

# The BOONJON™ Owner's Manual

## Contents of this package

Your BoonJon compact composting toilet system will include the following items.

1. BoonJon housing - includes body, lid with urine diverter, toilet seat with seat lid
2. Solid waste collection container
3. 6 ft of ventilation hose with a bag of fittings
4. Churn handle
5. Sealing lid
6. One gallon water jug
7. 64 oz pinch grip jar (not shown) for measuring peat moss or sawdust medium



Not included are the following items:

1. Five gallon bucket and locking lid (disposable container)
2. Active or passive ventilation mechanism (e.g., 12 volt fan or solar vent, or drafting cowling)
3. Peat moss or other composting medium

## How to use your BoonJon

Using your BoonJon is mostly intuitive but here are a few tips. First be sure that the toilet is sitting firmly on a surface where it will not move or tip over. Anchoring it using a docking cabinet is usually the preferred method.

1. Raise the toilet seat lid and remove the sealing lid from over the opening.

2. Place the sealing lid against the toilet seat lid with the narrow part resting between the hinges.
3. Situate yourself on the seat so that the pee and poo will drop into their respective areas. For men, this usually only entails sitting down. For women, it may take a couple of tries to get situated perfectly. You will develop a sense for correct seating usually after one or two uses. If ladies, you can separate the two functions, it may be easier to divide the waste that way. This may be stressful for some people and if so, try to just find the “sweet spot” where you can do #3.
4. If you are a male and want to pee standing up, use either a transmission type funnel or a section of PVC pipe. Keep it stored in an umbrella type stand with a cup at the base when not in use. First get the lady of the house’s permission to use this appliance, otherwise, just sit down. Moving on!
5. After you are done, you can put your toilet paper inside the toilet but it will fill it up much sooner. I recommend that you put the toilet paper in a small plastic bag lined trash basket. Any kind of toilet paper will do.
6. Wash your hands and dress yourself.
7. Add more medium at this time if you think you need to and/or rinse the funnel with deodorizer.
8. Replace the sealing lid and close the toilet seat lid.
9. Insert the churn handle in the hole in the top and churn the medium 15-20 times.

### **Emptying your BoonJon**

To empty your BoonJon:

1. Raise the housing lid to the open position.
2. Remove the one gallon urine collection container and dispose of the urine.
3. Remove the solid waste collection container and dump out the contents. Rinse out the remaining material if desired.
4. Recharge the solid waste collection container with two or three canisters of medium. Add more medium later if needed. Reinstall the solid waste collection container inside the housing and seat it into the back.
5. Reinstall the gallon jug.
6. Close the housing lid.

Please note that there is a snap that connects the toilet seat to the housing lid. This snap will snap together whenever you sit on the toilet but you should try to remember to snap it closed every time you unsnap it (usually for cleaning) for safety purposes. The snap prevents the housing lid from slamming down uncontrollably, should you try to lower it by holding only the toilet seat.

## How your BoonJon works

Understanding how your BoonJon works will help you with the installation. Briefly, the BoonJon system is comprised of three main components:

1. The BoonJon composting toilet.
2. An optional ventilation system.
3. A waste disposal composting system.

Your BoonJon toilet separates the liquid and solid waste and dehydrates, stores and pre-composts the solid waste. Liquid waste is collected in a common one gallon water jug and is typically removed from the toilet daily. Solid waste is collected inside the housing unit in a modified five gallon collection container where it is processed for further composting. When the collection container becomes full (and this is determined by how difficult it is to turn the churn handle), usually 10-15 uses, the owner has several options described below, depending on how the toilet is to be used. Always comply with local laws.

Once the collection container is full, the solid waste contents are transferred to a composting bin or mound or wooden tower, where the composting process continues. Alternatively, the waste can be buried or burned but composting will make the best use of the waste. If you want to discard the waste, it can be transferred and sealed in a 5-gallon plastic bucket and disposed of using the local trash disposal system.

## Types of installation

There are several ways to install the BoonJon system. You should determine how yours is going to be used in order to determine the best installation.

1. Are you going to use it occasionally, such as on weekends?
2. Are you going to use it for longer periods, from a week to a month at a time?
3. Are you going to be using it on an everyday basis?

