



AdvanTex[®]

AX100 Treatment Systems

Installation Instructions



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DOCUMENT

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About These Instructions

This manual contains an Installation Overview and a set of Installation Steps. It is not intended to replace installer training or requirements and instructions detailed in your engineering plan set. It may include additional steps that require completion prior to, during, or after the installation of Orenco components. Check to be sure all instructions and items supplied comply with all applicable regulations. If you discover any inconsistencies between your plan set and the instructions in this manual, contact your engineer or your dealer.

Installation Overview provides a simple overview of the installation steps. It is intended as a summary only, to provide a suggested order of operations – it does not provide complete instructions.

Installation Steps provide general instructions for each installation step along with references to installation documents for specific components. Many Orenco products come with installation instructions. All of these instructions are available in hard copy from Orenco and online in the Orenco Document Library at www.orenco.com.

Before You Begin

Before beginning, read these instructions and any documents referenced in them, and confirm the instructions for all of these products are the most current available. Check the Orenco Document Library at www.orenco.com to be sure your documents are current.

Please note that you must perform the installation according to the current manual or the system's warranty will be void. If you are not an authorized AdvanTex installer, contact your dealer for training and authorization before installing this system. The dealer can provide technical support, training, and replacement components. To find the nearest dealer, check the Distributor Locator page at www.orenco.com. If there is no dealer in your area, contact Orenco.

Be sure all of the necessary components are present before beginning the installation. Contact your dealer or Orenco at www.orenco.com if any components are missing or damaged.



Note — All nominal plumbing and riser diameters provided are US nominal pipe sizes (NPS). If you're using metric pipe, you will need adapters to connect to the US fittings supplied.

Tank Considerations



IMPORTANT — DO NOT plumb backwash discharge from a salt-type water softener into an AdvanTex unit or preceding tank. Failure to follow this or any other instruction in this manual will void the system's warranty. Contact your dealer if you have any questions about any plumbing arrangements that may interfere with proper system function.



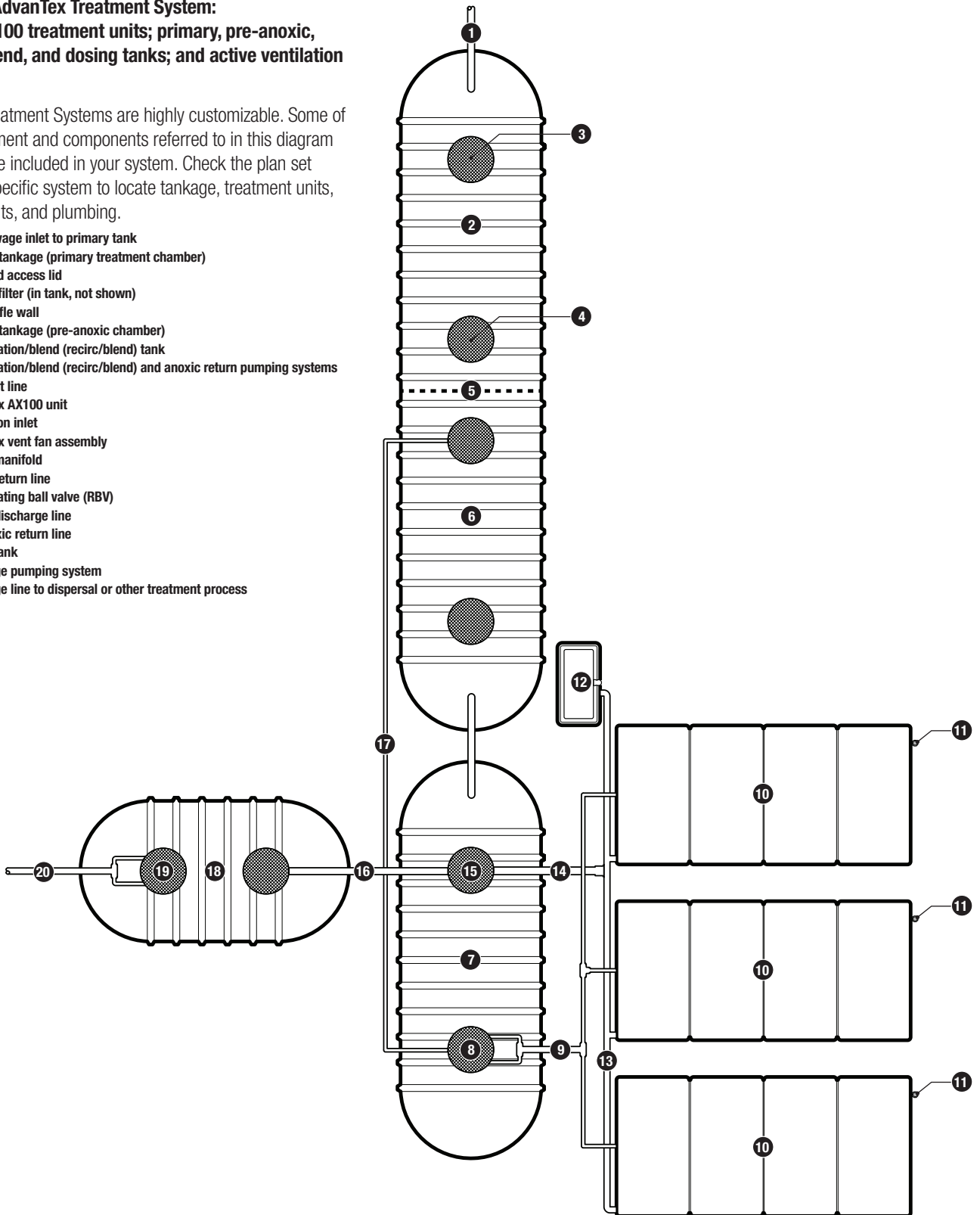
Key Point — All tanks used with AdvanTex Treatment Systems must be prequalified. Call your dealer for specifics.

