AmeriWater
The Water Purification Specialists

Operation & Maintenance Manual

High Efficiency Sand Filter
Model CWST
Multi Tank

3345 Stop 8 Rd, Dayton, OH 45414 | 800 535 5585 | www.ameriwater.com

98-2031 Rev A

Manufactured With Pride in The USA

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1 CONTACT DETAILS

We trust the unit meets all your expectations but in the event of any problems please do not hesitate to contact us as follows:

For all spares and consumables contact:

Customer Service Tel No: 1-800-535-5585

For all service or technical support contact:

Technical Support Tel No: 1-800-535-5585

Web address: www.ameriwater.com

(Or your local authorized **AmeriWater** dealer)

Useful Telephone Nos.

Tel No.....Contact Name:.....

Tel No.....Contact Name:.....

2 INTRODUCTION

This Installation, Operation, and Maintenance manual contains instructions for the AmeriWater filter series CWST. Check the model number on your filter system (located on the front of the control enclosure).

Read and understand each section of this manual before proceeding with installation and operation of your AmeriWater Filter System.

CAUTION: **All WARNINGS AND CAUTIONS MUST BE FOLLOWED TO AVOID PERSONAL INJURY!**

This filter system has been factory assembled and tested before shipping. The filter system may be broken down for shipping, with major components remaining assembled.

Report damage or missing parts immediately to AmeriWater. This filter system must be started by a Factory Authorized Representative.

START UP BY ANYONE OTHER THAN AN AUTHORIZED AGENT WILL VOID WARRANTY!

Contact AmeriWater at least two (2) weeks in advance to arrange start up.

Specifications subject to change without notice. Local codes supersede instructions in this manual. Contact AmeriWater with questions or to report significant deviations between local code and instructions.

System Description
AmeriWater High Efficiency Filter System series CWST are composed of the following major components:
Filter vessels
Filter Pump
Pre-assembled pipe manifolds (may be packed loose)
Valves
Control / Motor Starter Panel
Skid

2.1 Warranty Claims and Liability

AmeriWater warrants the Product to be free from defects in materials and workmanship. The warranty period shall not exceed (a) twelve (12) months from the date of startup (b) eighteen (18) months from the date of shipment, whichever occurs first. AmeriWater's obligation under this warranty is limited to repair or replacement of any part or parts found to be defective. AmeriWater shall not be required to incur expenses for labor outside of the place(s) of business of AmeriWater, nor travel expenses to fulfill its obligations hereunder. AmeriWater neither assumes nor authorizes any person to assume for it, any other liability in connection with the sale of Products.

This warranty shall not apply to any Product that has been subjected to abuse, misuse, alteration, neglect, or accident, nor to any Product that has been damaged as a result of any unusual force of nature such as flood, hurricane, tornado, or earthquake. All implied warranties, including any implied warranty of merchantability or of fitness for a particular purpose are disclaimed to the extent they extend beyond the above periods.

Manufacturer:

AmeriWater
3345 Stop 8 Road
Dayton, OH 45414
United States of America

Telephone: 1-800-535-5585
Fax: 1-937-461-1988

3 OPERATIONAL OVERVIEW

This section describes the operation of standard High Efficiency Filter Systems as they are shipped from the factory. It is intended to be an aid to understanding the general operation of the unit for the equipment operator and should not be considered a technical reference.

3.1 Modes of Operation

There are two modes of operation for the CWST Series.

3.1.1 Service Mode

Incoming water is pumped into the top inlet of the filter tanks, through the filtering media, out the bottom inlet of the tanks and returned to the cooling system.

3.1.2 Backwash Mode

This is the CWST Series self-cleaning mode. Water is directed to enter the bottom of the tank at a controlled flow rate. The media bed is lifted and separated loosening the trapped particles. The water exits the top of the tank carrying away the previously filtered particulates to the drain.

3.2 Start-Up

When power is applied to the CWST Series filter, the filter cycle valves will advance to the service mode. In service mode, all service valves (V1&V2) will be open and all backwash valves (V3&V4) will close. The filter pump will be disabled for a period of 60 seconds to allow the cycle valves to move into proper position.

Applying power to the control box also starts a timing mechanism that initiates automatic backwash cycles at predetermined intervals.

3.3 Initiating the Backwash Cycle

There are three ways to initiate the backwash cycle.

3.3.1 Automatic

The *Backwash Setting* screen allows for a daily or weekly auto scheduled backwash.

3.3.2 On-Demand

Two pressure transducers monitor the input and output water pressures and send a signal to the PLC to start a backwash when the difference between inlet and outlet water pressure reaches the preset threshold of 18 PSI. This feature is also automatic.

3.3.3 Manual

The backwash cycle can be initiated manually at any time by pressing the **Manual Backwash** button on the *Control Menu* screen of the HMI. Once initiated, the backwash cycle will commence without operator assistance.

3.4 Backwash Sequence of Operations

Once a backwash has been initiated by any of the above methods, the sequence of events that follows will always be the same. The sequence is as follows:

a) If a filter is using city water for backwash, the pump goes off. If the filter uses system water for backwash, the pump will be deactivated until the cycle valves turn, and the pump is reactivated. Note: If the system pressure exceeds 40 PSI, City Water mode should be used and the bypass valve should be opened.

b) On multiple tank filters, all service valves (V1&V2) close at the same time. Event time is 60 seconds.

c) Tank #1 backwash begins.

d) Backwash valves (V3&V4) open as well as Tank 1 Drain Valve (V5). Backwash duration is 5 minutes.

e) When Tank #1 backwash is complete, the second tank will begin backwashing. Tank 1 Drain Valve (V5) closes and Tank 2 Drain Valve (V6) opens. Repeats for each additional tank.

f) Once all tanks have backwashed, backwash valves (V3&V4) close and all service valves open.

g) The pump returns to run mode and the CWST Series Filter returns to service mode.

3.4.1 Aborting the Backwash

In certain situations, it may be desirable to abort a backwash. A backwash in progress can be aborted by pressing the **Backwash Abort** button on the *Control Menu* or *Control View* screen.

NOTE: If the backwash is being initiated by demand from the differential pressure, the backwash will be delayed only briefly. Demand for a backwash will continue until the differential pressure is brought below the preset threshold.

3.5 Automatic Backwash Timer

The backwash timer will automatically initiate a backwash at pre-determined intervals. The interval can be set to daily or weekly on the *Backwash Setting* screen.

3.5.1 Setting the Automatic Timer

The 24 hour or 7 day automatic backwash timer can be reset to zero by initiating a manual backwash. Thereafter, the CWST Series will backwash 24 hours or 7 days from the time the timer is reset, unless a manual or on demand backwash is initiated. The 7 day backwash interval is not recommended on cooling tower filters, only on closed loop water filters.

Note: In the event that electrical power is removed from the control box, the timer will keep the time with an internal battery. If the power failure happens right before a scheduled backwash and power is returned after the cycle should have started then the backwash will not occur until the next scheduled time (either the next day or the next week). A manual backwash can be initiated to maintain the schedule.

3.6 System Backwash Pump Enable

The CWST Series is a pressurized filter system designed to operate at a specific water flow rate. To achieve the specified flow rate, a pump is integrated into the CWST Series. Normally, this pump runs continuously whenever the system is in service mode. During backwash the pump is turned off if set to City Water and turned on if set to System Water on the *Backwash Water Select* screen. The system should not be set to System Water if the system pressure exceeds 40 PSI, as that will cause issues with the media bed.

3.7 Optional Backwash Storage Tank

The Backwash Storage Tank is used during a filter's backwash process to make sure the drain is not overwhelmed. The optional Backwash Storage Tank is designed to be paired with one filter, since it has one float switch to tell the CWST when the storage tank is full.

4 INSTALLATION

4.1 Unpacking Filter System

NOTE: Filter components may be placed next to the filter loose or packed in boxes on shipping skid. Be sure to remove all components before disposing of skid.

DO NOT LIFT OR PULL FILTER VESSELS BY SIDE PORTS; INTERNAL COMPONENTS MAY BE DAMAGED!

a) Remove the crate and foam packing from the filter system.

b) Inspect filter system and media for damage. Before signing bill of lading, report any damage to AmeriWater 800.535.5585.

c) Unpack filter system as close as possible to installation location.

4.2 Rigging

a) Pallets should be lifted by a forklift or crane. Filter systems should be rigged from lift points. **Do not allow rigging straps to contact system components.**

4.3 Locating Filter System

a) Filter should be located on a level floor or housekeeping pad.

b) Vibration pads (not included) may be used under components and pipe stands for vibration isolation.

NOTE: Vibration pads, if used, should be placed under all components to ensure proper alignment.

c) Floor load rating must be sufficient to accept filter weight.

d) Place system in close proximity to water to be filtered. Factory representative should be consulted if filter will be over 20 feet from water source.

e) Protect system from water temperatures below 32 °F and above 140 °F unless filter is designed for those temperature applications.

f) The pipe run to the drain must be able to be 20 feet or less. Vertical drain pipe installations not to exceed 8 feet in height.

4.4 Filter System Assembly

a) Place system skid in desired location and level skid.

NOTE: If system was shipped assembled, the pipe assembly may be loose at flanges to avoid flex damage. Some piping may be shipped broken down to avoid damage from flexing.

b) Arrange vessels with valves front.

c) Multi vessel systems are labeled and should be arranged in order from left to right. (Use lower pipe manifold as guide for spacing and leveling vessels).

CAUTION: **PERSONAL INJURY MAY RESULT! READ FOLLOWING CAREFULLY BEFORE PROCEEDING!**

TIPPING HAZARD may exist on empty, freestanding, multi-vessel systems with upper manifold attached.

With vessels properly aligned and leveled and with manifolds, add base (stone) media. (See media addition in Section 4.14). This will counter balance the system and reduce tipping hazard.

NOTE: Be sure that vessels are properly placed and aligned before adding base media. Vessels will be difficult to move with media added.

4.5 Assembling Manifolds

NOTE: Flange bolts, and gaskets are packed in separate cardboard box contained in filter shipping crate.

a) Align upper and lower manifolds with vessels. Install flange gaskets and bolt manifold flanges to vessels. Do not tighten flange bolts at this time. Minor adjustments in vessel alignment may be necessary at this time.

b) Assemble all interconnecting manifold flanges and secure unions. Tighten all connecting bolts at this time.

WARNING: **DAMAGE TO MANIFOLD MAY RESULT IF THE MANIFOLD IS PLACED UNDER STRESS OR IF FLANGE BOLTS ARE OVER TIGHTENED!**

4.6 Installing Safety Relief Valve

a) Inspect components to ensure that male and female threads are clean and free of nicks, burrs, scratches or any foreign materials.

b) Ensure the male thread is not cross-threaded in the female thread before tightening fitting. Dry fit the fittings together before applying tape. Record the number of turns where the fittings begin to tighten.

c) Teflon tape is wrapped in a clockwise direction as viewed from the end of the fitting. Ensure tape is pulled tightly against the threads of the fitting while wrapping.

d) Begin to wrap Teflon tape from the base of the fitting toward the outer threads.

e) Proceed down the threads to the end leaving a thread at the end of the fitting for a clean engagement.

f) Proceed back up the fitting to the base and tear off.

g) Depending on the length of the threading, this should take from ***2-4 wraps*****. Always keep the number of wraps to a minimum to prevent additional stress on the female fitting.**

h) Apply a layer of thread sealant smoothly over the threads.

i) Screw the fittings together until they are in the FINGER TIGHT position (according to step b)

j) Secure the female fitting and use a wrench to tighten the female fitting 1.5 to 2 turns. Failure to follow the recommended number of turns past finger tight may result in failure of the fitting. Never back off pipe threaded connections to achieve alignment.

k) If leaking occurs after the above steps, check threads for damage. The total number of engagements should be between 3 ½ and 6 threads. Any number of threads outside this range may indicate either under or over tightened fittings.

l) It is recommended to plumb the outlet of the safety relief valve to a nearby drain.

4.7 Electrical

NOTE: Filter control panel and pump must have a solid earth ground. Conduit and water pipe are NOT acceptable ground.

a) All wiring must be properly sized, rated, and connected in accordance with local, state, and national electrical codes.

b) Filter system should be on a dedicated circuit originating at a service disconnect panel.

NOTE: If filter pump motor starter is not factory supplied it must be wired with a dedicated disconnect.

c) Penetrations to filter control panel should be made with watertight connectors to preserve NEMA 4X rating.

4.8 Control / Motor Starter Package

a) Factory installed motor starter package includes a service disconnect, motor starter, and transformers pre-wired to the PLC. These systems require a single point electrical connection to the service disconnect. Line service must be rated to pump motor requirements. Standard systems are factory set for 208V or 460V, 3ph service based on filter model.

b) Wire the pump motor from the motor starter with seal tight (provided).

NOTE: Do not operate pump dry. Damage to pump seal and shaft may occur.

4.9 Control Package

a) The control package is pre-wired at factory.

b) Two sets of terminals, located in the control panel, are provided for pump control.

c) Power for motorized valves is supplied from control panel terminal strip. Valves and pressure transducers will need to be wired according to Section 11.3.

NOTE: Changes to panel without instructions from AmeriWater may void the filter warranty.

4.10 Pipe Connections

Recommended pipe size for all pipe connections are noted in schedule.

Connecting pipe should be of materials compatible in construction to filter manifold. Dielectric fittings are highly recommended if dissimilar metals are used.

Pipe runs shall not exceed 20 feet from filter system.

The companion full-face flange to the suction side of the filter pump is to be provided by end-user or contractor.

Basket or Y strainer (with gauges before and after strainer) is recommended ahead of filter pump at the size of the recommended pipe size.

Reference Section 11.2 for typical installation. **Properly secure all pipe runs with M & F clamps (or similar). Pipe movement may cause filter and / or pipe damage.**

4.11 Supply and Return Lines

NOTE: Isolation valves are recommended convenient to filter.

a) Connect influent (supply) line from pre-selected point in cooling system to suction side of filter pump.

NOTE: A foot valve / check valve should be installed on suction side of self-priming pump to prevent loss of pump prime.

b) Connect effluent (return) line from the outlet connection to the pre-selected point in the cooling system (downstream of inlet connection).

NOTE: Filter return must be connected to a point in the cooling system where cooling system pressure is equal to or less than pressure to filter pump suction.

NOTE: Filter supply and return lines should be connected to the cooling system where they are in an area of 'common' flow.

Reference Section 11.2 for connections.

4.12 Backwash Supply

NOTE: If filter is designed to use cooling system water for backwash, no backwash supply pipe is required in this section. (Skip to waste line section)

NOTE: Clean water supply is always recommended for closed loop filters.

Backwash supply requires min / max 30/60 psig at the filter. Make sure to consider the 10 PSI loss at the backflow preventer if installed. An isolation valve is recommended, convenient to filter. Backflow preventer is recommended and commonly required by local codes when potable water is used for backwash. A pressure gauge is recommended at the discharge of the backflow preventer.

NOTE: An efficient backflow preventer will create approximately 12 psig loss in line pressure. A minimum of 30 psig must be available at outlet side of backflow preventer.

Connect properly sized backwash supply line to inlet side of backwash flow control device.

4.13 Waste Line

NOTE: Ensure drain is adequately sized and free flowing to handle backwash flow. Optional Backwash storage tank is available to help handle the backwash flow.

A swing check valve is recommended for waste lines with a vertical lift. Check valve should be installed immediately after the filter waste line connection. Ball Type or Spring Type Checks Are Not Acceptable.

Drainpipe runs shall not exceed 20 feet or an 8-foot lift from filter system.

Connect properly sized drain line to filter backwash drain.

4.14 Media Installation

WARNING: **PROPER PROTECTIVE EQUIPMENT MUST BE WORN WHEN INSTALLING MEDIA. PERSONNEL HANDLING MEDIA MUST WEAR A DUST MASK OR RESPIRATOR FOR LUNG PROTECTION AND GOGGLES FOR EYE PROTECTION. REFER TO SAFETY DATA SHEET (SDS) FOR COMPLETE INFORMATION.**

a) Media containers are labeled. Separate containers according to vessel and order of addition. Before installing media, inspect media containers for loss during shipping. Notify AmeriWater if media loss is suspected. All loses must be verified by authorized factory representative.

NOTE: For multi-vessel systems be sure that each vessel has the same number of media containers per layer and same number of layers.

b) Remove top filter vessel closure.

NOTE: Fill vessel 1/3 full with water to cover under drain before adding media. This will help to level the media, expel air, and reduce dust exposure.

c) Add media in the order as indicated on media container label.

NOTE: To avoid displacement of water in multi vessel systems, follow this example.
Example: Add layer #1 to all vessels, then add layer #2 to all vessels, and continue until all media has been added to all vessels. Level each layer before adding next layer.

d) Install top distributor basket into elbow at top inlet inside tank. Note: the basket is shipped connected to the back of the filter vessel.

e) Fill vessels to top with water.

f) Replace and secure vessel gasket and closure.

g) Allow the media to soak in the water for 24 hours.

NOTICE: Contact AmeriWater at 800.855.5535 to arrange for factory authorized technician to do startup and training. AT LEAST A TWO-WEEK ADVANCE NOTICE IS REQUIRED. START UP BY UNAUTHORIZED PERSON MAY VOID WARRANTY!

4.15 Installation Check List

_____ All flange bolts and unions tightened

_____ Media installed (Section 4.14)

_____ Vessel caps installed and secured

_____ All recommended components installed per Typical Installation Sketch.

_____ Filter effluent (return) line connected to cooling system at point where pressure is equal to or lower than filter influent (supply) line

_____ All pipes properly secured to avoid movement

_____ Safety relief valve installed (Section 4.6)

_____ Power to control panel disconnect from dedicated supply w/ correct voltage (Section 4.7)

_____ Pump wired from motor starter (Section 4.8)

_____ Pump rotation correct

_____ Backwash supply connected (Section 4.12)

_____ Drain connected (Section 4.13)

_____ 24-hour soak and 45-minute install backwash (Sections 4.14 and 5.1)

4.16 Request for Startup

Request for Startup

Please complete this form and return via fax to schedule startup date. At least a two-week advance notice is required for startup.
AmeriWater Fax: 937.461.1988
Please have a factory authorized technician contact me to arrange startup for the AmeriWater Sand Filter System.
System location: _____
Note: All items listed below must be complete before startup personnel arrive. Should installation not be complete, additional charges may be incurred, including but not limited to, additional labor hours, travel expenses, and materials provided for startup.

