Lye (NaOH) Tank

Instruction Manual

Model: LYE-085

Important Safeguards

To reduce the risk of personal injury or property damage, when using electrical appliances basic safety precautions should always be followed, including the following:

- Read all instructions.
- Make sure nothing is turned on or plugged in before the until water is completely covering the element.
- The outside of the tank will get HOT, use caution and keep children and pets away.
- Unplug from outlet when not in use and before cleaning. Allow cooling before putting on or taking off parts, and before cleaning.
- SAVE THESE INSTRUCTIONS

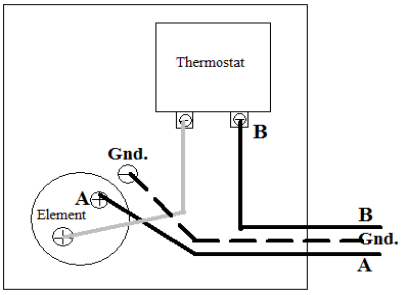
Please read all instructions before attempting to set up or use your Tank.

Before using your tank... Scrub it out with soap and water. Put enough water in it to check for leaks. First, heat your tank with just water.

- The handle for the lid is temporarily fastened to the underside of the lid. Unscrew the two nuts and put the handle on the other side of the lid.
    - You should have these items attached or included with your tank. Ball Valve - Ball Valve Plug (installed) - Heater/Thermostat - Lid & Handle
- The Heater Element and Thermostat have been tested for continuity prior to being packed.
- Do not use an Extension Cord or Power Strip.
- Consider hiring an Electrician or Plumber to install your tank.

DO NOT PLUG IN THE HEATER UNTIL WATER IS COVERING THE ELEMENT. WATER MUST ALWAYS COVER THE ELEMENT!
WHEN MIXING A NEW BATCH OF SOLUTION ALWAYS UNPLUG THE TANK. LYE BUILDING UP AROUND YOUR ELEMENT BEFORE MIXING WILL BURN IT OUT.

Heater/Thermostat Installation:



- Your Heater/Thermostat is supplied with a cord and plug.
    - 1500 Watt Heaters are 120 volts and use a standard 3-prong plug.
    - 3000 Watt, Heaters are 220 -240 volt and use an R-30, 30 amp plug.
- If wiring direct to an outlet or electrical panel hire an Electrician.

International Customers; you will need to use the proper style plug for your country. If you are not sure what is required, consult an electrician.

1. Insert the Heater Tube into the 1 ¼" (32mm) Coupling. There is only one hole this will fit in. Note: the Coupling is a female fitting that is at the bottom of the tank.
2. Screw the Heater/Thermostat into the Coupling. The electrical box is substantially attached to the Heater Tube
3. Turn the Heater/Thermostat until it is tight and the cord is not at the bottom of the box. See Picture Below.
4. Installing the Capillary Bulb and Tube:
    - **Carefully!**, uncoil about, **18" (46cm)** of the Capillary Tube. Do not kink or make any sharp bends in it.
    - Locate the Capillary Tube Hole, which is just left of the Heater Tube & Coupling.
    - Slip the Capillary Bulb into the hole and run it all the way in.
    - Using Sticky Tape, pack this around the Capillary Tube and push it in and around the tube to seal and hold the tube in place.
    - Carefully coil up the excess Capillary Tube and secure it with a piece of tape or wire tie to the box or the pipe coupling behind the box.

Be very careful when handling the assembly do not bend or kink the Capillary Tube.

After placing your Capillary Bulb into the inlet, you should attach your coil of Capillary Tubing to the box or to the Pipe Coupling behind the box.

Insert Capillary Bulb into small hole by Heater Element.

Capillary Bulb goes in this tube next to Heater Tube
Pictured inside of tank

Installing the Ball Valve:

1. Screw the pipe nipple into the 3/4" (20mm) coupling, welded to the tank. The pipe nipple is about 3" (76mm) long, with threads on each end with Teflon Tape applied.
2. Using a pipe wrench, screw the Outlet Nipple, into the Outlet Coupling.
3. Follow the rest of the instructions below.
4. Screw the Ball Valve onto the outlet nipple. Using hand pressure only.
5. The handle should be up as shown below.

Using Your NaOH Tank:

Calculating NaOH to Water Amounts:

- The NaOH Tank is very easy to use. Basically, you just put the desired amount of water in and then add the correct amount of caustic soda and mix.
- The percentage of NaOH (Lye) to water is up to you.

Mixing the Solution:

1. Before you do anything, **< Suit Up > Safety First**.
    - Put on a Respirator that uses cartridges and filters, specifically for Organic/Acid Vapors.
    - Use Nitrile Gloves with long cuffs.
    - Put on a long-sleeve Lab Coat or shirt.
    - Finally put on a full coverage Face Shield.
2. **Unplug Your Tank. Do not just turn the thermostat down. That does not turn it completely off.**
3. Weigh in your water. This can be done with Tank Scales under the tank or by measuring in, bucket by bucket.

