

The Air Line



Owner's Manual for 12V160-3

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The Air Line
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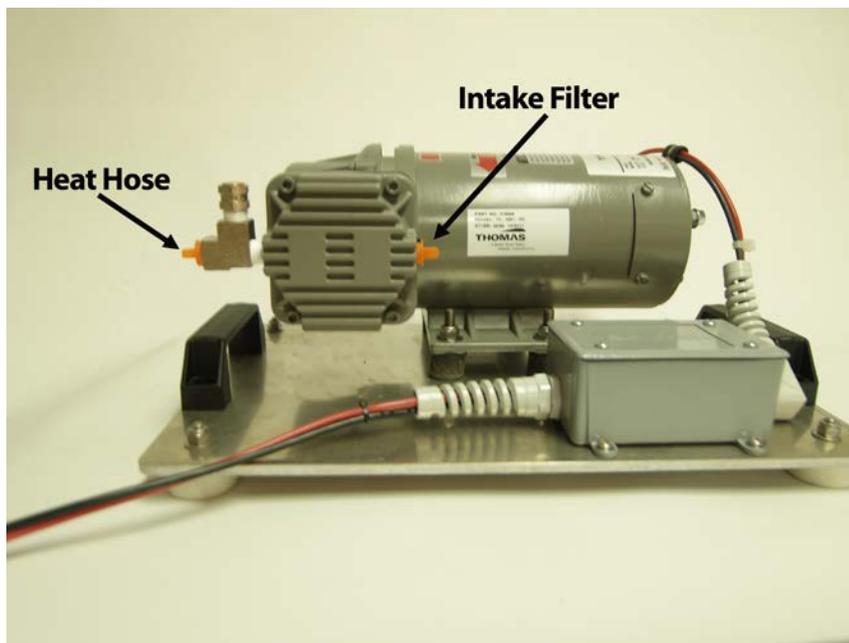
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AIR LINE MODEL 12V160-3

12 volt DC powered electric compressor system.

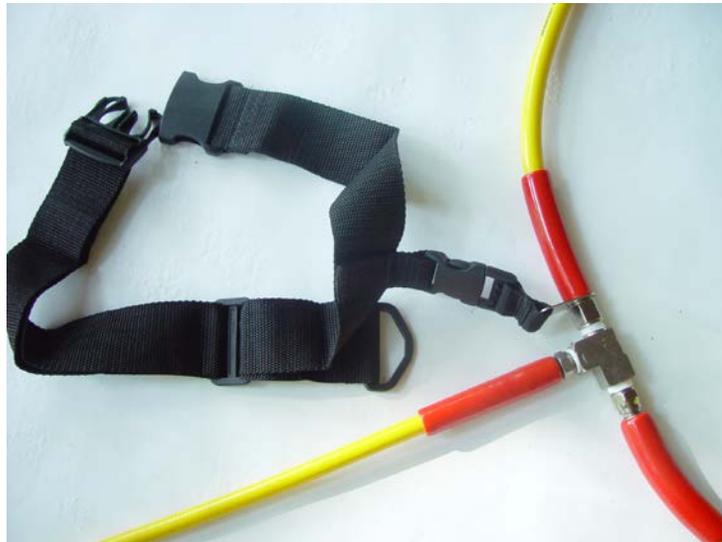
Your new system will be shipped in one of three ways; unmounted for custom installation, on an optional aluminum plate, or in an optional red storage case. The compressor will have 8 foot battery leads with alligator clips and switch, a black heat-disbursal hose, as well as an overpressure valve. The black heat-disbursal hose and the black intake particle filter will be unattached for shipping. You will need to screw these into the compressor head ports where indicated in the photo below. Use needle nose pliers to remove the orange plugs in the ports. Carefully thread the black intake filter and the black heat-disbursal hose into their respective ports. Do not over tighten. Screw the filter in hand tight. Do the same with the black heat-disbursal hose, then use a wrench on the hose fitting to tighten a bit further to snug it.



