Owner's Manual
Floating Series

ADVENTURE IS ALWAYS ON THE LINE!

Use only unleaded fuel containing no more than 10% ethanol.

940 NW 1st St, Fort Lauderdale, FL 33311 USA
954.462.5570 800.327.0412 FAX 954.462.6115
www.browniesmarinegroup.com info@browniesmarinegroup.com

Copyright © 2010 by Brownie's Third Lung
All rights reserved. No part of this manual may be reproduced in any form by any means without permission in writing from the publisher.
Edition 08/2010

Table of Contents

SPECIFICATIONS – Single Head Compressor

Air Displacement……..6 CFM (170 LPM)
Air Delivery……..…..4 CFM @ 50 PSI
……...(113 LPM @ 345 kPa)
Engine Run Speed……2900 +/- 150 RPM
Recommended Oil…….See Engine Owner's Manual
Unit Dimensions L x W x H (in)……...17 x 24 x 17
…….(cm)..43.18 x 60.96 x 43.18
Compressor Type……...Oil-less compressor,
……..PermaLube™ design
CFM = Cubic Feet per Minute
LPM = Liters per Minute
PSI = Pounds per Square Inch
KPa = kilopascals
RPM = Revolutions Per Minute

SPECIFICATIONS – Twin Head Compressor

Air Displacement……..……12 CFM (340 LPM)
Air Delivery……...7 CFM @ 50 PSI
…… 198 LPM @ 345 kPa)
Engine Run Speed……2600 +/- 150 RPM
Recommended Oil……..……See Engine Owner's Manual
Unit Dimensions L x W x H (in)……17 x 24 x 17
……...(cm)…43.18 x 60.96 x 43.18
Compressor Type……...Oil-Less compressor,
…….PermaLube™ design

CONGRATULATIONS ON YOUR PURCHASE OF A BROWNIE'S THIRD LUNG!!
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 owner's manual and the engine owner's manual before operating.

	F280X/F285X	F390X
Motor/Compressor in case	Single head Compressor w/motor	Twin Head Compressor w/motor
10 ft heat transfer hose w/filter	1	1
Dry-top intake staff & dive flag	1	1
Float tube with inflator adapter	1	1
60 ft down line	1	1
QRS Y-Dividers	1	2
20 ft diver hoses	2	3
Brownie's adjustable hookah regs	2	3
Brownie's Drop Weight Cummerbelt	2	3
Brownie's mesh gear bag	1	1
Manual	1	1
Online Hookah Certificates	2	3
Spare Parts	2 Male & 2 Female QRS, Oring & Filter Kit	2 Male & 2 Females QRS, Oring & Filter Kit

STOP!

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
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. One form is included for each diver set-up in your system package. You may photocopy the form as needed or download additional copies directly from www.browniedive.com/training/medical.shtml. 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 preexisting 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.(**Note:** If you have already had a medical exam for diving within one year of the start of training, and had a physician give his or her approval at that time, you may bring a photocopy of the *RSTC Medical Statement* form your physician signed at that time, in lieu of obtaining a new form.)

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.

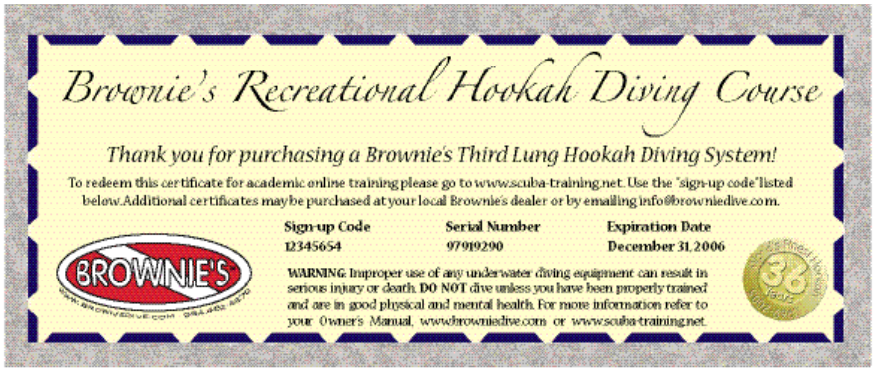
The program is an interactive, web-based learning course designed to teach you how to properly and safely use your hookah system. It is broken down into 7 modules each with specific Knowledge Requirements and Objectives.

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 (Internet Explorer, Netscape, etc.).
2. Go to 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 questionaire 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.
6. Upon completion of the Online Training Course you will receive a diploma by email (the address registered with scuba-training.net) The diploma will be ready to print, frame and proudly display. Hold onto your user name and password so you can access your online course anytime you want to review.



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, 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.

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. The Third Lung is stable in calm sea conditions. 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.

SETTING UP

GASOLINE POWERED UNITS ARE SHIPPED AND/OR DELIVERED WITH OIL AND GAS REMOVED from the engine. Refer to the Engine Owner's Manual, which is enclosed, for filling and maintenance procedures. **Note:** Use only unleaded fuel containing no more than 10% ethanol.

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.

The remote intake staff is designed to increase compressor life by making it difficult for water to intrude into the compressor. An additional benefit, is that it further eliminates the possibility of exhaust fumes entering the breathing air. Even so, precautions must still be taken to ensure a totally pure air supply. Never operate the equipment in a toxic fume environment such as near running outboard engines, exposed chemicals or fuel spills. The unit is for OUTDOOR USE ONLY and should never be run in an enclosed area.

STEP 1

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 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.

