

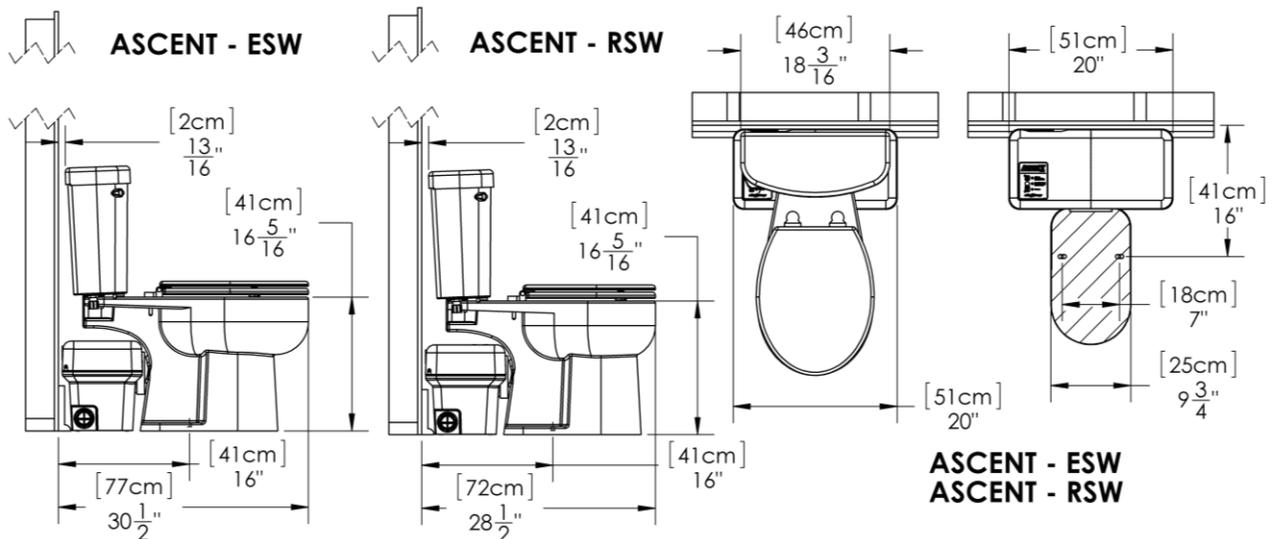
- 2-9 NORMAL OPERATING CYCLE:** The macerator's IST switch is capable of distinguishing between different modes of operation and optimizes the run time accordingly. Advanced run detection will energize the cutters once the unit detects a flush. In doing so, the cutters are spinning at maximum speed (rpm) prior to fluid and debris reaching the cutting system. The unit may pulse during a shower or draining a bathtub because the macerator can pump at a higher rate than the incoming flow.
- 2-10 ALARM:** The macerator has an integral alarm that will sound if the unit cannot remove liquid or keep up with incoming water. If the alarm sounds, a number of conditions could exist; please see the trouble shooting guide to determine the cause and solution. A silence button located on the user interface touchpad will stop the audible alarm. The alarm light will continue to illuminate. Discontinue using the product until the problem has been identified and resolved. In the event of a power outage, a 9-Volt battery will power the alarm. (Note: In the event of a power outage and if necessary, the macerator will accept two flushes prior to alarm activation. After that, the unit should not be used again until the power is restored.) The alarm automatically resets once a normal cycle is performed. If the yellow light is illuminated on the LED touchpad, the 9 volt battery needs to be replaced. The expected life of the supplied battery is 5 to 7 years.
- 2-11 ACCESS COVER:** The macerator has an access cover that can be removed to gain access to the pumping and macerating cartridge to remove debris or perform maintenance. Once the right hand decorative cover and access cover have been removed, the cartridge can be slid towards the opening to provide access to the basket and cutting mechanism. The blades or entire cutting base can be replaced if needed. See the maintenance section 4-3 of this manual for detailed instructions.

