



WSB® clean: Installation Manual

Models:

WSB 400	WSB 1250
WSB 500	WSB 1500
WSB 600	WSB 1600
WSB 750	WSB 1800
WSB 1000	



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1 INTRODUCTION

This manual covers installation of all residential WSB® clean models. It is important that you read through this entire manual before installing the system. If you have any questions after reading this document or if you need any further information, please contact a customer service representative at (519) 648-3475

RH2O North America Inc.
268 Woolwich St. S
Breslau, Ontario, Canada
N0B 1M0

Phone: (519) 648-3475
Fax: (519) 648-3585
info@rh2o.com
www.rh2o.com



It is important that you read this manual in its entirety to ensure that all requirements and details are clearly understood. If there is anything that is unclear or missing from this manual it is your responsibility as the installer to contact the manufacturer for clarification before proceeding.

2 SAFETY INFORMATION

Please read and follow the precautions listed below, as well as those found throughout this document. If you have any questions regarding the safety or operation of the WSB clean wastewater treatment system, please contact us at: (519) 648-3475.



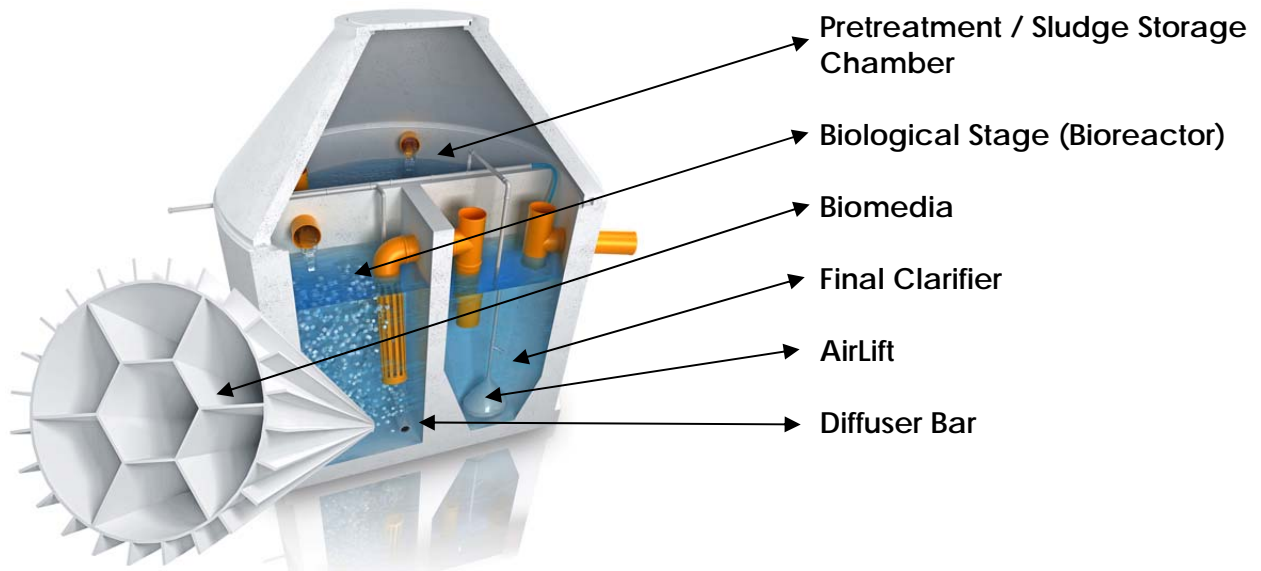
The installer must insure that the installation site is safe from hazards. Excavations must be properly secured and potential hazards roped off and marked. Failure to do so could result in severe bodily injury or death.



If contact with wastewater occurs, please remove any contaminated clothing and thoroughly wash all body areas and clothing exposed to wastewater with soap and water. To minimize any risk of illness, consult a physician

3 WSB® CLEAN SYSTEM OPERATION

WSB® Clean is a fully biological wastewater treatment plant designed to treat domestic wastewater. Please refer to the Illustration and details below.



3.1 Pre-Treatment / Sludge Storage Chamber

Incoming wastewater travels by gravity into the pre-treatment tank where coarse particles settle and are stored here along with return sludge from the final clarifier.

3.2 Biological Chamber (Bioreactor)

Pre-processed wastewater from the Pre-Treatment / Sludge Storage chamber is now fed into the biological stage which contains the specially designed plastic carrier media. Microorganisms settle on the media and consume the organic material in the wastewater. Oxygen is needed for the biological cleaning process and is supplied by an air blower and distributed by fine bubble diffusers.

3.3 Final Clarifier

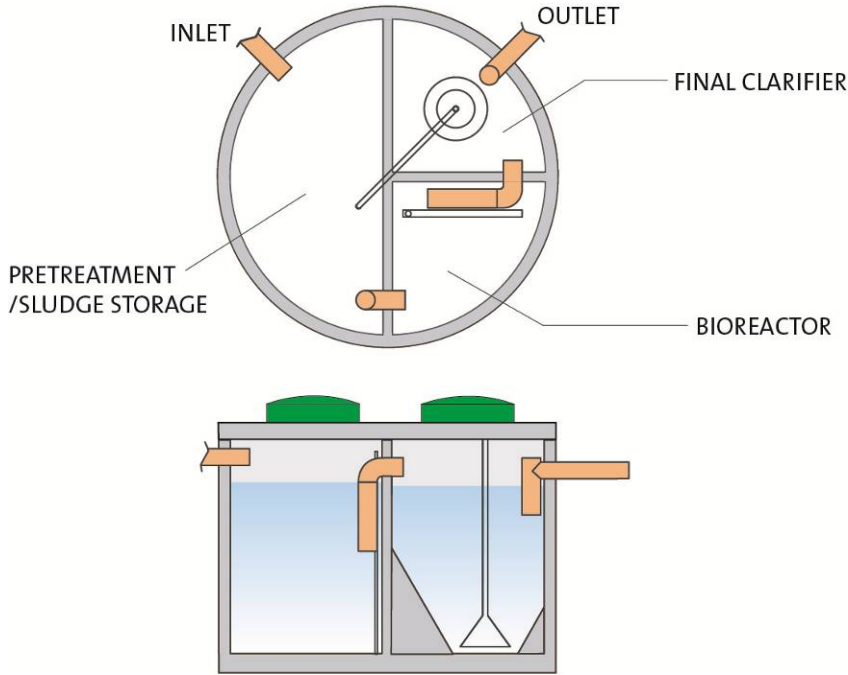
The final clarifier consists of a cone or sloped area in order to collect and transfer any secondary sludge back to the sludge storage. Sludge Return will be accomplished by either an air lift or pump. From the clarifier, the biologically cleaned wastewater is ready to be discharged back into the environment either via gravity flow, or via a pump tank.