_____ All flange bolts and unions tightened

_____ Media installed

_____ Vessel caps installed and secured

_____ Isolation valves, check valves, and pump strainer installed

_____ Filter effluent (return) line connected to cooling system at point where pressure is equal to or lower than filter influent (supply) line

_____ All pipes properly secured to avoid movement

_____ Safety relief valve installed

_____ Power connected to panel

_____ Pump wired from motor starter

_____ Pump rotation correct

_____ Control panel wired with dedicated power supply of correct supply

_____ Backwash supply connected

_____ Drain connected

Authorized Signature:_____Date:_____
Printed Name:_____ Phone #:_____

4.17 Startup Data Sheet

Start Up Data
AmeriWater Filter System

AmeriWater
The Water Purification Specialists
3345 Stop 8 Rd., Dayton, OH 45414
800-855-5535 Fax 937-461-1988

To Be Completed by Factory Authorized Representative at Start up		
Customer:		Start up date:
Address:		
Contact:		
Tel/Fax/Email:		

Filter Data:

Model #:	
Serial #:	
Pump Model:	
Pump Serial #:	
Motor HP:	
Valves:	

Connection

Data: Electrical: Control Power: _____
Pump Power: _____

PLC Brand: _____

System Water: PSI to Pump: _____ PSI across filter In _____ Out _____
Suction PSI to Cooling System: _____ after backwash:

Backwash Supply: Potable: _____ Pressure: _____
System: _____
Other: _____
Backwash Count: _____

Notes:

Tech: Customer:

4.18 Filter Daily Log Sheet

Company:
Filter Model:
Serial Number:
Start up Date:

AmeriWater
The Water Purification Specialists
3345 Stop 8 Rd., Dayton, OH 45414
800-855-5535 Fax 937-461-1988

AmeriWater Daily Filter Log Sheet

Date	Pressure In	Pressure Out	Backwash Count	Number of Backwashes	Notes

5 OPERATION

5.1 Initial Startup

Note: Initial Startup must be performed by an Authorized Factory Technician.

a) After the media has been installed and allowed to soak for 24 hours, a 45-minute install backwash needs to be performed.

b) Check all bolts and fittings for tightness. Then Unlock the system by entering the password and navigate to the *Backwash Setting* screen [Enter Password > Setting Menu > Backwash Setting]. Change the ***Each Tank Backwash Time*** to 45 minutes and the ***Auto Schedule*** to Daily.

c) Select the **Home** button and navigate to the *Control Menu* screen to select the **Manual Backwash** button. A confirmation screen will come up, select yes to begin the backwash.

d) When the backwash is complete, the system will go into Service.

e) Check that actuator valves rotate correctly and service occurs as expected.

f) Navigate to the *Control View* screen [Enter Password > Control Menu > Control View] and turn the throttling valve on the system until the ***Pressure Difference*** reads 8-12 psi.

g) The ***Each Tank Backwash Time*** can be set to 5 or 15 minutes at this time.

h) The throttling valve will need to be fully opened after a few days. To accomplish this, preform a backwash each day and then adjust the throttling valve until the ***Pressure Difference*** reads 8-12 psi again.

5.2 Seasonal Shutdown

If the filter system will be shut down for a prolonged period of time (over 1 week), the following procedures should be performed:

a) Backwash the system to remove debris from media.

b) Isolate and secure the filter system.

c) Drain system from system drain and leave drain open.

d) Open filter vessels and inspect media. Clean or replace as necessary.

e) Replace filter access cover gasket and cap. Leave bolts loose.

5.3 Seasonal Startup

5.3.1 Media

a) Check all bolts and fittings for tightness. Initiate filter backwash.

Note: Stop backwash cycle before last vessel has completed cycle (about 4 minutes into last vessel backwash) by de-energizing system at service disconnect on control panel.

Perform the following steps with the filter system isolation valves closed.

b) Energize the disconnect and start to drain filter system through lower drain manual valve. Check filter readings to ensure pressure is reading zero before turning the system off and proceeding to next step.

c) Remove filter vessel cover. Inspect cover and cover gasket, replace if necessary.

d) **Note: Drain water to top of sand then close drain.** Inspect filter media**.** Sand should appear clean and loose. Manually remove any debris from top of sand.

e) Level of sand in the filter vessel should be approximately 7.5" – 8.5” from bottom of filter inlet. If media level is below normal or appears other than loose sand, contact AmeriWater 800.855.5535.

Note: Media may appear colored. This condition is common and usually due to the presence of iron oxide or organics in the system water.

f) If sand is at normal operating level and clean, refill vessel with water.

g) Replace filter access cover gasket and cover, and secure cover bolts.

5.3.2 Pump

a) Remove basket strainer or 'Y' strainer cover (if applicable).

b) Inspect cover gasket. Replace or lubricate as needed and reinstall.

c) Remove and clean strainer basket.

d) Replace basket and secure cover(s).

e) Lubricate pump motor and pump shaft (if required).

f) Turn pump by hand, if possible, to ensure ease of movement.

g) Verify pump rotation.

5.3.3 Manifolds

a) Open isolation valves and check for leaks in fittings and pipe before energizing filter system.

5.3.4 System Automation

a) Energize control system.

b) Engage manual backwash by pressing **Manual Backwash** button on *Control Menu* screen.

c) Allow system to backwash for full cycle. After last vessel backwashes allow system to return to filter mode.

d) Pressure differential should now be close to that indicated on startup data sheet (typically 8 – 12 PSI).

e) Check voltage and amperage on pump motor leads. Current/amp draw should not exceed rating on motor nameplate.

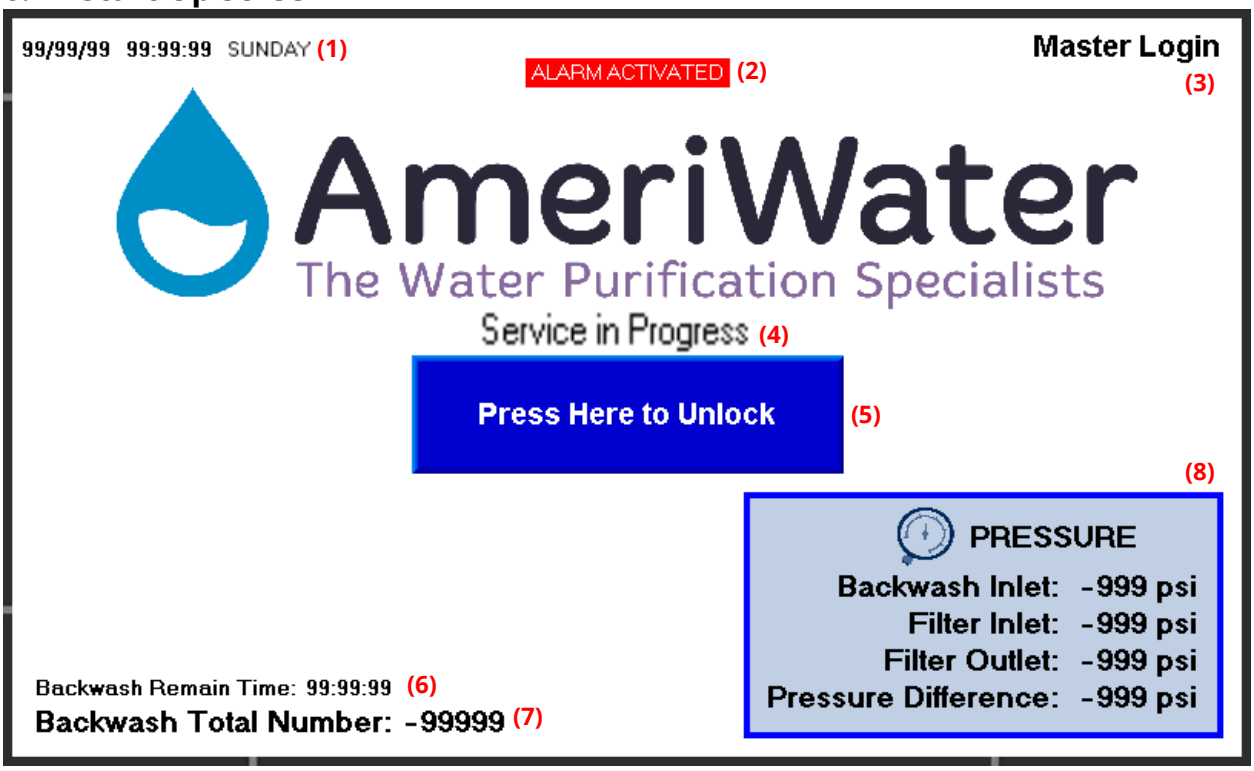
f) Check system for unusual noise or vibration. **Contact AmeriWater 800.535.5585 if any unusual conditions are noted.**

5.4 Freeze Protection

If filter is to be installed in an area where freezing is likely, all wetted surfaces should be heat traced and insulated to protect equipment from freezing. Follow shutdown procedures to reduce the likelihood of damage during winter shutdown periods.

6 OPERATOR INTERFACE

6.1 Start Up Screen



(1) Real Time Clock
   a. FORMAT: DD/MM/YY HH:MM:SS DAY

(2) Alarm Indicator
   a. Only visible when alarm is present
   b. Blinking every 0.5 seconds
   c. All the valves will move to close position and pump will be off while this alarm indicator is present (only for Alarms in Red in Section 7)

(3) Login as a Master User
   a. Password screen pops up when pressing the **Master Login** text
   b. Correct password allows access to the *Home Menu* screen

(4) Backwash/Service Status Indicator
   a. Only visible when the system is in backwash or service
   b. "Backwash in Progress" or "Service in Progress" will show up when visible

(5) Login as a Customer
   a. Password screen pops up when pressing the **Press Here to Unlock** text
   b. The password can be changed from *Change Password* screen
   c. Correct password allows access to the *Home Menu* screen
   d. Default password is 0000

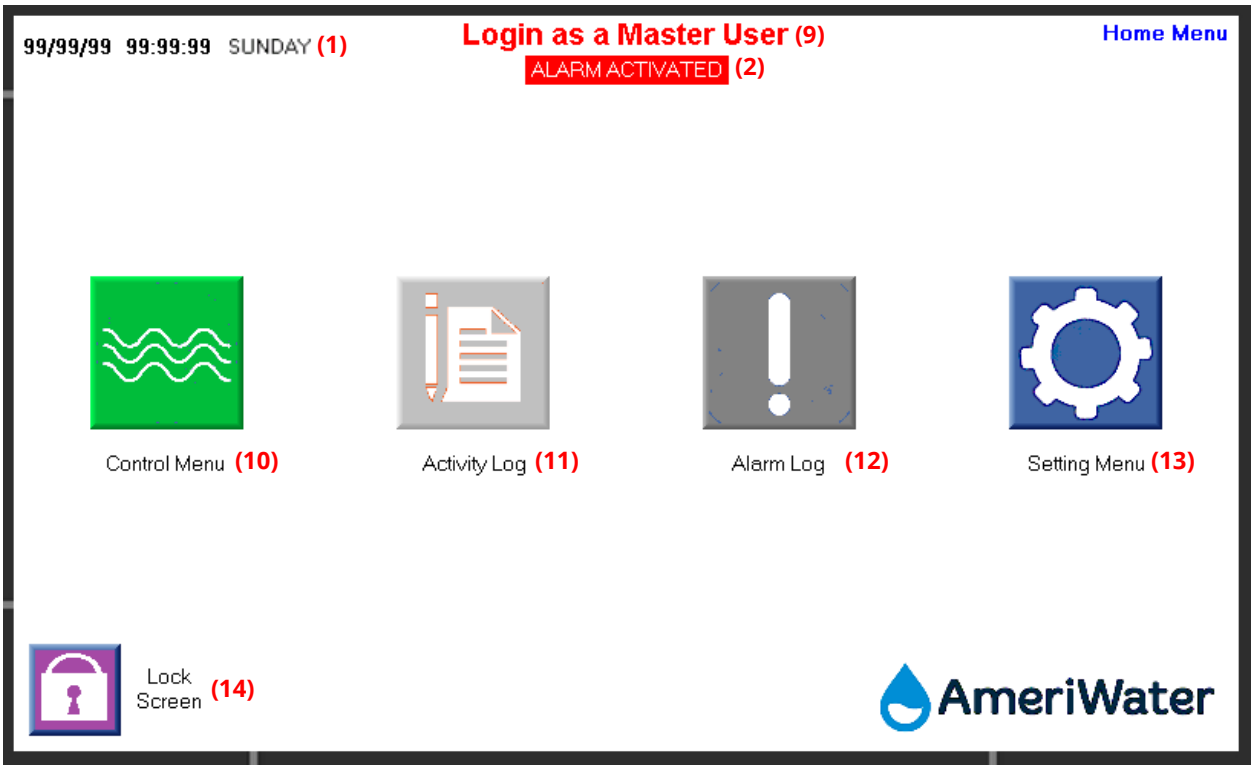
(6) Backwash Remaining Timer
   a. Only visible while the system starts to backwash the first tank until end of the timer
   b. Completing this timer initiates service mode
   c. This timer is adjustable to 5, 15, or 45 minutes on the *Backwash Setting* screen

(7) Backwash Total Number

a. Count total number of backwash initiated
b. This number is not resettable

(8) Pressure Monitor
a. Displays current backwash inlet pressure from 0-300 psi
b. Displays current filter inlet pressure from 0-300 psi
c. Displays current filter outlet pressure from 0-300 psi
d. Displays pressure difference between filter inlet and filter outlet

6.2 Home Menu Screen



(9) Master Login Indicator
a. When login as a master user, “Login as a Master” text is always visible on the top of the screen.

(10) Control Menu
a. Pressing the button will display the *Control Menu* screen

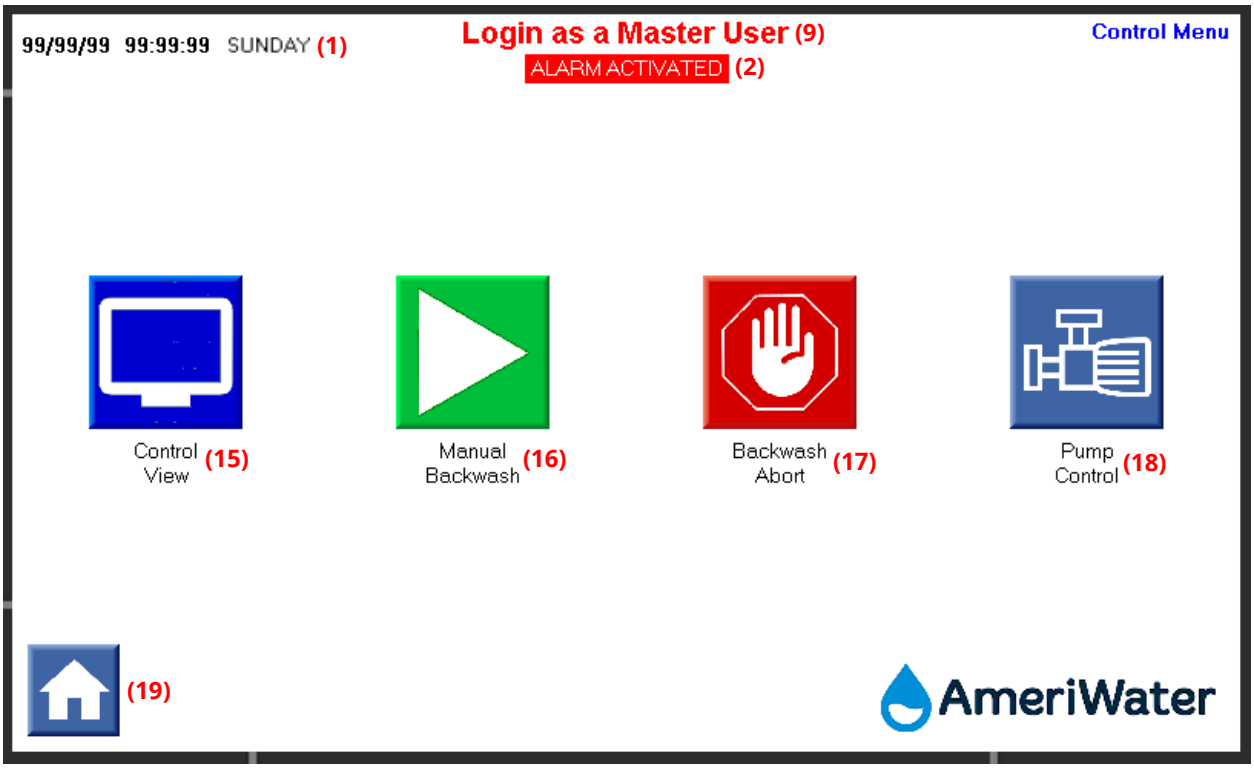
(11) Activity Log
a. Pressing the button will display the *Activity Log* screen

(12) Alarm log
a. Pressing the button will display the *Alarm Log* screen

(13) Setting Menu
a. Pressing the button will display the *Setting Menu* screen

(14) Lock Screen
a. Pressing the button will display the *Start Up* screen

6.3 Control Menu Screen



(15) Control View
- a. Pressing the button will automatically display the *Control View* screen with correct number of tank system, based on selected number of tank system in setting
- b. If no tank system is selected, pressing button will automatically display the *Tank # Select* screen

(16) Manual Backwash
- a. Pressing the button will display the *Manual Backwash Initiate Confirmation* screen
- b. If no tank system is selected, pressing button will automatically display the *Tank # Select* screen

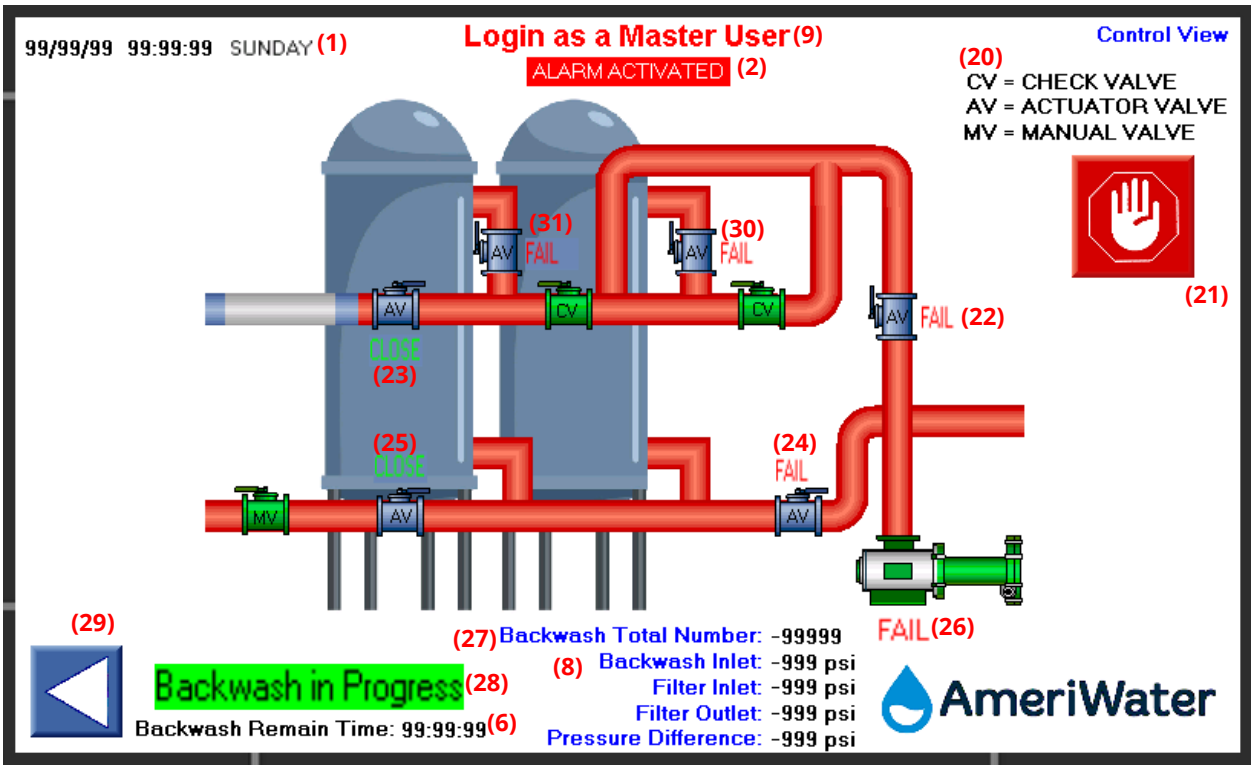
(17) Backwash Abort
- a. Pressing the button will display the *Manual Backwash Abort Confirmation* screen
- b. If no tank system is selected, pressing button will automatically display the *Tank # Select* screen

