SludgeHammer®

nature called. we answered.

commercial & industrial

communities

marine

residential

military

The latest advance in wastewater treatment

Design & Installation Instructions

Models: S-46 / S-66 / S-86 / S-126 / S-156

IAPMO STANDARD IGC 180-2003

IMO - MARPOL MEPC-159 (55) International

02/14/25

USAGE

The S-46, S-66, and S-86 are part of our residential wastewater treatment product line. They restore failing leach fields, bullet-proof existing septic systems, and can provide advanced treatment where NSF/ANSI Standard #40/Class 1 is not required.The S-86 system is also the backbone of SludgeHammer commercial treatment systems. Typically used in conjunction with our Medusa diffusers and recirculation pumps. The S-86 allows us to engineer solutions for high-strength waste, such as restaurants, food processors, wineries, large communities, etc.

THE SCIENCE

The SludgeHammer Blend™ revolutionizes residential septic system function. Soil absorbs waste through microbes in the ground that consume organic material. The microbes thrive in oxygen-rich environments. Without oxygen, something called biomat is produced — a slime that clogs the soil. Clogged soil causes residential septic systems to fail, which means they can no longer treat the wastewater produced by your household.

THE SCIENCE

It is estimated that 95% of all septic system failures are caused by biomat clogging. SludgeHammer technology is rigorously tested and certified to restore leach systems clogged by organic biomat through testing under IAPMO/UPC IGC180-2003. SludgeHammer is the ***ONLY*** technology listed on the market that holds the IAPMO/UPC standard.

THE SOLUTION

- Eliminate leach field clogging and optimize septic function with the SludgeHammer line of aerobic bacteria treatment systems.
- Extend the life of new leach fields
- Utilize alternative designs and take advantage of the nutrient-rich wastewater with drip irrigation or surface spray
- Drastically reduce the need for septic tank pumping
- Decrease or eliminate destructive property repairs

	residential S|66	residential S|46	commercial residential S|86
Usage:			
Home size	4 bedrooms	4 bedrooms	5 bedrooms
Platform	Residential	Residential	Residential/Commercial
Dimensions:			
Column diameter at top	8 3/8 in	12 in	12 in
Column diameter at base	9 in	15 in	15 in
Total height	36 in	36 in	36 in
Total weight	31 lbs	42 lbs	42 lbs
Electrical:			
Electrical service	120 VAC 60 hz - 15 amp	120 VAC 60 hz - 15 amp	120 VAC 60 hz - 15 amp
Power draw	51 watts ~ .425 amps	51 watts ~ .425 amps	71 watts ~ 1.5 amps
Air delivery rate	2.0 CFM at 2.5 psi	2.4 CFM at 2.0 ps	3.0 CFM at 2.0 psi
Liquid mixing rate at 4' depth	21,540 gpd	22,600 gpd	37,000 gpd
Organic digestion rate	1 lb/BOD/day	1.0 - 1.5 lb/BOD/day	2.5 - 3.0 lb/BOD/day
Tanks:			
Flow Rate	Single Unit 600 GDP S-66 + 6" Tank Bottom Diffuser "TBD" Flow Rate: 1,000 GPD	600 GPD	1,000 GPD
Min. liquid operational depth*	42 in	42 in	42 in
Maximum depth of tank	60 in	60 in	(residential 60 in
Working volume of septic tank	min 500gal max 1,500 gal	min 500 gal max 1,500 gal	applications) min 800 gal max size to load
Retention Time Requirement	2 Days	2 Days	2 Days

*Liquid operational depths less than 42" will require the custom order S-126 or S-156 System

SludgeHammer™

SludgeHammer™ Group Ltd.
4772 US 131 S., Building D
Petoskey, MI 49770

Ph: 1.231.348.5866

nature called. we answered.

www.SludgeHammer.net

SludgeHammer® ABG Series Flow Rates

IAPMO/UPC Series	*Model*	*Flow Rate Limitation (GPD)*
SludgeHammer®	S-46	600 GPD (1-4 bedrooms)
SludgeHammer®	S-66	600 GPD (1-4 bedrooms)
SludgeHammer®	S-66 + 6” TBD	1,000 GPD (5+ bedrooms)
SludgeHammer®	S-86	1,000 GPD (5+ bedrooms)
SludgeHammer®	S-126	600 GPD (1-4 bedrooms)
SludgeHammer®	S-156	1,000 GPD (5+ bedrooms)

SludgeHammer®

nature called. we answered.

