



# **Owner's Manual**

## Sea Lion Diving System

*ADVENTURE IS ALWAYS ON THE LINE!*



**This manual is also available online**



3001 NW 25th Ave, Pompano Beach, Florida 33069  
+1.954.462.5570 FAX +1.954.462.6115

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



**READ ALL SAFETY RULES AND OPERATING INSTRUCTIONS  
CONTAINED IN THIS MANUAL AND FOLLOW THEM WITH EACH USE  
OF THIS PRODUCT.**



**MANUAL SAFETY NOTICES**

Important instructions concerning the endangerment of personnel, technical safety or operator safety will be specially emphasized in this manual by placing the information in the following types of safety notices.

 <b>DANGER</b> 
DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This is limited to the most extreme situations.

 <b>WARNING</b> 
WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

 <b>CAUTION</b> 
CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

 <b>NOTE</b> 
NOTE advise of technical requirements that require particular attention by the operator or the maintenance technician for proper maintenance and utilization of the equipment.

***REGISTER YOUR PRODUCT ONLINE***  
***Go to [www.BrownieDive.com](http://www.BrownieDive.com) to register your product.***  
***Registration will allow us to keep you informed***  
***about important issues and news about your system.***

## Table of Contents

<b>SPECIFICATIONS</b>	<b>3</b>
<b>CONGRATULATIONS ON YOUR PURCHASE OF A BROWNIE'S SYSTEM</b>	<b>4</b>
<b>WHEN YOU RECEIVE YOUR NEW COMPRESSOR SYSTEM</b>	<b>4</b>
<b>MEDICAL CLEARANCE/POTENTIAL RISKS</b>	<b>5</b>
<b>ONLINE TRAINING</b>	<b>11</b>
<b>SEA LION BATTERY PACK</b>	<b>12</b>
<b>BATTERY PACKAGE</b>	<b>13</b>
<b>CHARGING THE BATTERY</b>	<b>13</b>
<b>SETTING UP</b>	<b>14</b>
<b>STARTING THE UNIT</b>	<b>14</b>
<b>THE TUBE INFLATION AND DEFLATION</b>	<b>15</b>
<b>MOUNTING THE UNIT IN THE FLOAT</b>	<b>16</b>
<b>HEAT HOSE</b>	<b>16</b>
<b>HOSES</b>	<b>16</b>
<b>USING EASY CONNECT ACCUMULATOR TANK</b>	<b>16</b>
<b>HOW TO ADJUST THE DROP WEIGHT CUMMERBELT</b>	<b>17</b>
<b>HOW TO USE THE DROP WEIGHT CUMMERBELT</b>	
<b>WITH AN EGRESSOR PACKAGE</b>	<b>18</b>
<b>BEACH LAUNCHING</b>	<b>19</b>
<b>USING AS A DECK MOUNT</b>	<b>19</b>
<b>BOAT LAUNCHING</b>	<b>19</b>
<b>MAX DEPTH SELECTOR</b>	<b>20</b>
<b>SOME TIPS ON USE OF THE EQUIPMENT</b>	<b>21</b>
<b>STORAGE</b>	<b>21</b>
<b>PERIODIC MAINTENANCE</b>	<b>21</b>
<b>TROUBLESHOOTING GUIDE</b>	<b>22</b>
<b>EMERGENCY MAINTENANCE PROCEDURE</b>	<b>23</b>
<b>REBUILD KIT INSTRUCTIONS</b>	<b>20</b>
<b>COMPRESSOR PARTS LIST</b>	<b>24</b>
<b>BROWNIE'S BOTTOM-MOUNT REGULATOR</b>	<b>25</b>
<b>WARRANTY</b>	<b>26</b>
<b>RETURN GOODS POLICY AND INSTRUCTIONS</b>	<b>26</b>
<b>USE OF EQUIPMENT IN THE BAHAMA ISLANDS</b>	<b>27</b>

## SPECIFICATIONS

Occasionally other compressor maintenance is needed. It is best to call Brownie's service department to determine what parts are needed. Generally, all that is required is the cleaning off of mineral deposits from the valve plate and possibly some inexpensive parts replacement. Hard and frequent usage will require a scheduled inspection program to prevent breakdown. Your seasonal requirements and frequency of usage will dictate your maintenance schedule.

Model	Oil-less Compressor	Dimensions Case (L x W x H)	Weight Case	Dimensions Gear (L x D)	Battery Weight	Weight Gear
Sea Lion	Single Head Direct Drive	17 x 24 x 17 in 43 x 61 x 43 cm	25lbs 11.34kg without batteries	31 x 14 in 79 x 36 cm	18.7 lbs 8.5 kgs	24lbs 10.89kg

## CONGRATULATIONS ON YOUR PURCHASE OF A BROWNIE'S SYSTEM

You now have in your possession the finest, most reliable, surface supplied breathing air system available. The operation is designed with your safety and convenience in mind, and by carefully reading this brief manual you can be assured of many hours of trouble-free enjoyment.

### WHEN YOU RECEIVE YOUR NEW COMPRESSOR SYSTEM

1. Inspect the contents to be sure everything is included.
2. Contact your dealer within 5 days of receipt should your equipment be damaged or missing.
3. Read and understand the information in this and other supplied manuals before operating.
4. Read **Charging the Battery** section, page 13 to start charging battery immediately. Battery will need full charge before first use.

	Sea Lion
Motor/Compressor in case	Single head Compressor with motor
5 ft heat transfer hose w/filter	1
Dry-top intake staff & dive flag	1
Float tube with inflator adapter	1
40 ft down line	1
QRS Y-Dividers	2
20 ft diver hoses	3
Brownie's hookah regs	3
Brownie's Drop Weight Cummerbelt	3
Brownie's Deluxe gear bag	1
Manual	1
Online Hookah Certificates	3
2.5 Gallon Accumulator Tank	1
Spare Parts (2 Male & 2 Female QRS, O-ring, Filter Kit)	See registration form
BiXPower 24V Lithium Ion Battery and charger	1
Dry Bag	1



## DANGER



Before using this system or engaging in any underwater activities you must ensure: 1) you are in good physical health 2) you are in good mental health 3) you have been properly trained and 4) you know the potential risks of diving.

### MEDICAL CLEARANCE/POTENTIAL RISKS

Diving can be one of the most exciting and rewarding activities you will ever experience. However, like most exciting activities, there are rules and procedures you must follow. Proper training is crucial to minimize risk and maximize enjoyment. Breathing in an underwater environment can be dangerous, or even deadly, if you don't know the rules or if you chose to ignore them.

Please refer to the RSTC Medical Statement and Guidelines for Recreational Scuba Divers Physical Examination included with this manual. You should complete all portions of the medical statement including the Divers Medical Questionnaire for each user of the system. You may photocopy the form as needed. Please keep this information on file for future reference and to review with your doctor or any professional diving instructor.

The purpose of the Divers Medical Questionnaire is to find out if you should be examined by your doctor before participating in recreational diver training. A positive response to a question does not necessarily disqualify you from diving. A positive response means that there is a pre-existing condition that may affect your safety while diving and you must seek the advice of your physician prior to engaging in dive activities. Please answer the following questions on your past or present medical history with a YES or NO. If you are not sure, answer YES. If any of these items apply to you or you are not sure, we must request that you consult with a physician prior to participating in SSA (surface supplied air) diving. Take the RSTC Medical Statement and Guidelines for Recreational Scuba Diver's Physical Examination to your physician.



## MEDICAL STATEMENT

### Participant Record (Confidential Information)

Please read carefully before signing.

This is a statement in which you are informed of some potential risks involved in scuba diving and of the conduct required of you during the scuba training program. Your signature on this statement is required for you to participate in the scuba training program offered

by \_\_\_\_\_ and  
Instructor

\_\_\_\_\_ located in the  
Facility

city of \_\_\_\_\_, state/province of \_\_\_\_\_.

Read this statement prior to signing it. You must complete this Medical Statement, which includes the medical questionnaire section, to enroll in the scuba training program. If you are a minor, you must have this Statement signed by a parent or guardian.

Diving is an exciting and demanding activity. When performed correctly, applying correct techniques, it is relatively safe. When

established safety procedures are not followed, however, there are increased risks.

To scuba dive safely, you should not be extremely overweight or out of condition. Diving can be strenuous under certain conditions. Your respiratory and circulatory systems must be in good health. All body air spaces must be normal and healthy. A person with coronary disease, a current cold or congestion, epilepsy, a severe medical problem or who is under the influence of alcohol or drugs should not dive. If you have asthma, heart disease, other chronic medical conditions or you are taking medications on a regular basis, you should consult your doctor and the instructor before participating in this program, and on a regular basis thereafter upon completion. You will also learn from the instructor the important safety rules regarding breathing and equalization while scuba diving. Improper use of scuba equipment can result in serious injury. You must be thoroughly instructed in its use under direct supervision of a qualified instructor to use it safely.

If you have any additional questions regarding this Medical Statement or the Medical Questionnaire section, review them with your instructor before signing.

## Divers Medical Questionnaire

### To the Participant:

The purpose of this Medical Questionnaire is to find out if you should be examined by your doctor before participating in recreational diver training. A positive response to a question does not necessarily disqualify you from diving. A positive response means that there is a preexisting condition that may affect your safety while diving and you must seek the advice of your physician prior to engaging in dive activities.

- \_\_\_\_\_ Could you be pregnant, or are you attempting to become pregnant?
- \_\_\_\_\_ Are you presently taking prescription medications? (with the exception of birth control or anti-malarial)
- \_\_\_\_\_ Are you over 45 years of age and can answer YES to one or more of the following?
  - currently smoke a pipe, cigars or cigarettes
  - have a high cholesterol level
  - have a family history of heart attack or stroke
  - are currently receiving medical care
  - high blood pressure
  - diabetes mellitus, even if controlled by diet alone

Have you ever had or do you currently have...