(18) Pump Control
- a. Pressing the button will display the *Pump Control* screen

(19) Home Button
- a. Pressing the button will display the *Home Menu* screen

6.4 Control View Screen

6.4.1 Two Tank



(20) Text Information
   a. Abbreviation for each valves that are used on the system

(21) Backwash Abort
   a. Same function as (17) but only visible when system is in service mode
   b. Pressing the button will display the *Manual Backwash Abort Confirmation* screen

(22) Service Inlet Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

(23) System Drain Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

(24) Backwash Inlet Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

(25) Service Outlet Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

(26) Pump Status
   a. Show the status as “ON”, “OFF”, or “FAIL”

(27) Backwash Total Number
   a. Count total number of backwash initiated
   b. This number is not resettable

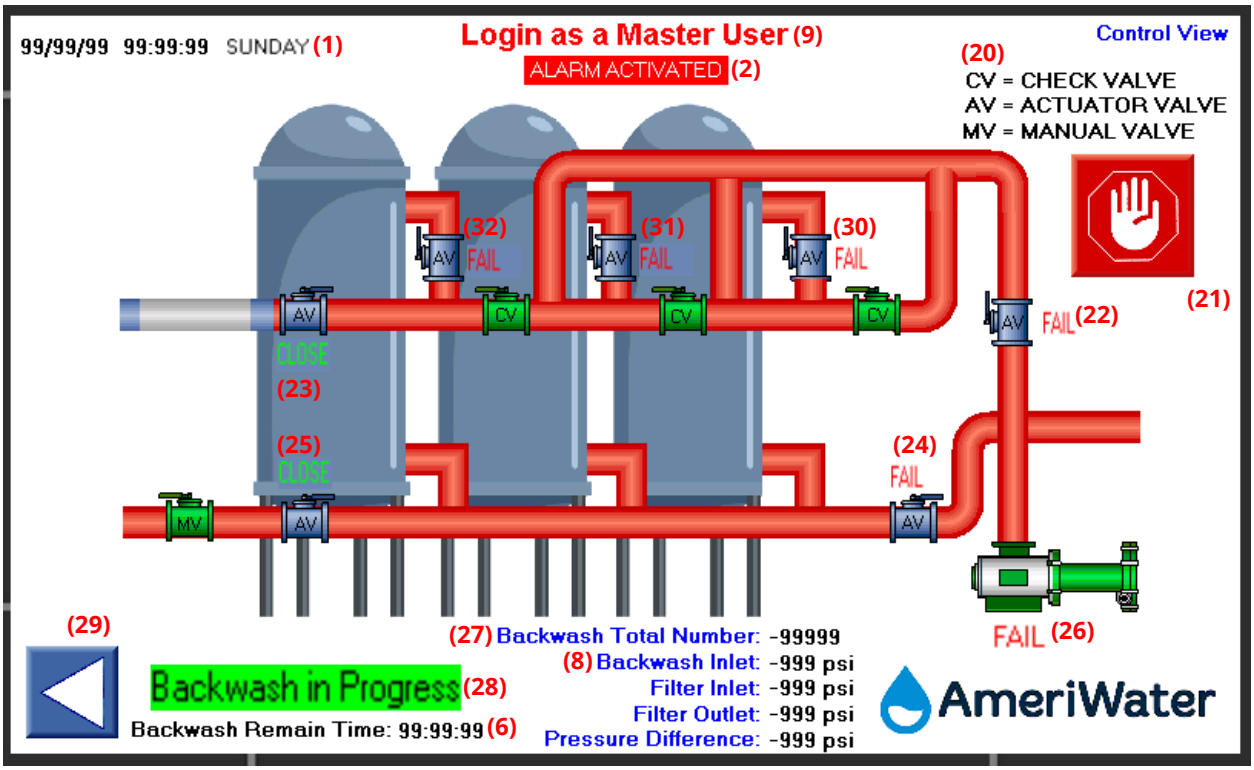
(28) Backwash/Service Status Indicator
   a. Same function as (4) but has color around the text
   b. Green color for backwash and sky blue color for service
   c. Only visible when the system is in backwash or service
   d. “Backwash in Progress” or “Service in Progress” will show up when visible

(29) Back button
   a. Pressing the button will display the *Control Menu* screen

(30) Tank 1 Drain Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

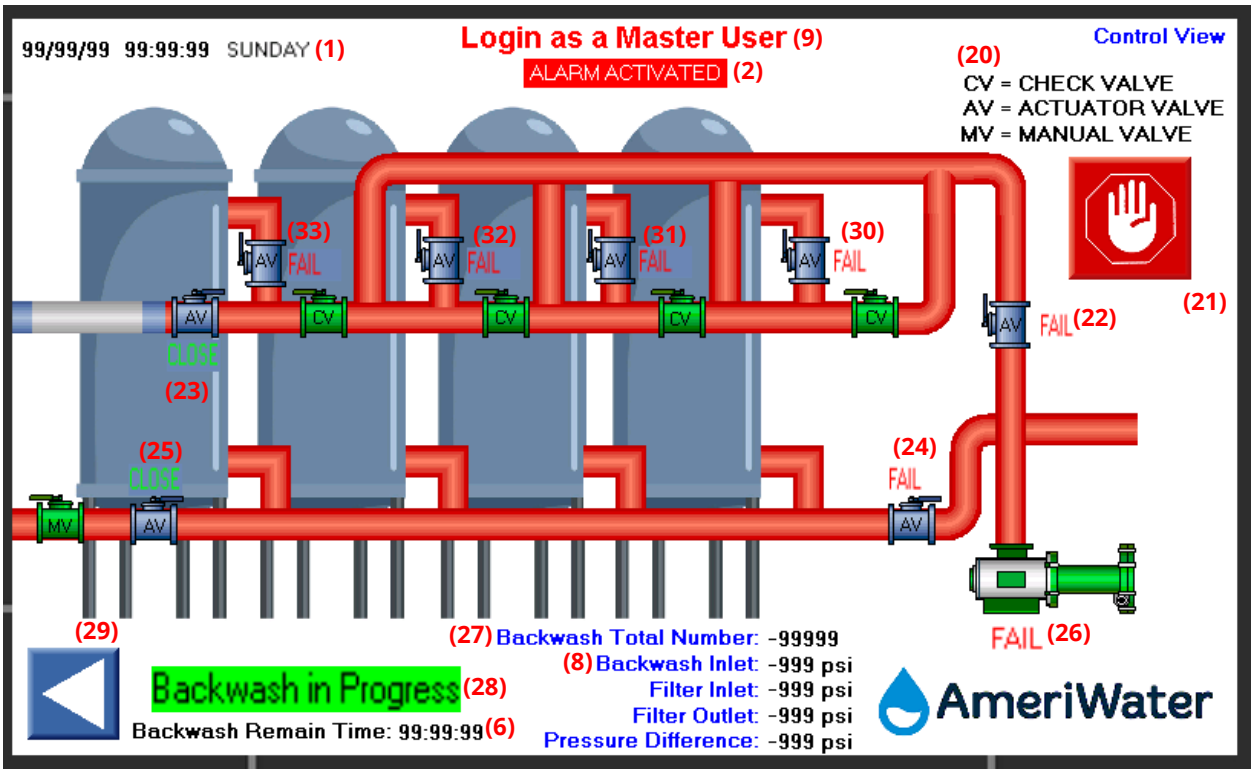
(31) Tank 2 Drain Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

6.4.2 Three Tank



(32) Tank 3 Drain Status
   a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

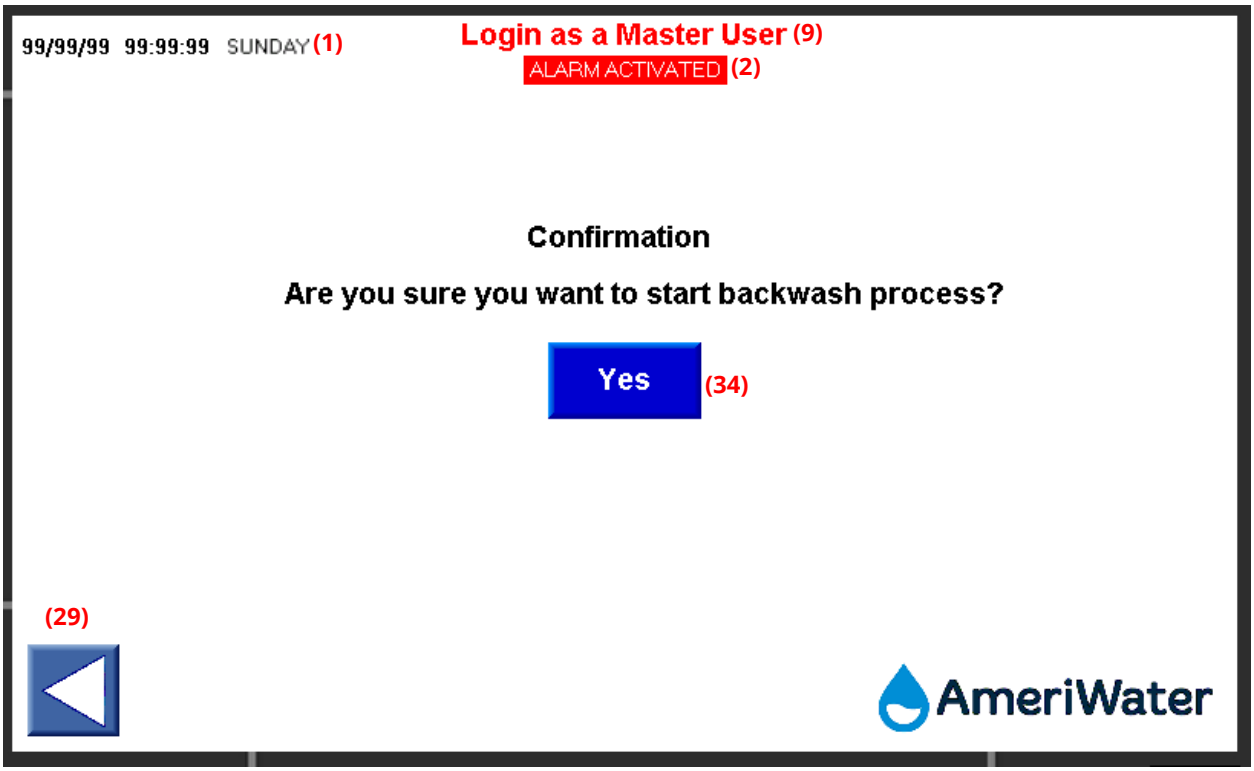
6.4.3 Four Tank



(33) Tank 4 Drain Status

a. Show the status as “OPEN”, “CLOSE”, or “FAIL”

6.5 Manual Backwash Initiate Confirmation Screen

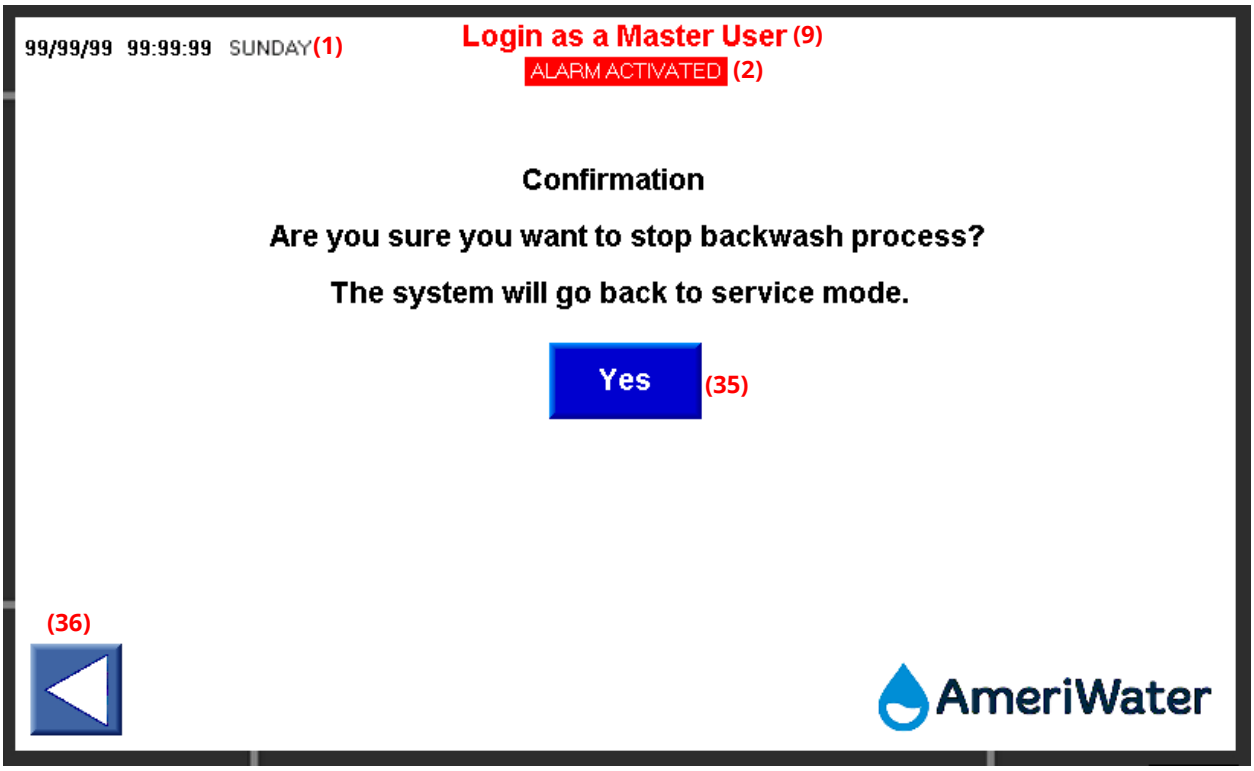


(34) Backwash Initiate Confirmation Button

a. Pressing the button will initiate backwash process

b. Pressing the button will automatically display the *Control View* screen with correct number of tank system, based on selected number of tank system in setting

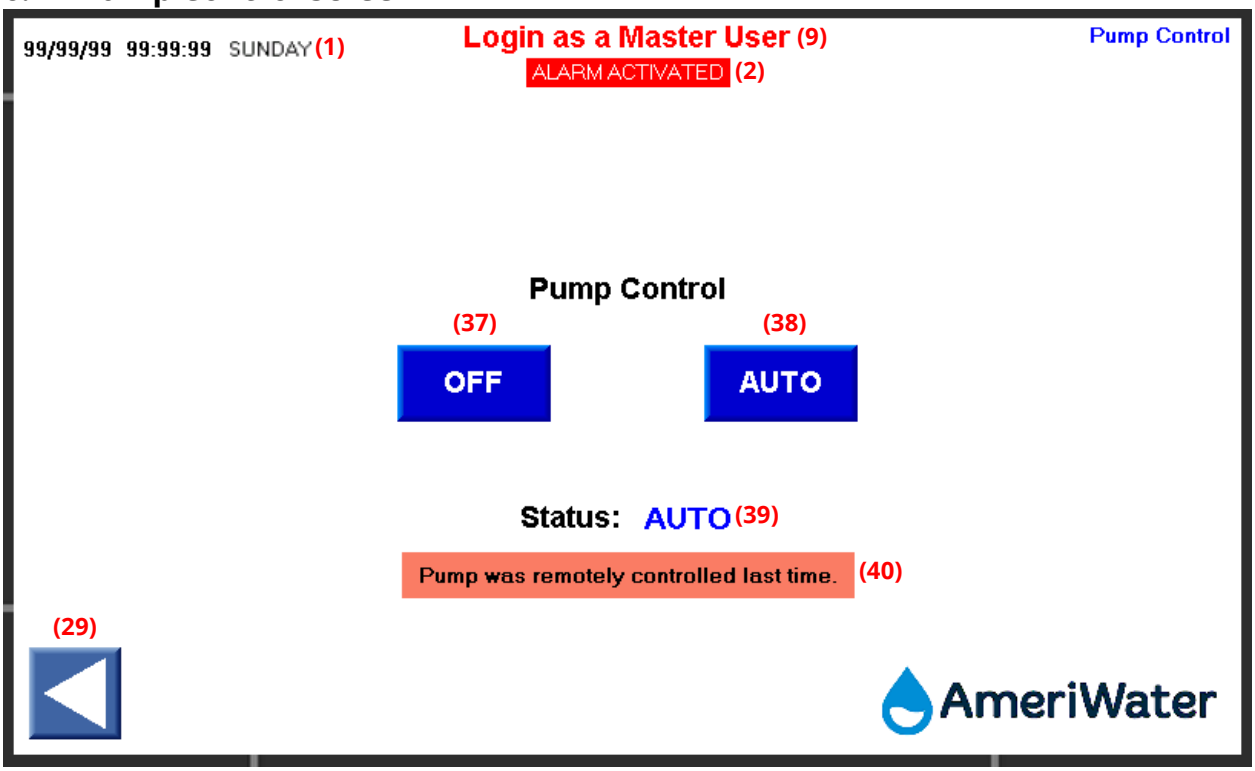
6.6 Manual Backwash Abort Confirmation Screen



(35) Backwash Abort Confirmation Button
   a. Pressing the button will abort backwash process and initiate service process
   b. Pressing the button will automatically display the *Control View* screen with correct number of tank system, based on selected number of tank system in setting

(36) Back button
   a. Pressing the button will display the previous page

6.7 Pump Control Screen



* System turns on pump only when each valves are properly set.
* Pump will be automatically off while actuator valves are moving.