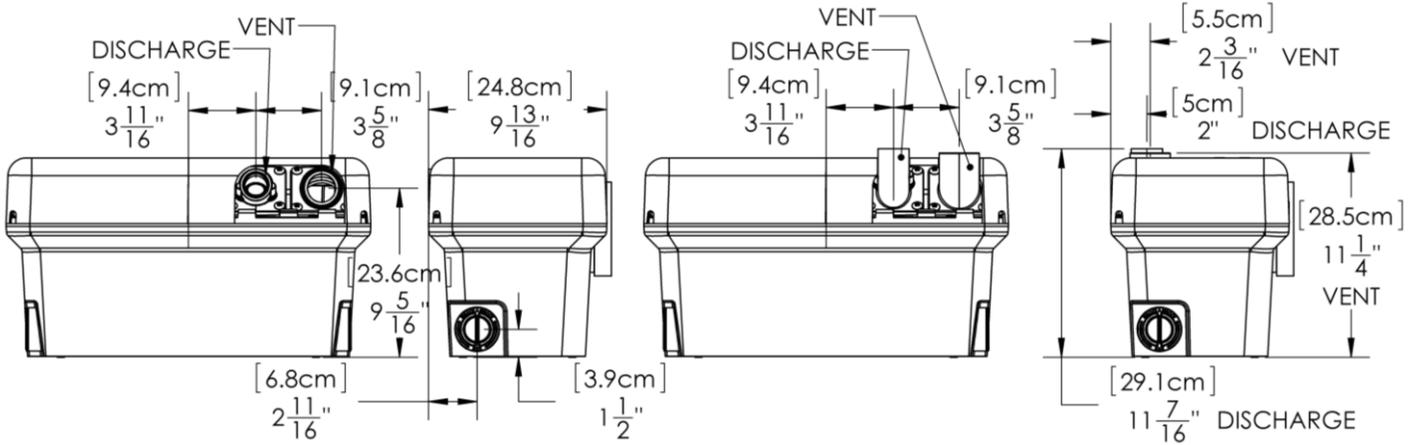
3. Installation

- NOTE: All installations should be done in accordance with federal, state and local codes. It is recommended that a certified or qualified installer perform these operations. Do not use an air admittance valve or a mechanical spring-loaded venting device.**

3-1 The bathroom layout should be designed prior to installation.

