

StorMaxx-NP

Installation Manual

This manual contains installation instructions for the SunMaxx Solar non-pressurized tanks used for thermal storage.





Table Of Contents

Table Of Contents	2
WARNINGS	1
Applications	2
Uses Include	2
Crate Contents	3
Exploded View	3
NP Tank View	3
Tank Models	4
Installation Instructions	5
Uncrating the Tank	5
Assembly of the Tank	7
Installing the Tank Heat Exchanger(s)	9
Installing The Copper Lid Supports (64 in diameter and larger)	10
Installing The Copper Lid Supports (64 in diameter and larger)	12
Installing metal brackets for lid support	13
Lid Support Pass-Through Exploded View	14
Fill port installation	14
Optional Add-on: Sacrificial Anode Rod	14
Fill the Heat Storage Tank with Water	14
Placing the Lid on the Tank	15
Placing the Aluminum Lid Cover and Trim	15
Owner Maintenance Checklist	16
Tank Labels	17

WARNINGS

- This tank is designed for indoor, not outdoor use.
- Tanks must be installed on a sufficiently strong surface to accommodate the weight of the tank and water combined. Note: Water weighs 8.33 pounds per gallon.
- Avoid installation in an area where water could potentially freeze.
- The water must be maintained at a level within the boundaries of the orange tape that surrounds the tank.
- Petroleum products will damage the EPDM liner.
- Temperatures above 180 Degrees Fahrenheit may damage the tank liner.
- Check your water pH before filling the storage tank.
 - For copper heat exchangers, the pH of the water must be maintained at between 8.2 and 8.6.
 - For stainless steel heat exchangers, the pH of the water should be maintained between 7 and 9.
 - If you have a water supply with a pH lower than this, you must raise the pH to an acceptable level. You can do this with pH plus for pools.
- Water with dissolved ions can act as an electrolyte causing electrolysis and resultant corrosion of copper pipes. Copper heat exchangers should be properly grounded for protection.
- Installing a sacrificial anode rod similar to those used in hot water heaters can add another level of protection if your water has dissolved ions.
- Surface or well water not coming from a municipal system should be tested for substances corrosive to copper such as cyanides and ferric, cupric, and ammonium salts. A different water source should be used if any of these substances are present.
- The warranty does not cover any on-site installation accidents or occurrences, including but not limited to: the liner being damaged during set-up, the aluminum outer skin of the tank being dropped onto the liner, the liner ripping while forcing the tank through a tight opening or while positioning the heat exchange coils on the tank bottom without properly lifting the coils into place.

Applications

- The SunMaxx StorMaxx non-pressurized water tank is used where a buffer tank is necessary to eliminate cycling and storage of thermal energy produced during day time hours, while still keeping sufficient water temperature for night time hours.

