

The AirLine

By J. Sink



Owners Manual for gas-powered models

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QUICK REFERENCE GUIDE

There is really only one thing that will usually cause problems: Failure to read the complete manual and not following the simple, step-by-step procedures!

The following guide is exactly what is implied: a quick overview of areas that need your special attention, but is NOT designed to replace reading the entire Manual. Failure to do so can, and/or will, result in non-warranted equipment failure or worse, injury.

1. This unit is shipped without oil. When adding oil, fill to the middle of the threads. The unit should be on a flat surface to observe the level of the oil. Overfilling will induce oil into carburetor. Under-filling might cause engine to over-heat and quit. The result could be equipment damage or a potential exposure to danger for the divers below. **The oil-alert system on the 4 and 5 HP engines could sense low-oil in a rocking sea and shut off. It has been disconnected for your safety. It is, therefore, the user's responsibility to check the oil daily.**

2. Add a light coat of marine lube to all the engine's metal parts before introducing it to salt water, and, after each day's use. From years of experience, we recommend T-9 for its superior protection properties. **In a marine environment, this will be very important to you in protecting your investment.**

3. The end of the black heat hose must be in the water to cool the hot air before it gets to the, more delicate, yellow air hoses. For relatively short periods of time, like start-up testing, it is OK to leave the black heat hose out of the water. You can run the unit without the yellow hoses attached for as long as needed. If you intend to deck mount a float unit you may need to order a heat hose extension to ensure cooling of the yellow hose. Unreel hoses rather than uncoil. Hold the coiled hose as though you were carrying a bass drum and roll out hose by turning the coil 360 degrees like a wheel. To further prevent kinking while in the water, occasionally look back to the surface. If there are loops of hose, there is the possibility, however remote, of kinking. There are two swivels in each line. Grasp the hose just past the junction where it connects to the regulator hose and rotate it opposite of the kink tendency to straighten it out.

4. The splash cap attached to the black plastic intake socket has a smaller red cap inside it. This is a measuring device for dumping fresh water into the compressor head to help remove internal salt deposits on the valve plate(s). **READ THE CLEAN UP AFTER THE DIVE DAY SECTION!! This is a MUST-DO part of your daily routine.** It is very safe if done properly. Use only the attached cap. If you induce too large a volume of water into the head, it will cause damage.

5. When you are finished for the day shut off the fuel. If you are going to store your unit for any length of time you should drain the fuel. You can do this in one of two ways: (a). When finished, and washing up, just turn the fuel valve off and let the carb. run dry until the engine stops. (b). Unscrew the carb./float bowl and dump the fuel out of the bowl and then replace the screw and bowl. This second method will also allow you to check and get rid of any sediment that may have worked its way into your carb.

DON'T GO NEAR THE WATER!!

"Without T-9 on your new Air Line." (Or, at least, some acceptable substitute.)

This is a must, around saltwater, to keep your life-support equipment looking good and in dependable working order.



The tests are in. T-9 beat the can (oil can, that is) off the better-known, but cheaper hardware store products. They simply don't hold up in a dynamic marine environment. Silicone spray is O.K., but the viscous residue is messy to handle and attracts sand like a magnet. WD-40 is fine for a limited time, but just doesn't last under the splash of a choppy sea and is not good for rubber parts. T-9 has been proven to be the most durable for the gas-powered units for the tenacity of its waxy film.

It is ESSENTIAL that you follow this recommendation: Fuel and oil the engine according to the Honda manual. Attach the intake staff. Liberally apply T-9 to all metal surfaces on the engine. On the 4 and 5 HP engines, pay particular attention to the gas tank by loosening the cap and coating the rim of the unpainted tank. Don't overlook the underside of the cap. Spray the bare, mounting bracket from beneath. The red extension tube on the can works well for this. Coat all the hardware and screws. Lubricate the linkage. Inspect your work to ensure thoroughness. Let the fluid penetrate for several minutes, then wipe off the excess with paper toweling. A light coating is all that should remain on the surface. **It is unnecessary to coat the compressor as it is marinated at the factory.**

Start up the engine and spray into the pull-cord housing, as that is where salty air will be pulled in for engine cooling.



(This next is a post-dive procedure, and is out of place here, but as it is similar to the pre-dive procedure you'll find it easier to remember.) After the dive day, when the engine has cooled down, put the air intake staff in and start the engine. Let it run at approximately half speed. Wash off the assembly with fresh water as soon as you start it. Spray it thoroughly. **The only precaution is to not force or squirt water into the engine air intake or the compressor air intake. After it has dried, touch up with T-9, especially the lip under the gas cap, the hardware and all the bare metal. Also spray into the pull-cord housing and then let the engine run for a minute, or two to make sure everything is dry before storing your unit.** Do this after every dive day and your Air Line will look good and work efficiently for years.

There are other simple, but important, post-dive procedures. They are explained in detail in the section appropriately called "After the dive day".



Before you get started, assemble a few items so you can complete the process without having to go look for things. You will need a can of Marine grade, lube/protectant (Manufacturer's choice is T-9) and a few watch-band size, and larger, Velcro ties. If you have purchased a #1905 Service Kit for the R260-3, you will also want a Phillips screwdriver and a #25 Torx. If you own an R360XL, the service kit is a 1915 and you will also need a 3/8 socket for the head bolts. (More on the Service Kit, under Periodic Maintenance.)

Technically, you really don't need any tools to start, although the Velcro comes in very, very handy.

While you're at it, you might want to procure a gas additive/stabilizer. The Air Line has had success with Sea-Foam, although there are several good products. Perhaps best known is Sta-Bil.

Because of California EPA restrictions, the carburetor jets are very small to cut down on exhaust emissions. But, because they are so tiny, they are unforgiving and will clog up rather easily if the engine is inactive, even for fairly short intervals such as a few weeks. The recommended, and apparently effective procedure, is to use the stabilizer full time. Meaning, add it to your gas CAN every time you fill it at the gas station. That way you won't have to remember to add it to the gas tank. The effect will be that the carb will always be flushed from normal usage and the need to clean the carb will be reduced if not eliminated.

You can clean the carb jets yourself, but why, if you can prevent it?

DON'T BURN UP YOUR NEW ENGINE!

The engine dip stick will appear to have oil in the reservoir. This is only a residual from when it was tested. Never assume there is oil in the engine. **Never start your unit without first unscrewing the plug and seeing the oil from the middle to the top of the threads.** The engine is 4/cycle: no oil/gas mixing is required. The new unit is shipped without fluids. Follow the Honda manual's recommendations for type and amount. Fill to mid threads. Make sure you can see the oil level. There are two fill holes for the same oil reservoir. Use whichever one is most convenient and easiest to access.



Although this equipment is much easier to use than the more cumbersome scuba gear, it is still a serious LIFE SUPPORT SYSTEM and must be used only by trained divers who fully understand the effects of breathing compressed air underwater. **If you don't FULLY UNDERSTAND any of the skills required for safe diving, it is essential that you seek RE-TRAINING at a qualified training facility.** Before allowing anyone to use this equipment **IT IS YOUR OBLIGATION, AS THE OWNER,** to have them seek training from an agency, such as NAUI, SSI, PADI or NASE. All users must be certified in Surface Supplied Air or Scuba. You might think you are being a pal to let someone try it because “he snorkels a lot”. Risk the friendship; don’t give in.

Knowing your maximum depth capability for making a free ascent in an out-of-air situation is an important first step. **NEVER USE THE EQUIPMENT PAST YOUR FREE ASCENT CAPABILITY.** **We highly recommend and stress the need for an independent, back-up air supply, available from The Air Line or from your local dive shop.**



Your Air Line is designed for shallow water, unobstructed diving and should never be used in enclosed areas, such as caves, shipwrecks or ledge overhangs. Air Line diving requires most of the same skills as Scuba, but there are a few important differences.

Your system comes set up for at least two. This makes it economical, but more importantly, it adds to it’s safety by encouraging the practice of diving with at least one other person.

NEVER DIVE ALONE.

Dive with an experienced buddy after having carefully planned your dive.



Your unit has the capability of running for long periods of time (much longer than Scuba) and therefore requires EXTRA ATTENTION TO DEPTHS AND DOWN-TIME. **The rules for decompression are identical regardless of the air source.**

You are cautioned to **never dive past a no-decompression limit on any surface supplied air system.** **Should the engine run out of gas (and they do) or be accidentally turned off, the consequences would be very serious if you did indeed exceed no-decompression limits.**

Should you feel that your last breath was slightly more difficult than the one previous, it is probably an indication that the motor has stopped. Rather than continuing to breath until the air hose has been sucked dry, start an immediate ascent at one foot per second while exhaling slowly. By ascending on the air hose you can estimate the rate by going hand-over-hand on the hose at approximately one foot intervals. As you feel the need, breath in from the hose, continue your ascent while continually exhaling slowly. **Never hold your breath.** As you rise, a proportionate amount of air in the hose will be expanding as it would in your lungs.

By far, though, the most efficient and safest way to ascend, is with a redundant system such as the Spare Air system available at most dive stores or through The Air Line.

Even though compressor diving feels as free as snorkeling, IT IS NOT. While you will probably hold your breath during a snorkeling ascent, **NEVER HOLD YOUR BREATH WHILE ASCENDING WHEN USING A SURFACE AIR DEVICE.** Always breathe in and out. Should an out-of-air situation arise, at the very least you need to be expelling air continuously while making an emergency ascent. Remember, your life and that of your fellow divers rely on your good judgment. DON'T TAKE CHANCES. You have nothing to prove.