Congratulations!

You have just purchased one of the most advanced and economical wastewater treatment systems on the market. The SludgeHammer® is the logical extension of our earlier technology that revolutionized the homeowner septic industry. Steady advances in design, and experience with our innovative ABG (Aerobic Bacterial Generator) technology allows us to provide advanced treatment for residential, plus the heavy organic loads of restaurants and businesses.

The remarkable efficiency we can attain using our specially designed SludgeHammer® Bacterial Blend reduces energy costs, the need for sludge pumping and ensures that the treatment process will be safe and dependable. Odors are eliminated. And now, treated effluent can be reclaimed for landscape irrigation. Your system will not be polluting the groundwater and nearby lakes and streams. The ease of maintenance means that SludgeHammer® Group Ltd. will be able to keep your system running smoothly.

Thanks!
from the folks at
SludgeHammer® Group Ltd.

What You'll Need to Install the SludgeHammer® Unit:

- ❒ Shovel & rake
- ❒ Hand saw and tape measure
- ❒ 7/8" hole saw/drill bit
- ❒ Phillips screwdriver and wrench
- ❒ Primer and glue
- ❒ 1/2" PVC schedule 40 pipe (amount based on location of tank)
- ❒ Multiple 1/2" PVC 90-degree elbows (dependent upon site layout)
- ❒ 1/2" PVC tee or elbow for bacterial catalyst assembly handle
- ❒ 1/2" quick connect union (optional)
- ❒ Mastic
- ❒ Riser (if none on septic tank)

Unpacking the SludgeHammer®

Unpack the SludgeHammer® unit and check for signs of damage. If you see any damage, contact us immediately at **231.348.5866**.

Your package should contain the following items:

- ❒ S-46/S-86
- ❒ Rope
- ❒ SludgeHammer® Blend Bag & Assembly
- ❒ Flex Pipe & Fittings

General Guidelines

The instructions here are for typical installations in a 500 to 2000 gallon residential septic tank. These instructions are general. Some installations may have differing additional requirements due to particular site conditions. Please complete the SludgeHammer® Site Evaluation Form on page 15 prior to installation.

Septic Tank Requirements

Riser—

The riser will provide access to the unit for future inspections and maintenance. If there are no risers on the septic tank, expose the top of the septic tank so a riser (not provided) can be installed. Risers need to be approved by the local authority and installed per manufacturer's instructions. The lid should be secure to prevent unauthorized access and have provisions for safe access. Install the riser over the septic tank opening where the unit will be installed. To be effective, you will need just enough riser to allow for the 1/2" air line assembly, as well as enough height to reach grade.

Location of the Unit—

If the tank is a dual-compartment septic tank, install the unit in the inlet. For a single-compartment tank, the unit should be placed toward the inlet end of the tank. For an onsite system having more than one tank installed in series, install the unit in the first tank.

Recommendations for Tank Pumping and Inspection—

The tank should be pumped prior to installing the unit unless the homeowner has had it pumped in the last 3-6 months. The tank should be visually inspected for cracks or leaks from house plumbing, baffles, concrete corrosion, or inlet and outlet tees. SludgeHammer® recommends a minimum liquid depth of 42" or greater for proper unit operation. After pumping, either refill the septic tank with the recommended 42" or greater liquid depth or allow for sufficient time for the tank to refill prior to turning on the unit.

Location of the Air Pump

The air pump can be located in a garage, shed, basement or other similar structure. If a suitable location is unavailable, the pump can be located outside in the plastic basin supplied by SludgeHammer® Group Ltd. These instructions assume you are installing the air pump in a garage, shed, basement or other similar structure. See page 12, under Appendix for installing the air pump into the basin.