Sample System Components

Sample AdvanTex Treatment System:
three AX100 treatment units; primary, pre-anoxic, recirc/blend, and dosing tanks; and active ventilation shown.

AX100 Treatment Systems are highly customizable. Some of the equipment and components referred to in this diagram may not be included in your system. Check the plan set for your specific system to locate tankage, treatment units, components, and plumbing.

1. Raw sewage inlet to primary tank
2. Primary tankage (primary treatment chamber)
3. Riser and access lid
4. Effluent filter (in tank, not shown)
5. Tank baffle wall
6. Primary tankage (pre-anoxic chamber)
7. Recirculation/blend (recirc/blend) tank
8. Recirculation/blend (recirc/blend) and anoxic return pumping systems
9. Transport line
10. AdvanTex AX100 unit
11. Ventilation inlet
12. AdvanTex vent fan assembly
13. Filtrate manifold
14. Filtrate return line
15. Recirculating ball valve (RBV)
16. Filtrate discharge line
17. Pre-anoxic return line
18. Dosing tank
19. Discharge pumping system
20. Discharge line to dispersal or other treatment process



Installation Overview

- Step 1.** Review and compare the engineering plan set with the installation site and components.
- Step 2.** Excavate, prep, and set each tank, per the plan set.
- Step 3.** Install tank adapters and access risers (including components) on the tanks per the plan set.
- Step 4.** Perform a watertightness test on all tanks and tank-to-riser connections.
- Step 5.** Install the RBV and make any necessary adjustments to the cage and stinger.
- Step 6.** Excavate and prep pads for all of the AX100 units per the plan set.
- Step 7.** Set each AX100 unit.
- Step 8.** Install each pump package in the appropriate tank per the plan set.
- Step 9.** Assemble and connect transport lines between the tanks and between the tanks and AX100 units.
- Step 10.** Install the ventilation system.
- Step 11.** Mount and wire each control panel.
- Step 12.** Backfill the installations, as well as all plumbing and in-ground electrical runs.
- Step 13.** Prepare the system for start-up.

Installation Steps

Step 1. Review and Compare Plan Set

Review the engineering plan set and compare it with the physical site.

- Check that:
 - All component locations are compatible with the site topography.
 - No obstructions at the site interfere with the system installation.
 - All component and plumbing locations and elevations match the plan set.
- Discuss any differences between the plan set, the site, and these instructions with the design engineer before continuing.



Key Point — All gravity transport piping must maintain a minimum slope of 1/8in per ft (10mm per meter or 1%).

Step 2. Set System Tanks



IMPORTANT — Keep everyone clear when excavating and placing tanks!



Key Points

- Set primary tanks at the correct depth to connect to the sewer inlet.
- All gravity transport piping must maintain a minimum slope of 1/8in per ft (10mm per meter or 1%).
- Be aware of slope requirements when setting tanks.

Follow the plan set to set the system's tanks. For non-Orenco components, follow the manufacturer's installation instructions.



Step 2a. Dig each excavation necessary for the system's tanks.

- For unstable soils, install shoring in the excavation before continuing.
- Consult a local soil engineer and applicable regulations for any questions about soil stability.

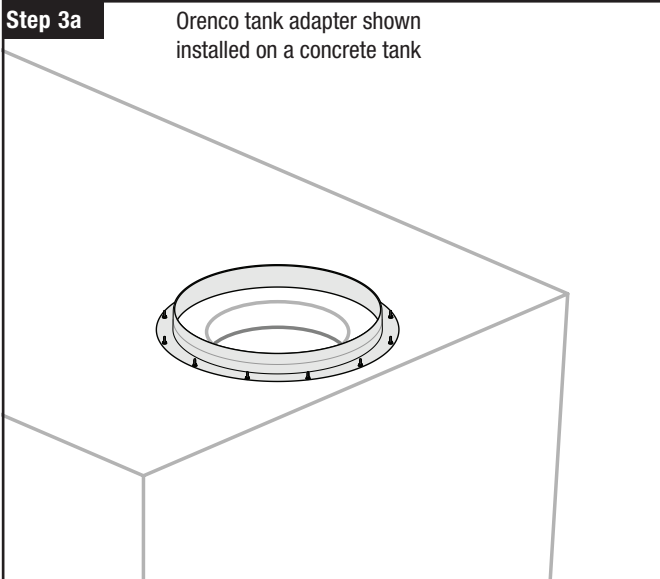
Step 2b. Prep the bottom of each excavation.

Step 2c. Prep and set each tank necessary for the system.