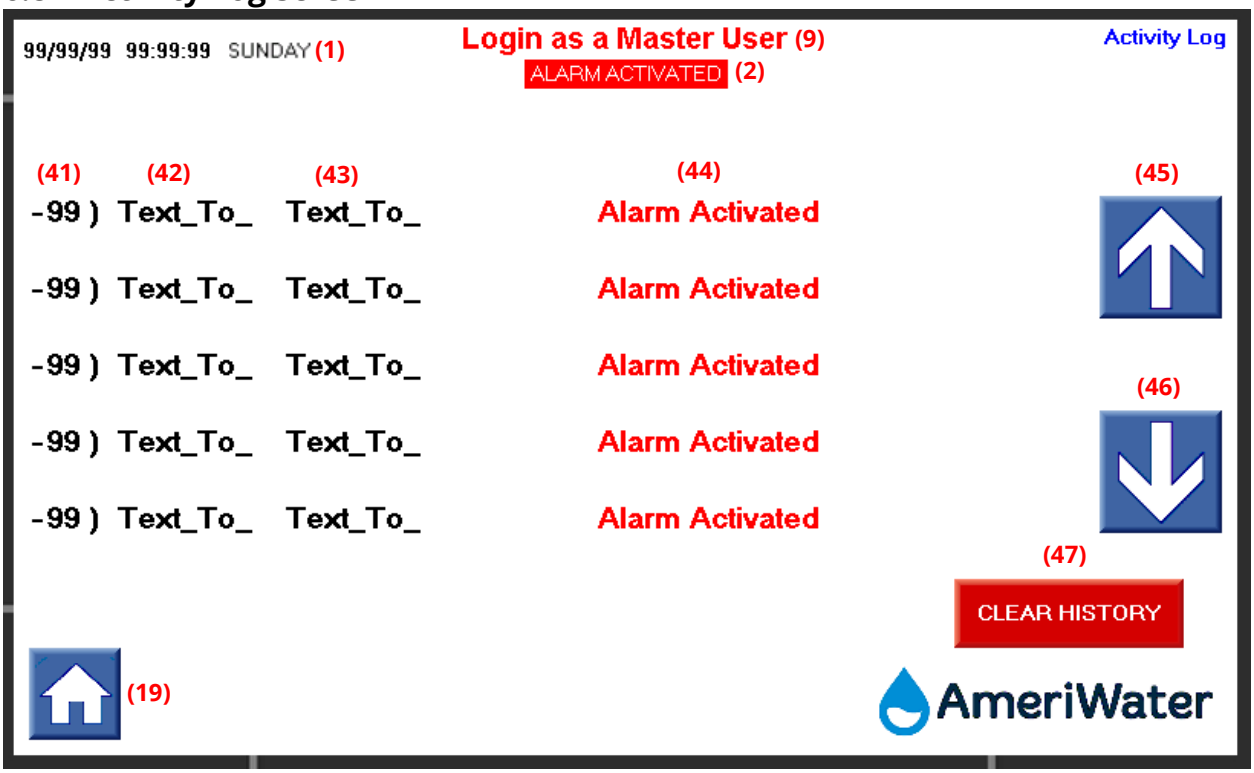
(37) Pump Off Button
   a. Pressing the button will force the pump off at any time

(38) Pump Auto Button
   a. Pressing button sets the pump to on/off automatically based on the process

(39) Pump Status Indicator
   a. Shows the status of the pump
   b. “OFF” or “AUTO” will be displayed

(40) Warning Information
   a. “Pump was remotely controlled last time.” text is visible when customer controlled the pump remotely via hardwire or Ethernet
   b. This text dissapears as soon as cutomer controls the pump from the HMI screen

6.8 Activity Log Screen



* The log list automatically update to top list when new log item is triggered.

(41) 0-99 number indicator
   a. This number is for easy visual distinguishment between each item in the log
   b. The number indicator restarts at 0 after 99

(42) Date Stamp
   a. Stamp date for each stored item
   b. FORMAT: DD/MM/YY

(43) Time Stamp
   a. Stamp time for each stored item
   b. FORMAT: HH:MM:SS

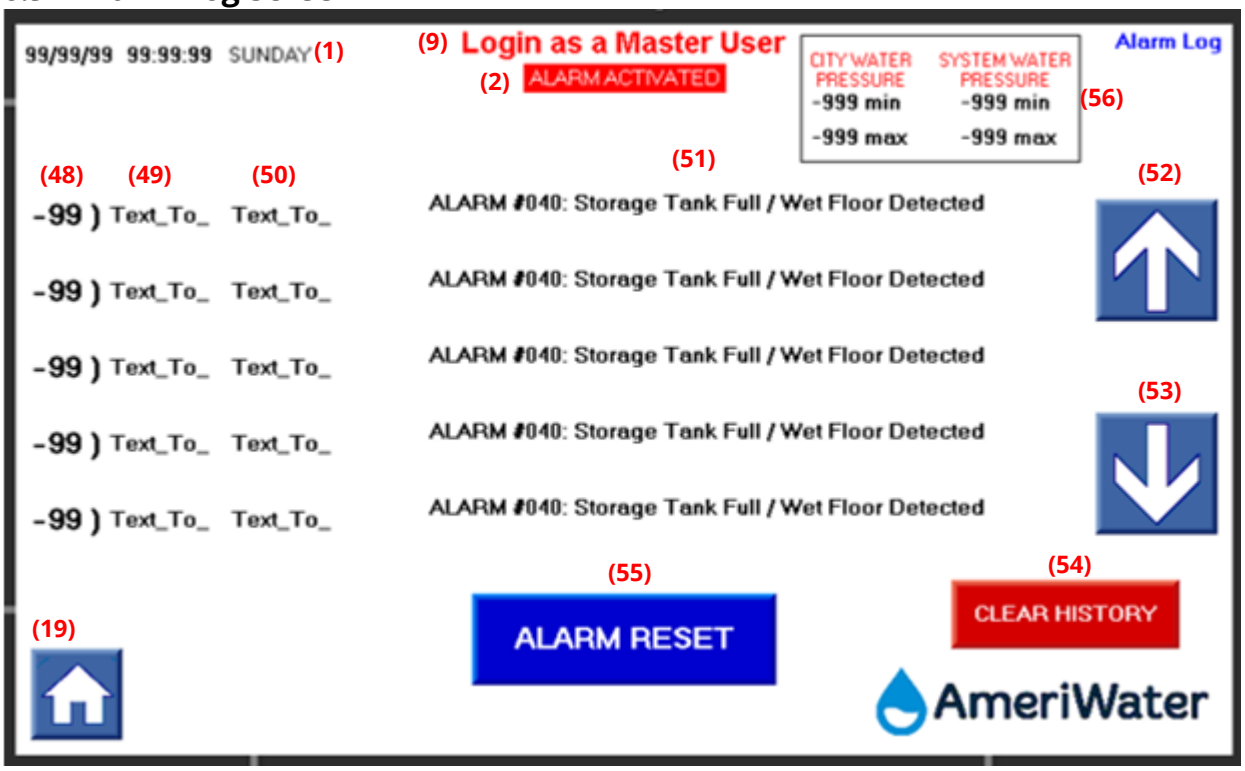
(44) Log Information
   a. Stamp description for each stored item (refer to Section 8 for more information)

(45) Log Page Up Button
   a. Pressing the button will shift down the log lists
   b. Log lists do not shift down when first log on screen reaches to most recent log hisotry

(46) Log Page Down Button
   a. Pressing the button will shift up the log lists
   b. Log lists do not shift up when 5th log on screen reaches to oldest log hisotry

(47) Clear History Button
   a. Only visible when login as a master user
   b. Empty all the log history

6.9 Alarm Log Screen



* The alarm list automatically updates to the top list when a new alarm is triggered.

(48) 0-99 number indicator
   a. This number is for easy visual distinguishment between each alarm
   b. The number indicatior restarts at 0 after 99

(49) Date Stamp
   a. Stamp date for each stored alarm
   b. FORMAT: DD/MM/YY

(50) Time Stamp
   a. Stamp time for each stored alarm
   b. FORMAT: HH:MM:SS

(51) Alarm Information
   a. Stamp description for each stored alarm (refer to Section 7 for more information)

(52) Alarm Page Up Button
   a. Pressing the button will shift down the alarm lists
   b. alarm lists do not shift down when first alarm on screen reaches to most recent alarm hisotry

(53) Alarm Page Down Button
   a. Pressing the button will shift up the alarm lists
   b. Alarm lists do not shift up when 5th Alarm on screen reaches to oldest alarm hisotry

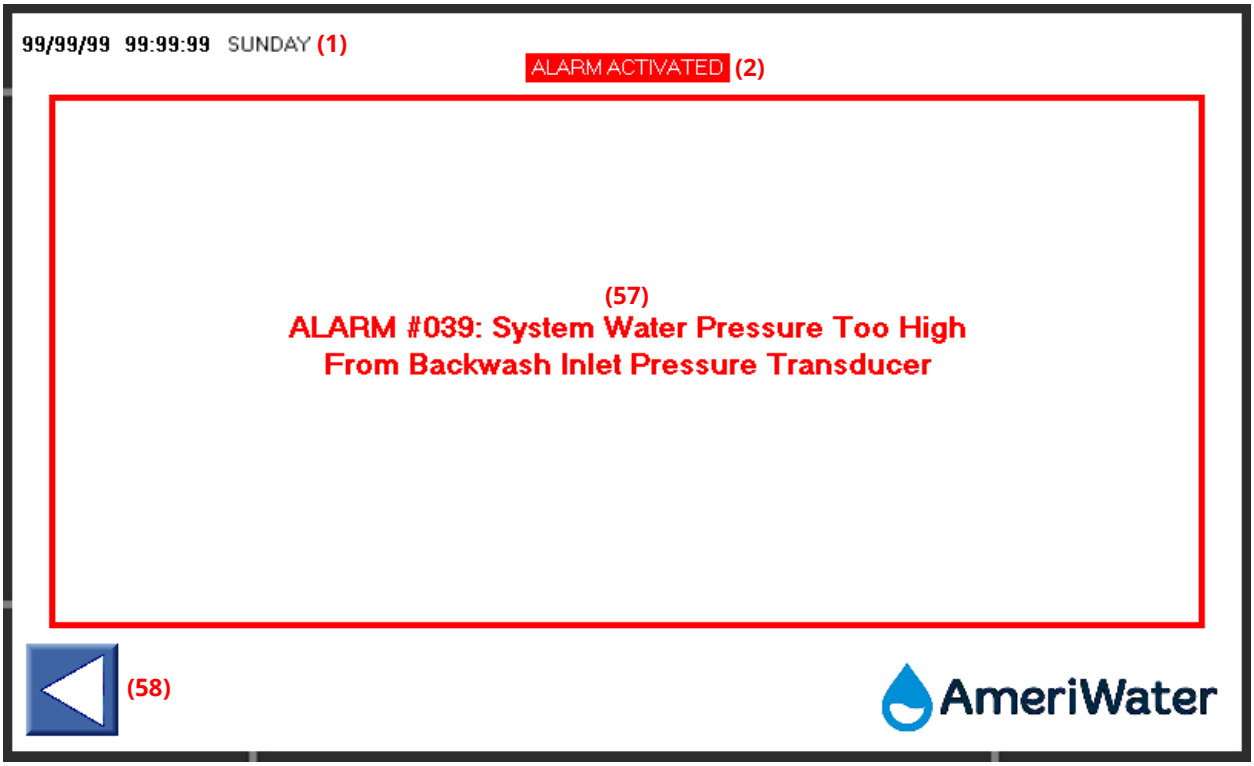
(54) Clear History Button
   a. Only visible when login as a master user
   b. Empty all the alarm log

(55) Alarm Reset
   a. Pressing the button will remove blinking alarm notification on the top of the screen

b. After pressing the button, system will try to go to service mode
c. Alarm will trigger again if the fault condition is not recovered

(56) Alarm Calibration
a. Only visible, not modifyable
b. Applies to ALARM #034 through ALARM #039, which sets low and high limits of each alarm (refer to ALARM LIST for more information)
c. City Water Pressure is set for a minimum of 20 PSI and a maximum of 90 PSI
d. System Water Pressure is set for a minimum of 0 PSI and a maximum of 125 PSI for PVC systems, 150 PSI for Low Pressure Copper systems, and 300 PSI for High Pressure Copper systems

6.10 Alarm Screen



* This screen will automatically pop up when any alarm triggers, as well as stamping it in the alarm log.
* If the system is on the *Manual Operation* or *E-Stop* screen, this screen will not pop up and not override the current status, but will still stamp to the alarm log.

(57) Alarm Information
a. Display alarm information (refer to Section 7 for more information)

(58) Back button
a. Pressing the button will display the *Start Up* screen

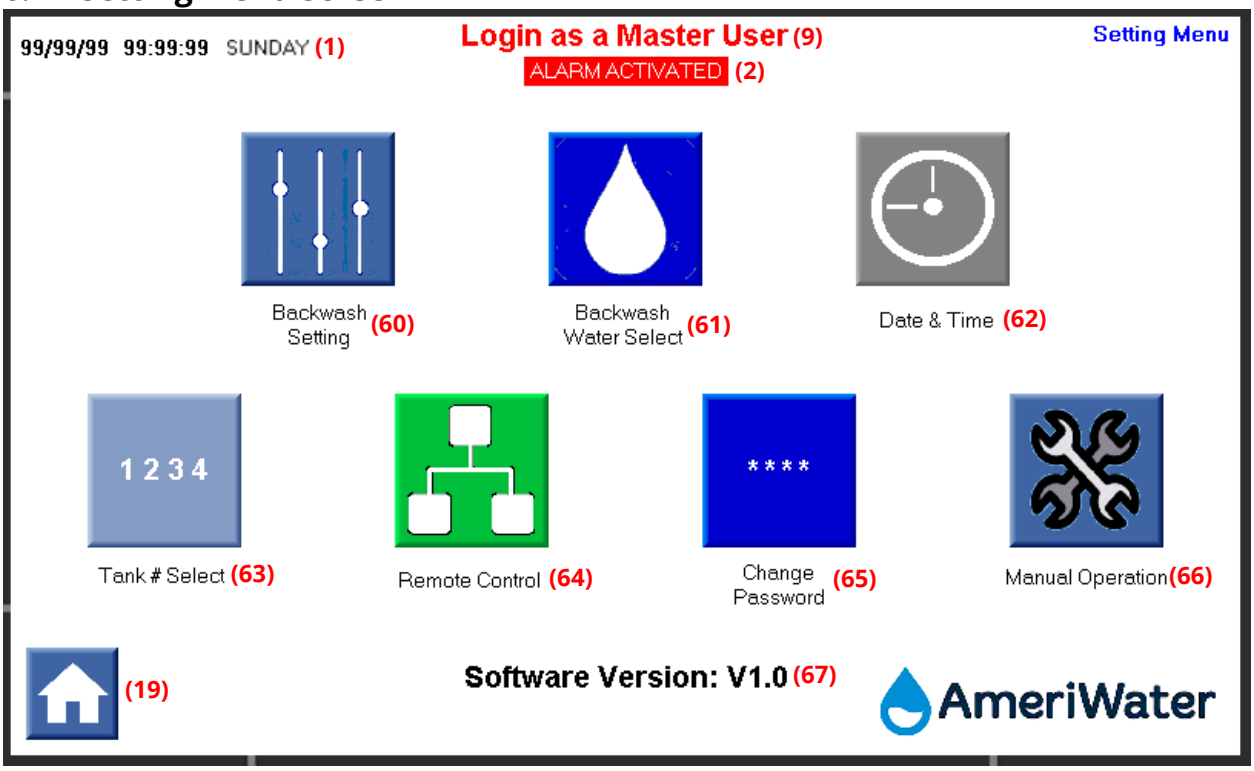
6.11 E-Stop Screen

* This screen will automatically pop up when the user presses the emergency stop button and will activate a gerneral alarm notification on the top of the screen.

(59) Back button

a. Same function as (58) but only emergency button is no longer activated
b. Pressing the button will display the *Start Up* screen

6.12 Setting Menu Screen



(60) Backwash Setting
   a. Pressing button will display the *Backwash Setting* screen
   b. Pressing button while the system is in backwash process will display the *Backwash Setting Confirmation* screen

(61) Backwash Water Select
   a. Pressing button will display the *Backwash Water Select* screen
   b. Pressing button while the system is in backwash process will display the *Backwash Water Select Confirmation* screen

(62) Date & Time
   a. Pressing button will display the *Date & Time* screen

(63) Tank # Select
   a. Only visible when login as a master user
   b. Pressing button will display the *Tank # Select* screen

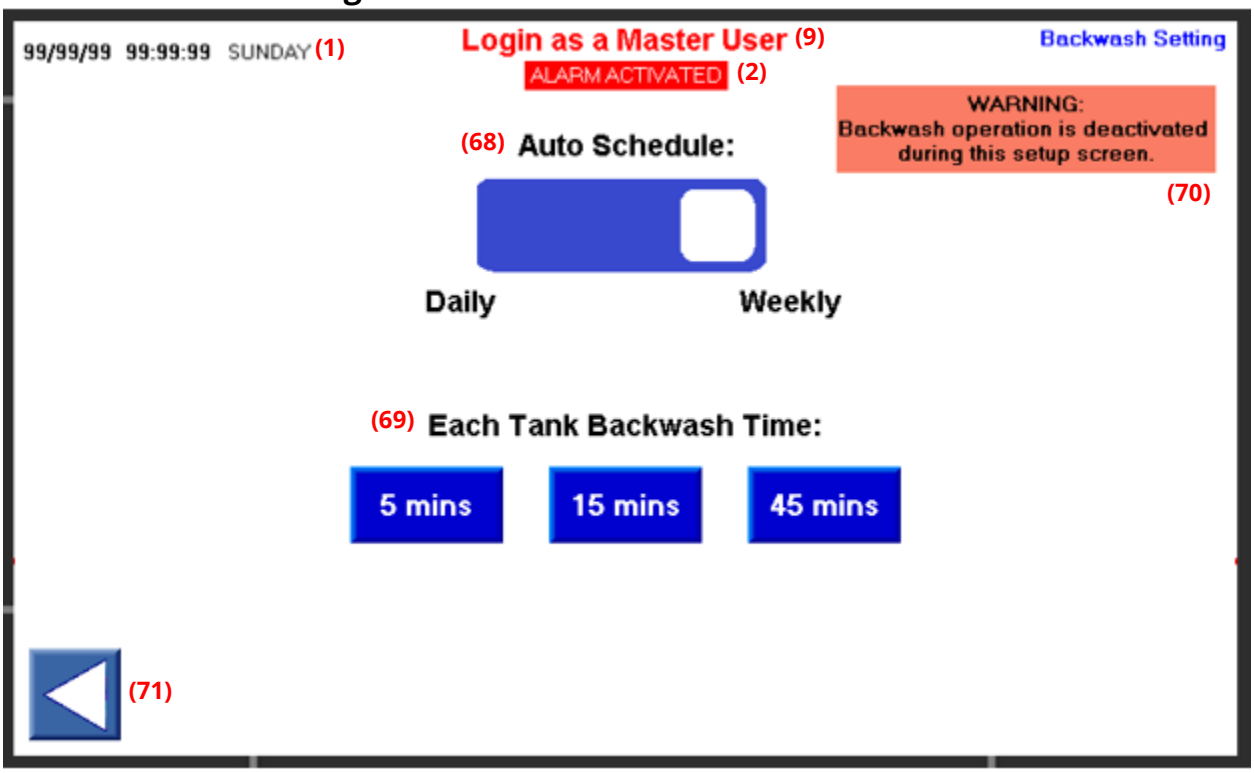
(64) Remote Control
   a. Pressing button will display the *Remote Control* screen