- \_\_\_\_\_ Asthma, or wheezing with breathing, or wheezing with exercise?
- \_\_\_\_\_ Frequent or severe attacks of hayfever or allergy?
- \_\_\_\_\_ Frequent colds, sinusitis or bronchitis?
- \_\_\_\_\_ Any form of lung disease?
- \_\_\_\_\_ Pneumothorax (collapsed lung)?
- \_\_\_\_\_ Other chest disease or chest surgery?
- \_\_\_\_\_ Behavioral health, mental or psychological problems (Panic attack, fear of closed or open spaces)?
- \_\_\_\_\_ Epilepsy, seizures, convulsions or take medications to prevent them?
- \_\_\_\_\_ Recurring complicated migraine headaches or take medications to prevent them?
- \_\_\_\_\_ Blackouts or fainting (full/partial loss of consciousness)?
- \_\_\_\_\_ Frequent or severe suffering from motion sickness (seasick, carsick, etc.)?

Please answer the following questions on your past or present medical history with a **YES** or **NO**. If you are not sure, answer **YES**. If any of these items apply to you, we must request that you consult with a physician prior to participating in scuba diving. Your instructor will supply you with an RSTC Medical Statement and Guidelines for Recreational Scuba Diver's Physical Examination to take to your physician.

- \_\_\_\_\_ Dysentery or dehydration requiring medical intervention?
- \_\_\_\_\_ Any dive accidents or decompression sickness?
- \_\_\_\_\_ Inability to perform moderate exercise (example: walk 1.6 km/one mile within 12 mins.)?
- \_\_\_\_\_ Head injury with loss of consciousness in the past five years?
- \_\_\_\_\_ Recurrent back problems?
- \_\_\_\_\_ Back or spinal surgery?
- \_\_\_\_\_ Diabetes?
- \_\_\_\_\_ Back, arm or leg problems following surgery, injury or fracture?
- \_\_\_\_\_ High blood pressure or take medicine to control blood pressure?
- \_\_\_\_\_ Heart disease?
- \_\_\_\_\_ Heart attack?
- \_\_\_\_\_ Angina, heart surgery or blood vessel surgery?
- \_\_\_\_\_ Sinus surgery?
- \_\_\_\_\_ Ear disease or surgery, hearing loss or problems with balance?
- \_\_\_\_\_ Recurrent ear problems?
- \_\_\_\_\_ Bleeding or other blood disorders?
- \_\_\_\_\_ Hernia?
- \_\_\_\_\_ Ulcers or ulcer surgery?
- \_\_\_\_\_ A colostomy or ileostomy?
- \_\_\_\_\_ Recreational drug use or treatment for, or alcoholism in the past five years?

**The information I have provided about my medical history is accurate to the best of my knowledge. I agree to accept responsibility for omissions regarding my failure to disclose any existing or past health condition.**

\_\_\_\_\_  
Signature Date Signature of Parent or Guardian Date

## Temporary Risk Conditions

- **Back pain**

## HEMATOLOGICAL

Abnormalities resulting in altered rheological properties may theoretically increase the risk of decompression sickness. Bleeding disorders could worsen the effects of otic or sinus barotrauma, and exacerbate the injury associated with inner ear or spinal cord decompression sickness. Spontaneous bleeding into the joints (e.g.: in hemophilia) may be difficult to distinguish from decompression illness.

## Relative Risk Conditions

- **Sickle Cell Disease**
- **Polycythemia Vera**
- **Leukemia**
- **Hemophilia/Impaired Coagulation**

## METABOLIC AND ENDOCRINOLOGICAL

With the exception of diabetes mellitus, states of altered hormonal or metabolic function should be assessed according to their impact on the individual's ability to tolerate the moderate exercise requirement and environmental stress of sport diving. Obesity may predispose the individual to decompression sickness, can impair exercise tolerance and is a risk factor for coronary artery disease.

## Relative Risk Conditions

- **Hormonal Excess or Deficiency**
- **Obesity**
- **Renal Insufficiency**

## Severe Risk Conditions

**The potentially rapid change in level of consciousness associated with hypoglycemia in diabetics on insulin therapy or certain oral hypoglycemic medications can result in drowning. Diving is therefore generally contraindicated, unless associated with a specialized program that addresses these issues.**

**Pregnancy: The effect of venous emboli formed during decompression on the fetus has not been thoroughly investigated. Diving is therefore not recommended during any stage of pregnancy or for women actively seeking to become pregnant.**

## BEHAVIORAL HEALTH

Behavioral: The diver's mental capacity and emotional make-up are important to safe diving. The student diver must have sufficient learning abilities to grasp information presented to him by his instructors, be able to safely plan and execute his own dives and react to changes around him in the underwater environment. The student's motivation to learn and his ability to deal with potentially dangerous situations are also crucial to safe scuba diving.

## Relative Risk Conditions

- **Developmental delay**
- **History of drug or alcohol abuse**
- **History of previous psychotic episodes**
- **Use of psychotropic medications**

## Severe Risk Conditions

- **Inappropriate motivation to dive – solely to please spouse, partner or family member, to prove oneself in the face of personal fears**
- **Claustrophobia and agoraphobia**

- **Active psychosis**
- **History of untreated panic disorder**
- **Drug or alcohol abuse**

## OTOLARYNGOLOGICAL

Equalisation of pressure must take place during ascent and descent between ambient water pressure and the external auditory canal, middle ear and paranasal sinuses. Failure of this to occur results at least in pain and in the worst case rupture of the occluded space with disabling and possible lethal consequences.

The inner ear is fluid filled and therefore noncompressible. The flexible interfaces between the middle and inner ear, the round and oval windows are, however, subject to pressure changes. Previously ruptured but healed round or oval window membranes are at increased risk of rupture due to failure to equalise pressure or due to marked overpressurisation during vigorous or explosive Valsalva manoeuvres.

The larynx and pharynx must be free of an obstruction to airflow. The laryngeal and epiglottic structure must function normally to prevent aspiration.

Mandibular and maxillary function must be capable of allowing the patient to hold a scuba mouthpiece. Individuals who have had mid-face fractures may be prone to barotrauma and rupture of the air filled cavities involved.

## Relative Risk Conditions

- **Recurrent otitis externa**
- **Significant obstruction of external auditory canal**
- **History of significant cold injury to pinna**
- **Eustachian tube dysfunction**
- **Recurrent otitis media or sinusitis**
- **History of TM perforation**
- **History of tympanoplasty**
- **History of mastoidectomy**
- **Significant conductive or sensorineural hearing impairment**
- **Facial nerve paralysis not associated with barotrauma**
- **Full prosthodontic devices**
- **History of mid-face fracture**
- **Unhealed oral surgery sites**
- **History of head and/or neck therapeutic radiation**
- **History of temporomandibular joint dysfunction**
- **History of round window rupture**

## Severe Risk Conditions

- **Monomeric TM**
- **Open TM perforation**
- **Tube myringotomy**
- **History of stapedectomy**
- **History of ossicular chain surgery**
- **History of inner ear surgery**
- **Facial nerve paralysis secondary to barotrauma**
- **Inner ear disease other than presbycusis**
- **Uncorrected upper airway obstruction**
- **Laryngectomy or status post partial laryngectomy**
- **Tracheostomy**
- **Uncorrected laryngocele**
- **History of vestibular decompression sickness**

1. Bennett, P. & Elliott, D (eds.)(1993). *The Physiology and Medicine of Diving*. 4th Ed., W.B. Saunders Company Ltd., London, England.

- **History of Coronary Artery Bypass Grafting (CABG)**
- **Percutaneous Balloon Angioplasty (PCTA) or Coronary Artery Disease (CAD)**
- **History of Myocardial Infarction**
- **Congestive Heart Failure**
- **Hypertension**
- **History of dysrhythmias requiring medication for suppression**
- **Valvular Regurgitation**

#### Pacemakers

The pathologic process that necessitated should be addressed regarding the diver's fitness to dive. In those instances where the problem necessitating pacing does not preclude diving, will the diver be able to meet the performance criteria?

\* **NOTE:** Pacemakers must be certified by the manufacturer as able to withstand the pressure changes involved in recreational diving.

#### Severe Risks

**Venous emboli, commonly produced during decompression, may cross major intracardiac right-to-left shunts and enter the cerebral or spinal cord circulations causing neurological decompression illness. Hypertrophic cardiomyopathy and valvular stenosis may lead to the sudden onset of unconsciousness during exercise.**

### PULMONARY

Any process or lesion that impedes airflow from the lungs places the diver at risk for pulmonary overinflation with alveolar rupture and the possibility of cerebral air embolization. Many interstitial diseases predispose to spontaneous pneumothorax: Asthma (reactive airway disease), Chronic Obstructive Pulmonary Disease (COPD), cystic or cavitating lung diseases may all cause air trapping. The 1996 Undersea and Hyperbaric Medical Society (UHMS) consensus on diving and asthma indicates that for the risk of pulmonary barotrauma and decompression illness to be acceptably low, the asthmatic diver should be asymptomatic and have normal spirometry before and after an exercise test. Inhalation challenge tests (e.g.: using histamine, hypertonic saline or methacholine) are not sufficiently standardized to be interpreted in the context of scuba diving.

A pneumothorax that occurs or reoccurs while diving may be catastrophic. As the diver ascends, air trapped in the cavity expands and could produce a tension pneumothorax.

In addition to the risk of pulmonary barotrauma, respiratory disease due to either structural disorders of the lung or chest wall or neuromuscular disease may impair exercise performance. Structural disorders of the chest or abdominal wall (e.g.: prune belly), or neuromuscular disorders, may impair cough, which could be life threatening if water is aspirated. Respiratory limitation due to disease is compounded by the combined effects of immersion (causing a restrictive deficit) and the increase in gas density, which increases in proportion to the ambient pressure (causing increased airway resistance). Formal exercise testing may be helpful.

#### Relative Risk Conditions

- **History of Asthma or Reactive Airway Disease (RAD)\***
- **History of Exercise Induced Bronchospasm (EIB)\***
- **History of solid, cystic or cavitating lesion\***
- **Pneumothorax secondary to:**
  - Thoracic Surgery
  - Trauma or Pleural Penetration\*
  - Previous Overinflation Injury\*
- **Obesity**

- **History of Immersion Pulmonary Edema Restrictive Disease\***
- **Interstitial lung disease: May increase the risk of pneumothorax**

\* Spirometry should be normal before and after exercise

**Active Reactive Airway Disease, Active Asthma, Exercise Induced Bronchospasm, Chronic Obstructive Pulmonary Disease or history of same with abnormal PFTs or a positive exercise challenge are concerns for diving.**

#### Severe Risk Conditions

- **History of spontaneous pneumothorax.** Individuals who have experienced spontaneous pneumothorax should avoid diving, even after a surgical procedure designed to prevent recurrence (such as pleurodesis). Surgical procedures either do not correct the underlying lung abnormality (e.g.: pleurodesis, apical pleurectomy) or may not totally correct it (e.g.: resection of blebs or bullae).
- **Impaired exercise performance due to respiratory disease.**

### GASTROINTESTINAL

#### Temporary Risks

As with other organ systems and disease states, a process which chronically debilitates the diver may impair exercise performance. Additionally, dive activities may take place in areas remote from medical care. The possibility of acute recurrences of disability or lethal symptoms must be considered.

