



SINGULAIR GREEN® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM

TAKING THE ORDER

Each Singulair Green Bio-Kinetic wastewater treatment system is sold complete including: delivery and installation of the tank; installation and start-up of the mechanical aerator, Service Pro control center and Bio-Kinetic system; three-year limited warranty with four prescheduled service inspections at six month intervals; and lifetime aerator exchange program. It is important that the Singulair Green order be taken and recorded carefully to insure that all federal, state and local regulations are met. A clear outline of responsibilities when the order is taken will simplify installation of the system and establish a sound working relationship with your customer and local health department.

INSTALLATION PROCEDURE

Installation of the Singulair Green system normally occurs in two phases. First, the polyethylene tankage is delivered and installed at the contractor's convenience. The electrical control center and underground electrical service cable are also installed at this time. Only when the system is ready for start-up are the Singulair aerator and Bio-Kinetic system delivered and installed. When the Singulair Green installer has completed equipment installation, he should also start-up and test the entire system and familiarize the owner with its operation. This installation procedure will assure efficient use of the contractor's and installer's time and protect equipment from possible damage or unauthorized start-up.

CONTACT THE LOCAL HEALTH DEPARTMENT

The contractor must contact the local health department prior to installation of the Singulair Green system and apply for an installation permit. The local Singulair Green dealer will have drawings, specifications and performance data for the system on file with the health department. Normally, the contractor will not be required to supply this information to receive the installation permit. The health department may request a drawing showing the proposed method of effluent disposal and location of the Singulair Green system in relation to the building, property lines and potable water supply. The health department may wish to inspect the site and proposed point of discharge, take soil samples or run percolation tests before issuing an installation permit. The contractor must find out if an inspection of the Singulair Green tank and sewer line will be required before backfilling is allowed.

DELIVERY TRUCK ACCESSIBILITY

Inform the contractor of the dimensions and weight of the delivery truck. The excavation must be accessible without interference from trees, shrubbery, power lines or other obstacles. Earth from the excavation must be piled outside the working area needed to operate the truck. Remind the contractor that extra charges will apply if the excavation is not complete and readily accessible.

POSITIONING THE EXCAVATION

The Singulair Green tank is available with three potential inlet locations. They are located on the inlet end wall and both inlet sidewalls at the same elevation. The position of the sewer line with respect to the building, inlet sewer line and point of discharge will dictate the best inlet choice. It is not necessary to position the system with the inlet end wall facing the building. Review the installation requirements and choose a tank that has the correct inlet location.

TANK LEVELING PAD

To insure that the tank bottom will be bearing the weight evenly, all tanks should be set on a four inch thick pad of gravel, sand or fine crushed stone. The pad should be installed and leveled by the contractor before delivery and setting of any tank takes place. The tank pad must be leveled to within 1/4" from side to side and end to end.

EXCAVATION SIZE AND DEPTH

The Singulair Green tank is 10' 3" long and 6' 6" wide. The excavation should have sufficient overdig to allow between 18" to 24" of clearance on both sides and 6" to 12" of clearance on the inlet and outlet ends of the system. Additional overdig will be required on deeper installations or for safety where the excavation side walls are unstable.

The excavation depth is calculated using several factors. First, note the elevation of the sewer line as it leaves the building. From this sewer line elevation, subtract 1/8" per foot from the building to the system location to determine the inlet invert elevation. Next, measure from the outside bottom of the tank to the inlet invert of the system. Subtract this distance from the inlet invert elevation to determine the finished excavation depth. Deduct 4" from the finished excavation depth to accommodate the leveling pad. Fall through the system from inlet invert to outlet invert is 4". Therefore, the outlet line from the system must be installed four inches lower than the point where the inlet sewer line joins the system. The excavation depth should allow a minimum of 6" and a maximum of 16 1/2" of fill over the tank.

TAKING THE ORDER (Cont.)

ANTI-FLOTATION

In areas where high water is a concern, it may be necessary to provide additional anti-flotation measures to secure the Singulair Green tank. Failure to follow the anti-flotation recommendation provided in the Tank Delivery and Setting document may result in damage to the Singulair Green tank or shifting in the excavation and will void the warranty.

BACKFILLING THE GREEN SYSTEM

Special backfill instructions must be followed for Singulair Green systems buried deeper than 16-1/2" below grade. Consult the Deeper Burial Requirements section of the Singulair Green Tank Delivery and Setting document for details. Prior to backfilling, add a minimum of 12" (250 gallons) of ballast water to the tank to prevent shifting in the excavation. Fill each chamber to an equal level. Cover all openings, then begin backfilling with gravel under and around the sloped clarifier. Continue to add gravel until the discharge line from the tank is covered. Proceed to the inlet end of the pretreatment chamber and add gravel until the inlet line is covered. Fine, loose earth may be used to backfill the remainder of the excavation. Be sure that the backfill is free of rocks, sharp objects, large clumps of earth and construction debris. Never use clay for backfill material. Add backfill evenly around tank in 12" increments. Hand tamp each layer of fill to compact soil. Final grading should be 3" to 6" below the top of each access cover.

FILLING THE SYSTEM WITH WATER

The Singulair Green system should be filled with clean water immediately after installation. Water should be added as the tank is being backfilled to equalize internal and external tank pressure. Fresh water is preferred but water from a nearby pond may be used if it is free of silt and other debris. A septic tank pumping service should never be used to fill the Singulair Green system. If this is done, large amounts of biologically untreatable materials may be deposited in the system and they could interfere with system operation and performance.

INLET SEWER LINES

Only domestic wastewater must be allowed to enter the Singulair Green system. It is not intended to handle flows from roofing down spouts, basement footer drains, sump pump piping or garage and basement floor drains. If the sanitary sewer system must be used for disposal of these liquids, it must be connected downstream of the Singulair Green system. Water softener backwash will affect system performance and must not flow into the Singulair Green system.

EFFLUENT DISPOSAL LINE

Due to the high level of treatment provided by the Singulair

Green Bio-Kinetic wastewater treatment system, its effluent may be discharged in a number of acceptable fashions. There must always be a ground water relief point installed in the discharge line that provides an outlet no higher in elevation than the outlet invert of the Singulair Green tank. This will prevent tank contents from backing up in cases where the normal discharge point is temporarily under water or the effluent disposal field is saturated.

ELECTRICAL POWER SUPPLY

A dedicated 115 volt AC single-phase, 10 amp (minimum) 60 Hertz circuit must be provided in the main electrical service panel for the Service Pro control center.

FINISH GRADING AND LANDSCAPING

A polypropylene aerator mounting riser with vented cover is provided for the aerator and extends twenty inches above the top of the Singulair Green tank. The top of the cover must project a minimum of 3" to 6" above finished grade. Individual extension riser sections may be added in 6" increments when necessary. If possible, determine if riser sections will be needed before tank installation is scheduled.

A polypropylene system mounting riser with sealed cover is provided for the Bio-Kinetic system. The top of the cover must project 3" to 6" above finished grade. Individual extension riser sections may be added in 6" increments when necessary.

PRETREATMENT CHAMBER ACCESS

Normally, the removable cover in the tank top is all that will be needed for pretreatment chamber access. On deeper installations, the access opening in the tank top must always be developed to within twelve inches of grade. Some owners and regulatory officials require that access to the pretreatment chamber must be at finished grade. These conditions should be determined when the order is being taken so that the appropriate riser and cover may be delivered with the tank.

SCHEDULING TANK DELIVERY

When all points have been fully explained, find out the customer's preferred installation date and make preliminary scheduling with your dispatcher. Take the customer's telephone number to call and confirm the actual date and time of tank delivery.

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SINGULAIR GREEN® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM

TANK DELIVERY AND SETTING

To insure that all work proceeds safely and efficiently, check these items prior to delivery of the Singulair Green tank.

- ✓ Does the driver have complete and accurate directions to the installation?
- ✓ Does the driver have the Singulair installer's tool kit?
- ✓ Are the appropriate aerator mounting riser, vented access cover, Bio-Kinetic system mounting riser, pretreatment riser, sealed access covers and extension risers included?
- ✓ Are additional anti-flotation measures required for this installation?
- ✓ Is a sufficient amount of water and gravel available for the installation?
- ✓ Is an adequate supply of sealing material available for all plumbing connections?
- ✓ Does the delivery vehicle have the proper pick-up bar, cable, straps and/or chain?
- ✓ Is the proper Service Pro control center available for delivery with the tank?
- ✓ Is there sufficient underground electrical cable to reach from the control center to the tank?

PLEASE NOTE: The Singulair Green tank is constructed of high density polyethylene. All joints have been factory sealed for your convenience. This will minimize tank loading, unloading and setting time at the site. The Singulair Green tank has been designed for underground use only. Do not install the tank in a location that is subject to vehicular traffic.

CHECKING THE EXCAVATION

Before tank setting begins, verify that the excavation is level and free of sharp stones and construction debris. Clear out any objects that could come in contact with the tank.

The length, width and depth of the excavation should be checked. The excavation should have sufficient overdig to allow between 18" to 24" of clearance around the entire perimeter of the Singulair Green system. In addition, the excavation should allow for a minimum of 6" and a maximum of 16½" of cover over the top of the tank. For deeper installations, consult the Deeper Burial Requirements section of this guide. Failure to follow the excavation and backfilling guidelines may result in tank damage and will void the system warranty.

Check the influent and effluent sewer line trenches. The trench depth should correspond with the Singulair Green system inlet and outlet connections and the trenches should be smooth to prevent damage to the sewer lines.

A tank leveling pad should be installed in the bottom of the excavation. The leveling pad should be a minimum of 4" thick and leveled to within ¼" from side to side and end to end. The elevation of the top of the leveling pad should

correspond to the outside bottom of the Singulair Green tank when installed. In areas with unstable soil conditions, a reinforced concrete pad may be required under the Singulair Green tank.

Safe working conditions must be established and maintained during the entire installation procedure. Unstable soil conditions require constant monitoring of the site to insure safety. Installation procedures, equipment and personnel should always comply with applicable safety regulations as well as all federal, state and local codes.



Do not install the Singulair Green tank in saturated clay, areas with a high water table, bogs, swampy areas, landfills where the soil is soft or wet, areas containing expansive soils or soils with an ultimate bearing capacity of less than 1,500 psf. Failure to follow these directions may result in damage to the tank and will void the system warranty.

TEMPORARY UNIT STORAGE

If a Singulair Green tank is delivered before installation can occur, store the tank on smooth ground with no rocks or sharp objects against the tank. Chock the tank with sandbags to prevent tank movement. If high winds are anticipated, tie the tank down to prevent any damage.

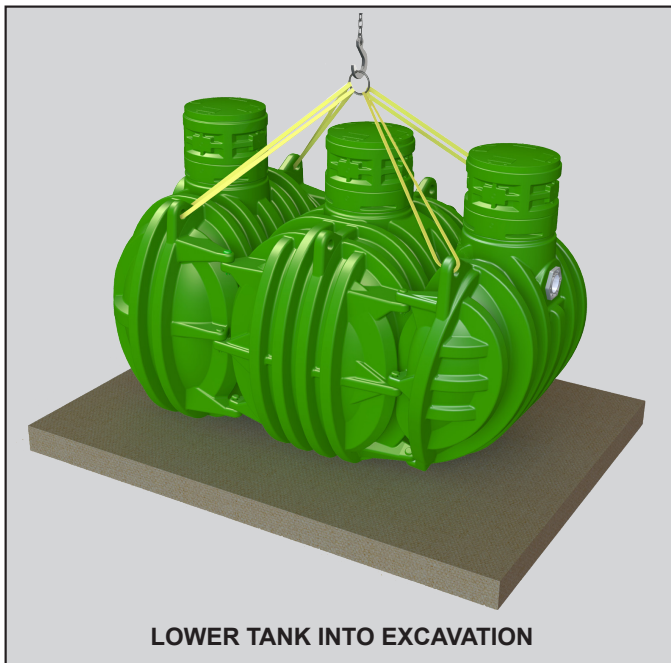
PREPARING THE SINGULAIR GREEN® TANK

Before installing the Singulair Green tank, inspect for signs of damage that may have occurred during transportation or handling. Damaged tanks could leak and should not be installed. Check the inlet and outlet couplings for any signs of damage that would prevent solvent welding to the plumbing. Inspect all risers and access covers to insure no damage has occurred. Verify that all riser and access cover fasteners are securely attached.