Installation Steps

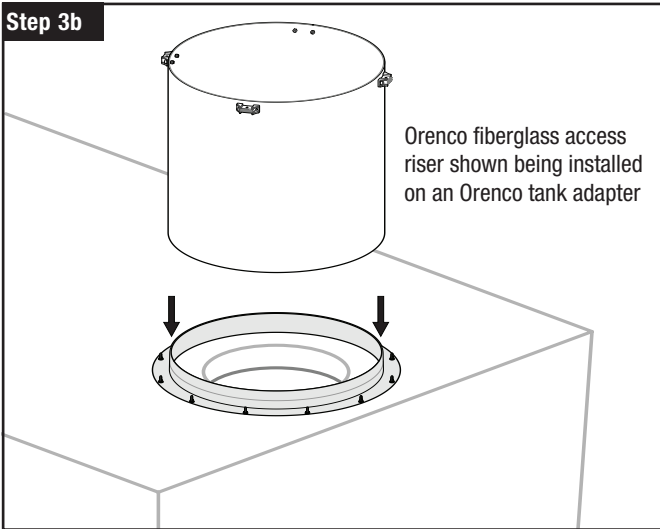
Step 3a

Orenco tank adapter shown installed on a concrete tank



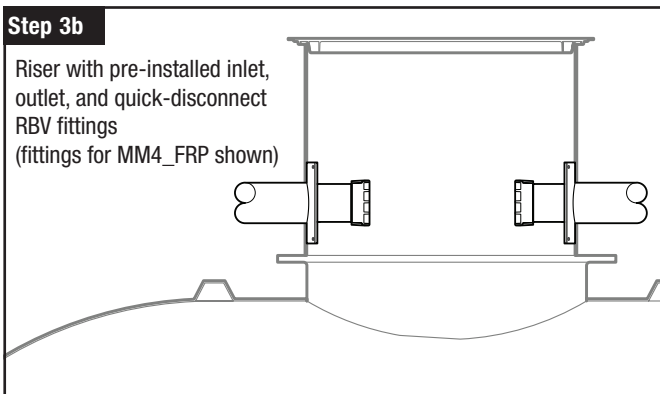
Step 3b

Orenco fiberglass access riser shown being installed on an Orenco tank adapter



Step 3b

Riser with pre-installed inlet, outlet, and quick-disconnect RBV fittings (fittings for MM4_FRP shown)



Step 3. Install Adapters and Risers

Step 3a. Install each tank adapter. Follow the manufacturer's instructions.

- For Orenco tank adapters:
 - PRTA24 or PRTA30, see [PRTA24 and PRTA30 Tank Adapter Installation Instructions, NIN-TA-PRTA-2](#)
 - RRFTA24, see [Installing RRFTA24 Tank Adapters Instructions, NIN-TA-RRFTA-2](#)
 - RRFTA30, see [Installing RRFTA30 Tank Adapters Instructions, NIN-TA-RRFTA-1](#)
 - FRTA24-RVF or PRTA30 with Roth tanks, see [Adapters for Roth Tanks Installation Instructions, NIN-GOP-TAD-1](#)
- For Infiltrator tank adapters:
 - SNAPPAR-Series adapters with Infiltrator tanks, see [Infiltrator Pipe Adapter Ring Assembly Instructions for EZsnap Compatible IM-Series Tanks](#)

Step 3b. Install each access riser and any additional components. Follow the manufacturer's instructions.



Key Points

- Watertight seams and penetrations are critical for best performance.
- Before installing each riser, make sure:
 - It is sized to be 2in to 3in (51mm to 76mm) above final grade after installation.
 - It is being installed in the correct location.
 - Its penetrations are at the correct height.
 - Its penetrations are aligned correctly for their connections.
- For installing risers and grommets on Orenco tank adapters:
 - PVC risers, including ultra-rib-style access risers sold by Orenco, see [PVC Riser Installation Instructions, NIN-RLA-RR-1](#)
 - Fiberglass (FRP) risers, see [Orenco Fiberglass Riser Installation Instructions, NIN-RLA-RF-1](#)
- For installing Orenco splice boxes:
 - Internal splice boxes, see [Internal Splice Box \(SB\) Installation Instructions, NIN-SB-SB-1](#)
 - External splice boxes, see [External Splice Box \(SBEX\) Installation Instructions, NIN-SB-SBEX-1](#)



Key Point — After installing each riser, make sure all:

- Adhesive seams are void free, with smooth, continuous fillets.
- Adhesive is set before backfilling or testing watertightness.

Installation Steps

Step 4. Test for Watertightness

Step 4a. Test each tank and tank-to-riser seam for watertightness. Follow the manufacturer's watertightness testing instructions.



Note — Some manufacturers require a partial or full backfill around the tank before testing watertightness.

- For Orenco tank adapters:
 - PVC risers, including ultra-rib-style access risers sold by Orenco, see [PVC Riser Installation Instructions, NIN-RLA-RR-1](#)
 - Fiberglass (FRP) risers, see [Orenco Fiberglass Riser Installation Instructions, NIN-RLA-RF-1](#)



Key Points

- Each tank and tank-to-riser seam must pass watertightness testing before you continue.
- Follow all applicable regulations for watertightness testing.
- Make sure all adhesive between the tanks, adapters, and risers is set before testing.
- Plug the tank's inlet and outlet before testing.
- Remove the plugs when the tank successfully passes the test.

Step 4b. Drop each tank's water level to just below the invert of the inlet (or outlet, if present) and remove the plugs from the tank inlet and outlet.

