

HEED 3

TECHNICAL / USER MANUAL

HELICOPTER EMERGENCY EGRESS DEVICE
MODEL 175-003 & 175-004



SUBMERSIBLE SYSTEMS, INC.

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www.HEED3.com

THE LEADER IN SELF-RESCUE BREATHING SYSTEMS

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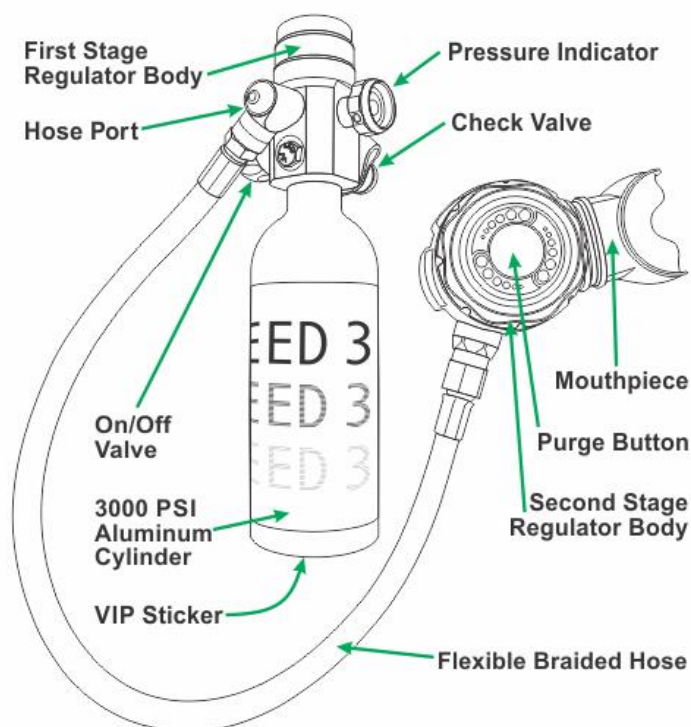
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GENERAL PRECAUTIONS & WARNINGS:

- HEED is shipped empty. Fill prior to use.
- No special training or SCUBA certification necessary for using HEED above ground or at shallow depths.
- Never overfill the HEED system above 3000 psi, the air pressure stamped on the cylinder. ONLY use purified, dry compressed breathing air when filling HEED.
- DO NOT fill or use HEED if it has been exposed to extreme heat exceeding 250°F, or open flame. Instead, discharge the cylinder completely and return it to an Authorized dealer or the manufacturer for inspection and possible hydrostatic testing.

HOW HEED WORKS:

Helicopter Emergency Egress Device (HEED) is a high-quality emergency breathing system produced and tested by people with more than four decades of manufacturing experience. We use the finest quality materials and techniques in the construction of this product. Enjoy the peace of mind that having HEED brings.



First Stage Regulator Body - Typical to regulators used by SCUBA Divers around the world, the first stage reduces the high pressure within the cylinder to an intermediate pressure utilized by the second stage.

Hose Port - Pivoting Hose Port for Flexible Braided Hose to attach First Stage to Second Stage Regulator Body.

Pressure Indicator - Dial Gauge has an easy to read, color coated display for at-a-glance pressure check in psi and bar.

Check Valve Refill Port - Refillable from an Air Compressor or SCUBA cylinder.

Mouthpiece - High quality silicone mouthpiece.

Purge Button - Clears the regulator and empties the cylinder.

Second Stage Regulator Body - Typical to regulators used by SCUBA Divers, the second stage allows the air from the first stage to equalize to the surrounding water pressure providing air at ambient pressure and normal breathing through the mouthpiece.

On/Off Valve - Twist knob to turn the air supply on and off.

3000 PSI Aluminum Tank - This cylinder is manufactured just like standard SCUBA cylinders, with the same safety features. The cylinder should be inspected annually and hydrostatically tested every 5 years.

VIP Sticker - Month and year of last cylinder visual inspection.

REFILLING HEED FROM A FILL STATION USING #920C ADAPTER:

(Use a high-pressure, breathing air quality air compressor designed to fill air systems.)

WARNING: If the HEED Check Valve Refill Port or Refill Adapter threads are damaged or worn these parts will require replacement. Continued use may cause injury.

CAUTION: DO NOT stand directly over HEED regulator while filling.

CAUTION: Ensure the regulator is firmly attached to the cylinder (hand tight, no tools required).

