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Safety & Operating Information

PLEASE READ THIS INFORMATION BEFORE USING YOUR LI’L BIT FOAM GENERATOR

WARNING!
Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious personal injury.

SAVE THESE INSTRUCTIONS!

Work Area Safety
• Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.

• Do not operate electrical motor driven equipment in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Electrical motor driven equipment could create sparks which may ignite the dust or fumes.

• Keep bystanders, children, and visitors away while operating a electrical motor driven equipment. Distractions can cause you to lose control.

Electrical Safety
• Grounded tools must be plugged into an outlet, properly installed and grounded in accordance with all codes and ordinances. Never remove the grounding prong or modify the plug in any way. Do not use any adapter plugs. Check with UL approved tester or a qualified electrician if you are in doubt as to whether the outlet is properly grounded. If the tool should electrically malfunction or break down, grounding provides a low resistance path to carry electricity away from user.

• Avoid body contact with grounded surfaces such as metal objects. There is an increased risk of electrical shock if your body is grounded.

• Don't expose electrical motor driven equipment to rain or wet conditions. Water entering a electrical motor driven equipment will increase the risk of electrical shock.

• Do not abuse the cord. Never use the cord to carry the tools or pull the plug from an outlet. Keep cord away from heat, oil, sharp edges or moving parts. Replace damaged cords immediately. Damaged cords increase the risk of electrical shock.

• When operating a electrical motor driven equipment outside, use an outdoor extension cord marked "W-A" or "W". These cords are rated for outdoor use and reduce the risk of electrical shock.

• Use only three-wire extension cords which have three-prong grounding plugs and three-pole receptacles which accept the tool's plug. Use of other extension cords will not ground the tool and increase the risk of electrical shock.
• **Use proper extension cords.** Insufficient conductor size will cause excessive voltage drop and loss of power.

• **Before using, determine that a Ground Fault Circuit Interrupter (GFCI) is provided with the power cord to insure it is operating correctly.** GFCI reduces the risk of electric shock. Machine must have properly functioning Ground Fault Circuit Interrupter on the power cord.

• **Extension cords are not recommended unless they are plugged into a Ground Fault Circuit Interrupter (GFCI) found in circuit boxes or outlet receptacles.** The GFCI on the machine power cord will not prevent electrical shock from the extension cords.

• **Keep all electric connections dry and off the ground. Do not touch plugs or tools with wet hands.** Reduces the risk of electrical shock.

### Personal Safety

• **Stay alert, watch what you are doing and use common sense when operating a electrical motor driven equipment. Do not use this equipment while tired or under the influence of drugs, alcohol, or medications.** A moment of inattention while operating electrical motor driven equipment may result in serious personal injury.

• **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.

• **Avoid accidental starting. Be sure switch is OFF before plugging in.** Plugging in while the switch or controls are on or plugging equipment in that has the switch **ON** invites accidents.

• **Remove adjusting keys or switches before turning the tool ON.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.

• **Do not over-reach. Keep proper footing and balance at all times.** Proper footing and balance enables better control of the tool in unexpected situations.

• **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.

1. To ensure optimum safe performance and long life from your foam generator be sure to follow these simply instructions.

2. Wear the Appropriate Safety Clothing – ESPECIALLY – safety glasses when operating ANY equipment that utilizes compressed air.

3. Operate the foam generator at specified pressures. This is important; pressures other than those specified will alter the calibration of the generator and will have an affect on the foam and the foam output. Higher pressures than recommended could cause a rupture of the system.

3. Your control of density, yield and strength of placed cellular concrete can be no better than your control of ingredients. For consistent results, be consistent with all your measurements.(Complete mix design, dilution ratio, yield, and strength information is available to our customers)
4. The Working Solution container should be kept free from rust, oil, dirt and other contaminants.

5. The Foam Generator shall be thoroughly washed and flushed out with water at the end of the day or at the end of each use. For severe cases due to previous negligence of maintenance warm washout water may be used.

6. Foam Generator must be washed out when changing types of Liquid Foam Concentrates. Be sure to avoid protein foams with sludge in them, or foaming agents with any type of sediment. Look in the bottom of your liquid foam concentrate container. If it contains settlement as is common with some protein foams, the liquid foam concentrate should be filtered before using.