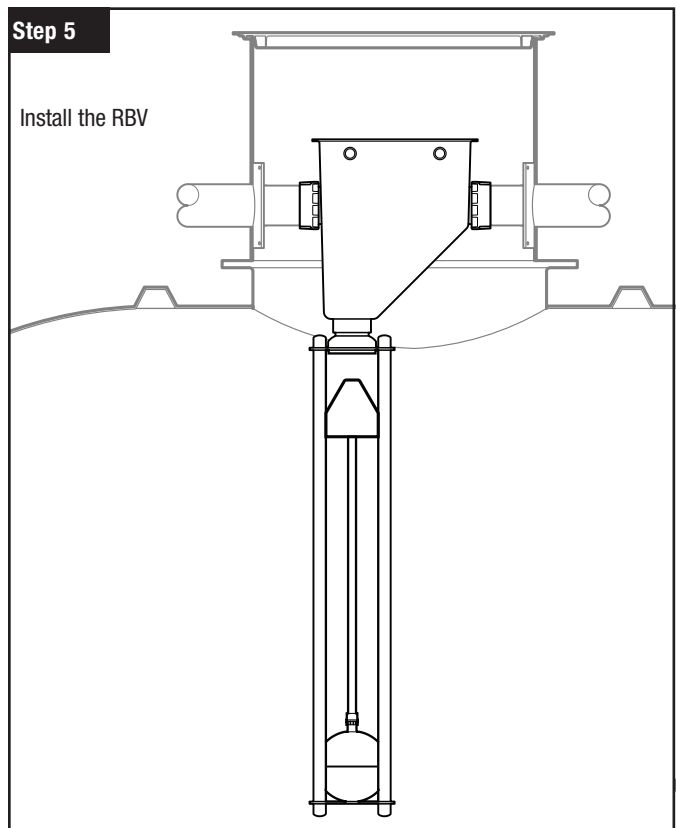
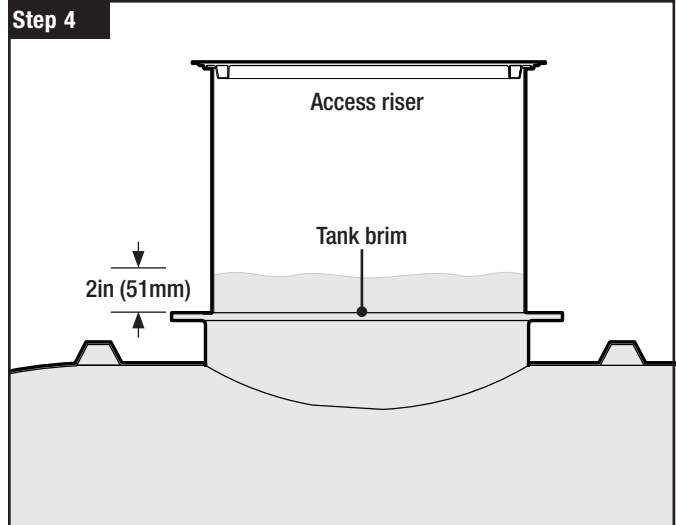
Step 5. Install RBV



IMPORTANT — Follow all applicable safety precautions when installing the RBV.

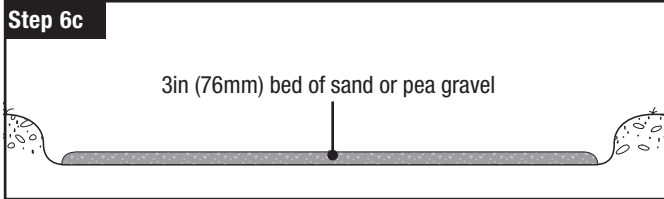
Install the RBV into the RBV riser. Use [Recirculating Ball Valve \(RBV\): MM4- and MM6-FRP Installation Instructions, NIN-RSV-4](#).

- If the stinger or cage needs adjustment, contact the design engineer or Orenco for more information.

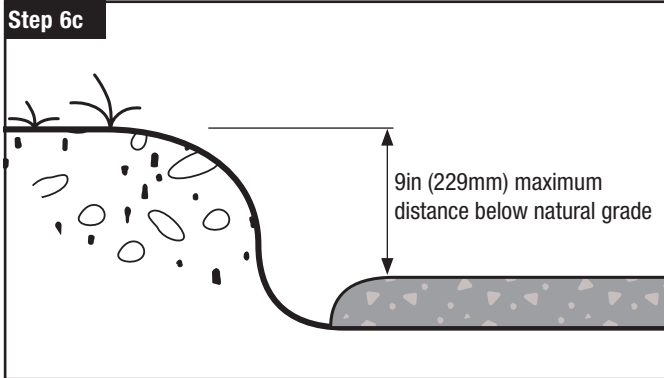


Installation Steps

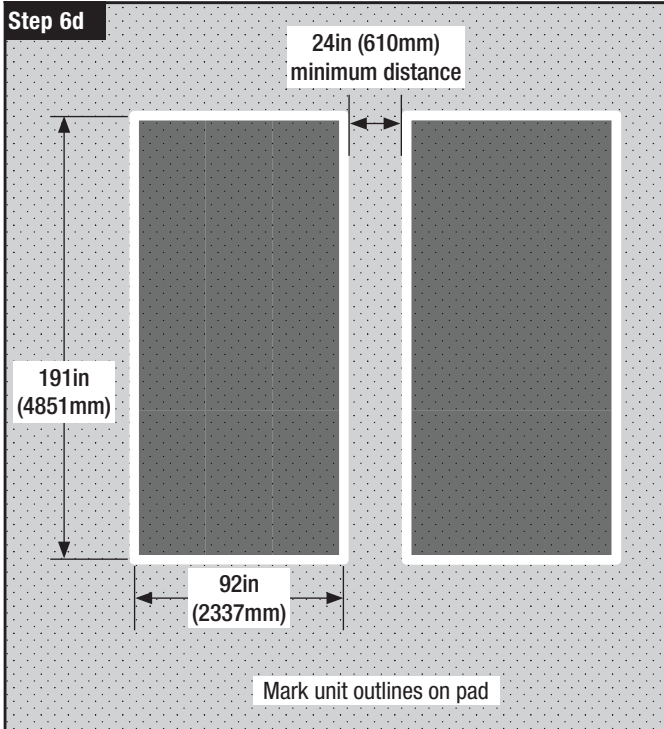
Step 6c



Step 6c



Step 6d



Step 6. Prep AX100 Unit Pads



IMPORTANT — Don't bury an AX100 unit or set the bottom of the unit deeper than 9in (229mm) below the natural grade. Doing so can damage the unit, transport piping, and ventilation system.