(65) Change Password
   a. Pressing button will display the *Change Password* screen
   b. Enter same login password as logged in currently, if user entered customer login, customer password is required to access *Change Password* screen

(66) Manual Operation
   a. Only visible when login as a master user
   b. Pressing button will display the *Manual Operation Confirmation* screen

(67) Software Version
   a. Display the current PLC program version

6.13 Backwash Setting Screen



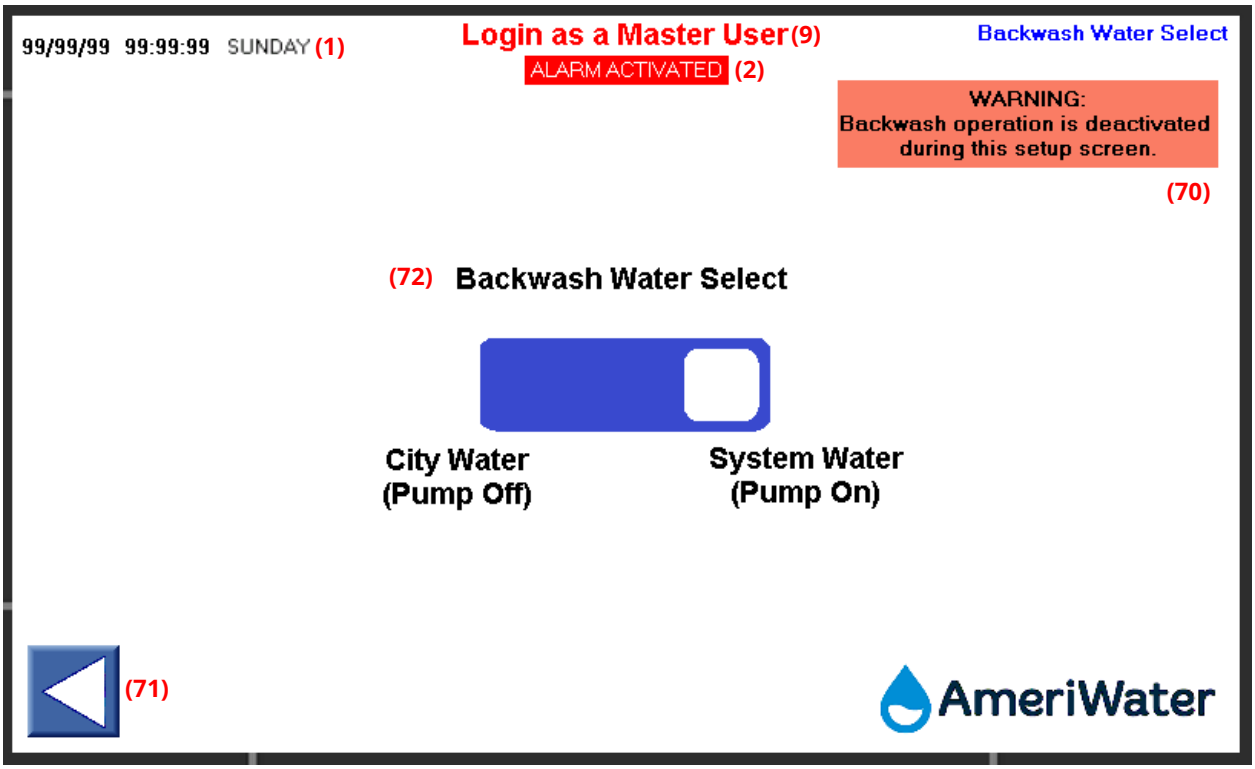
(68) Auto Schedule
   a. Select daily or weekly auto backwash schedule from the last time backwash has been initiated
   b. Select daily option inactivates ALARM #033 (refer to Section 7 for more information)
   c. Select weekly option inactivates ALARM #032 (refer to Section 7 for more information)
   d. Auto Schedule timer resets when backwash process is initiated

(69) Each Tank Backwash Time
   a. Setup backwash duration of each tank
   b. 5 mins, 15 mins, or 45 mins

(70) Warning Information
   a. "Backwash operation is deactivated during this setup screen" is always visible
   b. Preventing the risk of changing settings while the system is in backwash process

(71) Back Button
   a. Pressing the button will display the *Setting Menu* screen

6.14 Backwash Water Select Screen

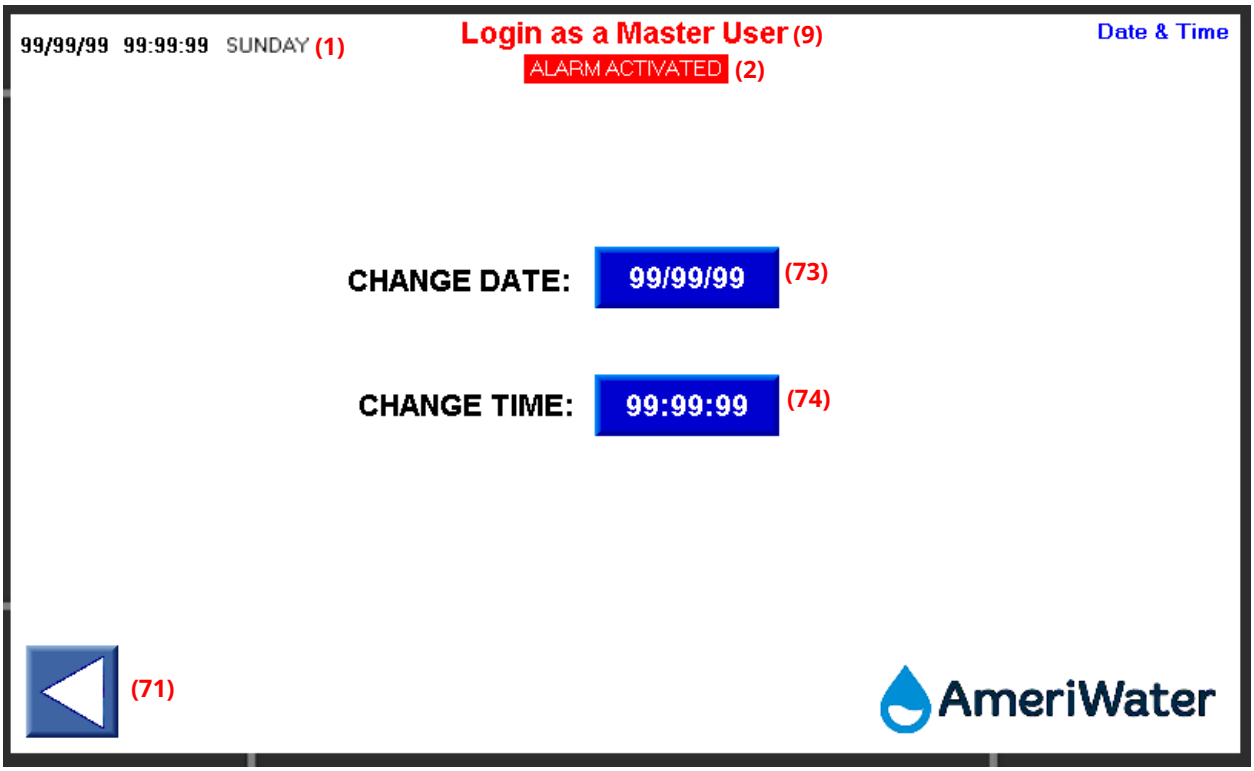


PAGE 17: BACKWASH WATER SELECT SCREEN

(72) Backwash Water Select

a. Select city water or system water during backwash process
b. This does not affect pump operation during service process
c. Select city water turns off pump during backwash process
d. Select system water turn on pumps only while backwash valves are properly set
e. Pump will be automatically off while actuator valves are moving

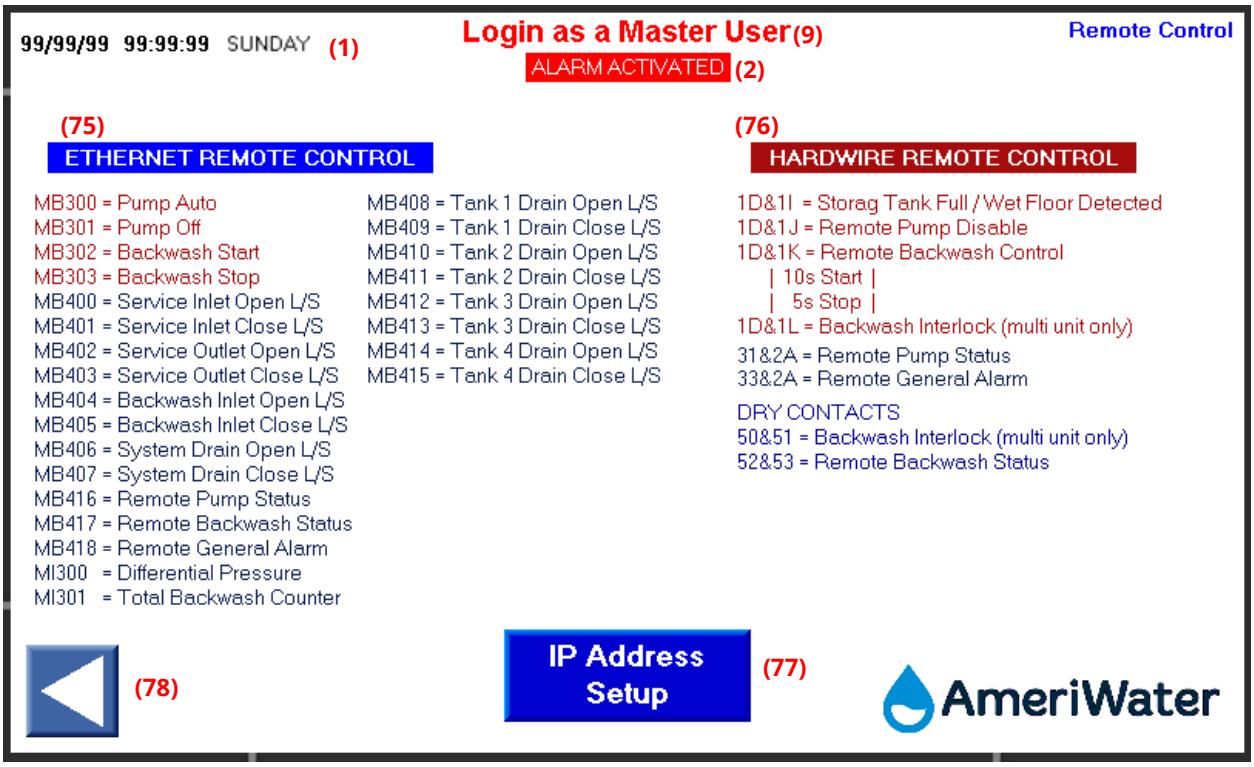
6.15 Date & Time Screen



(73) Change Date
   a. Display current Date
   b. FORMAT: DD/MM/YY
   c. Key pad entry will pop up when pressing the box to change the current date

(74) Change Time
   a. Display Current Time
   b. FORMAT: HH:MM:SS
   c. Key pad entry will pop up when pressing the box to change the current time

6.16 Remote Control Screen



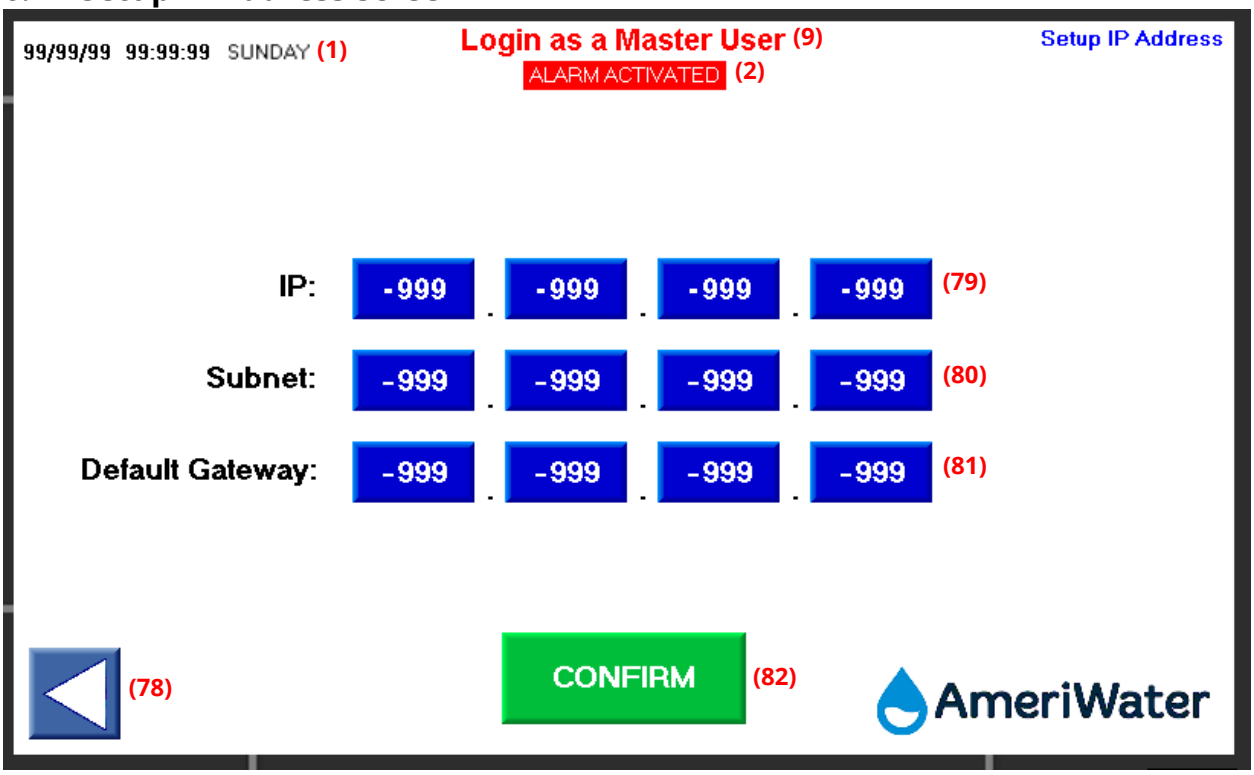
(75) Text Information
   a. Show memory bits for Ethernet connection

(76) Text Information
   a. Show inputs and outputs of PLC system for remote connection

(77) IP Address Set Up Button
   a. Pressing this button will display the *Setup IP Address* screen

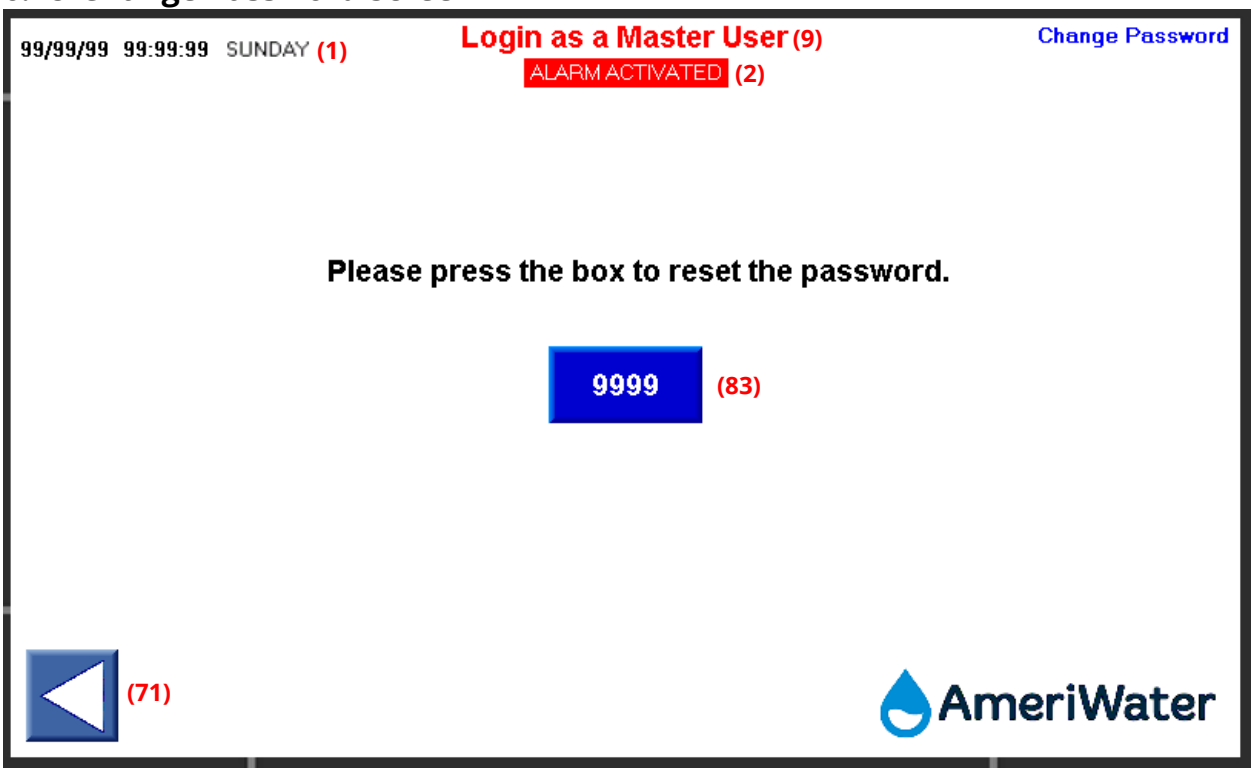
(78) Back Button
   a. Pressing the button will go back to previous page

6.17 Setup IP Address Screen



(79) IP (Internet Protocol)
   a. Pressing each box configure IP address
(80) Subnet
   a. Pressing each box configure subnet address
(81) Default Gateway
   a. Pressing each box configure default gateway address
(82) Confirm Button
   a. Pressing the button will confirm the new settings