STEP 2

CHECKING/ADDING OIL

1. Check oil daily before use. There is a hole in the side of the pan for easy access (Figure 1). Reach through the hole in the side of the pan (Figure 2) and, unscrew the dipstick going counter-clockwise. Remove the dipstick (Figure 3) and check that the oil level falls inbetween the two hash marks (Figure 4).If it does replace the dipstick and continue.
2. The system will hold 1 pint of oil. If the system is brand new and you are adding oil for the first time, measure out 1 pint of automotive detergent oil (SAE30 or 10W30). Insert the funnel into the oil reservoir and slowly pour the oil in (Figure 5). Completely screw the oil cap back in and remove one time to check the oil level. Make sure it falls inbetween the two hash marks on the dipstick.

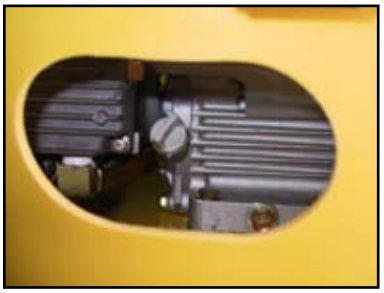


Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

STEP 3

STARTING THE UNIT

Serious burns may resulting from touching hot surfaces of the Engine. Please read the Engine Owner's Manual.

1. Make sure the oil reservoir and gas tanks are full. Refer to your Engine Owner's Manual.
2. Put the fuel switch in the "ON" position.
3. Turn the kill switch to "ON." Start the engine.
4. If it is cold, it might be necessary to choke it. As it warms, return the choke to the open position.

STEP 4

THE TUBE INFLATION AND DEFLATION

1. Lift Velco™ 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 and clip the inflation nozzle onto available D-ring.

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 engine off until you are ready to launch the unit.

STEP 5
MOUNTING.
Feed heat hose through oval hole in bottom of pan and also through the middle of the tube. Place 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.

STEP 6
HEAT HOSE
Snap the 60-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.

STEP 7
HOSES
For one diver, snap one or more of the 20-foot diver hoses directly to the 60-foot down line. For two, snap **one** QRS Y divider to the 60-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 60-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 60-foot down line. Then, you should follow the same pattern as previously stated.

STEP 8
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. See Figure 6, 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. See Figure 7. 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. See Figures 8 and 9.

Figure 6

Figure 7

Figure 8

Figure 9

STEP 9

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

Figure 10

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. See Figure 11.
4. Mount the regulator onto the tank and insert the cylinder with the valve pointing outward. There are two strips of Velcro that should be attached in a criss-cross fashion around the cylinders neck. See Figure 12.
5. Turn the system on.
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. See Figure 10.

Figure 11

Figure 12

STEP 10

LAUNCHING

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 the 60-foot down line to the heat hose.
4. Lower the float into the water.
5. Start the unit.The pressure release valve on the compressor should evacuate a sporadic puff of air or a light continuous flow. Breathing on the regulators should stop the flow indicating that the air is being properly regulated.
6. Push the unit into the current or wind and allow it to drift the length of the hose.
7. Snap on Y divider(s) if needed and diver hose(s) and snap regulator hoses to belts.
8. Reverse procedure for returning to the boat.

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 gripl 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. Start the unit on the beach or in calm, waist deep water. The pressure release valve on the compressor should evacuate a sporadic puff of air or a light continuous flow. Breathing on the regulators should stop the flow indicating that the air is being properly regulated.
6. Push the unit into the current or wind and allow it to drift the length of the hose.
5. Deploy the diver hoses attaching them to the belts.
6. Swim the unit well away from the breaking surf. Remember, the wind may blow the unit back into the surf.
7. Play out the 60-foot down line spinning out any kinks.
8. Reverse procedure for returning to the beach.

STEP 11
USING AS A DECK MOUNT

When using as a deck mount, or when inflating the tube, position the unit so that the exhaust is pointing downwind and that there is plenty of circulating air available to cool the engine. Also make sure that the exhaust is not too close to the gunwale (gunnel) to prevent exhaust from bouncing back into the intake air. The unit's design is usually sufficient to prevent this but being aware of the situation will totally ensure the air quality.
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.

STEP 12
SOME TIPS ON USE OF THE EQUIPMENT

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.

STEP 13
THE CLEAN UP AFTER YOUR DIVE DAY

1. After the engine has cooled down, and with the air intake assembly in place start up the engine.
2. Thoroughly spray down the entire unit with fresh water WITH THE ENGINE RUNNING.
3. Do not force water into the compressor air intake or into the engine air cleaner.
4. Fresh water can be safely sprayed over the rest of the unit, including into the pull cord housing of the engine, which is where salt laden air is drawn in for cooling purposes.
5. Wash the engine 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 compressor. (Handy blower is included in Care Kit).
7. Apply a very light coat of Corrosion X (supplied with Care Kit) to engine only. Do not spray on the compressor.
8. Turn off the gas feed switch and allow the engine to run until it shuts off. Unscrew the bolt underneath the carburetor to drain the gas. (Remember that you will need to have some sort of container to catch the fuel as it is draining.) After the gas has drained out replace the bolt and turn the on/off switch to the off position. This will keep the carburetor clean.
9. Add Stabil (supplied with Care Kit) to the gas if it is to be stored for more than a week (more information on storage in next section).
10. Before disconnecting hoses and regulators make sure to release pressure in lines by purging regulators.