3.4 Pump Tank (Optional)

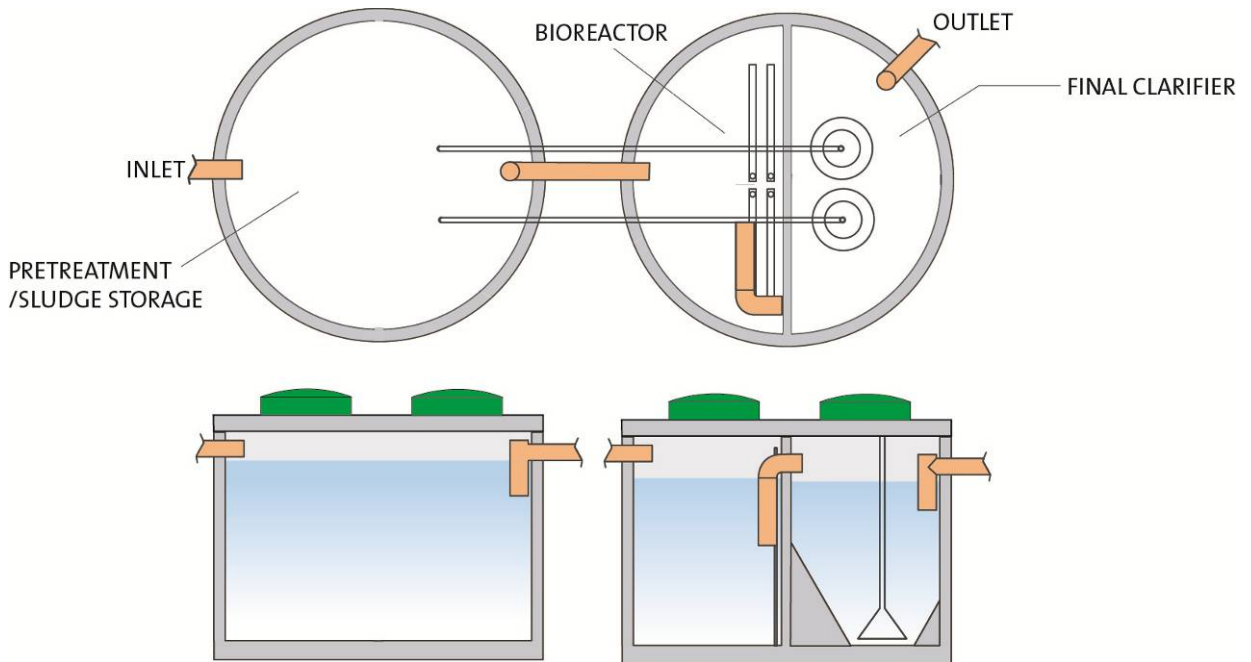
Depending on the type of disposal bed, you may have a pump tank to pressurize the treated effluent. The pump tank stores treated effluent from the final clarifier and pumps it to the disposal bed at intervals based on the controller dosing pump settings. The dosing rate for the disposal bed should be determined by the designer of the disposal bed.

3.5 WSB® clean Wastewater Treatment System Layout

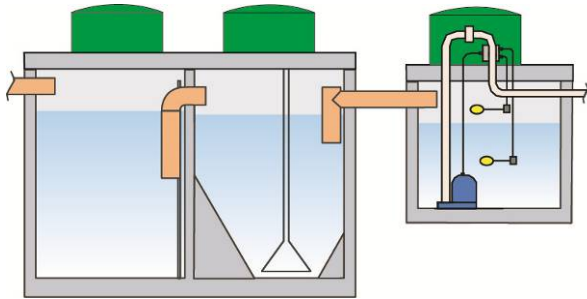
3.5.1 WSB 400 - 1000 – Single Tank Installation



3.5.2 WSB-1250-1800 – Two Tank Installation



3.5.3 Pump Tank – Example Installation



3.6 WSB® System Model Designation

Model Designation	Daily Capacity (L)	Number of Tanks	Pretreatment Capacity	NSF/ANSI 40 Classification
WSB 400	1600	1	2450 L	Class I
WSB 500	2000	1	2450 L	Class I
WSB 600	2500	1	2970 L	Class I
WSB 750	3000	1	2970 L	Class I
WSB 1000	3800	1	3490 L	Class I
WSB 1250	5000	2	5950 L	Class I
WSB-1500	5678	2	6950 L	Class I
WSB 1600	6300	2	6950 L	N/A
WSB 1800	7000	2	6950 L	N/A

Note: Please refer to the system data plate located on the control panel to identify which model you have.

3.7 System Classification

All WSB Clean models meet the requirements of NSF/ANSI 40 and are certified as Class I treatment systems. Models with design flows larger than 5700 L/day (1500 Gallons/day) do not fall under the NSF / ANSI 40 scope of work but have been verified by NSF as meeting the same design criteria.

3.8 Identification Plate

The identification plate is found on the WSB control panel. The information on this plate identifies the size of your system and it may be required for responding to any alarms or issues with your system. If an identification plate is not on the control panel, please contact RH2O immediately.



