

norweco® SINGULAIR®

OHIO NPDES TREATMENT SYSTEM INSTALLATION INSTRUCTIONS

All National Pollutant Discharge Elimination System (NPDES) installations in Ohio must be remotely monitored or equipped with a failsafe pump lock out. The Service Pro TNT control center features remote monitoring via standard residential telephone lines to comply with Ohio NPDES requirements. Digital Subscriber Line (DSL) phone service requires the use of a low-cost optional DSL filter. Voice Over Internet Protocol (VOIP) is not reliable with any telemetry system and not recommended. In order to meet Ohio Department of Health and Ohio EPA permit requirements, the distributor must record each installation online into the Service Pro MCD database, and a valid monitoring agreement must be maintained. The monitoring service of the Singulair NPDES system for the first two years is included in the initial installation cost. After the initial two year service contract has expired, the homeowner is still required by law to maintain a monitoring agreement and service contract, at their own expense, either from the distributor or another authorized service provider.

INTRODUCTION

Singulair NPDES treatment systems will treat domestic wastewater flows up to 600 gallons per day. The system includes either a concrete or Singulair Green Model TNT treatment system, one Model AT 1500 UV disinfection system and one post-aeration air pump. In addition to these components provided by Norweco, a state approved sampling port must be supplied by the distributor. All components must be properly installed for compliance with Ohio NPDES requirements. To insure proper treatment system operation, please take the time to familiarize yourself with the contents of these instructions.

COMPONENTS

The NPDES accessory equipment package is installed for use with the Singulair TNT system to meet NPDES permit requirements in the State of Ohio. For instructions on the proper installation, start-up, maintenance and service of the TNT wastewater treatment system, please refer to the Singulair Bio-Kinetic Installation Manual.

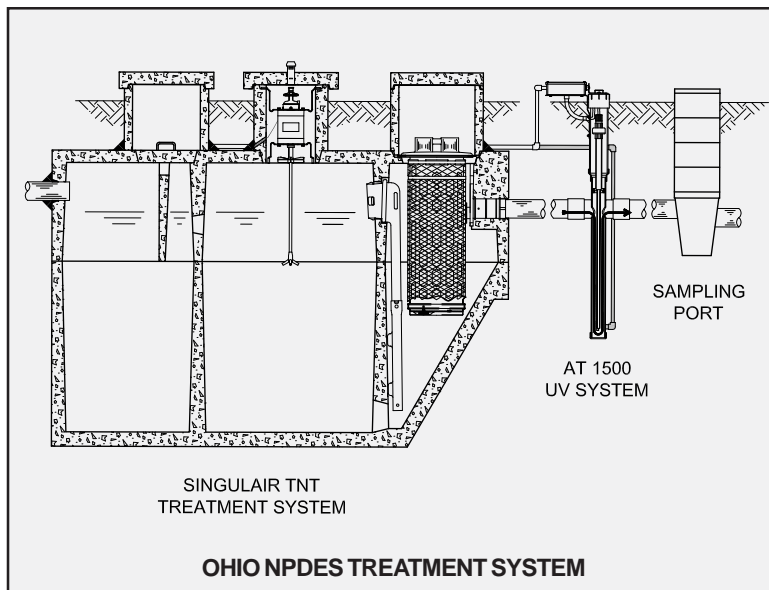
The Singulair NPDES accessory package consists of the following components:

- 1) Model A-20 air pump with integral pressure switch
- 2) Model AT 1500 ultraviolet (UV) disinfection system with post-aeration port
- 3) Disconnect switch

The following items should be supplied by the installer:

- 1) Electrical conduit
- 2) Electrical cable
- 3) 1/2" PVC air plumbing and fittings
- 4) *Sampling port
- 5) *Solvent primer and cement
- 6) *Proper cover for air pump, if installed outdoors