STORAGE

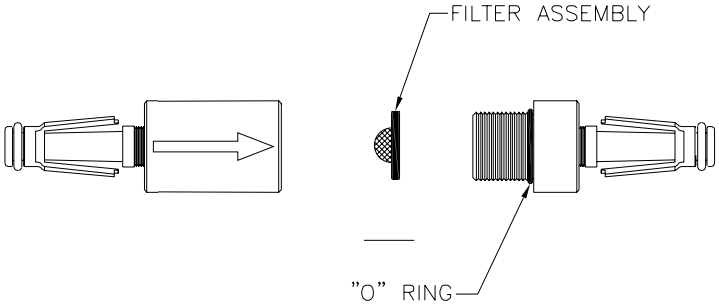
1. If you are going to be storing the unit for more than 2 months you will need to drain the gasoline completely in three different areas. Remember that you will need to have some sort of container to catch the fuel as it is draining.
2. To do this turn off the gas feed switch and allow the engine to run until it shuts off. Unscrew the big main bolt underneath the carburetor to drain the gas. After the gas has drained out replace the bolt and turn the on/off switch to the off position.
3. You will then need to drain all of the gasoline out of the fuel tank. Remove the small bolt located underneath the gas feed switch and drain the entire contents of the fuel tank.
4. Then use a flat head screwdriver to disconnect the gas line from the carburetor.
5. It is okay to store the unit with oil, but it must be drained before being shipped.

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.

NOTE: Engine maintenance is covered in Engine Owner's Manual.

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". Inability to pull engine starter rope.

POSSIBLE CAUSE: Seized engine 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 PROCEDURE

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

1. Get everything onboard or ashore. Rinse everything with fresh water including the engine. Open compressor heads and rinse. At this point you may transport the unit to a qualified technician or if you are comfortable with the following steps you may do them yourself.
2. Do not attempt to run the engine. There is a chance that the motor will "water lock" when it is flooded with seawater. If you force the engine to turn, you risk more damage. Do not do this.
3. Get the following items together: New spark plug/Gap, 3 pints of natural 10W30, set of wrenches/ratchets, screwdrivers – both Phillips and slotted head, can of starter fluid.
4. Remove the spark plug.
5. Remove the air cleaner, rinse and set aside to dry.
6. Remove hoses connected to compressor and drain. Leave them unattached for now.
7. Remove the brass bolt and cover under the carburetor and drain the gasoline into a container and discard. Run fresh fuel through the line, roughly ½ gallon.
8. Remove all drain plugs and drain oil. Put bottom drain plugs back in and fill again with one pint of oil.
9. Give the machine a few short pulls. Water will shoot out of the spark plug hole.
10. Remove the muffler.
11. Give the machine a few more short pulls – until water no longer spurts out.
12. Spray starter fluid into spark plug chamber to help dry out residual water.
13. Remove the housing around the pulley, and remove rust around magneto and rotor. Re-assemble.
14. Give the engine about a half dozen pulls to get the clean oil around parts inside the housing. Drain the oil again.
15. You may want to turn the engine up side down to ensure there is no more water emerging. If there is, spray more starter fluid into the hole to dry any more water.
16. Fill with oil, put in new spark plug, replace the air cleaner, reconnect compressor hose, and assemble the carburetor and muffler. Do not use any more starter fluid. To do so could be dangerous.
17. Turn switch to "on" and pull.
18. Let unit run for about 10 minutes. Drain and refill oil once more.

IF THE ENGINE IS STILL FROZEN:

1. It might be the bearing in the compressor or the engine itself. Also 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.

STARTING ENGINE

1. Turn fuel valve to the "ON" position.
2. Flip the engine switch to the "ON" position.
3. Grasp starter handle, and start engine as you would a lawn mower. Use choke if necessary.

Before using air tools or accessories, check manufacturer's maximum pressure rating. Maximum pressure rating must be above 135 PSIG.

STOPPING

1. Flip the engine switch to the "OFF" position.
2. Turn fuel valve to "OFF" position.
3. Drain excess gas as specified on page 5 in STORAGE section.

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.

NOTE: Disconnect spark plug wire before servicing engine or compressors.

NOTE: Make sure to check the oil before each use.

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 1st Street
Fort Lauderdale, FL33311
U.S.A.

Dear Mr. Carmichael,

Reference is made to your email of 26th 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

REBUILD KIT INSTRUCTIONS

Tools needed to perform this service:

Medium (6-8") Adjustable Wrench
1/8 Allen wrench
#2 Phillips screwdriver
#3 Phillips screwdriver
½" and 5/16" nut driver or socket wrench
11/16", ½" and 5/16" wrench
Rubber Hammer

Note: This procedure will deal with the disassembly of the compressor head and installation of the components contained in the compressor head rebuild kit.

You must have free access to exterior surfaces of the compressor assembly to perform this service. You will need to remove the motor/compressor assembly from the protective case to gain adequate access to perform this service.

Remove any straps from the pan that may inhibit the removal of motor/compressor assembly.

There are 4 bolts that hold the motor onto the pan or case. Locate and hold each of the 4 bolts at the base of the motor using a 1/2" wrench, and loosen the corresponding Nylock nuts on the underneath of the pan using a 1/2" socket wrench. Set bolts and nuts aside until reassembly.

1. Using a 11/16" wrench, remove the black Heat Hose (item 23) from the compressor head.
2. Using a 5/16" socket, remove the screws (item 8), lock washers (item 9) and flat washers (item 10) from front cover (item 7). Remove cover.
3. Using 5/16" socket, remove the screws (item 17), lockwashers (item 9) and flat washers* (item 10, 4 sets) from the compressor head. Remove compressor head (item 15).
4. Separate compressor head (item 15) from valve plate assembly (item 12).
5. Pull out piston sleeve (item 11a).