3.9 Tank Sizes

Sizing dimensions will vary based on your local tank manufacturer, but the following chart helps summarize the probable sizes offered

Model	Diameter		Height		Inlet		Outlet	
	Inches	Metres	Inches	Metres	Inches	Metres	Inches	Metres
WSB 400	102"	2.59	68.9"	1.75	57.1"	1.45	49.2"	1.25
WSB 500	102"	2.59	68.9"	1.75	57.1"	1.45	49.2"	1.25
WSB 600	102"	2.59	78.7"	2.00	66.9"	1.70	59"	1.50
WSB 750	102"	2.59	78.7"	2.00	66.9"	1.70	59"	1.50
WSB 1000	102"	2.59	88.6"	2.25	76.8"	1.95	68.9"	1.75
WSB 1250 1250Pre-treatment Tank	102"	2.59	78.7"	2.00	66.9"	1.70	63"	1.60
	102"	2.59	78.7"	2.00	63"	1.60	59"	1.50
WSB 1500 1500 Pre-treatment Tank	102"	2.59	78.7"	2.00	72.8"	1.85	68.9"	1.75
	102"	2.59	88.6"	2.25	76.8"	1.95	72.8"	1.85
WSB 1600 1600 Pre-treatment tank	102"	2.59	78.7"	2.00	72.8"	1.85	68.9"	1.75
	102"	2.59	88.6"	2.25	76.8"	1.95	72.8"	1.85
WSB 1800 1800 Pre-treatment tank	102"	2.59	88.6"	2.25	74.8"	1.90	70.9"	1.80
	102"	2.59	88.6"	2.25	72.8"	1.95	72.8"	1.85

4 Before You Begin

As the installer of any on-site wastewater treatment system, you play an integral role. Numerous parties rely on you doing a good job and ensuring that the system works for the foreseeable future including regulators, suppliers, dealers, property owners, neighbors, service providers etc.

You have chosen to install one of the most popular and advanced wastewater treatment systems in the world – WSB® clean. Installation of the WSB systems is relatively simple and straight forward as the main components of the system; media, diffuser(s), sludge return pump and all other connections, are pre-set/installed inside and outside the tank at the factory.

5 Installation Instructions

5.1 Pre-Installation Planning

To ensure proper installation of your WSB clean system it is critical that some initial site planning be performed to make sure that all related aspects of the install go smoothly. The list below will identify some key considerations that should be made before any digging or installation work is performed.

NOTE: This list is not a comprehensive and final list of site considerations and does not preclude the installer from performing any additional tasks identified as best practice and/or following any local regulation/code requirements. It is provided as a helpful tool to assist in site planning requirements.



- Be sure to read this manual completely before beginning any installation to ensure you have a strong understanding of all tasks and their relationship to each other.
- Double check to make sure you are familiar with the specific model and the Tank sizes provided by the tank manufacturer.
- Be sure to review any details or special instructions for tank installation if you are in an area identified with a high water table. If you are unsure, contact the manufacturer and/or the site engineer.
- Always ensure that a utilities locate has been performed.
- Double check to make sure that your excavation plans provide for sufficient slope from the house to the system inlet and from the system inlet to the bed.
- Double check your tank locations and local building code regulations to make sure the placement of the tank is within code requirements.
- Ensure that you are familiar with the electrical requirements for the system.

5.2 Excavation

Prior to excavation, be sure you confirm the size/model of the tank you will be installing. Be sure to excavate giving a minimum of 12" (30cm) extra around where the tank is to be installed to ensure ease of installation.



WARNING: Always check with the local utility companies for the location of water lines, electrical and telephone cables, gas lines or any additional hazards below grade prior to excavation. Failure to do so could result in severe bodily injury or death.

IMPORTANT: Make sure there is enough fall for the line(s) coming from the house to enter into the inlet of the WSB Clean treatment system. It is generally recommended to require a 2% slope.

The WSB® clean concrete tank system is designed to withstand the weight of the soil up to a burial depth of 5 feet (1.5 meters). It is not designed to withstand vehicle loads or deeper burials. Avoid locating the tank(s) in high groundwater areas where the tank could possibly float and cause problems. Please contact the tank manufacturer if deeper burial depths must be done or if the area is subject to high water table.

IMPORTANT: The tank(s) must be placed in accordance with all local plumbing, health and environmental regulations.

5.3 Tank Installation

After excavating the hole, prepare the bedding for the tank. The tank should be placed on a base of compacted and level $\frac{3}{4}$ " - 1" (20 mm to 25 mm) crushed stone minimum 6" (150 mm) thick. The crushed stone must be leveled and there must be no large stone or rocks under the bottom of where the tank is to be installed.

In most cases the tank will be placed by the local tank manufacturer using a truck with a crane on the back. A large excavator or separate crane can also place the tank if accessibility to the excavation is an issue. In either case, it is important to ensure that the tank is placed level and is installed deep enough to ensure the outlet pipe from the building can flow by gravity to the inlet of the WSB Clean system. If there is not enough slope for it to flow by gravity, a pump station may be required.

If gravity flow to the disposal bed is not possible a pump tank is required. The pump tank must be placed so that the inlet is connected to the outlet of the final clarifier. Care must be taken to ensure that there is sufficient slope for the effluent to flow from the clarifier to the pump tank by gravity (1-2% min).



Water testing the tank is recommended and may be required in your jurisdiction. Before water testing, the tank should be backfilled to a minimum of 24" (600 mm) of the outlet. Backfill material must be free of large stones and have a uniform gradation. In order to watertight, you will need to plug the inlet and outlet with a turned up elbow or some other kind of plug. Wait a least 60 minutes (or as required by your local jurisdiction) and inspect the tank for leaks. There should not be any drop in liquid level and no visual leaks. Once the tank is proven to be water tight, drop the water level in the tank below the bottom of the outlet.

5.4 Installing Additional Risers

Based on your site plan additional risers may be required to ensure that when the site is backfilled the access risers are not buried. Be sure to install additional risers in accordance with the manufacturers' instructions to ensure a proper watertight seal to avoid any infiltration into the treatment system.

5.5 Final Plumbing Connections

The outlet from the house can now be connected to the inlet (marked "IN") of the WSB clean system and the outlet (marked "OUT") from the treatment system can be connected to either a pump tank or directly to the dispersal bed (if applicable). All Connections must be water tight. Both the inlet and outlet pipes use flexible high pressure boot seals that allow the pipes to be fed through the fittings and tightened using the hose clamp to ensure a water-tight connection.



IMPORTANT: it is important that the inlet pipe is completely through the tank wall and overhangs into the pre-treatment tank by at least 2". The pump tank (if included) also requires the incoming pipe to be at least 2" into the tank (see pictures)

5.6 Electrical Connections



All WSB clean models are run off the same electrical panel. This panel controls the blower and the sludge return system (either pump or solenoid air-lift) and has the potential to run a pump (and floats) in the pump tank if required to do so. All blowers (on any sized system), pumps, and/or air-lift solenoids run on 120v, 60Hz power.

