



Handle  
With  
Care



**BRINE-TEK™**

Handling & Installation

Instruction Manual

03-06-2020

 (616) 794-1130

 [sales@beldingtank.com](mailto:sales@beldingtank.com)

 [www.beldingtank.com](http://www.beldingtank.com)

 (616) 794-3666



200 N. Gooding Street – P.O. Box 160 – Belding, MI 48809-0160

 Toll Free: (800) 253-4252



## HANDLING & INSTALLATION INSTRUCTIONS

### TABLE OF CONTENTS

ABOVE GROUND STORAGE TANKS	Page 2
INSPECTION	Page 2
INHERENT CHARACTERISTICS	Page 2
HANDLING	
General	Page 3
Handling Skidded Tanks	Page 3
Lifting / Handling Lugs	Page 3
FLAT or SLOPED BOTTOM TANKS	Page 4
Tank Bottom Support Pad	Page 5
Bottom Buffer Pad	Page 5
Side Bottom Flange Pad Cut Out	Page 6
Hold Down Lugs	
Standard Lugs	Page 7
Anchor Dogs / Load Ledge	Page 8
INSTALLATION	
Fitting Connections	Page 9
Water Fill Test	Page 9
Tanks For Food Application	Page 9
Safety Precautions	Page 9
Liquid Level Controller	Page 10
Solid (Salt) Level Indicator	Page 10
Internal Components	Page 11
Graded Filter Gravel	Page 12





## HANDLING & INSTALLATION INSTRUCTIONS

### **ABOVE GROUND STORAGE TANKS**

The following handling and installation instructions are intended to help customers install tanks properly and efficiently.

Handling and installation instructions are only recommendations. They do not relieve the purchaser from full responsibility for proper inspection, handling and installation. Improper handling or installation, which results in damage or tank failure, is the sole responsibility of the purchaser. Failure by the customer to comply with the handling or installation instructions will void the tank warranty. Unknown situations or conditions are also the burden of the purchaser.

The presence of BELDING TANK TECHNOLOGIES personnel or an authorized representative at the installation site does not relieve the purchaser of their responsibilities.

### **INSPECTION**

At the time of delivery, the customer shall be responsible for inspecting the tank for damage during transit. Both the inside and the outside of the tank must be inspected. All manhole bolts should be removed to allow for proper inspection. For your convenience, we have installed a minimum number of bolts in the manhole(s). See BELDING TANK TECHNOLOGIES Operation & Maintenance Instructions for proper sequence and torque settings for manhole bolting.

If damage has occurred it should be noted on the delivery receipt prior to signing acceptance, whether it be a BELDING TANK TECHNOLOGIES truck or common carrier. In the case of a common carrier, claim should be immediately filed by the customer with the delivering carrier. If delivery is made by a BELDING TANK TECHNOLOGIES truck, the factory should be immediately contacted prior to unloading or acceptance. The customer accepts all future responsibility for a damaged tank if the procedures set forth are not followed.

Minor damage can be repaired at the delivery site.

### **INHERENT CHARACTERISTICS**

In the manufacturing process, resin / gel coat may adhere to the steel lugs. This interface between steel and resin / gel coat does not bond, which allows for separation between the two dissimilar materials. This separation is cosmetic in nature ONLY, and in no way affects the structural integrity or operation of the tank

For minor cracks in the insulation case, an exterior expandable caulk may be used.

None of the inherent characteristics are considered damage.



## HANDLING & INSTALLATION INSTRUCTIONS

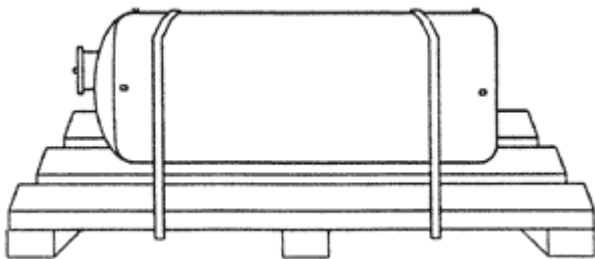
### GENERAL

BELDING TANK TECHNOLOGIES tanks are designed to withstand normal handling. Arrangements should be made to have responsible, experienced personnel to off-load the tank and/or equipment. Note the following handling precautions.