Key Points

- Set each unit to maintain a minimum slope of 1/8in per ft (10mm per meter or 1%) in any gravity pipes and ventilation pipes.
- A minimum of 24in (610mm) spacing is required between units.
- Be aware of slope requirements when setting pads.

Step 6a. Dig each necessary pad excavation.

1. Check the plan set for the location of each AX100 pad.
2. Excavate the location to the depth needed for a compacted 3in (76mm) thick pad.
 - Be aware of slope requirements between each tank, unit, and any additional components.
3. Make sure there are no obstructions that might prevent installation of the AX100 unit.

Step 6b. Prep the pad excavation.

1. Remove all debris, large (> 2in or 51mm) rocks, and sharp objects from the excavation bottom.
2. Compact and level the excavation bottom to prevent uneven settling.

Step 6c. Spread and level a 3in (76mm) pad of sand or pea gravel to create a level, even, and smooth pad.



Key Point — Make sure the pad is level to ensure the proper placement of each AX100 unit.

Step 6d. Make a 191 × 92in (4851 × 2337mm) placement outline on the pad for each AX100 unit.

- Paint, chalk, string, etc. can be used to mark the placement outline.
- These dimensions represent the size of an AX100 unit's top.
- Leave at least 24in (610mm) between placement outlines.

Installation Steps

Step 7. Set AX100 Units



IMPORTANT

- Latch all of the lids down before lifting the AX100 unit.
- Use only lifting equipment rated for the AX100's size and weight: 191 × 92in and 1850lb (4851 × 2337mm and 839kg).
- Keep the unit level at all times during offloading.
- NEVER go underneath an AX100 unit!



Key Points

- The outlet is permanently installed in one corner of the AX100 unit.
- Make sure the outlet placements for each unit match the plan set.

Step 7a. Prepare each AX100 unit for offloading. Follow [AdvanTex AX100 Unit Offloading Instructions, NIN-SHP-AXC-1](#).

Step 7b. Lift and place each AX100 unit on the pad, centered on its placement outline.

Step 8. Install Pump Packages in Tanks

Step 8a. Review the engineering plan set and identify each tank that requires a pump package.

Step 8b. Install all filters and flow inducers or Biotube® pump vaults.



Key Point — Placement and orientation of flow inducers and pump vaults affect the location of pumps, discharge assemblies, and splice boxes.

Step 8c. Install each pump and discharge assembly. Follow the manufacturers' instructions.

- For 4in (104mm) pumps with HV-style discharge plumbing, see [Pump and Discharge Plumbing Installation Instructions, NIN-HV-1](#).
- For 4in (104mm) pumps with HDA-style discharge plumbing, see [HDA Assembly and Pumps Installation Instructions, NIN-GOP-HDA-1](#).



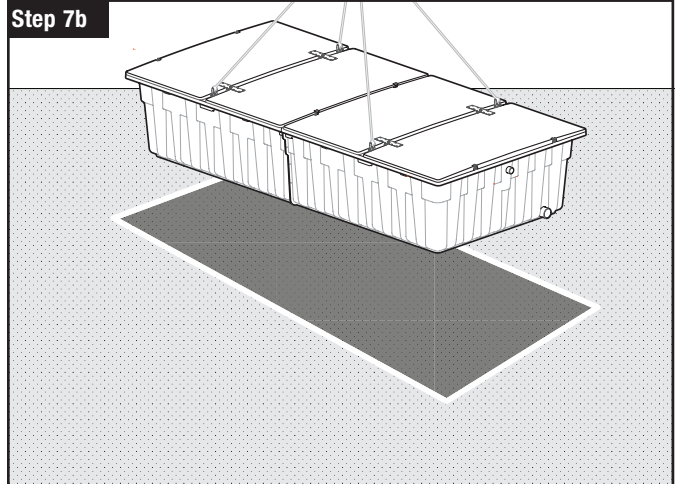
Key Points

- Make sure each pump's voltage and design gpm (or L/sec) is correct for its installation.
- Align each discharge assembly and flow inducer or pump vault for easy removal of Biotube cartridges and pumps.
- Hand tighten every plumbing connection and fitting between each pump and discharge assembly.

Step 7



Step 7b



IMPORTANT — DO NOT raise or lower pumps by their cords!

Step 8d. Install the float switch assemblies for each pump package. Follow [Float Switch Assembly Installation Instructions, NIN-MF-1](#).