Table 1- WSB Clean Model Output Configurations

Model	Output 1 (KL4)	Output 2 (KL5)	Output 3 (KL6)	Output 4 (KL7)	Input 1 (KL2)	Input 2 (KL1)
WSB-400	Blower	Sludge Return AirLift				High Float (Clarifier)
WSB-400 Pump Tank	Blower	Sludge Return AirLift	Pump Tank (Contactor)		Low Float	High Floats (Clarifier + PT)
WSB-500	Blower	Sludge Return AirLift				High Float (Clarifier)
WSB-500 Pump Tank	Blower	Sludge Return AirLift	Pump Tank (Contactor)		Low Float	High Floats (Clarifier + PT)
WSB-600	Blower	Sludge Return AirLift				High Float (Clarifier)



Model	Output 1 (KL4)	Output 2 (KL5)	Output 3 (KL6)	Output 4 (KL7)	Input 1 (KL2)	Input 2 (KL1)
WSB-600 Pump Tank	Blower	Sludge Return AirLift	Pump Tank (Contactor)		Low Float	High Floats (Clarifier + PT)
WSB-750	Blower	Sludge Return AirLift				High Float (Clarifier)
WSB-750 Pump Tank	Blower	Sludge Return AirLift	Pump Tank (Contactor)		Low Float	High Floats (Clarifier + PT)
WSB-1000	Blower	Sludge Return AirLift				High Float (Clarifier)
WSB-1000 Pump Tank	Blower	Sludge Return AirLift	Pump Tank (Contactor)		Low Float	High Floats (Clarifier + PT)
WSB-1250	Blower	Sludge Return Pump 1		Sludge Return Pump 2		High Float (Clarifier)
WSB-1250 Pump Tank	Blower	Sludge Return Pump 1	Pump Tank (Contactor)	Sludge Return Pump 2	Low Float	High Floats (Clarifier + PT)
WSB-1500	Blower 1 & 2	Sludge Return Pump 1		Sludge Return Pump 2		High Float (Clarifier)
WSB-1500 Pump Tank	Blower 1 & 2	Sludge Return Pump 1	Pump Tank (Contactor)	Sludge Return Pump 2	Low Float	High Floats (Clarifier + PT)
WSB-1600	Blower 1 & 2	Sludge Return Pump 1		Sludge Return Pump 2		High Float (Clarifier)
WSB-1600 Pump Tank	Blower 1 & 2	Sludge Return Pump 1	Pump Tank (Contactor)	Sludge Return Pump 2	Low Float	High Floats (Clarifier + PT)
WSB-1800	Blower 1 & 2	Sludge Return Pump 1		Sludge Return Pump 2		High Float (Clarifier)
WSB-1800 Pump Tank	Blower 1 & 2	Sludge Return Pump 1	Pump Tank (Contactor)	Sludge Return Pump 2	Low Float	High Floats (Clarifier + PT)

Please see the wiring diagrams in Appendix 1 to match up with your particular model number as well as if you have or do not have a pump tank. Additional photos show how the panel is setup.

Once all the wiring has been completed, the system can be backfilled. Backfilling may also occur prior to running the electrical but then trenching may be necessary for running the conduit etc.

Make sure all the electrical connections and wiring meets the proper electrical codes and regulations for your specific area.

5.7 Main Panel Breaker(s)

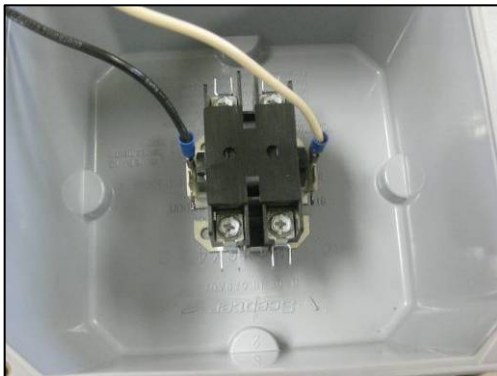
WSB clean panel requires a dedicated 115v single phase breaker in the electrical panel. The power needs to be brought to the lid with a vent cap on it (this is where the blower and solenoid are kept). The table below provides the breaker sizing requirements for the various systems.

Model	Controller Breaker	Pump Tank Contactor Breaker
WSB-400	15A	
WSB-400 Pump Tank	15A	20A
WSB-500	15A	
WSB-500 Pump Tank	15A	20A
WSB-600	15A	
WSB-600 Pump Tank	15A	20A
WSB-750	15A	

Model	Controller Breaker	Pump Tank Contactor Breaker
WSB-750 Pump Tank	15A	20A
WSB-1000	15A	
WSB-1000 Pump Tank	15A	20A
WSB-1250	20A	
WSB-1250 Pump Tank	20A	20A
WSB-1500	20A	
WSB-1500 Pump Tank	20A	20A
WSB-1600	20A	
WSB-1600 Pump Tank	20A	20A
WSB-1800	20A	
WSB-1800 Pump Tank	20A	20A

IMPORTANT: The breaker sizing provided above is a guideline and does not override compliance with appropriate electrical codes and breaker sizing requirements for any given jurisdiction. The control panels should be installed in accordance with appropriate electrical code design and rating by a qualified electrician.

