



Emergency Egress Air-Breathing Bottles

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During a visit to the Naval Air Development Center in Warminster, Pennsylvania, information regarding a compact emergency air bottle was presented to personnel from San Dimas. The emergency air bottle is for use by flight crew members in the event they are forced to escape from a submerged aircraft. In three years of operation of this unit with the Naval fleet, the Navy documented 13 saved lives. The manufacturer of the unit has documented 30 saved lives.

During certain missions, the USDA Forest Service operates aircraft over bodies of water, with the possibility of an emergency ditching over water. In particular, in the event of a helicopter crashing onto water, persons in the aircraft should not swim to the surface of the water until they are positive that the rotor blades have stopped turning, or they risk disastrous consequences.

The SRU-36/P Helicopter Emergency Egress Device (HEED) used by the Navy is a compact lightweight breathing apparatus, which provides for up to two minutes of emergency air. It can be carried either in the pocket of the pilot survival vest or in a holster container worn on the side of the leg like a sidearm holster.

Submersible Systems, Inc. HEED Bottles

The same device is available commercially from Submersible Systems, Inc. The device described above currently used by the U.S. Navy, U.S. Marine Corps, U.S. Air Force and selected U.S. Army aviation units is the HEED II. The HEED II Mod. 1, shown in Figure 1, is in use by Australian military units. The HEED III, shown in Figure 2, is in service with the U.S. Customs Service.

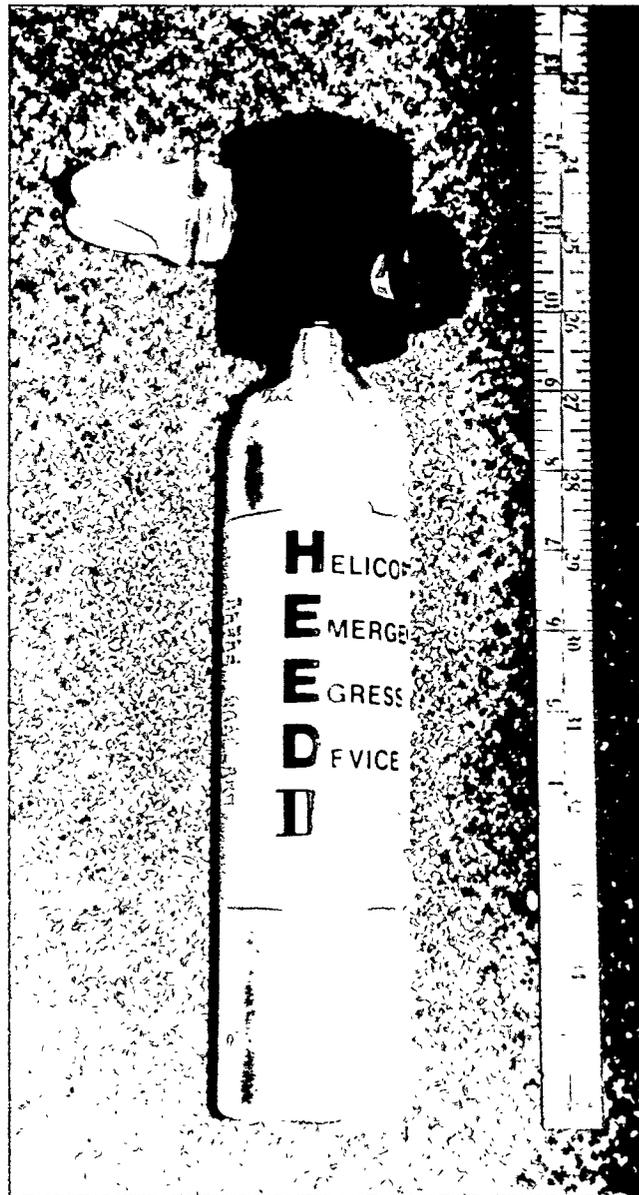


Figure 1.—HEED II Mod. 1 used by the Australian military. Note mouth piece at top left of unit. Actuation knob is at top right.