6.18 Change Password Screen

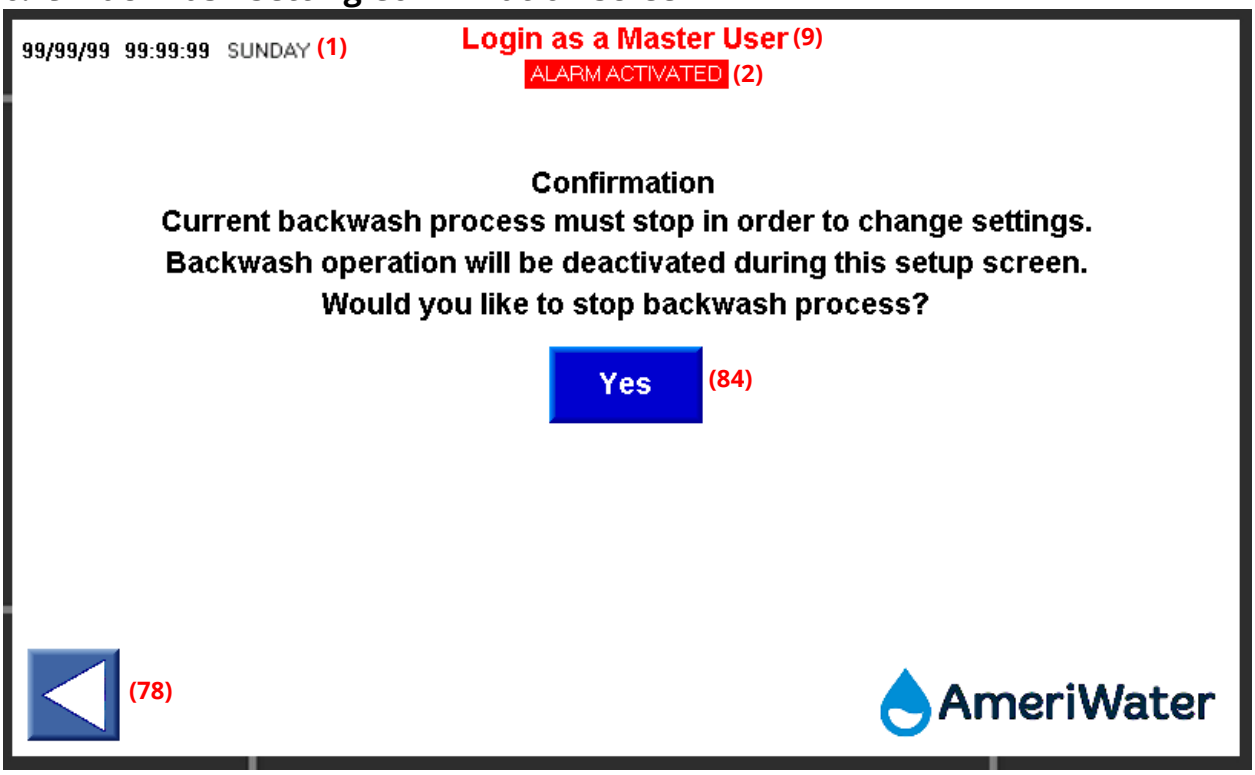


* If user login as a customer, customer password is required to access this screen
* If user login as a master user, master password is required to access this screen

(83) Change Password

a. Key pad entry will pop up when pressing the box to change current user password
b. This only changes customer's password
c. Default password is 0000

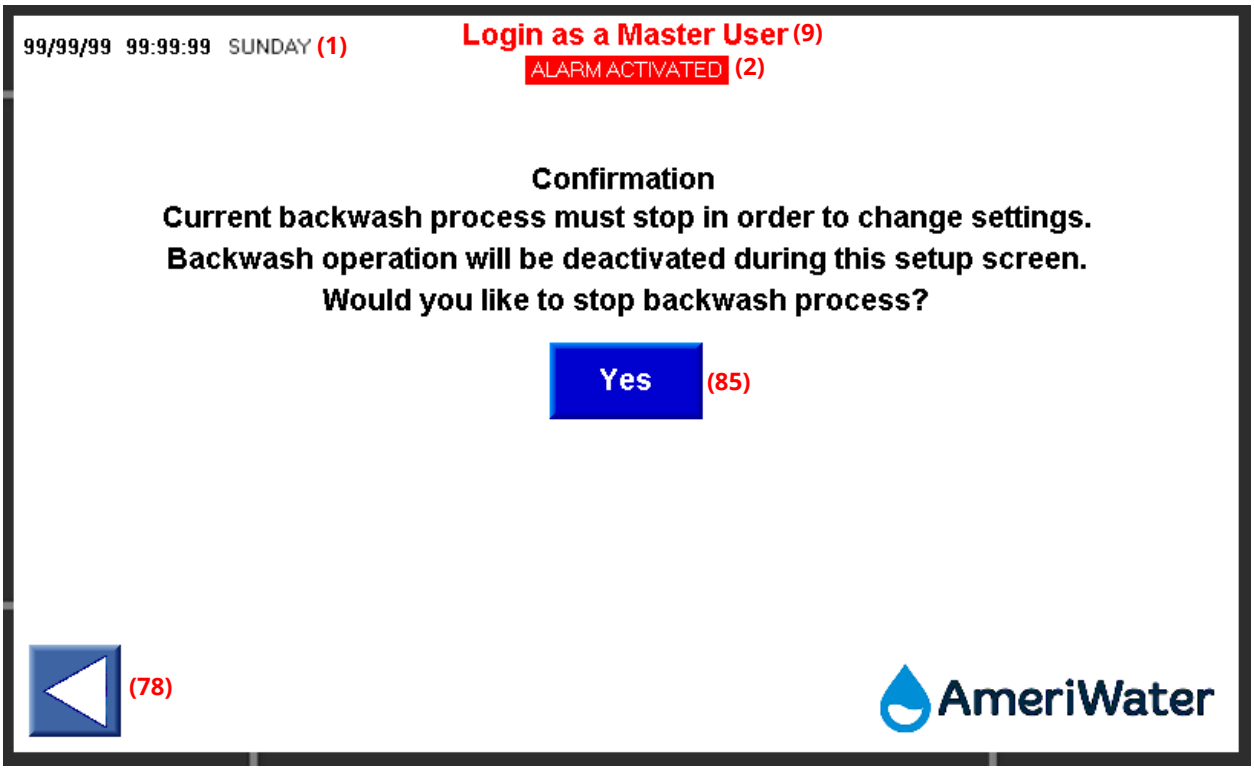
6.19 Backwash Setting Confirmation Screen



(84) Backwash Setting Confirmation Button

a. Pressing the button will display the *Backwash Setting* screen
b. Auto/Scheduled backwash will be prevented once user presses the button and function will return when the setting menu is exited

6.20 Backwash Water Select Confirmation Screen

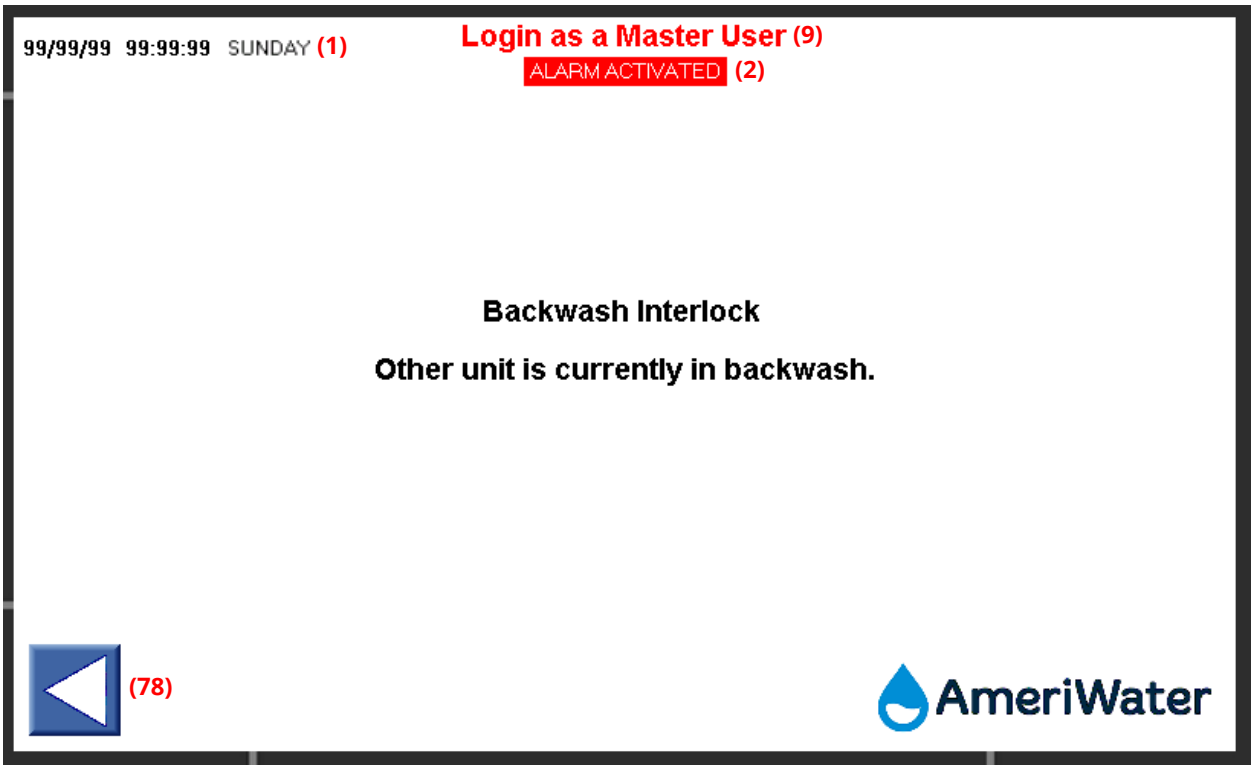


(85) Backwash Water Select Confirmation Button

a. Pressing the button will display the *Backwash Water Select* screen

b. Auto/Scheduled backwash will be prevented once user press the button and function will return when the setting menu is exited

6.21 Backwash Interlock Screen



* This screen automatically pops up when customer presses **Manual Backwash** button on *Control Menu* screen while interlocked unit is in backwash.
* Any Backwash process is prevented while interlocked unit is in backwash.

7 ALARM LIST

All the actuator valves will move to closed position when any of the alarms are triggered.
RED - Manual backwash is not available while these alarms are present. Valve will stay closed until alarm is reset. High risk.
BLACK – Manual Backwash is available while these alarms are present. Low risk.
See the Diagnostic Guide for Checks and Proposed Actions for each alarm.

Alarm #	Alarm Info	Description
ALARM #001	**Excessive Backwash** (More Than 15 Backwashes were Initialized within 24 Hours)	Caused by more than 15 backwash attempts within 24 hour timer This timer resets every 24 hours or when **Alarm Reset** button is triggered
ALARM #002	**Pump Overload**	Caused by motor overload tripping, due to short circuit or thermal overload Motor contactor sends overload signal to PLC input I1
ALARM #003	**Backwash Inlet Pressure Transducer Failure** (Out of Pressure Range)	Caused by backwash inlet pressure out of range from 0–300 psi for more than 2 seconds
ALARM #004	**Filter Inlet Pressure Transducer Failure** (Out of Pressure Range)	Caused by filter inlet pressure out of range from 0–300 psi for more than 2 seconds
ALARM #005	**Filter Outlet Pressure Transducer Failure** (Out of Pressure Range)	Caused by filter outlet pressure out of range from 0–300 psi for more than 2 seconds
ALARM #006	**Service Inlet Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	Caused by service inlet open limit switch and service inlet close limit switch pressed simultaneously for more than 1 second
ALARM #007	**Service Inlet Valve Failure** (Open Limit Switch Is Not Triggered)	Caused by service inlet open limit switch is not pressed for more than 2.5 minutes while service inlet actuator is energized to open the valve
ALARM #008	**Service Inlet Valve Failure** (Close Limit Switch Is Not Triggered)	Caused by service inlet close limit switch is not pressed for more than 2.5 minutes while service inlet actuator is energized to close the valve
ALARM #009	**Service Outlet Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	Caused by service outlet open limit switch and service outlet close limit switch pressed simultaneously for more than 1 second

ALARM #010	**Service Outlet Valve Failure** (Open Limit Switch Is Not Triggered)	Caused by service outlet open limit switch is not pressed for more than 2.5 minutes while service outlet actuator is energized to open the valve
ALARM #011	**Service Outlet Valve Failure** (Close Limit Switch Is Not Triggered)	Caused by service outlet close limit switch is not pressed for more than 2.5 minutes while service outlet actuator is energized to close the valve
ALARM #012	**Backwash Inlet Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	Caused by backwash inlet open limit switch and backwash inlet close limit switch pressed simultaneously for more than 1 second
ALARM #013	**Backwash Inlet Valve Failure** (Open Limit Switch Is Not Triggered)	Caused by backwash inlet open limit switch is not pressed for more than 2.5 minutes while backwash inlet actuator is energized to open the valve
ALARM #014	**Backwash Inlet Valve Failure** (Close Limit Switch Is Not Triggered)	Caused by backwash inlet close limit switch is not pressed for more than 2.5 minutes while backwash inlet actuator is energized to close the valve
ALARM #015	**System Drain Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	Caused by system drain open limit switch and backwash outlet close limit switch pressed simultaneously for more than 1 second
ALARM #016	**System Drain Valve Failure** (Open Limit Switch Is Not Triggered)	Caused by system drain open limit switch is not pressed for more than 2.5 minutes while backwash outlet actuator is energized to open the valve
ALARM #017	**System Drain Valve Failure** (Close Limit Switch Is Not Triggered)	Caused by system drain close limit switch is not pressed for more than 2.5 minutes while backwash outlet actuator is energized to close the valve
ALARM #018	**Tank 1 Drain Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM Caused by tank 1 open limit switch and Tank 1 close limit switch pressed same time for more than 1 second
ALARM #019	**Tank 1 Drain Valve Failure** (Open Limit Switch Is Not Triggered)	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM Caused by tank 1 open limit switch is not pressed for more than 2.5 minutes while tank 1 actuator is energized to open the valve
ALARM #020	**Tank 1 Drain Valve Failure**	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM

	(Close Limit Switch Is Not Triggered)	Caused by tank 1 close limit switch is not pressed for more than 2.5 minutes while tank 1 actuator is energized to close the valve
ALARM #021	**Tank 2 Drain Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM Caused by tank 2 open limit switch and tank 2 close limit switch pressed same time for more than 1 second
ALARM #022	**Tank 2 Drain Valve Failure** (Open Limit Switch Is Not Triggered)	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM Caused by tank 2 open limit switch is not pressed for more than 2.5 minutes while tank 2 actuator is energized to open the valve
ALARM #023	**Tank 2 Drain Valve Failure** (Close Limit Switch Is Not Triggered)	ONLY APPLIES TO 2, 3, AND 4 TANK SYSTEM Caused by tank 2 close limit switch is not pressed for more than 2.5 minutes while tank 2 actuator is energized to close the valve
ALARM #024	**Tank 3 Drain Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	ONLY APPLIES TO 3 AND 4 TANK SYSTEM Caused by tank 3 open limit switch and tank 3 close limit switch pressed same time for more than 1 second
ALARM #025	**Tank 3 Drain Valve Failure** (Open Limit Switch Is Not Triggered)	ONLY APPLIES TO 3 AND 4 TANK SYSTEM Caused by tank 3 open limit switch is not pressed for more than 2.5 minutes while tank 3 actuator is energized to open the valve
ALARM #026	**Tank 3 Drain Valve Failure** (Close Limit Switch Is Not Triggered)	ONLY APPLIES TO 3 AND 4 TANK SYSTEM Caused by tank 3 close limit switch is not pressed for more than 2.5 minutes while tank 3 actuator is energized to close the valve
ALARM #027	**Tank 4 Drain Valve Failure** (Open and Close Limit Switch Are Triggered Simultaneously)	ONLY APPLIES TO 4 TANK SYSTEM Caused by tank 4 open limit switch and tank 4 close limit switch pressed same time for more than 1 second
ALARM #028	**Tank 4 Drain Valve Failure** (Open Limit Switch Is Not Triggered)	ONLY APPLIES TO 4 TANK SYSTEM Caused by tank 4 open limit switch is not pressed for more than 2.5 minutes while tank 4 actuator is energized to open the valve
ALARM #029	**Tank 4 Drain Valve Failure** (Close Limit Switch Is Not Triggered)	ONLY APPLIES TO 4 TANK SYSTEM Caused by tank 4 close limit switch is not pressed for more than 2.5 minutes while tank 4 actuator is energized to close the valve
ALARM #030	**E-STOP**	Caused by pressing the emergency button

		Emergency button sends overload signal to PLC input I0
ALARM #031	**PLC BATTERY LOW**	Caused by low internal battery from PLC When the battery is replaced, RAM values are lost
ALARM #032	**Daily Backwash Failure** (Backwash Not Fully Completed at Least Once within 24 Hours)	ONLY APPLIES WHEN BACKWASH SETTING IS SELECTED AS DAILY Caused by incompletion of full backwash process within 24 hour timer This timer resets every 24 hours or when **Alarm Reset** button is triggered
ALARM #033	**Weekly Backwash Failure** (Backwash Not Fully Completed at Least Once in 7 Days)	ONLY APPLIES WHEN BACKWASH SETTING IS SELECTED AS WEEKLY Caused by incompletion of full backwash process within 7 days timer This timer resets every 7 days or when **Alarm Reset** button is triggered
ALARM #034	**City Water Pressure Too Low** (From Backwash Inlet Pressure Transducer)	APPLIES TO CITY WATER OPERATION DURING BACKWASH PROCESS ONLY (PUMP OFF) Caused by backwash inlet pressure transducer reading too low, but does not fall below 0 psi. (this lower limit is configured by AmeriWater)
ALARM #035	**City Water Pressure Too High** (From Backwash Inlet Pressure Transducer)	APPLIES TO CITY WATER OPERATION DURING BACKWASH PROCESS (PUMP OFF) Caused by backwash inlet pressure transducer reading too high, but does not exceed 300 psi. (this upper limit is configured by AmeriWater)
ALARM #036	**System Water Pressure Too Low** (From Filter Inlet Pressure Transducer)	APPLIES TO SYSTEM WATER (PUMP ON) Caused by filter inlet pressure transducer reading too low, but does not fall below 0 psi. (this lower limit is configured by AmeriWater)
ALARM #037	**System Water Pressure Too High** (From Filter Inlet Pressure Transducer)	APPLIES TO SYSTEM WATER (PUMP ON) Caused by filter inlet pressure transducer reading too high, but does not exceed 300 psi. (this upper limit is configured by AmeriWater)
ALARM #038	**System Water Pressure Too Low**	APPLIES TO SYSTEM WATER DURING BACKWASH OPERATION (PUMP ON)

	(From Backwash Inlet Pressure Transducer)	Caused by backwash inlet pressure transducer reading too low, but does not fall below 0 psi. (this lower limit is configured by AmeriWater)
ALARM #039	**System Water Pressure Too High** (From Backwash Inlet Pressure Transducer)	APPLIES TO SYSTEM WATER DURING BACKWASH OPERATION (PUMP ON) Caused by backwash inlet pressure transducer reading too high, but does not exceed 300 psi. (this upper limit is configured by AmeriWater) too high, but does not exceed 300 psi. (this upper limit is same as ALARM #037)

8 LOG LIST

Logged Item	Description	Additional Note
Manual Backwash Initiated	Triggers when user initiates manual backwash from the HMI touch screen.	This action is prevented while system is interlocking with other unit and the other unit is in backwash. (Input Terminal 1D and 1L) (Output Terminal 50 and 51) This action is prevented during *Backwash* and *water Selection Setting* screen.
Backwash Aborted	Triggers when backwash is aborted. This includes manual abort, remote abort, etc.	**Remote Abort:** Ethernet = Trigger MB303 Hardwire = Trigger INPUT4 longer than 10 seconds while system is in backwash mode (Terminal 1D and 1K) The system will go to service mode.
Backwash Completed	Triggers when full cycle of backwash is completed.	The system will go to service mode.
Remote Backwash Initiated	Triggers when user initiates remote backwash from Ethernet or electric hardwire.	**Remote Start:** Ethernet = Trigger MB302 Hardwire = Trigger INPUT4 longer than 5 seconds while system is in service mode (Terminal 1D and 1K) This action is prevented while system is interlocking with other unit and the other unit is in backwash. (Input Terminal 1D and 1L) (Output Terminal 50 and 51) This action is prevented during *Backwash* and *water Selection Setting* screen.
Scheduled Backwash Initiated	Triggers when daily or weekly scheduled backwash is initiated. Daily or weekly option is selected in *Backwash Setting*.	This action is prevented while system is interlocking with other unit and the other unit is in backwash. (Input Terminal 1D and 1L)

		(Output Terminal 50 and 51) This action is prevented during *Backwash* and *water Selection Setting* screen.
DP Backwash Initiated	Triggers when differential pressure between filter inlet and filter outlet is greater than 18 psi for more than 10 seconds.	This action is prevented while system is interlocking with other unit and the other unit is in backwash. (Input Terminal 1D and 1L) (Output Terminal 50 and 51) This action is prevented during *Backwash* and *water Selection Setting* screen.
Enter Manual Operation (Only Accessed by Master Login)	Triggers when master user accesses the *Manual Operation* screen.	It closes all the valves and turns off the pump initially. Remote/auto backwash scheduled operation is prevented during this screen.
Leave Manual Operation (Only Accessed by Master Login)	Triggers when master user leaves *Manual Operation* screen.	The system goes to service mode. The system will go to service mode.
Storage Tank Full	Triggers when INPUT2 float switch is triggered while system is in backwash mode. (Terminal 1D and 1I)	Backwash process is aborted from this action. The system will go to service mode.
Alarm Activated	Triggers when any of the alarms trigger.	Backwash process is aborted from this action. The system will go to service mode.
Power Loss	Triggers when power loss occurs.	The system will go into service mode when power returns.