5.7.1 Pump Tank Breaker and Contactor



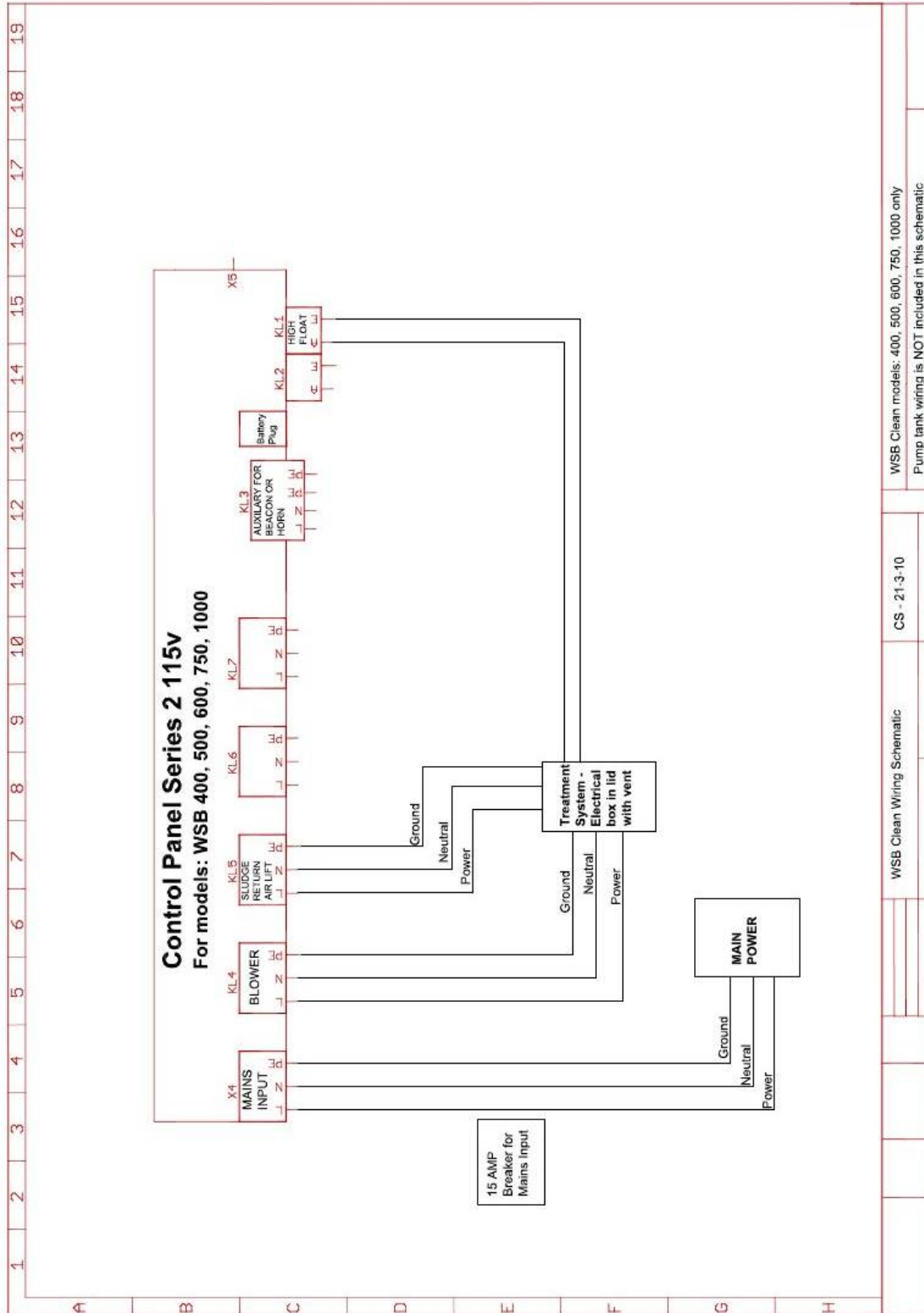
If a pump tank is also installed, a separate breaker is necessary to supply power to the pump via the contactor which will then be controlled by the WSB Clean Controller. See the table in section 5.7 for sizing.

IMPORTANT: The separate breaker is required so that if the pump fails and trips the breaker, it does not shut off power to the treatment plan, thus stopping any alarms, or telemetric notification systems. For this reason it is critical that the pump tank contactor and controller are on separate breakers. DO NOT put them on a single large breaker.

5.7.2 Mounting the Panel

The panel can be mounted either indoors (garage or basement) or outdoors if the controller was specifically purchased for outdoor installation (housed in an appropriately rated outdoor enclosure)