* Available for purchase from Norweco



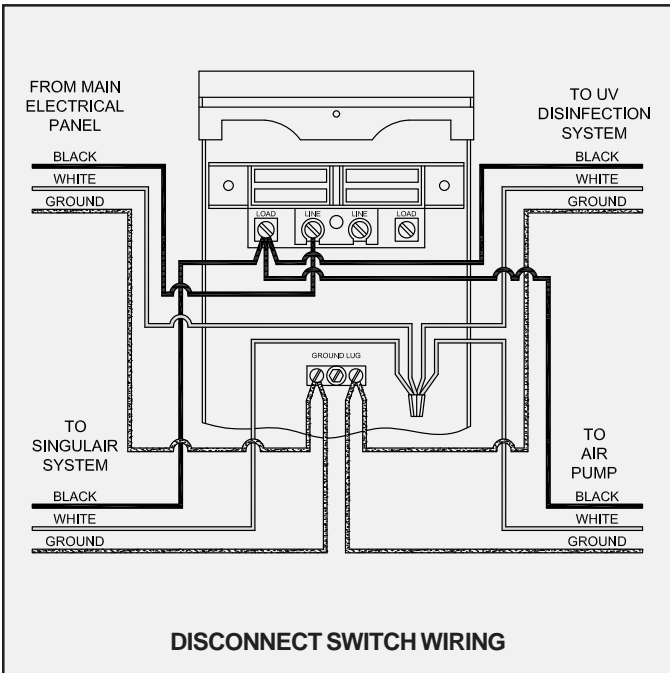
The distributor **MUST** install a state approved sampling port downstream of the UV disinfection system so that a free falling effluent sample can be obtained. The NPDES permit requires collection and testing of an effluent sample from each installation on an annual basis. An improperly designed sampling port will negatively affect the test results. The sampling port can be as simple as a PVC pipe cross with a sump. It is essential to properly clean and sterilize the sampling port prior to

collection of a free falling sample. Pre-engineered sampling ports are available for purchase from Norweco. **IT IS A VIOLATION OF STATE AND FEDERAL LAW TO INSTALL AN OFF-LOT DISCHARGING SYSTEM IN THE STATE OF OHIO WITHOUT AN APPROVED SAMPLING PORT.** Always follow proper sampling procedures to insure accurate results are obtained. Consult the Norweco Technical Bulletin EFFLUENT SAMPLING TECHNIQUES FOR RESIDENTIAL TREATMENT SYSTEMS for additional information regarding proper sampling procedures.

SINGULAIR® OHIO NPDES INSTALLATION INSTRUCTIONS (Cont.)

ELECTRICAL WIRING

All electrical work must be performed in accordance with the latest edition of the National Electrical Code, as well as all applicable state and local codes. Detailed wiring instructions for the Singulair Model TNT system are provided in the Singulair Bio-Kinetic System Installation Manual. Detailed wiring instructions for the UV system are provided in the Model AT 1500 UV Disinfection System Installation and Operation Manual.



A disconnect switch has been provided for use with the NPDES system. The disconnect switch provides an accessible method for disabling power to components of the NPDES system when maintenance is required. A #14/2 AWG minimum electrical cable should be installed from the main service panel to the disconnect switch. The hot (black) lead from the main service panel should be connected to the LINE terminal on the left side of the disconnect switch enclosure. The black leads to all NPDES system components should be connected to the LOAD terminal on the left side of the disconnect switch enclosure. All common (white) leads should be twisted together and secured with a wire nut connector. All ground leads should be connected to the ground lug provided in the disconnect switch enclosure.