**Week-ends** – If you are only going to be using your BoonJon on weekends or for just a few days at a time, it is best to just empty out the contents before leaving the facility. Ventilation will almost certainly not be needed so you will not need to install a ventilation system. It is a good practice to rinse out the collection container before leaving or place a “No Pest Strip” inside the housing while you are away. You may decide to leave this in place permanently as it is not in the way. This will prevent gnats from possibly developing during your absence.

As long as the waste is covered with peat moss, the smell will be mitigated completely and the dehydration and composting process will proceed initially without active ventilation. It depends on the temperature and humidity of the area you are in, as well. There may be some slight noticeable musty smell if the weather is very humid and for some reason you must keep the cabin closed up.

**Week to Month** – If on the other hand, if you plan on taking seasonal extended trips to your cabin and using the BoonJon on a more consistent basis, then you may possibly need to install a ventilation system. Wait to see if you have any issues with condensation build up inside the collection container or if the musty smell is noticeable before you go to the trouble of installing a ventilation system. If the collection container is filled with medium to the correct level, there should be no odor at all when the BoonJon is closed even without ventilation. When you open it to use it you will get a slight musty smell that is not particularly objectionable.

### **Homesteading or “off the grid” living**

If you are using the BoonJon system at your homestead off the grid, usually the best way to install the toilet is to use a “docking” cabinet. It can be as simple as concrete blocks and shelving boards or as sophisticated and attractive as the owner desires.



The docking cabinet holds needed accessories and canisters of medium as well as houses the ventilation system, if desired. The ventilation hose can be run either through the floor on dwellings with basements or of pier and beam construction, or through the wall to the outside, or into a stack going up to the ceiling and out the roof.

### **Ventilation**

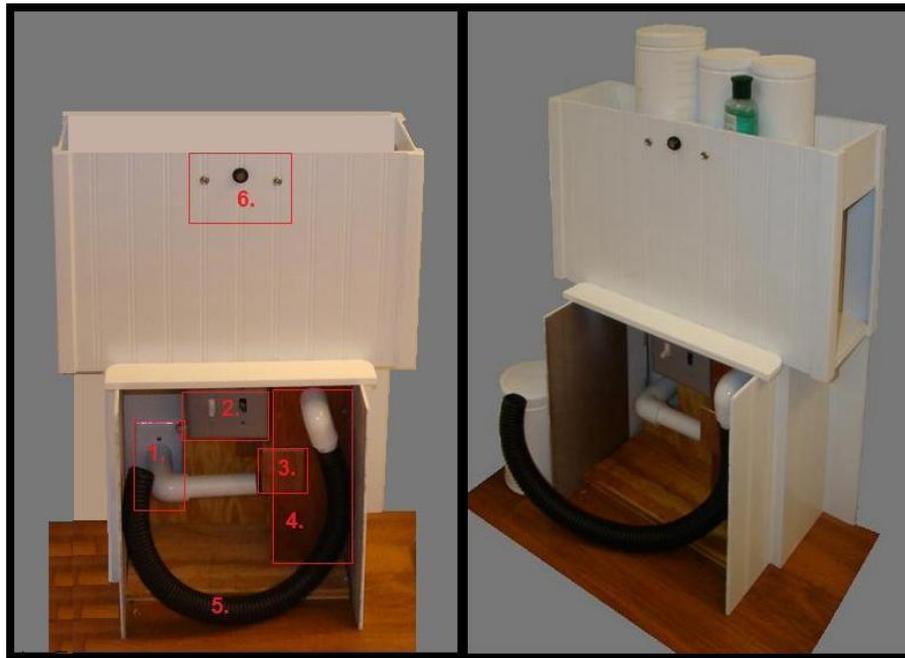
Ventilation is a complicated issue; complicated by the immense variation of applications. I recommend that you try using your BoonJon without ventilation first. **Ventilation is not needed for odor control as it is in the case with non-urine diverting systems.** Ventilation is usually only necessary if you are having problems with the build-up of condensation on the underside of the sealing lid. If that is the case, the simplest solution

is to just empty and recharge the solid waste collection container when it occurs. Condensation is usually only a problem as the container nears its maximum capacity.

