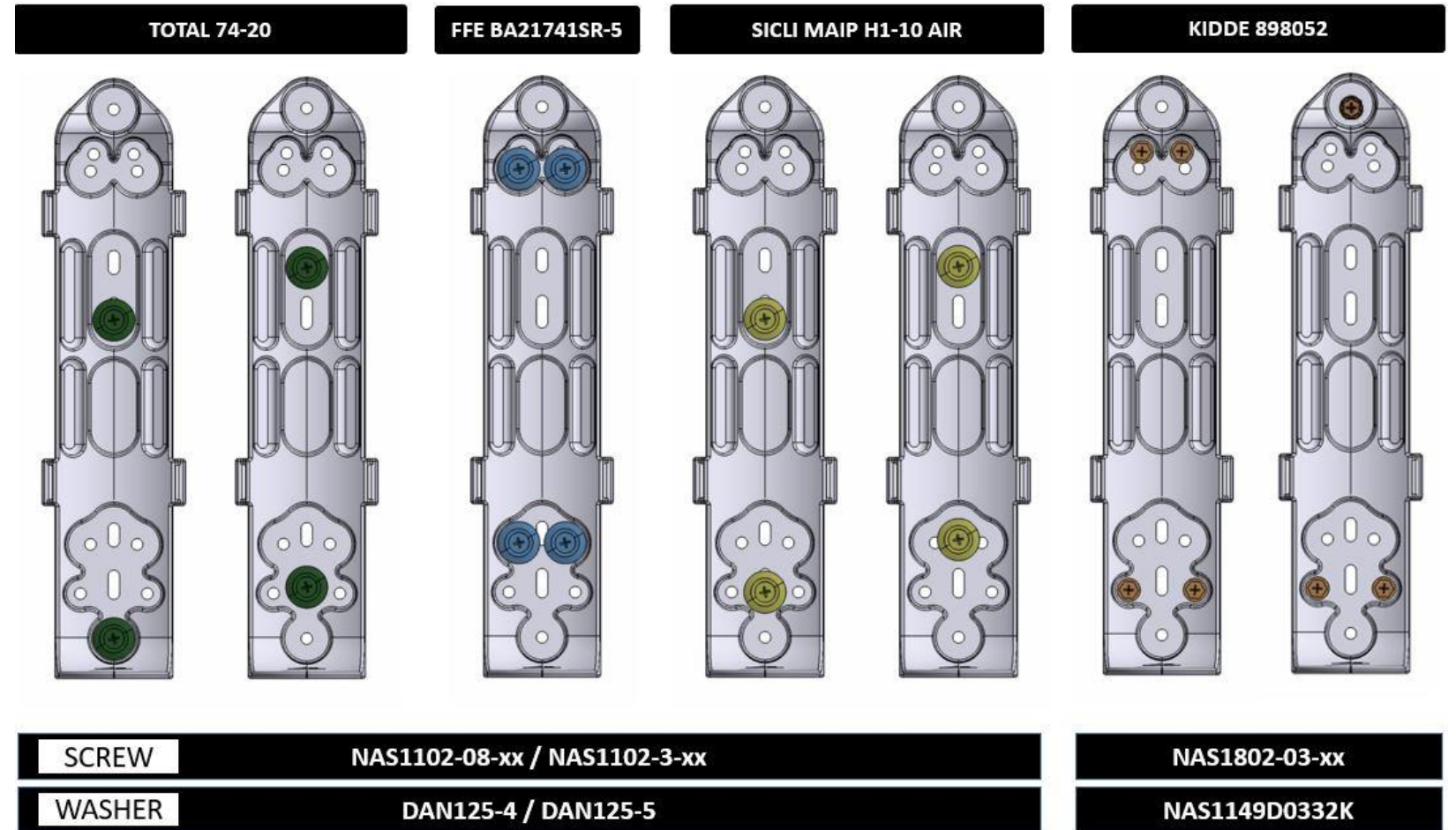




Easy retrofit.