#### Temporary Risk Conditions

- **Peptic Ulcer Disease associated with pyloric obstruction or severe reflux**
- **Unrepaired hernias of the abdominal wall large enough to contain bowel within the hernia sac could incarcerate.**

#### Relative Risk Conditions

- **Inflammatory Bowel Disease**
- **Functional Bowel Disorders**

#### Severe Risks

Altered anatomical relationships secondary to surgery or malformations that lead to gas trapping may cause serious problems. Gas trapped in a hollow viscous expands as the divers surfaces and can lead to rupture or, in the case of the upper GI tract, emesis. Emesis underwater may lead to drowning.

#### Severe Risk Conditions

- **Gastric outlet obstruction of a degree sufficient to produce recurrent vomiting**
- **Chronic or recurrent small bowel obstruction**
- **Severe gastroesophageal reflux**
- **Achalasia**
- **Paraesophageal Hernia**

### ORTHOPAEDIC

Relative impairment of mobility, particularly in a boat or ashore with equipment weighing up to 18 kgs/40 pounds must be assessed. Orthopaedic conditions of a degree sufficient to impair exercise performance may increase the risk.

#### Relative Risk Conditions

- **Amputation**
- **Scoliosis must also assess impact on respiratory function and exercise performance.**
- **Aseptic Necrosis possible risk of progression due to effects of decompression (evaluate the underlying medical cause of decompression may accelerate/escalate the progression).**



# Guidelines for Recreational Scuba Diver's Physical Examination

Instructions to the Physician:

\*Printed with permission from UHMS

Recreational **SCUBA** (Self-Contained Underwater Breathing Apparatus) can provide recreational divers with an enjoyable sport safer than many other activities. The risk of diving is increased by certain physical conditions, which the relationship to diving may not be readily obvious. Thus, it is important to screen divers for such conditions.

The **RECREATIONAL SCUBA DIVER'S PHYSICAL EXAMINATION** focuses on conditions that may put a diver at increased risk for decompression sickness, pulmonary overinflation syndrome with subsequent arterial gas embolization and other conditions such as loss of consciousness, which could lead to drowning. Additionally, the diver must be able to withstand some degree of cold stress, the physiological effects of immersion and the optical effects of water and have sufficient physical and mental reserves to deal with possible emergencies.

The history, review of systems and physical examination should include as a minimum the points listed below. The list of conditions that might adversely affect the diver is not all-inclusive, but contains the most commonly encountered medical problems. The brief introductions should serve as an alert to the nature of the risk posed by each medical problem.

The potential diver and his or her physician must weigh the pleasures to be had by diving against an increased risk of death or injury due to the individual's medical condition. As with any recreational activity, there are no data for diving enabling the calculation of an accurate mathematical probability of injury. Experience and physiological principles only permit a qualitative assessment of relative risk.

For the purposes of this document, **Severe Risk** implies that an individual is believed to be at substantially elevated risk of decompression sickness, pulmonary or otic barotrauma or altered consciousness with subsequent drowning, compared with the general population. The consultants involved in drafting this document would generally discourage a student with such medical problems from diving. **Relative Risk** refers to a moderate increase in risk, which in some instances may be acceptable. To make a decision as to whether diving is contraindicated for this category of medical problems, physicians must base their judgement on an assessment of the individual patient. Some medical problems which may preclude diving are **temporary** in nature or responsive to treatment, allowing the student to dive safely after they have resolved.

Diagnostic studies and specialty consultations should be obtained as indicated to determine the diver's status. A list of references is included to aid in clarifying issues that arise. Physicians and other medical professionals of the Divers Alert Network (DAN) associated with Duke University Health System are available for consultation by phone +1 919 684 2948 during normal business hours. For emergency calls, 24 hours 7 days a week, call +1 919 684 8111 or +1 919 684 4DAN (collect). Related organizations exist in other parts of the world – DAN Europe in Italy +39 039 605 7858, DAN S.E.A.P. in Australia +61 3 9886 9166 and Divers Emergency Service (DES) in Australia +61 8 8212 9242, DAN Japan +81 33590 6501 and DAN Southern Africa +27 11 242 0380. There are also a number of informative websites offering similar advice.

## NEUROLOGICAL

Neurological abnormalities affecting a diver's ability to perform exercise should be assessed according to the degree of compromise. Some diving physicians feel that conditions in which there can be a waxing and waning of neurological symptoms and signs, such as migraine or demyelinating disease, contraindicate diving because an exacerbation or attack of the preexisting disease (e.g.: a migraine with aura) may be difficult to distinguish from neurological decompression sickness. A history of head

injury resulting in unconsciousness should be evaluated for risk of seizure.

### Relative Risk Conditions

- **Complicated Migraine Headaches whose symptoms or severity impair motor or cognitive function, neurologic manifestations**
- **History of Head Injury with sequelae other than seizure**
- **Herniated Nucleus Pulposus**
- **Intracranial Tumor or Aneurysm**
- **Peripheral Neuropathy**
- **Multiple Sclerosis**
- **Trigeminal Neuralgia**
- **History of spinal cord or brain injury**

### Temporary Risk Condition

**History of cerebral gas embolism without residual where pulmonary air trapping has been excluded and for which there is a satisfactory explanation and some reason to believe that the probability of recurrence is low.**

### Severe Risk Conditions

Any abnormalities where there is a significant probability of unconsciousness, hence putting the diver at increased risk of drowning. Divers with spinal cord or brain abnormalities where perfusion is impaired may be at increased risk of decompression sickness.

### Some conditions are as follows:

- **History of seizures other than childhood febrile seizures**
- **History of Transient Ischemic Attack (TIA) or Cerebrovascular Accident (CVA)**
- **History of Serious (Central Nervous System, Cerebral or Inner Ear) Decompression Sickness with residual deficits**

## CARDIOVASCULAR SYSTEMS

### Relative Risk Conditions

The diagnoses listed below potentially render the diver unable to meet the exertional performance requirements likely to be encountered in recreational diving. These conditions may lead the diver to experience cardiac ischemia and its consequences. Formalized stress testing is encouraged if there is any doubt regarding physical performance capability. The suggested minimum criteria for stress testing in such cases is at least 13 METS.\* Failure to meet the exercise criteria would be of significant concern. Conditioning and retesting may make later qualification possible. Immersion in water causes a redistribution of blood from the periphery into the central compartment, an effect that is greatest in cold water. The marked increase in cardiac preload during immersion can precipitate pulmonary edema in patients with impaired left ventricular function or significant valvular disease. The effects of immersion can mostly be gauged by an assessment of the diver's performance while swimming on the surface. A large proportion of scuba diving deaths in North America are due to coronary artery disease. Before being approved to scuba dive, individuals older than 40 years are recommended to undergo risk assessment for coronary artery disease. Formal exercise testing may be needed to assess the risk.

\* METS is a term used to describe the metabolic cost. The MET at rest is one, two METS is two times the resting level, three METS is three times the resting level, and so on. The resting energy cost (net oxygen requirement) is thus standardized. (Exercise Physiology; Clark, Prentice Hall, 1975.)

### Relative Risk Conditions

## STUDENT

---

Please print legibly.

Name \_\_\_\_\_ Birth Date \_\_\_\_\_ Age \_\_\_\_\_  
First Initial Last Day/Month/Year

Mailing Address \_\_\_\_\_

City \_\_\_\_\_ State/Province/Region \_\_\_\_\_

Country \_\_\_\_\_ Zip/Postal Code \_\_\_\_\_

Home Phone ( ) \_\_\_\_\_ Business Phone ( ) \_\_\_\_\_

Email \_\_\_\_\_ FAX \_\_\_\_\_

Name and address of your family physician

Physician \_\_\_\_\_ Clinic/Hospital \_\_\_\_\_

Address \_\_\_\_\_

Date of last physical examination \_\_\_\_\_

Name of examiner \_\_\_\_\_ Clinic/Hospital \_\_\_\_\_

Address \_\_\_\_\_

Phone ( ) \_\_\_\_\_ Email \_\_\_\_\_

Were you ever required to have a physical for diving? ☐ Yes ☐ No If so, when? \_\_\_\_\_

## PHYSICIAN

---

This person applying for training or is presently certified to engage in scuba (self-contained underwater breathing apparatus) diving. Your opinion of the applicant's medical fitness for scuba diving is requested. There are guidelines attached for your information and reference.

Physician's Impression

☐ I find no medical conditions that I consider incompatible with diving.

☐ I am unable to recommend this individual for diving.