Active ventilation systems, using 12 volt or 110 volt fans, can be installed (1) in a plenum inside the cabinet, or (2) in the ventilation hose line, or (3) on top of the stack or roof. (See photos at the end of the manual.) *Passive* systems such as the [a Camco Cyclone](#) and the [360 Siphon vent](#) or turbine vents are good options

Ventilation systems can be a combination of fans if needed. Our R&D toilet (below) uses a solar vent (with battery back-up) located at the top of the 3" PVC pipe stack. A good solar vent, such as Nicro with a good back up battery is usually sufficient to ventilate the head 24/7. Another alternative is a 110 volt muffin fan located in a plenum in the docking cabinet. The fan is activated by a solar light switch during the night or it can be switched on to run 24/7. Notice that the toilet seat lid covers the sensor and activates the fan when someone sits down on the seat. This starts the ventilation during use and shuts it off after use. Another possibility is an inline fan located outside in the vent line. This will help reduce noise from the fan inside the bathroom. All installations are unique and will require special consideration and engineering by the installer. Your local hardware store or contractor can probably assist you if needed or call us.

### **An Example of a 110-volt Docking Cabinet Installation**

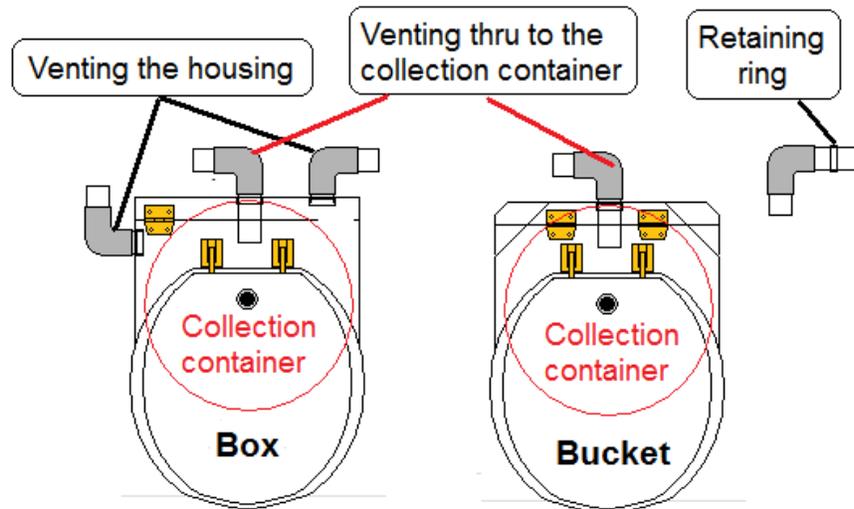


1. Thru-wall PVC vent pipe with cover plate (plenum to thru wall cover plate)
2. Electric on-and-off switch.
3. Plenum door to access muffing fan.
4. Plenum
5. Toilet housing to plenum vent hose.
6. Light sensor on-and-off switch.

## Installing the system

You can ventilate your BoonJon toilet two ways; either through the housing alone, or through the housing and into the back of the collection container. First, open the BoonJon housing by lifting the housing lid from the front edge. Remove the urine and solid waste collection containers.

### Ventilating through the back and sides



### **Venting through the housing (option #1)**

1. Anchor the BoonJon using a docking cabinet or find a location where you can set it with the back to a wall. If you opt not to use a docking cabinet, the BoonJon will need to be installed with its back close to a wall or vertical surface to help support the lid when it is open.
2. Determine where you want to attach the ventilation hose on the housing (the back corner or side corner). Cut a 1 3/8-inch hole 3 to 5 inches down from the top edge of the housing (below the housing lid) and 2 to 3-inches away from the corner.
3. Install the supplied elbow by inserting the long end into the vent hole and sliding the retaining ring over the nipple to secure it. Cut the nipple flush with the retaining ring. (Disregard the bucket model shown in the drawing.) The elbow should rotate as needed with the box model. Re-install the solid waste collection container inside the housing. Insert an empty gallon water jug so that it is centered and the handle points towards the back with one of the flat sides visible through the sight window. This will allow you to monitor how full the jug is.
4. Close the housing lid carefully.