9 MAINTENANCE

9.1 Maintenance Schedule

AmeriWater High Efficiency Filter Systems are designed for low maintenance. The following maintenance procedures are **minimum** frequency and will help to ensure continued trouble free operation.

Note: Keep daily record of pressures, backwash count, performed maintenance and unusual occurrences on log sheet provided (Section 4.18). The system log provides valuable information should factory service assistance be required. Contact AmeriWater 800.855.5535 if log sheets are needed.

Weekly:
Check automatic pump oilers (if applicable)
Check pump strainer and clean as necessary

Monthly:
Grease pump motors (if applicable)

Quarterly:
Check all control functions

Annual:
Check pressure differential transducers for proper operation
Inspect pump and pump motor for bearing wear
Inspect pump for seal wear
Inspect media. Clean, add, or replace as necessary.

Note: Expected wear life for pump seal is approximately 2 years. This may vary due to site specific operating conditions.

It is recommended that the entire media bed is removed and replaced with new media every 5 years. See section 10.1 for media repack kit part numbers. See section 9.1.3 for media removal instructions. Use the IFU that comes with the repack kit for media installation instructions.

9.1.1 Replacing Pump Mechanical Seal

a) Turn power to the pump off.

b) Disconnect the pump from the plumbing system by removing the bolts on the flanges on the inlet and outlet of the pump. Place the pump on a table or spacious work area.

c) Unscrew the bolts on the pump housing. Detach the pump's motor shaft from the housing.

d) Dismantling the pump's impeller is the next step, as the seal is located on the shaft behind

the impeller. While holding the shaft in place, rotate the pump's impeller counterclockwise with a wrench until it disconnects from the shaft. Part of the old mechanical seal will be attached to the impeller, while the other part will still be attached to the motor shaft. Remove both of these pieces.

e) Slide the new mechanical seal along the shaft of the motor. Do not touch the front face of the seal, as it is highly sensitive to oils. Once the new seal is on the shaft, screw the impeller back on and reattach the pump housing and motor by tightly screwing in the bolts.

f) Place the pump back onto skid and reconnect the flange bolts. Return power to system.

9.1.2 Media (Level & Condition)

a) Backwash filter (de-energize control panel before last vessel is finished backwashing).

b) Isolate filter system from all water sources.

c) Open bottom filter drain (ensure that pressure drops to zero).

d) Remove vessel cap and gasket.

e) Drain water to top of media then close drain.

f) Inspect sand. Sand should be loose and clean. Some discoloration is normal in systems with iron oxide or organic particles. Remove any loose debris or small amount of accumulated cake.

g) Push a broomstick or other rod into sand. Rod should penetrate media with relative ease until gravel is contacted.

h) Top of sand should be approximately 7.5" - 8.5" below bottom of inlet manifold.

i) Add or replace sand as necessary.

j) Refill vessels with water.

k) Replace vessel cap gasket and secure cap.

l) Open all water supply valves and energize power supply.

m) Return system to service with manual backwash.

9.1.3 Removal of Media

a) Backwash filter (de-energize control panel before last vessel is finished backwashing).

b) Isolate filter system from all water sources.

c) Open bottom filter drain (ensure that pressure drops to zero).

d) Remove vessel cap and gasket.

e) Drain water to top of media then close drain.

f) Use a Wet/Dry Shop Vacuum to suck out the media, emptying as needed. Note: make sure to clean out shop vacuum when complete so the sand doesn't cement into place.

9.2 Control Functions

a) Actuate manual backwash by pressing the **Manual Backwash** button.

b) Watch system through backwash cycle for smooth valve actuation and water flow.

c) Differential pressure should be 8-12 psig when system returns to filter mode.

10 CONSUMABLES AND SPARES

10.1 Consumables

Consumable P/N	Description
0133-0018	Media Repack Kit, 30” Tank, ½ Micron
33-0015	Top layer of sand, 50 lb bag, ½ Micron
0133-0022	Media Repack Kit, 30” Tank, ¼ Micron
33-0010	Top layer of sand, 50 lb bag, ¼ Micron

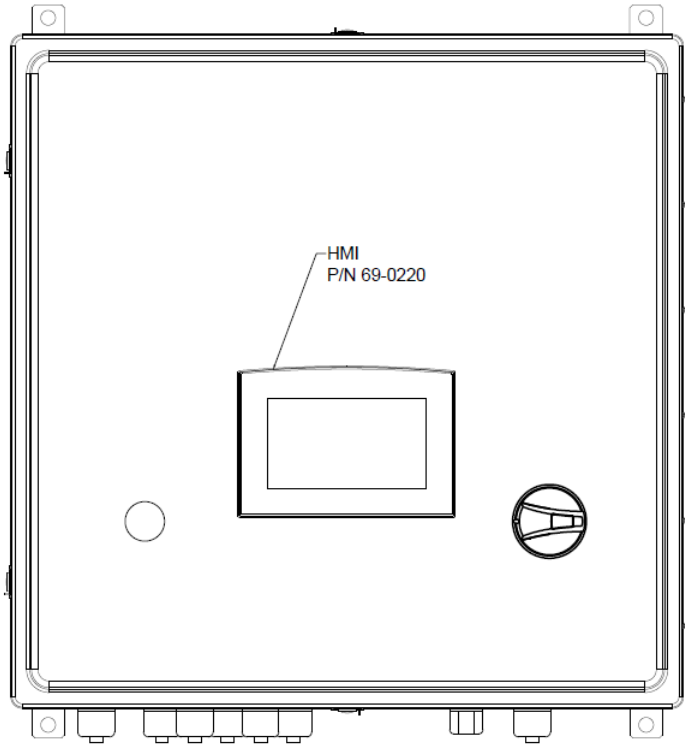
The Media Repack Kit is for one tank. A kit will need to be ordered for each tank in the system.

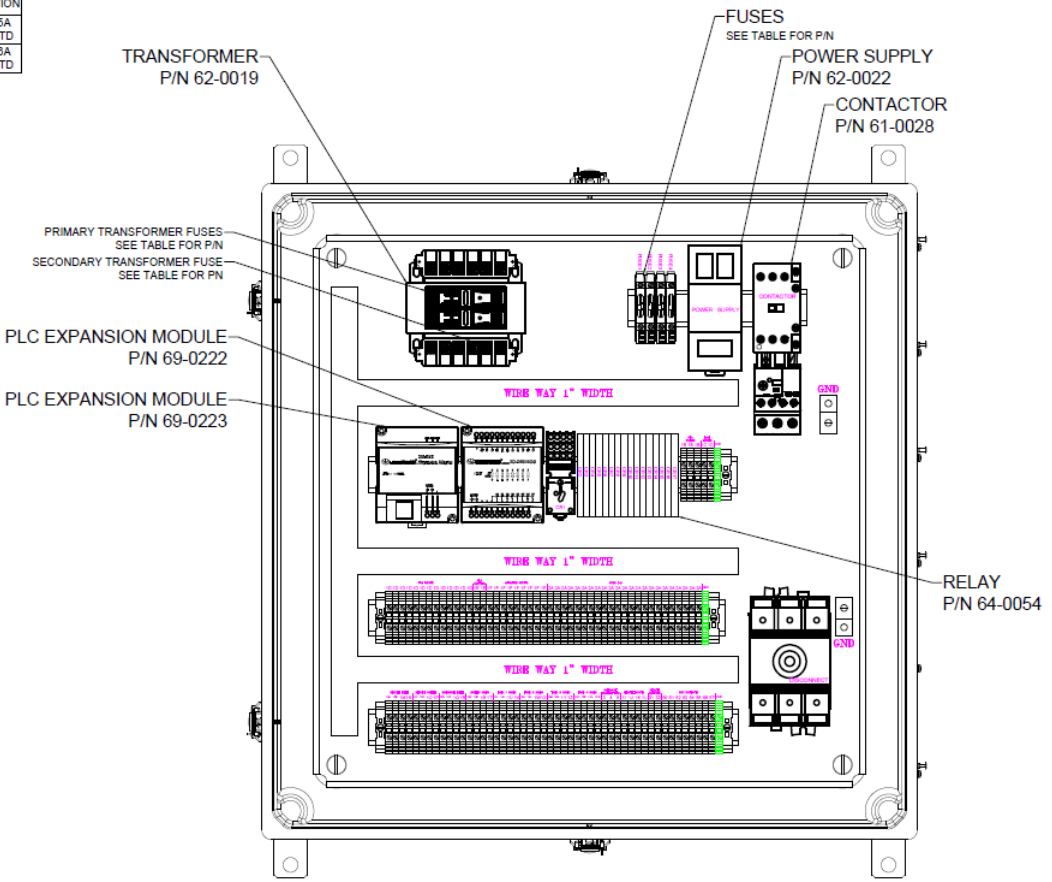
10.2 Spare Parts

Valve P/N	Actuator Only P/N	Description
051-0038 051-0044 051-0045 051-0046	51-0057	ACTUATOR,2WAY,1-2.5",NON-SPRING RETURN,BRAY, W AUX SWITCHES
051-0039 051-0040 051-0043	51-0058	ACTUATOR,2WAY,1-2",SPRING RETURN,BRAY, W AUX SWITCHES
051-0042	51-0059	ACTUATOR,2WAY,3",NON-SPRING RETURN,BRAY, W AUX SWITCHES
051-0041	51-0060	ACTUATOR,2WAY,4",NON-SPRING RETURN,BRAY, W AUX SWITCHES

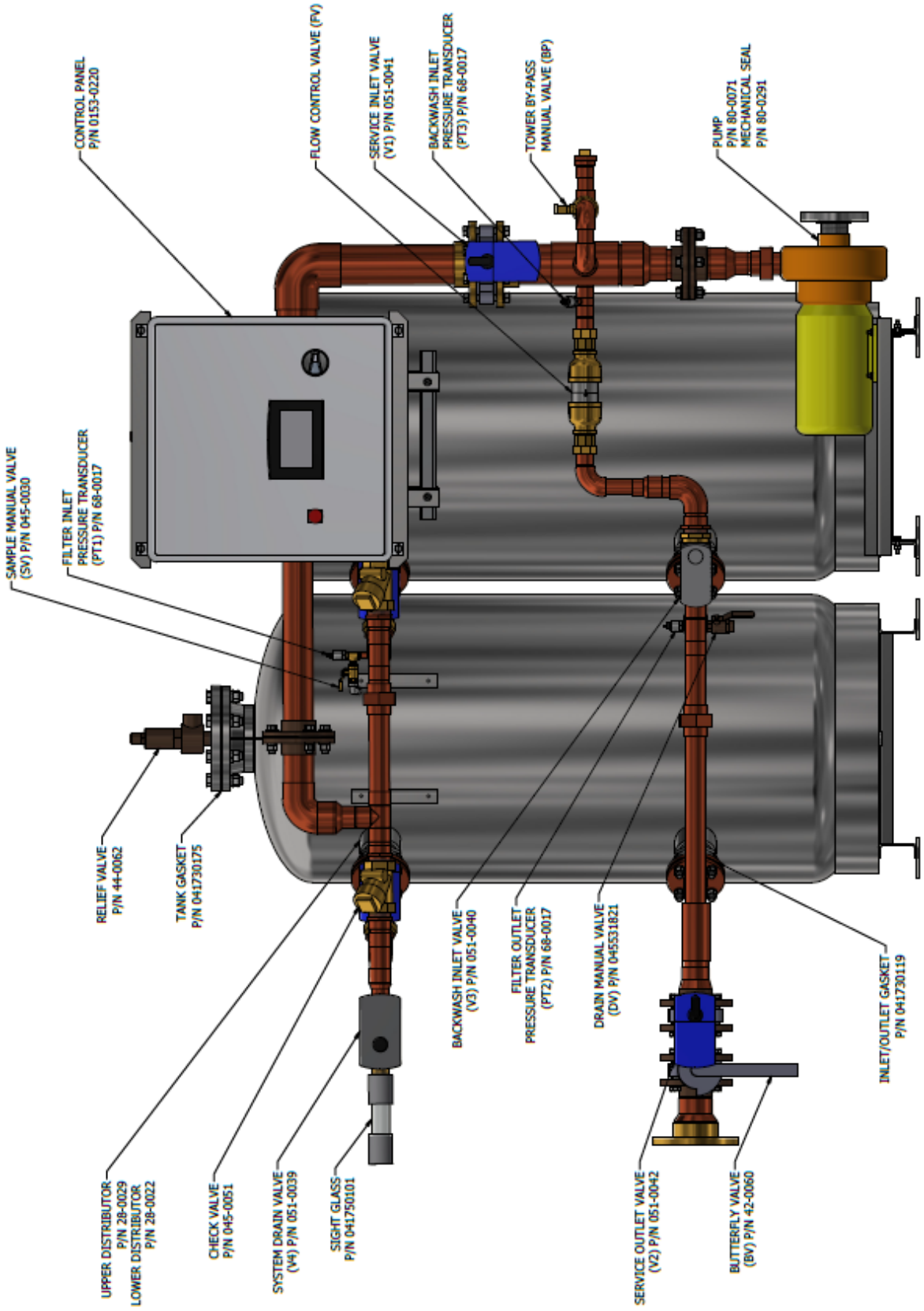
FUSES			
PART NUMBER	FUSE LOCATION	QUANTITY	DESCRIPTION
63-0038	FUSE 4	1	FUSE, 5MM X 20MM, 24VDC, 2.5A, TIME DELAY
63-0039	FUSE 2 & 3	2	FUSE, 5MM X 20MM, 24VDC, 0.5A, FAST ACT
63-0040	FUSE 1	1	FUSE, 5MM X 20MM, 24VDC, 5A, FAST ACT
63-0041	SECONDARY TRANSFORMER	1	FUSE, 2A 600V CC TD

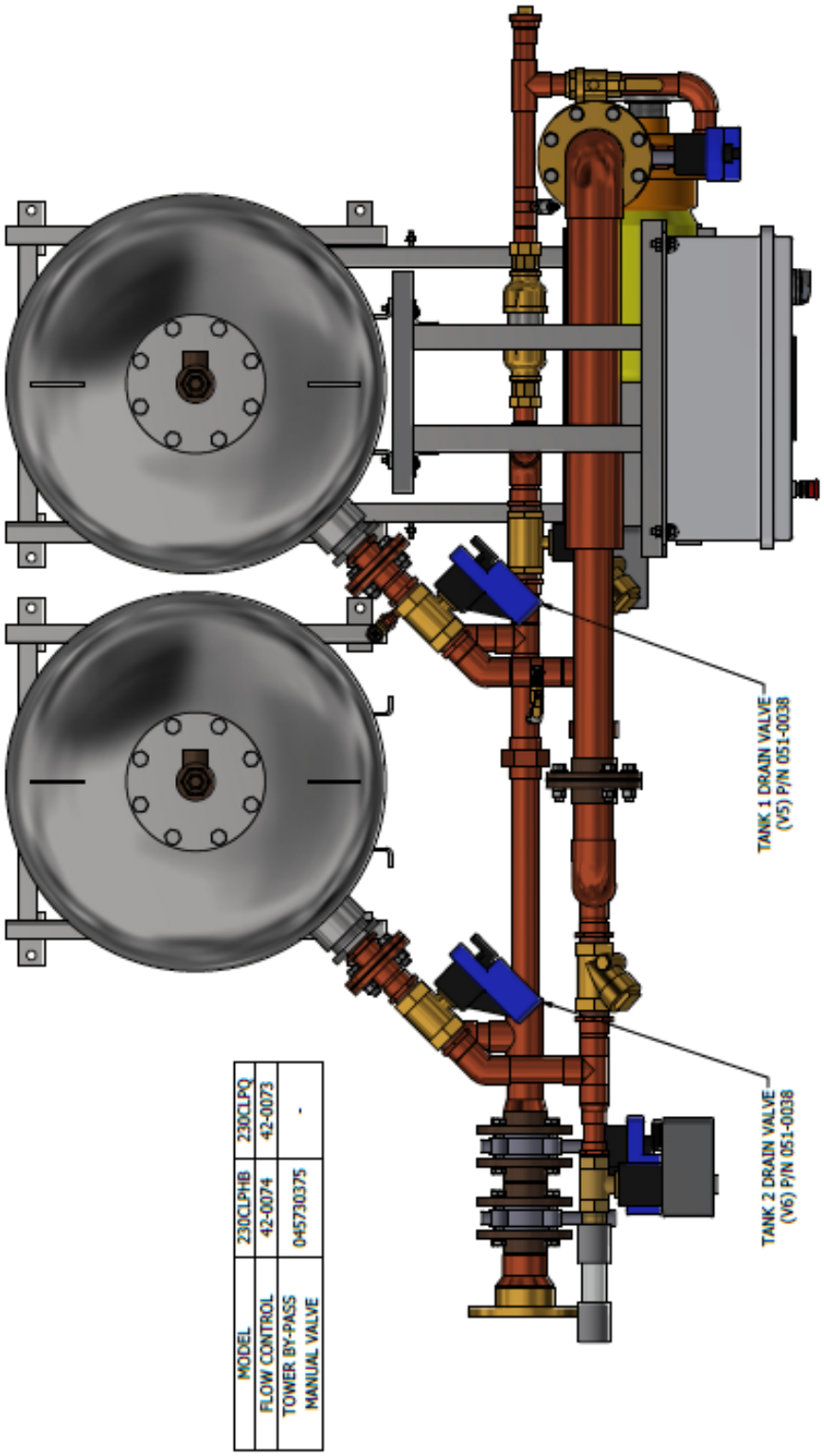
TRANSFORMER PRIMARY FUSE			
VOLTAGE	PART NUMBER	QUANTITY	DESCRIPTION
208 VAC	63-0042	2	FUSE, 3.5A 600V CC TD
460 VAC	63-0043	2	FUSE, 1.6A 600V CC TD