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Physician's Signature or Legal Representative of Medical Practitioner Date \_\_\_\_\_  
Day/Month/Year

Physician \_\_\_\_\_ Clinic/Hospital \_\_\_\_\_

Address \_\_\_\_\_

Phone ( ) \_\_\_\_\_ Email \_\_\_\_\_

## BIBLIOGRAPHY/REFERENCE

2. Bove, A., & Davis, J. (1990). *Diving Medicine*. 2nd Edition, W.B. Saunders Company, Philadelphia, PA.
3. Davis, J., & Bove, A. (1986). "Medical Examination of Sport Scuba Divers, Medical Seminars, Inc.," San Antonio, TX
4. Dembert, M. & Keith, J. (1986). "Evaluating the Potential Pediatric Scuba Diver." AJDC, Vol. 140, November.
5. Edmonds, C., Lowry, C., & Pennefether, J. (1992) .3rd ed., *Diving and Subaquatic Medicine*. Butterworth & Heineman Ltd., Oxford, England.
6. Elliott, D. (Ed) (1994). "Medical Assessment of Fitness to Dive." Proceedings of an International Conference at the Edinburgh Conference Centre, Biomedical Seminars, Surry, England.
7. "Fitness to Dive," Proceedings of the 34th Underwater & Hyperbaric Medical Society Workshop (1987) UHMS Publication Number 70(WS-FD) Bethesda, MD.
8. Neuman, T. & Bove, A. (1994). "Asthma and Diving." Ann. Allergy, Vol. 73, October, O'Conner & Kelsen.
9. Shilling, C. & Carlston, D. & Mathias, R. (eds) (1984). *The Physician's Guide to Diving Medicine*. Plenum Press, New York, NY.
10. Undersea and Hyperbaric Medical Society (UHMS) [www.UHMS.org](http://www.UHMS.org)
11. Divers Alert Network (DAN) United States, 6 West Colony Place, Durham, NC [www.DiversAlertNetwork.org](http://www.DiversAlertNetwork.org)
12. Divers Alert Network Europe, P.O. Box 64026 Roseto, Italy, telephone non-emergency line: weekdays office hours +39-085-893-0333, emergency line 24 hours: +39-039-605-7858
13. Divers Alert Network S.E.A.P., P. O. Box 384, Ashburton, Australia, telephone 61-3-9886-9166
14. Divers Emergency Service, Australia, [www.rah.sa.gov.au/hyperbaric](http://www.rah.sa.gov.au/hyperbaric), telephone 61-8-8212-9242
15. South Pacific Underwater Medicine Society (SPUMS), P.O. Box 190, Red Hill South, Victoria, Australia, [www.spums.org.au](http://www.spums.org.au)
16. European Underwater and Baromedical Society, [www.eubs.org](http://www.eubs.org)

## ENDORSERS

Paul A. Thombs, M.D., Medical Director  
Hyperbaric Medical Center  
St. Luke's Hospital, Denver, CO, USA

Peter Bennett, Ph.D., D.Sc.  
Professor, Anesthesiology  
Duke University Medical Center  
Durham, NC, USA  
[pbennett@dan.duke.edu](mailto:pbennett@dan.duke.edu)

Richard E. Moon, M.D., F.A.C.P., F.C.C.P.  
Departments of Anesthesiology and Pulmonary  
Medicine  
Duke University Medical Center  
Durham, NC, USA

Roy A. Myers, M.D.  
MIEMS  
Baltimore, MD, USA

William Clem, M.D., Hyperbaric Consultant  
Division Presbyterian/St. Luke's Medical Center  
Denver, CO, USA

John M. Alexander, M.D.  
Northridge Hospital  
Los Angeles, CA, USA

Des Gorman, B.Sc., M.B.Ch.B., F.A.C.O.M.,  
F.A.F.O.M., Ph.D.  
Professor of Medicine  
University of Auckland, Auckland, NZ  
[d.gorman@auckland.ac.nz](mailto:d.gorman@auckland.ac.nz)

Alf O. Brubakk, M.D., Ph.D.  
Norwegian University of Science and Technology  
Trondheim, Norway  
[alfb@medisin.ntnu.no](mailto:alfb@medisin.ntnu.no)

Alessandro Marroni, M.D.  
Director, DAN Europe  
Roseto, Italy  
Hugh Greer, M.D.  
Santa Barbara, CA, USA  
[hdgblgfp@aol.com](mailto:hdgblgfp@aol.com)

Christopher J. Acott, M.B.B.S., Dip. D.H.M.,  
F.A.N.Z.C.A.  
Physician in Charge, Diving Medicine  
Royal Adelaide Hospital  
Adelaide, SA 5000, Australia

Chris Edge, M.A., Ph.D., M.B.B.S., A.F.O.M.  
Nuffield Department of Anaesthetics  
Radcliffe Infirmary  
Oxford, United Kingdom  
[cjedge@diver.demon.co.uk](mailto:cjedge@diver.demon.co.uk)

Richard Vann, Ph.D.  
Duke University Medical Center  
Durham, NC, USA

Keith Van Meter, M.D., F.A.C.E.P.  
Assistant Clinical Professor of Surgery  
Tulane University School of Medicine  
New Orleans, LA, USA

Robert W. Goldmann, M.D.  
St. Luke's Hospital  
Milwaukee, WI, USA

Paul G. Linaweaver, M.D., F.A.C.P.  
Santa Barbara Medical Clinic  
Undersea Medical Specialist  
Santa Barbara, CA, USA

James Vorosmarti, M.D.  
6 Orchard Way South  
Rockville, MD, USA

Tom S. Neuman, M.D., F.A.C.P., F.A.C.P.M.  
Associate Director, Emergency Medical Services  
Professor of Medicine and Surgery  
University of California at San Diego  
San Diego, CA, USA

Yoshihiro Mano, M.D.  
Professor  
Tokyo Medical and Dental University  
Tokyo, Japan  
[y.mano.ns@tmd.ac.jp](mailto:y.mano.ns@tmd.ac.jp)

Simon Mitchell, MB.ChB., DipDHM, Ph.D.  
Wesley Centre for Hyperbaric Medicine  
Medical Director  
Sandford Jackson Bldg., 30 Chasely Street  
Auchenflower, QLD 4066 Australia  
[smitchell@wesley.com.au](mailto:smitchell@wesley.com.au)

Jan Risberg, M.D., Ph.D.  
NUI, Norway

Karen B. Van Hoesen, M.D.  
Associate Clinical Professor  
UCSD Diving Medicine Center  
University of California at San Diego  
San Diego, CA, USA

Edmond Kay, M.D., F.A.A.F.P.  
Dive Physician & Asst. Clinical Prof. of Family Medicine  
University of Washington  
Seattle, WA, USA  
[ekay@u.washington.edu](mailto:ekay@u.washington.edu)

Christopher W. Dueker, TWS, M.D.  
Atherton, CA, USA  
[chrisduek@aol.com](mailto:chrisduek@aol.com)

Charles E. Lehner, Ph.D.  
Department of Surgical Sciences  
University of Wisconsin  
Madison, WI, USA  
[celehner@facstaff.wisc.edu](mailto:celehner@facstaff.wisc.edu)

Undersea & Hyperbaric Medical Society  
10531 Metropolitan Avenue  
Kensington, MD 20895, USA

Diver's Alert Network (DAN)  
6 West Colony Place  
Durham, NC 27705



## WARNING



IMPROPER USE OF ANY UNDERWATER DIVING EQUIPMENT CAN RESULT IN SERIOUS INJURY OR DEATH. DO NOT DIVE WITHOUT PROPER TRAINING.

### ONLINE TRAINING

In the interest of sharing the most accurate and up-to-date information on accepted diving practices, Brownie's Third Lung has teamed up with Scuba-Training.net to provide free online dive training with the purchase of each Surface Supplied Hookah System.

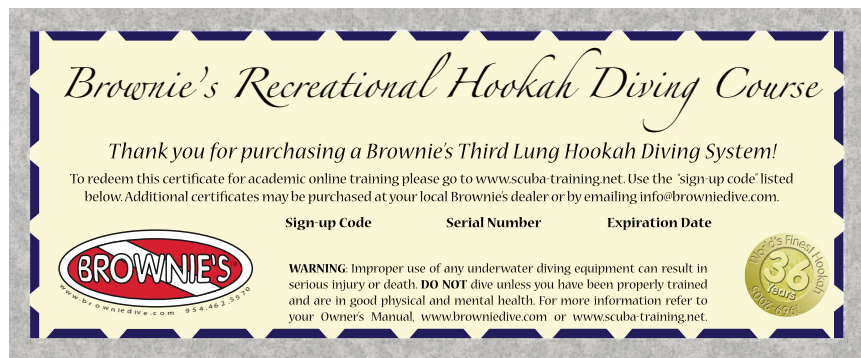
The program is an interactive, web-based learning course designed to teach you how to properly and safely use your hookah system. It is broken down into 7 modules each with specific Knowledge Requirements and Objectives.

The course utilizes a variety of written explanations, illustrations, photographs and streaming video to clearly convey each subject. Brownie's makes it easy for students of all ages, including children, to enjoy learning.

Each chapter concludes with a multiple choice quiz to test your understanding and comprehension of the topics covered. Incorrect answers are automatically reviewed and retested. Once you have successfully completed the quiz for that module, you can move on to the next module. After all chapters and quizzes have been completed there is a final comprehensive exam. The final exam follows the same format as the quizzes and may be retaken until it is successfully completed.

#### TO BEGIN ONLINE TRAINING

1. Launch your browser window (Chrome, Internet Explorer, etc.).
2. Go to [www.scuba-training.net](http://www.scuba-training.net).
3. Locate the "sign-up code" (found on the hookah training certificate that came with your purchase) and enter it. (Example pictured below).
4. You will be asked to create an account choosing a "user name" (usually email address) and password. You will also be asked to enter pertinent information to create an account, such as address and telephone number.
5. There will be a medical questionnaire that must be filled out before beginning the chapters. Answering yes to any question will require a consultation with a physician prior to participating in the in-water training phase.



#### AFTER THE ONLINE COURSE IS COMPLETED

It is time to visit your local dive store for the in-water training phase.

The online course will provide academic knowledge. To complete your training you'll need to practice that knowledge in a controlled environment before venturing into open water. The course website, [www.scuba-training.net](http://www.scuba-training.net), includes a list of affiliated independent scuba instructors and professional dive stores by geographic region. You should enroll in an in-water skills course with a professional scuba instructor to review your academic knowledge and practice your water skills. Your instructor will review with you the topics covered in the online course and evaluate your comprehension of the course content. Next, they will arrange a series of dives in a controlled environment (usually a pool) to practice breathing through a regulator and other water skills. He or she will share techniques to improve your efficiency and comfort in the water. By working closely with your instructor, you will become a better (and safer) diver.