An extra word of CAUTION: The new technology of The Air Line allows it to produce greater volumes of air than old-fashioned models. This is done to provide comfort at shallow depths by ensuring that there is plenty of breathable air under times of heavy consumption such as adding a third diver, swimming against currents or heavy task loading like moving and setting an anchor. Diving beyond no-decompression limits should never be done without adequate independent air and the training germane to it. As with Scuba, never dive beyond your training limits. At any depth, a fully independent back-up air supply is recommended and can be acquired from The Air Line or your local store.

WHEN YOU RECEIVE YOUR NEW COMPRESSOR SYSTEM

Inspect the contents to be sure everything is included. All the gas models, should include the compressor/engine assembly in a hard cover (on an aluminum plate for deck-mount units); one clear intake staff for the single-head compressor units; two airstaffs for the double-heads; a remote system for the deck mounts; a diver-down flag for the float units; a five, or 10 foot black compressor heat hose (attached); a hose splitter (two for Model R360XL, or if an additional diver package was ordered; two or three of the following: 60 foot feeder hoses, with second stage regulators and swivel fittings attached; Ditchable-Weight, Towing-Harnesses (DWTH); the float tube with Cordura cover and inflator hose (**Note: The inflator hose appears to have a fitting missing. It does not. The inflator end is a jacketed female quick connect which locks down on the valve stem of the innertube**); a large gear bag; a Ziplok bag containing conical filter screens; the hose splitter(s), with spare washers and intake-staff filter(s). Along with this Manual will be a separate Honda manual.



The conical filter screens are attached to washers. They will be found in a separate bag, with spares, so they are not lost by being knocked loose during shipping. They will go, convex, inside the female end of the yellow hose.



You will find the Ditchable-Weight, Towing Harnesses (DWTH) with small straps containing a female snap-in receptor sewn on at the center of the belt portion at the back. The regulator whip hoses have tabs that have male insertors that connect to the harness receptor. The DWTHs are fully adjustable for waist size and height. When you ordered your machine, you probably discussed DWTH size. Choose the harness you will be using. Undo the suspender straps, if attached to the belt. Let them dangle as you put on the belt. Adjust the belt at the buckle.



Bring the suspenders over your shoulders, cross them in front and snap them into the receptors at the front of the belt.



Adjust the suspenders to where the belt will ride comfortably on the hips. Position the belt slide to where there isn't too much excess hose to get in the way.



Establishing your weight requirement is discussed on page 21. No need to go there quite yet.

SETTING UP

The engine will operate best with unleaded gas certified at 86 octane or better. Never put oil in the gas. This is a 4 stroke engine.

RE-ADJUSTING THE SPEED OF THE ENGINE OR ALTERING THE PRESSURE RELIEF VALVE FOR ANY REASON WILL INVALIDATE THE WARRANTY. Higher pressures does not relate to more air, just more compressor wear and heat. Faster speed does NOT necessarily produce more air. It actually may produce less if adjusted faster than what was pre-set, and will overheat the compressor bearings causing expensive, non-warranted damage. Insufficient air cannot be fixed by running the engine faster than the preset 3,400 RPM. It has nothing to do with engine speed and can be dealt with in the section entitled TROUBLE SHOOTING. Engine and compressor speeds are pre-set to 3,400 RPM at the high throttle setting. This was not an arbitrary decision. It is the correct setting for the proper balance of volume and pressure.



The throttle lever can be used to slow down the engine during the wash-out process, but you will want to return it to the upper speed for diving. Running too slow under the breathing load could cause the engine to stall and create a safety hazard. ALWAYS ENSURE THAT THE THROTTLE IS IN THE FASTEST PRE-SET POSITION BEFORE ENTERING THE WATER. (See the Honda manual for locations and positions of the throttle lever.)

The remote breathing air intake(s) is (are) designed with two purposes in mind: 1. to increase compressor life by making it difficult for water to intrude into the compressor and, 2. to secure a proper distance between the intake and engine exhaust.. You will need to screw on the air filter to the air staff the first time you use the unit. Hand-tighten snugly. Then you can leave it in place. The filter will already be installed on the remoted air hose for the deck mounts. Rain is not a problem. However, 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.



Now is a good time to put your dive flag in place. Use the plastic tie-wraps supplied and place them through the holes in the flag as shown. Ensure that the flag stiffener will keep the flag hanging straight out.



Regarding the intake socket: Before inserting the staff, **visually ensure that the O-ring is in place** about 3/8 inch from the top.



If you need to replace it, the "O" ring size is .020. If not available locally, you can order directly from The Air Line. This keeps out splash, but more importantly, acts as a seal against the possibility of an exhaust swirl.

STEP-1

Unsnap the travel strap that goes around the girth. Unsnap the short strap on top of the case at both junctions and put these away in your dive bag for recovering your unit for storage.



Lift the cover off and put it aside. **THE COVER IS FOR STORAGE ONLY. IT IS NEVER TO BE USED WITH THE ENGINE RUNNING.** Tip for the day; You can put fresh water in the lid and use it for a small equipment wash.

Remove the dust cap(s) from the black socket(s) located on top of the compressor. Make a mental note that there is a small red cap inside the black cap.



More on this later. **DO NOT START THE ENGINE WITH THE DUST CAP ON.** Check for the “O” ring which is 3/8” down inside the black air staff receptacle. Place the clear PVC staff into the socket as far as it will go and make sure you screwed your filter on the end of the staff. The dust cap, tied to the socket, must ALWAYS BE IN PLACE WHEN THE STAFF IS REMOVED. If not, water or dust can splash directly into the compressor head.



STEP-2

STARTING THE UNIT. (for tube inflation)

Make sure the oil reservoir and gas tanks are full. (See SETTING UP for filling recommendations) You are also advised to be sure you have coated the metal engine parts with a marine protectant, such as T-9. This is extremely important when the equipment is being used around salt water.

Flip the on/off switch to the "ON" position. Put the fuel switch in the "ON" position.



You may have to choke a cold engine, but sometimes Honda engines start without choking them. This is usually only on the first start of the day if at all. Put the throttle lever in about the middle position. Now grab the recoil starter handle and give a good stiff quick pull. When the engine starts put the choke at about the half way point for approximately 30 seconds then you can switch the choke lever completely off.



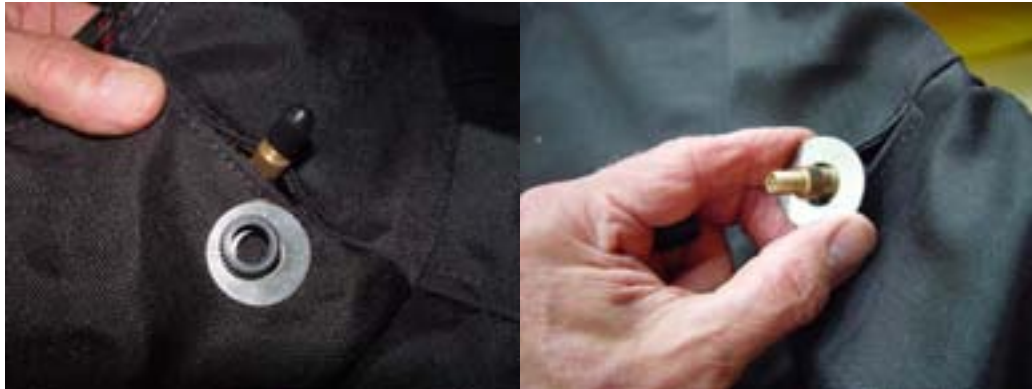


At this point, when the engine has started, spray the protectant directly into the pull cord assembly on the engine. This will blast a corrosion retardant into an area that will be sucking in salty air for cooling. After it has warmed for about a minute, stop the engine, attach the inflator hose onto the black compressor hose.

STEP-3 THE TUBE COVER

Install the black, innertube inside the yellow Cordura cover with the valve stem positioned to where it will align with the slot on the black side at the junction of the zipper ends.





Unscrew the black plastic retainer on the valve and remove the large stainless steel washer. Slip the valve through the sewn slot just below the zipper and replace the washer and retainer. Arrange the tube uniformly inside the cover and zipper it closed. You will only do this the first time you use your unit. You will want to leave the tube in the cordura cover after the initial setup.

The entire tube inflator valve unscrews. Remove it. Lubricate the valve with the protectant. Replace and tighten **snugly by hand**.



Start the engine as before and commence filling. You do not need to run the engine at full speed here. Pull back on the sleeve of the inflator fitting, push fitting onto the float valve as far as it will go and release the sleeve. Fill to where the cover is just full, but with a slight amount of room to allow for expansion when the sun is heating it. You should be able to pinch about $\frac{3}{4}$ inch of the cordura cover. Do not try to get all of the wrinkles out of the tube cover, this would be too full and might damage your cover. As it is inflating, occasionally tug the cover to position uniformly. Check that the valve is straight and not being pulled off to one side.



When full, pull back on inflator sleeve and remove. The compressor pan should nest snugly in the center of the tube with just a little pressure on it. If it does not, remove a slight bit of air by unscrewing the whole valve. Keep the unscrewed valve at the opening so that you can replace it when enough air has escaped to comfortably hold the red pan.

If you plan on using your unit regularly, you can keep the tube inflated if space permits.

Remember to replace the valve when the tube is emptied. Reapply protectant as needed.

STEP-4

MOUNTING THE UNIT IN THE FLOAT

Before nesting the pan into the tube, work the black hose into the grommeted hole directly in front of it. Dangle the two short straps and compressor hose into the center of the inflated tube.

Leave the long strap, located on the side, in the pan for now.



Nest the pan in the float in any way you want. It might be convenient to run the short straps through the black handles on the float cover for good balance while handling. Reach under and grab a short strap, bring it around to encircle the side of the tube it is on and snap it into its receptor. Make sure the strap is not twisted. Grasp the loose end, with the “D” ring attached, and snug the strap to where it is just tight. Repeat with the other short strap. Now take the long strap and bring it all the way around and under the whole tube. Snap and snug.