   Inspect rod and bearing assembly. The piston rod should pivot freely on the bearing. There should be no play perpendicular to the bearing.
6. Using a #2 Phillips screwdriver, remove screws (items 12b), valve restraints (items 12c) and flapper valves (items 12d) from plate.
7. Using a #3 screwdriver, remove screw (item 11b) from center of piston head. Remove cap (item 11c) and cup (item 11d).
8. Install new piston sleeve (item 11a) over bare piston head onto piston rod.
9. Slowly pull engine start cord, or manually turn fan (item 4) to position piston at maximum extension.
10. Place piston cap (item 11c) into center of new piston cup (item 11d).
11. Install new retainer screw (item 11b) through cap (item 11c) and cup (item 11d), into threaded center of piston head. Start screwing retainer screw into piston head. With rubber hammer tap cup & cap into sleeve then tighten screw.
12. Install new flapper valves (items 12d) located under the valve restraints (items 12c) onto valve plate (item 12e), carefully matching valves with setting posts.
13. Install new o-ring (item 12f) and gasket (item 12a) making sure each is fully seated in its appropriate groove.
14. Hold completed valve plate assembly (item 12) gasket side up. Place head (item 15) onto valve plate assembly (item 12), lining up posts.
15. Place lockwashers (item 9) and flat washers (item 10) onto screws (item 17) and install into corner holes of the head assembly. Install two flat washers* (item 10) onto the screw threads protruding through the head assembly. (Washers will be between head assembly and housing.) Align screws with holes in housing and begin threading by hand. Tighten using 5/16" socket.

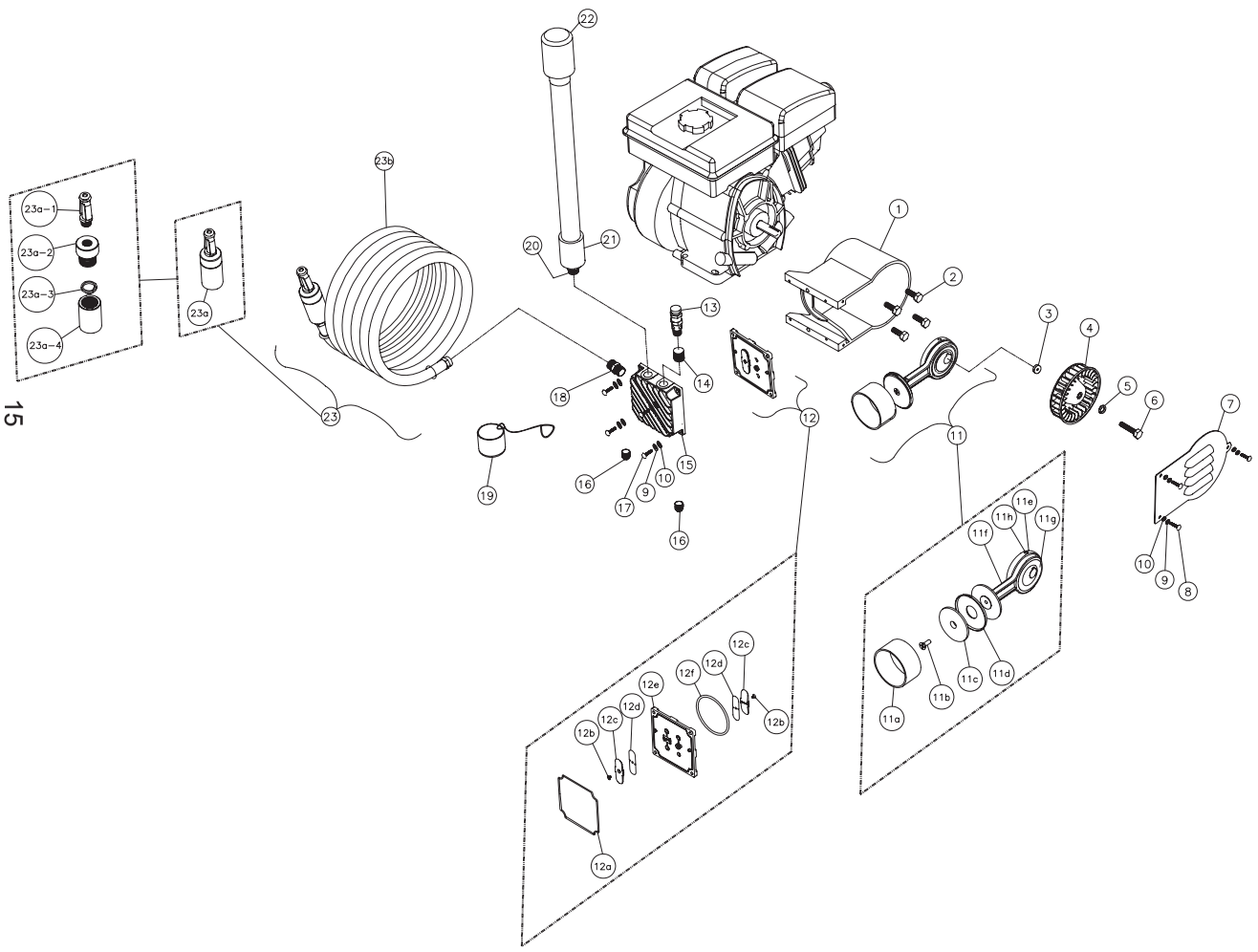
NOTE: For a Twin Head Compressor, repeat steps 3-15 to install a rebuild kit on the other head.

16. Using adjustable wrench, remove relief valve (item 13). Install new relief valve and tighten until snug.
17. Align front cover (item 7) with holes in housing. Install screws (item 8), lockwashers (item 9) and flat washers (item 10). Tighten using a 5/16" socket.
18. Place motor/compressor assembly in pan or dish. Secure with same bolts and nuts as disassembled. Replace any straps that were removed.

* If flat washers are present during disassembly, they must be replaced during reassembly. Current production models do not have flat washers located between compressor head and housing.