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

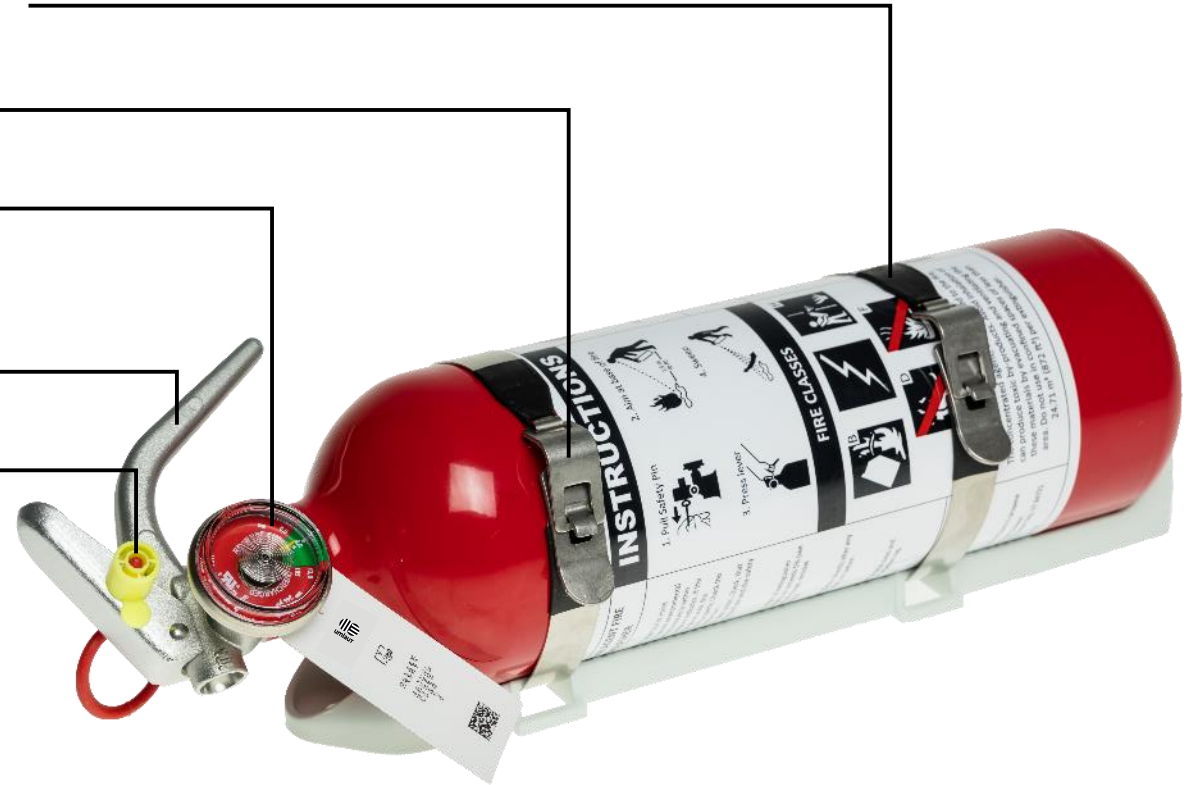
*shown here for bracket P3APP003020B





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: 3,6V; C: 2,6Ah).
- No hazardous effects by using the HAFEX on PED-fires to extinguisher the flames. Cooling of batteries to be done with water.

Test Set-up



➔ Lithium Ion Battery Fire after fire without any extinguishing

➔ Lithium Ion Battery Fire after fire with extinguishing



Product pictures.

Our fire extinguisher.



P/N: P3APP003010D





Product pictures.

The brackets.



P/N: P3APP003020B

UL halon-free fire extinguisher introduction



Other variants:





Safety pin removal



Red safety-pin with yellow seal (before and after seal-removal)*



Red safety-pin with yellow seal mounted to extinguisher valve-head*



Extinguisher with removed safety-pin and seal*

* Shown here with different design-variant.



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