STEP-5

INSTALLING HOSES, REGULATORS AND DWTH

For a single diver, (assuming you will not dive alone but have an associate on another system such as Scuba) screw one 60’ yellow air hose directly, and snugly, onto the black, compressor hose. It will only go one way, i.e. male garden hose to female garden hose. REMEMBER TO HAVE INSERTED THE SCREEN WASHERS INTO THE FEMALE GARDEN HOSE FITTING ON THE YELLOW HOSE.

For two divers, first screw a hose divider securely onto the compressor hose. Attach two yellow 60’ down hoses with regulator as discussed above. Hand tightening should be sufficient, but use enough force to ensure that the hoses will not unscrew from twisting and turning in the water.



For three divers, screw a second hose divider onto the first, making three ports available. Screw on three 60’ down hose assemblies. For the fourth diver, simply attach a third divider onto the first one. Voila!



Note that the yellow hoses have swivels on both ends. More on this in "Hose Management", below.

The regulator with whip hose and DWTH tab will already be assembled and tightened for you at the factory. Put on the DWTH. (Prior to this you will have established your weight requirement by entering the water, hanging onto the anchor line, or a line from the stern, and adding or subtracting weights until neutral buoyancy is established. For the 4 and 6 pocket belts, equalize the weight among the pockets. In the unlikely event that you have to jettison weights for an emergency ascent, you will not want to ditch all weight as that will encourage an ascent at an unsafe rate. To ditch weights, simply grasp the “D” rings at the flaps of the pockets and pull forward. The large mouth of the exposed pocket should allow an easy evacuation of the weight. However, if needed, a slight tug on the pouches will tumble them out. Each pocket will hold up to five lbs. It is recommended that you use the soft pelletized weight bags for comfort and deck protection. Keep an assortment of smaller weights: twos and fours, along with some fives. You will quickly establish your requirement.)

The belt tab for connecting to the hose will be at the center of the belt in the back.



The Regulator(s)

Your regulators have several features for comfort and safety. At the top of the housing is a switch marked, “pre dive” and “dive”. Because of the low pressures at which hookah regulators work, they are very sensitive to pressure. At the surface, where there is very little ambient pressure the regs will have a tendency to free-flow. This is not serious as you are not losing the limited amount of scuba tank air. At worst, it might be inconvenient when trying to communicate with others when at the surface of the water. Simply put the switch in the “pre dive” position. It is not necessary to return it to the “dive” position unless you will be pushing depth limits. The reg is, also, adjustable. The knob is located on the left side of the body. Under some conditions, such as very strenuous activity, if the breathing seems a bit labored, you can reach up and open the knob by turning counter-clockwise to “soften” the spring tension.



Turning it clockwise will make the regulator breath a little harder at the surface. If you were to open this in a counter clockwise direction it will breath much easier. When close to the surface the regulator may free flow (allowing air to flow without you breathing) slightly in the open position.

Just turn the adjusting knob until it stops. When you descend deeper you may choose to open your regulator more to allow for easier breathing. You will not cause any problems if you forget to turn it at the surface or if you leave it closed when you are down deeper. It will always breath. Adjusting the knob will only make it more personalized for your own air demands. Leave it in the open position when stored.

STEP-6

HOSE HANDLING

The most effective way to keep kinks out of hoses is in the way they are handled. Even with the swivels, the hoses are not smart enough to remain kink-free without some guidance from you. Always unreel, rather than uncoil hoses. Hold the reel perpendicular to your chest as though you were holding a bass drum and roll out the hose turning the hose coil in a 360 degree motion like a wheel.



By so doing, the hoses will be straight when you have launched the float and it travels down wind. Retrieve hoses the same way. Start a couple of turns at the regulator and secure with a small Velcro band. This will keep the regulator from unwinding and hitting you someplace sensitive. Like a-----knee, for instance.

More on retrieval later.

STEP-7

STARTING THE UNIT (For your dive)

Start exactly as indicated in STEP-2, **remembering not to start up if the system is under load. It probably will not be under load the first dive of the day, but after the first start up of the day depress the purge button on a regulator and release all pressure from the system.** The purge button is the center section of the regulator. This is to be depressed to let air escape and depressurize the system.



After warming up for about a minute, put the system under load. The Quiet Valve on the compressor should release air when you start the unit. On all systems, they are located at the compressor head in an upright position. They are called, Quiet Valves for good reason: They do not pop, or hiss when expelling unconsumed air. They are pre set and require no adjustment.

However, Air Line units put out such a volume of air that the excess air might continue escaping through the relief valve until the divers are at depth. When everything has checked out, stop the engine and release the pressure in the lines by purging the regulators. You are now ready to launch.

A NOTE ABOUT THROTTLE SPEED: The throttle lever has a fast-to-slow range. You will keep it on high. During wash-down you can throttle the engine down to about 1/3 to 1/2 engine speed.

STEP-8

BOAT LAUNCHING

Have the divers put on the hose retention harnesses. When launching from a boat, position the participants on either side of the unit, being careful not to touch the hot exhaust cage. Gently lower the unit into the water with as little angle as possible, or at least with the gas cap at the highest point. Push the unit away from the boat, rolling out the hoses like a wheel as discussed in STEP 7. When you get to the regulator hoses, snap the harnesses to the short buckle located at that junction. You will probably take the harness off and secure it to a boat rail while you deal with your personal gear or simply not attach hose to harness quite yet.

Restart the engine with a regulator purge button being held down. Push the unit away from the boat and it will go downwind without any kinks. Put on personal gear, harnesses and enter the water any way that is comfortable and safe for you.

A few words about buoyancy: With scuba, a buoyancy compensating device (BCD) has some value because the weight of the compressed air in the cylinder is being consumed making the cylinder lighter and lighter. With hookah you need only enough weight to be neutral. The same weight will suffice for the duration of the dive.

The use of a BCD is not discouraged. The Air Line offers a Horse Collar model, perfect for hookah diving. There are no bands of straps in the back as there is no tank involved. It is low profile and has a serious safety feature: With a slight amount of air it will float a traumatized diver face up as opposed to face down, or face side with a conventional scuba BCD. Because it will be connected to the air delivery hose, it can be power inflated off the compressor to assist a diver with a bag full of goodies to the surface. At the surface the float provides a stable, high-visibility pick up station, but inflating the Horse Collar will supply an additional degree of hands-free comfort.

Remember, also, that you are always linked to the surface with your air hose so you can ascend slowly and safely by going hand-over-hand up the hose to the surface. A whistle, or other signaling device attached to a tube mounting strap might come in handy to signal the boat attendant.

Back to weighting. After you are successfully in the water as a first-time user, try a few weight combinations, starting with very little, to where you are comfortably neutral in the water several feet under the surface. Perform this task **ONLY** in a controlled environment, such as hanging onto the anchor rope, or preferably, from a line off the stern. Once you have established the correct weight, you will probably stay with that amount unless you seriously change your lifestyle or start wearing exposure suits.

Your Air Line is towed with little effort by the diver. **DO NOT ATTEMPT TO TOW IT FROM A MOVING BOAT as it will flip over and ruin your dive day.** If you are planning a second dive within a short time, retrieve the unit starting with the regulators by piling the hoses on the deck reversing the launching procedure. Reach over and turn off the motor. Unload the pressure by purging the regulators. Carefully lift or slide the unit onto the deck being very careful of the hot muffler cover. Put the unit on top of the hoses so that it is immediately ready to relaunch at the next stop. Obviously time, space and personal procedures will come into play.

After your last dive for the day, enter the boat, retrieve the unit by pulling in the hoses, but leave them in the water.

Stop the engine with the On/Off switch and let it float back away.



Purge the regulators to eliminate pressure. Unsnap them from their harnesses. Retrieve the hoses in reverse order of the launching, i.e., reel in a couple of loops starting at the regs. Secure the loops at the regs so that they don't flop around. Retrieve the balance of the hoses. Unscrew them from the "Y" divider. Secure the reeled in hoses with the Velcro ties. Carefully lift the unit onto the boat. Unscrew the 60' air hoses from the divider and finish off the hose end in the velcro's coil. Leave the unit on the tube if you plan to use it later. Your particular needs will dictate this. Otherwise, unsnap it from the tube, remove the staff and put on the dust cap. Post dive maintenance will be covered later.

STEP 8A - BEACH LAUNCHING

When launching from the beach, first determine whether the surf will allow safe entry. Essentially hose handling is the same as for boat launching with the exception of protecting the regulators. **DO NOT LET REGULATORS DRAG IN THE SAND.** Secure them to the harnesses and drape them over the shoulder. Secure the second stage reg so that it cannot possibly hit the sand. A few granules can stop your dive. Preventative maintenance is still the best. Although the systems are protected against reasonable salt intrusion, they are essentially for calm water entry. Start the engine on the beach to ensure that everything is functioning properly. Stop the engine and purge the regs. Two people should guide the unit with the engine off past the surf to where it cannot be swamped or driven back to the shore. Then just reach up and give the recoil starter a pull. When coming back in turn the engine off before you get in the surf and guide it into shore. Upon return, the same care needs to be exercised to prevent swamping.