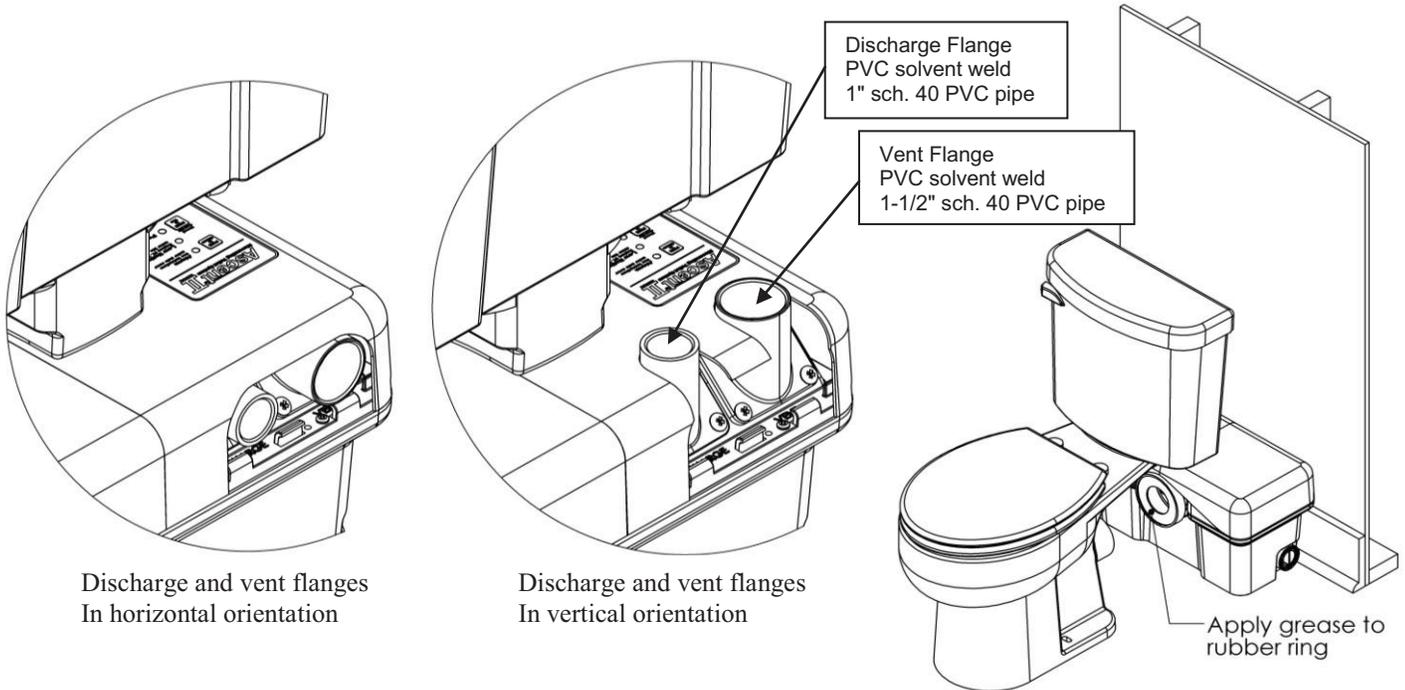
- Make certain the power source (GFCI receptacle) is within range of the macerator's 8' power cord. The cord can be configured to exit the unit on either the left or right side. Do not use an extension cord. When exiting the left side of the macerator the vent flange must be removed so the cord can be routed between the positioning clips. Reinstall vent flange after routing the cord.
- If possible, the right side of the macerator should remain unobstructed. An access cover is located under the decorative cover that allows access to the cutting mechanism. In the event of a jam, the decorative cover as well as the access cover will need to be removed from the macerator and working room to do so would be beneficial.
- Auxiliary inlet ports are located on either side towards the back of the macerator's tank. These ports can accept waste from sink or tub/shower.
- An optional discharge extension allows the macerator to be positioned behind a wall. For instance, the macerator could be positioned on the floor of a linen closet or utility room. DO NOT fully frame unit into a wall -- access to macerator must be maintained.
- The macerator features Quickflip™ discharge and vent flanges that can be oriented in a vertical or horizontal orientation to best fit your installation.
- A sink should be plumbed into one of the auxiliary inlets and not the discharge line of the macerator even if elevations would allow such an installation. The discharge line is pressurized and the plumbing system needs to accommodate this.
- The water supply line for the toilet tank is located on the left side. When roughing in, pay attention to allow for the macerator.
- Long downward pitched runs of discharge piping, or piping where the point of discharge is at a lower elevation than the macerator unit, should be designed to prevent siphoning from the macerator tank.
- Rough in dimensions – The toilet hold down fasteners should be located 16" from the wall and spaced 7" apart. This assumes a typical baseboard of ¾" x 5.5" with ¾" quarter round. Actual baseboard dimensions must be taken into account during the installation and thus rough in dimensions might change.