1. NEVER unsecure a loaded tank from the trailer until the rigging is properly secured for off-loading.
2. NEVER roll or slide a tank. Lift the tank using a crane or other approved method.
3. Tank must always be lifted empty.
4. Operators of hoist equipment should always follow proper rigging procedures. NEVER allow tank to swing out of control.
5. Do not drop or allow hard impact from tools, spreader bars, etc.
6. Avoid the use of equipment inside the tank that could scratch or damage the inner corrosion barrier. Ladder ends should be padded. Workman entering a tank should take proper precautions to ensure they are not tracking debris inside the tank.
7. NEVER use cables or chains around tank.
8. NEVER lift a tank using fittings or accessories. Use designated lifting lugs.
9. If tanks are being stored prior to installation, be sure to lay on padded surface and tie down securely.

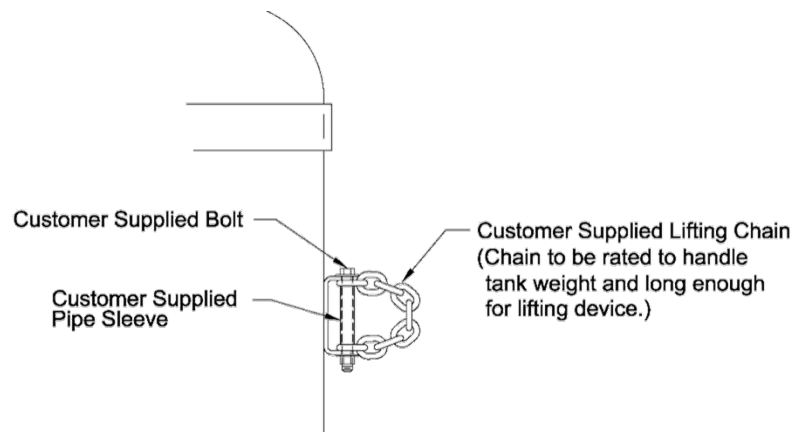
### HANDLING SKIDDED TANKS

Small tanks shipped by common carrier are palletized to facilitate handling by forklift. To remove tank, pull on the bottom of the skid. **DO NOT PULL ON THE TANK.**



### LIFTING / HANDLING LUGS

The lugs are designed for equal load on both ear tabs of the lug. BELDING TANK TECHNOLOGIES recommends using a pipe spacer between the ear tabs to achieve equal load and lifting chain to allow the tank to easily rotate from horizontal to vertical.

