



Home and Rural Pioneer Water Tanks Installation Manual



Pioneer Water Tanks
Authorized Dealer



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1. INTRODUCTION

The information outlined in this manual for the construction of the Pioneer Water Tanks range of “Home & Ranch” water storage tanks is a guide and should not be used in place, or to replace practical installation training from Pioneer Water Tanks.

Pioneer water tanks are a steel wall panel construction, supporting a dome roof system. The tank is fitted with a specific liner suited to the tanks design and contents. Inlet and outlet nozzles are made of polyethylene, galvanized steel or 316 stainless steel as required. Included as specified are ladders, access hatches, basket filters, level indicators and other items.

Site preparation will vary depending on the tank size, location, wind loads and other engineering and specific factors.

This manual does not cover issues of safety, hazard identification and project specific issues other than general components and standard items. Refer to OSHA guidelines for site appropriate safety protocol and regulations.

2. PRE MOBILIZATION REQUIREMENTS

Before leaving for site it is essential that installers have enough documentation and information about the project to be able to complete the installation as required with the minimum of problems. Included with this installation manual are the layout drawings for each standard size of Pioneer XL Home & Ranch tanks, which includes a general arrangement drawing, as well as truss layouts, roof sheet layouts and geotex fabric layout drawings. These documents will not be included with each tank kit.

3. SAFETY

Safety on a Pioneer construction site is paramount, it is necessary to follow the correct installation methods and safe work practices. All persons working on site are responsible for their own safety and the safety of their co-workers.

It is therefore everybody’s responsibility to be aware of all possible hazards on site. Personal safety equipment must be used as dictated by the type of work being undertaken or as deemed necessary by the particular site requirements or governing body. In addition the installation personnel must have completed the required statutory training or required training for that specific site.

Appropriate site safety inductions and documentation must be completed prior to the commencement of construction; these include but are not limited to the following;

- i. Job Safety Analysis read and signed by all participants
- ii. Site safety meetings
- iii. Hazard assessment etc...
- iv. Confined Spaces training

4. REQUIRED TOOLS

Refer to Appendix A (Tool List) for a detailed list of hand and power tools required to install a Pioneer Water Tank. It is the responsibility of the installer to provide the complete tool list and use the tools specified for each task according to the manufacturer’s recommendation.

NOTE: No angle grinders are to be used to cut roof sheeting, sparks will damage the zincalume coating and the liner.
All electrical equipment is to be tested and tagged.

INSTALLATION PRE - START CHECK

After having completed any site-specific inductions, check the site is ready as per the site file specifications. Liaise with the clients site contact so that the client's drawings and specifications can be checked against the your site file. If there are any differences, do not start building the tank until these differences or variations have been rectified and signed off by the clients site contact.

CONSTRUCTION

6.1 INSTALLATION SEQUENCE

The instructions in this manual are for tanks up to two rings tall. Tanks over two rings tall require a specialized jacking system and installation must be overseen by an Acer Water Tanks appointed site supervisor. Tanks over two rings tall are not covered in the scope of this document.

6.2 WALL ASSEMBLY - BOTTOM RING

Mark the circumference of the tank onto the ring beam or sand pad before you begin assembling the first ring of the tank wall. For ease of installation place all the tank components except the trusses and roof sheets into the center of the tank after the tank diameter has been marked.

Check the nozzle positions and heights with the drawings and mark these out also. The overflow panel (second ring panel) is typically the first wall panel to be removed from the stack. Lay this outside of the tank diameter in the approximate location where the overflow will be located. This panel will be installed with the second ring. The 2 inch bottom outlet (first ring panel) is typically the second sheet to be removed from the stack. Align this panel according to where the customer has indicated the outlet will be located.

To begin construction, have one person brace the first panel, a second person brace the second bottom panel being fitted, a third person aligning the bolt strip on the outside of the tank and a fourth person inserting bolts through the panels into the bolt strip (finger tight).

Fit 2-3 bolts to hold the panel in place, keeping the panels braced as required. Ensure the correct alignment of the bolt strip holes to the tank wall holes. Use spud wrenches to align the overlapping panels with the bolt strip. Continue to loosely fit (finger tight) bolts into all of the holes in the bottom panel, **EXCEPT THE TOP FOUR (4) HOLES**. The top ring of panels will overlap the bottom panels at this spot. **DO NOT TIGHTEN THE BOLTS AT THIS POINT.**

Working in a clockwise direction, overlap each panel with the right side of the panel on the inside of the next panel to be added (from the perspective of someone inside the tank diameter). In other words, the new panel being added fits to the outside of the standing panel.