7. Make sure the foam is thoroughly blended with slurry before placing concrete. We recommend the ASTM C-796 standard of two (2) minutes of mixing after the foam is added. (Ask us about approved/recommended mixers)

8. Keep a check on wet density. This is your control for maintaining yield and for providing the specified density and compressive strength. (Call for assistance or mix design help.)

9. Avoid using excessive amounts of oils or release agents in your forms. Alcohol based materials will kill foam.

10. Do not pump foam concrete with a pump that creates a vacuum head on the intake line such as a piston pump. Ask us about approved recommended pumps.

11. Do not add admixtures to the mix without first testing them on the foam. (See foam compatibility acid test)

12. Do not add admixtures or additives to the foaming solution prior to dilution; this will void the warranty and may produce uncontrollable results.

**NOTE:**

We take the operation of any equipment seriously. Your Viper™ foam generator is a well designed piece of equipment; however with any equipment that is using electrical current, or compressed air, and has moving parts and substances, safety recommendations as well as good common sense much be used to insure your safety and the safety of those around you in the work area. Please read and understand all the above information before operating your equipment.
CALIBRATION DATA ON YOUR FOAM GENERATOR

CALIBRATION DATA

MODEL: Viper Li’L Bit Foam Generator

SERIAL NO:

Delivery Rates:

Foam Density: [    ] pounds per cubic foot.
This is your foam target density. (How much it should weigh.)

Foam Expansion:
There are [   ] cubic feet of air in the foam for each cubic foot of working solution used.

Foam Rate:
This is the amount of foam per cubic feet per minute delivered from the discharge hose.

Working Solution Rate of Use:

This unit was calibrated with and performs best using VariMax® HS:320 at a rate of one part VariMax® HS:320 to 320 parts of water.

VariMax® HS:320 is the liquid foam concentrate of the future, and available today.
**VariMax® Liquid Foam Concentrate Information:**

**Variable Dilution Ratios**
VariMax® HS:320 is not a pre-diluted 1:40 product. You choose dilutions for High Performance, Super Economical or Ultra High Performance. Or anywhere in between. The dilution of the concentrate is your choice not the manufacturer of the foaming agent. ASTM C-796 tests indicate that VariMax® HS:320 produces optimum results diluted at 1:320, yet the choice is up to you.

**Neutral PH**
The chemistry of VariMax® HS:320 is non-aggressive and a human friendly neutral Ph. It will not chap your hands or cause problems with surfaces that it touches.

**Guaranteed Not to Decompose or Rot in the container**
VariMax® does not decompose (rot) in an opened container. The shelf life of VariMax® HS:320 is measured in years not in days or weeks.

**No Foul Odor**
Gone forever are the complaints by workers and bystanders about the rotten stench involved with making cellular concrete. VariMax® has a very attractive strawberry color, texture and a most pleasant smell. There is no need for an antimicrobial additive to VariMax® - bacteria can’t grow in it, and it doesn’t rot, ever.

**Very Cost Effective Concentrate**
At the High Performance dilution ratio of 1:320 VariMax® HS:320 saves the cellular contractor over 50% of the typical cost of major foaming agents. Those savings skyrocket to 85% at 1:320 on shipping, handling and storage.

**Very Cost Effective System**
At the High Performance dilution ratio of 1:320 VariMax® HS:320 saves the cellular contractor in many other ways.

**Reduced Freight – up to 87% savings in freight**

**Reduced Handling - up to 87% savings in material handling**

**Reduced Storage and Drayage - up to 87% savings in material storage**

Your Viper™ Li’L Bit foam generator is engineered and calibrated specifically for use with VariMax® HS:320 Liquid Foam Concentrate.
INCLUDED ASSEMBLIES

FOAM GENERATOR

Your Viper™ Li’L Bit Foam Generator Assembly consists of the following components and has been factory calibrated to give the required rate and quality of foam.

1. One Viper™ Li’L Bit Foam Generator Unit.

2. Foam Discharge Hose and Grip Assembly.

3. Compressed Air On / Off Valve, with Quick Disconnect.

4. Working Solution Intake Assembly Filter and Suction Hose with Strainer.
CONCRETE MIXER

For neat cement pastes, it is desirable to use a paddle-type mixer sometimes called a mortar mixer or any type slurry mixer which will insure a thorough proper blending of cement and water. We recommend two minutes of mixing time after the paste is foamed.