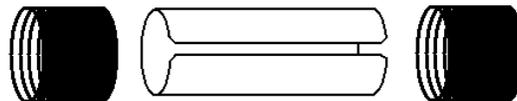
## Venting through the housing and into the collection container (option #2)

1. To ventilate the system through the collection container, you will have to cut the hole in the center of the back of the BoonJon housing. Measure 5 inches down from the top edge of the housing lid (not the toilet seat lid!) and cut a 1 3/8-inch hole (centered).
2. Temporarily install the collection container and make sure that it is seated correctly to the back. Close the housing lid to secure the collection container in place. Drill a hole into the back of the collection container using the same 1 3/8-inch hole saw, using the hole in the housing as your guide. **DO NOT CUT THROUGH THE COLLECTION CONTAINER BUCKET BUT ONLY ALLOW THE PILOT BIT TO PUNCTURE THE COLLECTION CONTAINER.**
3. Remove the collection container and using the pilot hole you just made, cut a larger hole in the back of the collection container using a 1 3/4-inch hole saw.
4. Install the supplied elbow (with the long nipple) by inserting the long end into the vent hole from the back and sliding the retaining ring over it to secure it to the housing. The elbow should rotate as needed to align with the vent hose.
5. Re-install the collection containers inside the housing. Insert an empty gallon water jug so that it is centered and the handle towards the back with one of the flat sides visible through the sight window. This will allow you to monitor how full the jug is.
6. Close the housing lid carefully.

## Attaching the Ventilation hoses

1. Attach the ventilation hose onto the elbow that vents the toilet housing.
2. Run the hose to a ventilating mechanism. The location and type of ventilation installation are at your discretion.

Next you will need to route the ventilation hose. The ends of the supplied hoses are designed to fit over the existing barbs. If you need to shorten a section of hose, cut a piece out of the *middle* and then insert a sleeve and join the two sections with black electricians, Atomic or Gorilla tape, or epoxy glass. Do not just cut off one of the ends as the barbs will not fit inside the corrugated sections of the hose.



The package comes with one 12-foot section of hose that is actually two sections of 6 foot each. A sleeve is supplied so you can adjust the length of the hose.

If you are not handy with such installations, then I suggest you contract someone who is. If you have questions about your installation, call me and I will try to help you make the best decision. Be prepared to photograph and e-mail pictures of your situation.

### Handling peat moss or other composting materials

There are many substances that are suitable as a composting medium: sawdust, coconut coir, peat moss, etc.

A 64 oz. pinch grip jar is included with your order. These jars are available at Wal-Mart, Dollar Tree, or as snack or nut jars at your local grocery store. Use a small plastic cup or flour scoop made from a plastic soda bottle (that you keep in the compost container) to fill up the quart jars and store them in the head area. The mouth of these jars fits nicely inside the opening of the BoonJon and you can pour out any quantity without spilling.

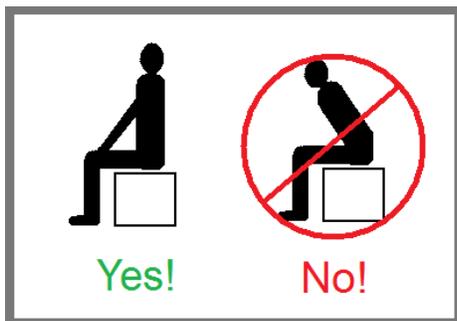


Once you clear this hurdle, managing the composting material becomes fun and easy.

### Using the BoonJon

As with any composting or desiccating head, separation of the liquid and solid waste is imperative and you will need to situate your body on the seat to facilitate this process. The BoonJon is designed to make body alignment as easy as possible. For best results, men should always use the BoonJon in the sitting position as opposed to standing. If however you must stand, a long transmission funnel from your automotive store is an alternative if the lady of the house will allow it.

In the case of women, the first uses of the BoonJon may require some special attention, but after a few uses, you will develop a feel for proper alignment and you will become more comfortable and confident as time passes.