Install Airline from the Air Pump to the Riser

- Dig a 4 to 6" wide by 8 to 12" deep trench from the air pump to septic tank riser (local requirements may vary). (Figure 1)
- Drill a 7/8" hole through the riser at or near the bottom of the trench. Install a 1/2" PVC Sch 40 pipe (not provided) through the hole so that it extends into the riser at least 12". This PVC pipe is the air line that will connect the air pump to the SludgeHammer® unit. The area where the air line enters the riser must be sealed with mastic or by similar means. (Figure 2)
- Run the 1/2" PVC Sch 40 or Flex 1/2" pipe back to the air pump and glue or attach the pipe into the flexible air connection's male adapter that is provided.
- Do not allow dirt or other contaminants to enter the air line. Additional fittings and pipe may be required depending on the location of the pump.
- See Appendix on page 12 if pump is to be installed in basin.

Figure 1: Trenching to riser.

Figure 2: Bringing air line to riser.

Install the Unit in the Septic Tank

Figure 3

Figure 4

Figure 5

Figure 6

- Do not remove the internal PVC pipe and surrounding media from the center of the SludgeHammer®. (Figure 3)
- Included with the unit is a piece of rope made of a non-reactive material that will be used to set the unit into the septic tank and/or to remove it for future maintenance needs. (Figure 4) Thread the ends of the rope through the holes left by the threaded rod and tie with non-slip knots. Pull hard against the knots to make certain they do not slip.
- Prime and glue a piece of 1/2" PVC Sch 40 pipe (not provided) into the coupling within the 4" center tube. (Figure 5) This is for the air line. There should be enough pipe to extend above the horizontal pipe protruding into the riser from the basin when the unit is on the bottom of the tank.
- Using the rope provided, lower the unit into the tank. (Figure 6) Rotate the unit so the open portion of the 4" center tube is easily accessible.
- Anchor the rope to the ground with a stake or other means so that it does not fall into the tank while completing the air line assembly.

- To complete the air line assembly, cut the two PVC pipes to the appropriate length. Make a glued connection with a 1/2" PVC 90 (not provided) (Figure 7)
- If installing a quick connect union (recommended to facilitate maintenance), cut the horizontal pipe to a shorter length allowing for the extra connection.
- Remove SludgeHammer® Blend Bag & Assembly from the packaging. Glue a 1/2" PVC Sch 40 pipe (not provided) into the coupling end of the SludgeHammer® Blend Bag & Assembly creating an extension. The extension should be long enough to extend up into the riser when the SludgeHammer® Blend Bag & Assembly is set down into the installed unit. (Figure 8)
- Cut the PVC pipe to a length so that it is a few inches below the lid of the riser and glue on a 1/2" PVC tee or elbow (not provided) as a handle. This facilitates the removal and replacement of the SludgeHammer Blend Bag & Assembly when and if that becomes necessary. (Figure 9)
- Slide the PVC extension with the SludgeHammer® Blend Bag & Assembly down the center PVC pipe of the Unit.

  (Figure 9) Do not force the SludgeHammer® Blend Bag & Assembly into the unit. As long as it is submerged within the air column in the unit, then it is positioned correctly.
- Tie off the excess rope from the unit to the horizontal air line pipe. (Figure 10)

