

# **HEED 3**

## **TECHNICAL / USER MANUAL**

### **HELICOPTER EMERGENCY EGRESS DEVICE**

#### **175 & 300 SERIES**



**SUBMERSIBLE SYSTEMS, INC.**

Phone: (714) 842-6566

[www.HEED3.com](http://www.HEED3.com)

*THE LEADER IN SELF-RESCUE BREATHING SYSTEMS*

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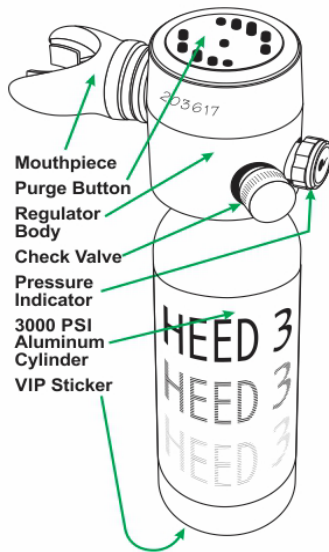
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### GENERAL PRECAUTIONS & WARNINGS:

- HEED is packaged fully assembled and is ready to use after it has been filled with air. User needs to purchase a Refill Adapter – see options below. Refill adapters are available on the Submersible Systems shopping cart – [www.heed3.com](http://www.heed3.com) – click on Buy Now.
- No special training or SCUBA certification required for using HEED above ground or at shallow depths.

### PRODUCT BRIEFING:

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. HEED is made in the U.S.A. by craftsmen dedicated to producing a quality product. Enjoy the peace of mind that having the HEED brings.



**Regulator** - Our simple rugged design utilizes the same time proven technology found in typical regulators used by SCUBA Divers around the world. Our always-on, breathe on demand, balanced single stage regulator is easy to use, maintain and service. Can be used in any orientation, even upside down.

**Serial Number** – Located on the Regulator.

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

**Purge Button** - Clears the regulator and empties the cylinder.

**Mouthpiece** – High quality silicone mouthpiece.

**Check Valve Refill Port & Cap** – Refillable from an Air Compressor, Hand Pump or full SCUBA cylinder.

**3000 PSI Aluminum Cylinder** – Original manufacture date is stamped on the neck. The cylinder should be hydrostatically tested every 5 years based on this date.

**VIP Sticker** - Month and year of last cylinder visual inspection, required every year when refilling at a dive shop.

**OPTIONAL ACCESSORIES SOLD SEPARATELY** – Go to [www.heed3.com](http://www.heed3.com) to order:



P/N 920C – Air Compressor Refill Adapter



P/N 910C – Scuba Tank Refill Adapter



P/N 959 – Nose Clip with Lanyard

## **REFILLING HEED FROM 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).

**NOTE:** Set compressor pressure setting to 3200 PSI.

1. Unscrew black cap from 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.
5. Turn the On/Off Knob on HEED counter-clockwise until it is completely open/on.
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 compressor or fill station valve OFF.
9. Turn the On/Off Knob on HEED clockwise until it is completely closed/off.
10. Depress the 2<sup>nd</sup> Stage Purge Button until air flow can no longer be heard and the hose is depressurized.
11. Open bleed knob to release pressure in compressor line. Remove Adapter from compressor yoke.
12. Remove Adapter from HEED and replace black cap on Refill Port.
13. Check the Pressure Indicator. If the tank is full, the Dial Gauge will read 3000 psi.

## **REFILLING HEED FROM FULL SCUBA CYLINDER USING #910C 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).

**NOTE:** Twice a year lightly lubricate the Bleed Screw o-ring using silicone grease.

1. Unscrew black cap from 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 Bleed Screw clockwise to close (do NOT overtighten).
5. Attach Refill Adapter to SCUBA cylinder valve.
6. 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.**
7. 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.**
8. Close SCUBA cylinder valve.
9. Turn Bleed Screw ½ turn counterclockwise to relieve pressure in the adapter. **NOTE: You will not be able to remove the Adapter from Refill Port until this is done.**
10. Remove Adapter from SCUBA cylinder and HEED.
11. Replace black cap on Refill Port.

## **MOUNTING INSTRUCTIONS:**

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

1. Weave the 2 straps on the back of the holster through the rows of MOLLE webbing 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.  
**NOTE: Mouthpiece can face left or right simply by switching mouthpiece cover and lanyard attachment to either side of the holster.**
3. For models with Nose Clip option, place nose clip loosely inside of black mouthpiece protective cover. Secure mouthpiece cover over mouthpiece.