When urinating (both men and women), you should hear a trickle in the gallon jug. If you don't, be sure to check the level or position of the gallon jug. The sound diminishes as the jug becomes full.

*Always sit upright on the seat. Don't lean forward.* The openings to the collection container are designed for this type of seating arrangement. Spray "Lysol with bleach" (or your favorite non-caustic household

cleaner) into the funnel and around the rim occasionally to keep odor away and to sanitize the surfaces.

Toilet paper can be discarded in the collection container, however this will cause you to empty it more often and make it less suitable for gardening. It is better to discard your toilet paper in a small waste basket lined with a plastic bag and covered with a lid.

When you are finished using the toilet, replace the sealing lid, close the toilet seat lid and insert the churn handle and rotate it relatively quickly in a clockwise direction only for about 15-20 full turns. **The handle should always be in the three o'clock position when you finish.** This is the most comfortable angle to insert it for right handed people.

As the collection container begins to fill up, turning the churn handle will meet more resistance. You will develop a feel for when it is time to empty the collection container by the level of resistance. Usually the collection container will be about a quarter to a third full when it needs to be emptied. The BoonJon is easy to empty and you should just empty it anytime you feel you need to. Don't make it a contest to see how much it will hold.

### **Disposing of solid waste**

Optimally, you want to empty your BoonJon into your composting heap or tower outside, burying it in vegetation and allowing it to compost to completion over several months. You should consider attracting black soldier flies. Black soldier flies will significantly reduce your waste volume by as much as 90%. In addition, they have the added benefit of driving away house flies by eating their larva in the composted waste. You can attract black soldier flies by building a simple "digester" as follows. Pour the solid waste from the collection container into a bottomless 5 gallon bucket situated in the center of your compost pile or tower. Take a second bucket with a lid on it and cut off the bottom so that it fits inside the top of the bottomless bucket. Cut holes into the sides of the top bucket to allow the flies to enter and lay their eggs inside. Attach a piece of sponge to the underside of the lid of the top bucket to provide a place for the black soldier flies to land and deposit their eggs above the pit.

Be sure to use a "white" bucket for both parts because a black bucket will generate a lot of heat under direct sunlight. This combined with the thermophilic heat generated from the vegetation can raise the temperature above 150 degrees F for a sustained period and this can be lethal to the BSF larva. If you surround your compost tower with sweet potatoes, the vines, which are fast growing will help shelter the digester from direct sunlight as well as give the BSFs a good place to land and mate.

Configure some kind of locking system to keep the top portion of the digester locked to the bottom portion. Simple screen door hooks will work fine. The purpose for this is to keep vermin out of the pit. Raccoons especially, seem to like the taste of the larva and are easily smart enough to remove the lid to access them.



Pour your cut vegetation around the bucket and raise the bucket as you fill the compost tower over time. A four foot wide by three foot deep by four foot high tower will take about a half a year to fill if the toilet is being used daily by two people. It is important that the level of the waste and the level of the composting vegetation remain the same. Allowing the surrounding vegetation to rise higher than the waste inside will generate too much heat and will be lethal to the BSF larva.

There are a series of videos about BoonJon gardening on the C-Head/BoonJon website. Go to [www.c-head.com](http://www.c-head.com) to view them.

If you are using your BoonJon in a van, RV or camper, or you plan on discarding your waste in the trash, you may want to use the C-Head system and purchase a ventilation hood adaptor. This will allow you to transfer the waste to a 5-gallon plastic bucket until it is completely full and then “treat” it with chlorine bleach, seal it and dispose of it more easily.

### **Disposing of Urine**

At an average normal rate of one to two quarts/liters a day per person, the one gallon container on the BoonJon will have to be emptied daily or every other day (if used by one or two people). You can replace the jug with a new jug, and then the full gallon container can be capped and set aside to be diluted with water (5 parts water to 1 part urine) for use as fertilizer. Simply pour an amount into a watering can full of water.

Another option for campers, vans and RVs is to store the full gallon container and replace it with another empty one. Using smaller one-gallon containers allows the use of

small spaces to store it in, until it can be properly disposed of in a urinal or toilet or in the woods. As long as it is capped and not allowed to sit for long periods of time, odor will not be an issue and the older gallon jugs can be easily replaced with a new empty water jugs. Add a small amount of diluted holding tank treatment to the jugs (Thetford Campa Chem – formaldehyde free) using a dish soap squirt bottle or spray bottle. This completely eliminates any odor.