Figure 7

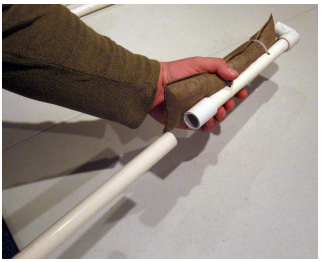


Figure 8

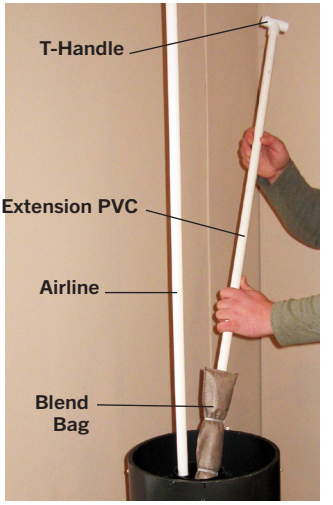


Figure 9

Start Up the Unit

Figure 10

Figure 11

Figure 12

- Plug the air pump into outlet and make sure it begins to operate. (Be sure all basin connections comply with local codes.)
- Check all PVC pipe and fitting joints for evidence of air leaks. Make sure liquid over the unit is being actively agitated and aerated and that the SludgeHammer® Blend Bag & Assembly is submerged. (Figure 11)
- Some odors might become noticeable, but typically subside within 24-hours. If odors are apparent within the house refer to Site Evaluation Form for inspection of proper plumbing and venting. Place the riser lid over the top of the riser opening to reduce exposure to gases. White PVC pipe and fittings are not UV resistant. All exposed pipe and fittings must be covered or painted (not provided).
- Install septic tank riser lid. Make certain all lids are tight.
- Backfill trenches and bury all 1/2" PVC pipes to restore the landscaping. (Figure 12)
- Your install is complete!
- Follow-up inspections are recommended between the 1st and 3rd week after start-up.
- As the Unit begins to operate within the septic tank, sometimes unpleasant odors can become very noticeable. These odors normally disappear after a day or two. After start-up of the unit, a foam or bubbly flock may occur in the tank witin a week or two. This foam is harmless and is a sign of healthy bacterial activity. It will dissipate over time.

MEDUSA™ Diffuser /TBD Aerator

THE MEDUSA™ AIR DIFFUSER AND TBD deliver microfine bubbles for aeration needs in all possible applications.

ADVANTAGES INCLUDE:
- Minimal back pressure
- Amplified mixing through diffuser action
- Microfine bubbles for increased oxygen transfer
- Self-cleaning

TBD AERATOR—
The TBD is designed to be added to septic tanks in association with the SludgeHammer® to inexpensively provide extra oxygen in systems where that is needed.

TBD AERATOR

MEDUSA DIFFUSER

MEDUSA™ DIFFUSER—
The Medusa diffuser is designed for large scale systems and for systems with high organic loads or high-solids effluents. The air diffuser hose extensions are long enough to encourage extensive motion through the liquid and cause a vibratory effect that keeps solids from attaching to the diffuser hose.

Installation of either diffuser can be done using an individual air pump to pressurize a single diffuser or as part of an air delivery manifold. The air delivery rate to the TBD should be in the range of 1-3 CFM. The Medusa diffuser operates at higher air flows, 3-9 CFM and requires more powerful air blowers.

INSTALLATION STEPS—

1. Remove unit from package and inspect for integrity. The unit will have a weight attached to it. (Picture 1)

2. If connecting multiple Medusas/TBD in series, simply install a tee into the main air line and attach a valve, union and threaded female connection. (The threaded hose nipple screws into the threaded female connection.) (Picture 2)

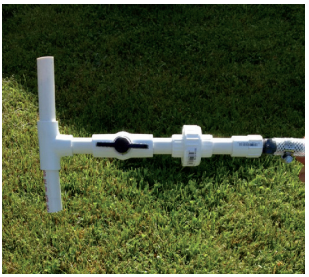
3. Connect a threaded hose nipple into the air line after the valve and the union and secure a 5/8" braided flexible hose to the nipple with a hose connector. (Picture 3)

4. Measure the distance from the air distribution source to the point where the Medusa/TBD will be placed. Provide an extra 2-3 feet of slack and cut the braided hose.