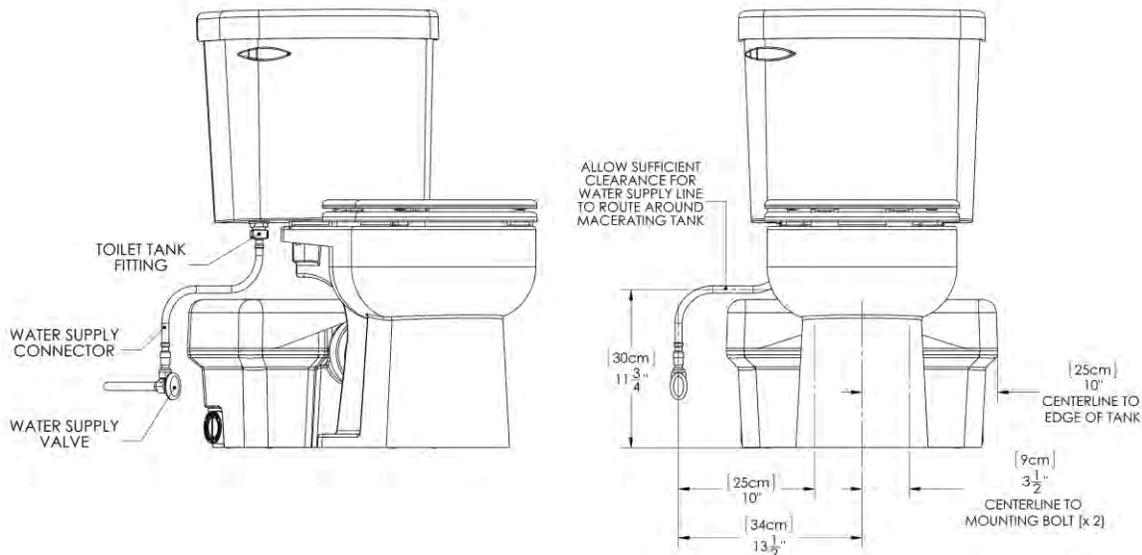
3-2 PREPARING THE MACERATING PUMP UNIT FOR INSTALLATION

- 3-2-1 The decorative covers are shipped from the factory assembled on the unit. However, during the installation both covers must be removed from the macerator. The auxiliary inlet couplers, Allen wrench, grease packet, hardware, and 9-volt battery can be found in a depression in the access cover.
- 3-2-2 Auxiliary inlets should be plumbed using the supplied aux. inlet couplings and/or reducing bushing when connecting to either 2" or 1-1/2" standard sch 40 pvc pipe. The plug must be removed by turning until the rib is vertical and pulling outward, pliers might be required if unit has been stored.
- 3-2-3 Both the discharge and vent flanges are shipped from the factory in the horizontal orientation. If the installation allows for a vertical orientation, the four screws must be removed from each in order to flip the flange. The decorative cover will need to be modified with the use of a hole saw and cutters to remove material. A template is provided on the underside of the decorative cover.
- 3-2-4 When installing the toilet to the macerator, first apply a small amount of silicone grease (grease package is provided) to the rubber sealing lip of the macerator. This will provide for a very simple and smooth installation.



3-3 SYSTEM ASSEMBLY

- 3-3-1 Schematics: Typical Installation Diagrams. Refer to these diagrams when needed during the assembly process. Installations may vary per local plumbing and electrical codes. Also, discharge and vent pipe routing can vary per installation.
- 3-3-2 Place the macerator in the desired location and connect all inlet and outlet waste piping to the unit. The non-inlet side of the tank should be towards the wall to ensure proper toilet placement.



- 3-3-3 Assemble the toilet in accordance to the installation manual(s) provided with it. Be careful when tightening fasteners as to not crack the porcelain.
- 3-3-4 To mount the toilet to a concrete floor, drill two holes approximately 2-1/4" deep with a 5/16" masonry drill bit. Insert plastic plugs into holes. If the floor is wood, bore a pilot hole with a 1/4" drill bit. Fasteners not included.
- 3-3-5 Place the toilet in front of the macerating tank and apply silicone grease to sealing lip of macerator. Then slide the discharge hub of the toilet into the rubber sealing ring of the macerator.
- 3-3-6 Place the toilet over the holes in the floor. Slip the plastic china protectors over the lag screws ensure proper orientation. Tighten lag screws (do not over tighten) and snap plastic caps in place.
- 3-3-7 Connect the water supply line to the fill valve, located directly below the flush lever, on the bottom of the toilet tank.

3-4 CONNECTION TO THE DISCHARGE AND VENT FLANGES

- 3-4-1 The Macerator has a PVC discharge flange with an integrated check valve that can be configured in a vertical or horizontal orientation. Standard 1" schedule 40 PVC pipe can be solvent welded directly to the flange. Excessive amounts of glue should be avoided. The check valve can be removed from the flange if required. Replacement flanges can be ordered. <http://www.libertypumps.com/Service/ReplacementParts/>
- 3-4-2 A "full-port" ball or gate valve and a union should be installed in the discharge pipe to facilitate the removal of the macerator or to perform maintenance if required. In addition, a drain off point is also recommend to allow the discharge piping to be drained if required.
- 3-4-3 The macerator is equipped with a PVC vent flange, which can be configured in a vertical or horizontal orientation. Standard 1-1/2" Schedule 40 PVC pipe can be solvent welded directly into the flange.
- 3-4-4 The macerator must be vented to allow for proper toilet flush performance. Depending on the installation, the product should either be connected to the stack vent of the dwelling or vented (plumbed) directly outside.
- 3-4-5 *****Do not use an air admittance valve or a mechanical spring-loaded venting device**, as these devices are one-way valves. The air pressure in and outside the macerating pump unit must be equal, a "cheater" vent will obstruct the airflow in one direction and prevent proper toilet function.
- 3-4-6 The Macerator is not designed to support the discharge and vent piping; proper pipe hangers are required.