### **Safety Note**

Peat moss and other organic matter are subject to possible spontaneous combustion when stored wet in very large amounts. It is virtually impossible for a five gallon container full of peat moss to spontaneously ignite and there are no recorded incidents of this happening that I am aware of. Large mounds of material (such as those found with bulk suppliers) insulate the core where the heat can grow. If this were a serious hazard then we would have frequent fires at most garden suppliers where bags and mounds are stored in the rain and direct sunshine. Nevertheless, as a matter of general safety, it is probably wise to never store composted waste in a place where high temperature extremes are likely to occur.

Keep hand cleaner handy and use it each time you handle the contents inside the housing or simply wash your hands.

### **Pest control**

If you have livestock or live in an area that is prone to flying insects or you keep a lot of fresh fruit onboard your boat, you can eliminate the prospect of them migrating to your toilet by adding diatomaceous earth to the mixture. It is usually obtained at any garden or home improvement store in the pool supply section. A twenty dollar 24 pound bag will give you a two year supply if you add one cup to the collection container mixture when you recharge it. It also seems to aid in reducing the musty odor of compost. It is non-toxic to humans in anything less than massive doses but lethal to insects. It works mechanically so it does not lose its potency and insects cannot develop a resistance to it. Only use this if they become a problem.

DE is bulky, heavy and dusty and does not break down, so it is around for a long time. Also for gardeners, some insects that it kills are beneficial such as black soldier flies and their larva, which control the housefly population and break down the waste significantly. DE has also been known to kill earthworms.

An alternative method of complete control is by using a “Hot Shot No Pest Strip2” placed inside the housing of your BoonJon toilet. It is not recommended that you leave the No Pest Strip inside the toilet longer than needed. Even though the product is contained inside the C-Head housing, you should also allow some ventilation in the toilet area (bathroom), as much as possible. The instructions state that it should not be used in an area where



people will be present for more than four hours a day, but this is using the full evaporation rate of the strip inside a house where ventilation is restricted to the interior of the structure. If you live on a boat, chances are that you are getting a lot of ventilation from open hatches, so there should be little concern. The DOT hazard placard indicates 1-1-0-0 which is pretty benign. But here is how you do it.

1. Wear rubber gloves. Cut the end off of the foil package and remove the strip, which is a plastic tower with holes in it running from top to bottom.
2. Slide the foil package back over the top exposing only the bottom area about a half of an inch, so that you are restricting the evaporation rate of the strip. Raise the cover to expose more of the strip if needed.
3. Tape the package covered strip to the inside wall of the housing if you are in a moving vehicle, or simply set it in the back corner of the toilet housing outside the solid waste collection container.
4. You will see immediate results but after 10 days, the gnat egg population will have been completely eradicated, so remove the strip and place it in a sealable plastic bag for reuse in the future.

The active ingredient is Dichlorvos, an organophosphate. Organophosphates are chemicals commonly used in insect control but they are toxic and can be absorbed through the skin. In addition to killing flying insects, they also kill roaches and other invasive insects. Here are the [MSDS](#) and [CDC](#) links. Humidity found inside the collection container will quickly break down Dichlorvos and render it harmless. Restricting the evaporation by covering most of the strip should have a significant effect in limiting exposure to the chemical. The small space inside your C-Head or BoonJon housing will only require a very small amount of the chemical in order to be very effective and will contain the evaporation until the humidity breaks it down. The end result is an easy and inexpensive means of pest control.

A third possibility is to put two moth balls in the small basket located on top of the solid waste collection container. You will need to remove and replace this basket whenever you empty the toilet to prevent it from falling out. Use basically the same precautions with moth balls as you would with organophosphates. In every case, read the directions. Use your own judgment and act responsibly.

### **Cleaning your BoonJon**

You may use any of several standard household cleaners and degreasers that are available on the market. The collection container should be washed occasionally. The collection container is all plastic except for a few stainless steel fasteners. You may choose to fill it with water and let it stand, prior to cleaning it to soften up any dried waste. A standard toilet bowl brush should work fine.