Uses Include

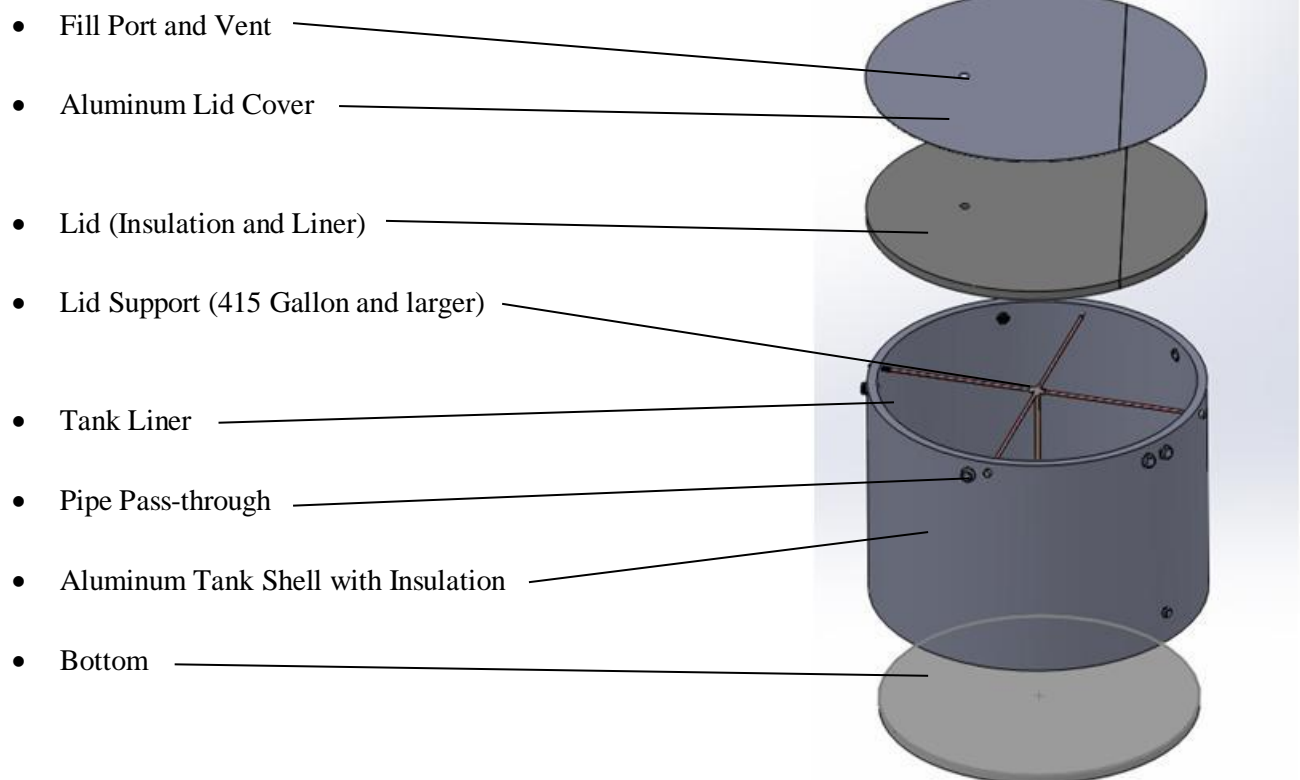
- **Warm Water Baseboarding.** A hydronic baseboard can heat an entire building if properly calculated and designed. It takes a greater number of baseboards for warmer water applications. According to the water temperature chart, a hydronic baseboard will deliver 228 Btu/ft at 120°F water, 274 Btu/ft at 130°F, or 225 Btu/ft at 140°F water.
- **Warm Air Furnaces and Heat Pump Systems.** In a warm air application, larger sized ducts are required to move energy at an adequate CFM. The SunMaxx in tank heat exchangers and duct water to air exchangers are designed to provide home heating down to water temperatures of 120°F, at design outdoor temperatures.
- **Radiant Floor Heating.** Floor heating, when combined with heat storage is a very efficient method to heat a home, or similar building since tank temperatures can be as low as 95°F. and still provide all of the designed heating load. This means that the necessary storage tank can be smaller than the equivalent tank for a higher temperature application. Additional benefits of radiant floor heating include increasing efficiency of 20 to 35% compared to conventional distribution.

Crate Contents

- Storage tank shell with insulation
- Tank lid and bottom (located inside the storage tank)
- Aluminum tank lid cover [comes in 2 pieces for tanks with diameter larger than 4FT] (located on the outside of the tank between the tank and wrapping)
- Lid trim
- Copper lid support pipes, fittings (64" diameter and larger tanks only)
- Hardware bag for lid support: 4 Qest nut, ring, and cone assemblies, 4 white caps (415 gallon and larger tanks only)
- Silicone Sealer
- Bag of screws for the lid cover and trim