4. Now start adding the NaOH. It is easiest to add a little, stir, add more, stir, add more...until complete.
5. Use a paddle to stir. When stirring, try not to bang on the heater element too much. Run parallel to the heater element and it will sweep the crystals around in that area and dissolve them.
6. It will not take much stirring if using a good grade of NaOH. Food grade will dissolve the quickest.
7. Put the lid on and let this sit for about a half-hour, then stir again.
    a. The lid may seem loose but this is so there will be no chance of damage to your Bulb Seal that surrounds the rim of the tank. This seal works by compression and makes a perfect seal to contain the vapors.
8. Repeat Step 6, again.
9. Now you can leave it to sit and cool. With this size tank, it will take a long time.

Very important note; keep the lid on at all times when not stirring. If you do not, your water will evaporate and your mixture will end up being lye heavy.

Tips on Using the NaOH Tank:

- Mix at the end of the day so it will cool and be ready the next day.
- You can place the tank on a Timer. Very handy when your mixture has already cooled. The Timer, for example, can turn the tank on at 5 AM and be ready at 8 AM for the workday.
- **Always** re-stir the tank after it cools and just before using.
- To make sure everything is mixed completely, take a small container, open the Ball Valve and empty about two quarts out. Pour back into the tank and stir.
- Take notes on the cooling times of your NaOH Tank.
- Check the actual temperature of your lye/water solution using a thermometer against the dial reading. Adjust your dial to the setting it needs to be to match your desired temperature of the lye/water solution. Then mark that location on the dial. Dial Indicators may vary a few degrees, depending upon the manufacturer of the dial.

Cautions in using your Tank

- The Tanks walls can get very hot, be careful.
- Keep the cord out of the way of traffic and do not put where someone might trip over it.
- Keep children away from the tank and electrical components.
- Do not drop water on the control box.
- If you have to move the tank, let it cool and drain it completely.
- **Do not use an Extension Cord or Power Strip.**
- *Safety first!*

Troubleshooting your Tank, if it is not heating:
First, check the following.

- Is the unit plugged in?
- Are the cord and plug in good shape, not cut or damaged?
- Has the Breaker been tripped or a Fuse blown?
- Have you checked to see if something else that you know works, will work in the outlet?

Let's check the Heater/Thermostat box.

Call an Electrician or Plumber, if you do not know what you are doing. Your tank was tested prior to shipment, if it is not heating, then it is likely that it is not installed correctly or something in the circuit providing the power is not correct.

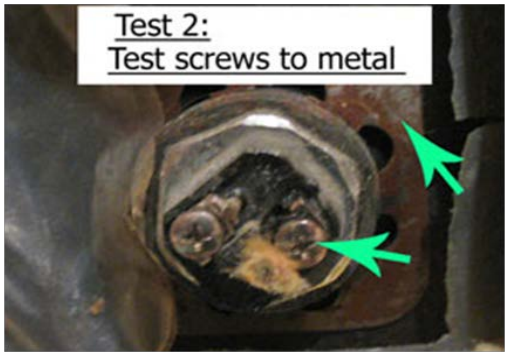
BEFORE TESTING YOUR ELEMENT, UNPLUG YOUR HEATER/THERMOSTAT!

Tools needed:

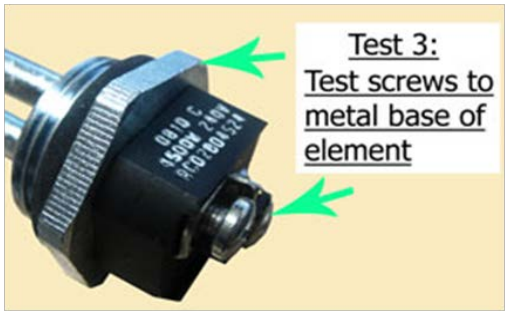
- Philips screwdriver
- Volt / Ohm meter (Multitester**)**

- Leave the unit on the tank for the first part of the troubleshooting.
- Carefully remove the cover and be very careful with the Capillary Tube. If it gets a Kink you will need a new Thermostat.
- See below on how to remove the cover.
- Before doing anything else, check for loose wires or loose connections.
    - If you have a loose connection or wire
        - Tighten up the terminal or replace the wire to the terminal and tighten the connection.
        - Replace the cover
        - Check your water
        - Plug in the tank and see if it works. Go to the next step if this doesn't work.
- **BEFORE GOING TO NEXT STEP, UNPLUG THE HEATER/THERMOSTAT!**
- Disconnect the wires to the heater element.

Test 1:
Test across both element screws. Resistance should read close to the following Ohms.
 1500 watt element, (115V), about 8 to 10 Ohms
 3000 watt element (220-240V), about 16 to 19 Ohms.
 4500 watt element (220-240V), about 11 to 13 Ohms.



Test 2:
Test each screw to the bare metal part of the water heater. Test both screws.
If multimeter reads any Ohms at all, or if needle moves even tiny bit, then the element is shorted, and needs replacement.



Test 3:
For this test, you must remove the Element from the Heater/Thermostat.
Test each screw to the metal base of the element.
If the multimeter reads any Ohms at all, or if needle moves even tiny bit, then the element is shorted and needs replacement.