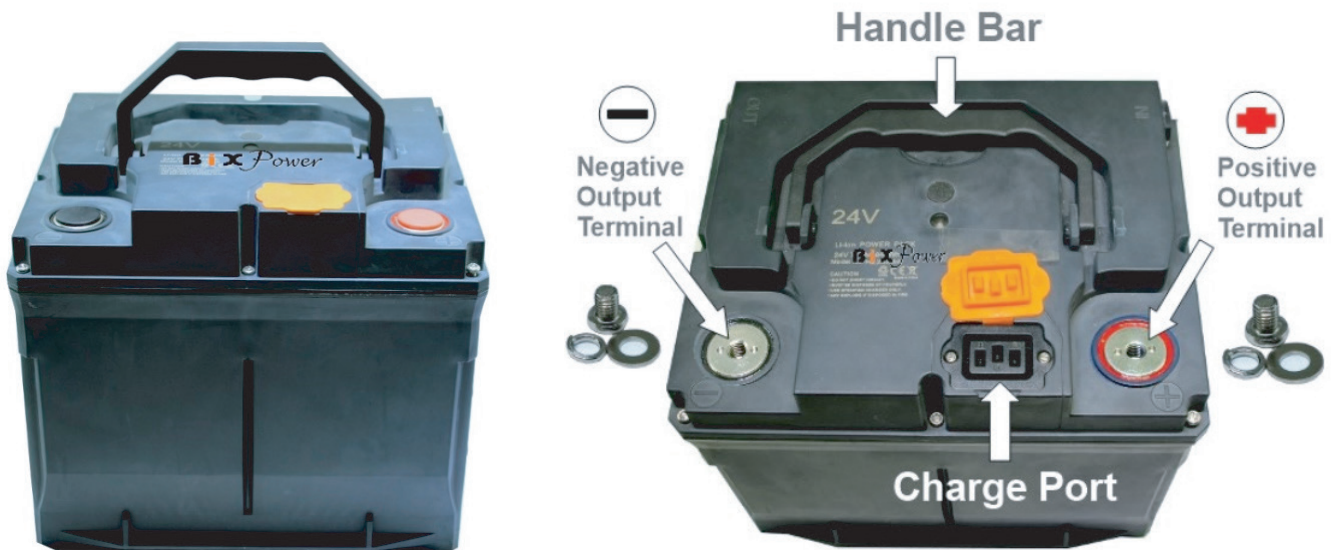


## SEA LION BATTERY PACK

The **Sea Lion** battery is a 24 Volt, 63.8 Amp-hour (1531 Watt-hour) lithium ion battery pack. It is model HL2454B by BiX International, Inc. The battery pack is not waterproof. It is important to protect the battery from water intrusion while it is not enclosed in the battery compartment of Sea Lion. The battery compartment has been designed to resist water spray from harming the battery pack. The battery compartment is not designed to be submerged underwater.

*The battery pack weighs about 18.7 pounds (8.5 kilograms.)*

*The dimensions of the battery pack are about 9" x 7" x 8" (228 mm x 178 mm x 203 mm).*



### WARNING



THE BATTERY PACK IS NOT WATERPROOF. WHEN BATTERY IS NOT SEALED INSIDE COMPARTMENT, BATTERY MUST BE STORED IN A COOL / DRY PLACE.



### WARNING



BATTERY COMPARTMENT IS NOT DESIGNED TO BE SUBMERGED UNDER WATER. WATER INTRUSION WILL CAUSE DAMAGE TO YOUR BATTERY PACK.



### DANGER



NEVER EXPOSE THE CHARGER TO WET CONDITIONS. THE CHARGER SHOULD ONLY BE USED IN A DRY, STABLE ENVIRONMENT TO REDUCE THE RISK OF ELECTROCUTION.

### Spring-Loaded Battery Contacts

The Sea Lion uses spring-loaded contacts to make a connection with the battery pack. The contacts are screwed into the output terminals of the battery. The contacts should be inspected for corrosion prior to use each time. Corrosion will reduce the contact surface and must be cleaned off prior to use.

**Use an abrasive surface like sandpaper or a wire brush to remove any corrosion. Make certain not to short circuit the battery by connecting the two terminals.**

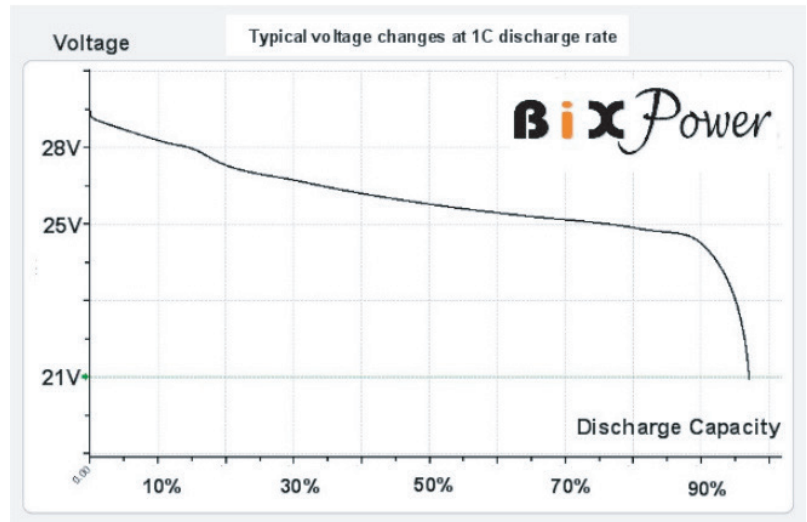


## BATTERY PACKAGE

This battery output voltage range is 21V - 29.5V. When the battery is fully charged, its output voltage is 29.5V. The output voltage will drop gradually during the discharge process and the final cut off voltage is 21V. The battery will shut OFF if it is discharged lower than 21V.



**Voltmeter Display**



### WARNING



IF THE BATTERY IS ALLOWED TO DISCHARGE BELOW 19V. THE BATTERY CELLS MAY NOT RECHARGE, REQUIRING YOU TO REPLACE THE BATTERY.

## CHARGING THE BATTERY

Charging the battery can take 8 -10 hours for a full charge.

1. Open the Sea Lion lid by pressing the button of the red latch underneath the handle. Pull the handle up so that the battery compartment is open.
2. Remove the battery from the battery compartment.
3. Remove the cover from the battery charging port on the battery.
4. Plug the charging cable into the battery.
5. Plug the power cable of the battery charger into a wall outlet.
6. The LED on the battery charger will remain red until the battery is fully charged. The LED will turn green once the battery is fully charged.
7. **DO NOT attempt to charge the battery while the battery is in the battery compartment.**
8. **DO NOT attempt to charge the battery while the battery is powering the Sea Lion or any other device.**
9. The supplied charger should only be used with BiXPower batteries. Use of the supplied charger with any battery other than a BiXPower battery can cause damage.





## WARNING



YOUR THIRD LUNG IS DESIGNED FOR SHALLOW WATER, UNOBSTRUCTED DIVING AND SHOULD NEVER BE USED IN ENCLOSED AREAS, SUCH AS CAVES, SHIPWRECKS OR LEDGE OVERHANGS.



## WARNING



DO NOT POUR OIL INTO COMPRESSOR. THIS WILL CONTAMINATE THE COMPRESSOR AND RUIN IT FOR AIR BREATHING. BREATHING FROM A COMPRESSOR THAT HAS HAD OIL MISTAKENLY ADDED MAY RESULT IN SERIOUS INJURY. DO NOT SPRAY CORROSION X OR ANY PETROLEUM BASED PRODUCT ON, IN, OR AROUND THE COMPRESSOR.



## WARNING



NEVER OPERATE THE EQUIPMENT IN AN ENVIRONMENT WHERE TOXIC FUMES ARE PRESENT SUCH AS NEAR RUNNING OUTBOARD ENGINES, EXPOSED CHEMICALS OR FUEL SPILLS.

## SETTING UP

**1. Select a location with fresh, clean air.** Remove the dust cap from the socket located on top of the compressor, slip the clear PVC staff into the socket as far as it will go to create a watertight seal in the socket. The compressor will pump the air from the immediate area through the hoses to the diver(s). Always make sure the yellow case lid is fully removed prior to operation.



## NOTE



The dust cap, tied to the socket, must ALWAYS BE IN PLACE WHEN THE STAFF IS REMOVED. If not, water can splash directly into the compressor head.



## STARTING THE UNIT

1. Verify that the charged battery pack is placed in the battery compartment evenly with nothing underneath the battery.
2. Verify that the gasket around the lid of the battery compartment is in good condition.
3. Clean off any debris, sand, dirt, from the battery compartment lid gasket.
4. Close the lid of the battery compartment. Ensure that the latch is fully engaged by observing the latch button. It should be pushed up all the way. It is important for the lid to be fully secured so that it does not open during operation.
5. Observe the battery voltage display. Confirm that the battery is charged sufficiently.
6. Using the rotary switch on the Maximum Depth Selector panel, select your preferred maximum operating depth rating rotating the knob until the white line is pointing at the desired depth. Do not attempt to turn the knob further than the furthest depth indicators in each direction. For more information on the Maximum Depth Selector, see PAGE 20.
7. Turn the circuit breaker switch to the ON position.



## STARTING THE UNIT - CONT.

8. Listen for the number of pulses that the system creates upon startup. The number of pulses corresponds to your maximum depth selection from step 6. Confirm that the number of pulses matches your depth selection prior to diving.
  - a. One pulse > Maximum Depth: 15 ft
  - b. Two pulses > Maximum Depth: 25 ft
  - c. Three pulses > Maximum Depth: 35 ft
  - d. Four pulses > Maximum Depth: 65 ft

Note: The Maximum Depth Selector must be set prior to turning the system on. Changing the Maximum Depth Selector knob while the system is already on will have no effect.
9. After startup, allow for the system to fully pressurize prior to diving. You will know it is fully pressurized once the system goes to idle (the compressor stops running.)



### CAUTION



The Third Lung is stable in calm sea conditions when used with the Brownie's Float Tube. Care should be exercised when conditions are rough to avoid swamping or inverting the unit. Breaking waves, similar to those found in the surf zone, may invert or swamp the Third Lung. Care should be exercised when such conditions exist.