Exploded View

NP Tank View



Tank Models

SKU	Diameter (in)	Height (in)	Volume (USG)	Weight (lb)	Max. No. of HX	Unsupported Span, A (in)
StorMaxx-NP-0150G-4FT	36	48	139	129	1	36
StorMaxx-NP-0200G-4FT	40	48	176	137	1	40
StorMaxx-NP-0225G-4FT	44	48	218	141	1	44
StorMaxx-NP-0250G-4FT	48	48	263	155	2	48
StorMaxx-NP-0300G-4FT	52	48	313	166	2	52
StorMaxx-NP-0400G-4FT	58	48	397	185	3	58
StorMaxx-NP-0400G-5FT	52	60	407	222	2	52
StorMaxx-NP-0500G-4FT	64	48	490	206	4	32
StorMaxx-NP-0500G-5FT	58	60	516	226	3	58
StorMaxx-NP-0600G-4FT	70	48	592	227	5	35
StorMaxx-NP-0600G-5FT	64	60	636	264	4	32
StorMaxx-NP-0700G-4FT	76	48	705	241	6	38
StorMaxx-NP-0700G-5FT	68	60	724	270	5	34
StorMaxx-NP-0800G-4FT	80	48	786	267	7	40
StorMaxx-NP-0800G-5FT	72	60	818	274	5	36
StorMaxx-NP-0800G-6FT	64	72	783	281	4	32
StorMaxx-NP-0950G-5FT	76	60	917	309	6	38
StorMaxx-NP-0950G-7FT	64	84	930	301	4	32
StorMaxx-NP-1000G-5FT	80	60	1021	338	7	40
StorMaxx-NP-1000G-6FT	72	72	1006	339	5	36
StorMaxx-NP-1100G-6.5FT	72	78	1101	340	5	36
StorMaxx-NP-1200G-4FT	96	48	1151	359	9	48
StorMaxx-NP-1200G-5FT	86	60	1189	371	8	43
StorMaxx-NP-1200G-6FT	78	72	1192	372	6	39
StorMaxx-NP-1200G-7FT	72	84	1195	372	5	36
StorMaxx-NP-1300G-4FT	100	48	1253	386	10	50
StorMaxx-NP-1300G-5FT	90	60	1308	386	8	45
StorMaxx-NP-1300G-6FT	82	72	1324	386	7	41
StorMaxx-NP-1500G-5FT	96	60	1496	426	9	48
StorMaxx-NP-1500G-6FT	86	72	1463	413	-	43
StorMaxx-NP-1700G-7FT	86	84	1737	666	8	43
StorMaxx-NP-1900G-6FT	96	72	1842	723	9	48
StorMaxx-NP-2000G-5FT	110	60	1987	732	10	55
StorMaxx-NP-2000G-6FT	100	72	2005	754	10	50
StorMaxx-NP-2200G-7FT	96	84	2187	774	9	48
StorMaxx-NP-2400G-5FT	120	60	2379	775	12	60
StorMaxx-NP-2800G-7FT	108	84	2795	925	10	54
StorMaxx-NP-3500G-7FT	120	84	3477	1064	-	60
StorMaxx-NP-4000G-7FT	128	84	3973	1179	-	43
StorMaxx-NP-4500G-7FT	135	84	4434	1278	-	45
StorMaxx-NP-5000G-7FT	142	84	4921	1344	-	47
StorMaxx-NP-0150G-4FT	36	48	139	129	1	36
StorMaxx-NP-0200G-4FT	40	48	176	137	1	40

Installation Instructions

Notes:

- If at all possible, the tank should be moved into position in the crate.
- If the tank must be moved around corners or through tight spaces, remove the wooden crate and other components. Maneuver the shell with insulation separately. Keep the bubble wrap on while maneuvering. If you are going to move the tank down stairs, tape cardboard to the bottom of the tank for protection.

Uncrating the Tank

1. Remove the stretch wrap from the crate.
2. Remove the top and vertical crate supports.
3. Remove the aluminum lid cover located on the outside of the tank.
4. Remove the pieces that can easily be reached from inside the tank liner.



5. Leave the bubble wrap on. Lay the tank down on its side. Remove the crate bottom.



6. With the tank is on its side, push the liner inside the tank. This protects the liner while moving the tank into position.



7. Clean the floor at the desired tank location.
8. Make sure the floor is level. **Note:** If the floor is not level, the tank will not be round at the top and the lid will not fit properly. If this is the case, shim the low spots on the aluminum tank shell. The shims can later be removed once the tank is full and the lid is in place.



9. Move the tank to the desired location. **NOTE:** Do not drag the liner or lay the shell on the liner while maneuvering the tank.