8B - USING AS A DECK MOUNT

AN IMPORTANT NOTE. The black heat transfer hose needs to be in the water for cooling hot compressor air. It is perfectly all right to have it out of the water for start up or wash down if the yellow air hoses are not attached, but prolonged running out of the water with the yellow hoses attached will cause the more delicate yellow hose to soften and burst or possibly slip off the fitting creating a potentially dangerous situation. If the provided black hose does not reach the water, extensions can be ordered in 5', 10' or custom lengths. 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 need to order a heat hose extension. You can purchase yellow hose extensions of 40', 60' or 100' to get additional range away from the boat. **When deck mounting, secure the black heat hose to a stationary object so as not to pull or put excess pressure on the fitting at the compressor head.**



SOME TIPS ON USE OF THE EQUIPMENT

It may help to remember that the air delivery from a compressor is somewhat different from a SCUBA cylinder. A fixed pressure is not descending and ascending with you. You will probably descend more slowly when breathing from a compressor. Having an almost unlimited supply of air means that you haven't had to shorten your dive for fear of wasting limited air. This also allows you the luxury of clearing air passages at leisure and letting your respiration rate becomes normalized. Ensure that your companions are breathing comfortably and continue your descent. If the current appears to be strong, you may wish to test it. The safest way is to launch as indicated and toss out a safety line. Attempt a dive against the current, but at the safety line, monitoring your progress against the position of the boat. If diving against current is difficult or impossible, swim to the safety line. Against a moderate current, monitor your respiration and exertion levels. If they become high or you anticipate having to exert unusual energy to make progress, you will need another plan. You can either move to a calmer site or secure your floating unit to the safety line. You will at least be able to work laterally. Be sure that your line is not so long as to invite the danger of a boat passing over it. Should the unit get caught in a current you still have the huge advantage of being connected to your fellow diver(s) and the high visibility float. The person you've left as a tender in the boat can pick you up without any fear of losing contact with you. NEVER DIVE WITHOUT A BOAT TENDER who can retrieve the anchor and operate the boat in a manner consistent with the care of those in the water. These considerations need to be discussed at part of your dive plan. It may also help to discuss, and be aware of, the fact that there is available air in the hose system should the engine stop running. It will be necessary to inhale harder as the compressor is not supplying pressure. You should not depend upon this however as once the small reserve is used up you are still confronted with making a safe swimming ascent. The advantage of surface supplied air is that a link is still maintained to the surface and the other diver(s) and no cumbersome gear has to be dealt with. Remembering to check fuel levels before diving will virtually eliminate the possibility of the engine stopping. **Small independent air systems are highly recommended.**



In the previous chapter we mentioned the term, “dive plan”. To fully enjoy the shared experience of Air Line diving, you need to map out a plan while still in the boat rather than rely on hand signals which might be misinterpreted. Keep reasonably together; at least be able to maintain eye contact with all the participants. Avoid frequent cross overs, although the swivels, and the initial, proper deployment of the hoses, will usually preclude problems. Although hose management is not a factor with scuba, you are more than compensating with the freedom from gear, the long operating times, the safety of the surface link and the fact that none of the divers can be isolated.

THE CLEAN UP AFTER YOUR DIVE DAY

The key to long and productive life of your Air Line is in following a maintenance schedule. Sure, you will sometimes be tired and plan to clean up later, but invest the few minutes it will take to make sure that your Air Line is ready for the next adventure. After the engine has cooled down, put the air intake staff in place. Disconnect the yellow down hoses, start up the engine and immediately start thoroughly spraying down the entire unit with fresh water with the engine running at 1/3 to half speed. Do not force water into the compressor air intake or into the engine air cleaner. 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. The cooling vent system should have been treated as in STEP 2 but it is wise to wash out this area EVERY TIME as a preventive measure. Wash the engine thoroughly including all the linkage.



To maximize the effect of the compressor wash-out, at this point, turn off the engine and force water from several angles directly into the vented cover. Turning off the motor will stop the cooling fan from turning and improve the efficiency of thoroughly rinsing the bearing/piston rod assembly. Re-start the engine and proceed with the next important step.

The dust cap on the compressor intake socket has a smaller red cap inside it, almost exactly the size of a thimble. With the engine running, pull out the air intake staff(s) and pour ONE RED CAPFULL, at a time, of water into each compressor head. (I'm not kidding) Let the engine run for 2-3 seconds and pour in another capful. Again, wait 2-3 seconds.



Do this at least 5 times, replace the staff(s) and let the engine run for at least 3-4 more minutes to ensure that the compressor has dried internally.

This light internal wash-out will not totally eliminate salt deposits, but will certainly prolong intervals between compressor rebuilds. This has been tested for many years and really works. (This is easy and very effective.)

Stop the engine and reconnect the hoses. Re start the engine and continue doing a thorough wash down of the rest of the components starting at the black heat hose fitting, down the hoses, belts and ending with the regulators. Wash the regulators by holding in the purge button and directing water into every orifice.



Continue to purge the regulators for an additional minute, or two to allow condensation to evacuate the system.

Do **NOT** go back and rewash a hot engine. Cool water on a hot engine could do serious damage.

CAUTION: THE YELLOW HOSES WILL NOT WITHSTAND COMPRESSOR HEAT FOR LONG INTERVALS. THEY WILL WEAKEN AND EITHER COME APART NOW OR POSSIBLY LATER WHEN YOU ARE DOING YOUR NEXT DIVE. THE END OF THE BLACK, HEAT HOSE IS USUALLY IN THE WATER FOR COOLING PURPOSES during a dive. Always disconnect the yellow air hoses from the black heat hose after 3-4 minutes during wash down. This will prevent heat build up and yellow hose damage. When the yellow air hoses are disconnected you can run the unit out of the water as long as you need, to accomplish your task and without putting the black heat hose in the water.

Drying off the compressor/engine can be sped up by using the black hose, with the engine running. Use your thumb on the opening to create an air jet to direct the air into the crevices of the unit to blow excess water off.



The Honda engine is equipped with a Fuel Cut-Off switch.

USE IT!



If you are not going to use the unit for the rest of the day or you are going to store it away for a length of time, it is very advantageous to turn off the fuel during the wash down and allow the carburetor to run dry. You can also remove to screw from the bottom of the carb. (10mm) float bowl and let the fuel drain. This is a good way to get any sediment or water out of the carb.

This will slow down a build-up of varnish deposits. If you have turned off the fuel you will note that as the carburetor empties, the engine will rev up and down as it is getting more air than fuel. You can maximize the fuel consumption by working the choke back and forth to where you can hear it burning the fuel uniformly. The engine will eventually run dry and stop. THE HONDA MANUAL CONTAINS SPECIFIC INFORMATION ABOUT PROPER STORAGE.

This next step is a must if you want to keep your unit good looking, in good working order and keep the effects of saltwater corrosion from slowly taking its toll on your life support unit.

When the engine is thoroughly dry, lightly spray a Marine Lubricant/Protectant into the engine pull cord housing to further protect this area. You should do this without fail.



Lightly coat all the linkage parts and hardware of the motor. Work all switches back and forth to ensure penetration. Lightly spray any metal surface that you think needs extra protection, but don't be messy. It is also a very good idea to refill the gas tank, WITH A STABILIZED FUEL (Sea-Foam, Sta-Bil etc.) . This will reduce the chance of condensation building up in the tank. **Do not spray protectant into the vented compressor housing. We do not want any of the protectant to possibly work its way into the cylinder where your air is compressed.**

For storage, wrap the heat hose around the unit after being sure that the muffler is cool.

Put the soft goods neatly into your gear bag and you're ready to go next time.



PERIODIC MAINTENANCE

Much of the maintenance will be determined by wind and sea conditions and adherence to the simple post dive procedures. Change engine crank case oil according to the recommendations found in the engine section. Break-in instructions for the Honda will also be found in that section.

The particle filters in the female garden hose ends of the yellow air hoses need to be inspected regularly. They are washable and are removed by hand.



Occasionally, lubricate the "O"-ring in the intake socket with a MINISCULE bit of food-grade, Silicone grease (available from most larger hardware stores, or from dive shops.). Do NOT use an oil-based lube. The "O"-ring does not need to be removed. The merest coating will keep it fresh and prevent it from "rolling" when you install the staff. If it does, it could be sucked into the compressor head and cause, if not damage, at least, inconvenience. Ensure that the "O"-ring is in place every time you put the staff in. If it is not present it is probably in the compressor head, having been pushed down from not having the "O"-ring properly lubricated. Do not start the engine. It is not a serious thing for compressor life, but will not supply enough air volume for comfortable breathing, which could be dangerous. Removal of the "O"-ring from the compressor valves is covered in the Troubleshooting section.

Occasionally other compressor maintenance may be needed. Salt intrusion and long running times might require that you perform a full rebuild of the compressor head. Take heart; not difficult and not expensive. Service Kit Part # 1905 is all that's needed for the R260-3 and a 1915-20 for the R360XL. . Even so, each compressor head can be rebuilt in just several minutes and with common hand tools. A simple, single page diagram is included with the kit.

If you require compressor service, either warranty or post-warranty, or encounter a problem you can't easily deal with, call our service department at 352-307-1001. Explain which model you own and that it requires service. You will either be directed to your nearest service center, or given advice for self-maintenance.

For Honda service, contact a local authorized, small engine dealer. You will need the Honda model (On the face of the pull-cord housing) and serial numbers found near the engine base on the side of the On/Off switch. The locations will probably be convenient as there are thousands of centers worldwide. For all other service, compressor and Honda parts, contact The Air Line at (352) 307-1001.

Your seasonal requirements and frequency of usage will dictate your maintenance schedule. Remember, salt perseveres. A little regular effort will ensure that your investment doesn't let you down when you need it most.

NEGLECT IS NOT WARRANTIED.

The simple secret of long and productive life is following the daily and periodic procedures. Log usage time and follow a maintenance plan. Don't ever hesitate to call if you need advise, it is never an imposition.

A typical maintenance schedule will go some thing like this:

DAILY PRE-DIVE	DAILY POST-DIVE	PERIODIC
Inspect liquid reservoirs.	Thorough wash down.	Follow Honda schedule
Inspect hose fittings.	Reapply protectant.	Re-build compressor head
Inspect particle filters.	Store in a clean environment.	* 300 – 500 hour *
Top off fuel.	Lubricate intake socket O-	
Inspect intake socket O-ring.	ring with tiny bit of Silicone	
Inspect compressor intake filter.	grease. Repeat: "tiny".	