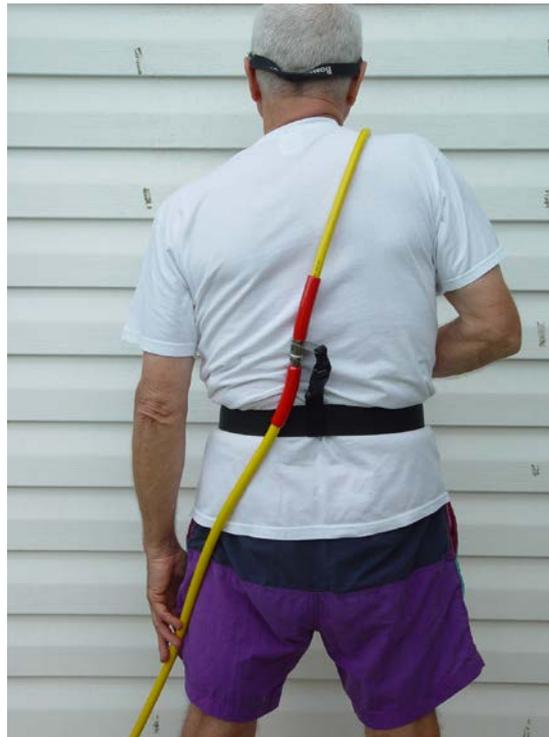
The basic set up will be for one diver with a 60 foot hose/regulator set. A Ziploc bag will be included which will contain two hose washer/filter screens. Insert a screen into the exposed hose end with the conical filter facing up. Additionally, you will have received a tow belt and a weight belt. The tow belt allows the hose to be connected to the body at the rear waist area. The weight belt allows you to weight yourself to make yourself neutrally buoyant.

You will find the tow belt has a female snap-in receptor sewn on the belt. The regulator whip hose has a tab that has a male insertor that connects to the tow belt receptor. To tighten the tow belt, pull on the D-ring after the belt has been snapped together around the waist. To loosen, simply feed some of the belt back through the belt slide next to the D-ring. The position of this belt slide can also be moved to make large adjustments in the overall length for varying sized individuals.

If you acquired an additional diver package, it will include a hose splitter, another tow belt and weight belt, and filters.



Tow belt attached to the diver hose. (*Photo also shows the optional power inflator hose below the tow belt.*)



Tow belt and diver hose on diver.

Before attempting to use this system, it is essential that you understand that it is a piece of LIFE-SUPPORT equipment and must be approached with same caution you would with scuba. 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.

Perhaps the most important thing in your training to remember is that you NEVER, EVER HOLD YOUR BREATH WHILE ASCENDING. Even, and especially, at shallow depths, air in the lungs will expand as you ascend. You must, therefore always breathe in and out, or, in an out of air situation, never hold your breath; it needs a path of escape. When breathing compressed air, holding your breath while ascending will cause serious injury. You will remember that if you open up your throat and allow a small, continuous stream of bubbles to escape during an emergency ascent, the expanding air has a place to evacuate. You should never ascend faster than the air bubbles from your exhalation. One of the many benefits of hookah is that the air hose is always handy to assist in a measured one foot per second ascent. (Don't forget, never hold your breath)

Know your maximum depth capability for making a free ascent in an out of air situation. At any depth you should carry an independent back up system, such as Spare Air, which is available through us or any of the better dive stores.

Your Air Line is designed for unobstructed, shallow water use. Even so, you must be familiar with no-decompression limits, because given the long run time of the system, it is conceivable that, at certain depths, it may be possible to exceed the no decompression time limits for that depth. You must always stay within no decompression time limits for your maximum dive depth. The safest rule-of-thumb is to pick out a site with second ATM (33') or less.

SETTING UP

The motor and compressor are essentially sealed, however it is best not to leave the unit in a place where it will be subjected to wet, salty air.