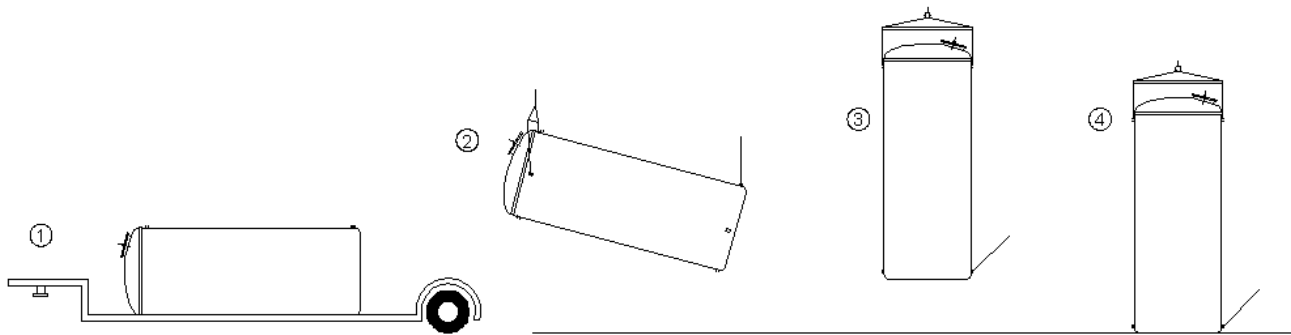


## HANDLING & INSTALLATION INSTRUCTIONS

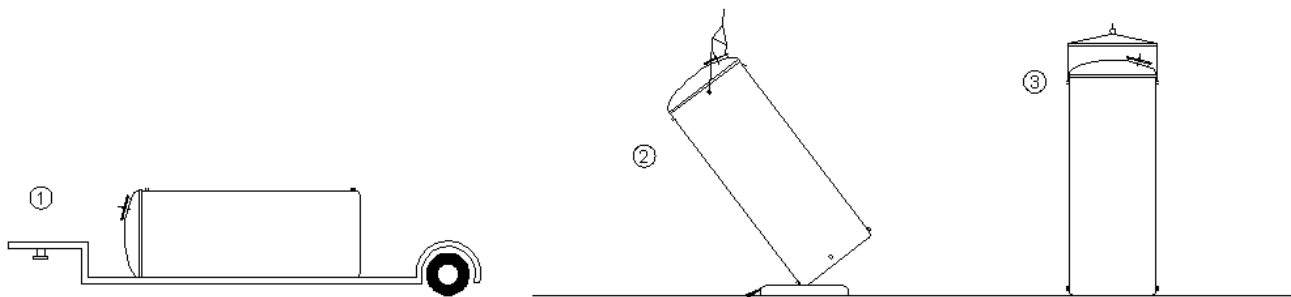
### FLAT OR SLOPED BOTTOM TANKS

Larger tanks shipped by BELDING TANK TECHNOLOGIES truck and special built trailers, require a spreader bar and tail hook lines attached to the appropriate lifting lugs to unload tanks. Use a guide line to keep the load under control.

Use a spreader bar and lines attached to appropriate lifting lugs to hoist the tank to an upright position and place the tank on its foundation. Control the tank with guide lines to ensure the tank is gently set on its base.



Recommended Method



Alternative Method

**CAUTION:** When a tail hook is unavailable and the tank rest on a pivot point, proper care should be taken to protect the pivot point by means of excessive padding.



## HANDLING & INSTALLATION INSTRUCTIONS

### ***TANK BOTTOM SUPPORT PAD***

BELDING TANK flat bottom and slope bottom tanks require continuous bottom support. The most common support pad is a concrete slab. However, any other support structure with sufficient strength to support the combined weight of the tank and its contents without deflection, plus a reasonable factor of safety, is acceptable. Design for bearing strength of support pad is the responsibility of the purchaser. The support pad must exceed tank diameter by 6" minimum and be flat within +/- 1/16".

INSTALLATION NOTE: Support pad must be clean and free of all foreign objects prior to setting the tank in place.

### ***TANK BOTTOM BUFFER PAD***

Liquid grout such as concrete, epoxy, etc., MUST NOT be used under standard flat bottoms. BELDING TANK recommends a buffer pad between the tank support and tank bottom: flexible elastomer or a minimum of two layers of 30-pound roofing felt. When applying the roofing felt, be sure there are no overlaps or wrinkles causing ridges under the bottom. It is the responsibility of the purchaser to see that tanks are properly installed. Any deviation from the above outlined procedure must be approved by BELDING TANK TECHNOLOGIES or it will void your warranty.