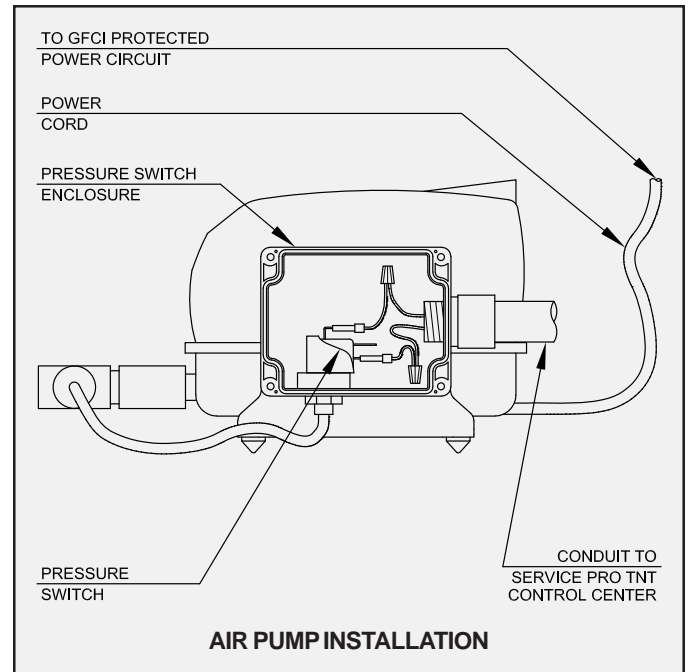
MODEL A-20 AIR PUMP INSTALLATION

Fresh air for post-aeration is supplied by the Model A-20 air pump. The air pump must not be installed where it will be exposed to moisture or direct sunlight. Excessive heat will cause premature air pump failure. Mount the air pump in a horizontal orientation indoors or in a well-ventilated weatherproof enclosure. Installation of the air pump with inadequate ventilation, in a wet location or vertical orientation may damage the pump and will void the warranty.

The Model A-20 air pump is equipped with a power cord that must be connected to a 120 volt GFCI protected power circuit. A GFCI circuit should be used to protect service personnel from the potential of electric shock.

An air pressure switch is included with each Model A-20 air pump to monitor proper operation. The pressure switch must be connected in conduit to the Auxiliary Input 2 in the Service Pro TNT control center. Alarm leads carry low voltage and must be run in a conduit separate from any power wire. To make this connection:

1. Remove the gasketed cover from the pressure switch enclosure and set aside.
2. Drill the appropriate size hole in the pressure switch enclosure to accept the conduit that will contain the alarm leads.
3. Install a conduit from the pressure switch enclosure to the Service Pro TNT control center.
4. Insure that all conduit connections are watertight.
5. Two alarm leads (minimum #18 AWG) should be included in the conduit for connection of the pressure switch to the Service Pro TNT control center.
6. Connect each alarm lead to one of the red wires from the pressure switch and secure with wire nut connectors.



7. In the Service Pro TNT control center, connect the alarm leads to the RELAY terminals of Auxiliary Input 2.
8. Replace the gasketed cover on the air pump pressure switch enclosure.

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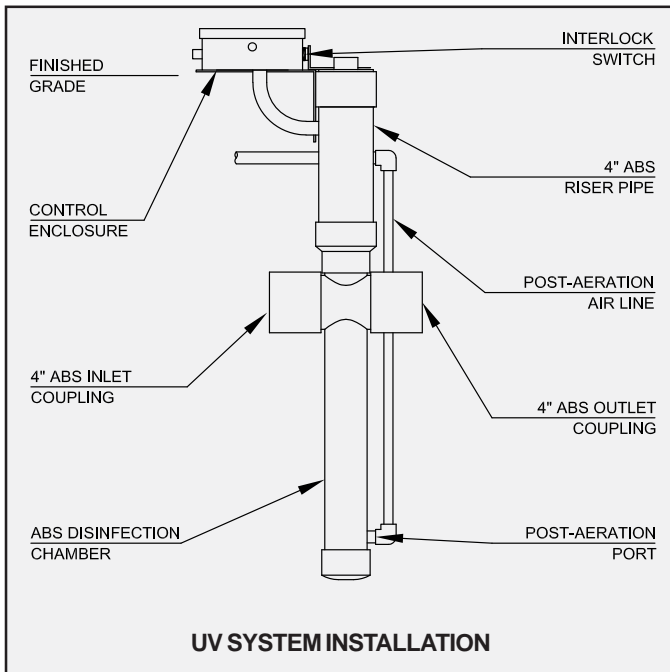
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SINGULAIR® OHIO NPDES INSTALLATION INSTRUCTIONS (Cont.)

UV SYSTEM INSTALLATION

The Model AT 1500 UV disinfection system is essential to insure fecal coliform and E. coli are reduced to the levels specified in the NPDES permit. A post-aeration connection port is provided near the bottom of each Model AT 1500 system. To insure proper disinfection of effluent, it is critical to orient the post-aeration port toward the outlet side of the UV system. Prior to installation of the post-aeration air line, the inlet and outlet plumbing must be connected to the UV system. Reference the Model AT 1500 UV Disinfection System Installation and Operation Manual for information specific to the proper installation of the UV system.