## THE TUBE INFLATION AND DEFLATION



1. Lift Velcro flap on the side of the tube cover.



2. Turn the valve cover counter-clockwise exposing the valve.



3. Insert the inflation nozzle into the valve and turn clockwise to lock.

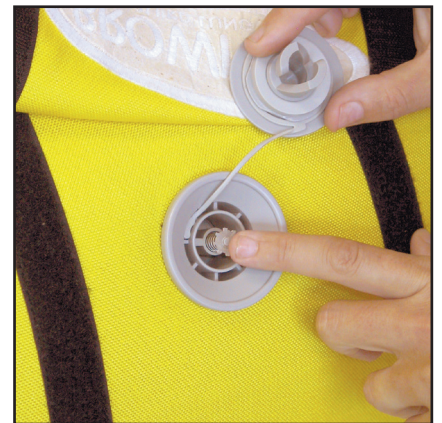


4. Located at the end of the black heat hose is a male QRS fitting which fits snugly into the clear tube. With the compressor running, insert the male QRS fitting into the clear tube and begin filling.



5. At about halfway through the filling process, check to see that the tube is positioned uniformly in the cover. Fill until tube is firm to the touch, but avoid overfilling. Shut off engine by turning kill switch to "Off."

6. Press fabric cover back into place.



7. Deflation is very quick and easy. Remove the valve cover by turning counter clockwise and simply depress the quick-deflate button in the center of the valve. You may also lock the valve open by depressing the quick-deflate button and turning it clockwise. Replace valve cap, turn clockwise to secure. Press fabric cover back into place. Turn unit off until you are ready to launch.



## **MOUNTING THE UNIT IN THE FLOAT**

Feed heat hose through oval hole in bottom of the pan and also through the middle of the tube. Place the entire pan into the tube. The mounting straps on the compressor pan are lined up with corresponding straps on the tube cover. Snap the buckles together and adjust straps. Keep snug to prevent slipping.

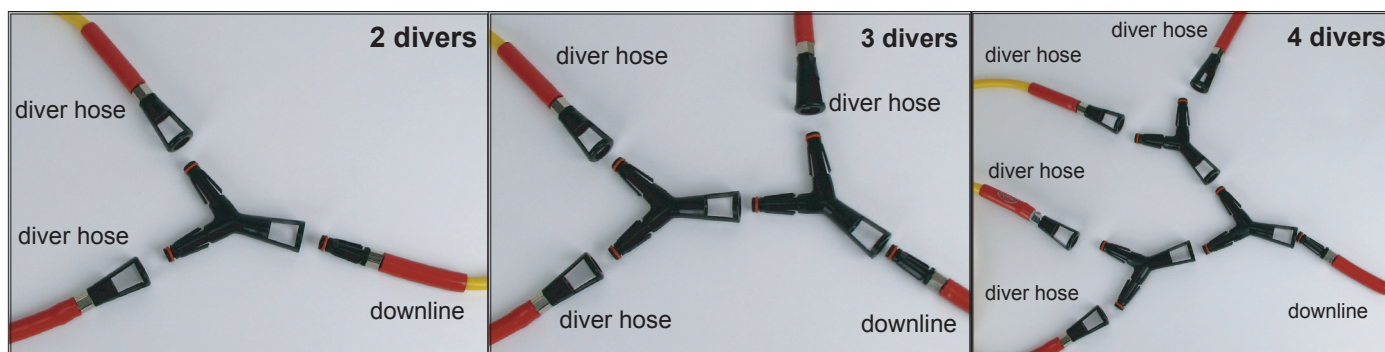
### **HEAT HOSE**

Snap the 40-foot down line to the black heat hose. Unreel rather than uncoil the hose on the deck. Even with the QRS fittings it is best to eliminate as many coil loops as possible.



## **HOSES**

For one diver, snap one or more of the 20-foot diver hoses directly to the 40-foot down line. For two, snap one QRS Y divider to the 40-foot, common hose; then snap the two 20 foot diver hoses to the Y divider. Snap the regulator to the end of the diver hoses. For three divers, snap two QRS hose dividers to the 40-foot, common hose; then, snap the three 20-foot diver hoses to the Y dividers. Again, snap the regulator to the end of the diver hoses. For four divers, snap three QRS hose dividers to the 40-foot down line. Then, you should follow the same pattern as previously stated.



## **USING EASY CONNECT ACCUMULATOR TANK**

When using your Sea Lion system, connect the stainless steel 2.5 gallon accumulator tank. The accumulator tank should always be used when operating your Sea Lion. With the QRS fittings, adding the accumulator tank is literally a snap. Simply connect the Heat Hose male QRS connector into the female QRS connector. Then, connect the 40ft downline using the Female QRS connector and snap to the Male QRS connector on the accumulator tank.



## HOW TO ADJUST THE DROP WEIGHT CUMMERBELT:

1. Unclip the front buckle
2. Undo the Velcro underneath the buckle
3. Lay the belt flat open. Unzip the sleeve located on the back of the belt. You will see that there is a piece of elastic with the Velcro adjustments on both sides. The belt should be adjusted evenly on both sides so the front buckle is centered across the mid-section. Simply undo the Velcro and re-adjust them to fit the waist of the diver. (\*For extremely small waist divers: You can switch the ends of the belt from opposite stainless steel loops to the loops that are next to each other. Bottom belt configuration will reduce belt size by approximately 3 inches.) Zip the sleeve back up.
4. Unclip the buckles that hold the drop weight pockets in place. Each pocket can hold up to 10 lbs. of weight. We recommend using soft lead shot weights rather than hard weights as they conform better to the shape of the pocket. Undo the Velcro and distribute the weight evenly into each pocket, then re-Velcro.
5. Reinsert the pockets matching the bend in the pocket to the bend in the belt itself, and reconnect the buckles.





## HOW TO USE THE DROP WEIGHT CUMMERBELT WITH AN EGRESSOR PACKAGE:

1. Follow above steps 1-5.
2. Then unzip the sleeve that came with the Cummerbelt, and put aside. You will no longer need this sleeve unless there are times that you choose to dive without the Egressor scuba system.



3. Zip new sleeve onto the belt with the Brownie's logo facing upright.
4. Mount the regulator onto the tank and insert the cylinder with the valve pointing outward. Secure the cylinder in place using the elastic loop around the tank neck.
5. Open the tank valve completely.
6. The mouthpiece has a bungee necklace attached so the regulator may hang easily around the neck for quick retrieval in an out of air situation.







## CAUTION



Do not let regulators drag in the sand. This can result in damage to the regulators and an obstruction to air delivery.

### BEACH LAUNCHING

1. When launching from the beach, first determine whether the surf will allow safe entry.
2. Breaking surf may flip the unit. Having a grip on the unit in and out of surf zone is essential.
3. DO NOT LET REGULATORS DRAG IN THE SAND. The float is equipped with straps to secure all hoses for easy carrying.
4. Snap on Accumulator Tank in between heat hose and main hose.
5. Turn the unit on at the beach or in calm, waist deep water.
6. Push the unit into the current or wind and allow it to drift the length of the hose.
7. Deploy the diver hoses attaching them to the belts.
8. Swim the unit well away from the breaking surf. Remember, the wind may blow the unit back into the surf.
9. Deploy the 40-foot down line spinning out any kinks.
10. Reverse procedure for returning to the beach.



### USING AS A DECK MOUNT

When using as a deck mount, or when inflating the tube, position the unit so that there is plenty of circulating air available for cooling. If the unit is used often as a deck mount, you might consider ordering hose extensions to get additional range away from the boat. With the QRS fittings, adding additional hoses is literally a snap.



## NOTE



A ten (10) foot heat hose should be used when using the unit as a deck mount



## WARNING



Sudden bursts of energy might use up more air volume than the compressor can supply. This will result in restrictive breathing. If you encounter this, simply SLOW DOWN your breathing or refrain from exerting great amounts of energy until your respiration rate becomes normalized. Excitement, activity level, current flow, depth and experience level of divers will dictate your dive.

### BOAT LAUNCHING

1. Place the compressor assembly into the float and fasten connections.
2. Run the heat transfer hose through the center hole.
3. Snap on Accumulator Tank in between heat hose and main hose.
4. Snap the 40-foot down line to the heat hose.
5. Lower the float into the water.
6. Turn the unit on.
7. Push the unit into the current or wind and allow it to drift the length of the hose.
8. Snap on Y divider(s) if needed and diver hose(s) and snap regulator hoses to belts.
9. Reverse procedure for returning to the boat.

## MAXIMUM DEPTH SELECTOR

### PURPOSE

The Maximum Depth Selector is a feature of the Sea Lion designed specifically to conserve battery life and provide longer dive times for times when air consumption is relatively low. By selecting a shallower depth, the system runs at a lower maximum pressure limit, thus increasing the efficiency of the compressor. It is advised that the Maximum Depth Selector is only set to a depth other than 65 feet when air consumption of the divers is relatively low. This is when there are only one or two divers, or when the divers are not working hard underwater (e.g. drifting and not swimming into a current.)

A diver at 15 feet with the Maximum Depth Selector set to 15 feet can experience battery life increases of over 50% compared to a diver at 15 feet with the Maximum Depth Selector set to 65 feet. A diver at 15 feet with the Maximum Depth Selector set to 15 feet can experience battery life increases of over 30% compared to a diver at 15 feet with the Maximum Depth Selector set to 65 feet.



### USAGE

It is important that the selected maximum depth is not exceeded by the diver(s) during operation. For maximum system performance and air supply, it is advised that the Maximum Depth Selector is set to 65 feet for all applications. This will result in a minimum run-time of about 135-150 minutes with a fully charged battery. Under heavy work, the Maximum Depth Selector should be increased higher than the diver's maximum depth to give the divers a comfortable air supply. It is important that the Accumulator Tank is used always.



### WARNING



BE SURE TO NEVER EXCEED MAXIMUM DEPTH. BE AWARE THAT THE SYSTEM IS OPERATING AT A LOWER PRESSURE AND WILL SUPPLY LESS AIR WHEN SET TO 15, 25, OR 35 FEET. USE WITH CAUTION.

### USER INTERFACE

The Maximum Depth Selector must be set prior to turning the system ON. Changing the Maximum Depth Selector knob while the system is running will not have any effect. Set the Maximum Depth Selector by turning the knob until the knob's white indicator line aligns with the desired depth on the Maximum Depth Selector Panel. Do not attempt to turn the knob further than the furthest depth indicators in each direction.

Once the Maximum Depth Selector is set and the system is turned ON, the system will pulse the compressor a certain number of times to indicate and confirm the maximum depth setting. Please confirm that the number of pulses matches with your desired maximum depth selector prior to diving.