Conditions are so varied in diving as to make an exact compressor re-build schedule impossible. Your awareness and experience with the equipment will be the best yardstick in this determination.

Abused valve plate. A Warranty Caveat.



Too tired to take a few minutes after the dive day to take care of the gear?

The valve plate assembly shown here was actually removed from a compressor sent back to us for “warranty” service. Guess what?

In a way I’m glad I have this to show you what eventually **will** happen when you get back dockside after “carefree” excursions into the briny and simply put the gear away hoping that, “For what I paid, this shouldn’t happen.”

A three word summation: Read the Owner’s Manual!!

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.

ANOTHER POSSIBLE CAUSE: Failure to follow safe diving practices.

SOLUTION: Immediately seek medical attention. Secure retraining before attempting to dive again.

CONDITION: Insufficient air.

POSSIBLE CAUSE: Air leak in hose system, engine RPM too low.

SOLUTION: Check the washer associated with the particle filter. Check that hoses are properly connected. Check for a hose burn or other accidental hose damage , check engine throttle.

ANOTHER POSSIBLE CAUSE: Salt or dirt, or socket “O”-ring stuck in valve in compressor.

SOLUTION: Clean valve plate(s) or replace according to Service Kit #1905 or #1915-20. If you have noted that the “O”-ring is missing from the intake air socket first, remove the compressor head. It should be clearly evident that the “O”-ring is holding open a valve. Remove it by hand or with tweezers. Inspect for other potential problem while open. If all else looks all right, then you should be back in business. If the problem persists, call our service dept. at 352-307-1001.

ANOTHER POSSIBLE CAUSE: Dirt, salt or some corrosive matter in pressure release valve.

SOLUTION: The valve is not easily cleaned. Replace it. A spare valve in a small zip lock bag is a good thing to keep on hand.

ANOTHER POSSIBLE CAUSE: Debris in particle filter.

SOLUTION: Clean it or replace it. Spares are included in the ZipLok.

ANOTHER POSSIBLE CAUSE: Quiet relief valve shows part of an “O”-ring coming out.

SOLUTION: This is not fixable. The valve needs to be replaced. Do NOT remove the valve and plug up the hole. You WILL damage the compressor that way. Unconsumed air must be regulated with an overpressure valve.

CONDITION: System "frozen". Inability to pull engine starter rope.

POSSIBLE CAUSE: Corrosion in engine or compressor. To determine which, remove the compressor head and pull off the piston cylinder. If you can “rock” the piston rod top up and down then the problem will be the engine. If the piston is rigid, the problem will be with the compressor bearings..

SOLUTION: Take to an authorized Honda small-engine service center. For the compressor call our service center at 352-307-1001. If it requires factory service we will refer you to your closest Thomas facility.

ANOTHER POSSIBLE CAUSE: System under a load.

SOLUTION: bleed off air pressure on the system by purging a regulator.

CONDITION: Any strange noises or erratic behavior in system.

POSSIBLE CAUSE: Bearing problem.

SOLUTION: Ascertain if the noise is in the engine or compressor as above. Take it to the appropriate service center.

CONDITION: Engine will not start, or only runs if the choke is manipulated.

CAUSE: Carburetor jets are clogging up.

SOLUTION: See the specific instructions which follows.

Carburetor Cleaning 4 and 5.5 HP engines

This will be easier for you to take the unit out of the tub (only 4 x 7/16 bolts). This can be done in the tub if you choose to do so, (for the brave only) because this doesn't let you see much and then some of this procedure is by feel only.

Tools: 10 mm open end wrench, a long straight tip screwdriver (1/4 inch tip width and 3-4 inches long if you leave the unit in the tub), a very, very small piece of wire (anywhere from 2" long or more), a pair of needle nose pliers, one can of carburetor spray.

1. Turn off the fuel valve before proceeding. On the underside will be two bowls. You will only be dealing with the larger, gold one. It has two screws in it. The bottom one is what holds it to the carb.

Place a rag under the bowl because some fuel will be in it and this will catch the small amount of run off. Remove the very bottom screw and pull the bowl straight down. Leave the screw that is slightly off to the side alone. This is only a fuel drain.



2. You will now notice a white plastic float that moves up and down. This controls the fuel flow into the bowl. Be gentle with this and do not use any force to remove this float. There is a small metal pin that slides left to right. Slide this pin out and let the float drop down into your hand. Notice that there is a small pointed black tip on the float and notice the small hole that this came out of. Use a pair of needle nose pliers to hold onto the pin.

Put these items where you will not lose them or damage them while you finish.



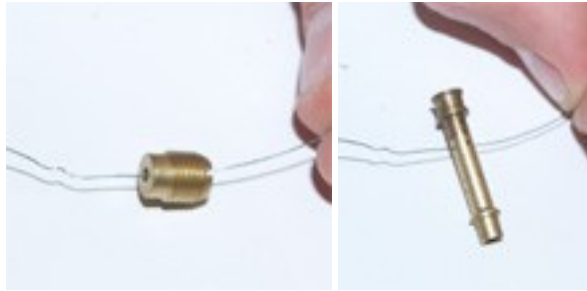
3. When you removed the bowl, the screw came out of a metal tube. The main jet is screwed up inside of this tube. Now you will need a $\frac{1}{4}$ " wide straight or slotted screwdriver. Make sure your screwdriver is as wide as the hole in tube. (In other words make the tip of the screwdriver as wide as you can. If you use too small a tip screwdriver you could mess up the main jet's slot that the screwdriver goes into and then you will have to drill and use an easy out to remove the main jet.) Use your small screwdriver and slide this up into the metal tube and turn it until you feel the tip of the screwdriver slip into the slot on top of the main jet. If your engine is out of the tub you can tilt the engine and see the main jet up inside the tube. Now unscrew the main jet counter clockwise.

After it breaks lose just unscrew it all the way out. You should have in your hand a small short jet about $\frac{3}{8}$ " long and a long skinny tube which is the fuel nozzle about an inch long. If the long jet does not fall out tap the metal tube gently to make it fall out and /or squirt some of your carb. cleaner up in the tube to get it to loosen up. This one is not screwed in. Also look and see which end falls out first so you can put it back in the right way. (The end with the bulge faces down.)



4. Now you should have two small brass pieces in your hand. They will have some very small holes. You will need to use a very small piece of wire to open these holes. Work the wire through every orifice, back and forth. Don't forget the holes in the little $\frac{3}{8}$ " jet. Carb cleaner by itself will not remove these old fuel deposits. This is the problem with your engine. Although by looking at it, it may not appear so, the tiny

holes are partially plugged from old dried fuel. **Absolutely do not use a drill bit. Do not enlarge these holes or you will be buying new jets.** Enlarging these holes will affect the way your engine runs. Now take some spray carb cleaner and flush the jets out and then spray carb cleaner up and into all crevices in the carb. Spray it good and everywhere, you can't hurt anything. Spray it up into the orifice where the white float's black tip came out. Flush the entire carb really well.



5. You are almost finished. We just have to put it back together. Put the small end of the long skinny brass jet back up into the metal tube (bulged end facing down) followed by the shorter main jet. Screw the main jet back up inside the metal tube and just snug it down. Do not try to over tighten. Now take the white plastic float and hold it up so the black tip goes back up into its own hole. Now slide the metal pin back in place. This does not take any force. It should just slide into place. Now move the float gently up and down to see that the white float moves freely.

6. Now just replace the gold colored float bowl and the center screw. You are finito. Looks like you did a good job, too. Bet you didn't know you were an engine mechanic.

Now for the final test. Let's start the engine. Remove the air intake dust cap or caps. Lay the black heat hose out and remove anything on the end of the black heat hose. Place the engine start switch to the on position. Turn on the fuel valve. Set the choke to the on position (to the right). Put the throttle to about half speed.

O.K. this is it. Pull it over. It should start after two to four pulls. Remember we drained the fuel so give it an extra pull or two so the fuel has a chance to get into the carb. Once it starts put the choke at about the half way position for a few moments then you can turn it off completely.

GOOD JOB!

If for some reason you still have a problem call us at (352) 307-1001.

Now remember when you put this unit away each day turn off the fuel. If you are going to use it again the next day it is not necessary to drain the carb. If you are not going to use the unit again for a week or more drain the carb. during wash down. Shut the fuel valve off while the engine is running and you are doing the rinsing and let the carb. run dry. The engine will stop when the fuel in the float bowl is gone. You can also remove the 10 mm screw on the side of the gold float colored bowl and drain it fast and all at once. (Not the screw directly on the bottom) Use a rag here to catch the small amount of fuel that will run out.

Note:

Use of a fuel stabilizer when your unit is being stored will definitely help. Don't just put the stabilizer in the fuel tank. Use it full-time by putting it into your gas CAN every time you fill it up. That way you won't have to remember to add it to the tank, and full time use will have a flushing effect every time the engine is run.

Now go have some more fun!

Carburetor Cleaning 3 HP engine

For the float model R260-3, this will be easier for you to take the unit out of the tub (only 4 x 7/16 bolts). This can be done in the tub if you choose to do so, (for the brave only) because this doesn't let you see much and then some of this procedure is by feel only.

Tools: 10 mm open end wrench, a long straight tip screwdriver (1/4 inch tip width and 3-4 inches long if you leave the unit in the tub), a very, very small piece of wire (anywhere from 2" long or more), a pair of needle nose pliers, one can of spray carburetor cleaner.