1. Remove rubber cover from the Check Valve Refill Port.
2. Apply small amount of food grade silicone grease to Refill Port threads with your finger.
3. Screw Refill Adapter onto Refill Port until finger tight.
NOTE: DO NOT apply a wrench or otherwise overtighten.
4. Attach the yoke from the compressor to the Adapter.
NOTE: If line is pressurized over 3200 PSI, adjust the line pressure to 3200 PSI.
5. Turn the On/Off Knob counter-clockwise until it is completely open.
6. Turn the valve on your compressor ON.
7. Refill the cylinder to 3200 psi initially, after cooling down the pressure will be approximately 3000 psi. Regulate the flow so that it takes approximately 45-60 seconds to fill the cylinder.
NOTE: Filling too fast can generate heat and will result in an incomplete fill after the cylinder cools.
NOTE: Fill cylinder slowly and DO NOT OVERFILL to protect the safety burst disc inside the regulator from rupturing. If it ruptures, a new 3300 psi burst disc must be installed before unit can be filled.
8. When the cylinder is full, turn the On/Off Knob clockwise until it is completely closed.
9. Turn the compressor or fill station valve OFF.
10. Depress the 2nd Stage Purge Button until air flow can no longer be heard and the hose is depressurized.
11. Open bleed knob to release pressure in line. Remove Adapter from compressor yoke.
12. Remove Adapter from HEED and replace rubber cover on Refill Port.
13. Check the Pressure Indicator. If the tank is full, the Dial Gauge will read 3000 psi.

REFILLING HEED FROM A STANDARD SCUBA CYLINDER USING #910S ADAPTER:

WARNING: If the HEED Check Valve Refill Port or Refill Adapter threads are damaged or worn these parts will require replacement. Continued use may cause injury.

CAUTION: DO NOT stand directly over HEED regulator while filling.

CAUTION: Ensure the regulator is firmly attached to the cylinder (hand tight, no tools required).

1. Remove rubber cover from the Check Valve Refill Port.
2. Apply small amount of food grade silicone grease to Refill Port threads with your finger.
3. Screw Refill Adapter onto Refill Port until finger tight.
NOTE: DO NOT apply a wrench or otherwise overtighten.
4. Turn knurled ring on Adapter firmly to closed (clockwise) position.
5. Attach Refill Adapter to SCUBA cylinder valve.
6. Turn the On/Off Knob counter-clockwise until it is completely open.
7. Open SCUBA cylinder valve very slowly just until you can hear air passing from one cylinder to the other.
NOTE: Filling too fast can generate heat and will result in an incomplete fill after the cylinder cools.
NOTE: If air is escaping from the Adapter during filling, close cylinder valve, wait for air to stop and re-tighten knurled ring by turning to closed (clockwise position).
8. When at least 2 minutes have elapsed, and air can no longer be heard flowing from the cylinder, turn the cylinder valve completely open to ensure maximum fill.
NOTE: SCUBA cylinder must be filled to 3000 psi at beginning of refill procedure in order to fill to recommended full capacity.
9. Turn the On/Off Knob clockwise until it is completely closed.
10. Close SCUBA cylinder valve.

11. Depress the 2nd Stage Purge Button until air flow can no longer be heard and the hose is depressurized.
12. You must turn the knurled ring on Adapter to open (counter-clockwise) position to relieve pressure in the Adapter.
NOTE: You will not be able to remove the Adapter from Refill Port until this is done.
13. Remove Adapter from SCUBA cylinder and HEED.
14. Replace rubber cover on Refill Port.

MOUNTING INSTRUCTIONS:

Optional HEED 3 Holster is designed to attach to a modular style vest (MOLLE).

1. Weave the 2 straps on the back of the modular holster through the webbing of vest (left side recommended) and snap into place.
NOTE: It is important that the operator be able to grip the regulator having sufficient clearance for a pull of at least 6 inches.
2. Place unit in Holster and attach flap securely over the regulator ensuring velcro is fully engaged.
3. Attach Mouthpiece Cover.
4. Affix the included small velcro tab located on the metal ring to another web to help secure the holster.

PRE-USE CHECK:

1. Check for obvious physical damage, broken or loose parts. Do not use if damaged.
2. Turn the system on by turning the On/Off Knob counter-clockwise until it is completely open.
3. Visually check Dial Gauge for needle to be within green zone. Refill if necessary.
4. Push Purge Button down and release. Purge Button should move up and down freely. To maintain full pressure do not purge unnecessarily.

USING HEED:

1. Grab HEED regulator head and pull until Hose is completely out of the Holster. This action will release the Mouthpiece Cover.
2. Place the HEED regulator into user's mouth.
3. If the system is used underwater press purge button lightly or exhale sharply to expel water from the regulator prior to inhalation.
CAUTION: Failure to purge the HEED regulator before inhaling will result in swallowing water.
4. Continue to inhale and exhale to a safe and normal rate of ascent. Take small, slow, steady breaths to maximize the duration of air supply.
NOTE: The HEED utilizes a balanced regulator which means it will provide air in any orientation including the regulator being upside down or sideways.
CAUTION: If HEED is used until completely empty underwater, it should be referred for five year service.
5. When done using system, turn the On/Off Knob clockwise to turn off.

TRAVELING:

NOTE: When transporting product (not using) on commercial aircraft, cylinders must be VISIBLY empty and removed from regulators.