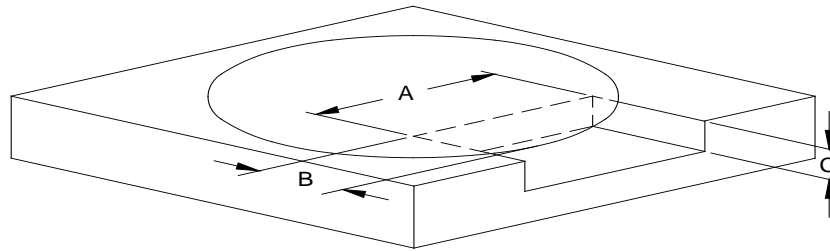


## HANDLING & INSTALLATION INSTRUCTIONS

### ***SIDE BOTTOM FLANGE PAD CUT OUT:***

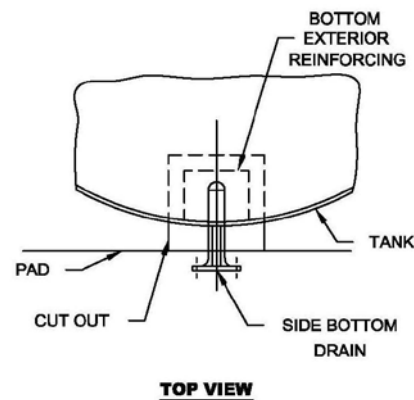
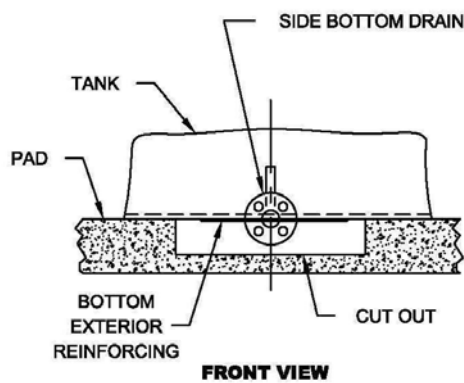
**CAUTION:** When installing any BELDING TANK TECHNOLOGIES tank with a side bottom flange, your pad cut-out dimensions must conform to the specifications as detailed below. Any deviation without the written consent of BELDING TANK TECHNOLOGIES may cause serious damage and will void warranty.

Consult the factory if you have any questions. 1-800-253-4252.



Drain Size	A	B *	B **	B ***	C
2"	12	8	9	10-1/2	4-1/4
3"	12	8	9	10-1/2	4-3/4
4"	12	8	9	10-1/2	5-3/4
6"	14	8	9	10-1/2	6-3/4
8"	18	8	9	10-1/2	8
10"	22	8	9	10-1/2	9-1/4
12"	26	8	9	10-1/2	10-3/4

\* Tank Diameter < 120" \*\* Tank Diameter 120" to 144" \*\*\* Tank Diameter > 144"



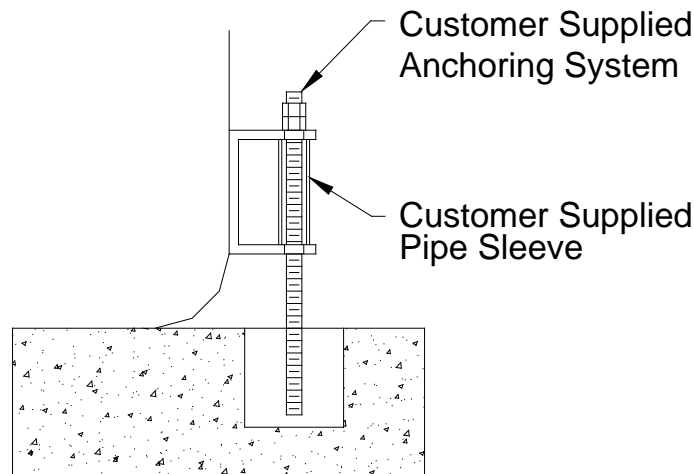
***The bottom exterior reinforcing MUST BE within the pad cut out.***

## HANDLING & INSTALLATION INSTRUCTIONS

### *HOLD DOWN LUGS - Standard*

The required hold down lugs are supplied as standard equipment on all BELDING TANK TECHNOLOGIES tanks. Anchor bolts and hold down hardware are supplied by the customer.