Serious 12V dive machines, of which this is one of very few, require serious power because of the amp draw. This would have been discussed with you at time of purchase, but it is worth repeating. Our, in-house, testing was done on a fully charged Group 31, Trojan SC200 deep cycle, marine battery. Make sure that your battery is rated for about 200 minutes at 25 AMPS continuous. The ratings can be deceptive as the 12V160 draws 26+ AMPS. The SC200 continually ran for 1 hour 15 minutes before the battery dropped to an acceptable 11 volts and still provided an acceptable volume of air. Taking it lower than 11 volts could create a dangerous situation of insufficient air and, if done with regularity, will reduce the cycle life of the some batteries. Two batteries connected in parallel will double the run time.

Prior to diving, ensure that the battery is FULLY charged. A volt meter will show 12 volts even if the battery is not at full charge. The charger should register at or near zero on a 2 AMP trickle charge. The safest course of action is to trickle charge overnight before reusing.

If you are using the boat's battery as the power source, running the engine will maintain the voltage. Another option would be to dive for shorter durations and then run the engine to recharge.

IMPORTANT: THE COMPRESSOR MUST BE PLACED WHERE THE SURROUNDING AIR IS CONTAMINANT FREE! Care must be taken if you are using a generator as the power source, or if any other engine is running while the compressor is in use. The obvious concern with running an engine is the possibility of air contamination. Special attention must be given to placement of the compressor in relation to any engine exhaust, wind direction and current direction of a moored boat. Never place the compressor in an area where exhaust fumes (*or any other air contaminant*) could accumulate. If needed, a remote air intake hose can be ordered inexpensively to raise the intake air away from contaminants.

Weighting for Neutral Buoyancy

Practice buoyancy control off the boat, but safely connected to it with a trailing rope. Put on the weight belt. Establishing your weight requirement is very simple. Start with just a few pounds of weight. Hanging from the anchor line or a stern line, take a breath and hold it. The water line should be at about eye level. Exhale and hold it. You should start sinking **slowly**. If you don't sink at all when you exhale, then you need more weight. If you start sinking too fast when you exhale, you have too much weight. Add or subtract weights in small increments until the above process is complete. Ideally, if weighted properly you will neither sink nor float up when breathing normally. You should be able to maintain a particular depth without effort while breathing normally. Once establishing your proper weighting, unless you make some lifestyle changes or change an exposure suit, you will consistently be ready with the same weight. You might want to mark individual weights or remember what is required for each diver if you let others use your weight belt.

You should equalize the weight among the pockets, so you are balanced. In the unlikely event that you have to jettison weights for an emergency ascent, you can either discard the entire belt by releasing the weight belt buckle, or remove individual weights from the pockets. The latter is preferable, if time and conditions permit, because one can discard just enough weight to make oneself positively buoyant, and thus maintain better control of one's ascent rate. Each pocket in the weight belt will hold up to five pounds (*up to 3-4 lbs. soft weights, and up to 5 lbs solid weights*). Keep an assortment of smaller weights; twos, threes, and fours, along with some fives. You will quickly establish your requirement.

Attaching and Deploying Hoses

Before starting, first hand tighten the air hose with the washer/filter onto the black hose. A tool is not necessary. For two divers, you will screw the hose divider that came with the additional diver package onto the black hose first. Put the tow belt around your waist and adjust to your girth. Position the short receptor toward the center of your back