Assembly of the Tank

1. Open the tank out into a circle. Measure to ensure a circular shape.



2. Lay the tank bottom on the ground with the blue Styrofoam side facing down.
3. Lift one side of the tank and slide the bottom under the tank. **Note:** Make sure the tank's liner does not get caught between the tank's wall and bottom.



4. Fit the tank shell around the bottom, making sure the shell insulation falls around the edges. It will be a tight fit. Work your way around the shell pulling out and pushing down. **Note:** It may be necessary to get inside the tank, pushing out on the shell to accomplish this.
5. Climb inside the tank. Be careful not to damage the liner. Straighten out the pleats of the rubber liner.



Installing the Tank Heat Exchanger(s)

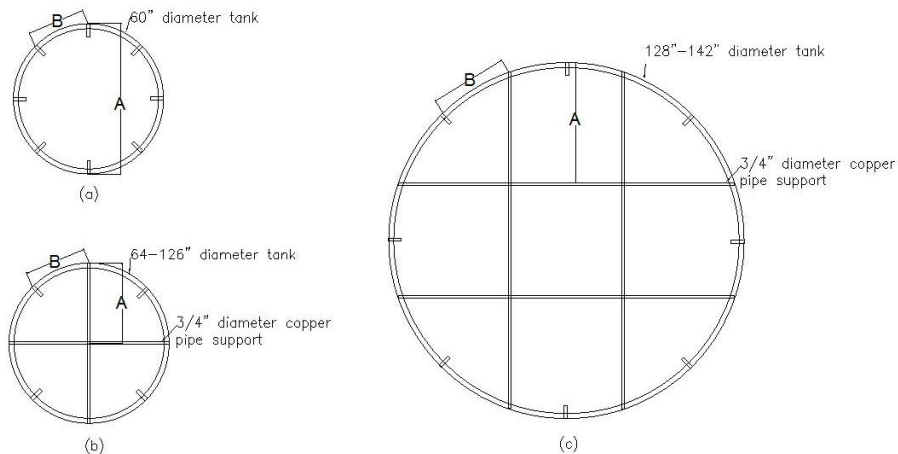
Notes:

- Dripping solder will not damage the tank EPDM.
 - Hot supply or return lines are plumbed to the tops of coils. Cold supply or return lines are plumbed to the bottoms.
 - Coils should be placed so they can be easily plumbed to the tank pass-throughs.
 - Multiple coils must be plumbed together in parallel, not series. Position the coils to optimize this plumbing. The diagram below shows coils piped in parallel.
 - Hot water supply pipes from the tank should be plumbed with a mixing or anti-scald valve.
 - If using heat transfer fluid like propylene glycol, there must be two isolated coils, one for the heat transfer fluid, and one for domestic water.
 - Bullhead tees reduce head pressure and increase flow rates. Bullhead tees are required for any application with over 50,000BTUs of heat loss.
1. Inspect the coil(s) for any shipping damage.
 2. Lower the coil(s) into the tank, gently setting the base blocks onto the liner.
 3. Plumb the coils according to the individual job piping scheme.
 4. Seal all pipe pass-throughs with high temperature silicone sealer. Be sure to clean all copper pipe in the pass-throughs beforehand to ensure a good bond with the silicone sealer.
 5. Pressure check all solder joints before putting water in the tank.
 6. Ground the pipes (copper only).