AIR COMPRESSOR

An air compressor capable of delivering a minimum of 7 cubic feet per minute of free air at a gage pressure of 100 pounds per square inch is necessary. The air compressor should not throw oil or water. (Ask us about compressors, we carry a full line of air compressors).

FOAM WORKING SOLUTION TANK

It is recommended that a clean 5 gallon pail or empty drum or similar container be used to prepare the foam working solution. The foam working solution tank should be cleaned before using it and contain no residue. It should also be easy to wash or rinse out when finished. An open 5 gallon pail, or plastic waste container such as a Rubbermaid trash can works great.
ASSEMBLY OF Li’L BIT FOAM GENERATOR SYSTEM

Your Li’L Bit Foam Generating Assembly was completely assembled, tested and calibrated at our factory. To guard against damage during shipment, the unit was packed and placed in box to protect it. Only the Discharge Hose, Air Valve and Pick Up Tube Assembly was disassembled from the unit to protect it during shipping.

ASSEMBLY

Unpack the Foam Generator from its carton and follow this assembly procedure with all the components.

Place the Foam Generating Unit on a flat and level surface. Always use the unit on a flat level surface. Always use the unit on a level slightly higher than the working solution container. The pump in the Viper™ Li’L Bit is designed to pull the working solution up to the foam generator. It does not need a gravity feed. Typically the Li’L Bit can sit on a table with the working solution container on the floor. When using the Li’L Bit and a large working solution container, you can make a stable platform on top of the container (with a sheet of strong plywood etc.) if you wish.

Connect the Foam Discharge Hose and Grip Assembly to the front of the Foam Generator. Using the ¾” swivel hose fitting, hand tight then snug gently with a wrench.

Do not over tighten. If this fitting is too loose, you will see some foam seeping out during use. Tighten only until the foam doesn’t leak.

Connect the Working Solution Intake Assembly Filter and Suction Hose by screwing the strainer to the ¼” pipe nipple on the side of the Foam Generator. Note the pipe fitting swivels for ease of installation. Tighten slightly tighter than hand tight.

Mount with strainer plug facing down as in this illustration.
Connect your compressed air supply source to the ¼” ball valve on the air valve.

And attach to the Foam Generator using the Quick Disconnect fitting on the Air Valve. Be sure the Air Valve is closed.

**NOTE:** This air valve is pictured in the OPEN position and it does not have an air hose attached to it as it would in operation.

The unit is now assembled and ready for filling and operation.
Foam Generator Working Layout

Li’L Bit Foam Generator

Foam Discharge and Grip

Compressed Air ON/OFF Valve

Working Solution Intake Assembly Filter & Suction Hose

Foam

Your Air Compressor

Working Solution
1 Part VariMax
320 Parts Water
A. **FILLING**

Prepare a Foam Solution that will meet the requirement of your application. We recommend the use of VariMax® Liquid Foam Concentrate and clean potable water. Follow the manufacturer's dilution ratios. VariMax® offers a variable dilution ratio. Placing the proper amount of clean potable water into the Working Solution Container, then add the proper amount of VariMax® HS:320 and slowly stir with a clean paddle until mixed. Aggressive mixing will cause the working solution to foam in the container. Always be sure to double check your measurements because an improper Working Solution will affect your foam. The proper proportions for various volumes of premix solution are as follows:

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<th>5 Gallon Pail</th>
<th>55 Gallon Drum</th>
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<tr>
<td>1:40 Pre-Diluted Foaming Agents</td>
<td>1:40</td>
<td>3.2 liquid oz. / 95 ml</td>
<td>16 liquid oz. / 473 ml</td>
<td>176 liquid oz. / 5,205 ml.</td>
</tr>
<tr>
<td>VariMax® Liquid Foam Concentrate</td>
<td>1:80</td>
<td>1.6 liquid oz. / 47 ml</td>
<td>8 liquid oz. / 237 ml</td>
<td>88 liquid oz. / 2,602 ml.</td>
</tr>
<tr>
<td>VariMax® Liquid Foam Concentrate</td>
<td>1:160</td>
<td>.8 liquid oz. / 24 ml</td>
<td>4 liquid oz. / 118 ml</td>
<td>44 liquid oz. / 1,301 ml.</td>
</tr>
<tr>
<td>VariMax® Liquid Foam Concentrate</td>
<td>1:320</td>
<td>.4 liquid oz. / 12 ml</td>
<td>2 liquid oz. / 59 ml.</td>
<td>22 liquid oz. / 650 ml.</td>
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Where facilities provide for preparation of larger volumes of Foam solution, multiply the above proportions by the desired factor. We recommend not making more than a one day supply. The working solution has a pot life of several weeks; however, good practice dictates making a fresh supply of working solution each time you use your foam generator.