Regularly check that the bolt strip covers can slide up and down freely on each vertical bolt strip. If they cannot slide freely, the bolts are too tight. Loosen now.

Once the bottom ring is assembled, insert the sacrificial anode attachment clips between the two bottom panels along the vertical seam. For tanks with two (2) or more anode bags, space them evenly around the perimeter of the tank.

Now measure the tank diameter and confirm roundness of the bottom ring.

6.3 WALL ASSEMBLY - TOP RING

Before beginning to assemble the top ring, be sure you have placed a 6-8 ft. step ladder inside the tank so that workers can get out if necessary as well as any other essential items such as the tank liner and geotex fabric, water and sunscreen.

It is a good idea to start with the overflow penetration so it can be aligned before all of the other panels are added. It is recommended to have four workers during this stage of construction. Two should bring the new panel into place and one worker on each vertical strip location should be opening the bottom ring panels where the top ring panels will slide in.

ALL WORKERS MUST BE WEARING GLOVES.

THE TOP RING PANELS OVERLAP THE BOTTOM RING PANELS ALONG THE HORIZONTAL SEAM. The top ring panels follow the same overlapping scheme along the vertical seam as the bottom ring panels. Continue adding top panels in a clockwise direction until all panels are installed.

6.4 TOP AND BOTTOM HOOP ASSEMBLY

If a bottom hoop and concrete anchors have been provided with the tank, install the bottom hoop at this time in the same manner as the top hoop described below. The bolt strip cover will need to slide freely up and down to correctly fit the bottom and top hoops.

Install the top hoop. The hoop sections have a factory fitted insert at one end of each length that fits into the following section of hoop. Using clamps, secure the top hoop to the top of the tank wall, flush with the bottom of the lip (shoulder) on the top of the tank wall. From the inside of the tank, attach the top hoop to the sidewall with five (5) evenly-spaced tek screws per wall panel section. These screws fastening the top hoop to the sidewall will later be used to secure the top of the liner to the tank wall, so be sure the screws are in good condition and not stripped.

6.5 CHECK FOR ROUNDNESS AND TIGHTEN BOLTS

Measure for roundness of the tank and make adjustments as necessary. Once the tank is completely round, tighten all of the bolts from the inside. Start tightening from the bottom of the bolts to the top, then move to the next line of bolts in a clockwise direction.

6.6 BOLT HEAD COVER STRIPS & FILAMENT TAPE

Using filament tape, affix the vertical bolt head cover strips (strips of plastic, green on one side- black on the other) to the sidewall, making sure to completely cover all of the bolt heads. Overhang the top of the sidewall by 1 inch.

Apply a continuous strip of filament tape along the entire inside seam where the top ring panels overlap the bottom ring panels. This will eliminate the possibility of the liner being pinched between the panels.

6.7 ROOF ASSEMBLY SYSTEM

Mark the positions of the trusses on the tank wall according to the truss layout drawings. Spread the roof truss halves out into matching pairs as per the drawings, and bolt together the trusses that are able to be man handled onto the tank wall complete with the swivel feet. Individually lift and bolt the bigger sections whilst supporting them off trestles. Do not fully tighten the swivel feet truss connection until the truss is properly positioned onto the tank wall.

Lift the trusses into position and check that they are square at both ends and are spaced to the correct measurements. Clamp or temporarily fit the trusses swivel feet to the tank wall with tek screws prior to drilling the connection holes to enable the diameter to be re-checked to ensure the tank is still round. The trusses must be parallel and spaced according to the truss layout drawing. Take multiple measurements.

Drill mounting holes through the tank wall with an oiled step-bit (aka Christmas tree bit) aligned with the holes in the truss foot. Bolt the swivel feet to the wall and continue working outward until all trusses are installed. Tighten the swivel feet truss connection. Install plastic bolt head covers on the outside of the tank.

6.8 ACCESS HATCH AND LADDER PLACEMENT

Locate the position of the access hatch and ladder. Affix the ladder bracket to the top hoop at this time using two tek screws. The access hatch is ideally located near, but never above, a truss. Keep this in mind as you determine the location of the ladder bracket and access hatch.

6.9 CONDENSATION STRIPS AND FOAM SEAL

Apply a single layer of double-sided sticky tape along the top edge of the tank wall. Peel back the yellow film and attach the condensation strips (located inside the liner box) horizontally along the top edge of the tank wall. Overlap 1 inch onto the top hoop and 2-4 inches between adjacent strips.

Just prior to installing the roof sheets, unroll and attach the foam seal along the top edge of the tank wall, on top of the condensation strips. Only one side of the foam seal is sticky. Be sure not to stretch the seal as you install it, but rather leave plenty of material along the entire circumference so it can fill the gaps underneath the roof sheets.