Parts List - AC1 Compressor Assembly

Single Head Direct Drive – F280, C270



NO.	PART NUMBER	DESCRIPTION	QTY
1	AC1–21	Housing Single	1
2	HHCSSS 5/16 P1	Screw Hex Head 1/15–24x1	4
3	280–FS	Spacer	1
4	638565	Fan Wheel Direct Drive Twin	1
5	WMLSS 5/16	Washer Lock SS 5/16 Med	1
6	WFESS 5/16–1.25	Washer Fender 5/16 1–1/4 ODSS	1
7	AC1–7 SS	Cover SS Vented	1
8	HMMSSS10C.3/8	Screw Trim HH MS SS 10–24 x 3/8	3
9	WMLSS10	Washer Lock 10/32 Med SS	5
10	AN960C10L	Washer Flat #10 SS	5
11	AC2–BA0	Rod and Bearing Assembly	1
11a†*	AC–SLEEVE	Sleeve Aluminum w/ Hard coat	1
11b†*	PFMSSS 1/4C.625	Screw Phil Fit 1/4 x 20 x 5/8	1
11c	AC–CAP	Cap Picton AC Units	1
11d†*	AC–CUP	Cup Piston	1
11e	AC–2–6U	Eccentric	1
11f	AC–ROD	Rod	1
11g	6908ZZ	Bearing	1
11h	SSCPSS1/4C.375	Set Screw	1
12 †	AC–VPA	Valve Plate Assembly	1
12a*	AC1–2–17	Gasket, Valve Head Special	1
12b*	PFMSSS6C.25	Screw Flat Head Special	2
12c	AC–AL–RESTRAINT	Restraint Aluminum	2
12d*	AC–2–18	Valve Flapper	2
12e	AC1–2–13	Valve Plate AC Aluminum	1
12f *	AC–VPO	O–Ring	1
13	PR25–008	Pressure Relief Valve	1
14	110–64	Reducer 3/8 MIP to 1/4 FIP	1
15	AC–HEAD	Head	1
16	3/8 BP	Plug Brass 3/8	2
17	HMMSSS10C1	Bolt Trim HH CS SS 10–24x1	4
18	122–6	3/8 Nipple	1
19	AC2–DC	Dust Cap w/ Lanyard	1
20	28–224	Nipple Hex Brass 3/8 x1/2	1
21	ISS–280	Socket Intake Staff	1
22	DC–460	Drip Cap	1
23	HH10–QRS3/8	Heat Hose Assembly	1
23a	HH–D COMPLETE	Housing Heat Hose w/ Filter /QRS M	1
23a–1	QRS3/8M	Quick Release Swivel Male	1
23a–2	HH–101	Housing Heat Hose Top Male	1
23a–3	10373	Filter Washer w/ 304 SS	1
23a–4	HH–102	Housing Heat Hose Bottom Female	1
23b	HH10	10' Heat Hose 3/8	1

COMPRESSOR HEAD REBUILD KIT INCLUDES ITEMS MARKED WITH * or †

* BTL–DDRB1

† BTL–DDRB2

Note: One Rebuild Kit is Needed ForEach Compressor Head

REBUILD KIT INSTRUCTIONS

Tools needed to perform this service:

Medium (6-8") Adjustable Wrench
1/8 Allen wrench
#2 Phillips screwdriver
#3 Phillips screwdriver
½" and 5/16" nut driver or socket wrench
11/16", ½" and 5/16" wrench
Rubber Hammer

Note: This procedure will deal with the disassembly of the compressor head and installation of the components contained in the compressor head rebuild kit.

You must have free access to exterior surfaces of the compressor assembly to perform this service. You will need to remove the motor/compressor assembly from the protective case to gain adequate access to perform this service.

Remove any straps from the pan that may inhibit the removal of motor/compressor assembly.

There are 4 bolts that hold the motor onto the pan or case. Locate and hold each of the 4 bolts at the base of the motor using a 1/2" wrench, and loosen the corresponding Nylock nuts on the underneath of the pan using a 1/2" socket wrench. Set bolts and nuts aside until reassembly.

1. Using a 11/16" wrench, remove the black Heat Hose (item 23) from the compressor head.
2. Using a 5/16" socket, remove the screws (item 8), lock washers (item 9) and flat washers (item 10) from front cover (item 7). Remove cover.
3. Using 5/16" socket, remove the screws (item 17), lockwashers (item 9) and flat washers* (item 10, 4 sets) from the compressor head. Remove compressor head (item 15).
4. Separate compressor head (item 15) from valve plate assembly (item 12).
5. Pull out piston sleeve (item 11a).