### **Preferred Method of Anchor Installation:**



### **Expansion anchor or resin capsule anchor.**

**Belding Tank recommends the use of two nuts on the top of the lug. When the tank is EMPTY, hand tighten the first nut onto the top of the lug. Hand tighten the second “JAM” top nut onto the bottom nut. Then, using two wrenches lock the bottom nut onto the top nut. Do not adjust after the tank is filled.**

### **Do not over tighten hold down lugs.**

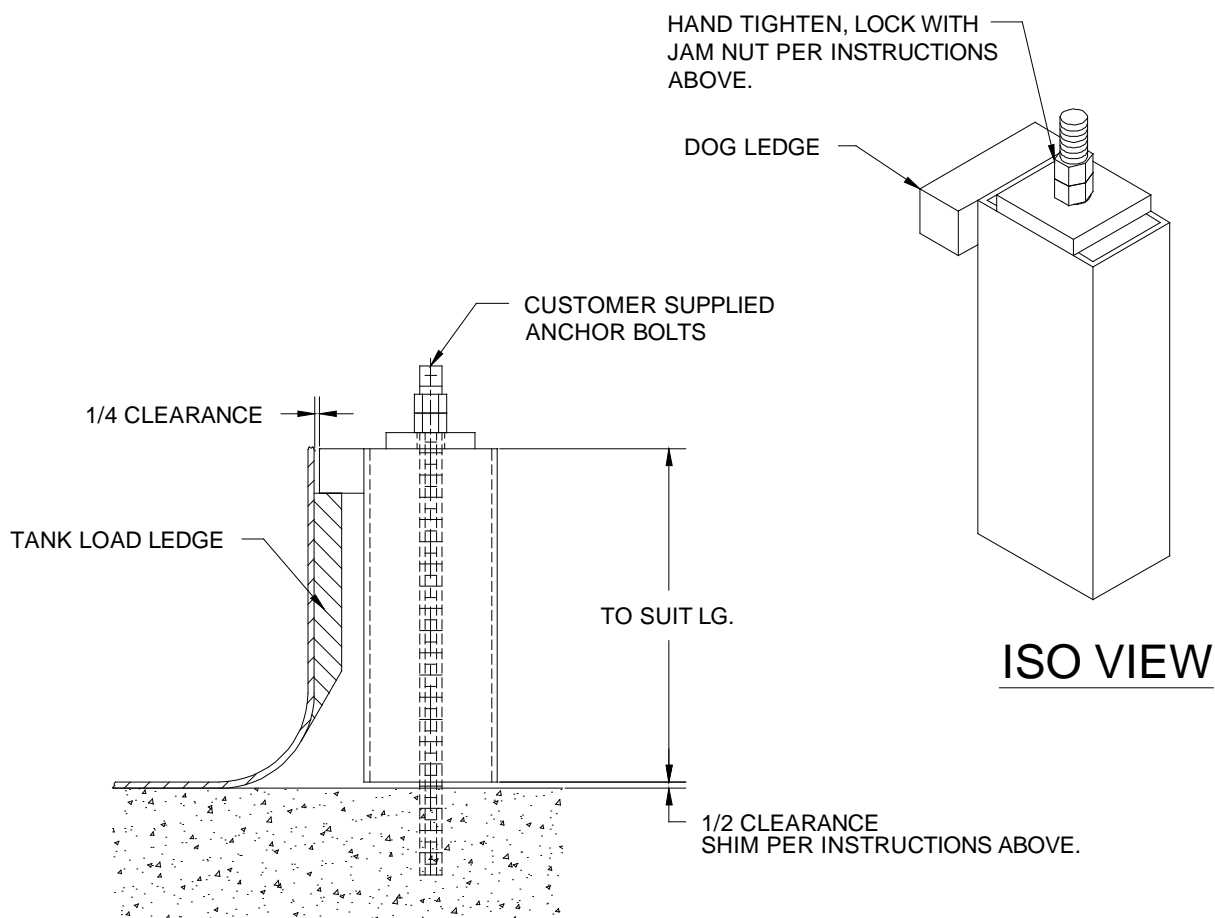
**INSTALLATION NOTE:** Do not locate or pre-set anchor holes/bolts in the tank pad before receipt of tank. BELDING TANK will not be responsible for pre-set anchor holes/bolts.