6.10 ROOF SHEETING

Weather conditions should be considered when fitting the roof sheets (ideally calm and dry). The roof sheets run perpendicular to the trusses. Refer to the roof sheet layout drawing included in your tank layout book to identify the correct sheets and their installation orientation.

Starting with the shortest sheet on one side of the tank, begin installing the roof sheets according to the layout drawing. Take care not to damage the newly-applied foam seal as the roof sheets are being handed up for installation.

Each new sheet installed should overlap the preceding sheet until the peak of the domed roof is reached, at which time the sheets should underlap the previous sheet until the far end of the tank is reached. Be sure that the sheets are installed in such a way that water is always shed from the peak to the edge and doesn't run under the sheets.

Affix the roof sheet to the trusses at every other valley, being sure that the sheets are going on at a right angle to the trusses. On larger tanks, sheets will overlap at the trusses to span the complete length of the tank. Refer to the layout drawing for the appropriate orientation. Using a 6-8 foot ladder inside the tank, it is possible to add the lap screws at this time along the seam between sheets at two foot spacing.

Using the specially-designed roof sheet marking jig, attach the outer edge of the roof sheets to the top hoop at every other valley using tek screws. Where the direction of the valley becomes perpendicular to the trusses, it is necessary to attach the roof sheet to the top hoop at EVERY VALLEY.

Be sure that the foam seal is attached perfectly to the top hoop before the roof is screwed down so it can fill the space below the roof sheets. **DO NOT TIGHTEN THE ROOF SHEETS DOWN SO FAR THAT THEY PINCH AND SPLIT THE FOAM SEAL.**

It is common practice to leave one or two roof sheets off until all interior work on the tank has been completed to allow access in and out of the tank as well as venting of the air.

6.11 ROOF PENETRATIONS

Locate and mark out the position of all penetrations in the tank roof including access hatch, basket filter, mechanical level gauge and rotary vent. All holes must be drilled in the roof at this time. The lid of the cardboard box which holds the liner can be used to catch metal shavings during the cutting of holes in the roof, making for easier cleanup later.

Using the flashing provided with these components to mark the cut line. Drill a 1 inch hole at the corner of each outline using the oiled step-bit, then insert the power nibbler and cut the penetration in the roof. Apply a perimeter of foam seal just outside of the cut line and screw the flashing into the tank using long tek screws. Install the component to the flashing.

6.12 SIDEWALL PENETRATIONS

All sidewall penetrations should be cut before the liner is exposed. Mark and cut all sidewall penetrations using an oiled step-bit and a power nibbler for large diameter holes or an oiled hole-saw for small diameter holes. Use profile flange as a template.

6.13 PREPARATION FOR LINER INSTALLATION

Before installing the liner, check the following items have been completed.

- A. Liner penetration flanges coming through the tank pad are installed flush with the sand and prepared for attachment.
- B. Profile flanges for outlets above 4 inches to be taped to wall (refer outlet instructions). Include galvanized backing ring on the overflow fitting.
- C. Cut bolt strip covers with an upside-down "V" shape on every other vertical strip where liner lugs will attach (second corrugation above bottom and the row just above the seam between the top and bottom ring).
- D. Remove all tools and other items from inside the tank. Keep an impact drill with bolt driver and nut driver handy along with filament tape and scissors. All of these tools should go inside a small cardboard box as not to damage the liner. All other items except geotex and the liner should go out of the tank.
- E. Sand fill spread and levelled.
- F. Create a camber of sand along the inside edge of the tank.
- G. Make sure all holes have been cut in roof (including drill hole for mechanical level gauge). No more self-tapping screws may be driven through the roof after this time.
- H. Be 100% sure the floor is completely clean and the sand is free sticks and rocks. Rake and remove foreign matter.
- I. **USE A STRONG MAGNET WAND TO REMOVE ALL METAL SCREWS AND SHAVINGS FROM SAND PAD.** Rake and repeat 2-3 times.
- J. Prepare a step ladder by wrapping excess geotex fabric around the feet of the ladder and securing with duct tape. This will protect the liner if a ladder is being used during the final stage.

6.14 LINER INSTALLATION

Once the inside of the tank has been prepped completely, unroll the geotex fabric and lay out according to the layout drawings. Allow 6 – 8 inches to go up the wall, overlapping joints by one foot.

Remove footwear as soon as the geotex is laid out. Never walk on the tank liner or geotex with shoes on. Unfold liner to where the wall lugs can be seen and rotate the liner until the wall tabs line up with vertical wall joints. There is a single wall tab for each ring that the tank is high, and the wall tabs are bolted to the wall every second vertical joint.