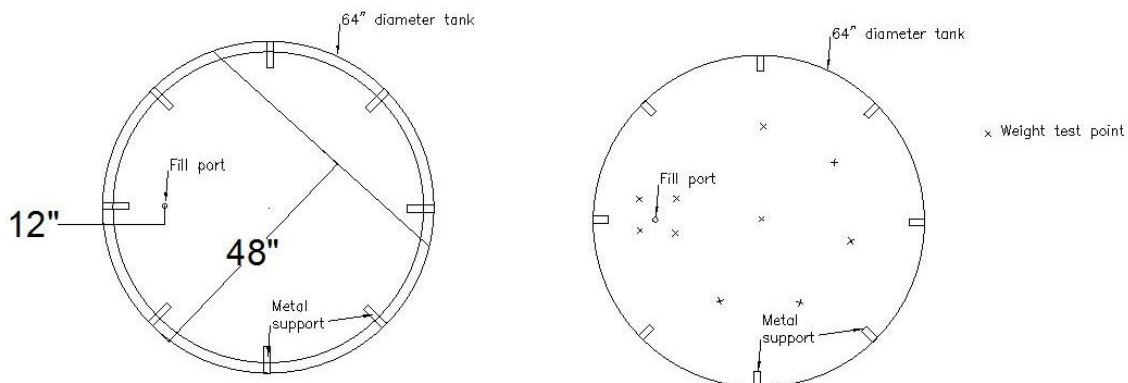


Lid Support Design

- 1) Design of the lid support is two ways:
 - a) Metal brackets around perimeter, spaced such that the spacing, B, is no more than 25"
 - b) Copper vertical supports are added for diameter above 64" to increase lid support



- 2) Testing of the lid support was done on a 64" tank with metal brackets only, to simulate the span of the worst case scenario which has an unsupported span of 60"
 - a) Test locations are marked with an "x", located designated weak points.
 - b) Testing of lid support completed by 3rd party. Lid did not fail in any of these tests.



Installing The Copper Lid Supports (64 in diameter and larger)