1. Turn off the fuel valve before proceeding. It is located to the left of the pull-cord housing.

To access the carb it is necessary to remove the air cleaner. Very easy. Just undo the two large screw holding on the cover, peel off the paper air cleaner and, with a 5/16 socket, remove the back plate, **which also supports the carburetor**. There is a gasket here so be sure to retain it. At the bottom of the plate will be a short tube that connects to a black rubber hose. Pull the tube out of the hose. Disconnect the clear plastic tube from the retainer on the plate as well. On the bottom of the float bowl will be a 10 mm screw.

Place a rag under this float bowl to catch the small amount of fuel that will be remaining in the bowl. Remove the very bottom screw and pull the bowl straight down. Leave the screw that is slightly off to the side alone. This is only a fuel drain.



2. You will now notice a white plastic float that moves up and down. This controls the fuel flow into the bowl. Be gentle with this and do not use any force to remove this float. There is a small metal pin that slides left to right. Slide this pin out and let the float drop down into your hand. Notice that there is a small pointed black tip on the float and notice the small hole that this came out of. Use a pair of needle nose pliers to hold onto the pin. Please put these items where you will not lose them or damage them while you finish.

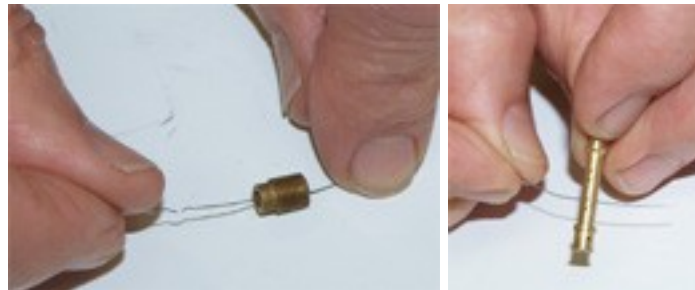


3. The float screw came out of the metal tube that is hanging straight down from the carb. The main jet is screwed up inside of this tube. Now you will need a 1/4" wide straight or slotted screwdriver. Make sure your screwdriver is as wide as the hole in tube. (In other words make the tip of the screwdriver as wide as you can. If you use too small a tip screwdriver you could mess up the main jet's slot that the screwdriver goes into and then you will have to drill and use an easy out to remove the main jet.) Use your small screwdriver and slide this up into the metal tube and turn it until you feel the tip of the screwdriver slip into the slot on top of the main jet. If your engine is out of the tub you can tilt the engine and see the main jet up inside the tube. Now unscrew the main jet counter clockwise.



After it breaks lose just unscrew it all the way out. You should have in your hand a small short jet about 3/8" long and a long skinny tube which is the fuel nozzle about an inch long. If the long jet does not fall out tap the metal tube gently to make it fall out and /or squirt some of your carb. cleaner up in the tube to get it to loosen up. This one is not screwed in. Also look and see which end falls out first so you can put it back in the right way. (The end with the bulge faces down.)

4. Now you should have two small brass pieces in your hand. They will have some very small holes. You will need to use a very small piece of wire to open these holes. Carb. cleaner by itself will not remove these old fuel deposits. This is the problem with your engine. Although by looking at it, it may not appear so, the tiny holes are partially plugged from old dried fuel. **Absolutely do not use a drill bit. Do not enlarge these holes or you will be buying new jets.** Enlarging these holes will affect the way your engine runs. Now take some spray carb. cleaner and flush the jets out and then spray carb. cleaner in all crevices in the carb. Spray it good and everywhere, you can't hurt anything. Spray it up into the orifice where the white float's black tip came out. Flush the entire carb. really well.



5. Not much more to do. We just have to put it back together (Actually, YOU have to put it back together, I'm just looking over your shoulder). Put the small end of the long skinny brass jet back up into the metal tube (bulged end facing down) followed by the shorter main jet. Screw the main jet back up inside the metal tube and snug it down. Do not try to over tighten. Now take the white plastic float and hold it up so the black tip goes back up into its own hole. Now slide the metal pin back in place. This does not take any force. It should just slide into place. Now move the float gently up and down to see that the white float moves freely.

6. Now just replace the gold colored float bowl and the center screw. Now replace the back plate (don't forget the gasket or the hoses), paper air cleaner and cover. "Whew!" You are now a quasi-qualified, Honda mechanic.

Now for the final test. Let's start the engine. Remove the air intake dust cap. Lay the black heat hose out and remove the black, plastic dust cover on the end of the black heat hose (if you haven't already lost it). Place the engine start switch to the on position. Turn on the fuel valve. Set the choke to the on position (to the right). Put the throttle to about half speed.

O.K. this is it. Pull it over. It should start after two to four pulls. Remember we drained the fuel so give it an extra pull or two so the fuel has a chance to get into the carb. Once it starts put the choke at about the half way position for a few moments then you can turn it off completely.

GOOD JOB!

If for some reason you still have a problem (or to congratulate us) call us at (352) 307-1001.

Now remember when you put this unit away each day turn off the fuel. If you are going to use it again the next day it is not necessary to drain the carb. If you are not going to use the unit again for a week or more drain the carb. Shut the fuel valve off while the engine is running and are doing the rinsing and let the carb. run dry. The engine will stop when it can no longer pull fuel from the tank.

Note****

Use of a fuel stabilizer when your unit is being stored will definitely help. Don't just put the stabilizer in the fuel tank. Use it full-time by putting it into your gas CAN every time you fill it up. That way you won't have to remember to add it to the tank, and full time use will have a flushing effect every time the engine is run.

Now go have some more fun!

The Air Line
4346 SE 99th St
Ocala Fl, 34460
877.203.3235

Detachable-Weight
Towing Harness
Pocket

Product description

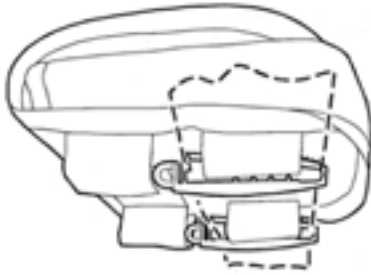


The clipper pocket can be used as a weight pocket (up to five pounds), a spare pocket, or a small utility pocket. It can mount in a variety of positions, using its durable clips to a 80c waist strap or any other 2.0-inch (50 mm) webbing waist belt. The pocket has a secure hook-and-loop closure with a D-ring pull-tab for easy opening.

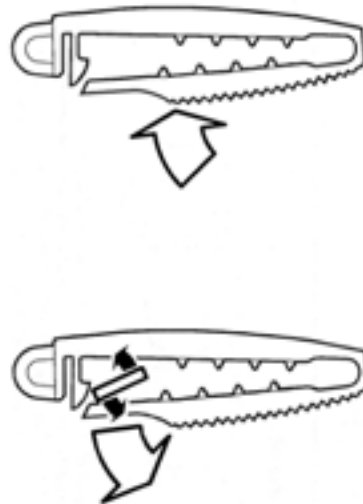
Attaching the Clipper pocket

You can attach the Clipper pocket to any 2-inch (50 mm) webbing in any of four different positions.

To mount the pocket with the flap facing down, insert the webbing strap through the plastic clips as shown below. To mount the pocket with the flap facing up, turn the pocket over and move the mounting clips to the opposite set of loops.



To lock the pocket in place, squeeze the clips shut. To open the clips, insert a flat-bladed screwdriver into the dip and twist as shown in the diagram below.



Locking clip

Unlocking clip with screwdriver

To mount the pocket sideways, slip the webbing through the slots on the back of the pocket as shown below.



EMERGENCY MAINTENANCE PROCEDURE

- A. In the unlikely event that you accidentally submerge your unit, act quickly and the situation is tenable. Get it on board or ashore. Remove and clean the spark plug. Pull the start rope repeatedly and continually until all excess water has been expelled from the cylinder. Pour or spray a water displacing oil into the cylinder. Marvel Mystery Oil is recommended but WD-40 or CRC will do. Pull the start rope several more times.
- B. Drain oil and gas completely, using whatever means are available. Replace with fresh fluids. Remove carb. float bowl and turn fuel valve on and flush carb. and fuel lines with the fresh fuel which will remove any water.
- C. Replace the spark plug.
- A. Remove the air intake cover on the engine. If there is a paper element, discard it but replace it as soon as possible. Remove sponge or foam filter if there is one. Set it aside.
- B. Detach the air intake staff from the compressor. Start the engine and with the engine running, Use your red fresh water rinse cap located in your black dust cap rinse out the compressor head. DO NOT pour a heavy stream into the compressor head. Do this several times (the more times; the more effective). Let your unit run with the black heat hose laying on the ground for at least 45 min. to one hour. Stop and restart periodically over next few hours to ensure that all parts are working and moving.
- C. Remove the compressor head as soon as possible. Inspect and replace parts as needed. You may not need to do anything here. Just inspect and make sure nothing was damaged. A #1905 Or a 1915-20 Service Kit is all you should need if you have a problem. Otherwise call our Service Manager at (352) 307-1001 advise. The engine can be taken to any authorized Honda repair station.
- D. If the engine is equipped with a sponge air cleaner, the element needs to be cleaned before reinstalling. Wash with gasoline using a kneading action. Let dry. Add several drops of oil and replace.

AT NO TIME SHOULD OIL BE PUT INTO THE COMPRESSOR as this will introduce a toxic and hazardous substance into the air breathing system. It is sometimes mistakenly believed that food grade, vegetable or synthetic oils are not harmful. OIL IS OIL and will cause eventual suffocation or permanent lung damage.

A SPECIAL WORD ABOUT SAFETY!!

NEVER, EVER INDUCE GASOLINE INTO THE ENGINE IN ANY WAY OTHER THAN THE WAY IT IS DESIGNED. That is through the normal gas tank feed system. Pouring gas from an open container while, or when trying to start an uncooperative engine that has been partially dismantled is dangerous and presents a serious burn threat. Take the equipment to a professional, authorized Honda repair facility.