It doesn't matter which vertical joint the tabs bolt too as long as the tabs are attached to the left or right line of vertical bolts throughout the installation. The floor tabs are fixed to the wall at the second row from the bottom. The wall tabs are fixed through the bolt strip coves at one row above the horizontal joints and overlapped with filament tape, check for any sharp edges. See the liner fitting drawing.

Fit the liner to the top of the tank wall underneath the condensation strips using the existing teks that fix the top hoop. Simply remove the tek, position the liner and screw through the liner's top polyethylene edging into the same hole. Ensure that the liner is installed properly using Pioneer Water Tanks Diagonally opposite fixing method.

Check for diagonal creases and adjust the top edge. The liner should only have vertical creases and the floor must be smooth and free of any folds. Check that the wall to floor seams are evenly spaced around bottom edge of the tank wall.

6.15 NOZZLE FITTING

Prior to cutting nozzle holes through the liner ensure there is enough slack both above and below the nozzle position. Use a utility knife hook blade when cutting the holes in the liner. This allows for the most control in cutting and is safer than a straight blade. In case of large outlets, cut the bolt holes out and fit a bolt through each cut hole to keep the liner in position. Install nozzles as per the drawings.

Each bolt must also have a stem seal ("O" ring) between the galvanised washer and the nozzle's countersunk flange. **Do not allow the bolts to turn when tightening to avoid stem seal ("O" ring) damage.**

NOTE: If valves are to be fitted to large outlets they must be supported to avoid leveraging damage to the tank wall.

6.16 TRIM ROOF

Once all of the work has been completed inside the tank, remove all tools and ladders and reattach all roof sheets. Mark the cut line along the outer edge of the roof sheets using the specially designed roof sheet marking jig. The standard roof overhang is two inches (2").

Cut the roof sheets off around the circumference of the tank using a **power nibbler**. Be sure that anyone working around the tank at this stage is using eye protection, ear protection, gloves and long sleeves. The shards produced by the nibbler are very sharp.

6.17 ANODE INSTALLATION

Attached the anode bag to the anode tab and bury the anode bags as deep as possible (minimum 12 inches deep). Pour 1 gallon of water on the anode bag, and then cover with dirt. This activates the magnesium in the bag and ensures the anode system starts working right away.

7. ACCESSORIES

7.1 HOLD DOWN BRACKETS

Install the hold down brackets (if provided) by evenly spacing them around the perimeter of the tank and affixing with tek screws to the bottom hoop. Do not anchor the tank into the concrete until tank has half-filled with water. Otherwise leave play in the anchor bolts to allow for tank shifting during the initial fill.

7.2 LEVEL INDICATORS:

The level Indicator should be fitted after carefully revision of the drawing and specific instructions provided.

7.3 FASCIA INSTALLATION

Remove the plastic coating from the fascia panels, end caps and crocodile brackets (for Colorbond® tanks).

Insert one of the end caps into the groove end of the fascia panel and secure with two tek screws. The fascia panels have a tongue at one end and a groove at the other which interline with each other. Hold one of the crocodile brackets against the back of the fascia panel so the bracket covers all of the remaining holes. The bracket should fit neatly between the two ribs of the fascia panel. The crocodile bracket has six tabs at right angles to the long strip section. These attach to the underside of the top hoop and must be at the bottom of the fascia panel before tek screwing the two together.

Tek screw through the fascia panel holes into the crocodile bracket starting at one end working toward the other end. Fascia should have equal overlaps at each end.

Hold one of the fascia panels against the roof end with the end cap just to one side of the ladder bracket. Check that the ends of the tabs are touching the wall under the top hoop and tek screw the hoop through the holes in the tabs. Continue to assemble the fascia panels and install them around the tank sliding the tongue end in the groove end of the previous panel. Screw two teks through the holes at the join to secure them together.

When the last fascia panel is being installed, it will have to be marked and cut to the same distance away from the access hatch as the first panel. Fit the last end cap and then bend both end caps toward the roof sheets so they that are at right angles to the fascia.

7.4 BRASS OUTLETS

If tank is being used in an area where there is a high likelihood of fire, it is advised to use only brass outlet fittings in lieu of the polyethylene fittings provided as a standard component on the tank.

Prior to preparing the liner for installation, but an appropriately sized hole in the sidewall of the tank. After the liner is installed, cut a hole of an equal diameter as the wall penetration in the liner using a hook-blade razor knife. Always be sure there is a rubber gasket on each side of the liner so you get a proper seal.