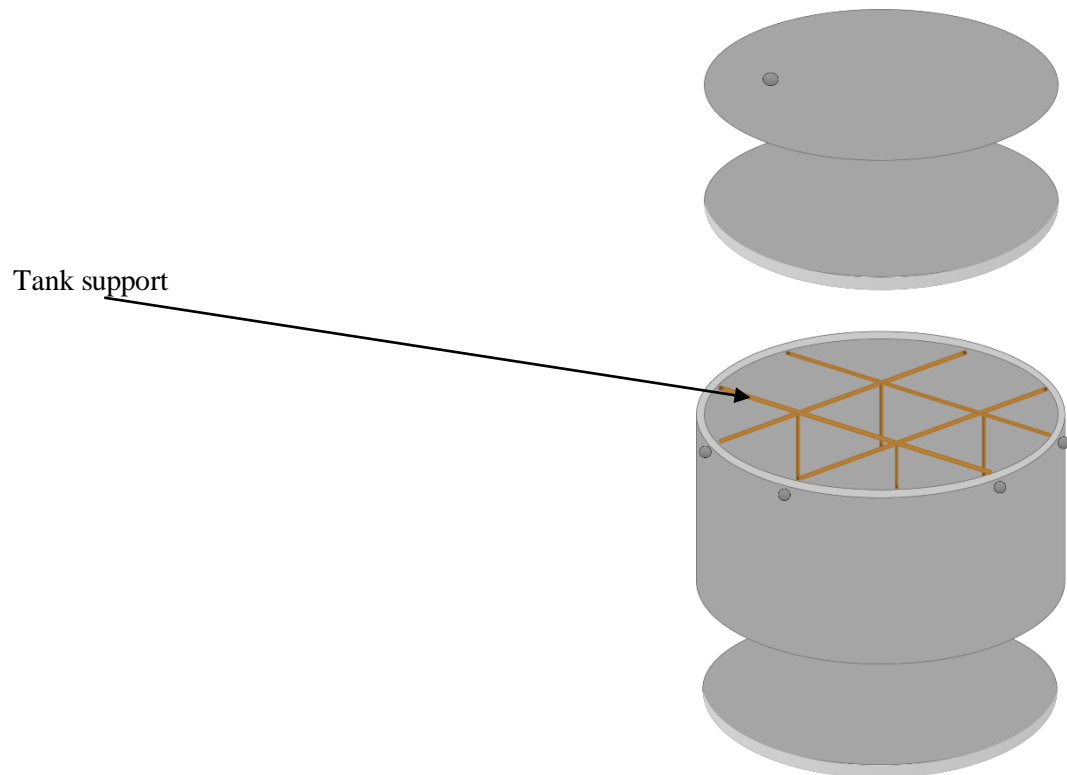


- 1) Copper lid support is built from $\frac{3}{4}$ " copper pipe, cross, end cap, and tee as shown above.
- 2) Pick out the lid support center post. The photos above show the top and bottom of the center post.
- 3) There are four 1" pass-throughs positioned at right angles around the perimeter of the tank. Find them.
- 4) Fully insert the copper lid supports into the cross fitting at the top of the center post and into the pass-throughs in the tank shell.
- 5) The tank shell is flexible. Pull each lid support out of its pass-through and assemble the nut, pass through and cap on the pipe.
- 6) Slide each pipe back into its pass-through and loosely tighten the nut.
- 7) Each branch of the cross should be equal in length and the tank should be circular. Measure to ensure this is true.
- 8) Hand tighten each of the nuts to secure the support. DO NOT use a wrench.
- 9) Apply a thick seam of silicone to seal the gap between the liner and nut. This ensures that water condensing on the pipe above the water line will not leak into the insulation or down the outside of the tank.



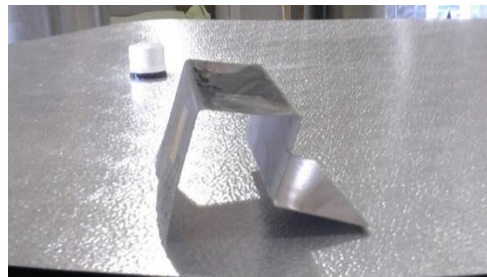
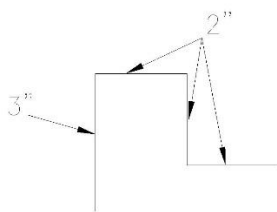
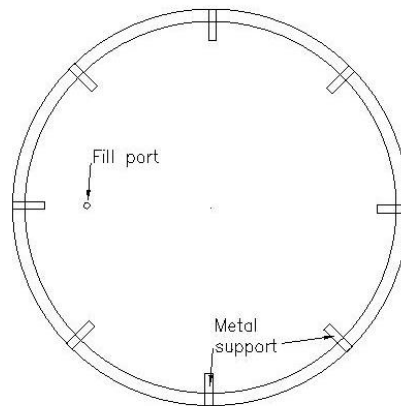
Copper pipe lid support for tanks with diameter larger than 128"

- For tanks with diameter 64" through 128", 1 copper cross is sufficient to support the lid with metal brackets (see next section).
- For tanks above 128" in diameter, additional copper support is needed. Four copper crosses are used to ensure sufficient support to tank lid.
- Use $\frac{3}{4}$ " copper, copper cross, copper cap, and copper tees for copper lid support, similar to previous section.



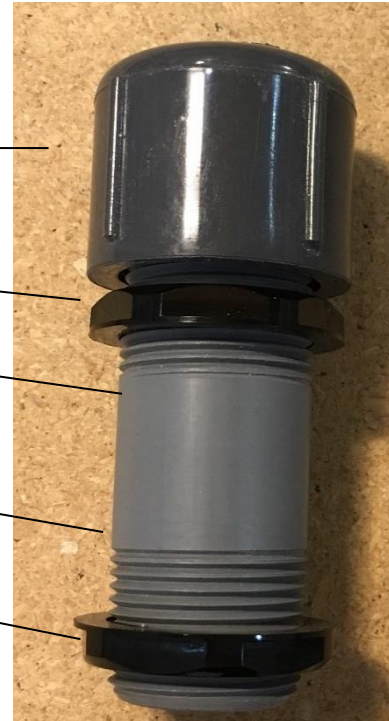
Installing metal brackets for lid support

- Metal supports are made of 0.024" thick 316 stainless steel. It shall be bent to the dimensions shown below of 3"x2"x2"x2". It shall be 2" in width.
- Spacing of metal supports should be a maximum of 25". The number of brackets required is dependent on the tank size.
- For tanks with copper support, position of the copper support can take the place of a needed metal bracket.