5.7.3 WSB-400-1000 (No Pump Tank) Wiring Diagram

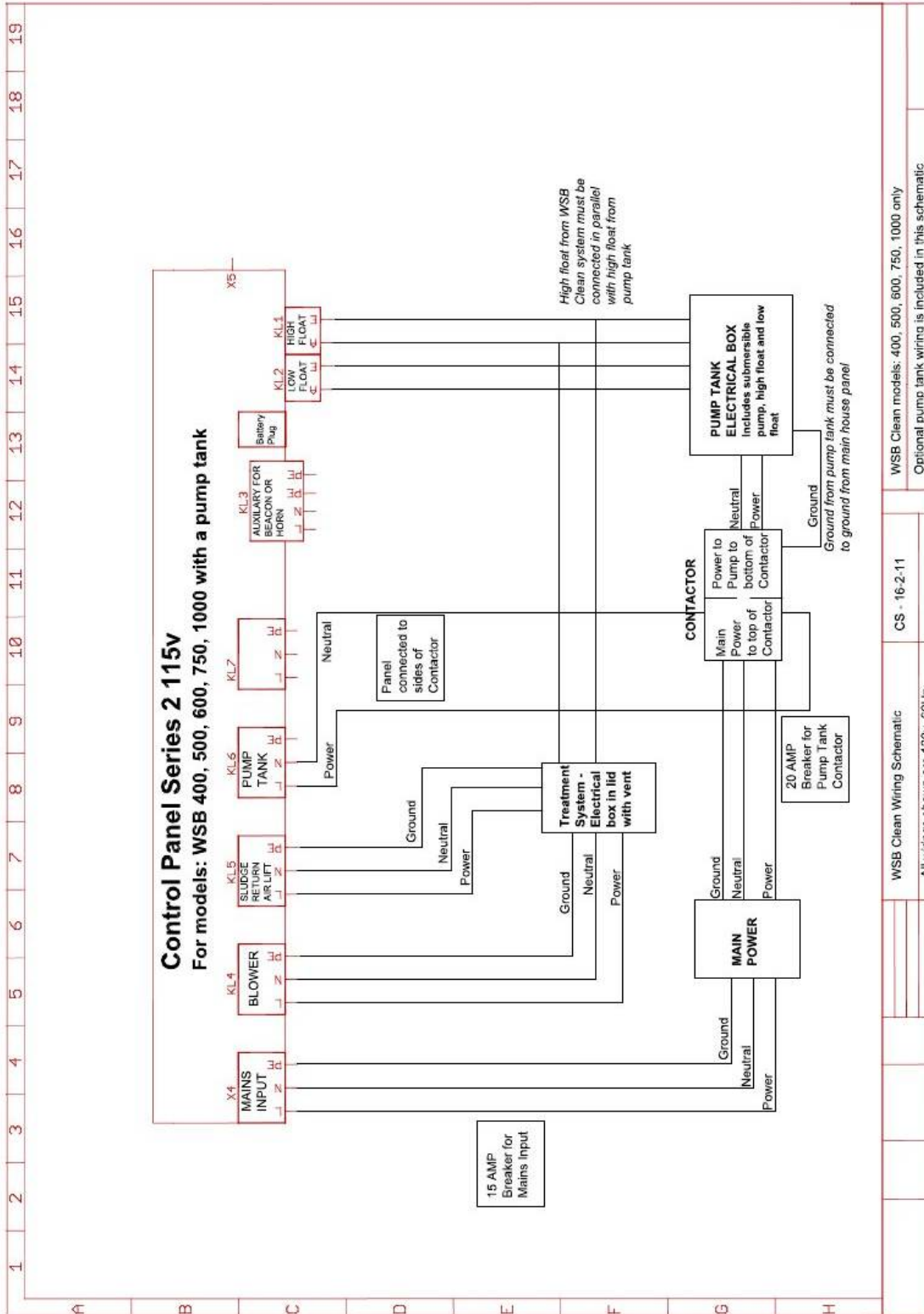


WSB Clean models: 400, 500, 600, 750, 1000 only
Pump tank wiring is NOT included in this schematic