CAUTION: Extreme care should be used in the vicinity of any excavation. A delivery vehicle can place excessive loading on excavation sidewalls and care must be taken in its positioning. Once installed, no vehicle should operate over the tank or any other part of the treatment system.

TANK SETTING AND SAFETY

Make sure the delivery vehicle outriggers are firmly placed on stable soil at the excavation site. All personnel must be out of the excavation area and at a safe distance from the tank. Before lifting the tank, check all lifting chains, straps or cables to be sure they are properly secured. Lift the tank using at least four of the molded lifting lugs located on the Singulair Green tank. Carefully lower the tank into the excavation. Stop the tank several inches above the excavation floor and position it in the desired location. Lower the tank carefully until all tension is off the lifting device. Do not remove the lifting chains, straps or cables until tank leveling has been completed.



LEVELING THE TANK

Remove the access covers and place a level on the risers to verify that the tank is level within $\frac{1}{4}$ " from side to side and end to end. If the tank needs to be raised more than 6" to apply leveling material, all personnel should move to a safe location so the tank can be fully removed from the excavation. Fall through the system from inlet invert to outlet invert is 4". Therefore, the outlet invert of the system must be installed 4" lower than the inlet invert.



MOUNTING RISER AND OPTIONAL EXTENSION RISER INSTALLATION

If extension risers are required, install them as needed above each mounting riser. To insure a watertight seal, install a gasket in all joints between the risers.

Access to the pretreatment chamber can be developed to grade or below grade as required by local regulation or owner preference. The access cover on the pretreatment chamber must be developed to within 12" of finished grade. Place a sealed access cover on the pretreatment chamber access opening. Place a vented access cover on the aerator mounting riser and a sealed access cover on the Bio-Kinetic system mounting riser before backfilling.

SEWER LINE INSTALLATION

Sewer lines may be installed as soon as the Singulair Green tank has been leveled. Sewer line trenches must be smoothly excavated and free of debris or sharp objects. The trenches must allow sewer lines to be laid with $\frac{1}{8}$ " of fall per lineal foot. Influent and effluent sewer lines must be at least 4" in diameter. The influent and effluent lines should be PVC pipe and solvent welded into the Singulair Green tank inlet and outlet couplings. Influent and effluent lines must be laid continuously and unspliced from the tank to the undisturbed earth beyond the tank excavation site.

Underground electrical cable for electrical service to the Singulair aerator should be installed in the influent sewer line trench before backfilling the Singulair Green tank. Refer to the "ELECTRICAL WIRING AND CONTROL CENTER INSTALLATION" instructions for complete details.

CAUTION: Do not attempt to adjust the position of the tank or sewer lines with the backhoe bucket. Excessive force may damage the inlet and/or outlet couplings.

GROUND WATER RELIEF POINT

The effluent sewer line should be installed with a ground water relief point to prevent back-up into the system if the effluent discharge point is blocked or flooded. This device can be constructed by installing a pipe tee in the effluent sewer line and extending it to grade. The relief point must be at a lower elevation than the outlet invert of the Singulair Green tank. The extension to grade should be installed with a suitable screen to prevent access to the sewer line.

BACKFILLING THE GREEN SYSTEM

Prior to backfilling, add a minimum of 12" (250 gallons) of ballast water to the Singulair Green tank to prevent shifting in the excavation. Fill each chamber to an equal level. Do not add water through the clarifier access opening. The clarification chamber will be filled through the transfer opening between the aeration and clarification chambers as the aeration chamber is filled. The Singulair Green tank must be backfilled immediately after the sewer lines, underground electrical cable and ballast water are in place.

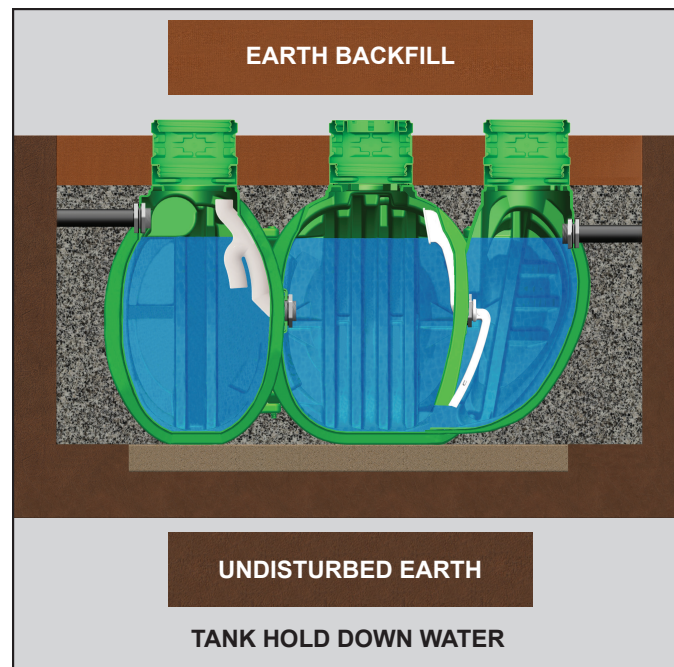


Cover all openings, then begin backfilling with gravel under and around the sloped clarifier. Continue to add gravel until the discharge line from the Singulair Green tank is covered. Proceed to the inlet end of the pretreatment chamber and add gravel until the inlet line is covered. Fine, loose earth may be used to backfill the remainder of the excavation.

Be sure that the backfill is free of rocks, sharp objects, large clumps of earth and construction debris. Never use clay for backfill material. The backfill must flow freely and care should be taken to insure that all recesses formed between the ribs and beneath the area between the pretreatment and aeration chambers are completely filled. Add backfill evenly around the entire perimeter of the Singulair Green tank in 12" increments. Hand tamp each layer of fill to compact soil. When backfilling over the tank, add fill to the area between the risers first. Final grading should be 3" to 6" below the top of each access cover and should slope away from the tank so surface runoff will drain away from the Singulair Green system. Use extreme care when backfilling the excavation. Do not allow dirt or mud to enter any part of the Singulair Green system or sewer lines.

TANK HOLD DOWN WATER

The Singulair Green tank must be filled with clean water to the outlet invert immediately following backfilling. The water must be free of leaves, mud, grit or other materials that might interfere with system operation.



When pumping or dewatering the Singulair Green tank, only pump the pretreatment chamber. Then, promptly refill the tank to capacity with clean water. Dewatering and leaving the Singulair Green tank empty will affect tank integrity and void the Singulair Green warranty.

DEEPER BURIAL REQUIREMENTS

Special consideration should be taken if the Singulair Green tank is buried deeper than 16 1/2" below grade. However, the tank should never be buried deeper than 34 1/2" below grade. If deep burial is required, first fill the tank with 12" of clean ballast water. Next, backfill around the entire tank with gravel up to the base of the risers. Once gravel is in place, fill the tank with clean water to the design flow line. Finally, backfill to grade with native soil.

SPECIAL ANTI-FLOTATION SYSTEM

In areas where high water is a concern, it may be necessary to provide additional anti-flotation measures to secure the Singulair Green tank. Anti-flotation is not required when the tank is installed with at least 16" of fill over the tank and the soil density of the backfill is at least 100 pounds per cubic foot. Failure to follow the anti-flotation recommendations provided in this document may result in damage to the Singulair Green tank or shifting in the excavation and may void all or part of the limited warranty.

If anti-flotation is required, consult a soil scientist to measure soil density. Once soil density is defined, refer to the SHALLOW BURIAL AND REDUCED SOIL DENSITY HOLD DOWN REQUIREMENTS chart below. After the amount of additional hold down weight is determined, it is recommended that a pair of concrete beams of appropriate size be placed at the base of the excavation. Alternately, 0.60 CCA treated lumber beams may be used. Treated lumber beams and anti-flotation strap assemblies are available from Norweco. Beams must not be placed directly under the perimeter of the Singulair Green tank. The weight of the soil over the beams significantly contributes to the tank hold down forces. Placing beams under the tank will limit the amount of soil anchoring the beams into the excavation and should never be done.

Secure the anti-flotation beams to the Singulair Green tank with properly rated hold down straps that attach to the lifting lugs located at the top of each of the three chambers. The weight of the beams plus the weight of the soil over the beams must be greater than the required hold down weight shown in the table below.



COMPLETING THE INSTALLATION

Once backfilling has been completed and the tank has been filled with clean water, the access openings must be secured. Install a sealed access cover on the pretreatment and clarification chamber risers. Install a vented cover on the aeration chamber riser. Secure all access risers with the fasteners that have been provided. Installation of the control center and underground electrical cable are normally completed before leaving the site. Refer to "ELECTRICAL WIRING AND CONTROL CENTER INSTALLATION" instructions for details.

SHALLOW BURIAL AND REDUCED SOIL DENSITY HOLD DOWN REQUIREMENTS						
Soil Density (lbs. per cu.ft.)	80	90	100	110	120	130
Fill Over Tank (inches)	Additional Weight Required (lbs.)	Additional Weight Required (lbs.)	Additional Weight Required (lbs.)	Additional Weight Required (lbs.)	Additional Weight Required (lbs.)	Additional Weight Required (lbs.)
6	6,915	5,935	4,956	3,976	2,996	2,017
8	6,091	5,008	3,926	2,843	1,761	678
10	5,267	4,081	2,896	1,710	525	*
12	4,443	3,155	1,866	578	*	*
14	3,619	2,228	836	*	*	*
16	2,796	1,301	STANDARD INSTALLATION	*	*	*
18	1,972	374	*	*	*	*
20	1,148	*	*	*	*	*
22	324	*	*	*	*	*
24	*	*	*	*	*	*

* HOLD DOWN WEIGHT NOT REQUIRED

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CONTROL CENTER WITH MCD TECHNOLOGY

ELECTRICAL WIRING & CONTROL CENTER INSTALLATION

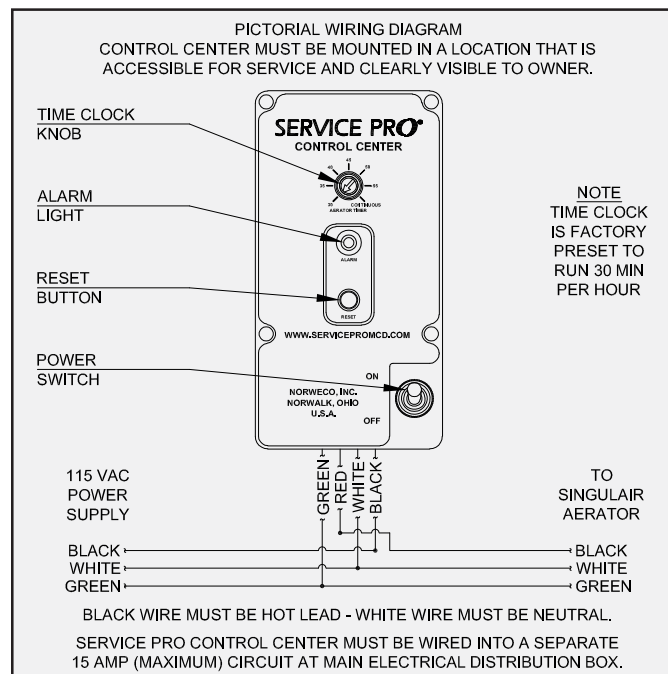
The underground electrical service cable for the Service Pro control center should be installed by the tank delivery truck driver or electrician as soon as the Singlair tankage has been installed in the prepared excavation. Usually it is best to begin with the underground service cable so that backfilling of the Singlair tankage and influent sewer line is not delayed. The information contained in these instructions is not intended to be a complete electrical installation reference, as code requirements vary according to geographic area. Always insure safe working procedures are followed whenever electrical work is performed on the Singlair system.