Airline Travel

Unfortunately, you will probably not be allowed to transport your Air Line as luggage on a commercial flight. Any appliance that has ever had fuel in it is disallowed. With a few simple steps, however, it can be transported as freight. Call the Air Line for more info at 1-352-307-1001

Air Quality

Bad memories linger. Once upon a time a major outboard motor company produced a hookah system that was removed from the market due to some questionable air. Welcome to the tort era.

Your AirLine is, indeed, a piece of life support equipment and, as such, meets very strict air quality standards. All of our units were originally tested in Phoenix, Az. by an independent laboratory. They meet, or exceed, the Compressed Gas Association specifications for grade "E" air quality as stated in CGA G-7.1. The rating is included in this manual.

Now go enjoy your dive.

No, wait---I forgot something.

Get a pen and fill in the balance of this information before you start having too much fun and forget it, like I almost did.

Air Line Model number: _____ Invoice number: _____

Model number of Honda engine: _____ (Found on face-plate of pull-cord housing)

Serial number: _____ (Found at base of engine, to right of ON/OFF switch)

Equipment use Waiver

In signing below I affirm that I am competent in the use of underwater breathing apparatuses and have had adequate training in their use. I further affirm that I understand the precautions which must be taken with their use and, if I am not sure of any aspect of the potential hazards of breathing compressed gas underwater, I will seek proper training or re-training before attempting to use this, or any, life-supporting equipment. At no time will I allow untrained people to use this equipment and I fully understand that this equipment is never to be used beyond no-decompression limits.

By so signing I release The Air Line by J. Sink from any liability caused by my affirming false information, or by the use or misuse of the equipment, including unauthorized alterations. The Air Line by J. Sink has exposed me to the benefits of an independent back-up air supply such as Spare Air, which I acknowledge to be prominently displayed in its literature. This signed document will be a part of my permanent record and I understand that it must be returned to "The Air Line by J. Sink" at the time of my purchase and that no warranty will be activated without it being on file.

Sign: _____ Date: _____

Please sign and PRINT OUT NAME(underneath) then date.

ONE (1) YEAR LIMITED WARRANTY

The Air Line by J. Sink, Inc., surface-supplied air breathing system is warranted to you, the original purchaser, for a period of I year from the date of original retail purchase, to be free from defects in material or workmanship. If during the specified warranty period you believe the purchased product or any part thereof, has such a defect, you must return the product or part during such period with proof of purchase and at your cost to the nearest authorized service center for replacement or repair of the defective part.

For **compressor service**, contact our Service Department at (352) 307-1001. Specify which Air Line model you have. You will be referred to your nearest dealer. For **Honda service**, locate your nearest **authorized** small engine dealer in the yellow pages. If unable to locate one call American Honda Customer Service in Duluth, GA. The number is (404) 497-6400. Be prepared with the engine's model and serial numbers, not The Air Line's model and serial numbers. You will find this information at the base of the engine on the side of the On/Off switch.

For all other service, contact The Air Line at (352) 307-1001

If the product or part is found to have been defective in material or workmanship, it will be repaired or replaced (at service center's discretion) free of charge, and returned to the purchaser, freight paid by purchaser.

This warranty shall not apply to any system or part which, in the service center's judgment, has been subject to misuse, negligence or accident, or which, in the case of electric powered compressors, has been operated from a low or wrong power supply. Negligence on all models will mean failure to carefully follow operating and maintenance procedures as specified in the Owner's manual. Further, this warranty will not apply to compressors that have been oiled internally, which will also constitute a dangerous health hazard. No implied warranties are in effect and the manufacturer disclaims any implications with respect to the product and its parts.

The remedy provided in this limited warranty for a defective product is purchaser's sole and exclusive remedy, subject to your state law. Further this warranty gives you specific legal rights and you may have other rights which vary from state to state.

The Air Line by J. Sink understands that use of its equipment might be seasonal, but the one year warranty period from date of original purchase will be adhered to in the interest of comprehensible record keeping.

The Air Line by J. Sink
P.O.Box 190
Summerfield, FL 34492
Corporate and sales offices: 352/307-1001
e-mail < airlinebyj@aol.com >

We'll see you on the bottom !



The Air Line

ENGINE POWER

9/11/02

The Air Line Co.
Tucson, AZ

Re: Honda Engine Approval for Diving Float Application.

<u>Engine Model #</u>	<u>Thomas Compressor Model #</u>	<u>The Air Line Model #</u>
G100K2QA2	TG-250C0-36	AL-R260
GX12OK1QX2	TG-402C0-36	AL-C360
GX12OK1QX2	TG400CO-36	AL-R26OXL

The Application Review of the Honda engine in your product is completed and has been approved for warranty. The approval paperwork is on file at Engine Power, Inc. as well as American Honda Motor, Co.

Application Approval means that American Honda has reviewed the expected use of this engine, contingent on the usage conditions as presented by the manufacturer of the equipment. Warranty will be provided under the conditions of the standard published warranty. Application Approval does not imply or guarantee warranty, beyond the conditions of the standard warranty. (See attached)

Some Honda Engine service centers may be somewhat skeptical about extending Honda warranty in this type of application. You can be assured that extensive testing was performed and that all requirements of the application approval process have been executed and completed. Although Honda has reviewed and approved the engine installation for warranty purposes, it is important to remember that application approval is not an endorsement of a manufacturers product.

Best Regards,

Mike Hale
Application Specialist-EPI

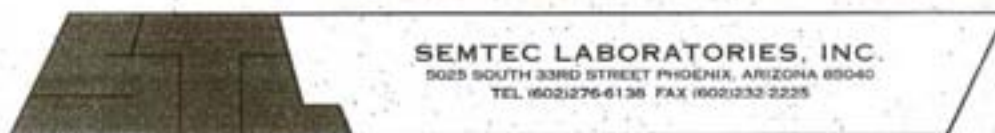
January 25, 2007

Mr. Joe Sink
The Air Line by J. Sink, Inc.
4340A S.E. 95th Street
Ocala, FL 34480

Dear Joe,

In follow up to our conversation earlier this week, please find the following.

As you know Thomas is the worlds leading OEM compressor manufacturer in the world. As a result, Thomas has a very broad array of products with many available



ANALYSIS RESULTS FOR GRADE "E" AIR

STL#18646

SITE OF TEST	AL-R260
CLIENT	The Air Line

INTRODUCTION:

On 05 May 1999, SEMTEC personnel performed an analysis on a portable air compression system being used to supply breathing air for under water use. The analysis is performed to ensure that the air being delivered conforms to Grade "E" air specifications outlined by the Compressed Gas Association, Inc.

RESULTS:

The standards below are specified by the Compressed Gas Association, Inc., under CGA, G-7.1 for Grade "E" Air.

ANALYTE	SPECIFICATION	RESULT
%O ₂ in Air	19.5- 23.5%	21.0
Carbon Monoxide (CO)	<10 ppm	<1
Carbon Dioxide (CO ₂)	<1000 ppm	375
Condensed oils	<5 mg/m ³	<1
Total Hydrocarbons	< 25 ppm	< 0.1
Water Vapor	Varies with intended use	10,700 ppm
Particles	No visible particles	Pass
Odor	No pronounced odor	Pass

CONCLUSIONS:

The above identified portable compressed air system **PASSES** the specifications required by the Compressed Gas Association, Inc. as stated in CGA G-7.1 for Grade "E" air.

Note: This certification applies only to the air being delivered by the compression system. This document does not include certification of any alarm systems (i.e. carbon monoxide, high temperature or low pressure) or calibration levels of the aforementioned alarm systems.

10 May 1999

Rick Hall
Technical Analyst
SEMTEC Laboratories, Inc.

THE AIR LINE
9531 E. LOCINAE Ln TUCSON, AZ
FINAL TESTING RESULTS FOR GRADE E AIR

STL 22180

INTRODUCTION:

SEMTEC Laboratories performed a series of tests on an air compressor designed to directly feed compressed ambient air to divers. The model was **AL-R 260 XL**. The unit was brought to SEMTEC and operated in the parking lot of SEMTEC during the testing. The air was sampled at the distal end of a 60-foot delivery hose. Grade E compressed air is specified as intended for self-contained underwater breathing apparatus (SCUBA).

Grade "E" air is defined by the Compressed Gas Association (CGA) in the publication G-7.1-1997 "Commodity Specification for Air."

RESULTS:

The following table provides the test results and the specifications as given by CGA in document G-7.1-1997:

ANALYTE	SPECIFICATION	TEST RESULT
% Oxygen	20-22%	21.1%
Carbon Monoxide (CO)	<10 ppm	<1 ppm
Carbon Dioxide (CO2)	<1000 ppm	350 ±25 ppm
Oil (condensed droplets)	<5 mg/m ³	<5 mg/m ³
Water Vapor	not specified	near saturation
Odor	none	good
Total Hydrocarbons (as CH4)	<25 ppm	<1 ppm

CONCLUSIONS:

The above-identified air compression system **PASSED** all specifications for Grade E air.