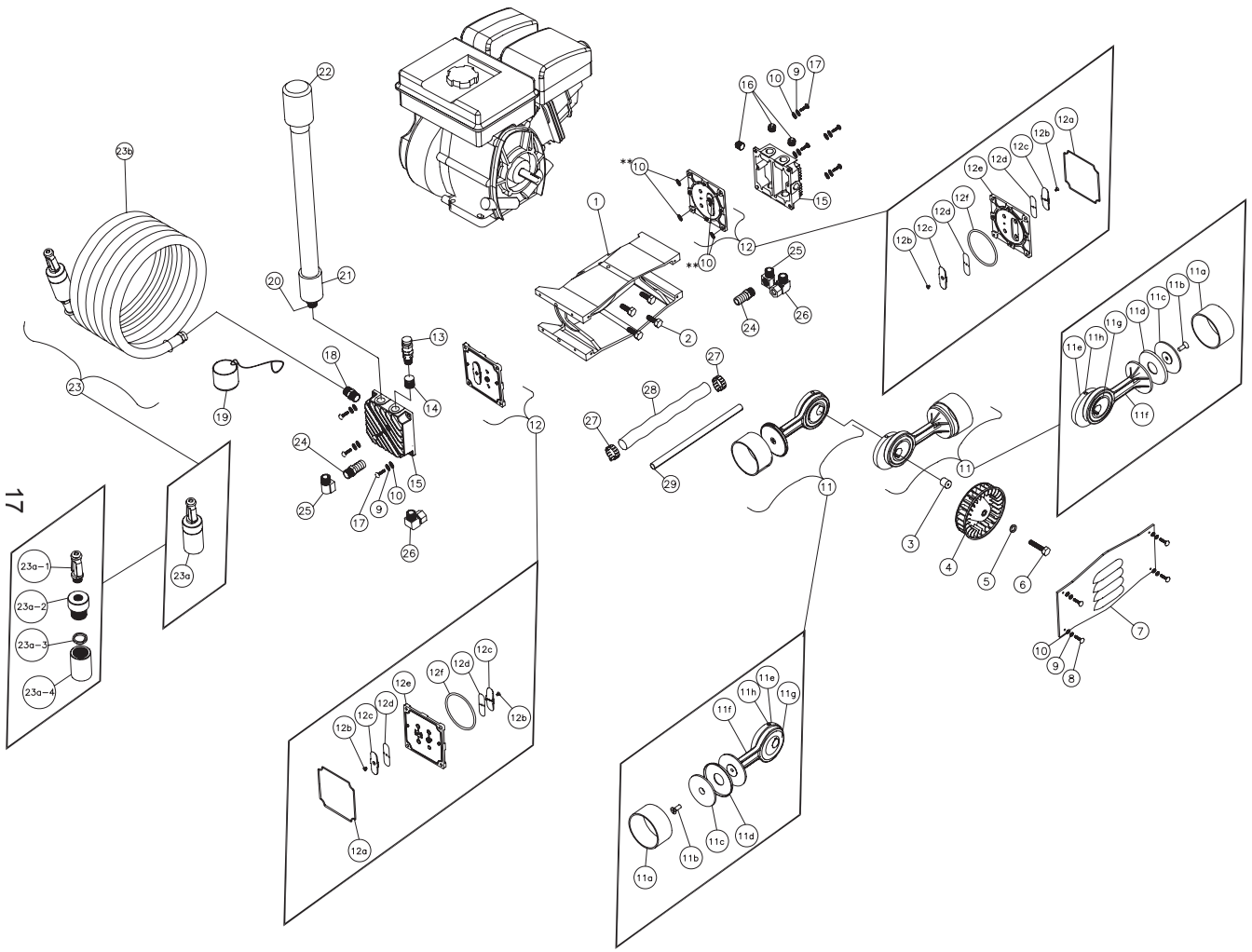
   Inspect rod and bearing assembly. The piston rod should pivot freely on the bearing. There should be no play perpendicular to the bearing.
6. Using a #2 Phillips screwdriver, remove screws (items 12b), valve restraints (items 12c) and flapper valves (items 12d) from plate.
7. Using a #3 screwdriver, remove screw (item 11b) from center of piston head. Remove cap (item 11c) and cup (item 11d).
8. Install new piston sleeve (item 11a) over bare piston head onto piston rod.
9. Slowly pull engine start cord, or manually turn fan (item 4) to position piston at maximum extension.
10. Place piston cap (item 11c) into center of new piston cup (item 11d).
11. Install new retainer screw (item 11b) through cap (item 11c) and cup (item 11d), into threaded center of piston head. Start screwing retainer screw into piston head. With rubber hammer tap cup & cap into sleeve then tighten screw.
12. Install new flapper valves (items 12d) located under the valve restraints (items 12c) onto valve plate (item 12e), carefully matching valves with setting posts.
13. Install new o-ring (item 12f) and gasket (item 12a) making sure each is fully seated in its appropriate groove.
14. Hold completed valve plate assembly (item 12) gasket side up. Place head (item 15) onto valve plate assembly (item 12), lining up posts.
15. Place lockwashers (item 9) and flat washers (item 10) onto screws (item 17) and install into corner holes of the head assembly. Install two flat washers* (item 10) onto the screw threads protruding through the head assembly. (Washers will be between head assembly and housing.) Align screws with holes in housing and begin threading by hand. Tighten using 5/16" socket.

NOTE: For a Twin Head Compressor, repeat steps 3-15 to install a rebuild kit on the other head.

16. Using adjustable wrench, remove relief valve (item 13). Install new relief valve and tighten until snug.
17. Align front cover (item 7) with holes in housing. Install screws (item 8), lockwashers (item 9) and flat washers (item 10). Tighten using a 5/16" socket.
18. Place motor/compressor assembly in pan or dish. Secure with same bolts and nuts as disassembled. Replace any straps that were removed.

* If flat washers are present during disassembly, they must be replaced during reassembly. Current production models do not have flat washers located between compressor head and housing.