CS - 21-3-10

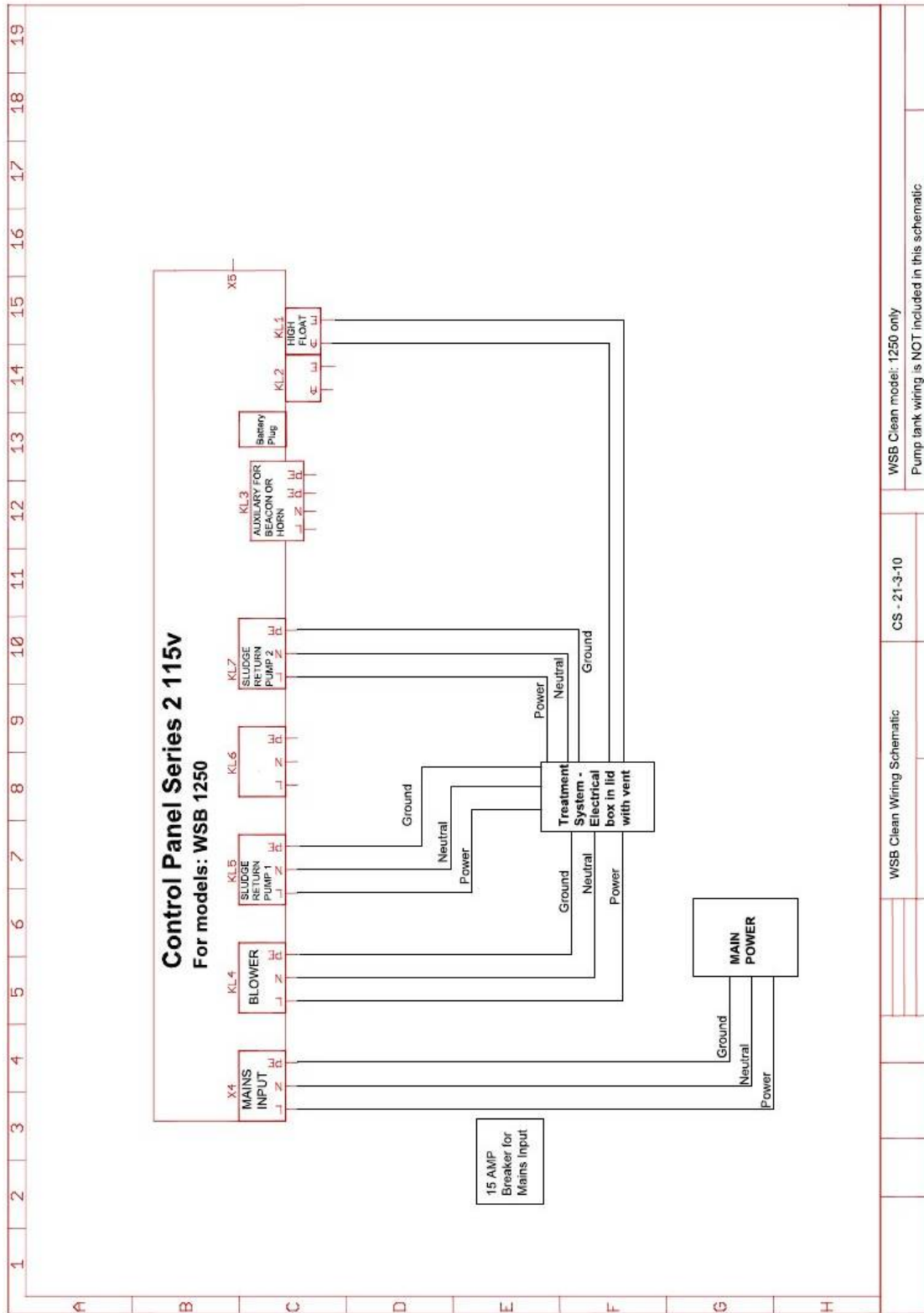
WSB Clean Wiring Schematic

5.7.4 WSB-400-1000 With Pump Tank Wiring Diagram





5.7.5 WSB-1250 (No Pump Tank) Wiring Diagram

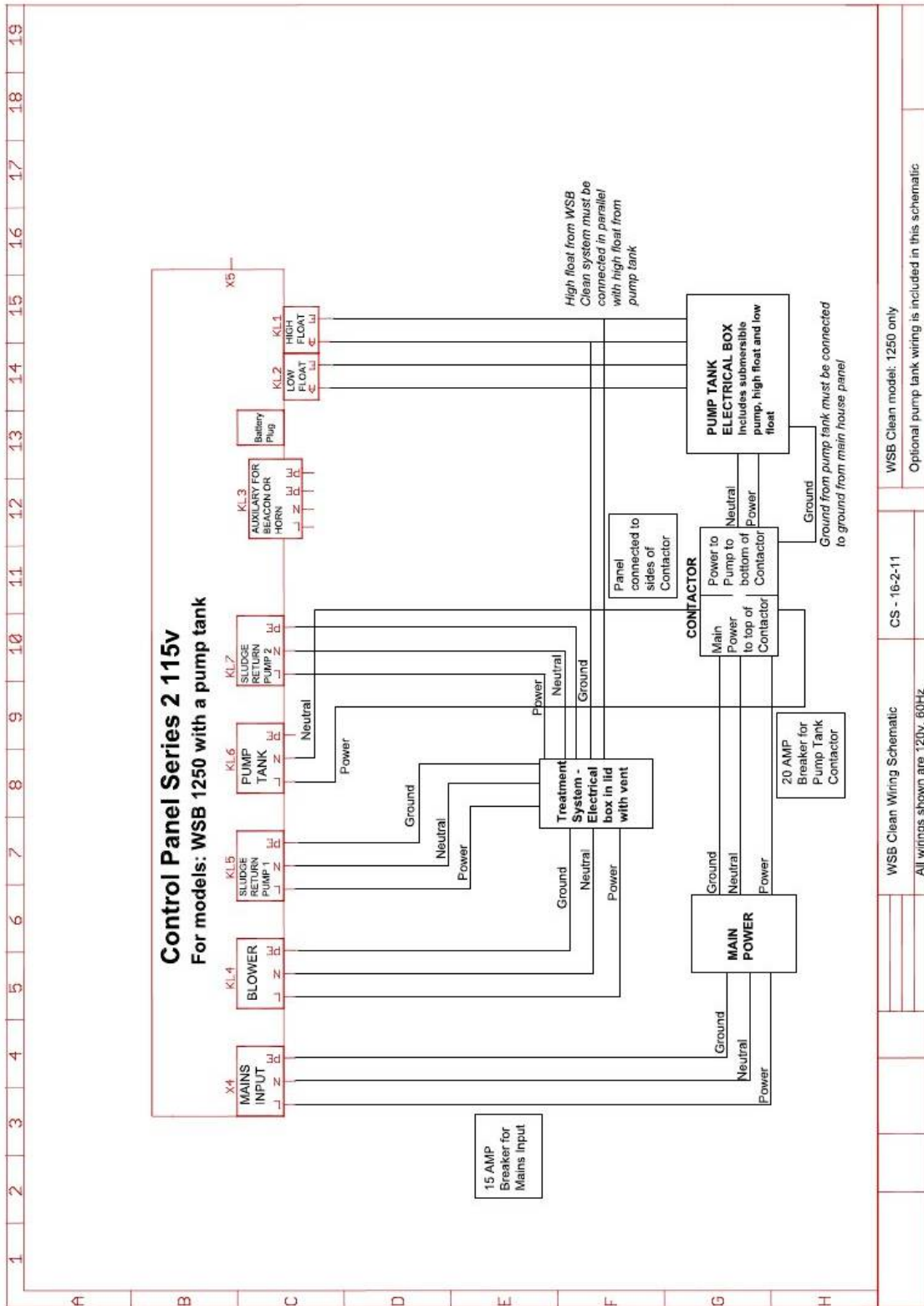


WSB Clean model: 1250 only
Pump tank wiring is NOT included in this schematic

CS - 21-3-10

WSB Clean Wiring Schematic

5.7.6 WSB-1250 With Pump Tank Wiring Diagram



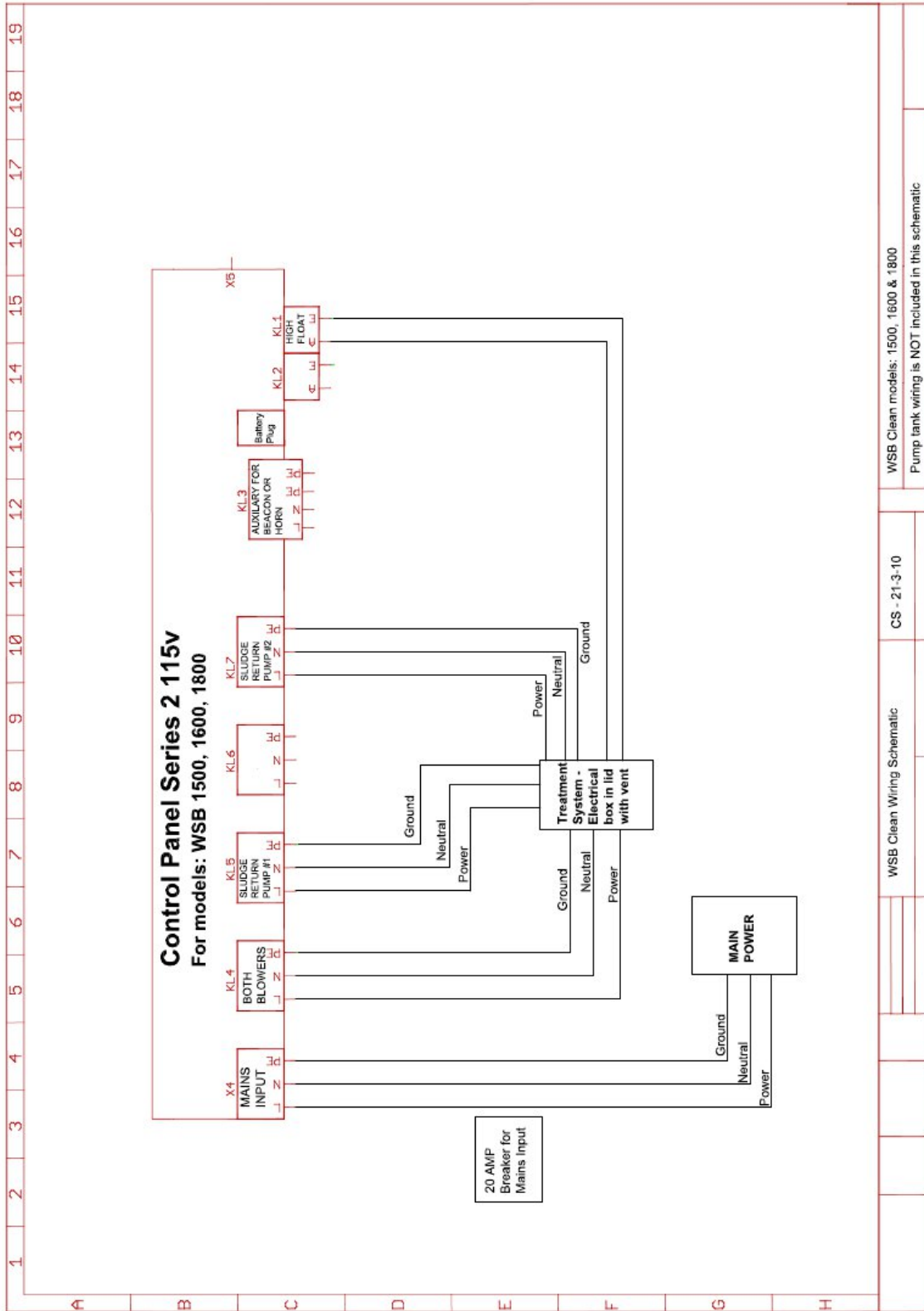
WSB Clean model: 1250 only
Optional pump tank wiring is included in this schematic