Wipe down the outside of the BoonJon housing with a light solution of Clorox and water or use Lysol spray with bleach. For best results, spray the inside of the collection container with silicon spray after it has dried. This will make the next cleaning easier and

help prevent waste from sticking to the sides of the container. Do not use solvents or abrasives on the outside of the toilet housing.

If a urine spill happens from overflowing or a failed container, soak up the urine with a rag or paper towels and rinse out the pan with a sponge and water. Use gloves. Then wipe down the inside of the housing with a light mixture of Clorox and water or Lysol with bleach.

### **Example of an Exterior Ventilation System**

Photo shows ventilation stack outside home using 3" PVC sewer pipe and a solar vent on top with battery backup.

Flared end at the end of a 3" PVC sewer pipe will accommodate a Nicro solar vent.

1" PVC vent pipe exiting the wall of the house at the bathroom, running to the sewer pipe, sloped to drain condensation.

3" pipe is set in concrete inside a concrete block with drainage holes in the bottom.

The stack is painted black to assist in ventilation but heating the air and causing it to rise naturally to the top.



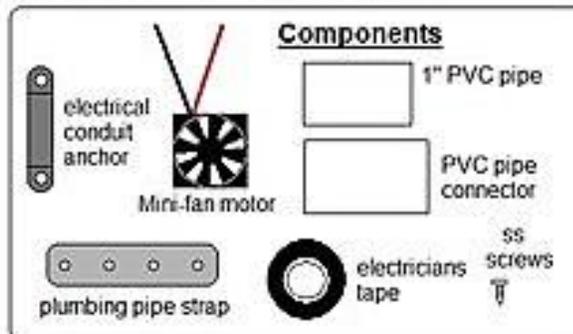
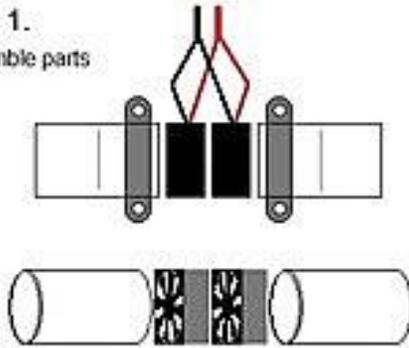
## Using an inline 12-volt positive pressure ventilation system

This unit is run using a 12 volt battery that is charged by a solar panel and monitor. The panels and monitors are available from any RV or boating store. The mini fans or muffin fans are available online or at electronics or computer stores. **CAUTION:** Always consult a certified electrician before installing any electrical components in your BoonJon ventilation system.