Lid Support Pass-Through Exploded View

- CPVC Cap
- Lock nut
- CPVC pass through
- Inner Tank Wall
- Lock Nut



Fill port installation

- Fill port must be installed 12" from outer edge of tank
- Allows for easy access to fill the tank
- Drill 7/16" hole in top of cap to ensure no pressure buildup

Optional Add-on: Sacrificial Anode Rod

- Anode rod can be installed 12" from outer edge of tank (opposite side of tank lid from fill port)

Fill the Heat Storage Tank with Water

- Piping should have already been pressure checked at this point.
- Water chemistry questions should have already been addressed at this point.
 1. Fill the tank with cold water up to the BOTTOM OF THE ORANGE TAPE. DO NOT OVERFILL.
 2. Test the pH of the water.
 - a. pH for Copper heat exchangers: 8.2-8.6.
 - b. pH for Stainless steel heat exchangers: 7-10.
 - c. Use pH plus for pools to raise the pH if necessary.

Placing the Lid on the Tank

1. Do not try to insert the lid yet. Place it on top of the tank, liner facing down. The overcut edge of the liner should come up over the shell.
2. Push the lid down 1" evenly across the entire tank, making sure the overcut lid liner ends up between the lid and shell liner.
3. Apply silicone to the seam where the lid liner and tank liners meet.
4. Push the lid all the way in until it rests on the brackets or lid supports.
5. Apply more silicone to the liner seam. This will prevent condensation from forming under the lid cover.

Placing the Aluminum Lid Cover and Trim

1. If the lid cover has come in 2 pieces, use the rivets provided to put the pieces together. Rivets should be spaced every 6"-8" along seam.
2. The lid comes with vent cap installed. Unscrew the vent cap and set it aside.
3. Place the lid cover on the tank, fitting the precut hole over the CPVC port nipple and lining up the edge of the lid cover with the shell.
4. Apply Teflon tape to the threads of the PVC nipple. This will prevent water condensing on the inside of the cap from running down into the lid insulation.
5. Screw the vent cap back on.
6. Position the crimped aluminum trim pieces around the outside of the lid cover and tank shell, covering the entire perimeter seam.
7. Secure the trim to the lid cover with the self-tapping screws provided. There should be 15 screws per 48" of edge cap spaced every 6" on lid top and every 12" around side of tank. Trim material is made from 0.02" 3003 Aluminum.

Owner Maintenance Checklist

CAUTION: BE CAREFUL WHEN REMOVING THE PVC CAP AS WATER CAN BE VERY HOT.

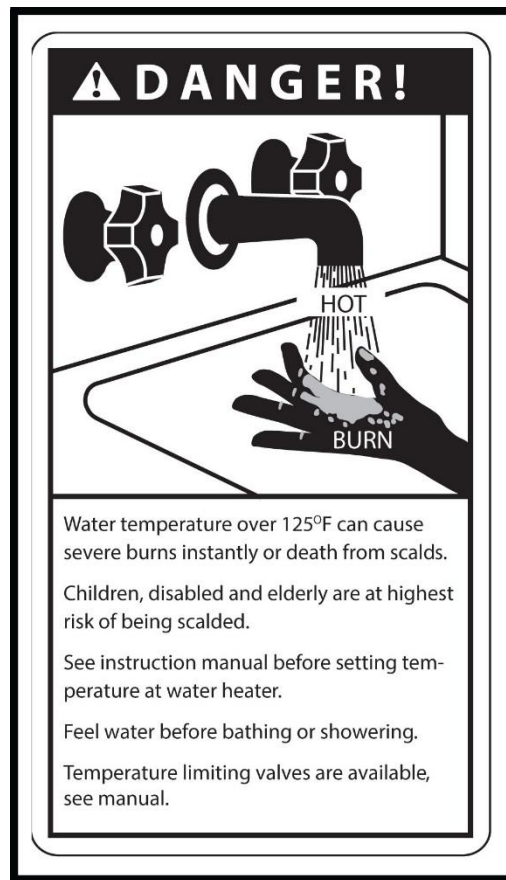
1. Check for leaks on a regular basis. Contact the installer if a leak is detected.
2. Once a year, check the tank's water level. Remove the white cap from the access port and use a long wood dowel to check the water level. The water level should be within the orange tape around the tank. When determining the water level, remember the tank bottom insulation is 2" thick. Water can be added through the access port. Remove the old Teflon tape and put new tape on the threads each time the cap is removed.
3. Check the pH level to ensure it is within the desired range.
4. Check that the tank temperature does not exceed 180°F. Installer shall set controller settings to ensure temperature requirements are met.
5. Check circuit breaker which supplies power to controller which controls tank temperature.
6. When used for space heating, check circulator pumps at the start of heating season.
7. When used for warm air delivery system, check air filter and replace as needed.
8. Check silicone seals of all passages.