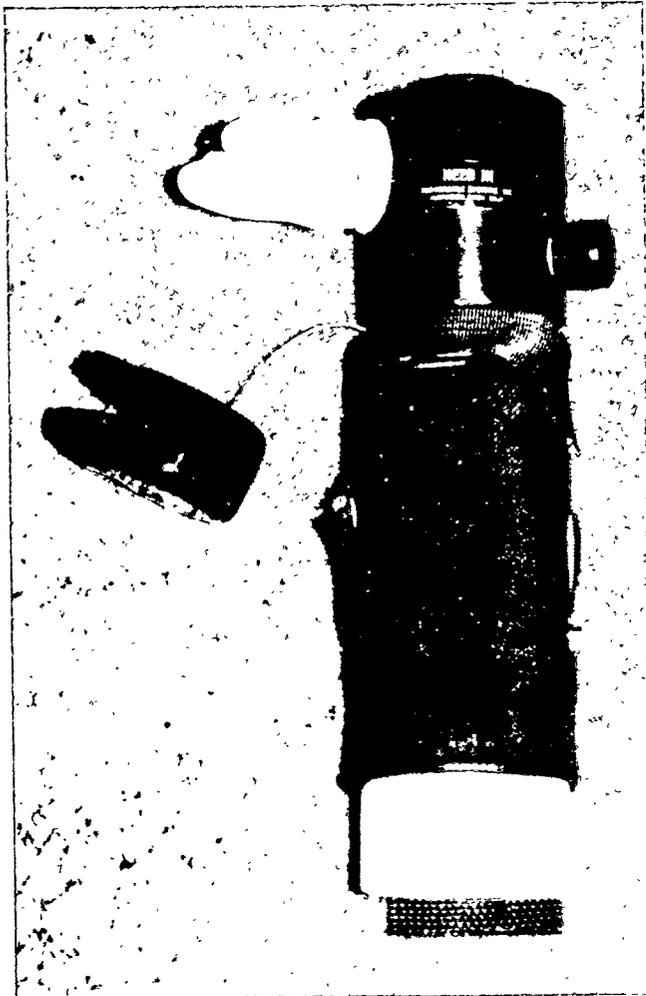


Figure 2.—HEED III used by the U.S. Customs Service. Unit shown is in the holster, with mouth piece cover (to the left of the bottle) hanging below mouth piece (upper left). Check valve is small knob projecting from upper right side. Pin pressure indicators cannot be seen in either figures 1 or 2.

All of these models feature pin pressure indicators, which cannot be seen in either photo. The pin pressure indicators signify whether the bottle is, or is not, full of air. The HEED systems can be custom modified to meet specific needs if necessary. There is also a HEED III Mod. I, but the only difference between it and the HEED III is a dial gauge instead of a pin for a pressure indicator. HEED III Mod. I is \$30 more per unit than HEED III. According to the company representative, the dial gauge is extremely sensitive and may not be suited for use in Forest Service missions.

The balanced single-stage demand regulator fits on top of the cylinder. One fitting on the side of the unit is a pressure gauge and the second is a check valve or knob (depending on the model) with a protective cap that allows for refilling. Refill adapters are

Table 1

	HEED II	HEED II Mod.1	HEED III
Model No.	171	271M1	175MT
Length (in.)	13.5	11.75	8.75
Diameter (in.)	2.0	2.25	2.25
Weight (lbs)	1.5	1.75	1.3
Pressure (psi)	1,800	3,000	3,000
Air Capacity (cu. ft.)	1.7	2.7	1.7
Surface Breaths	30	48	30
Valve Actuation	Knob	Knob	Check Valve
Pressure Indicator	Pin	Pin	Pin

available at a separate charge of \$23 or \$36 depending upon method of refilling. Refilling is simple and can be completed in about three minutes.

General specifications for the HEED II, HEED II Mod. I, and HEED III are shown in Table 1. All three models are DOT approved and have been approved for military use.

For the models with 30 breaths available, United States Navy tests indicate an average breathing time of 2 minutes at 10 feet under water with moderate activity level.

Use of the Bottles

The actuation knob on the HEED II bottles must be turned on prior to use. With the HEED III, the check valve demand regulator is always on and ready for use. To use the HEED III with holster, simply grab the regulator and pull the unit from the holster. The velcro strap and mouth piece cover will automatically release. If the system is used underwater, exhale into the mouth piece to clear water (purge) from the regulator prior to inhaling the first breath. Otherwise, place the mouth piece into the mouth and breathe normally. An interview with one Navy pilot, who used the HEED II in an emergency underwater egress, indicated that he didn't even purge the bottle and had no difficulty receiving air immediately.

The HEED bottles are of a durable construction. In following the use of their systems by the military, Submersible Systems has found that when the units are assigned to a pilot for exclusive use, they remain in better condition than when they are assigned as equipment specific to a helicopter.

Ordering Information

Model prices are as follows (quantities of 1 to 49):

HEED III, with holster	\$223 each
HEED III, without holster	\$199 each
HEED II, with holster	\$178 each
HEED II, without holster	\$160 each
HEED II Mod. I, without holster	\$227 each

Other emergency breathing air bottles exist on the market. Of the models we have located, all except the HEED line of bottles are aimed at scuba diving usage. These sport diving bottles were of comparable cost to the HEEDs and are not military approved.

From the specifications provided, we recommend consideration of the HEED III due to its smaller size and weight and simpler operation (check valve actuation versus a knob to twist). However, if more surface breaths were wanted (48 versus 30), a new model called the HEED III Mod. III should be considered. This model also has a check valve and is comparable in price.

To receive additional information regarding the HEED bottles or to place an order, contact:

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