



Science and Technology



EMERGENCY PREVENTION & RESPONSE

PROTECTIVE COVER FOR EMERGENCY BREATHING DEVICE REGULATOR

SIMPLE HARD COVER SECURES AND PROTECTS THE TWO MOST CRITICAL PARTS OF AN UNDERWATER EMERGENCY BREATHING DEVICE (EBD), THE PURGE BUTTON AND MOUTHPIECE.

Life vests worn by maritime helicopter crews worldwide are equipped with an EBD in the event the aircraft is forced to ditch. The breathing regulator on the EBD is hung on the front of the vest by a soft rubber mouthpiece cover. However, the soft cover does not protect the regulator body or more importantly, the purge button.

Left exposed, the purge button can be either inadvertently or negligently pressed by those who wear the vest. Over time, this slowly depletes usable air pressure. If left undetected, this could very well render the EBD useless when needed most. This issue presents a serious life-threatening situation.

This new hard cover design securely houses and protects the entire mouthpiece and over 75% of the regulator body. To deter unnecessary access to the purge button, the cover also offers a tamper-evident solution. This will reveal if the purge button has been accessed or interfered with since the last maintenance inspection.

KEY BENEFITS

- + Protects regulator from normal wear and tear
- + Prevents the inadvertent purging of critical air supply
- + Shelters mouthpiece from damage and debris
- + Increases user confidence in equipment reliability
- + Incorporates unique positive friction-fit design
- + Tamper-evident seal compatible

STAGE OF DEVELOPMENT

Prototype

PARTNERSHIP SOUGHT

License

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DHS COMPONENT

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The Technology Transfer and Commercialization Branch (T2C) within the Office of Industry Partnerships (OIP) of the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) serves as the centralized point to manage technology transfer activities throughout DHS and the DHS laboratory network. T2C@hq.dhs.gov

THE TECHNOLOGY

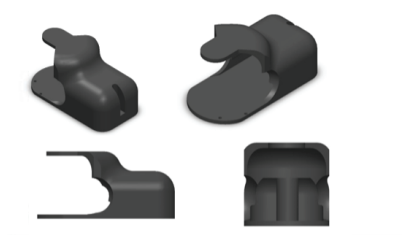
Made of a high-performance thermoplastic, it is waterproof, lightweight, durable, and able to withstand extreme temperatures. The solid one-piece design helps it retain its structural integrity. The smooth and rounded upper shape reduces the likelihood of it becoming a snag hazard during actual underwater egress. Its flat bottom allows it to be worn closely and comfortably against the wearer's chest during routine flight operations.

The cover uses an exclusive internal, passive-friction design, which provides positive regulator retention. This alleviates the need for a mechanical release button or latch that could be hard to locate in an emergency. The cover also delivers the user with a holster-like, fast, and positive tactile feedback when removing or drawing the regulator. In the dark, this response signals to the user that the EBD has cleared the cover. This can be calming and reassuring under extremely stressful situations. Reinsertion of the regulator back into the cover feels gradual, with a slight resistance before locking positively into place.

The cover is easily attached to the life vest using a single (standard-size) plastic tie-wrap. It is routed and secured to a 1-inch webbing tab sewn to the outer portion of the vest. Put simply, this unique hard cover houses the regulator and protects the purge button, the same way a holster houses a gun and protects the trigger.



Orange-colored protective cover prototype sitting next to EBD.



Three-dimension computer-aided design (CAD) view of Regulator Cover.

APPLICATIONS

The technology has several potential end-users:

- + Military
- + Law Enforcement
- + Search & Rescue
- + SCUBA
- + Offshore Oil

PATENT INFORMATION

US Patent numbers 11,219,789 and 11,369,814



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