UNDERGROUND ELECTRICAL CABLE INSTALLATION

To insure proper electrical system protection and uninterrupted service to the Singlair aerator and control center, be sure to follow these instructions carefully. Always double check all work before leaving the job site.

1. Electrical work must be performed in accordance with the latest edition of the National Electrical Code as well as all applicable local codes.
2. Underground electrical service cable used with the Singlair system must be UL and CSA approved, type UF, #14/2 AWG minimum and must have a full-size center ground. Larger cable is required if the underground service needs to be run more than 80 feet. Consult your electrician for details.
3. The underground cable installation must be unspliced from the location of the Service Pro control center into the aerator mounting riser above the aeration chamber of the Singlair tank.
4. Install a watertight conduit fitting into the power cable entrance in the side of the aerator mounting riser. Insert the free end of the power cable through a pre-formed two foot by one foot conduit ell, then into the watertight conduit fitting in the power cable entrance of the aerator mounting riser. Guide the power cable up into the aerator mounting riser. Pull enough cable through the riser to reach thirty-six inches above the riser opening. Coil and secure the cable in the mounting riser so that it will not hang down into the tank while the system is being filled with water.

5. Lay the conduit ell with cable directly across the top and down the tank side. Do not allow the power cable to be laid across the end of the tank or any removable access cover. Insure the conduit and cable entrance openings are sealed.
6. Check the excavation and sewer line trench to be sure they are free of debris, rocks and any sharp or abrasive objects.



7. Uncoil the electrical service cable into the excavation and influent sewer line trench. Leave sufficient slack in the cable so that it will not be stressed or pulled tight during backfilling or settling.
8. Backfill around the underground electrical cable with fine granular material.
9. The underground electrical cable should have at least two feet of earth cover. If the proposed finished grade will not permit this coverage, the cable should be installed in approved conduit from the tank to the building foundation.
10. Always encase the electrical cable in conduit any time it is above finished grade. Route the conduit and cable as directly as possible to the control center mounting location.

INSTALLATION OF ELECTRICAL CONTROL CENTER

Although the aerator is not installed until system start-up, the control center should be wired for operation when the tank and underground electrical cable are installed. The control center should be located so the red warning light can be seen and the audible alarm heard. The mounting location should minimize exposure to direct sunlight,

ELECTRICAL WIRING & CONTROL CENTER INSTALLATION (Cont.)

freezing rain or conditions that might prevent routine inspection or access. The control center should always be mounted out of the reach of children.

Detach the control center cover from the enclosure and remove the insert from the mounting posts. Set the control center insert aside. Remove two of the three $\frac{1}{2}$ " knockouts in the bottom of the control center enclosure. Install a conduit connector into each of the openings. For installations requiring a NEMA 3R rated enclosure, remove the $\frac{1}{8}$ " drain opening knockout to vent moisture from the enclosure. Exposed wiring to or from the control center should always be enclosed in conduit. NOTE: Be sure to assemble the hub to the conduit before connecting the hub to the enclosure. Mount the enclosure securely using masonry nails, wood screws or common nails as appropriate. The following steps should be performed by the installing electrician to complete system wiring:

1. Use a dedicated 115 volt AC, single-phase, 15 amp (maximum) circuit breaker in the main electrical panel for service to the Singulair aerator.

CAUTION: Make sure the circuit supplying power to the Singulair system is de-energized. Check it with an electrician's test light before proceeding. Remember that other circuits in the main electrical service panel may remain energized as you are working. Use only tools with insulated handles, stand in a dry location and work with extreme care.

2. Run the black wire from the dedicated breaker in the main electrical service panel to the black wire attached to the Service Pro control center. Use at least #14 AWG black solid copper wire. To connect the wire leads, strip off the insulation jacket $\frac{7}{16}$ " from the end of each insulated wire lead. Twist the stripped leads together and secure the connection with a yellow wire nut connector.
3. Wire from the neutral in the main service panel to both the white wire in the underground electrical cable from the Singulair aerator and the white wire attached to the Service Pro control center. Use at least #14 AWG white solid copper wire. Strip off the insulation jacket $\frac{7}{16}$ " from the end of each insulated wire lead. Twist the three stripped leads together and secure the connection with a yellow wire nut connector.
4. Install a grounding conductor from the ground lug in the main service panel to the control center. This wire must be attached to the non-insulated ground lead in the aerator underground electrical cable and the green wire attached to the Service Pro control center. Strip off the insulation jacket $\frac{7}{16}$ " from the end of the insulated wire lead. Twist the three stripped leads together and secure the connection with a yellow wire nut connector.

CAUTION: Never allow the white neutral leads and ground leads to be spliced together or connected to common terminals. Failure to connect the Service Pro

control center to a proper ground will void the Singulair system warranty.

5. Connect the black lead of the underground electrical cable from the aerator to the red wire attached to the Service Pro control center. Use at least #14 AWG black solid copper wire. To connect the wire leads, strip off the insulated jacket $\frac{7}{16}$ " from the end of each insulated wire lead. Twist the stripped leads together and secure the connection with a yellow wire nut connector.
6. Inspect your work to make sure all wires are connected to the appropriate locations, there are no breaks in the wiring insulation and that all connections are secure.
7. Before installing the control center insert, energize the circuit breaker in the main electrical service panel and, with your electrical multi-meter, test the voltage being supplied. It should read between 109 volts and 121 volts supplied between the black and white wires attached to the control center. Once the voltage has been confirmed, place the dedicated circuit breaker in the main service panel in the "off" position. The conduit openings in the control center must now be sealed using duct seal. **IMPORTANT:** The conduit openings must be sealed to prevent corrosive gas from entering the control center enclosure which could result in a fire or explosion. Failure to properly seal all conduit openings will void the warranty.
8. Close the insulator and snap into position.
9. Clearly label the dedicated circuit used for the Singulair system on the door of the main service panel. Replace the service panel dead front and enclosure cover.
10. Make sure the selector switch in the control center is in the "off" position.

BEFORE LEAVING

Tear off the bottom portion of the three-part Warranty Registration Card entitled Singulair Bio-Kinetic System Service and Warranty Record. Record the tank setting date and owner's name, address and telephone number. Fill in the contractor's name, directions to and description of the job site, optional equipment installed and location of the Singulair tank and control center. On the back side of the card list the date the owner and/or contractor anticipates the system will be ready for start-up. Take this portion of the card with you for your permanent record of this installation, leaving the remaining two portions intact and attached to the control center. Place the remaining portions of the Warranty Registration Card and Owner's Manual in a secure location inside the facility.

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CONTROL CENTER WITH MCD TECHNOLOGY

INSTALLATION AND OPERATION INSTRUCTIONS

The advanced integrated circuitry of the Service Pro control center simplifies the Singulair installation, improves system performance and allows for communication with the Service Pro website. The control center insert and enclosure provide space for power and communication wiring connections. The integrated circuitry continually monitors both motor over current and under current conditions and minimizes nuisance alarm conditions using the automatic restart feature. To reduce unnecessary service calls, the control center shuts down the Singulair aerator in the event of an over current or an under current alarm condition, illuminates the alarm light and begins an automatic two hour aerator restart attempt sequence before activating the audible alarm and telemetry system.

Service Pro MCD and TNT control centers are equipped with an automatic telemetry system designed to communicate through a toll free telephone number or an Internet connection. In the event of an alarm condition that cannot be corrected by the control center's self-diagnostic sequence, the telemetry system contacts the Service Pro remote monitoring center. The monitoring center identifies the alarming control center and logs the time that the message was received and specific alarm condition reported. The monitoring center then automatically updates the website and notifies the responsible Norweco distributor or service provider by email, fax or telephone. In addition to documenting alarm conditions, the website tracks the date, time and duration of service visits, service contract renewals and maintains a complete database for every Singulair system registered. Access to the information is password protected and available to licensed distributors, sponsored service providers, health departments and system owners.

These instructions are not intended to be a complete electrical, telecommunication or network system installation reference. Telecommunication and network system policies as well as electrical code requirements vary according to geographic area. Consult your local policies and regulations prior to installing the Service Pro control center. Refer to the Electrical Wiring and Control Center Installation instructions for additional details.

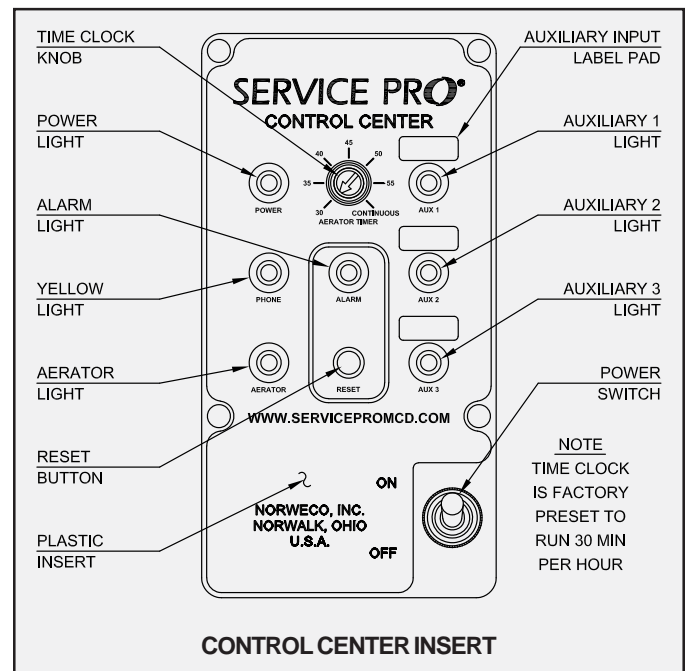
INSTALLATION OF ELECTRICAL CONTROL CENTER

Although the aerator is not installed until system start-up, the Service Pro control center should be wired for operation when the tank and underground electrical cable are installed. Complete steps 1 through 10 of the "Underground Electrical Cable Installation" section of the Electrical Wiring and Control Center Installation instructions. The control center should be located so the warning light can be seen and the audible alarm heard. The mounting location should minimize exposure to direct sunlight, freezing rain or conditions that might prevent routine inspection or access. The control center should always be mounted out of the reach of children. If the Singulair system is to be remotely monitored, the steps in the Getting Started Website Instructions can be completed either before or after Service Pro control center installation.

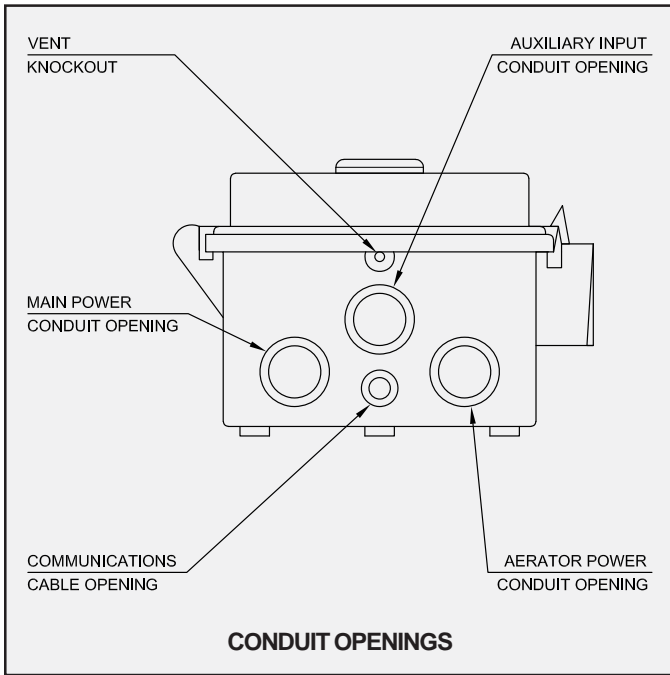
Detach the control center cover from the enclosure, remove the insert from the mounting posts and set the control center insert aside. Remove two of the three 1/2" knockouts in the bottom of the control center enclosure if you are not using any auxiliary alarm inputs. Remove all three of the knockouts in the bottom of the control center enclosure if you are using the auxiliary alarm inputs. **NOTE:** All alarm wires must be in a conduit separate from the power lines. Install a conduit connector into each of the openings. Remove the knockout for the communications cable only if the communication

grommet will be used. For installations requiring a NEMA 3R rated enclosure, remove the 1/8" drain opening knockout to vent moisture from the enclosure. Exposed wiring to or from the control center should always be enclosed in conduit.