1. Purge until empty of air.
2. Remove regulator from cylinder (regulator is attached hand tight) by turning counter-clockwise. Leave o-ring and washer on the regulator.

CAUTION: Do not force regulator on or off cylinder. Excessive force may damage threads. If regulator does not remove easily, soak in a 1 to 1 vinegar & water solution for 3 hours to loosen any corrosion.

3. Place HEED in a protective container (plastic bag or box) to keep unit clean and to secure loose parts.
4. Pack in your check or carry-on luggage.
5. When you reach your destination, reassemble (hand tight) and fill the cylinder. Lightly lubricate the tank o-ring with a small amount of silicone grease – never use a hydrocarbon based oil. **DO NOT** force regulator onto cylinder.

NOTE: Replace o-ring after product has been disassembled and reassembled 3 times, or o-ring shows signs of wear or air leakage.

GENERAL SERVICING INFORMATION

NOTE: Ensure HEED is always pressurized whenever it is submerged to prevent water from entering system. If HEED has been emptied of air underwater it should be referred for five year service.

NOTE: If a leak or damage is found at any point the unit should be referred for five year service.

ANNUAL CHECK: (performed by user):

1. Visually check Dial Gauge for needle to be within green zone. If it is not, perform a leak test to determine if the HEED is actually leaking or if it just needs to be filled.
2. Look for obvious physical damage, such as broken or loose parts. Check openings of diaphragm cover for presence of foreign objects or punctures of blue diaphragm. Check that all parts are clean and securely attached.
3. Perform a leak test. HEED must be pressurized and needle within the green zone.
 - a. Completely submerge filled unit into a tub of water.
 - b. Shake the unit back and forth several times so that all trapped air is released.
 - c. Hold the unit still and watch for any leaks for 60 seconds (spend 20 seconds at each of the following: mouthpiece opening, side ports, and tank o-ring areas).*NOTE: A leak is defined as a continuous bubble at a constant rate.*
 - d. If leak is detected, refer unit for five year service.

FIVE YEAR SERVICE: (must be done by certified repair technician or returned to manufacturer):

1. Overhaul service is recommended for the HEED every 5 years when not used underwater. Service includes complete overhaul of regulator, replacement of all worn parts, visual inspection of cylinder and labor. Regulator may be upgraded and receive a new serial number. Cylinder will receive a new VIP (visual inspection) sticker with the date marked.
NOTE: Only personnel certified to repair HEED can perform the repair or refer units to the manufacturer for servicing.
2. DOT 3AL cylinder: Hydrostatic testing is required every five years. DOT also requires that any cylinder exposed to fire or heat in excess of 350°F be condemned. CE marked cylinder - Refer to local country regulations for how often hydrostatic testing should occur.
NOTE: Any cylinder that shows signs of corrosion, pitting or damage during any service checks should be evaluated further.
3. Visit www.heed3.com to download Repair Form and return to:
Submersible Systems
7413 Slater Ave.
Huntington Beach, CA 92647

ROUTINE CARE / STORAGE:

1. For general cleaning, use a mild dish soap or Simple Green / biodegradable solution.
2. For sanitizing, use a commercially available regulator sanitizer available through a dive shop.
3. Keep the threads on both the Refill Port and Refill Adapter clean and lubricated. Use high-quality, non-toxic, food grade silicone grease for best results.
NOTE: NEVER use a hydrocarbon based oil (i.e. household oil or motor oil).
4. HEED used frequently in a water training environment need extra care:
 - a. After use, rinse and soak for at least 30 minutes in warm, fresh water.
 - b. Gently shake to dislodge any water and wipe dry with a clean towel.
 - c. Will require service every three to six months.
5. Store HEED full or with some positive pressure to prevent contaminants from entering the cylinder. Store in a clean, dry environment with optimum temperatures of 50-75°F for best product performance. Avoid direct sunlight, automobile trunks or other areas subject to temperature extremes.
NOTE: Industry guidelines recommend replacing air in cylinders annually.

HEED 3 SPECIFICATIONS

MODEL #	175-003 / 175-004
Cylinder Capacity	1.7 cu ft / 48 liters
Water Capacity	16 cu in / .3 liters
Service Pressure	3000 psi / 207 bar
Length	9.25" / 23 cm (excluding hose)
Diameter	2.25" / 5.7 cm
Weight	3 lbs / 1.4 kg
Surface Breaths*	32
Cylinder Material	Aluminum – black anodized
Regulator Type	Balanced Piston, On/Off Knob, 20" or 27" flexible braided hose & Demand 2 nd Stage Regulator
Pressure Relief	Integrated in Regulator
Operational Temperature	-22°F / 30°C < +158°F / +70°C
Altitude Limits	Tested at up to 35,000 ft / 10,500 m
Cylinder Rating	DOT 3AL 3000 or CE Marked
Duration of Breathing	Approx. 2-5 minutes. Varies upon user's lung capacity, physical exertion, depth of usage in water and several other factors.

*Based on 1.5 liters per breath