### WARNING



THE MAXIMUM DEPTH SELECTOR DOES NOT GUARANTEE THAT TWO-TO-THREE HEAVY-BREATHING DIVERS WILL HAVE SUFFICIENT AIR SUPPLY AT THE SELECTED DEPTH.

Number of Pulses	Maximum Depth Selection (feet)
1	15
2	25
3	35
4	65



### WARNING



BE SURE TO CONFIRM THE NUMBER OF PULSES MATCHES YOUR SELECTED DEPTH.



## NOTE



Do not force water into the compressor air intake.

## ***SOME TIPS ON USE OF THE EQUIPMENT***

### THE CLEAN UP AFTER YOUR DIVE DAY

1. After it has cooled down, and with the air intake assembly in place, start the unit.
2. Thoroughly spray down the entire unit with fresh water **WITH THE UNIT RUNNING**.
3. Do not force water into the compressor air intake and battery compartment.
4. Fresh water can be safely sprayed over the entire unit.
5. Wash the unit thoroughly including all the linkage. When you feel certain that you have completely washed off and out all the corrosive matter, continue washing the rest of the system, including all the hoses, belts, tube and regulators. You may purge the regulator and wash it down **ONLY** while the unit is on and running, otherwise you may flood the regulator.
6. Blow-dry the engine and battery compartment lid with the air coming from the uncoupled Heat Hose.
7. Before disconnecting hoses and regulators make sure to release pressure in lines by purging regulators.

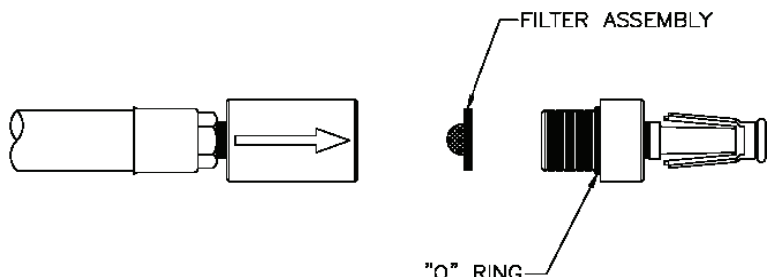
## ***STORAGE***

1. Thoroughly clean all components of the system with fresh water.
2. Allow everything to dry completely.
3. Remove the battery and store in a dry place.
4. Pack all the items in their appropriate boxes and bags and store in a cool dry place.

## ***PERIODIC MAINTENANCE***

Much of the maintenance will be determined by such factors as frequency of usage, wind and sea conditions, and attention after the dive and storage conditions. Assuming you have followed the simple post dive procedures, periodic maintenance will be easy and inexpensive.

The inline filter between the black hose and the heat hose needs to be inspected before every dive and cleaned when dirty. See the diagram below.



Occasionally other compressor maintenance is needed. It is best to call Brownie's service department to determine what parts are needed. Generally, all that is required is the cleaning off of mineral deposits from the valve plate and possibly some inexpensive parts replacement. Hard and frequent usage will require a scheduled inspection program to prevent breakdown. Your seasonal requirements and frequency of usage will dictate your maintenance schedule.

## ***TROUBLESHOOTING GUIDE***

CONDITION: Diver headache, nausea, dizziness.

POSSIBLE CAUSE: Boat engines running in vicinity of compressor. Exposed chemicals or fuel.

SOLUTION: Abort dive or move to a cleaner air environment.

POSSIBLE CAUSE: Exhaust is entering intake.

SOLUTION: Abort dive and inspect/repair equipment.

CONDITION: Insufficient air.

POSSIBLE CAUSE: Debris in inline filter.

SOLUTION: Replace or clean out as instructed on other page.

POSSIBLE CAUSE: Too many diver's for the depth attempted.

SOLUTION: Move to shallower water.

POSSIBLE CAUSE: Air leak in hose system.

SOLUTION: Check all fittings. Pouring water on the connections may help detect leaks.

POSSIBLE CAUSE: Compressor may require servicing.

SOLUTION: Have unit inspected and repaired by a qualified technician.

CONDITION: System "frozen".

POSSIBLE CAUSE: Seized motor or compressor.

SOLUTION: Have unit inspected and repaired by a qualified technician.

CONDITION: Any strange noises or erratic behavior in system.

POSSIBLE CAUSE: Water intrusion, loss of lubrication in main bearing.

SOLUTION: Have unit inspected and repaired by a qualified technician.

## **EMERGENCY MAINTENANCE**

In the unlikely event that you accidentally submerge or flip your unit, the situation can be saved if you ACT QUICKLY and DON'T PANIC.

1. Get everything onboard or ashore.
2. Turn the unit's power switch to the off position.
3. Open the battery lid.
4. REMOVE THE BATTERY
5. Rise the system with fresh water.
6. Remove the compressor head and rinse.
7. Allow everything to dry completely.
8. Inspect the battery for damage
9. Re-attach the compressor head.
10. Insert the battery back into the compartment
11. Close the battery lid and turn the unit on.
12. Allow the unit to run for several minutes with no regulators attached.

IF THE UNIT IS FROZEN OR IS NOT PRODUCING SUFFICIENT AIRFLOW:

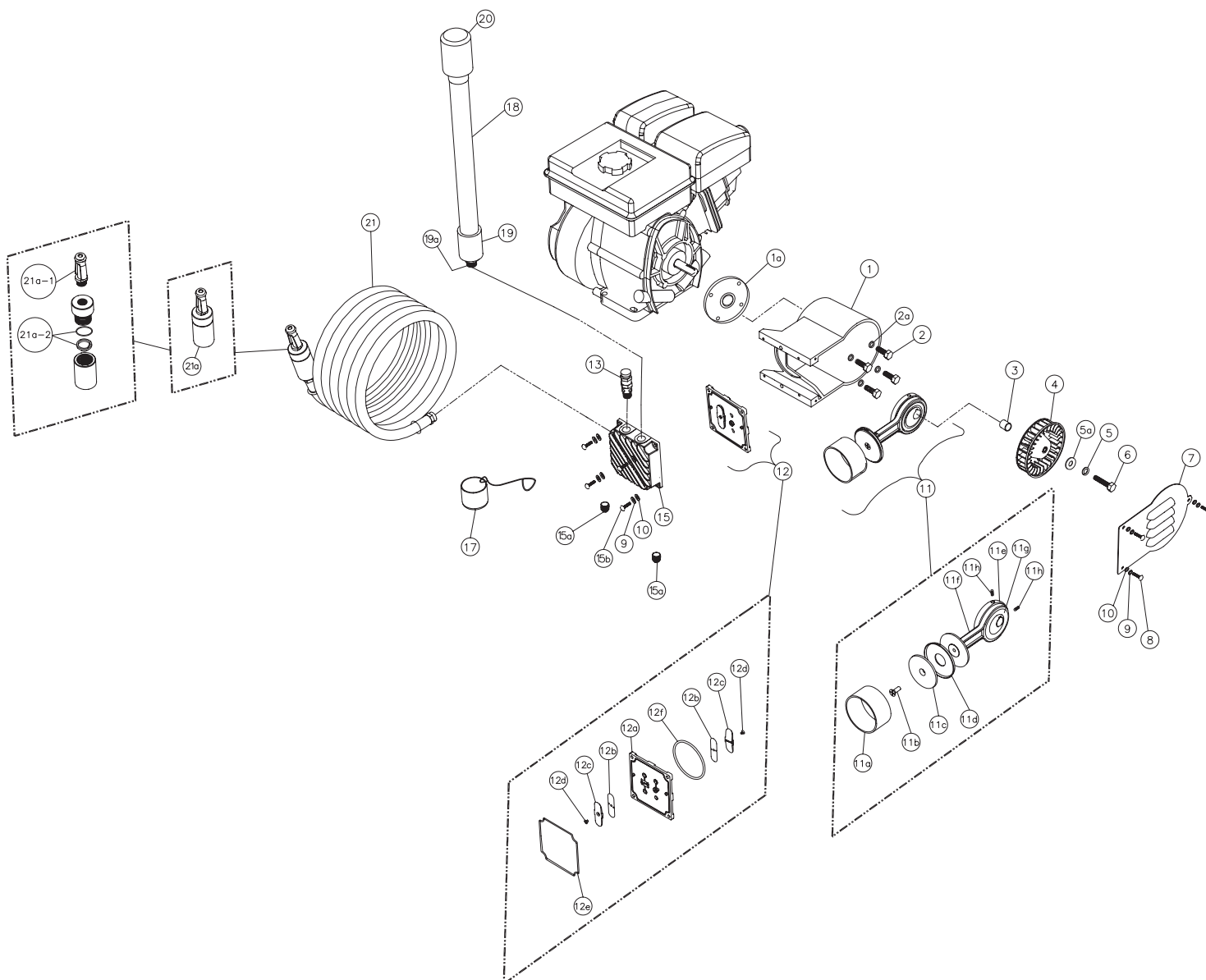
1. It might be the bearing in the compressor or the motor itself. Additionally, the flapper valves in the compressor may have broken after the inrush of water.
2. You should return the unit to the factory so a qualified technician may fully evaluate the damage.

IF YOU HAVE LET THE UNIT SIT AFTER HAVING BEEN FLIPPED:

1. Chances are there will be more problems, especially with salt corrosion.
2. You should return the unit to the factory so a qualified technician may fully evaluate the damage.

**WARNING:** If warranty service or repairs are needed, contact your nearest authorized service center. If one does not exist, contact the factory. Unauthorized tear down of the unit will void the factory warranty.