NOTE: Be sure to assemble the hub to the conduit before



SERVICE PRO® CONTROL CENTER INSTRUCTIONS (Page 2 of 6)



connecting the hub to the enclosure. Mount the enclosure securely. The following steps should be performed by the installing electrician to complete system wiring:

1. Use a dedicated 115 volt AC, single-phase, 15 amp (maximum) circuit breaker in the main electrical panel for service to each Singlair aerator.

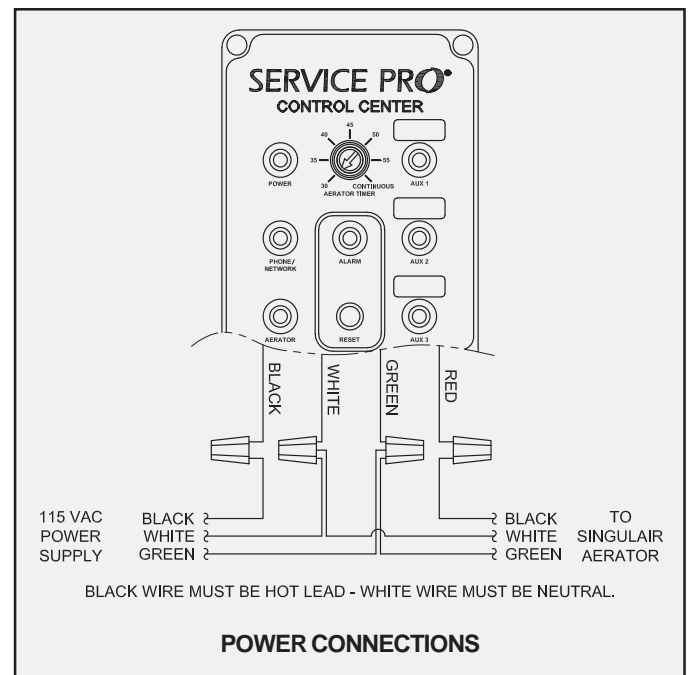
CAUTION: Make sure the circuit is de-energized. Check it with an electrician's test light before proceeding. Remember that other circuits in the service panel may remain energized as you are working. Use only tools with insulated handles, stand in a dry location and work with extreme care.

2. Connect the black wire from the dedicated breaker in the main service panel to the black wire provided on the circuit board. Use at least #14 AWG black solid copper wire. To connect to the wire leads, strip off the insulation jacket $\frac{7}{16}$ " from the end of each insulated wire lead. Twist the stripped leads together and secure the connection with a yellow wire nut connector.
3. Wire from the neutral in the main service panel to both the neutral wire in the underground electrical cable from the Singlair aerator and the white wire provided on the circuit board. Use at least #14 AWG white solid copper wire. Strip off the insulation jacket $\frac{7}{16}$ " from the end of each insulated wire lead. Twist the three stripped leads together and secure the connection with a yellow wire nut connector.
4. Install a grounding conductor from the ground lug in the main service panel to the control center. This wire, along with the non-insulated ground lead in the aerator underground electrical cable and the green ground wire attached to the optional telephone communications module, if equipped, must all be connected to the green wire provided on the circuit board. Strip off the insulation

jacket $\frac{7}{16}$ " from the end of the insulated wire lead. Twist the four ground leads together and secure the connection with a yellow wire nut connector.

CAUTION: Never allow the white neutral leads and ground leads to be spliced together or connected to common terminals. Failure to connect the Service Pro control center to a proper ground will void the Singlair system warranty.

5. Connect the black lead of the underground electrical cable from the aerator to the red wire provided on the circuit board. Use at least #14 AWG black solid copper wire. To connect to the power connector lead, strip off the insulation jacket $\frac{7}{16}$ " from the end of each wire lead. Twist the stripped leads together and secure the connection with a yellow wire nut connector.
6. If auxiliary alarm inputs are being used, skip to AUXILIARY ALARM INPUTS.
7. Inspect your work to make sure there are no breaks in the wiring insulation and that all connections are secure.
8. Before installing the control center insert, energize the circuit breaker in the main electrical service panel and, with your electrical multi-meter, test the voltage being supplied. Set up the meter to read AC voltage on the 0-150 volt scale. Place one probe of the meter into the yellow wire nut connector attached to the black lead and one probe into the yellow wire nut connector attached to the white lead. It should read between 109 volts and



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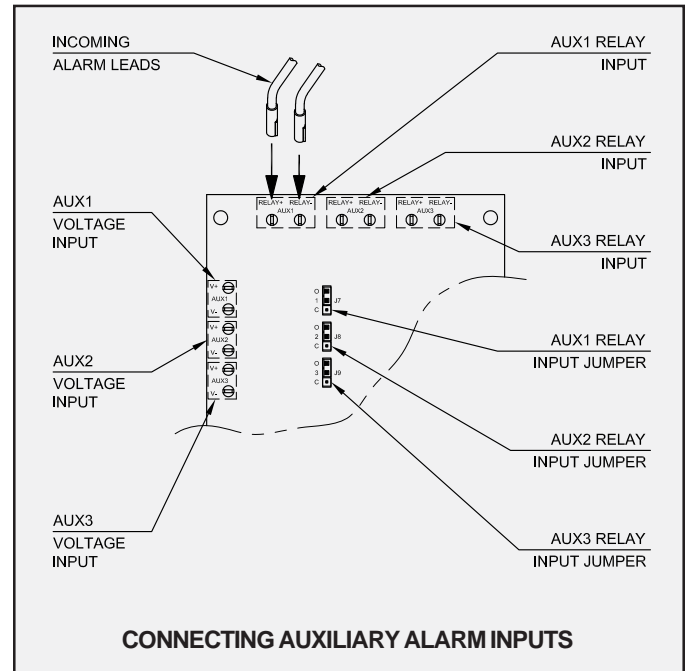
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CONTROL CENTER WITH MCD TECHNOLOGY

INSTALLATION AND OPERATION (Page 3 of 6)

121 volts. If it is within these limits, place one probe of the multi-meter into the yellow wire nut connector attached to the red lead and one probe on the power connector pin attached to the white lead. The meter should read zero volts. Once these readings are confirmed, place the dedicated circuit breaker in the main service panel in the "off" position.

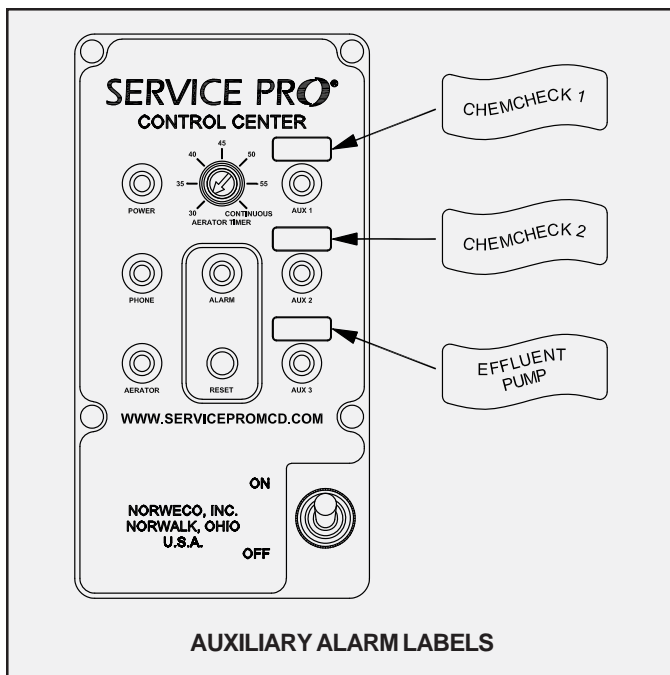
9. The conduit openings in the control center must now be sealed. Expanding foam sealant is recommended for this purpose. Insure sealant complies with local code requirements. Follow manufacturer's instruction when adding expanding foam sealant into the conduits. **IMPORTANT:** The conduit openings must be sealed to prevent moisture and corrosive gas from entering the control center enclosure which could result in a fire, explosion or damage to the control center. Failure to properly seal all conduit openings will void the Singularir system warranty.
10. Close the insulator and snap the insert into position.
11. When the auxiliary inputs are used, label the corresponding auxiliary alarm light located on the front of the Service Pro control center insert using the labels provided.



AUXILIARY ALARM INPUTS

The Service Pro control center will accept alarm inputs that generate several different types of output: a 5 to 120 volt AC or DC signal, a normally open relay circuit or a normally closed relay circuit. The inputs on the control center are male 0.110" quick connect terminals and accept standard female 0.110" insulated quick connect receptacles. When connecting to the three auxiliary alarm inputs:

1. Determine the type of output that is generated by the alarm device you wish to connect.
2. Route the leads through one of the conduits not being used for power lines into the bottom of the enclosure. Be sure to pull enough wire to comfortably reach the two auxiliary terminals you will be connecting to on the back of the control center insert.
3. Crimp the insulated female 0.110" quick connect receptacles to the ends of the alarm leads.
4. Connect the leads to the corresponding auxiliary alarm inputs. When connecting a relay circuit, connect to the "RELAY +" and "RELAY -" terminals. For a voltage input, connect the leads to the auxiliary alarm terminals marked "V+" and "V-".
5. When connecting a device that uses a relay contact setting, you will need to set the jumper for the correct relay configuration. If the alarm circuit is normally closed, place the jumper over the bottom two jumper pins closest to the 'C' label. If the alarm circuit is normally open, place the jumper over the top two jumper pins closest to the 'O' label (see CONNECTING AUXILIARY ALARM INPUTS on Page 3 for reference).



12. Clearly label the dedicated circuit used for each Singularir aerator on the door of the main electrical service panel in the home. Replace the service panel dead front and enclosure cover.
13. Make sure the selector switch in the control center is in the "off" position.
14. Complete the steps outlined in the "Before Leaving" section of the Electrical Wiring and Control Center Installation instructions.

SERVICE PRO® CONTROL CENTER INSTRUCTIONS (Page 4 of 6)

COMMUNICATION CABLE INSTALLATION REQUIREMENTS

If a telephone connection will be utilized, a telephone line must be installed unspliced from the telephone box to the Service Pro control center. Before installing the telephone line, familiarize yourself with the equipment and policies of the local telephone service provider. The Service Pro control center is not compatible with digital telephone service. With DSL Internet service, a DSL filter will need to be connected to the telephone jack on the Service Pro controls to insure proper operation of the monitoring feature. If a telephone line is not available, one will need to be installed by the local telephone service provider or an Internet communication module should be utilized.