Tank Labels

Tank warning labels

WARNING	WATER HEATER	CAUTION
FOR SAFE INSTALLATION AND OPERATION - Follow the instructions in the use and care manual provided. A replacement copy may be obtained by writing the manufacturer.		
This appliance must be installed in accordance with the manufacturer's instructions, local codes utility company requirements, and/or in the absence of local codes, the latest edition of the National Electrical Code.		
FOR YOUR SAFETY - DO NOT store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Keep rags and other combustibles away.		
CAUTION - Hotter water increases the risk of scald injury. See the care and use manual for instructions before changing the temperature setting.		
WARNING - Any thermostat setting above 125°F may cause severe burns and consume energy unnecessarily.		
Power supply must be shut off before removing access panels prior to adjusting thermostat(s) or resetting temperature limiting control.		
CAUTION - Risk of electric shock. Connect branch circuit equipment grounding means to water heater. For detailed information refer to the care and use manual. USE COPPER CONDUCTORS ONLY.		
CAUTION - Risk of electric shock. Connect branch circuit equipment grounding means to water heater. For detailed information refer to the care and use manual. USE COPPER CONDUCTORS ONLY.		
Tank must be full of water before being energized to avoid damaging the heating element(s).		
WATER LEAKAGE - Regardless of the material from which a water heater is constructed, it will at some time leak, due to the corrosive action of water. This water heater must not be located in an area where leakage will result in damage to adjacent area or lower floors. When such areas cannot be avoided, it is recommended that a suitable catch pan, adequately drained, be installed under the water heater. See the care and use manual for more details.		
WARNING - California law requires that this water heater must be braced, anchored, or strapped to avoid falling or moving during an earthquake. See care and use manual for information regarding correct installation procedures.		
CALIFORNIA PROPOSITION 65 WARNING - This product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.		
When a supplemental heat source is connected to this storage tank, provisions must be made to limit the heat source temperature not to exceed that of the water heater thermostat setting.		
CAUTION - If the water heater has been retrofitted with supplemental heat equipment, you must adjust both the thermostat controlling the supplemental heat source and the thermostat on the water heater to the same temperature. Failure to adjust both thermostats to the same temperature can cause loss of proper temperature control.		



Tank Label Details

 <p>StorMaxx™ Solar Storage Tanks</p>	 <p>SunMaxx Solar™ Hot Water Solutions</p>
<p>www.SunMaxxSolar.com P: 1.877.786.6299</p>	
<p>Serial Number:</p>	
<p>Tank Capacity:</p>	<p>G</p>
<p>Maximum Water Temperature:</p>	<p>180°F</p>
<p>Recommended Water Temperature:</p>	<p>175°F</p>
<p>Recommended pH To Protect Copper / Stainless Steel</p>	<p>7-10</p>
<p>⚠ Caution The heat transfer medium must be water or other non-toxic fluid having a toxicity rating or class of 1, as listed in clinical toxicity of commercial products, 5th edition.</p>	
<p>⚠ CAUTION! Do not exceed recommended / maximum water temperatures Do not fill tank past bottom of orange tape line</p>	
<p>⚠ DANGER! Risk of Fall. Keep Off! Lid not designed to support heavy weight or intended to be used for storage</p>	
<p>Install exactly in accordance with manufacturers printed instructions</p> <div data-bbox="915 1522 1078 1671">  <p>UL[®] US LISTED</p> </div> <p>Alternative-Energy Water Storage Tank MH62065 NP-L001 v.2017.4.4</p>	

Fill Line Label



Heat Exchanger Pipe Labels