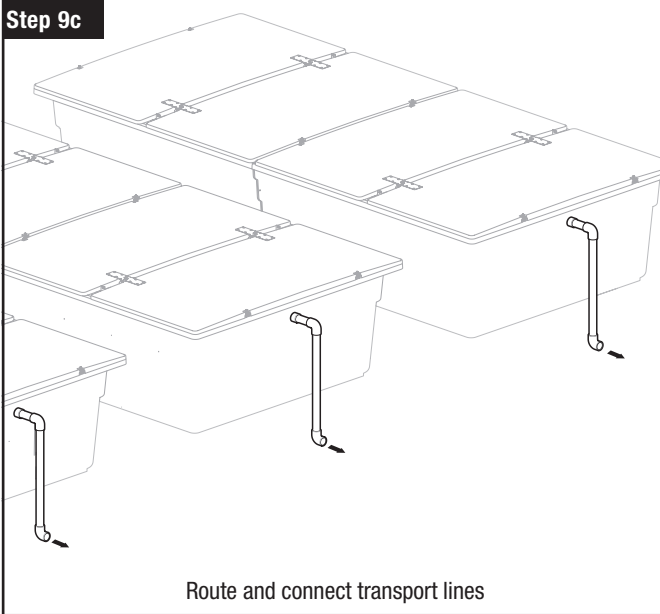
- For settings or adjustments in recirc/blend tankage, see the engineering plan set for the project.
- If the plan set doesn't provide settings, contact the design engineer.



IMPORTANT — DO NOT change the float switch tether lengths!

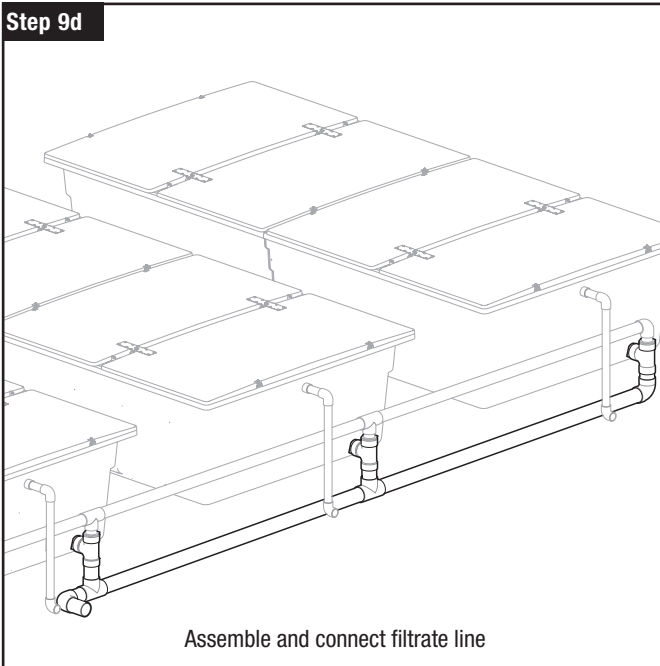
Installation Steps

Step 9c



Route and connect transport lines

Step 9d



Assemble and connect filtrate line

Step 9. Connect Transport Lines



Key Points

- Make sure all connections are properly glued.
- Only use PVC primer on PVC-to-PVC joints.
- Do not use PVC primer to connect PVC and ABS components.

Step 9a. Route and connect the raw sewage inlet to the primary tank.

Step 9b. Route and connect the transport lines between tanks:

- Primary and recirc/blend
- Recirc/blend and pre-anoxic

Step 9c. Route and connect the transport line(s) from the recirc/blend pumping system to each NPS 2in diameter inlet coupling on every AX100 unit.

1. Remove the red protective plug from the inlet coupling.
2. Connect the transport line.

Step 9d. Assemble and connect the filtrate return between each unit and the RBV.

- Single AX100 units use a filtrate return line.
 - Multiple AX100 units use a filtrate return manifold.
1. Remove the red protective plug from the outlet coupling.
 2. Assemble the filtrate return line or manifold. For manifolds only:
 - Slightly increase the length of the pipe stub at the bottom of each outlet tee to maintain proper slope. The unit furthest from the recirc/blend tank gets the shortest stub; the unit closest to the tank gets the longest stub.
 3. Connect the filtrate return line or manifold to the unit or units.
 4. Brace the transport piping to maintain slope and avoid bowing, sagging, or flat sections in the line.



Key Point — Make sure the filtrate return maintains a minimum slope of 1/8in per ft (10mm per m or 1%).

Step 9e. Route and connect any required transport lines from the RBV to downstream components, tankage, and dispersal.

Installation Steps

Step 10. Install AX100 Ventilation System

AX100 units use active ventilation with a single, common air outlet line connected to the vent fan assembly and either:

- A single, common air inlet for all of the units, or
- A separate air inlet for each unit

Check the plan set to determine whether each AX100 requires a single, common air inlet or a separate air inlet and then follow the applicable instructions in this step.

For ventilation systems with factory-equipped heaters, contact the design engineer or Orenco.



Note — Each AX100 unit is supplied with a snorkel.

Step 10a. Route the air outlet line between the vent fan assembly site and the filtrate return line or manifold.

- Make sure the ventilation pipe maintains a minimum slope of 1/8in per ft (10mm per meter or 1%) back to the return line or manifold.

Step 10b. Glue the ventilation pipe into the filtrate return.

Step 10c. Prep and install the AX vent fan assembly (AXVFA). Use [AX Vent Fan Assembly \(AXVFA\) Installation Instructions, NIN-ATX-VFA-1](#).

- Use the correct diameter pipe and fittings, per the plan set, to connect the AXVFA to the air vent line from the AX100 units.

Step 10d. Install each AX100 unit air inlet.

- The air inlet coupling is on the opposite end of the unit from the filtrate outlet.