## **PRE-USE CHECK:**

1. Check for obvious physical damage, broken or loose parts. Do not use if damaged.
2. Visually check Dial Gauge for needle to be within green zone. Refill if necessary.
3. 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. Pull D-ring on flap of Holster to open.
2. Grab HEED regulator head and pull out of the Holster. This action will release the Mouthpiece Cover.
3. Place HEED regulator into user's mouth.
4. 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.**
5. Place Nose Clip (optional) on nose and adjust as needed.
6. 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 Overhaul service.**

## **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. Hold upside down and remove regulator from cylinder (regulator is attached hand tight) by turning counter-clockwise. Leave o-ring, washer and exhaust discs 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.**

## **SERVICE INFORMATION:**

- *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 Overhaul Service.*
- *If a leak or damage is found at any point the unit should be referred for Overhaul Service.*
- *No matter how often the unit has been used, or even if the unit has not been used at all, the HEED requires tank inspection and regulator overhaul every 5 years.*
- *Service intervals are from the Date of Manufacture (found on the cylinder neck – look for XX A XX representing the month and year of manufacture).*
- *Service record for each serial number should be maintained by user and record the date of the Annual Check and Overhauls as they are performed.*

## **BASIC MAINTENANCE ITEMS TO BE REPLACED AS NECESSARY** (performed by user- all parts available for purchase on [www.heed3.com](http://www.heed3.com)):

1. Check Valve Refill Port – P/N 030CK-2S – Refill port may become damaged during filling, hex key needed
2. Dial Gauge Pressure Indicator – P/N 003DGS – wrench needed
3. External O-rings – Common O-rings P/N 015 SET (for Dial Gauge Pressure Indicator and Check Valve Refill Port), Tank O-ring P/N 027 SET

## **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.
  - 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 Overhaul Service.
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. If unit is filled at a Dive Shop they will require that the cylinder is visually inspected annually by them and receives a fresh VIP sticker.

## **OVERHAUL & CYLINDER SERVICE** (to be performed by repair facility / manufacturer):

1. Regulator Overhaul Service: Recommended for the HEED every 5 years when not used underwater or in a training environment. Service includes: Overhaul of regulator, replacement of all worn parts, visual inspection of cylinder and labor. Cylinder will receive a new VIP (visual inspection) sticker with date marked.
2. DOT 3AL cylinder: Hydrostatic testing is required every five years. Any cylinder exposed to fire or heat in excess of 250°F, or shows signs of corrosion, pitting or damage should be evaluated further. CE marked cylinder - Refer to local country regulations for how often hydrostatic testing should occur.

## **HEED SERVICE OPTIONS:**

### **OPTION 1**

**Return to Manufacturer for Service** – visit [www.heed3.com](http://www.heed3.com) to download Service Form. Submersible Systems, Inc. provides both Overhaul and Hydrostatic Testing at our facility in Huntington Beach, California, USA.

### **OPTION 2**

#### ***Inhouse Maintenance by Corporate/Certified Customer***

- Inhouse maintenance may be conducted by personnel that have a background on servicing SCUBA equipment or EBS.
- Manufacturer will provide appropriate parts, tools and manuals as needed.

### **OPTION 3**

#### ***In-country 3<sup>rd</sup> party repair center or dive maintenance company***

- Please contact Submersible Systems, Inc. for a list of centers.

### **UNITS USED IN TRAINING ENVIRONMENT:**

1. HEED used frequently in a water environment or for training purposes will need extra care:
  - a. After each in-water use rinse and soak pressurized HEED for at least 30 minutes in warm, fresh water.
  - b. Rigorously shake and / or utilize a steady stream of water dislodge any debris (salt, mineral deposits, sand, etc)
  - c. Gently shake to drain water and wipe dry with a clean towel.
2. HEED may require Overhaul Service more frequently depending on the amount of use it receives and the environmental conditions it is used in.

***NOTE: Use in chlorinated swimming pool water will accelerate the deterioration of most rubber components and require more frequent service than in other typical conditions.***

### **ROUTINE CARE & STORAGE:**

1. For general cleaning, use a mild dish soap or Simple Green / biodegradable solution.
2. To clean mouthpiece, use a product such as Sterisol germicide or other food grade disinfectant.
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), petroleum based substances to clean or lubricate. Do not expose the regulator to aerosol spray, as some aerosol propellants attack or degrade rubber and plastic.***

4. 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. Avoid storing where it may be exposed to an electric motor which produces ozone. Prolonged exposure to extreme heat, ozone, chlorine and ultraviolet rays can cause premature degradation of rubber parts and components.

***NOTE: Industry guidelines recommend replacing air in cylinders annually.***

<b>HEED 3 SPECIFICATIONS</b>		
<b>MODEL #</b>	<b>175</b>	<b>300</b>
Cylinder Capacity	2 cu ft / 58 liters	3 cu ft / 85 liters
Service Pressure	3000 psi / 207 bar	3000 psi / 207 bar
Length	9.5" / 24 cm	13" / 33 cm
Diameter	2.5" / 6.4 cm	2.5" / 6.4 cm
Weight	1.8 lb / .8 kg	2.2 lb. / 1 kg
Surface Breaths*	38	57
Cylinder Material	Aluminum – black anodized	
Regulator Type	Integrated Balanced Single Stage Demand	
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 ISO Marked	
Duration of Breathing	Approx. 2-7 minutes. Varies upon cylinder size, user's lung capacity, physical exertion, depth of usage in water and several other factors.	

\*Based on 1.5 liters per breath