Twin Head Direct Drive – F390, C390, CTD390



NO.	PART NUMBER	DESCRIPTION	QTY
1	AC2–V2	Housing Twin Version 2	1
2	HHCSSS 5/16 P1	Screw Hex Head 1/15–24x1	4
3	390–FS	Spacer	1
4	638565	Fan Wheel Direct Drive Twin	1
5	WMLSS 5/16	Washer Lock SS 5/16 Med	1
6	WFESS 5/16–1.25	Washer Fender 5/16 1–1/4 ODSS	1
7	AC2–7N SS	Face Plate Twin Ventilated	1
8	HMMSSS10C.3/8	Screw Trim HH MS SS 10–24 x 3/8	4
9	WMLSS10	Washer Lock 10/32 Med SS	12
10**	AN960C10L	Washer Flat #10 SS	12
11	AC2–BA0	Rod and Bearing Assembly	2
11a	AC–SLEEVE	Sleeve Aluminum w/ Hard coat	2
11b	PFMSSS 1/4C.625	Screw Phil Fit 1/4 x 20 x 5/8	2
11c	AC–CAP	Cap Picton AC Units	2
11d	AC–CUP	Cup Piston	2
11e	AC–2–6U	Eccentric	2
11f	AC–ROD	Rod	2
11g	6908ZZ	Bearing	2
11h	SSCPSS1/4C.375	Set Screw	2
12 †	AC–VPA	Valve Plate Assembly	2
12a†*	AC1–2–17	Gasket, Valve Head Special	2
12b†*	PFMSSS6C.25	Screw Flat Head Special	4
12c	AC–AL–RESTRAINT	Restraint Aluminum	4
12d†*	AC–2–18	Valve Flapper	4
12e	AC–VPA	Valve Plate AC Aluminum	2
12f *	AC –VPO	O–Ring	2
13	PR25–008	Pressure Relief Valve	1
14	110–64	Reducer 3/8 MIP to 1/4 FIP	1
15	AC–HEAD	Head	2
16	3/8 BP	Plug Brass 3/8	3
17	HMMSSS10C1	Bolt Trim HH CS SS 10–24x1	8
18	122–6	3/8 Nipple	1
19	AC2–DC	Dust Cap w/ Lanyard	1
20	28–224	Nipple Hex Brass 3/8 x1/2	1
21	ISS–280	Socket Intake Staff	1
22	DC–460	Drip Cap	1
23	HH10–QRS3/8	Heat Hose Assembly	1
23a	HH–D COMPLETE	Housing Heat Hose w/ Filter /QRS M	1
23a–1	QRS3/8M	Quick Release Swivel Male	1
23a–2	HH–101	Housing Heat Hose Top Male	1
23a–3	10373	Filter Washer w/ 304 SS	1
23a–4	HH–102	Housing Heat Hose Bottom Female	1
23b	HH10	10' Heat Hose 3/8	1
24	102–1006	Barb Hose 5/8 x 3/8Brass MNPT	2
25	28–158	Elbow ST 3/8 90° Barstock Brass	2
26	0069–0806	Elbow Brass 1/2 Tube x 3/8 MNP	2
27	620–010	Clamp SS SM	2
28	K7130–10–100	Polywire 5/8 x 100	1
29	XT–390	Crossover Tube 1/2" x 10–5/8"	1

COMPRESSOR HEAD REBUILD KIT INCLUDES ITEMS MARKED WITH * or †

* BTL–DDRB1

† BTL–DDRB2

Note: One Rebuild Kit is Needed ForEach Compressor Head

** NOT ON ALL UNITS.
IF PRESENT RETAIN WASHERS AND REINSTALL DURING ASSEMBLY

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,
2. Pack authorized items in sturdy container.
   NOTE: Always COMPLETELY drain all gas and oil from engines before packing. All gas-powered motors must be sealed in a durable plastic bag inside the shipping carton.
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 our factory location in Ft. Lauderdale, FL.

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 15% restocking fee (30% for custom orders.)

ENGINE WARRANTY AND REPAIRS

Engine adjustments, repairs, and warranty service are to be handled through your engine manufacturer's authorized service centers. They are listed in your telephone phone book's Yellow Pages under "Engines, gasoline."

BROWNIE'S
THIRD LUNG

Congratulations!

You are among the first to receive the newly redesigned Brownie's hookah regulators.

We've changed the placement of the hose to follow a more natural path. (See pictures below.) While scuba hoses are typically routed from the top of the tank around the diver's shoulder, hookah regulator hoses are attached to the divers' waist. By moving the hose to the bottom of the regulator, the hose can lay cleanly next to the diver's body creating a more efficient, streamlined profile in the water; reducing the chance of snagging the hose on objects nearby.

There is a substantial reduction in sideways torque placed on the second stage from the hose. A reduction in torque = a reduction in jaw effort to grip the regulator. The bottom hose position and integrated swivel provides unobstructed range of motion. Regulator recovery remains unchanged. There is no need to re-learn a technique due to a change in design.

Additional features:

- Proven performance of traditional demand regulator mechanism.
- Compact size, small internal volume for easy clearing
- Light-weight, impact-resistant composite materials
- Full exhaust tee to direct bubbles away from your line of vision
- Extended mouthpiece requires less clamping effort; reducing jaw fatigue. Can be trimmed to fit smaller mouths.

We are confident you will find our new Brownie's hookah regulator more comfortable than ever before. You can see all the Brownie's products at www.browniedive.com.

OLD

NEW

OLD

NEW

TECHNICAL BULLETIN 050622

Changes to Valve Plate Assemblies for AC1 and AC2 Direct Drive compressor assemblies.