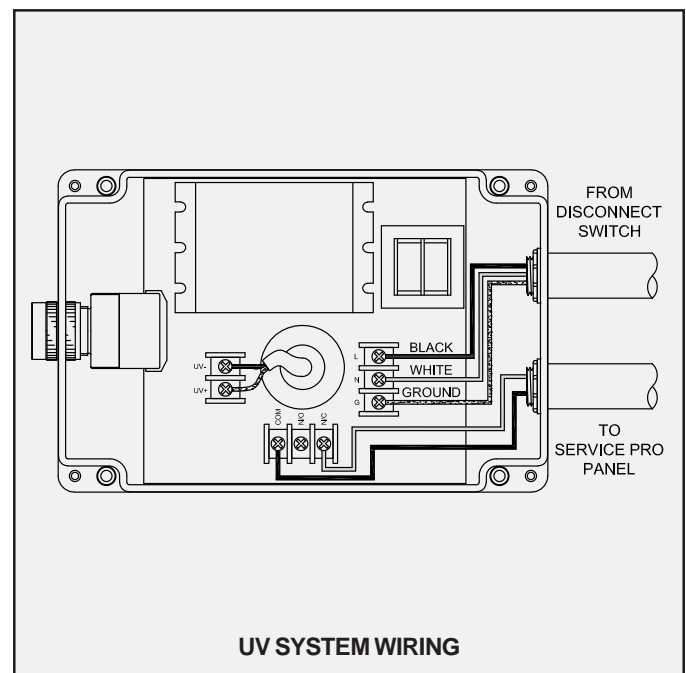
After the Model AT 1500 UV disinfection system has been connected to the inlet and outlet plumbing, the post-aeration air line must be installed. To connect the remote air pump to the disinfection chamber of the UV system:

1. Orient the PVC post-aeration port toward the outlet side of the UV system.
2. Install a 1/2" PVC air line from the post-aeration connection on the UV system to the air pump.
3. Use the appropriate primer and cement to solvent weld the PVC plumbing and fittings.
4. If the air pump is located at an elevation that is lower than the UV disinfection system outlet invert, install a check valve to prevent siphoning.

CAUTION: DO NOT LOOK DIRECTLY AT THE UV LAMP OR EXPOSE SKIN DURING OPERATION OF THE UV DISINFECTION SYSTEM. PERMANENT EYE DAMAGE AND SKIN BURNS WILL OCCUR FROM EXPOSURE TO UV RADIATION. UV BLOCKING PROTECTIVE EYEWEAR IS PROVIDED WITH EVERY SYSTEM AND MUST BE WORN DURING INSTALLATION, SERVICE OR ANY TIME THE BULB MAY BE ILLUMINATED.

Detailed electrical wiring instructions for the UV system are included in the Model AT 1500 UV Disinfection System Installation and Operation Manual. Power to the UV disinfection system is supplied from the disconnect switch. The UV system contains an alarm output that must be connected to the auxiliary alarm circuit of the Service Pro TNT control center. To connect the Model AT 1500 UV disinfection system to the disconnect switch and to the Service Pro TNT control center:

1. Remove the gasketed cover from the UV disinfection system control enclosure.
2. Install an electrical conduit from the disconnect switch to the UV system control enclosure. Use one of the preinstalled conduit fittings on the control enclosure to connect the conduit to the UV system. Install a minimum #14/2 AWG electrical cable in the conduit from the disconnect switch.
3. Connect the hot (black) wire from the disconnect switch to the terminal marked "L" in the control enclosure. Connect the common (white) wire to the terminal marked "N". Connect the ground wire to the terminal in the enclosure marked "G".
4. Install a separate conduit from the UV system to the Service Pro TNT control center. Use the remaining preinstalled conduit fitting on the control enclosure to connect the conduit from the UV system. Install two alarm leads (minimum #18 AWG) in the conduit to the Service Pro TNT control center.
5. In the UV control enclosure, connect one alarm lead to the "COM" terminal and the other to the "N/C" terminal.
6. In the Service Pro TNT control center, connect the alarm leads to the RELAY terminals of Auxiliary Input 1.
7. Replace the gasketed cover on the UV system control enclosure and close the cover on the Service Pro TNT control center.