## AC1 COMPRESSOR PARTS



No.	Part Number	Description
1	AC1U	COMPRESSOR HOUSING, SINGLE HEAD
1a	AC1U-ADAPTER	ADAPTER PLATE, SINGLE HEAD
2	HHCSS5/16F.75	BOLT HEX HD 5/16X24X3/4 SS WASHER
2a	WFLSS5/16	WASHER FLAT 5/16 X 3/4 SS
3	280-AFS	SPACER FAN AL 280 1X7/16X21/64
4	638656	FAN-WHEEL DIRECT DRIVE TWIN
5	WMLSS5/16	LOCKWASHER SS 5/16 MED
5a	WFESS5/16-1.25	WASHER FENDER 5-16 1-1/4 OD SS
6	HHCSS5/16F1.75	BOLT HH SS 5/16X24X1.75"
7	VS-H FACE PLATE	FACE PLATE HORIZONTAL SS VS
8	HMMSS10C.3/8	SCREW TRIM HH MS SS 10-24X3/8
9	WMLSS10	LOCKWASHER 10/32 MED SS WASHER
10	AN960C10L	WASHER FLAT #10 7/16X.0310
11	AC2-BAU	ROD ASSEMBLY COMPLETE:
11a	*† AC-SLEEVE	SLEEVE, ALUM W / HARDCOAT
11b	*† PFMSSS1/4C.625	SCREW PHIL FLT 1/4X20X5/8
11c	AC-CAP	CAP PISTON AC UNITS
11d	*† AC-CUP-W	CUP PISTON WHITE
11e	AC2-6U	ECCENTRIC, UNIVERSAL AC UNITS
11f	AC-ROD	ROD AC UNITS
11f/e/g	AC2-BER	ROD / BEARING / ECCENTRIC ASSEMBLY
11g	SSB6908DD	BEARING SS SEALED (GPL 226)
11h	SSCPSS1/4C.5	SET SCREW 1/4-20X.5 SS SUBARU

No.	Part Number	Description
12	† AC-VPA	VALVE PLATE ASSM
12a	AC-VALVE PLATE	VALVE PLATE AC ALUM
12b	AC1-2-18	VALVE FLAPPER
12c	* AC-AL-RESTRAINT	RESTRAINT ALUM
12d	* PFMSSS6C.25	SCREW FLAT HD 6/32X1/4
12e	AC1-2-17	GASKET, VALVE HEAD SPECIAL
12f	* PFMSSS6C.25	SCREW FLAT HD 6/32X1/4
13	VRV-3001B-V-72	PRESSURE RELIEF VALVE 72 PSI n
15	AC-HEAD-SINGLE	HEAD AC SINGLE
15a	06115-06	PLUG 3/8" FLAT ALLEN
15b	HMMSSS10C1	BOLT TRIM HH CS SS 10-24X1
17	AC2-DC	DUST CAP W/LANYARD
18	IS-460	STAFF, INTAKE 460
19	ISS-280	SOCKET INTAKE STAFF ALL UNITS
19a	28-224	NIPPLE HEX BRASS 3/8X1/2
20	DC-460	CAP, DRIP 460
21	HH7 1/2	HEATHOSE 1/2"X7" NO FILTER
21a	HH-D Complete	HOUSING HEATHOSE W/FILTER/QRSM
21a-1	QRS38M	QUICK RELEASE SWIVEL M/ORING
21a-2	HH-DFK	FILTER KIT: SCREEN ASSEMBLY & O-RING

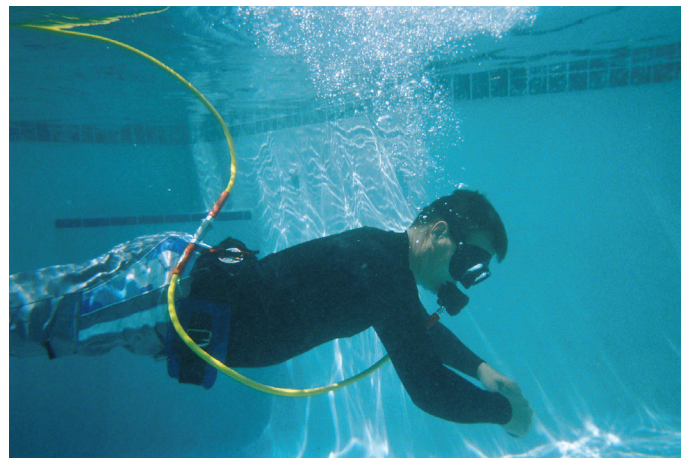


## BROWNIE'S BOTTOM-MOUNT REGULATOR

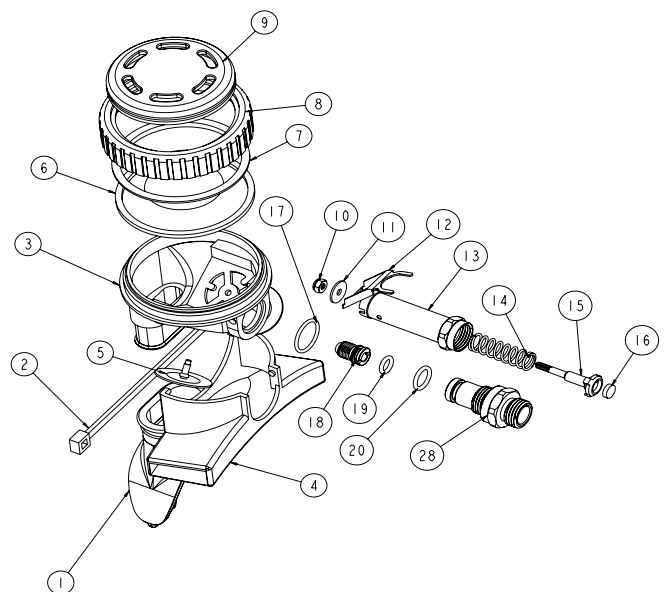
We've changed the placement of the hose to follow a more natural path!

While scuba hoses are typically routed from the top of the tank around the diver's shoulder, hookah regulator hoses are attached to the diver's waist. By moving the hose to the bottom of the regulator the hose can lay cleanly next to the diver's body thereby creating a more efficient, streamlined profile in the water and reducing the chance of snagging the hose on objects nearby.

Additionally, there is a substantial reduction in the sideways torque placed on the second stage from the hose resulting in reduced jaw effort to grip the regulator.



No.	Part Number	Description
1	P6R	MOUTHPIECE RUBBER
2	A-02-010-12	TIE NYLON RG-8
3	A-02-008-03	HOUSING RG-8 HOOKAH
4	A-02-008-04	EXHAUST TEE RG-8 HOOKAH
5	A-02-008-05	EXHAUST VALVE RG-8 HOOKAH
6	B-02-010-01	DIAPHRAGM RG-8 HOOKAH
7	A-02-010-10	WASHER DIAPHRAGM RG-8 HOOKAH
8	A-02-010-04	COVER RING
9	A-02-010-05	COVER RG-8 HOOKAH
10	C-02-010-06	LOCKNUT RG-8 HOOKAH
11	P-02-008-01	SPACER SS RG-8 HOOKAH
12	S-02-008-01	LEVER ARM RG-8 HOOKAH
13	C-02-008-01	ADJUST TUBE
14	D-02-008-01	SPRING RG-8 HOOKAH
15	C-02-008-02	POPPET RG-8 HOOKAH
16	A-02-008-01	SEAT RG-8 HOOKAH
17	O-EKM-15MX-1-5	ORING RG-8 HOOKAH
18	A-02-010-06	ORIFICE RG-8 HOOKAH
19	O-A5568-010	ORING RG-8 HOOKAH
20	O-A5568-012	ORING RG-8 HOOKAH
21	C-02-008-09	INLET FITTING RG-8 HOOKAH





# WARRANTY

*Brownie's Third Lung products are warranted to be free of defects in materials and workmanship for a period of one year from the date of retail purchase. A copy of retail purchase receipt, showing model and serial numbers is required to verify warranty eligibility. This warranty is limited and subject to the restrictions listed below.*

*Brownie's will repair, replace or refund valid warranty claims, at our discretion. Brownie's shall not be liable for any special, incidental or consequential damages beyond the wholesale purchase price.*

*Please fill out and return enclosed Warranty Registration Form along with a copy of dated retail purchase receipt to register your warranty.*

## **What is not covered**

*Inspection, service and/or labor charges will be paid by the retail consumer.*

*Some parts are subject to wear, even under normal or minimal use. All components should be inspected for wear on a regular basis. Replacement of worn items constitutes normal maintenance and is the responsibility of the owner.*

*This warranty does not cover damage resulting from the introduction of water, gas, oil or other contaminants, normal wear, improper use, improper maintenance, neglect of care, alteration, or unauthorized repair.*

*All repairs made, not covered under the terms of this warranty, will be made at the owner's expense.*

## **RETURN GOODS POLICY AND INSTRUCTIONS**

*To return merchandise to Brownie's for service or credit:*

- 1. Call our sales department to obtain a RMA number and shipping destination (954.462.5570)*
- 2. Pack authorized items in sturdy container*
- 3. Boldly print the RMA number on the package exterior*
- 4. Include: a note detailing the situation, a copy of original purchase receipt showing model number, serial number, date and place of purchase*
- 5. Ship package, freight prepaid, to the designated location*

*Unauthorized returns, returns shipped freight collect and returns missing RMA numbers may be refused or subject to additional inspection/processing fees.*

*Items returned for credit must be in new condition (at our discretion) and will be subject to a restocking fee (Items are subject to return only up to 30 days from date of purchase).*

## **USE OF EQUIPMENT IN THE BAHAMA ISLANDS**



### **DEPARTMENT OF FISHERIES**

Ministry of Agriculture, Fisheries  
& Local Government  
P. O. Box N-3028  
Nassau, Bahamas  
Fax: (242) 393-0238

**MAF&LG/FIS/10**

8 April 2003

Mr. Robert M. Carmichael  
President/CEO  
Brownie's Third Lung  
940 Northwest 1<sup>st</sup> Street  
Fort Lauderdale, FL33311  
U.S.A.

Dear Mr. Carmichael,

Reference is made to your email of 26<sup>th</sup> March, 2003 that was addressed to the Bahamas' Ministry of Tourism relating to the usage of air compressors, hookah and scuba dive gear in the Bahamian exclusive economic zone.

Please be advised that current Bahamian laws do permit the possession and use of Scuba, hookah dive gear or air compressors for the purposes of recreational diving. However, the use of these apparatuses are strictly prohibited for the purposes of spearfishing or the collection of any marine resource while in Bahamian waters.

It is hoped that the above fulfills your request relating to the usage of the mentioned gear while in Bahamian waters.

Sincerely,

Edison Deleveaux  
For/DIRECTOR OF FISHERIES



3001 NW 25th Ave, Pompano Beach, FL 33069  
PHONE: +1.954.462.5570 FAX: +1.954.462.6115