Install the penetration and tighten down while backing up the inside portion of the fitting. Do not over tighten or allow the liner to spin when the fitting is being tightened.

7.5 FLOATING SUCTION FILTERS

After the liner and outlets been installed, thread the open end of the floating suction filter into the female threaded bottom outlet on the tank. It is common practice to suspend the float on the filter end of the product from a truss using a nylon or stainless steel cord so that the filter screen hangs about 2-4 inches above the floor of the tank when the tank is empty. This prevents accumulated debris from being sucked up by the filter. It is good practice to hang the filter from a location near the access hatch on the tank for easier access during routine maintenance.

8. COMMISSIONING:

All Pioneer Water Tanks commercial tanks are commissioned upon completion where possible or should have at least 6 inches of water put in them before the installation crew demobilizes from site. Add all warning stickers provided with the tank kit. Lock access hatch with waterproof lock and give key to owner.

NOTE: When the Prime Installer is used to build a tank, the Prime is not responsible for the commissioning of the tank. The Authorized Dealer shall commission the tank.

9. SITE CLEAN UP

Installers are responsible for good house keeping and cleaning up the site during and as the project is completed. If there are no disposable facilities on site, all rubbish must be removed from site and disposed of elsewhere.

10. APPENDICIES

Following pages include:

- A. Tool List
- B. General Arrangements Drawings
- C. Truss Layouts
- D. Roof Sheet Layouts
- E. Geotex Fabric Layouts
- F. Overflow Diagram
- G. Fascia Drawing

Tool List for Pioneer Water Tanks

YES	QTY	ITEM	NOTES
STANDARD TOOLS			
	2	2 Ft. Step Ladders	
	3	8 Ft. Ladders	
	4	25' Tape Measures	
	1	100' Tape Measure	
	2	Utility Knives	
	1	Self-Retracting Utility Knife	
	1	Scissors	
	4	Pencils	
	4	Sharpie Markers	
	1	8" Phillips Head Screwdriver	large handle
	1	8" Flat Head Screwdriver	large handle
	2	Torpedo Level	6" long
	1	Large Level	24" minimum
	2	String Levels	
	1	String	1 roll
	3	Vice Grip Clamps	
	1	Metal Shears- straight	
	1	Metal Shears- left	
	1	Metal Shears- right	
	1	Large Adjustable Wrench	
	4	C-Clamps	
	1	Claw Hammer	
	1	Small Channel Lock Plier	
	2	Large Channel Lock Pliers	must fit over 2.5" pipe
	1	3 Lb. Cross Pien Hammer	
	2	Shovels	
	2	Hard Rakes	Landscape style preferred
	1	10" x 10" Tamper Compactor	
	set	Wrench and Sockets	
	2	Tool Belts	for holding nuts and bolts
	2	Extension Cords	100 ft. each.
	2	Marking Paint	spray can
	1 each	Open End Wratching Wrench	13mm, 15mm, 24mm, 26mm
POWER TOOLS AND BITS			
	2	Cordless Impact Drivers	spare battery and charger for each driver
	2	Cordless Drills	spare battery and charger for each drill
	1	Corded Hammer Drill	Required only if tank is anchored to concrete
	4	3/8" Socket Adapters	
	4	1/2" Socket Adapters	
	4	5/16" Nut Driver Adapters	magnetic
	2	1/4" Nut Driver Adapters	magnetic
	2	3/8" Nut Driver Adapters	magnetic
	set	Metal Drill Bits	full range of sizes up to 1"
	set	Standard Drill Adapter Bits	for driving phillips and flat head screws, etc.
	1	7/8" Step Drill Bit	
	1	1 1/2" Step Drill Bit	
	1	2" Hole Saw	For cutting metal
	2	1/2" Concrete Drill Bits	masonry bits
	2	13mm Deep Socket	3/8" drive
	2	14mm Deep Socket	3/8" drive
	2	15mm Deep Socket	3/8" drive
	1	Cutting Oil	Small can with applicator or spray can

SPECIALTY TOOLS		
1	AC Generator	If electrical outlets are not available within 100 ft.
1	Reciprocating Saw	corded preferred, cordless is acceptable
6	18 TPI Bi-Metal Saw Blades	new
1	Hitachi Nibbler	
2	Spud Wrenches	for aligning tank panels
1	Magnetic Pickup Stick	As powerful as possible
SAFETY EQUIPMENT		
	Ear Plugs	
	Gloves	
	Safety Glasses	
	First-Aid Kit	
	Sunscreen	
	Water	
	Covered Shoes	



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www.oneclarion.com | 863-261-8388 | info@oneclarion.com