B. **OPERATION**

Ensure the Compressed Air On/Off Valve is closed in the Off Position.

Connect your air supply to the Compressed Air On/Off valve. Then turn on Your air supply on, be sure it is on, and running delivering air up to the Closed Compressed Air On/Off Valve.

Place the pick-up tube assembly into your foam solution tank. Making sure that the hose is not kinked or restricted in any way. You are now ready to make foam.

To turn your foam generator On and Off you will simply open and close the Compressed Air On/Off Valve. To ensure you have adequate air pressure we want to check the generator the first time you use it. We will do this by first opening the top of the foam generator. Next open the Compressed Air on/Off Valve, this will start the foam generator and will start producing foam. Check the regulator gauge to ensure that the pressure is between the 2 green indicators, verify this setting by looking at the pressure gauge it should read between the two indicators, this indicates that you have the proper...
amount of air coming into the unit and it will operate properly. Now close the valve once you verified the air pressure setting.

**Close the Top of the Box:** The Viper™ Li’L Bit is designed to be operated with the top closed.

**ADJUSTING FOAM QUALITY**

**A. GENERAL PROCEDURE**

Foam quality and output is governed by the following factors:

1. The Foam Solution has been properly measured and mixed according to the manufacturer’s specifications.

2. The Air Pressure coming into the unit is at a minimum of 75 psig and 7 cfm.

3. Air Pressure Regulator factory setting- set at 70 psig while generating foam.

4. The Air Metering Valve has been factory set and locked for a calibrated rate and expansion of foam at above regulator setting (refer to your calibration sheet).

When this foam Generator Equipment was calibrated, the Air Metering Valve was set for approximately 4 CFM of foam at 20 expansion and a Pressure Regulator setting of 70 psig. (Please refer to the calibration sheet)

**B. TROUBLESHOOTING:**

In the event that a malfunction should occur, check the unit as follows before making any adjustments.

Ensure that the Air Pressure should not be less than 70 psi while discharging foam. If the Air Pressure is lower, first make sure your air source is supplying you with at least 75 psi at 7 cfm. If it is at least 75 psi coming in and the regulator gauge shows less then an air pressure adjustment maybe necessary on the regulator.

Inspect and clean the Liquid Strainer by removing the nut on the strainer. You should use a small holder or vise to do this to avoid twisting the hose. Clean the screen and strainer by washing them with water. Reassemble and attach it back to the foam generator.
Be sure you are using the properly mixed working solution. Remember to double check your measurements when measuring out Liquid Foam Concentrates and water. If you are experienced at using 1:40 pre-diluted foaming agents, it will seem to you that you are not using near enough VariMax® when mixing with water at 1:320. This is normal, and yes it really works and meets all ASTM C-796 tests and specifications when mixed at 1:320.

If none of the above measures solve the problem, adjust the unit as follows:

**AIR PRESSURE REGULATOR ADJUSTMENT**

Adjust the Air Pressure to **70 psi while generating foam**. To do this you must pull back on the air regulator knob to unlock it. Turning the knob clock wise or to the right will increase the air pressure. (air pressure can only increase if the pressure coming into the unit is greater, so be sure it is) Turning the knob to the left counter clock wise will decrease the air pressure. Also the regulator gauge is equipped with two green indicators, if the gauge is running between these; you should have correct air to make good foam. Push in on the knob once the desired air pressure is reached to lock it back into position.

(Air Regulator in Locked Position)        (Air metering Valve in Un-Locked Position)

**AIR METERING VALVE ADJUSTMENT**

If this adjustment does not correct foam quality, then a slight adjustment of the Air Metering Valve may be needed. To unlock the Metering Valve pull on the red ring around the valve to bring it up against the knob. This will unlock the knob and now allow the valve to turn freely. Turning the valve clockwise will close the valve and make the foam heavier and slower. Turning the valve counter clockwise will open the valve and make the foam lighter. The knob has a white stripe on it to indicate zero and it has numbers as well on the front of the knob. Closing the valve all the way, then opening it two complete turns will get you close to good foam. Check the foam by weighing it, then make a slight adjustment to the foam by turning the valve.
We recommend turning the valve 1/10 at a time, this equates to 1 number on the knob so note the position and numbers. Once the foam is set push back on the red washer to prevent this knob from turning.