## HANDLING & INSTALLATION INSTRUCTIONS

### *HOLD DOWN LUGS – Anchor “DOG” / Load Ledge*

1. Position & set Anchors -- See Tank Drawing for position.
2. Minimum height of anchors above tank base = height of “DOG” + top plate + height of (2) nuts + ½” minimum.
3. Position anchor “DOGS” over anchor bolts; locate dog ledge ¼” away from sidewall and on top of load ledge & level “DOGS”; -- shim if needed.
4. When tank is empty fill anchor “DOG” box with non-shrink grout.
5. Put cover plate over anchor “DOG” box and hand- tighten bottom nut.
6. Hand tighten second “JAM” top nut onto the bottom nut.
7. Lock bottom nut onto the top nut. Do not adjust after tank is filled.





## HANDLING & INSTALLATION INSTRUCTIONS

### ***FITTING CONNECTIONS***

Fiberglass tanks will move due to hydrostatic pressure and temperature fluctuations. Because of this movement, Belding Tank strongly recommends the use of flexible pipe connections. The flexible connection should be attached to the tank fitting. If rigid piping is used and results in damage to the tank and/or fitting, your warranty will be void.

**CAUTION: METALLIC FITTINGS MUST NOT BE USED ON FRP NIPPLES OR COUPLINGS.**

BELDING TANK recommends that you do NOT use raised face flanges. If raised face flanges must be used, a flange spacer **MUST BE USED** when bolting FRP flanges to raised face flanges. Use only full-face gaskets. Do NOT over torque the flange bolts.

### ***WATER FILL TESTING***

BELDING TANK recommends that each tank be water filled (hydro tested) for a minimum 2-hour period at atmospheric pressure, after the tank is installed and prior to use.

### ***TANKS FOR FOOD APPLICATION***

See BRINE-TEK™ Operation & Maintenance Instructions for tanks requiring FDA approval.

### ***SAFETY PRECAUTIONS WHEN WORKING INSIDE OF TANK***

1. Top manhole **MUST BE OPEN** for proper ventilation.
2. Tank entry should be made only through the side manhole.
3. Proper confined space entry procedures should be followed. A safety watch person should always be present outside the tank with no other duties than to observe/rescue. In addition, one other person is required to be within hearing distance, to assist in a rescue if required.
4. Mechanical ventilation should be provided when working within the tank.





## HANDLING & INSTALLATION INSTRUCTIONS

### *LIQUID LEVEL CONTROLLER: (When Supplied)*

BELDING TANK TECHNOLOGIES BRINE-TEK™ Liquid Level Controller is designed to provide a relatively constant liquid level in a BRINE-TEK™ Brinemaker. This is accomplished by installing a normally closed pressure switch on the water inlet line. This senses a decreasing water level which will close the pressure switch contacts and start the auto reset timer. The timer opens the water solenoid valve and replaces water for a preset time period. At the end of the time cycle, the water valve closes and the timer resets; and waits for the next signal from the pressure switch to add more water.

Installation of the liquid level controller should follow the guidelines set forth in the BRINE-TEK™ Liquid Level Controller Installation Instructions. We indicate a piping by-pass around the solenoid and pressure switch to provide a method of manually adding water.

When you are ready to add water for the first time, it should be done with the manual by-pass. Run water into the tank until you reach an overall height between 7 and 8 feet. Adjust the pressure switch so the contacts just open at this water level.

### *SOLID (SALT) LEVEL INDICATOR: (When Supplied)*

BELDING TANK TECHNOLOGIES BRINE-TEK™ Solids Indicator is a GP-4 Bindicator Yo-Yo. The brinemaker comes complete with a 3" MNPT nipple, located on the dome top head for mounting the Bindicator Yo-Yo. For complete installation instructions see Bindicator GP-4 Yo-Yo Installation, Operation & Maintenance Manual.