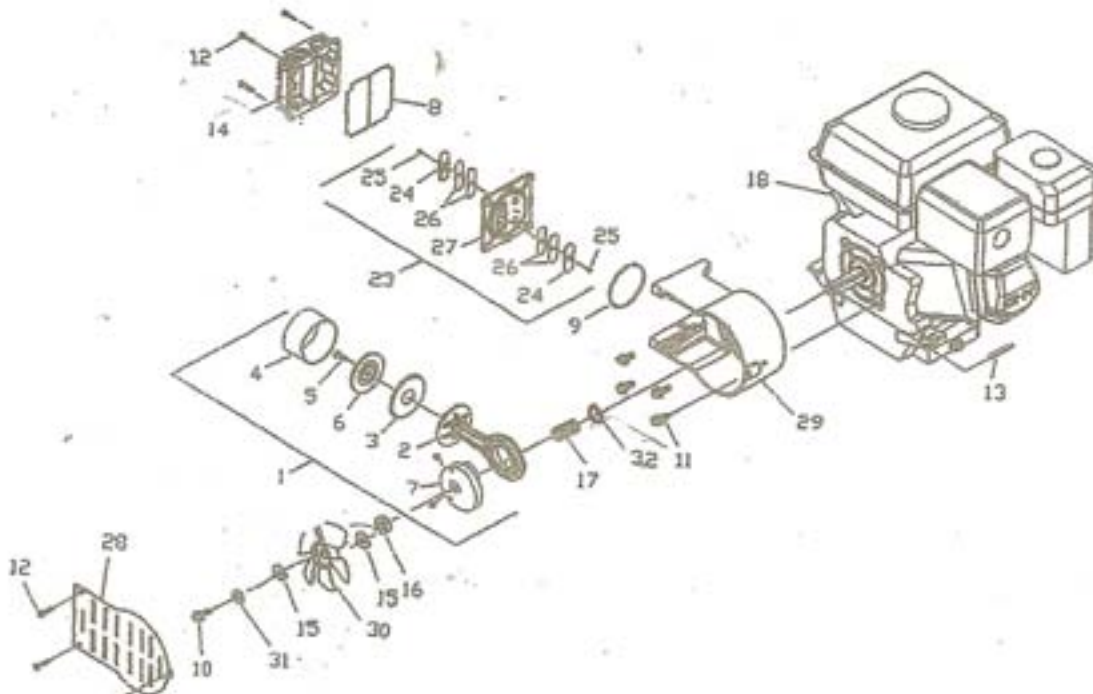
Note: This certification applied only to the air being delivered by the compression system. This document does not include certification of any alarm systems (e.g. carbon monoxide, high temperature or low pressure) or calibration levels of the aforementioned alarm systems.


7/15/02

Ed Holdsworth
General Mgr
SEMTEC Laboratories, Inc.

PARTS LIST AND DRAWING MODEL R-260-3

Item #	Part No.	Comp Part	Description	Item #	Qty	Part No.	Comp Part	Description	Qty
1	60848		Con Rod Ecc & Bearing Assy	15	1	628274		Washer - Connect Rod to Shaft	2
2	607922		Con Rod Ecc & Bearing	16	1	628869		Spacer - Connect Rod to Shaft	1
3	624377		Piston Cup	17	1	627247		Spring - Connect Rod to Shaft	1
4	618119		Piston Sleeve	18	1	GX100		Enging - 3HP Honda	1
5	625198		Screw - Retainer	23	1	602566		Valve Plate Assembly	1
6	626730		Retainer	24	1		617312	Valve Restraint	2
7	667129		Eccentric Assembly	25	1		625857	Screw - Valve Flapper	2
8	623624		O-Ring Gasket - Head	26	1		662054	Valve Flapper	4
9	623638		O-Ring - Sleeve	27	1		662053-540	Valve Plate	1
10	625092		Screw - Connecting Rod to Shaft	28	1	664715		Front Cover	1
11	625847		Screw - Housing to Engine	29	4	669159		Housing	1
12	625546		Screw - Head & Front Cover	30	7	638656		Fan	1
13	626275		Key	31	1	629035		Lockwasher	1
14	669067-500		Head	32	1	626370		Washer - Spring	1

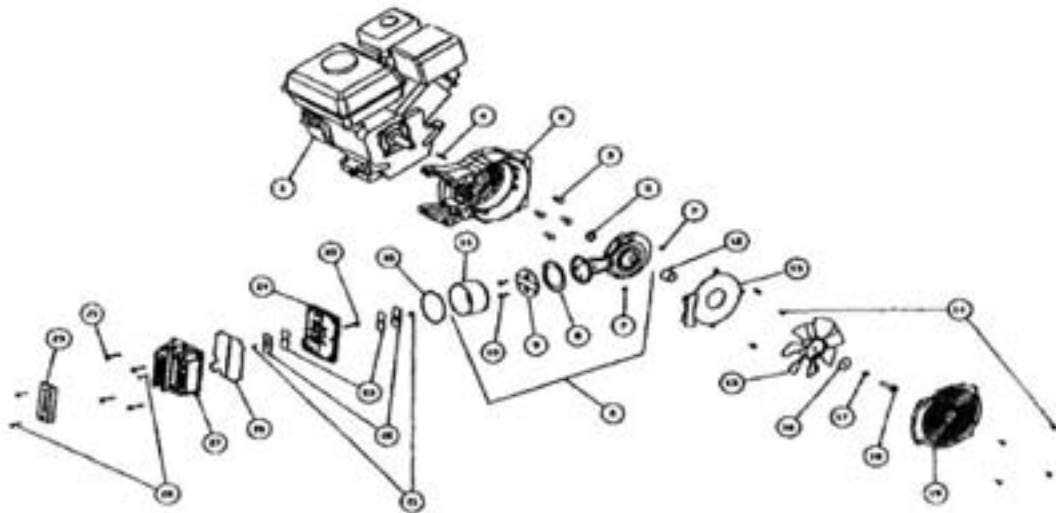


THE AIRLINE R260-3 FUEL DRIVEN DIVE COMPRESSOR

PARTS AND DRAWING FOR THE AIRLINE R-260XL FUEL DRIVEN DIVE COMPRESSOR

Key	Part No.	Description	Qty
1	643316	Engine - Honda 4.0 HP	1
2	669254	Housing - Black Acrylic Coat	1
3	625294	Screw 5/16" - 24 x .75" Hex Hd	4
4	626275	Key Square - 3/16" x 1"	1
5	627247	Spring	1
6	666500	Ecc. Brg. Rod & Sleeve Assy	1
7	625008	Set Screw 5/16" - 18 Hex	2
8	636183	Platen Cup	1
9	626398	Cup Retainer - Acrylic Coat	1
10	625382	Screw 1/4" - 20 x .88" Flt Hd SS	2
11	618193	Cylinder Sleeve	1
12	626387	Spacer	1
13	662404	Deflector - Cover	1
14	625383	Screw #10-24 x .5" Pan SS	7
15	636745	Fan - 7 Blade 6.0" CCW	1

Key	Part No.	Description	Qty
16	626299	Washer SS	1
17	626288	Lockwasher SS	1
18	626199	Screw 5/16" - 24 x .75" Hex Wash SS	1
19	662455	Front Cover	1
20	623075	O-ring	1
21	625384	Screw 10-32 x .28 T-30 Flt Hd SS	2
22	617397	Valve Restraint - Acrylic Coat	2
23	662563	Flapper Valve	2
24	662628	Valve Plate - Acrylic Coat	1
25	625385	Screw 1/4" - 20 x 1.25" Hex Wash SS	5
26	623082	O-ring Gasket	1
27	669253	Head Acrylic Coat	1
28	625189	Screw #10-24 x 7/8" Trt Hd SS	3
29	664141	Cover - Filter	1



FSM 0136 01/02

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MAXIMIZING PERFORMANCE OF YOUR NEW DIVING MACHINE.

**Relevant to the XL series, also to older, Model C360 in shallow water and/or for two divers.
Applies to R260-3 when used by only one person, or two at 30 feet or less.**

Fact 1- Air Line compressors supply a very large volume of air. Fact 2- In most situations of shallow water for two and three divers, the available air cannot possibly be consumed even by, shall we say---- generously sized individuals.

To get the most productivity of your machine and have it work at its peak for the situation, we have some helpful hints in this regard.

The XL series. For anything less than three at a depth of about 40 feet, do the following: After you've done all the pre-dive set-up and ensured that the system is working properly according to the procedures found in the Owner's Manual (YES, read the darned thing. It's simple, but important), restart the engine and then put a full load on the system. The way to do this is to release the purge buttons (where the logo is) on the front of the regulators. The overpressure valve on the compressor will be evacuating all of the air.

Push the engine throttle lever slowly back until the unit is idling roughly. Then bump it up a little at a time until it is running smoothly, but not at full throttle. This will ensure that the engine will not stall from an "overload". Mechanically what is happening is that the engine is now running slower, actually producing less air (that's a good thing in this instance). Less air means that the engine does not have as much air to evacuate which results in cooler running, with the added benefit of longer operating times on a tank of gas (Now THAT'S a good thing).

If, during the descent, the breathing seems labored, slow down the activity a bit until it is comfortable. However, during whatever the planned activity is, if it seems labored, that will be an indication that the throttle speed should be increased slightly. With a little experience you will be setting the throttle at the proper speed as second nature.

The R260-3 and RD2100-3. For one diver, or two to 30 feet or less, follow the throttling down procedures as shown above.

NOTE: Thomas Industries, the people who make Air Line compressors, state that idling down is unnecessary. True, but I'm Polish and don't want to sell you maintenance parts prematurely. And besides, instinct tells me that cooler running makes a happier compressor.

So be assured that leaving the engine at full throttle will not harm the compressor, or affect warranty. It might reduce the service interval a bit, but intervals are generally in the hundreds of hours in any event, and rebuilds take but 15 minutes.

Hint number two: (I really like this one 'cause I invented it) The optional **Dial-a-Dive** accomplishes, essentially, the same thing but at the compressor (See it on the web Accessories page). It doesn't slow down the engine, but evacuates air at a lower pressure thus accomplishing the same thing. The Dial-a-Dive has two different pressure settings: one for deeper, multiple divers and one for the shallower. It's as easy as twisting a lever. Put it into the low-pressure mode for most dives, and higher-pressure mode for the rest. It's possible you may never need the higher pressure, but nice to know switching is this easy.