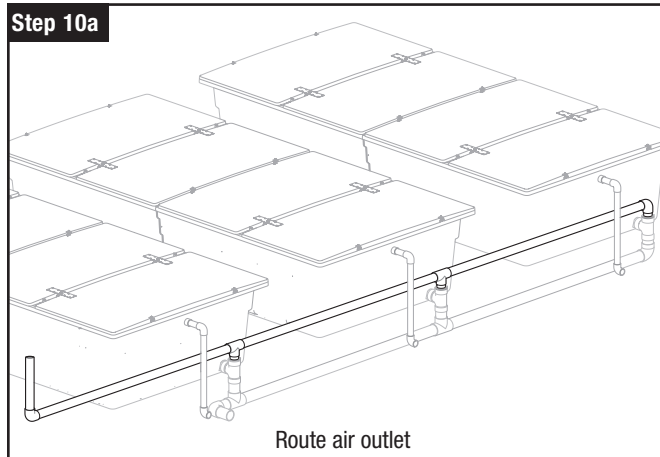
For separate air inlets:

Install an inlet snorkel into the air inlet coupling of each unit.

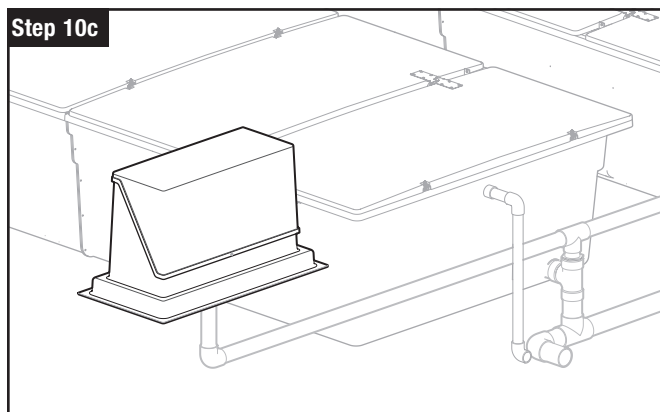
For a single, common air inlet:

1. Install an NPS 3in diameter ABS pipe stub into each unit's air inlet coupling.
2. Build the common vent inlet line between the stubs on the units.
3. Make sure all inlet line connections slope back to the units.
4. Install the intake snorkel on the ventilation line.

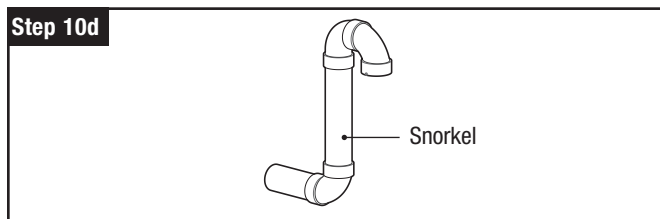
Step 10a



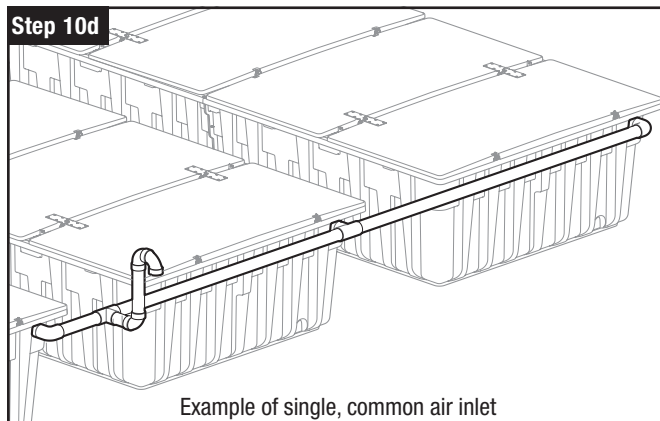
Step 10c



Step 10d



Step 10d



Installation Steps

Step 11



Step 11. Mount and Wire Control Panel



IMPORTANT — Follow all applicable regulations and electric codes.



Key Points

- This step should be performed by a licensed and qualified electrician.
- Installation instructions, schematics, and wiring diagrams specific to the panel, including pump and float switch configurations, come with each panel. If any are missing, contact your dealer or Orenco.

Step 11a. Mount the panel. Use the instructions that came with it.



Key Points

- Follow all applicable regulations for placement of the control panel.
- DO NOT mount panels on an exterior wall of a residential building or living space other than a garage or shop wall!
- The motor contactors make a sound while engaging and disengaging that can be disruptive to occupants.
- Mount panels at a service-friendly location and height.
- Protect panels from direct sunlight, if possible, by mounting them on weather-resistant materials and supports under protective coverings.
- Ultraviolet light can degrade the surfaces of panels over time.
- Constructing shade for panels helps avoid excessive temperatures.

Step 11b. Route and install any necessary electrical conduit.

Step 11c. Route all system-related wires and cables into the control panel and make connections as shown in the system's wiring diagram.



Key Points

- Use waterproof wire connectors in splice boxes.
- Seal the conduit at the control panel and at each splice box with UL-listed sealing foam, putty, silicone sealant, or an Orenco seal kit.

Step 11d. Connect electrical power to the control panel.

Installation Steps

Step 12. Backfill Installations



Key Points

- Maintain the slope of pipes, lines, and manifolds during backfilling.
- Keep electrical conduits from shifting during backfilling.
- Brace pipes, lines, and conduits or place them on compacted beds and then carefully backfill around them.

Step 12a. Perform the final backfill of the system's tanks. Follow the tank manufacturer's instructions.

Step 12b. If ground water or surface water is a concern, place curtain drains around each AX100 unit pad.

Step 12c. Check the plan set to find out if the units need berming.

Step 12d. If the plan set requires it, berm around the AX100 units.