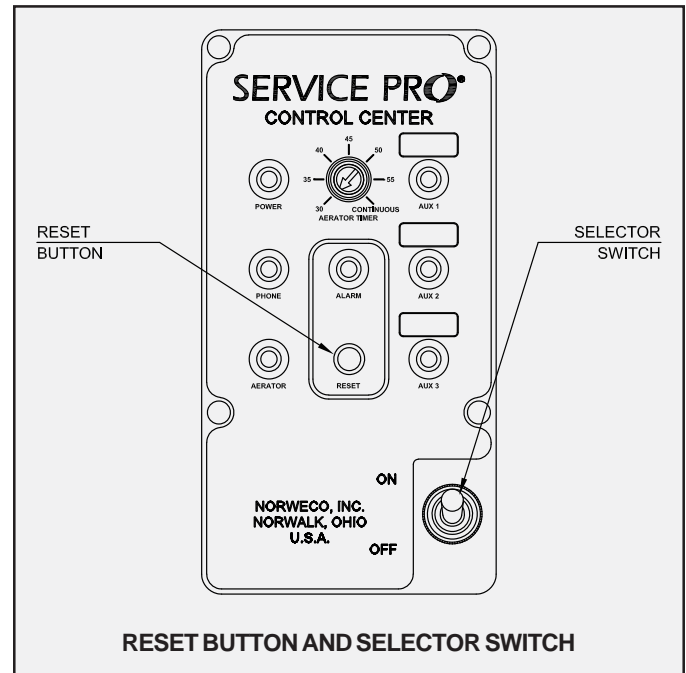
If an Internet connection will be utilized, a network cable must be installed from the home Internet connection to the Service Pro control center. The network cable will typically be plugged into a switch or router that distributes Internet service in the home. Regardless of whether the communications will take place through a phone line or the Internet, the following steps must be performed to complete system wiring:

1. Make sure the dedicated circuit breaker in the main service panel is in the "off" position. Using the auxiliary input conduit or one of the grommets provided, run the telephone or network cable into the bottom of the enclosure. **NOTE:** The telephone or network cable cannot be installed into a conduit with any power lines. Crimp the appropriate phone or network jack on the communications cable in the control center.
2. Connect the telephone or network cable into the jack provided on the control panel. Connect the other end of the communications cable to the existing telephone system or home Internet service.
3. Snap the control center insert into position. Close the control center cover.

RESET BUTTON

The reset button on the Service Pro control center is used to perform multiple tasks during installation and operation. To activate the reset button, apply pressure with your index finger. The button is activated when a "click" is heard. The reset button can be used to silence the audible alarm, turn on the aerator when it is in an off cycle or restart the run cycle when the aerator is currently running. The reset button is also used to test the control center audible and visual alarms and telemetry system. **NOTE:** Excessive pressure on the reset button should be avoided.

To test the alarms, press and hold the reset button for approximately five seconds until the alarms activate and then release. After five seconds, the panel will call out and deliver an alarm test message to the Service Pro monitoring system. Once the communication is complete, the control center will return to normal operation.



The reset button can also be used to record service visits. When arriving on site, press and hold the reset button for five seconds until the alarm test feature activates, then release the button. After the control panel has completed the alarm test call, routine service should be performed on the Singulair system. Once system service has been completed, press and hold the reset button again for five seconds until the alarm test feature activates. The Service Pro control center will register two alarm test calls received within a four hour period as a service visit. The date, time and duration of the service visit will be logged in the database for future reference.

TELEMETRY SYSTEM COMMISSIONING

Each control center is shipped with the integrated telemetry system disabled. All other monitoring, diagnostic and local alarm functions will operate as designed. The reset button is used to enable the integrated telemetry system once the communications cable has been connected. This process is referred to as commissioning the control center. Commissioning notifies the Service Pro monitoring center that the control center is functional and ready to transmit information.

To commission the control center, insure the dedicated circuit breaker in the main service panel is in the "on" position and the communications cable is properly installed. Place the control center selector switch in the "off" position. While

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INSTALLATION AND OPERATION (Page 5 of 6)

holding in the reset button, place the selector switch in the “on” position. Continue to hold the reset button until the red alarm light illuminates. Release the reset button and allow the telemetry system up to sixty seconds to call out and complete the commissioning process. The yellow light will illuminate during the call out process.

If commissioning is successful, the alarm light will flash 5 short flashes and stop as verification. If commissioning is unsuccessful, the alarm light will flash a pattern that indicates the cause of the failed communication. The pattern will display repeatedly. If the commissioning is not successful, refer to the table below for troubleshooting information. Conduct an alarm test to confirm commissioning was successful. If the yellow light does not illuminate during the alarm test, recommission the panel and refer to the table below for troubleshooting information.

AERATOR TIMER

Each control center is supplied with an adjustable timer that determines the run time of the aerator. The timer is adjustable in 5 minute increments up to continuous operation and will not permit the aerator to run less than 30 minutes out of each hour. Full time operation is achieved by turning

the dial so that the arrow points to the “continuous” position. Use a small blade screwdriver to rotate the adjustment dial to the desired position. The timer is factory preset and should only be adjusted after carefully reviewing the Time Clock Setting and Service Instructions.

ALARM CONDITION OPERATING SEQUENCE

When the control center detects an over current or an under current alarm condition, the alarm light will activate and flash a code that specifies the alarm condition that was detected. If an under current or open motor condition is detected, the alarm light will flash two short flashes. If a high water or over current condition is detected, the alarm light will flash steadily. If either an over current or an under current alarm condition is detected, the Singulair aerator is shut down and an automatic system restart sequence begins. With the alarm light flashing, the control center will automatically attempt to restart the aerator every five minutes for a period of two hours (24 restart attempts). The control center monitors motor current during each restart attempt. If the proper level of current is detected, the control center returns the aerator to normal operation and turns off the alarm light. Pressing the reset button while the alarm light is flashing causes the control center to attempt to restart the aerator

RED ALARM LIGHT DIAGNOSTIC CODES	
CONDITION	RED ALARM LIGHT FLASH PATTERN
Successful commissioning	Flash 5 short and stop
Alarm test	Flash 10 short and stop
Service visit start	
Service visit end	
Communications cable not plugged in	Flash 1 short, 1 long - pause 3 seconds & repeat
Phone line in use in home	Flash 2 short, 1 long - pause 3 seconds & repeat
Number called is busy	Flash 3 short, 1 long - pause 3 seconds & repeat
Remote monitoring center error	Flash 4 short, 1 long - pause 3 seconds & repeat
Phone service terminated	
Service Pro panel communication error	Flash 5 short, 1 long - pause 3 seconds & repeat
Control failure	Illuminate continuous
Aerator under current	Flash 2 short - pause 3 seconds & repeat
Aerator open motor	Flash 2 short - pause 3 seconds & repeat
Aerator over current	Flash evenly until serviced
Auxiliary one, two and three	

SERVICE PRO® CONTROL CENTER INSTRUCTIONS (Page 6 of 6)

and counts toward the 24 restart attempts. If the aerator does not restart after 24 attempts, the audible alarm and the alarm light activate.

After both audible and visual alarms are activated, press the reset button and the control center will attempt to restart the aerator again. If the proper current level is not detected, the audible alarm beeps three times, then silences. The alarm light continues to flash and the control center interrupts power to the aerator. If the alarm condition is not corrected and the control center resets after 48 hours, the audible alarm will automatically reactivate. If a control failure is detected, the alarm light will illuminate continuously and the audible alarm will activate. If an auxiliary alarm condition is detected, the audible alarm and the corresponding auxiliary alarm light will activate.

If the telemetry system on the Service Pro control center has been commissioned, the system will then attempt to call out after a five minute delay and deliver an alarm message. The system will call the Service Pro monitoring center every 48 hours until the alarm condition is corrected and the control center is reset. The Service Pro control center uses advanced diagnostic technology to monitor the Singulair system for proper operation. In the event an alarm condition is encountered, the control center will display a series of flashes from the alarm light located in the center of the control panel (refer to the Red Alarm Light Diagnostic Codes chart on Page 5 for further reference).

SYSTEM HEARTBEAT FEATURE

The Service Pro control center contains a system heartbeat feature that will call out every 30 days to inform the monitoring center that the Singulair system is functioning as designed. If the heartbeat call is not received, the monitoring center will notify the distributor or service provider that service is required at that location.

FCC COMPLIANCE

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. The label on the inside of the control center cover contains, among other information, a product identifier in the format US:S2KMM00BMCD. If requested, this number must be provided to the telephone company.

If the Service Pro control center causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the

operations of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with the Service Pro control center, for repair or warranty information, please contact Norweco, Inc. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

SERVICE PRO WEBSITE & REGISTRATION

The telemetry system, standard with Service Pro MCD and TNT control centers, is engineered to interface with the Service Pro monitoring center. The Service Pro monitoring center allows the homeowner, service provider, licensed Norweco distributor and authorized regulatory entities online access to Singulair wastewater treatment system records. Records generated by the Service Pro control center (heartbeat record, alarm conditions, service records) can be accessed at www.servicepromcd.com. For access to the website, contact your local distributor or Norweco, Inc.

Permanent record retention and remote monitoring of the Singulair system will begin when the following steps have been completed:

- The "Add New Subscriber" section of the website has been completed by the Singulair distributor or service provider
- The system is started up and the Service Pro control center is commissioned
- Three copies of the signed Service Pro Subscriber Monitoring Agreement are received by Norweco

A control center can be commissioned either before or after the new account has been registered with the Service Pro monitoring center. However, if the commissioning step is performed first, the registration of the new account must be completed within 30 days of commissioning.

The Getting Started Website Instructions provide details on registering a new account on the Service Pro website. Add each new account by using the information recorded on the Monitoring Agreement form.

The Monitoring Agreement is completed with the owner of each system to be monitored by the website. The top three copies of the Agreement should be submitted to Norweco. This activates monitoring and satisfies Norweco's warranty registration procedure. Refer to the Subscriber Monitoring Agreement Guide for further information.

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SINGULAIR GREEN® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM

SINGULAIR® AERATOR INSTALLATION

Installation of the aerator and Bio-Kinetic system should take place when the Singulair Green system is ready for start-up. Refer to the Bio-Kinetic System Installation instructions for additional details regarding the installation of the Bio-Kinetic system. Your delivery truck driver should have instructed the contractor or owner to contact your office and make arrangements for equipment installation to occur after the home is occupied and the sanitary sewer is in use. Review your Singulair Green tank setting records weekly to insure that you do not have equipment installations that are overdue. If you suspect that adequate time has passed for system start-up and you have not yet heard from the owners, contact them to schedule equipment installation.

PRE-INSTALLATION CHECKLIST

- ✓ The installer should have accurate directions to the facility and a list of service inspections due at other installations in the vicinity.
- ✓ The service vehicle should carry the Singulair Tool Kaddy fully stocked with tools, spare parts and test equipment for use during installation.
- ✓ The installer should have the Singulair Green Installation Manual.
- ✓ Someone should be present at the location to allow installer access to the control center and electrical service panel.
- ✓ The main electrical service panel wiring must be complete so the aerator may be started-up and tested.
- ✓ All chambers of the Singulair Green tankage should be full to the flow line.
- ✓ The installer must have the proper model aerator for the installation.
- ✓ The serial number on the aerator must match the service and warranty record card.