These adjustments may change the output of the nozzle. After the correct expansion has been attained, check the output of the nozzle. Foam of the proper quality should weigh between 3.0 to 3.5 pounds per cubic foot.

**MAINTENANCE OF FOAM GENERATOR EQUIPMENT**

**A. CLEANING THE FOAM GENERATOR**

When operations have ceased for the day, the Foam Generating Equipment should be cleaned in the following manner:

Use a minimum of two gallons of clean (warm if possible) water.

Place the pick up tube into the bucket of clean water.

Open the air valve, allow the clean water to run thoroughly through the entire system until just clear, clean water is running out the discharge hose.

Once the water is out of the bucket, allow the generator to run for an additional 10 seconds, this will allow air to flow through the system for final cleaning.

Wipe down the outside of the foam generator with a clean damp cloth, or wash it off if it got cement paste on it or it is dirty.

The Foam Generator is now clean and should be ready for work the next day.

Following these simple steps and taking the time to clean your machine will help in getting the most out of your Viper™ Li’L Bit foam generator. This is a few minutes well invested in the future of your equipment.

Note, small amounts of water will remain in the foam generator. It is critical that you do not allow the foam generator to freeze. If freezing conditions are going to occur the generator must be stored at room temperature above 45°F.

Failure to do so will void warranty and possibly damage the foam generator.

**B. GENERAL MAINTENANCE**

Foam Solution should not be stored for more than 48 hours. (We recommend making only what you can use in 1 day)
The air compressor should not be throwing any water or oil. If it does, we recommend draining the air tank, placing a filter to catch any contaminants. If a filter is installed it should be inspected daily. (ask us about air filters we carry a full line of compressors and accessories)

The Liquid Strainer should be inspected on a regular basis. If the screen begins to clog, performance will be lost; be sure to clean regularly.

Like all other surfaces active agents, the activity of foam liquid may be altered by contamination with other wetting or penetrating agents, oil and greases. Care should be taken to keep the equipment free of these contaminants. Also never mix additives into the liquid foam concentrate, always add them directly to the mix.

If you should have any questions or comments please do not hesitate in calling us. We are here for you and appreciate your input.

Any questions or help needed - please give us a call at 423-505-5948
Check us out on the web www.vermillionassociates.com
You may email us at service@vermillionassociates.com

Cellular Concrete Terms and Descriptions:

**Foam Generator:**
The mechanical device through which you introduce working solution and produce the foam for the cellular concrete. There are a variety of types of foam generators including pressure tanks, pumps, automatic mixing and non automatic mixing units. Some foam generators are self cleaning; some require manual dumping and cleaning.

**Working Solution:**
A mixture of liquid foam concentrate and water. Different manufacturers of liquid foam concentrate suggest different ratios of dilution. The higher the dilution ratio the more cost efficient the working solution becomes. The working solution is what goes into your foam generator.

**Liquid Foam Concentrate / Foaming Agent:**
This is the product that is sold by the manufacturers to mix with water and make working solution for your foam generator. Liquid Foam Concentrate is typically packaged in 5 gallon pails, 55 gallon drums and 250 gallon totes.
Cellular Concrete:
The Portland cement based lightweight insulating concrete that is made by adding pre-formed foam into a cement based slurry. There can be sanded or non-sanded mixes, and in some cases fly ash is used to substitute for a portion of the Portland cement. Cellular concrete mixes are a system, which can be produced to a wide variety of densities and compressive strengths to meet the requirements of a multitude of applications. Our customers are supported with complete mix design, density and strength information. Typical Cellular concrete densities range from 20 lb./ft$^3$ to 130 lb./ft$^3$ with corresponding strengths of 50 psi to 3200 psi, depending on the mix design. Vermillion LLC and Associates is more than willing to help our customers with mix design information.

“We want to earn the opportunity to be your cellular concrete partner.”

Ron Vermillion
Vermillion LLC and Associates
2176 Sargent Daly Drive
Chattanooga, TN 37421
T: 423-505-5948 F: 800-783-8459
www.vermillionassociates.com
info@vermillionassociates.com