## HANDLING & INSTALLATION INSTRUCTIONS

### INTERNAL COMPONENTS INSTALLATION

1. Install the 22" plenum in the tank through the 24" diameter side manhole. The plenum should be positioned in the center, with the two flanged tabs positioned under the two FRP plenum brackets on the tank bottom. This will give an approximate position with sufficient clearance for final adjustment.
2. Using the stainless steel bolts, nuts and washers provided, install the 2" PVC brine discharge pipe between the brine plenum and the flanged connection on the tank interior. Allow the PVC pipe flanges to determine the final position of the brine plenum. The plenum may need to move in, out, or be turned slightly to allow for proper alignment of the flanges on top of the plenum and the inside tank wall.
3. Install the six slotted PVC pipe sections evenly into the six holes in the sides of the brine plenum. Position the pipes with the slots on the sides and directed toward the tank bottom and put the caps on the outside of each end. To prevent the pipes from moving or rolling, use a few pieces of gravel, if a gravel bed is being used, or run a bead of food grade caulk along both sides of the slotted pipes at the outer end for about six inches.
4. Inspect the water inlet spray ring piping to ensure that all holes are aligned horizontally with the tank bottom and that no holes are blocked by support brackets. Also inspect for any damage that may have occurred during transit.
5. Replace the side manhole cover and follow the "Manhole Bolting Sequence" and torque requirements found in the following "Operation and Maintenance" section.
6. The 4" stainless steel fill pipe should be positioned through the top center 6" flanged nozzle. Secure the adjustable pipe hangers supplied to the FRP brackets on the exterior tank sidewall. Adjust to ensure proper alignment so there is no stress on the top flange nozzle.
7. Connect the 8" PVC coupling with vent pipe extension to the FRP tank connection. Using two hose clamps connect the rubber boot to the PVC vent pipe extension and vent down pipe. The vent down pipe is held in place by clamping it to the FRP mounting lugs on the tank exterior sidewall. A clamp and polyester dust bag are provided for use during unloading to control excessive salt dusting.
8. When all connections are complete and prior to installing the gravel support bed that is required when using granulated grades of salt, the tank should be filled with water. The water should be held for a minimum of 2 hours and then checked carefully for any leaks. If a leak is detected, contact BELDING TANK TECHNOLOGIES.
9. Drain the water and install the gravel (if required), using 7" of coarse filter gravel (1/2" x 1/4") on the bottom and 5" of fine filter gravel (1/4" x 1/8") on the top. This should be done carefully to keep the PVC slotted pipe in proper position.
10. The tank should be re-filled with 7' of water through the water inlet piping and the pressure switch of the BRINE-TEK Liquid Level control unit should be adjusted at this time. (See the BRINE-TEK Liquid Level instructions later in this manual). Visual inspection through the top manhole is recommended to ensure the water spray ring is operating correctly.

**A GRAVEL BED IS REQUIRED FOR GRANULATED SALT ONLY.**



## HANDLING & INSTALLATION INSTRUCTIONS

### **GRADED FILTER GRAVEL**

Filter gravel beds are required in BRINE-TEK™ Brine Makers when granulated salt is being used. Stream washed gravel should be used. **DO NOT** use crushed rock. Gravel packed in 100 lb. bags that equal about 1 cubic foot.

8 foot diameter tanks require:

30 bags of 1/2" x 1/4" on the bottom and 22 bags of 1/4" x 1/8" on top of that.

9 foot diameter tanks require:

38 bags of 1/2" x 1/4" on the bottom and 27 bags of 1/4" x 1/8" on top of that.

10 foot diameter tanks require:

45 bags of 1/2" x 1/4" on the bottom and 35 bags of 1/4" x 1/8" on top of that.

11.5 foot diameter tanks require:

61 bags of 1/2" x 1/4" on the bottom and 44 bags of 1/4" x 1/8" on top of that.

12 foot diameter tanks require:

67 bags of 1/2" x 1/4" on the bottom and 48 bags of 1/4" x 1/8" on top of that.

14 foot diameter tanks require:

87 bags of 1/2" x 1/4" on the bottom and 61 bags of 1/4" x 1/8" on top of that.

### **KNOWN SUPPLIERS OF GRAVEL**

KLEEN INDUSTRIAL SERVICES      800-356-7323  
Mountaintop, PA & Danville, CA

NORTHERN FILTER MEDIA      563-263-2711  
Muscatine, IA

RED FLINT      800-238-9139  
Eau Claire, WI

***A simple web search can be done for  
"Filter Gravel Suppliers" to locate a  
supplier close to you.***