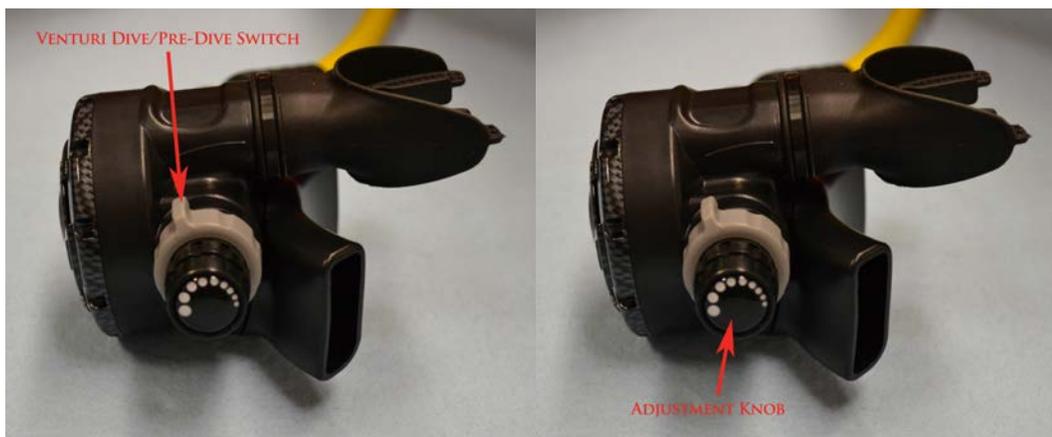
Unreel the hose coils as though you were holding a bass drum in front of you. Just throwing coils out indiscriminately might cause a hose kink when you are in the water and stretch out the hose. The swivel fittings on the ends of the long down hose section will help, but proper deployment is

the trick for kink-free performance. Snap the connector, located between the down hose and whip hose, onto the belt receptor and position the regulator hose over your right shoulder.

(NOTE: Should the regulator come out of your mouth while submerged, you should; lean to your right side so the regulator whip hose hangs to that side, and then reach back with your right hand to the tow belt hose connector to quickly find the regulator whip hose. Run the regulator whip hose through your hand as you pull it in a sweeping motion toward your face. You should end up with the regulator in your hand. Use the purge button or forcefully exhale to clear the regulator after placing it back in your mouth. We recommend that you practice this maneuver near the surface until it can be done quickly and easily.)

The Regulator(s)

Your regulators have several features for comfort and safety. On the side of the housing is a gray venturi switch behind the adjustment knob. 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 may 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. If free flow occurs, simply put the gray venturi switch in the “Pre-Dive” position by pushing it forward, as seen in the photos. When ready to dive, you can rotate the gray venturi switch towards the rear to place it in the “Dive” position.



Venturi Switch

Adjustment Knob

The regulator is also adjustable using the adjustment knob. 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 reduce the spring tension, making it easier to draw a breath, but can increase the tendency to free flow. Turning the adjustment knob clockwise increases spring tension, making it a little harder to draw a breath, and reduces the tendency to free flow. You may want to try various settings of this knob during your first few dives to find the right position for you. The best practice is to set the regulator so that it breathes easily, just short of free flowing.

Starting the Compressor



Purge Button

The compressor has an on/off toggle switch located on the electronics box. The On/Off positions are clearly marked. Ensure that the compressor is in the OFF position. Attach the alligator clips, positive to positive, and negative to negative. Don't start the compressor under load. Depress and hold the regulator purge button when starting, so there is no back pressure. Start the compressor and then release the purge. In a few seconds, there should be a noticeable volume of air escaping from the compressor's overpressure valve. Ensure that the compressor is situated where it cannot be pulled into the water, lashing it to something if it is not mounted. Now go get wet. Have someone monitor the system while you are diving. That person will be looking for anomalies such as slowing of the compressor. Predetermined signals can then be instigated such as a hose tug.

When finished, shut off the compressor and release built up line pressure by depressing the regulator purge button. Rinse the hose and regulator in fresh water. Flush fresh water through all of the orifices on the regulator to thoroughly rinse out the internal areas of the regulator. Let everything dry before storing in a cool, dry place.

Compressor Service and Maintenance

The compressor does not require regular service or maintenance. You should get many hundreds of hours of operation, before you will eventually need a compressor head rebuild. You will know when it is time for a head rebuild, because you will begin to notice that you are getting less air than you are accustomed to receiving. You can send the compressor to us for servicing. We may also be able to locate a suitable service location near you. Please contact The Air Line for service needs. We will either help locate a service center, or provide an RA number to return the unit to us for servicing. Below, you will find a compressor parts diagram for reference.

Call or write us if you require other info. The contact information is on the cover page.



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