AERATOR START-UP PROCEDURE

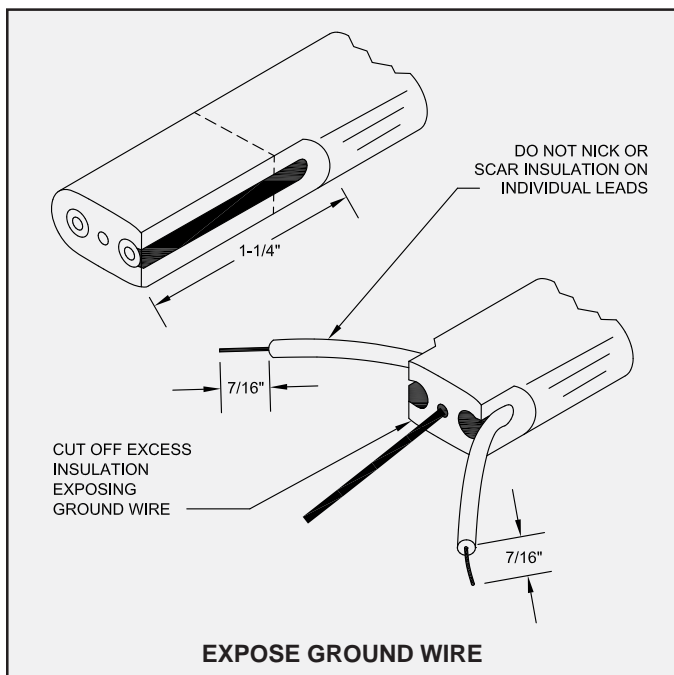
When you arrive on site, introduce yourself to the owner and ask to see the main electrical service panel and Service Pro control center. Be certain the circuit for the Singulair Green system in the main electrical service panel is de-energized and that the selector switch in the Service Pro control center is placed in the "off" position. Explain to the owner that you will be installing the aerator into the aeration chamber of the tank and you will need access to the main electrical service panel for system start-up after the aerator has been installed. Carry the aerator in its shipping carton to the tank site. Place the Singulair Tool Kaddy nearby for easy access to tools and test equipment. Remove the vented cover from the aerator mounting riser. Carefully remove the aspirator shaft from the shipping carton. Do not bump or bend the aspirator shaft. Lay the shaft on the vented cover. Grip the outside bottom of the shipping carton with your feet and lift the aerator to remove it. Lay the aerator on its side with the brackets resting on the vented cover near the aerator mounting riser. Uncoil the underground electrical service cable from inside the aerator mounting riser and extend it out of the riser. Test the exposed leads with the electrical multi-meter from the Tool Kaddy before proceeding. The circuit should not be energized and voltage should not be evident when the leads are tested with the multi-meter.

WIRING THE ELECTRICAL CONNECTOR

The moisture resistant electrical connector must be properly wired to insure system operation and protect components. Carefully follow these steps to completely wire the electrical connector:

1. Uncouple the two halves of the electrical connector on the Singulair aerator. Unscrew the three captive stainless steel screws from the face of the female half of the assembly. They will stay in the body of the receptacle. Lift out the rigid internal receptacle body.
2. Unscrew the compression nut on the strain relief connector assembly at the small end of the female half of the connector. Do not misplace the compression ring. Insert the electrical service cable through the compression nut, compression ring and neoprene grommet, which is contained in the molded plastic sleeve of the female connector.
3. Strip the outer insulation back 1 1/4" on the underground electrical service cable and expose the three individual leads. Use extreme care to be sure the insulation jackets on the individual black and white leads are not scarred or damaged while stripping the outer jacket. Check them carefully. If even slight damage is noticed, cut off the end of the cable just below your work and begin again.

AERATOR INSTALLATION (Cont.)



- Strip off the insulation jackets $\frac{7}{16}$ " from the ends of the black and white leads.
- Insert the black lead end of the electrical cable into the hole adjacent to the brass-colored screw and tighten the screw securely.
- Insert the white lead end of the electrical cable into the hole adjacent to the silver-colored screw and tighten the screw securely.
- Insert the bare copper ground lead into the hole that is adjacent to the green colored screw and tighten the screw securely.
- Inspect your work to see that no two uninsulated leads are in contact with each other and that all screws are tight. Also be sure the wire insulation is not captured in the terminal. All power cable leads must be connected to the correct terminals in the female receptacle for proper aerator operation. The back of the insert body is clear, making it easy to verify that each wire is in place before tightening the terminal screws. Improper wiring or electrical hook-up will void the warranty.
- Locate the insert key above the grounding pole on the side of the rigid receptacle body and align it with the keyway molded on the inside of the rubber receptacle sleeve. Grasp the connector and insert the receptacle body fully into the sleeve.
- Engage the three captive stainless steel screws on the face of the receptacle body and tighten them.
- Press the neoprene grommet onto the small end of the female half of the electrical connector. Tighten the compression nut and clear plastic compression ring against the grommet. The compression nut achieves maximum torque by hand-tightening. Do not over-tighten the compression nut.

NOTE: Any time the female connector is not in use, secure the closure cap in the end of the receptacle.

ASPIRATOR SHAFT INSTALLATION

Each Singulair aerator is manufactured and tested to a critical straightness tolerance from the aerator motor to the aspirator. Remember that the operating life of the aerator often depends on the straightness of the aspirator shaft. It must not be bumped or allowed to contact anything except the aeration tank liquid.

- With the Singulair aerator lying on its side and the brackets propped up on the vented cover, rotate the foam restrictor until the stainless steel set screws in the intermediate shaft are facing up.
- Loosen the two set screws that are located closest to the foam restrictor.
- Examine the upper end of the aspirator shaft and locate the alignment mark permanently affixed during factory testing. Insert the aspirator shaft into the intermediate shaft so that the alignment mark on the aspirator shaft meets the corresponding mark on the intermediate shaft. Be sure both set screws have been loosened before inserting the aspirator shaft. The aspirator shaft must be fully inserted to the depth of the stop shoulder that has been machined in the outside of the aspirator shaft. Use a tee-handle allen wrench to tighten both set screws finger tight only. Overtightening may dish the side of the aspirator shaft and compromise the straightness tolerance.

INSTALLATION IN THE MOUNTING RISER

- Lower the aerator into the aerator mounting riser carefully to avoid any contact between the aspirator shaft, aspirator tip and tank side walls.
- Make sure that the weight of the aerator is evenly distributed on all four mounting brackets and that the brackets are seated in the four grooves on the top of the aerator mounting riser.
- Arrange the underground power cable in the mounting riser so that it does not touch or come into contact with the side of the Singulair aerator.
- Make sure the blades on the male half of the electrical connector are clean and dry. Plug the two halves of the watertight electrical connector together making sure the multiple lip seal is securely engaged. Arrange the aerator power cord, electrical connector and underground electrical cable around the aerator, and secure them into the mounting clips attached to the aerator upper brackets. Before replacing the aerator mounting riser lid, make sure these electrical connections are not resting against the top of the aerator.

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SINGULAIR GREEN® BIO-KINETIC® WASTEWATER TREATMENT SYSTEM

INSTALLATION OF THE BIO-KINETIC® SYSTEM

Installation of the aerator and Bio-Kinetic system should take place when the Singulair Green system is ready for start-up. Refer to the Bio-Kinetic System Installation instructions for additional details regarding the installation of the Bio-Kinetic system. Your delivery truck driver should have instructed the contractor or owner to contact your office and make arrangements for equipment installation to occur after the home is occupied and the sanitary sewer is in use.

The Bio-Kinetic system is installed in the final clarification chamber of the Singulair Green tank. This unique device accomplishes tertiary treatment, flow equalization and, if required by local regulations, effluent disinfection and dechlorination in one compact assembly. The Bio-Kinetic system is recommended for use in direct off-lot discharge applications and any other application where extremely high quality effluent is desirable. Installation of the Bio-Kinetic system can take place as soon as the tank is ready for storage or immediately after the tank is installed in a prepared excavation.

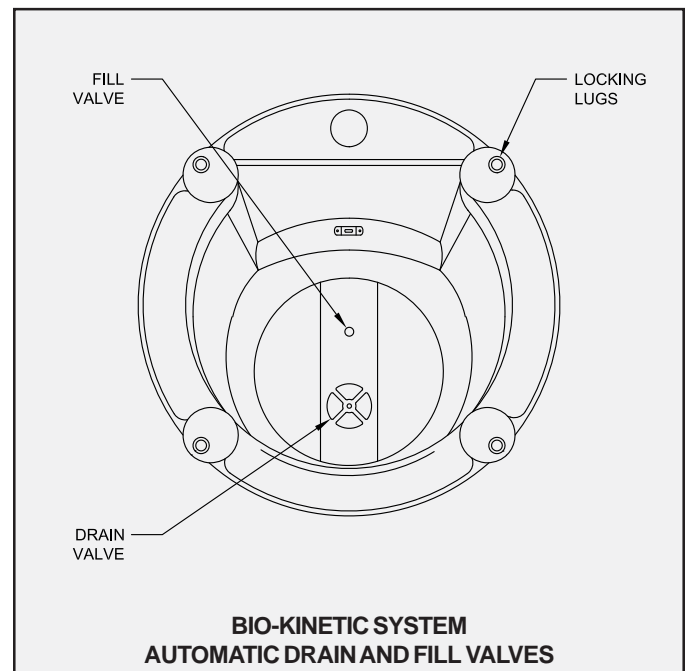
Drain and fill valves built into the Bio-Kinetic system allow it to be installed within the Singulair Green tank any time before or after the tank has been set. This allows faster Singulair Green system installation and less time at the installation site. When installing the Bio-Kinetic system before tank delivery, make sure the tank is stored in a level position to avoid stress on the receiving flange, the Bio-Kinetic discharge flange or to prevent damage to the outer chamber filter media.

BIO-KINETIC® SYSTEM PRE-INSTALLATION CHECKLIST

- ✓ All chambers of the Singulair Green tank should be full to the flow line with clean hold down water as soon as the tank is placed in the excavation and backfilling is complete. When the owner calls for start-up, ask him to check the liquid level in the Singulair Green system. If the liquid level has not reached the outlet invert, have the owner add clean water until full.
- ✓ The service vehicle should be fully stocked, including the Singulair Tool Kaddy, Bio-Kinetic lubricant, Blue Crystal disinfecting tablets and Bio-Neutralizer dechlorination tablets.
- ✓ Make sure the proper model of Bio-Kinetic system for the installation is in the service vehicle. The Bio-Kinetic system may be supplied with or without Blue Crystal and Bio-Neutralizer chemical feed systems. Therefore, check your order and Distributor Service and Warranty Record Card carefully to be sure you have selected the proper Bio-Kinetic system with the correct service cover, flow distribution deck and feed tube(s) and that it is properly labeled for the correct model Singulair Green system.

PREPARING THE SINGULAIR GREEN TANK

1. The Bio-Kinetic system mounting riser should be used for access to the clarification chamber. Additional extension risers may be added as necessary to reach finished grade.
2. The Bio-Kinetic system should only be installed in a mounting riser with a sealed access cover above it. All mounting risers and covers must be in place before backfilling the tank to prevent fill material from entering the Singulair Green tank. The top of each access cover must be located 3" to 6" above finished grade. Check to be sure that a pretreatment tee is installed in the opening in the pretreatment/aeration chamber wall.
3. Check to be sure that a Bio-Static sludge return is properly installed in the opening in the aeration/clarification chamber wall.
4. The Singulair Green tank should be filled with clean water. The water should be free of dirt, mud, leaves, grit, oils or other materials that might possibly interfere with operation of the system. The tank should be filled with



INSTALLATION THE OF BIO-KINETIC® SYSTEM (Cont.)

water immediately after backfilling has been completed to prevent damage to the Singulair Green tank. The aeration and clarification chambers will both be filled if the hose is installed in the aeration chamber access opening. The pretreatment chamber should be filled separately through its access opening.

5. Influent and effluent sewer lines must be installed and connected to the system as soon as it is set and before backfilling to prevent entry of mud or debris. Follow the procedures outlined in the Singulair Green Tank Delivery and Setting instructions when backfilling the installation. Failure to follow proper backfilling procedure may result in damage to the tank and will void the Singulair Green warranty.
6. When a Singular Green system is being installed to replace a failed onsite wastewater treatment system, the old septic tank need not be abandoned. However, be sure the Singulair Green system is installed downstream of the old septic tank and that the entire obsolete system is completely pumped and cleaned before the Singulair Green tank is installed. If the owner prefers, the obsolete system may be totally removed or filled in and abandoned in the ground.
7. Check to see that roofing down spouts, footer drains, sump pump piping or garage and basement floor drains are not connected to the sanitary sewer. The Singulair Green system may not operate properly if hydraulic flows greatly exceed the rated treatment capacity. If the facility is equipped with a water softener, locate the backwash discharge line. The backwash line must not be connected to the Singulair Green system.