5. Connect the braided flexible hose to the nipple on the Medusa/TBD hub and secure with hose connector. (Picture 4)

Picture 1

Picture 2

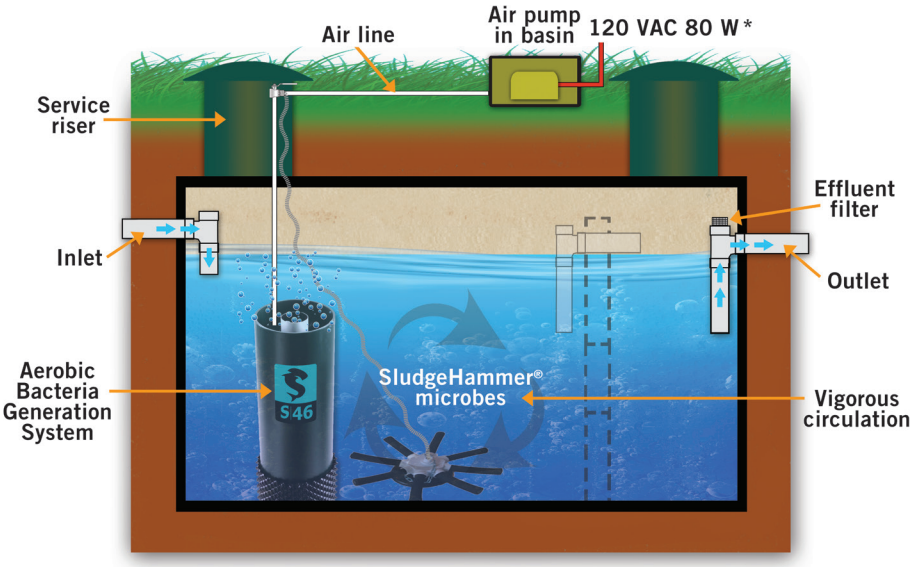


Picture 3

Picture 4

6. Set the Medusa/TBD unit into the tank and move to the desired location.

   A. When installed in a standard two chamber tank the Medusa/TBD will often be placed inside the first chamber with the SludgeHammer®. In this case the SludgeHammer® will be near the front of the chamber directly under the tank opening allowing access to the SludgeHammer® while the Medusa/TBD will be placed in the center of the tank downstream from the SludgeHammer centered between the SludgeHammer unit and the end wall of the tank chamber. (See diagram below)



* You will need to increase the airflow volume when adding a diffuser to the SludgeHammer system.

Background and Guidelines for Operating a SludgeHammer® System

Proprietary bacteria are introduced at start-up of the system within the bacterial catalyst which is replaced as part of the annual maintenance. Several billion bacteria spores are contained within the bag. Unlike a conventional anaerobic septic tank, the proprietary bacteria in combination with the air enriched effluent break down the solids within the septic tank. The proprietary bacteria is robust and capable of adapting to a wide variety of conditions and moderate abuses, but the bacteria perform best when care is given to what you put in your septic system. The SludgeHammer® Blend Bag & Assembly can be safely handled. As a precautionary measure, SludgeHammer® recommends washing one's hands after handling this part of the product.

Operation Guidelines

The following are recommended guidelines to follow after the installation of the SludgeHammer®. These guidelines are within the normal suggested septic system guidelines for the standard convetional septic system.

- Household cleaning products or chemicals should be discharged down the drain into the septic system sparingly. Typically available household cleaning products can normally be used. Cleaning products containing disinfectants, pesticides or products that make claims they kill bacteria should be used sparingly.
- Laundry soap and detergents with bactericides should also be avoided. Laundry should be spaced out over the week. If bleach is going to be used choose a powdered bleach. If possible, do no more than one load a day when using bleach.
- Products labeled "natural, organic and biodegradable" still can be toxic; toxic compounds are found everywhere in nature. Read the labels carefully and avoid products that claim to "kill bacteria."
- Water softeners may cause problems for a septic system if the backwash discharges into the septic tank. High concentrations of salt discharged into the septic tank can raise the PH in a system upsetting the bacteria. This is cause for concern in a septic system with or without Sludgehammer®. Keep your water softener maintained in accordance with the manufacturer.

Operation Guidelines (continued)

- The unit can be damaged or clogged by non-biodegradable items or materials that enter the septic system, including but not limited to, any items made of rubber, latex, plastics or metals, sand or soil from non water-tight septic tanks, etc. It is important to keep such items out of the onsite wastewater treatment system.