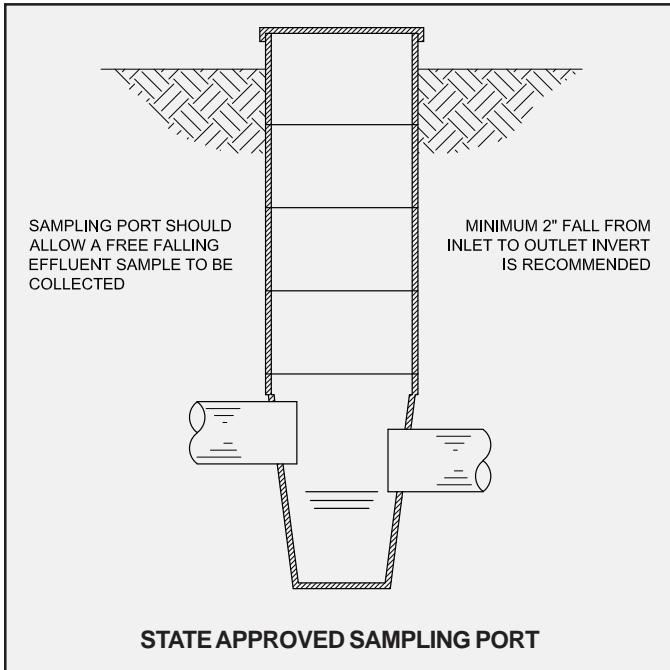


UV SYSTEM WIRING

SINGULAIR® OHIO NPDES INSTALLATION INSTRUCTIONS (Cont.)

SAMPLING PORT INSTALLATION

The installer must provide a state approved sampling port downstream of the UV disinfection system. To insure accurate results, it is essential that the sampling port allows a free falling effluent sample to be collected. Pre-engineered sampling ports are available for purchase from Norweco. The sampling port should always be installed within 3 feet of the UV disinfection system. Installing the sampling port further than 3 feet from the UV system may negatively affect the accuracy of effluent samples.



BACKFILL

Once the sampling port has been installed, the system should be backfilled. Backfill the Singulair tank per the Tank Delivery and Setting Instructions. Insure the air line for the post-aeration system is protected during the backfilling process. Always use sand, gravel or fine crushed stone to backfill the UV system and sampling port up to the inlet and outlet plumbing. Then backfill with native soil to finished grade. The control enclosure on the UV disinfection system should be completely above grade in the finished installation. Final grading should slope away from all access covers and risers so surface runoff will drain away from the system.

ACTIVATING THE SYSTEM

Inspect all electrical connections and insure that all junction boxes have been covered to maintain watertight integrity. Verify that all conduit connections are properly sealed. Energize the dedicated circuit breaker in the main service panel and turn on power at the disconnect switch. Insure proper operation of the NPDES system components. The green indicator lamp should be lit on the UV system and the air pump should be operating. Close and secure all access covers prior to leaving the site.

NPDES SYSTEM SERVICE

The Singulair NPDES treatment system must be serviced at six month intervals to maintain proper operation and insure that permit requirements are met. Detailed instructions for servicing the Singulair system are included in the Singulair Service Manual. For service of the UV disinfection system, consult the Model AT 1500 UV Disinfection System Installation and Operation Manual.

The post-aeration air pump contains an air filter that should be inspected at each service visit. Remove the air filter cover to inspect the filter media. If the filter requires cleaning, simply rinse it with cold water. Replace the media into the empty filter cavity and reinstall the air filter cover. If the air flow is reduced, the alarm in the Service Pro TNT control center will activate, indicating the diaphragms and flapper valves may need to be replaced. Air pump rebuild kits are available for purchase from Norweco.

EFFLUENT SAMPLING

Special precautions and record keeping are required when collecting samples for compliance with the Ohio NPDES permit. Consult the Norweco document titled EFFLUENT SAMPLING FOR RESIDENTIAL TREATMENT for detailed sampling procedures. Always wear proper eye protection and disposable gloves when collecting samples.

Prior to sample collection, the bottle, sampling equipment and effluent pipe must be cleaned and sterilized. It is essential that the sampling point allows a free falling effluent sample to be collected. Samples taken directly from a sump will provide inaccurate results due to the accumulation of solids over time.

A proper sample can only be collected when there is effluent flow. Flow may be induced by adding water to the system inlet or pretreatment chamber. Induced flows must be typical of the normal incoming flow rate. A surge flow will create a washout of solids and skew test results. Once effluent is flowing, place the mouth of the bottle directly into the falling stream of effluent to collect the sample.

The sample should be chilled during transport and handling to inhibit further biological activity. Invalid data will result if the sample is held for a longer period of time than the guidelines permit. For this reason, travel time, laboratory operating hours, weekend and holiday schedules all must be considered when collecting effluent samples for compliance with NPDES permit requirements.

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