BIO-KINETIC SYSTEM INSTALLATION PROCEDURE

Remove the Bio-Kinetic system from the shipping carton. Lift off the Bio-Kinetic system service cover and set it aside. Use the disassembly tool to remove the internal components and discard the shipping sleeve. Reinstall the internal components. Rotate the round, black locking lugs inward to allow installation.

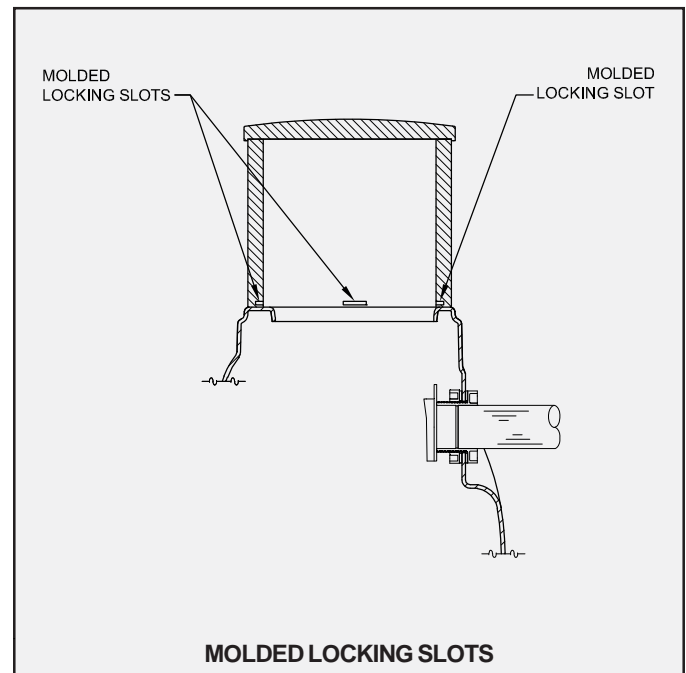
The Bio-Kinetic system discharge flange must engage the plastic receiving flange that has been installed in the outlet of the Singulair Green tank. Carefully examine the condition of the outlet coupling and receiving flange. Any residue or debris that has accumulated in the grooves of the receiving flange must be removed and the grooves and face of the receiving flange should be wiped clean. Use the swab tool to apply a liberal amount of Bio-Kinetic lubricant to the entire face of the receiving flange and the inside of the grooves. Apply the lubricant evenly until all interior surfaces of the receiving flange and the grooves are thoroughly coated. Locate the gasketed discharge flange assembly installed in the outlet of the Bio-Kinetic system. Check to make sure that the assembly is tight and fully engages the discharge opening of the Bio-Kinetic system. Using the swab tool, apply a liberal amount of lubricant to the exterior surfaces of the gasketed discharge flange. Apply the lubricant evenly

over the entire face of both sides and along the edges of the discharge flange.

CAUTION: Bio-Kinetic lubricant has been specially formulated. Use of other lubricants, especially petroleum based lubricants, can cause degradation of the rubber components and will void the warranty.

SELF FILL VALVE

Use the lifting tool to lower the Bio-Kinetic system into the mounting riser. Be careful to align the discharge flange with the receiving flange that is installed in the outlet of the



tank. The Bio-Kinetic system is equipped with a pressure sensitive valve to aid in the filling process for new systems that are not yet filled and the draining process during service or removal. The fill valve is engineered to open when the pressure outside the Bio-Kinetic system reaches 16 inches of head. When the tank water level reaches 16 inches on the outer chamber of an empty Bio-Kinetic system, the fill valve will open. The valve will remain open until the water level inside the filter reaches 4 inches below the water level outside the filter. At this point, the valve will close. For operation instructions on the drain valve system, refer to "Clarification Chamber and Bio-Kinetic Service." Carefully guide the system through the center of the opening using the lifting tool. Be sure to maintain the Bio-Kinetic system

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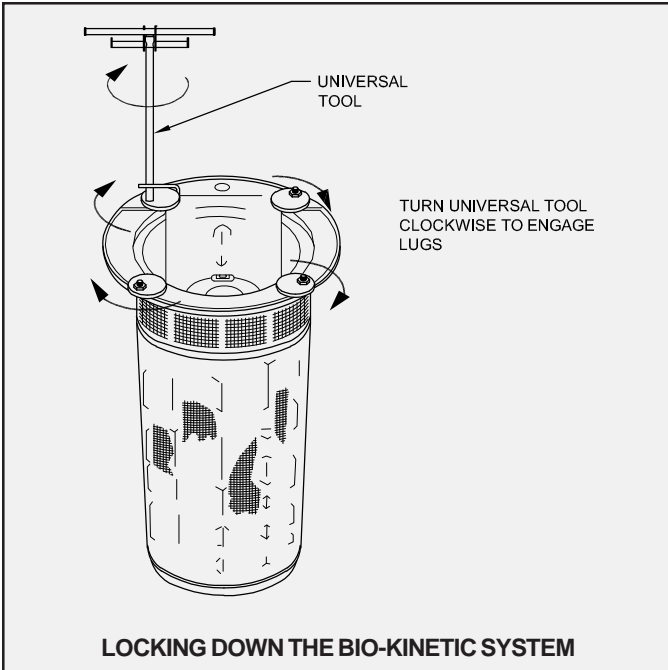
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NORWALK, OHIO
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SINGLAIR GREEN® BIO-KINETIC®

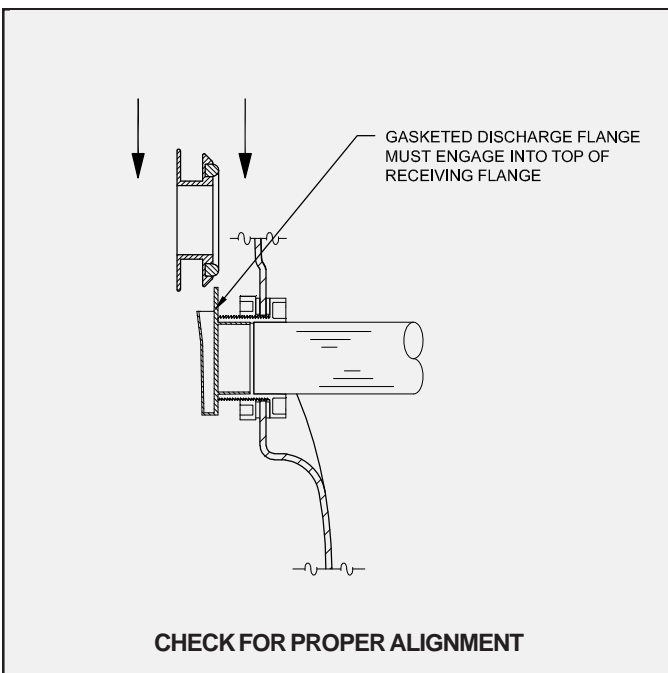
WASTEWATER TREATMENT SYSTEM

INSTALLATION OF THE BIO-KINETIC® SYSTEM (Cont.)



in a vertical position. If allowed to tilt, the system could rub the edge of the opening and be damaged. **NOTE:** Use the viewing port to be sure proper alignment and engagement of the outlet connection takes place. The discharge flange must engage the top of the receiving flange.

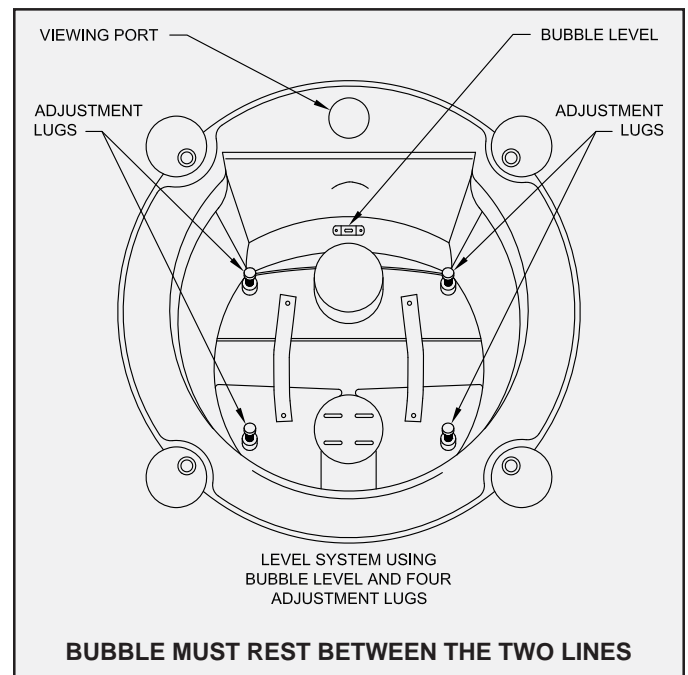
Continue to lower the system until the discharge flange fully engages the receiving flange and the top collar of the Bio-Kinetic system rests on the ledge of the clarification chamber access opening. To confirm that the discharge flange and receiving flange are fully engaged, look through



the viewing port in the top collar. Use the locking lug tool to twist each of the round, black locking lugs clockwise, so that each locking lug is positioned directly into the molded locking slots of the mounting riser.

PLACING THE BIO-KINETIC SYSTEM ON LINE

Locate the level indicator mounted above the outlet of the Bio-Kinetic system flow distribution deck. The bubble should be resting squarely between the two lines in the clear plastic case. If the location of the bubble indicates the system is not installed in a level position, the flow distribution deck should be leveled using the four adjustment lugs provided for this purpose. With the ratchet drive, extension and $\frac{7}{16}$ " socket from the Tool Kaddy, turn each of the adjustment lugs the minimum amount



necessary for the bubble to rest squarely between the two lines in the clear plastic case. Leveling of the flow distribution deck is essential for proper operation of the flow equalization ports, chemical feed tubes and effluent weir within the Bio-Kinetic system.

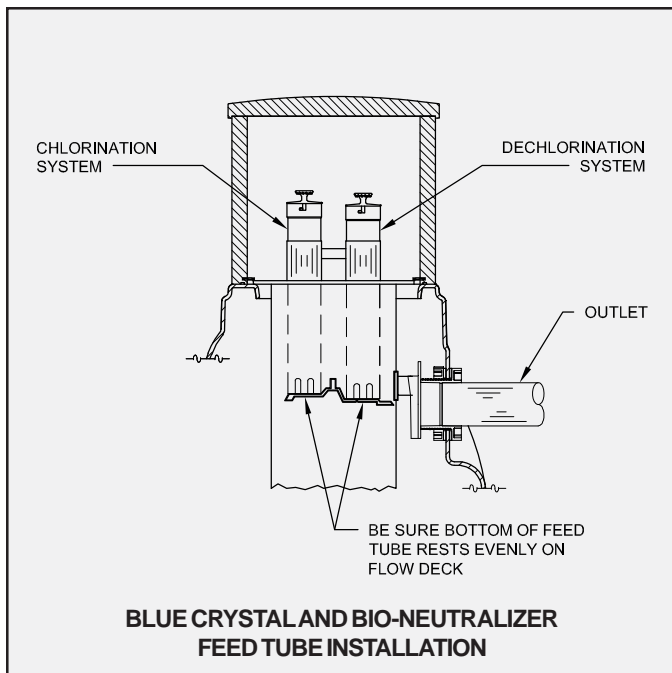
The system service cover can now be placed into position. Install the cover, handle side up, aligning the four holes in the cover with the four locking lug bolts. Be sure the optional chlorination and dechlorination feed tube access openings are in the proper position. The cover will come to rest on the collar of the Bio-Kinetic system. There is no need to add fasteners to the locking lug bolts.

If the installation requires a Blue Crystal disinfection system, the chlorine feed tube opening in the service cover must be positioned on the inlet side of the system

INSTALLATION OF THE BIO-KINETIC® SYSTEM (Cont.)

nearest the aerator mounting riser. Before handling Blue Crystal disinfecting tablets, carefully read the container label and the "Warning" section of these instructions. To fill the chlorine feed tube, remove the cap, hold the tube (open end down) with one hand and insert Blue Crystal disinfecting tablets, one tablet at a time, until the tube is filled. Each tablet must lie flat in the stack. When the feed tube has been completely filled, replace the cap. Twist the cap clockwise until it locks securely into position on the chlorine feed tube. Install the feed tube, slotted end down, through the plastic collar molded into the top of the Bio-Kinetic system service cover. The feed tube will begin to engage the round recess in the flow distribution deck. Rotate the chlorine feed tube clockwise until it locks into position.