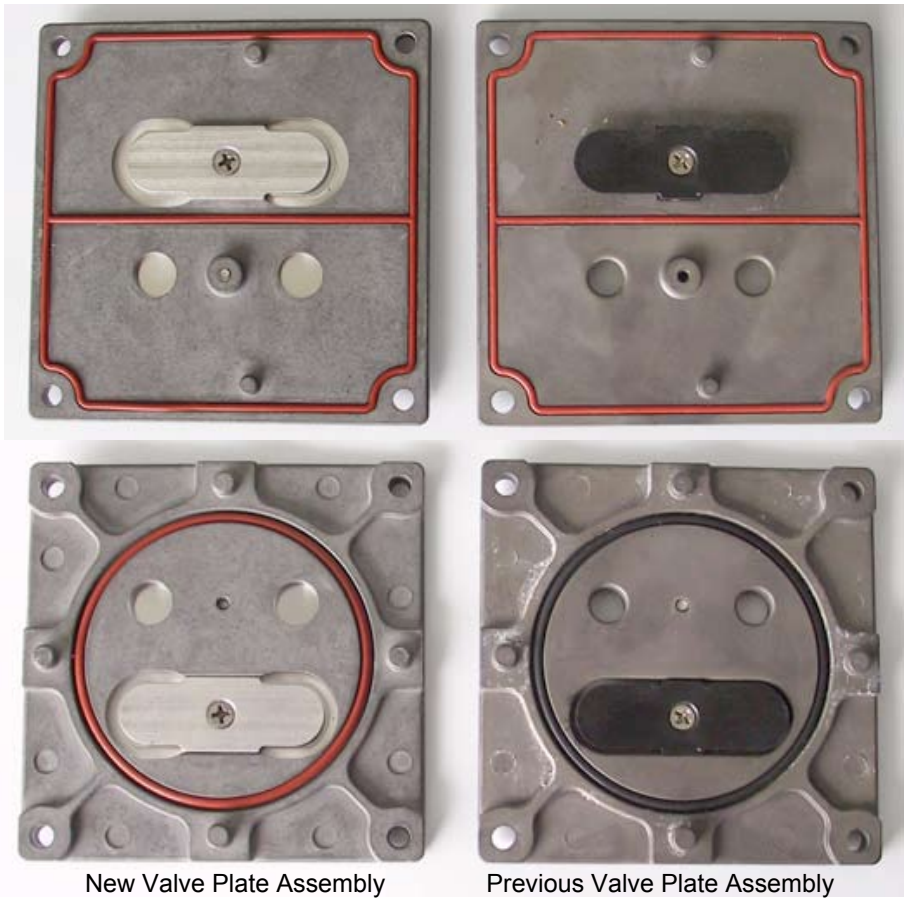
AC1 assemblies on F280, E150, C270, B230X-BOAT and previous single head, direct drive models.
AC2 assemblies on F390, E250, C390, CTD390, B340X-BOAT and previous dual head, direct drive models.

The following changes have been made to **Valve Plate Assemblies** for Brownie's Third Lung direct-drive compressor assemblies produced since June, 2005, beginning with serial number 12039.

1. Increased diameter of 4 port holes
2. Removed material around the outflow side of the port hole
3. Valve restraint material is now aluminum, changed from high temperature plastic
4. Changed flapper valve design (see below)

These changes are designed to increase airflow and provide greater service life of the valve components.
The new flapper valves and restraints are NOT backward compatible with the previous valve plate design.
Compressors requiring service to replace flapper valves and/or restraints will be required to also replace the valve plate to accommodate the new parts.

For your convenience, we have produced a single part number for a preassembled valve plate assembly (including the valve plate, flapper valves, valve restraints, screws, round o-ring, square o-ring), AC-VPA, $55.00 each.



New Valve Plate Assembly Previous Valve Plate Assembly

Revisions to Rebuild Kits

Brownie's will now offer 2 versions of compressor head rebuild kits. One kit is required per compressor head.

BTL-DDRB1 ($65.00 FT) includes cylinder sleeve, piston cup, cap screw, 2 "new design" flapper valves, 2 restraint screws, round o-ring, square o-ring
This set is one of multiple components included in Care Kits CK-280, CK-280R, CK-390, CK390R as of June 15, 2005.

BTL-DDRB2 ($104.00 FT) includes cylinder sleeve, piston cup, AC-VPA valve plate assembly
This set should be sold to all customers with system serial numbers prior to 10239. After installation of this kit, the customer can continue future services with the BTL-DDRB1.

New flapper valve shape

Previous flapper valve shape

NOTES:

940 NW 1st Street
Fort Lauderdale, FL 33311

PHONE: 954.462.5570 800.327.0412
FAX: 954.462.6115

www.browniesmarinegroup.com info@browniesmarinegroup.com

CUT HERE

CUT HERE

CUT HERE

CUT HERE

Warranty Registration

ADVENTURE IS ALWAYS ON THE LINE

Your warranty cannot be registered without this form. We will not be able to inform you of important upgrades without the completion of this form. Please complete the requested information and fax or mail it back to us with a copy of the original cash register receipt. It is the policy of Brownie's Third Lung not to share customer information with any outside organization. Thank you and happy diving!

940 NW 1st St., Fort Lauderdale, FL 33311 PH: 954.462.5570 800.327.0412 FAX: 954.462.6115

Model Number:_____ **Serial Number**:_____

Name:_____

Street Address:_____

_____

City:_____ **State or Province**:_____ **Zip**:_____ **Country**:_____

Phone:_____ **Fax**: _____ **E-mail**:_____

Certification Agency:_____ **Certification Level**:_____

Certification Number: _____ Do you SCUBA dive as well as Hookah dive? Yes No

How many years have you been diving?_____ **How many dives per year?**_____

Store purchased from:_____ **Store Location**:_____

Date of Purchase:_____ (don't forget to include a copy of original receipt)

Are you… Male / Female Married / Single **Age:** 18 to 25 26 to 35 36 to 45 45+

How did you find out about our product?

Store Display

Internet

Mail Out

Friend

Witnessed a Brownie in use and could not bear to be without one

Publication: _____

Boat Show: _____

Other:_____

Occupation:

Educator

Skilled Labor

Office

Management

Professional

Technical

Executive

Medical

Professional Diver

Student

Other: _____

Other Interests:

Photography

Jogging

Tennis

Boating

Windsurfing

Fishing / Hunting

Camping

Hiking

Water Skiing

Exercise

Bicycling

Golf

Snow Skiing

Other:_____

CUT HERE

Fold along this line.

CUT HERE

Place
Postage
Here

Brownie's Third Lung
940 NW 1st Street
Fort Lauderdale, FL 33311

CUT HERE

Fold along this line.

CUT HERE