- Prescription drugs, including but not limited to: antibiotics, chemotherapeutic and immune system suppression drugs, can have a devastating effect on any bacteria community within a septic tank or SludgeHammer® unit. If anyone within the home is using these types of drugs, then notify your local certified installer or maintenance inspector for an additional service visit to check the system. It may be necessary to inspect the tank frequently for signs of trouble.

- Additional materials that should not be allowed in a septic system include, but are not limited to, automotive products, petroleum products, pesticides, paint or paint thinner, solvents, etc.

- If the home is unoccupied for any extended period up to two months or if the unit is in a septic tank serving a vacation property that is periodically occupied, leave the air pump operating. Service intervals should be scheduled for the start-up period of each season when possible.

- If a vacation home is closed up after the vacation season and the system will be unused for more than two months, unplug the air pump. When the vacation home is occupied the next season, have the service provider install a new bacterial catalyst, and plug in the air pump. The system will restart without additional oversight.

- Power outages: if power is lost for up to six days where the air pump is not functioning, then the septic system should function without problems. Should the power remain out for an extended period of time, then contact your local certified installer or maintenance provider for an additonal service visit to check the system.

IF THERE ARE ADDITIONAL QUESTIONS contact your local Certified SludgeHammer® Installer or Maintenance Inspector.

APPENDIX

The following instructions are the appropriate installation procedures for the Air Pump Basin assembly. This is an option when there is not an appropriate location to install a pump within a nearby structure, such as a garage or basement. The air pump basin must be vented to supply air to the pump and for cooling. The basin should be waterproof but not airtight. The pump requires air to function properly and the basin should be located as close as possible or practical to an electrical source, preferably in a shady spot.

Air Pump Requirements

The Air Pump can be located in a garage, shed, basement or other suitable structure. When these are unavailable or impractical it can be located in the plastic basin supplied by SludgeHammer®. Locate the basin as close as possible to an electrical source in a shady spot. Burying the basin over one-third of its height is not recommended, since there is potential for moisture, condensation or water to collect in the basin. These conditions can cause the air pump to malfunction.

Connect Basin Air Line to Air Pump

The SludgeHammer® package includes a clear tube air pump connector with two hose clamps, and a barbed glue fitting connected to a PVC 90-degree elbow. Please locate and set aside.

- Cut a PVC close nipple and glue into the female adapter. Take the Air Pressure Sensor tee and glue it to the close nipple. Add a second close nipple and glue into the Air Pressure Sensor tee. (Figure A1) Make certain the threaded barb adapter on the clear tube air pump connector is tightly threaded into the PVC 90-degree elbow (provided). Tighten the hose clamp on the barb end (provided). Position the air pump in the center of the basin. DO NOT GLUE THIS CONNECTION NOW! Estimate the correct length for the clear plastic tubing to make sure it does not kink and cut to length.

- Remove the air pump and the clear tube connector. Put the second hose clamp (provided) over the open end of the clear plastic tube, slide the tube over the outlet port of the air pump and tighten the hose clamp.

- Reposition the air pump within the basin, now connected to the clear tube connector, slip the PVC 90-degree elbow over the close nipple to insure the clear tube is not kinked, then glue the PVC 90-degree elbow on the close nipple. (Figure A2)

Figure A1: Air supply pipe connection to air pump with sensor attached.

Figure A2: Air pump installed in protective basin.

If Using External Alarm Control Box

The Alarm/Control Box should be placed in a location where the alarm light will be visible and the alarm sound can be heard. Bring the air pressure sensor wires and high water alarm float wires in the septic tank to the Alarm/Control Box. Hook both sets of sensor wires to terminals 1 and 2 per the electrical schematic. (Figure A3)