NOTE: The chlorine feed tube must always be installed through the mounting collar nearest the aerator mounting riser. If the installation requires disinfection and dechlorination, there will be two openings in the protective cover. The dechlorination feed tube must be installed nearest the system outlet.



WARNING

Blue Crystal disinfecting tablets are a strong oxidizing agent and highly corrosive. Tablets should be stored in a cool, dry, well-ventilated area away from combustible materials such as paper, petroleum products, chemicals, rags or cardboard. Contact with other liquids or chemicals may cause fire. Improper use of this product may cause personal injury or property damage. Always wear rubber gloves and either safety goggles or a face shield when handling Blue Crystal disinfecting tablets or working with the chlorine feed tube. Keep tablets out of the reach of children, as they can cause skin and eye damage, irritate the nose and throat,

and may be fatal if swallowed. If on skin, wash with plenty of soap and water for fifteen minutes, call a doctor if irritation persists. If swallowed, immediately drink large quantities of water, do not induce vomiting, avoid alcohol and get medical attention immediately. If inhaled, immediately remove victim to fresh air. In the case of fire, apply liberal quantities of water. It is a violation of Federal law to use Blue Crystal tablets in a manner inconsistent with the instructions printed on the storage container label.

If the installation requires a Bio-Neutralizer dechlorination system, the Bio-Kinetic system will be supplied with a dechlorination feed tube. Before handling Bio-Neutralizer dechlorination tablets, carefully read the container label and the "Warning" section of these instructions. To fill the dechlorination feed tube, remove the cap, hold the tube (open end down) with one hand and insert the Bio-Neutralizer dechlorination tablets, one tablet at a time, until the tube is filled. Each tablet must lie flat in the stack. When the tube has been completely filled, replace the cap. Twist the cap clockwise until it locks securely into position on the dechlorination feed tube. Insert the dechlorination feed tube, slotted end down, into the mounting collar closest to the system outlet. The bottom of the tube must come to rest evenly on the floor of the flow deck.

WARNING

Bio-Neutralizer dechlorination tablets must be stored in a cool, dry place away from acids and oxidizers. Do not allow Bio-Neutralizer tablets to come into contact with chlorine tablets. Although not rated a hazardous material by the USEPA, exercise caution when handling and wash skin thoroughly with soap and water if contact occurs.

Inspect the Bio-Kinetic system to verify that all four locking lugs are fully engaged into the molded locking slots in the riser, the moisture vapor shield is properly installed over the four locking lug bolts and the feed tubes are properly installed. Reinstall the Bio-Kinetic system access cover on the clarifier riser. Secure the access cover to the riser using the fasteners provided. Now proceed with the steps outlined in the Singulair Green System Final Check and System Start-Up instructions.

SERVICING THE BIO-KINETIC SYSTEM

Each Singulair Green installation equipped with the Bio-Kinetic system should be inspected and serviced during each six-month prescheduled service inspection. Refer to the Bio-Kinetic System Service instructions for service procedures and recordkeeping policies.

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GENERAL NOTES:

- ① SINGULAIR® AERATOR, AS TESTED AND ACCEPTED BY NSF.
- ② FALL THROUGH SINGULAIR® PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TEN AND ONE HALF INCHES BELOW TANK TOP.
- ③ ON DEEPER INSTALLATIONS, RISERS MUST BE USED TO EXTEND AERATOR MOUNTING RISER AND BIO-KINETIC® SYSTEM MOUNTING RISER TO GRADE. INSPECTION COVER ON PRETREATMENT CHAMBER MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.
- ④ REMOVABLE COVERS ON RISERS ARE EACH SECURED TO PREVENT UNAUTHORIZED ACCESS.
- ⑤ CONTACT THE LOCAL, LICENSED SINGULAIR® DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.

PROJECT ENGINEER'S APPROVAL:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

DATE: _____
NAME: _____
CONTRACTOR'S CERTIFICATION:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.

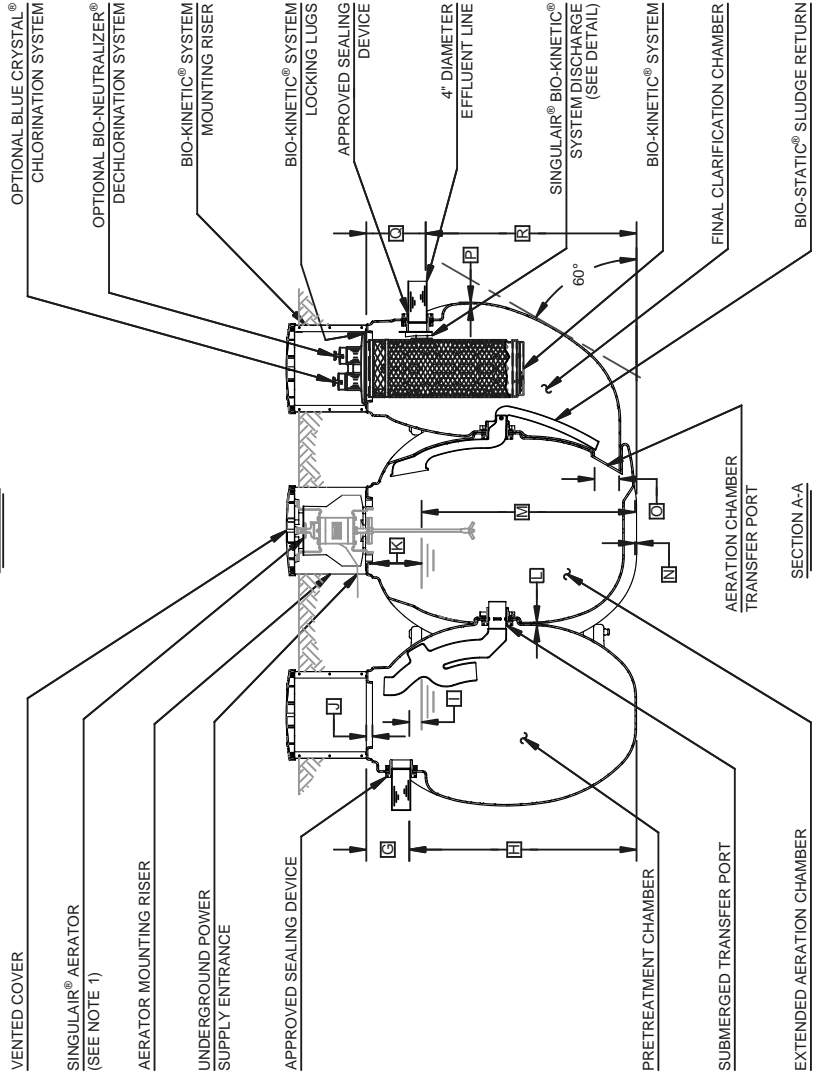
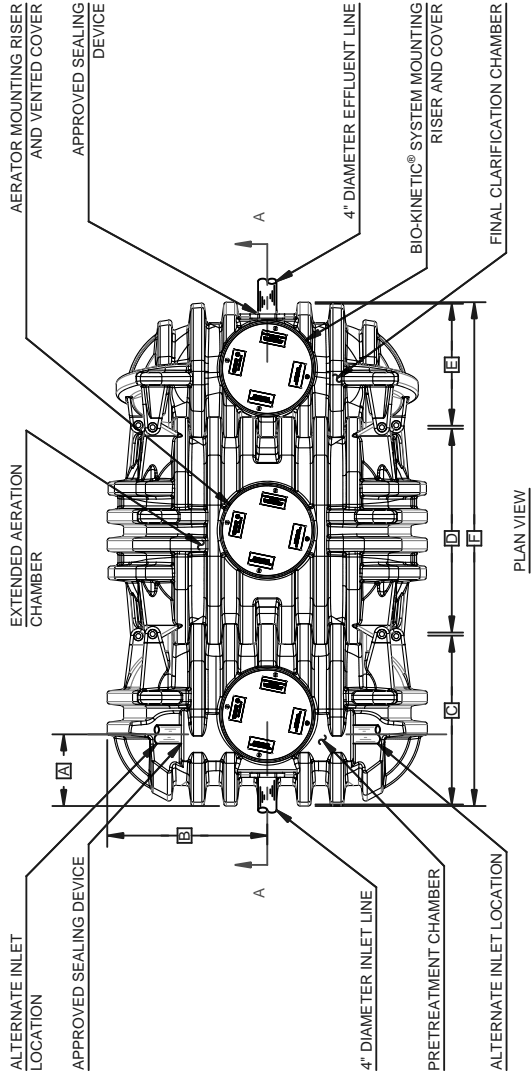
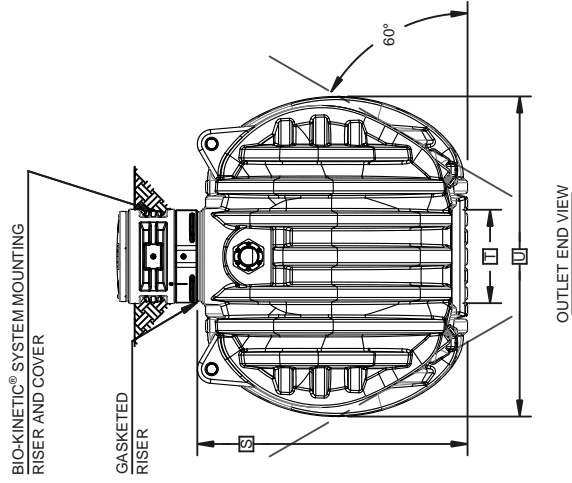
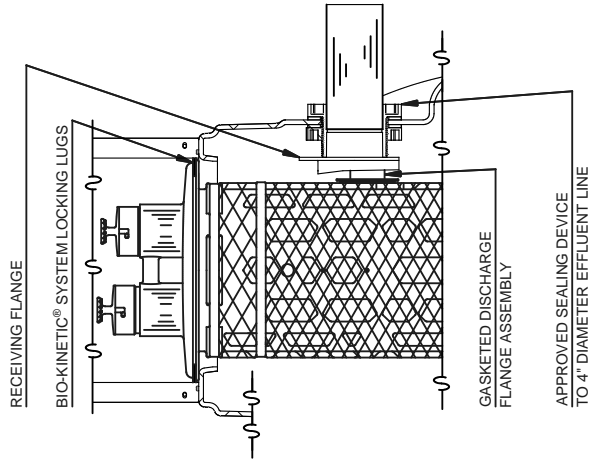
DATE: _____
NAME: _____

CRITICAL DIMENSIONS	
A	1'-5 1/2"
B	3'-3"
C	3'-5 1/4"
D	4'-1 3/4"
E	2'-5 3/4"
F	10'-3"
G	0'-10 1/2"
H	4'-7 1/2"
I	0'-3"
J	0'-1 1/2"
K	1'-0"
L	0'-0 3/4"
M	4'-4"
N	0'-0 3/8"
O	0'-6"
P	0'-0 3/8"
Q	1'-2 1/2"
R	4'-3 1/2"
S	5'-6"
T	1'-1"
U	6'-6"
V	
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X	
Y	
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REG. NO. 4,048,899
REG. NO. 4,048,900

norweco
SINGULAIR® GREEN
960 - 600 SYSTEM

DATE: 04-09-12
DRAWN BY: A
CHECKED BY: BDS
DESIGNED BY: JMM
SCALE: 8-4-10
NTS
MMX



NOTE: TOTAL SYSTEM CAPACITY: 1,300 GALLONS
RATED CAPACITY: 600 GALLONS PER DAY