3-5 CONNECTION TO THE SOIL-STACK OR SEWER

- 3-5-1 The macerator has a shut-off head of 36 feet. All frictional losses from horizontal runs and elbows need to be accounted for. The minimum flow rate for 1" PVC sch. 40 pipe is 5 gal/min compared to 3 gal/min for 3/4" PVC pipe. If you require a vertical lift, it should precede any "horizontal" run and should commence as near as possible to the discharge of the macerator. Once you have started the horizontal run, you may not change directions in a vertical manner.

NOTE: Friction losses from horizontal runs without 1/4" per foot pitch will reduce the amount of vertical lift the system is capable of handling. See sections 3-5-2 and 3-5-3. Consult factory for proper sizing if you have long runs or multiple elbows. Phone: 1-800-543-2550.

- 3-5-2 The discharge piping can be made from 3/4" or 1" diameter PVC pipe. Use long turn bends and not elbows where possible. The connection to the soil-stack or sewer pipe should be made with an approved wye fitting.

3-5-3

If you wish the unit to pump vertically and horizontally you may calculate 3 feet of vertical lift is equivalent to 30 feet of "horizontal" run. Each bend or change of direction gives a pressure drop, which must be calculated into the total head of the unit. As an estimate, reduce discharge height by 3 feet for each 90° bend.

For example: 1" SCH. 40 PVC pipe is used for the discharge and runs horizontally for 1'; then turns 90° and rises 5' vertical. Then it travels horizontal with another 90° turn (3 turns in total) and connects with the soil-stack. See illustration below.

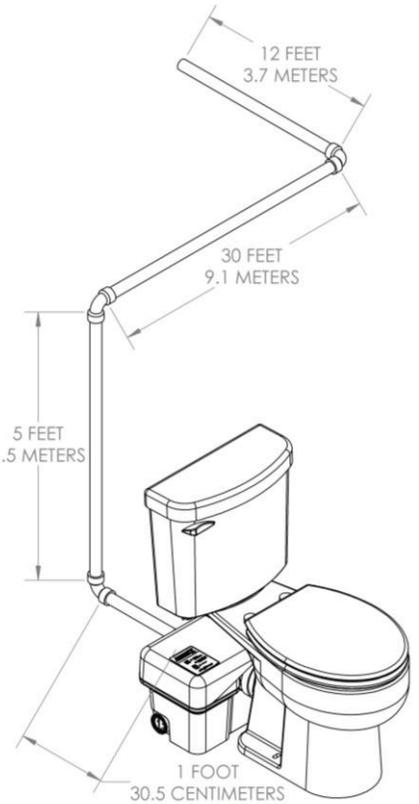
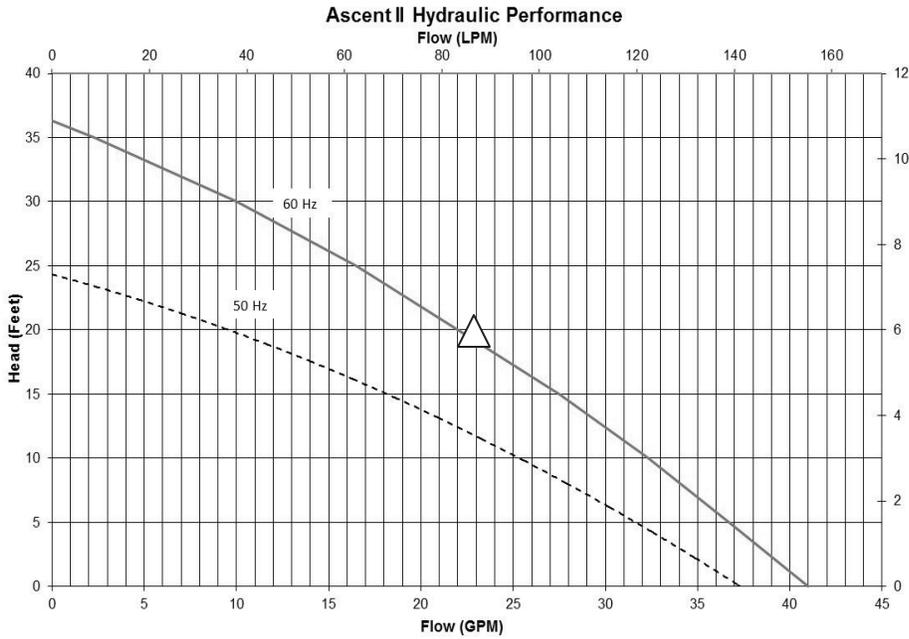
Calculations:

Total vertical lift 5' → 5' vertical

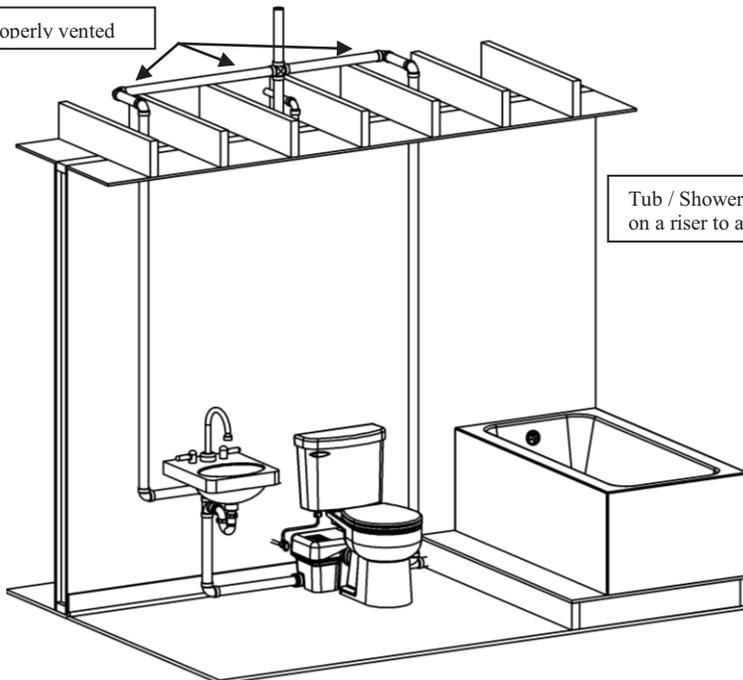
Total Horizontal run 43' → 4.3' vertical

Total of three 90° elbows → 9' vertical

Now add the three together we get 18.3' of vertical lift. Reading the performance curve below indicates the application would result in a flow rate of 23 gal/min(60Hz).



All fixtures must be properly vented



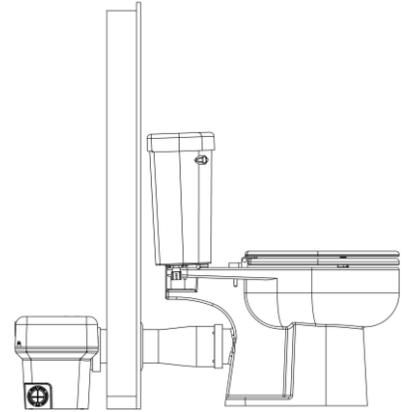
Tub / Shower should be installed on a riser to accommodate the P trap

3-6 CONNECTION TO ELECTRICAL SUPPLY

- 3-6-1** All wiring should be done in accordance with the applicable electrical codes. The macerating system requires a properly sized single-phase GFCI (ground fault circuit interrupter) type receptacle. Receptacle should be installed in accordance with local and state electrical codes. It is recommended that the receptacle be 40 inches away (in a straight line) from a shower or bathtub. If installation is performed in a basement, the receptacle should be 48 inches from the floor.
- 3-6-2** If the electrical power receptacle (outlet) is in close proximity to the macerator, the "extra power cord" can be coiled and tucked away in a large depression designed into the access cover that is located under the right decorative cover.



