

EMERGENCY EXIT FOR A HELICOPTER



Main Technological Area —→ Mechanics

Keywords —→ Emergency exit, Seal, Removable opening, Window, Unlock

The invention relates to an emergency exit system to allow the occupants to quickly abandon the helicopter, for example in the case of an accident, in addition to the normal service exits of the helicopter. Contrariwise to known solutions, in which the seal is glued continuously to a removable part and the load value to be applied to open the emergency exit can not be determined with precision, the patented solution allows to operate the removable part of a helicopter hatch using a predetermined force when pulling out the emergency exit handle.

TECHNICAL SPECIFICATIONS

Under normal aircraft operating conditions, emergency exits must ensure that the removable part not be removed either by accidental loads that might be applied on the surface facing the inside of the fuselage or by aerodynamic suction or compression loads acting on the surface facing the outside of the aircraft. On the other side, it must be possible to quickly remove a removable part from a hatch by applying a force on it that does not exceed a predetermined value, either from the occupants or from first responders being outside of the fuselage. This value should not be raised (or lowered) according to the environmental condition or to the quantity of glue interposed between a seal and the attached hatch. The patented solution meets the above needs to make the amount of force necessary to remove the removable part as repeatable and controllable as possible under any operating conditions.

According to Figure 1, in normal operating conditions the presence of a plastic material element and of some strip elements housed in it prevents removal of the emergency exit panel from the wall of the aircraft.

The emergency exit opening handle allows to directly modify the shape of the deformable element interposed between the removable panel and the fuselage wall, by extracting a strip element housed in the seal itself; removal of the strip element cause an elastic transformation of the deformable element which can consequently allow the removable part to be moved away from the fuselage.

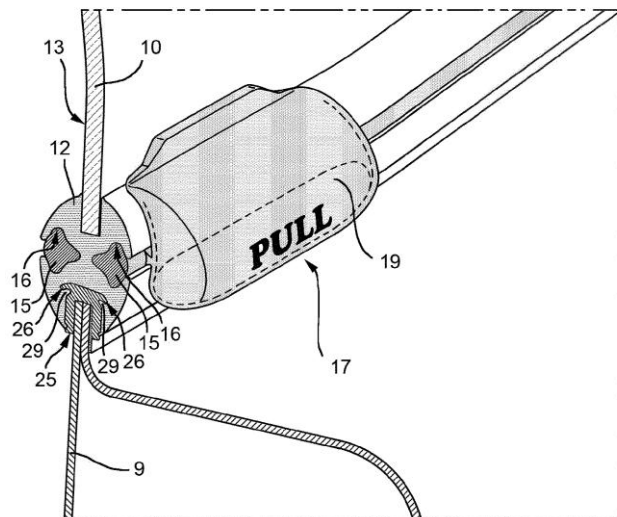


Figure 1 – Emergency exit opening components

INNOVATION/ADVANTAGES

- Ease of use and of maintenance, with the least possible use of qualified technical personnel and/or special equipment
- The amount of force necessary to remove the removable part is repeatable and controllable
 - As independent as possible from the operations of connecting an insulating element to the wall using glues
 - As independent as possible from environmental conditions, over a wide range of temperature values, from -40°C to 50°C
- Reduced cost and/or overall weight of the emergency exit.
- The seal can also be applied to the emergency exits of helicopters that are already manufactured and in service, in a simple and inexpensive manner.

FIELDS OF APPLICATION

<i>Aerostructures</i>	Can be applied to different type of vehicles, not necessarily helicopters
<i>Automotive</i>	Can be applied to transportation vehicles, in particular operating in harsh environments
<i>Manufacturing, Research Laboratories</i>	System for quick and safe exit from laboratories in case of relevant incident

PATENT INFORMATION

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IPC Codes - B64C1/32

Active worldwide applications

EPO - EP3501974; **filing date:** 2017/12/19; **grant date:** 2020/02/05
 National Extensions: ITALY – FRANCE- GERMANY – UNITED KINGDOM

USA - US11161588B2; **filing date:** 2017/12/19; **grant date:** 2021/11/02
 China - CN111527027B; **filing date:** 2018/12/19 **grant date:** 2023/04/07
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