IMPORTANT

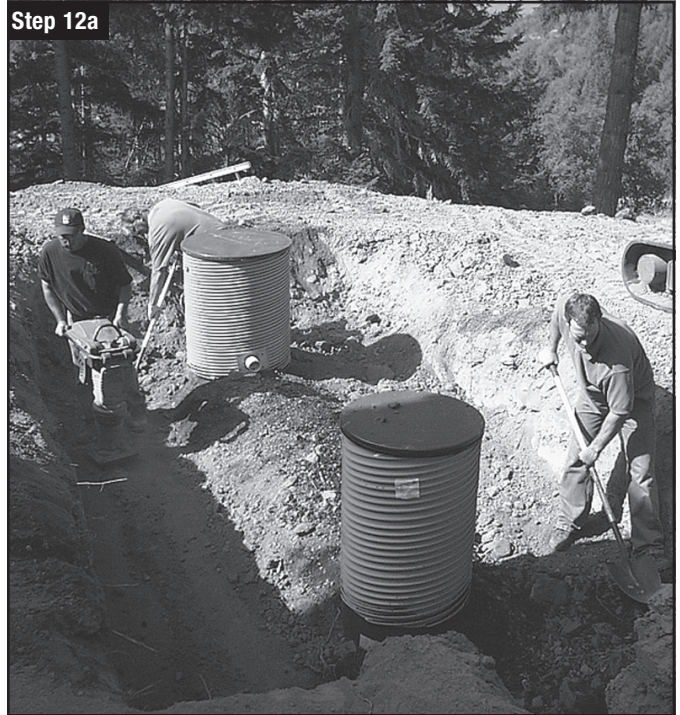
- Do not set the bottom of a unit lower than 9in (229mm) below the site's natural grade.
 - Do not use native material if it contains debris, large (≥ 2 in or ≥ 51 mm) rocks, or sharp objects.
 - If native material is unsuitable, use sand or pea gravel.
 - Do not over-compact the material. Over-compaction can deform the AX100 unit.
 - Fasten all latches on the AX100 unit before backfilling to avoid damage to the unit.
1. Make sure each lid on the unit is fastened and secured.
 2. Berm and compact around units in maximum 12in (305mm) lifts.
 3. Slope the finished grade away from each unit to prevent surface water from ponding on or around it.
 4. Make sure the top of each unit is at least 5in (127mm) above the berm's final grade.

Step 12e. Backfill all of the piping and conduit runs.

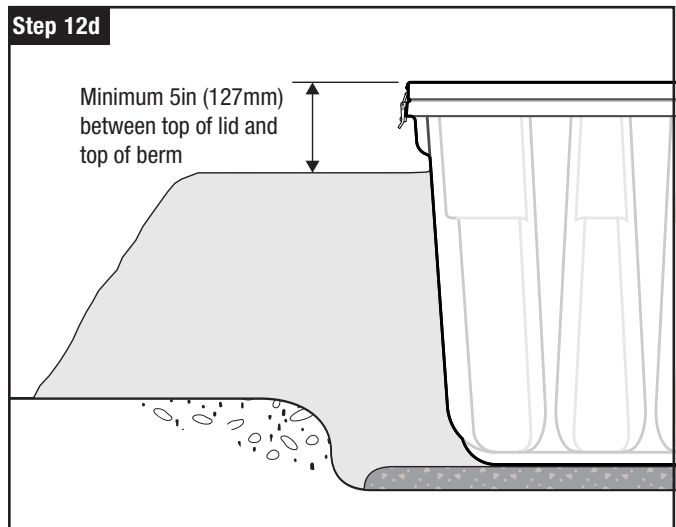
Step 12f. Inspect the entire installation for exposed PVC pipe.

Step 12g. Paint all exposed PVC pipe with UV-inhibiting paint to protect against ultraviolet light.

Step 12a



Step 12d



Installation Steps

Step 13. Prep System for Start-Up

Step 13a. Flush the manifolds and laterals in each AX100 unit.



IMPORTANT

- Contact your dealer or Orenco before using a generator to operate a pump, to make sure it can supply sufficient starting amperage to the pump.
 - Always make sure each chamber has enough water to safely run its pump or pumps!
1. Open the AX100's manifold valve.
 2. Disconnect the spin nozzle laterals from the manifold at the unions.
 3. Position the laterals so the spray nozzles are pointed up.
 4. Connect the laterals to the manifold.
 5. Open the outlet valves on the laterals.
 6. Turn on the recirculation pump to flush the manifold and laterals.
 7. Turn off the recirculation pump.
 8. Close the outlet valves on the laterals.
 9. Disconnect the spin nozzle laterals from the manifold at the unions.
 10. Position the laterals so the spray nozzles are pointed down.
 11. Connect the laterals to the manifold.



Step 13b. Check the spray nozzle patterns in each AX100 unit.

- Adjust the valve on the manifold as needed to bring the square spray patterns to the edges of the splash guards – but not beyond them.

Step 13c. Make sure all system components are installed correctly:

- Primary treatment system tanks (including grease tanks), pumping equipment, and controls
- Secondary treatment system recirc/blend tanks, pumping equipment, and controls
- AdvanTex AX100 units
- RBV
- Ventilation system
- Dosing tank, pumping equipment, and controls
- Distributing valve assembly
- Dispersal system

Step 13d. Make sure the following actions are completed:

- All tanks, seams, and risers have passed watertightness testing.
- All plumbing connections have been completed and tested.
- All electrical connections have been completed and tested.
- All recirculation tank liquid levels are set to above the 100% discharge level.
- For remote telemetry panels: an active, dedicated phone or high-speed internet line is connected to the panel.

Step 13e. Contact the system operator and the design engineer to schedule the official system start-up.