### C-Head - Inline 12-volt Positive Pressure Ventilation System

#### Step 1.

Assemble parts



#### Step 2.

Make sure that the fans are blowing in the same direction



Align PVC connectors and fan motors

#### Step 4.



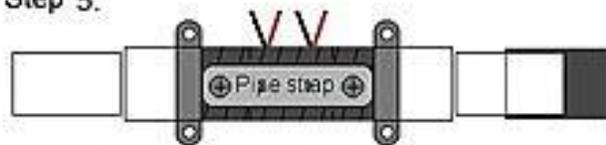
Wrap assembly with electricians tape

#### Step 3.



Electricians tape on all four sides

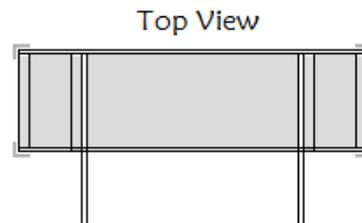
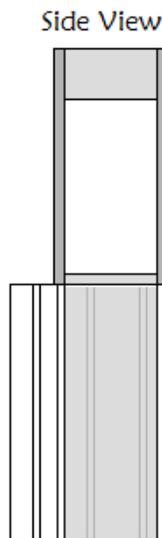
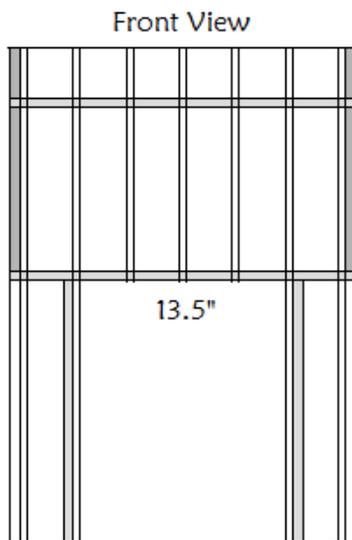
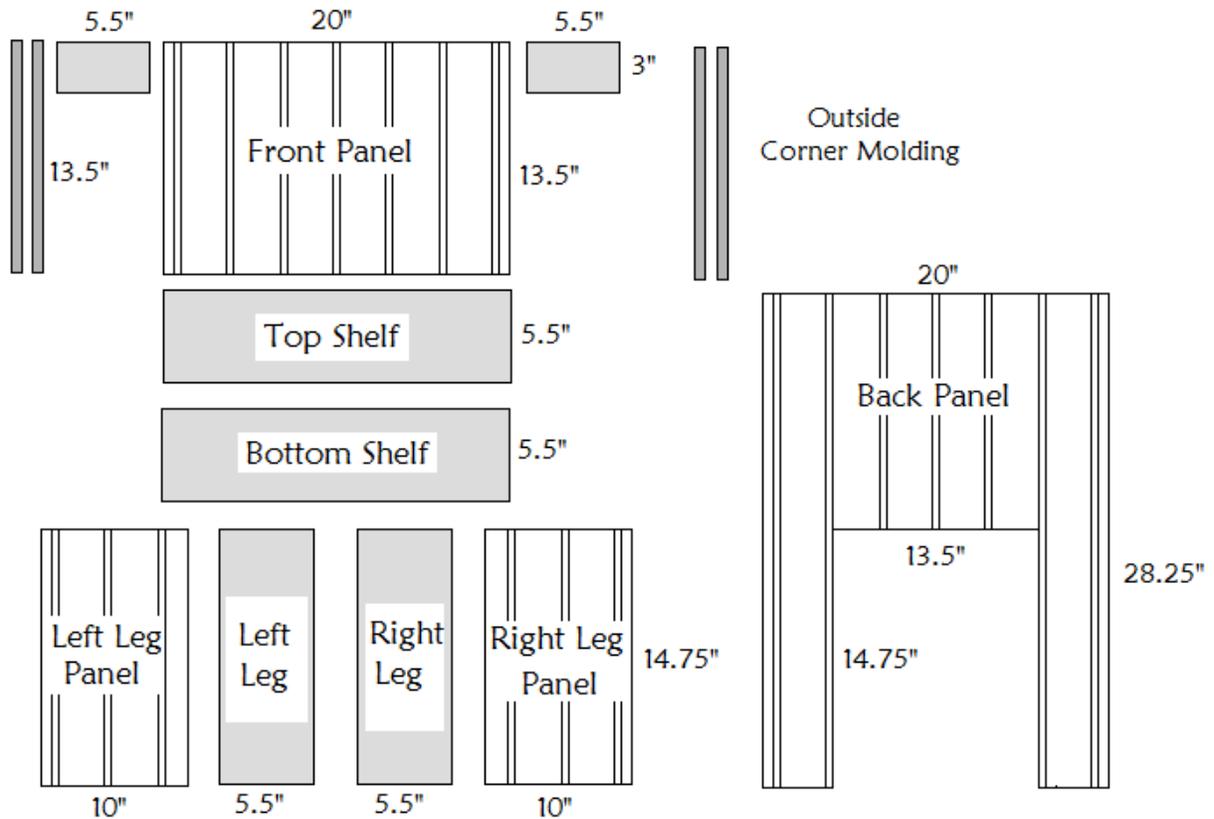
#### Step 5.



Attach pipe strap on one (bulkhead mount) or two sides

**Do not screw into mini-fan motors**

# White Wainscot Docking Wall Cabinet



## **Materials List**

- 1x6x8' clear primed board
- 48"Lx32"H wainscot panel
- 8' stick of outside corner molding
- Carpenters glue and brads or drywall screws
- White enamel paint and caulking