Risk of electric shock. This pump is supplied with a grounding-type attachment plug. To reduce the risk of electric shock, be certain that it is connected to a properly grounded, grounding-type receptacle.



3-7 EXTENSION PIPE

- 3-7-1** To install the macerator behind a wall, a Liberty extension pipe kit # K001184 (sold separately) will be needed. Included in the kit are an 18.75" long extension pipe, a decorative trim ring, and a grease packet. Rubber rings seal both ends of the extension pipe. **To prevent tearing, always grease both seals prior to installing the pipe.** Slip the decorative trim ring onto the pipe. To install the pipe, no fasteners are required, slip the extension pipe over the toilet's discharge, and then insert the pipe into the macerator. To finish the installation, fasten the toilet to the floor and secure the macerator discharge and vent piping. For proper flushing performance, ensure that the base of the toilet is not below the base of the macerator. Check the extension pipe with a level, and verify that the pipe is either level or sloped towards the macerator unit and away from the toilet.

- 3-7-2** Liberty recommends only one extension pipe be used.

3-8 INSTALLATION TIPS

- 3-8-1 PIPE SUPPORTS:** All sanitary pipe work must be supported in accordance with the pipe manufacturer's recommendations. Avoid dipping or trapping, which may cause the buildup of residual "solids" and subsequent blockage.
- 3-8-2 BENDS:** Wherever possible, long sweeping bends should be used. Do not use short elbows. If sweeping 90° elbows are not available, use two 45° elbows to make a 90° turn.
- 3-8-3 VERTICAL PIPING FIRST:** If vertical lift is required, this must precede the horizontal pipe run.
- 3-8-4 BATTERY:** Battery must be installed **AFTER** the macerator is connected to the AC power supply. Failure to follow this procedure could result in the unit not functioning properly.
- 3-8-5 DIRECTLY VERTICAL:** All vertical lifts should rise as close to the macerator as possible, allowing only for the need to clear the toilet tank; the initial horizontal run should not exceed 12".
- 3-8-6 NO DIAGONAL "UPHILL" PIPE RUNS:** All discharge piping from the unit should run either directly vertical or in a horizontal plane (with a minimum 1/4" per foot drop) to the point of discharge. Pipe work must not be installed with a diagonal upward slope from the unit to the point of discharge.
- 3-8-7 EASY ACCESS:** The unit should be accessible and removable in the event of maintenance being required. During the installation, a full-port ball valve should be installed near the discharge flange to allow easy service of the unit.
- 3-8-8 GRAVITY FALL:** The unit accepts wastewater by gravity; it does not "vacuum" in water. All inlet pipe work must have a positive gravity fall (1/4" per foot drop minimum). All horizontal piping from the macerator must also have a 1/4" per foot drop to allow free drainage when the pump stops.
- 3-8-9 SOIL STACK CONNECTION:** All discharge pipe work must be connected to the soil stack by an appropriate and approved connection like a "tee" or "y" fitting.
- 3-8-10 PIPE WORK:** All pipe work should be copper, PVC, or CPVC. Do not use flexible piping. Hangers should not be less than 4 feet apart to prevent pipe rattling.
- 3-8-11 FLUSHING:** Macerator is designed to work with a low flow toilet (1.28 gallons per flush).
- 3-8-12 DISCHARGE:** Never discharge directly into an open drain, fixture, manhole or rainwater drainpipe. It is illegal, as it constitutes a health hazard. Direct connections into sanitary waste systems only shall be acceptable.
- 3-8-13 FREEZING:** Ensure all pipe work susceptible to freezing is adequately insulated or heated. In unheated buildings, the toilet, piping and macerating unit must be properly winterized. Use plumbers' anti-freeze or drain completely.
- 3-8-14 ELECTRICITY:** The macerating system must be connected to a Ground Fault Circuit Interrupter (GFCI). Before attempting any maintenance or servicing, the unit must be disconnected from the power source.
- 3-8-15 SHOWER:** The water height will be 4.5" in the Macerator tank before the unit starts pumping. The shower stall floor must be well above this level, Liberty recommends at least 6" - 8" to ensure proper shower drainage and prevent any backflow.