CS - 16-2-11

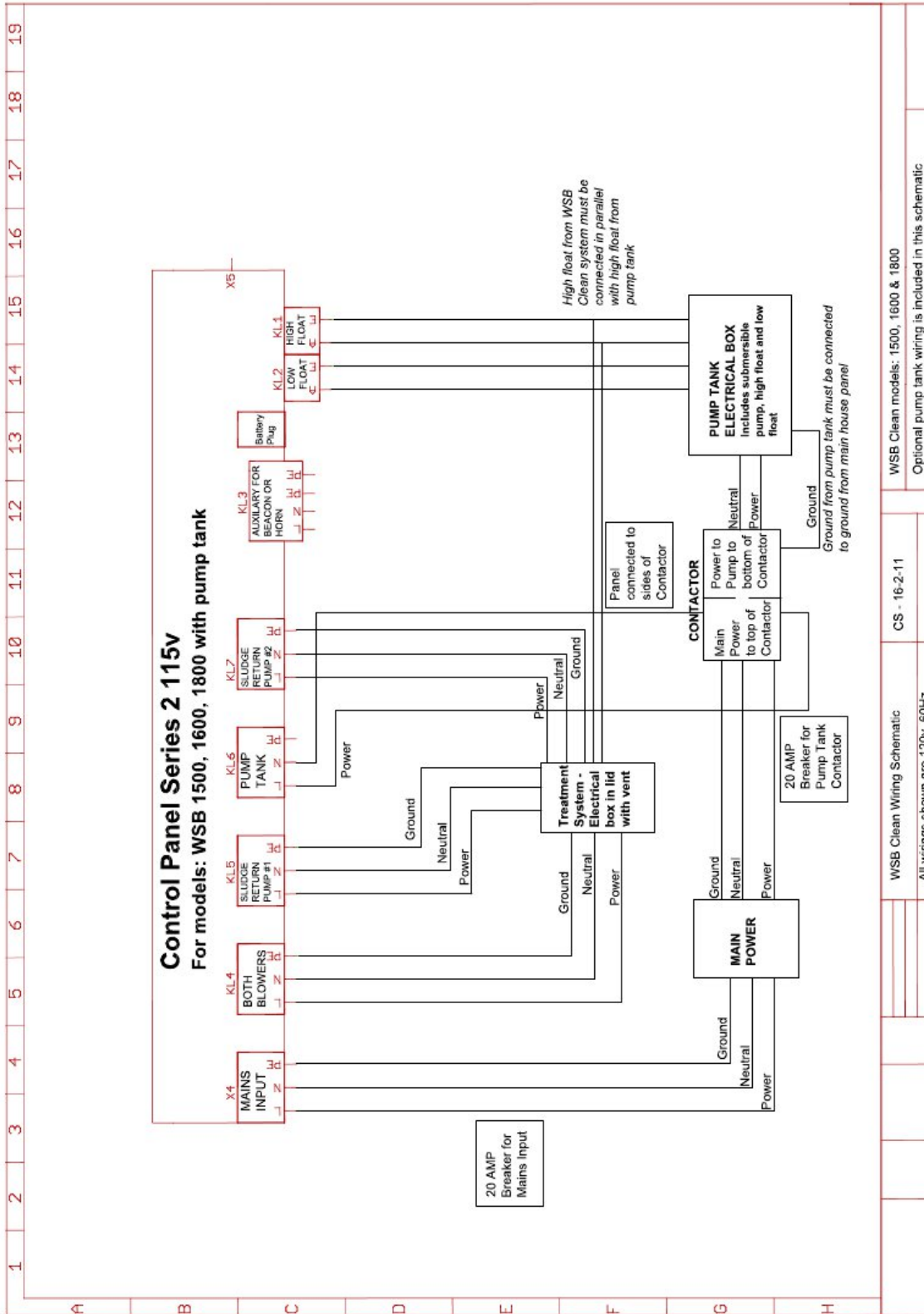
WSB Clean Wiring Schematic
All wirings shown are 120v, 60Hz



5.7.7 WSB-1500-1800 (No Pump Tank) Wiring Diagram



5.7.8 WSB-1500-1800 With Pump Tank Wiring Diagram



WSB Clean models: 1500, 1600 & 1800
Optional pump tank wiring is included in this schematic

CS - 16-2-11

WSB Clean Wiring Schematic
All wirings shown are 120v, 60Hz



5.8 Backfilling

The WSB clean wastewater treatment system will come with media, diffuser(s), sludge return pump(s) and all other connections pre-set inside and outside the tank. Once the inlet and outlet have been connected the system is ready to operate (as long as all the electrical connections have been made). Backfilling with native material is acceptable as long as no large or sharp rocks that may damage the system are used. Slope the ground away from the access risers to prevent surface water from ponding around the system. Ensure all access risers are to grade.

5.9 Commissioning the System

Once all the backfilling has been finished and the electrical connections have been completed by a qualified electrician, the system is ready to be started up. Please place a call to RH2O North America and they will schedule a qualified technician to come out and commission the system and panel. The RH2O Representative will also connect the battery pack to the panel at this time which will allow your panel to alarm if there is an interruption in the incoming power source.

NOTE: Please ensure the system is filled with clear water for the system to be commissioned.

Important: if the system includes a pump tank it is the responsibility of the installer to ensure that the dosing settings are documented and provided to RH2O.

5.10 Completing Paperwork

Please provide the service contract and Homeowners Manual to the client. Homeowners are required to return a signed service contract prior to start-up. The Owner's Manual will provide the owner with valuable information in regards to the system and how it should be operated.

6 Repairs & Maintenance

All repairs and maintenance must be performed by an RH2O licensed service technician and in accordance with the guidelines in the RH2O Operation, Service, and Maintenance manual. Please contact your authorized RH2O service provider if any service is required.



NOTES
