

HEED 3 TECHNICAL / USER MANUAL



HELICOPTER EMERGENCY EGRESS DEVICE MODELS 175-001, 175-002, 300-001 & 300-002

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THE LEADER IN SELF-RESCUE BREATHING SYSTEMS

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HOW HEED WORKS

Helicopter Emergency Egress Device (HEED) is a complete miniature emergency breathing system all-in-one unit. It is composed of a balanced single stage on-demand Regulator, high pressure Cylinder, Check Valve (refill port), and Pressure Indicator (in the form of a Dial Gauge or Pin Style Indicator).

The system is always on and ready for immediate use. Upon inhalation, the diaphragm depresses the lever pressing the Poppet Assembly down and away from the Poppet Seat. This action allows air to flow from the Cylinder into the Regulator chamber and out the mouthpiece. On exhalation, the diaphragm is forced upward; the Poppet Assembly and Seat are forced closed by a spring. Air exits the Regulator chamber through the exhaust ports at the bottom of the Regulator.

MOUNTING INSTRUCTIONS:

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

NOTE: It is important that the operator be able to grip the regulator having sufficient clearance for a pull of at least 6 inches.

PRE-USE CHECK:

1. Check Pressure Indicator- The unit is operational when the needle is within the green zone (range from 2600 psi to 3000 psi). Refill unit to full capacity if needed.
2. Check for obvious physical damage, broken or loose parts.

TO USE THE 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 the HEED regulator into user's mouth.
4. If the system is used underwater press purge button or exhale sharply to expel water from the regulator prior to inhalation.
5. Continue to inhale and exhale to a safe and normal rate of ascent.
NOTE: The HEED utilizes a balanced regulator which means it will provide air in any orientation including the regulator being upside down or sideways.

REFILLING SPARE AIR FROM A FILL STATION USING #920C ADAPTER:

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

1. Unscrew black cap from the HEED Check Valve filling port.
2. Screw #920C Refill Adapter onto the Check Valve until finger tight ONLY. Do not over-tighten the Refill Adapter.
3. Attach the yoke from the compressor to the Adapter.
NOTE: If line is pressurized over 3200 PSI, adjust the line pressure to 3200 PSI.
4. Turn the valve on your compressor ON.
5. 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 tank.
NOTE: Fill tank 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.
6. When the tank is full, turn the compressor or fill station valve OFF.
7. Open bleed knob to release pressure in line. Remove Adapter from compressor yoke.
8. Remove Adapter from HEED and screw the Check Valve Cap onto the Check Valve until finger tight.
9. Check the Pressure Indicator. If the tank is full, the Dial Gauge will read 3000-3200 PSI.

REFILLING HEED FROM A SCUBA TANK USING #910S ADAPTER:

(Utilizes a standard SCUBA tank.)

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

1. Unscrew black cap from the HEED Check Valve filling port.
2. Place the #910S Adapter onto Check Valve and turn knurled ring of the Adapter to the right until finger-tight.
NOTE: Filling too fast can result in an inaccurate air reading and can damage the internal components inside the Check Valve.
3. Attach Adapter to SCUBA tank valve.
4. To fill, **open SCUBA valve SLOWLY** (allow 45-60 seconds to fill). Unit is full when needle on Dial Gauge points to 3.
5. Close SCUBA tank valve.
6. Turn the knurled ring of the Adapter to the left to relieve pressure in the Adapter.
7. Remove Adapter from SCUBA tank and HEED.
8. Replace black cap on Check Valve.

NOTE: If air is escaping from the adapter during filling, close tank valve, wait for air to stop and re-tighten knurled ring by turning to the right.

NOTE: If SCUBA tank WAS NOT FULL at beginning of refill procedure, then the HEED will not be filled to its recommended full capacity, diminishing available air volume.

WARNING: If the HEED check valve or adapter threads are damaged or worn these parts will require replacement. Continued use may cause injury.

NOTE: If adapter knurled ring does not move freely, soak in 1-1 vinegar and water solution for 3 hours to loosen any corrosion.

GENERAL SERVICING INFORMATION

NOTE: If a leak or damage is found at any point the unit should be referred for service. See Service Manual for specific procedures.

WARNING: Ensure unit is always pressurized whenever it is submerged to prevent water from entering system. If unit has been emptied of air underwater, it is important to return to trained technician for visual inspection and any necessary service before attempting to refill it.

PRE-USE CHECK: (performed by user):

1. Visually check Dial Gauge for needle to be within green zone. If unit does not read in the green zones then perform the ANNUAL CHECK below to determine if the unit 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.

ANNUAL CHECK: (performed by user):

1. Perform an annual leak test. A leak test consists of completely submerging filled unit into a tub of water; shake the unit back and forth several times so that all trapped air is released; 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.

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

1. Every five years the regulator should be overhauled with a complete overhaul kit. Refer to Service Manual for complete instructions. Only personnel certified to repair HEED can perform the repair or refer units to the manufacturer for servicing at:
Submersible Systems
7413 Slater Ave.
Huntington Beach, CA 92647
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.

ROUTINE CARE / STORAGE:

1. DO NOT immerse in or use solvents, acids or other chemical cleaners on the HEED system. Hot, soapy water may be used for cleaning when necessary.
2. Corrosion resistant materials are used in all parts of HEED. If used in salt water or a chlorinated swimming pool, we recommend that the unit be filled, then rinsed with clean, fresh water and allowed to dry before storage for maximum performance and reliability.
3. HEED units should be stored 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. Industry guidelines recommend replacing air in cylinders annually.

SERIALIZATION:

All HEED systems are identified with individual serial numbers. Serial numbers are located on the regulator to the right of the mouthpiece.

HEED 3 SPECIFICATIONS		
MODEL #	175-001 / 175-002	300-001 / 300-002
Length	8.75" / 22 cm	13.4" / 34 cm
Diameter	2.25" / 5.7 cm	2.25" / 5.7 cm
Weight (full)	1.5 lb / .68 kg	2.2 lb. / .98 kg
Cylinder Pressure Rating	3000 psi / 207 bar	3000 psi / 207 bar
Cylinder Volume	1.7 cu ft / 48 liters	3.0 cu ft / 85 liters
Duration of Air Supply	32 breaths at surface	57 breaths at surface
Recommended Depth	100 feet due to limited air supply	
Cylinder Material	Aluminum – black anodized	
Pressure Relief	Integrated in Regulator	
Regulator Type	Integrated Balanced Single Stage Demand	
Operational Temp.	-22°F (-30°C) to +158°F (+70°C)	
Altitude Limits	Tested at up to 35,000' (10,500 m)	
Burst Disc Rate	3300 psi; Bursts between 4300-4500 PSI	
Buoyancy	Nearly neutrally buoyant	
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.	