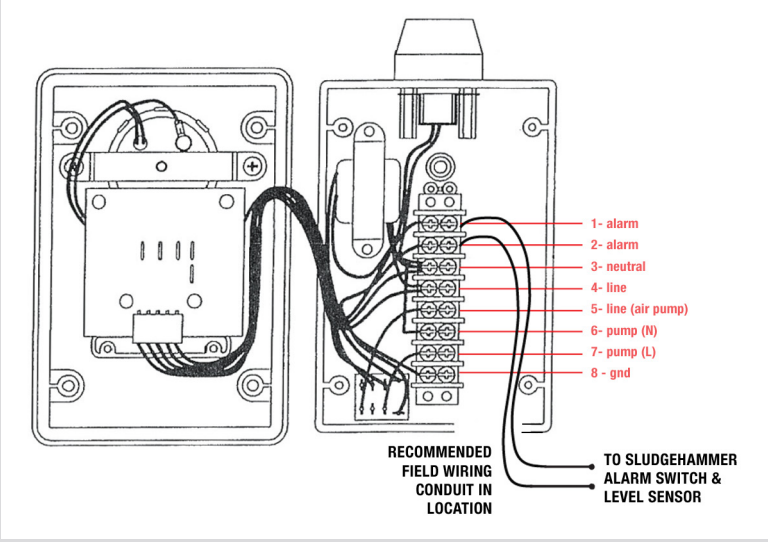


Figure A3: Electrical connections inside the Alarm/Control panel.

Make Electrical Connection to Basin and Air Pump

Note: Hire a qualified electrician to wire a GFCI protected connection to the air pump.

Suggested Electrical Conduit Assembly

Required components:

- 1/2" Carlon (or similar) gray electrical male adapter
- 1/2" Carlon (or similar) PVC entry elbow
- 1/2" PVC Sch 40 pipe
- 3/4" barb end spade bit
- EMT lock nut
- Wet or dry PVC glue

- Install a 1/2" Carlon (or similar) gray electrical male adapter (not provided) by drilling another 3/4" hole, typically at 90 or 180 degrees from the air line connection male adapter. Follow the same procedure as the air line male adapter installation except use an EMT lock nut on inside of the basin instead of the female adapter.

- Cut a close nipple approximately 1-1/2" long from 1/2" PVC pipe (not provided) and glue it into the Carlon male adapter. Glue a 1/2" Carlon PVC entry "L" (not provided) onto the close nipple in the position best suited to connect to the electrical service. Leaving it unglued for the electrician is also an option. Check to make certain the electrician properly glued this connection (Figure A4).

Figure A4: Entry elbow for electric.

- The electrician can connect the electrical service to this entry or make his own waterproof connection to the basin. The electrician must connect the basin and air pump to a GFCI protected service that meets the codes and ordinances of the local authority having jurisdiction over electrical installations.

SludgeHammer®

INDIANA IAPMO SITE EVALUATION CHECKLISTS

Existing septic systems must be evaluated to determine if they qualify for the IAPMO Installation in accordance with SludgeHammer's State approval.

See below contacts to obtain a checklist for rejuvenation or to install as a preventative measure on an existing, functioning system.

Stuart@septicdesign.com 574-215-9289
or
Charlie Ray waterphoenixh20@gmail.com 260-417-1800

SludgeHammer®

nature called. we answered.

SludgeHammer® Group Ltd.
4772 US 131 South, Building D
Petoskey, MI 49770

Ph: 231.348.5866
Fax: 720.834.3102
www.SludgeHammer.net

SludgeHammer®— Putting Nature to Work. Naturally.

Septic systems have successfully treated household waste for hundreds of years. Soil absorbs the waste and microbes in the ground consume organic material. As long as there is oxygen, the microbes thrive. Without oxygen they produce biomat—a slime that clogs the soil. It is estimated that 95% of all septic system failures are caused by biomat clogging. Eliminate it and you extend the life of new leachfields or drip irrigation systems and drastically reduce the need for septic tank pumping or destructive property repair.

Enter the SludgeHammer®, an Aerobic Bacterial Generator that fosters the growth of a curative biomat of specialized bacteria right in the septic tank. As the SludgeHammer® eliminates waste in the tank, it sends out an endless stream of microbes that keep the soil open and porous. These powerful bacteria help control nitrates and fecal bacteria that contaminate the soil and nearby groundwater. Most importantly, they preserve the soil's health as long as the SludgeHammer® operates.

02/14/25