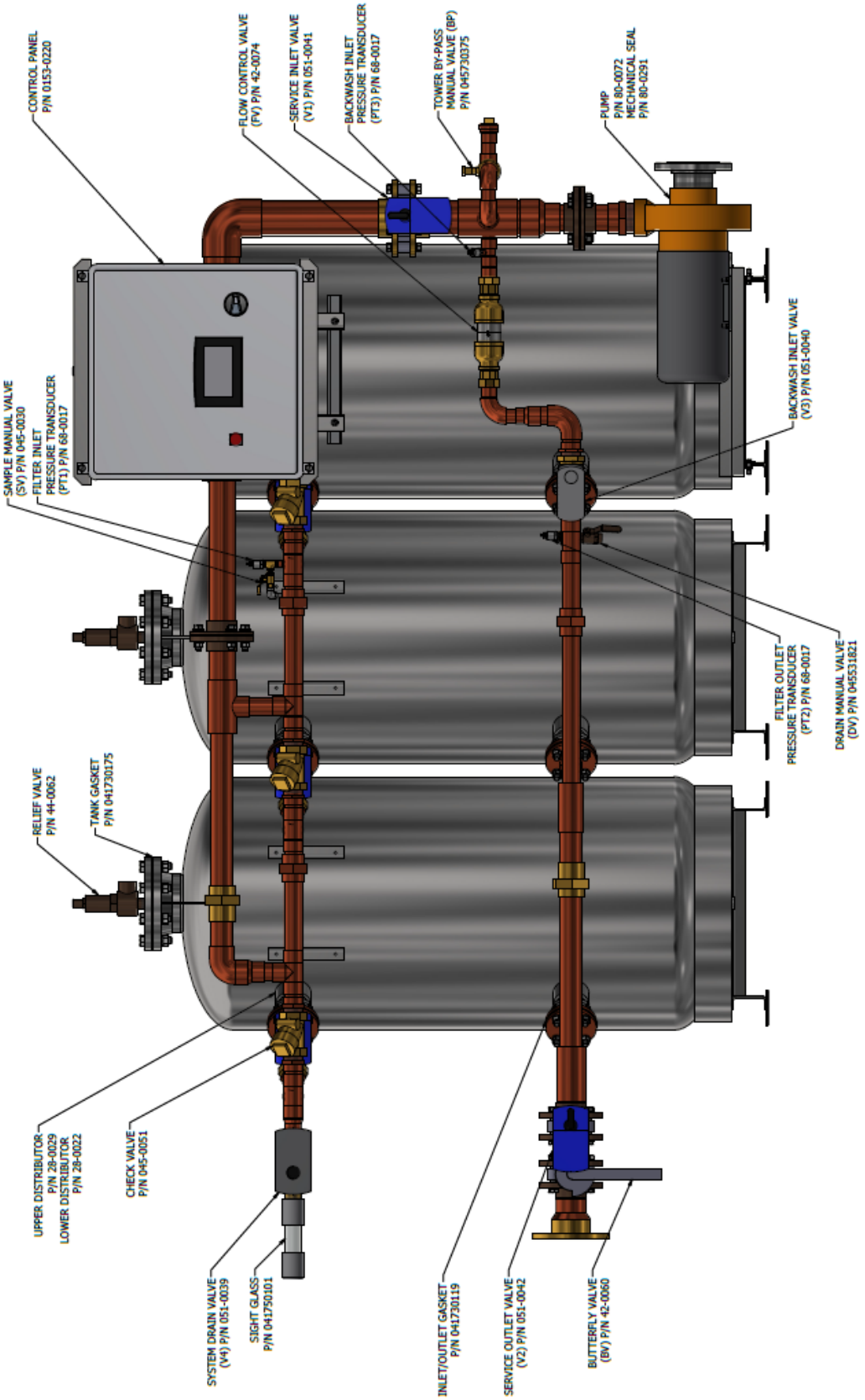


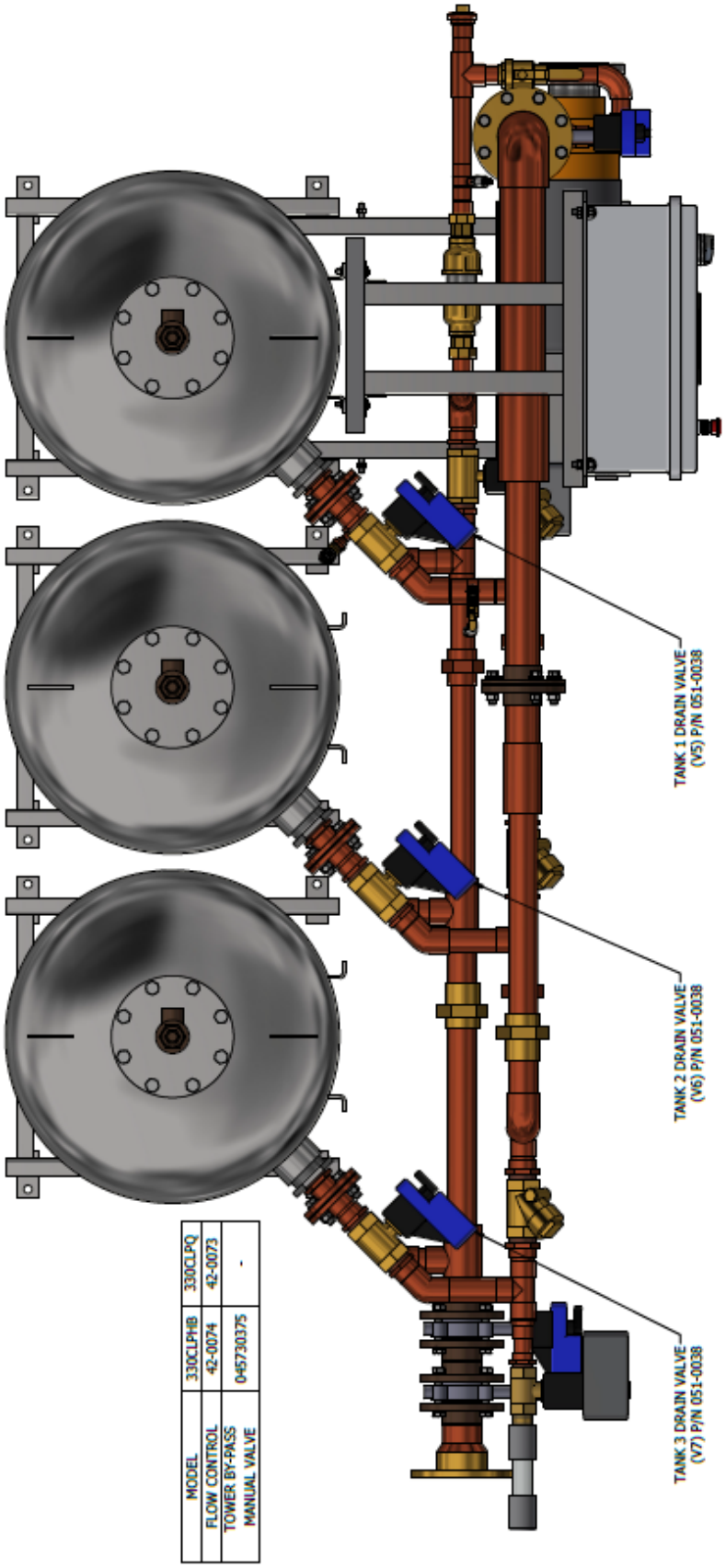
Two Tank


CONTROL PANEL
P/N 0153-0220
FLOW CONTROL VALVE (FV)
SERVICE INLET VALVE
(V1) P/N 051-0041
BACKWASH INLET
PRESSURE TRANSDUCER
(PT3) P/N 68-0017
TOWER BY-PASS
MANUAL VALVE (BP)
PUMP
P/N 80-0071
MECHANICAL SEAL
P/N 80-0291
SAMPLE MANUAL VALVE
(SV) P/N 045-0030
FILTER INLET
PRESSURE TRANSDUCER
(PT1) P/N 68-0017
RELIEF VALVE
P/N 44-0062
TANK GASKET
P/N 041730175
BACKWASH INLET VALVE
(V3) P/N 051-0040
FILTER OUTLET
PRESSURE TRANSDUCER
(PT2) P/N 68-0017
DRAIN MANUAL VALVE
(DV) P/N 045531821
INLET/OUTLET GASKET
P/N 041730119
UPPER DISTRIBUTOR
P/N 28-0029
LOWER DISTRIBUTOR
P/N 28-0022
CHECK VALVE
P/N 045-0051
SYSTEM DRAIN VALVE
(V4) P/N 051-0039
SIGHT GLASS
P/N 041750101
SERVICE OUTLET VALVE
(V2) P/N 051-0042
BUTTERFLY VALVE
(BV) P/N 42-0060

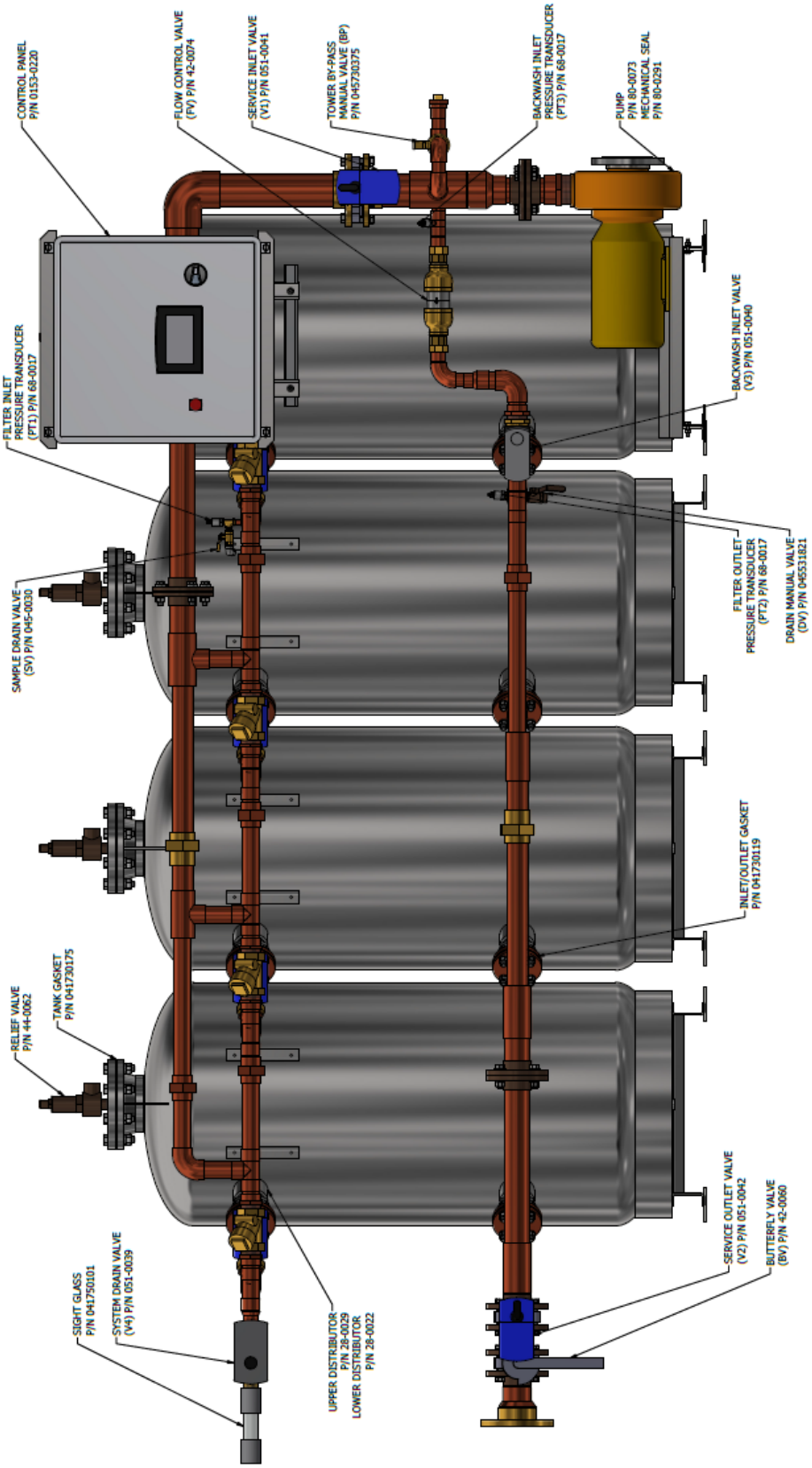

TANK 1 DRAIN VALVE
(V5) P/N 051-0038
TANK 2 DRAIN VALVE
(V6) P/N 051-0038
MODEL
FLOW CONTROL
TOWER BY-PASS
MANUAL VALVE
230CLPHB
42-0074
045730375
230CLPQ
42-0073
-

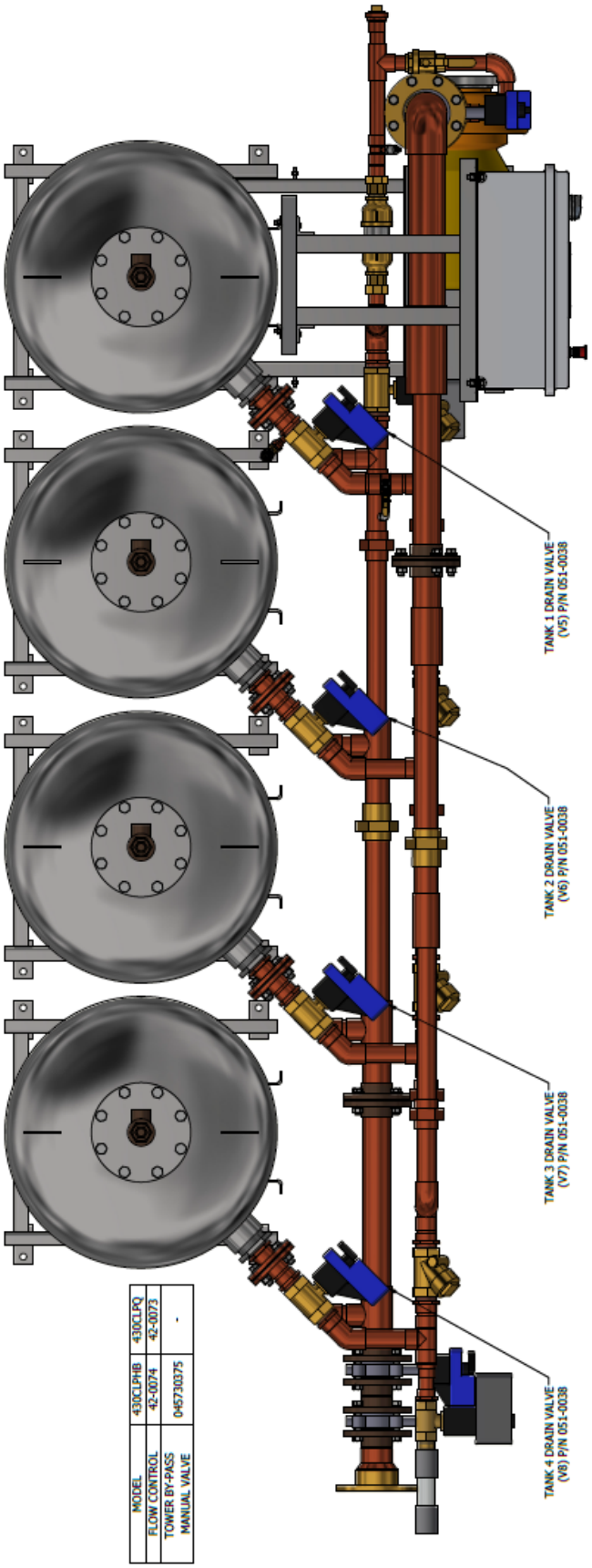
Three Tank


CONTROL PANEL
P/N 0153-0220
FLOW CONTROL VALVE
(FV) P/N 42-0074
SERVICE INLET VALVE
(V1) P/N 051-0041
BACKWASH INLET
PRESSURE TRANSDUCER
(PT3) P/N 68-0017
TOWER BY-PASS
MANUAL VALVE (BP)
P/N 045730375
PUMP
P/N 80-0072
MECHANICAL SEAL
P/N 80-0291
BACKWASH INLET VALVE
(V3) P/N 051-0040
SAMPLE MANUAL VALVE
(SV) P/N 045-0030
FILTER INLET
PRESSURE TRANSDUCER
(PT1) P/N 68-0017
FILTER OUTLET
PRESSURE TRANSDUCER
(PT2) P/N 68-0017
DRAIN MANUAL VALVE
(DV) P/N 045531821
RELIEF VALVE
P/N 44-0062
TANK GASKET
P/N 041730175
UPPER DISTRIBUTOR
P/N 28-0029
LOWER DISTRIBUTOR
P/N 28-0022
CHECK VALVE
P/N 045-0051
SYSTEM DRAIN VALVE
(V4) P/N 051-0039
SIGHT GLASS
P/N 041750101
INLET/OUTLET GASKET
P/N 041730119
SERVICE OUTLET VALVE
(V2) P/N 051-0042
BUTTERFLY VALVE
(BV) P/N 42-0060


TANK 1 DRAIN VALVE
(V5) P/N 051-0038
TANK 2 DRAIN VALVE
(V6) P/N 051-0038
TANK 3 DRAIN VALVE
(V7) P/N 051-0038
MODEL
330CLPHB
330CLPQ
FLOW CONTROL
42-0074
42-0073
TOWER BY-PASS MANUAL VALVE
045730375
-

Four Tank

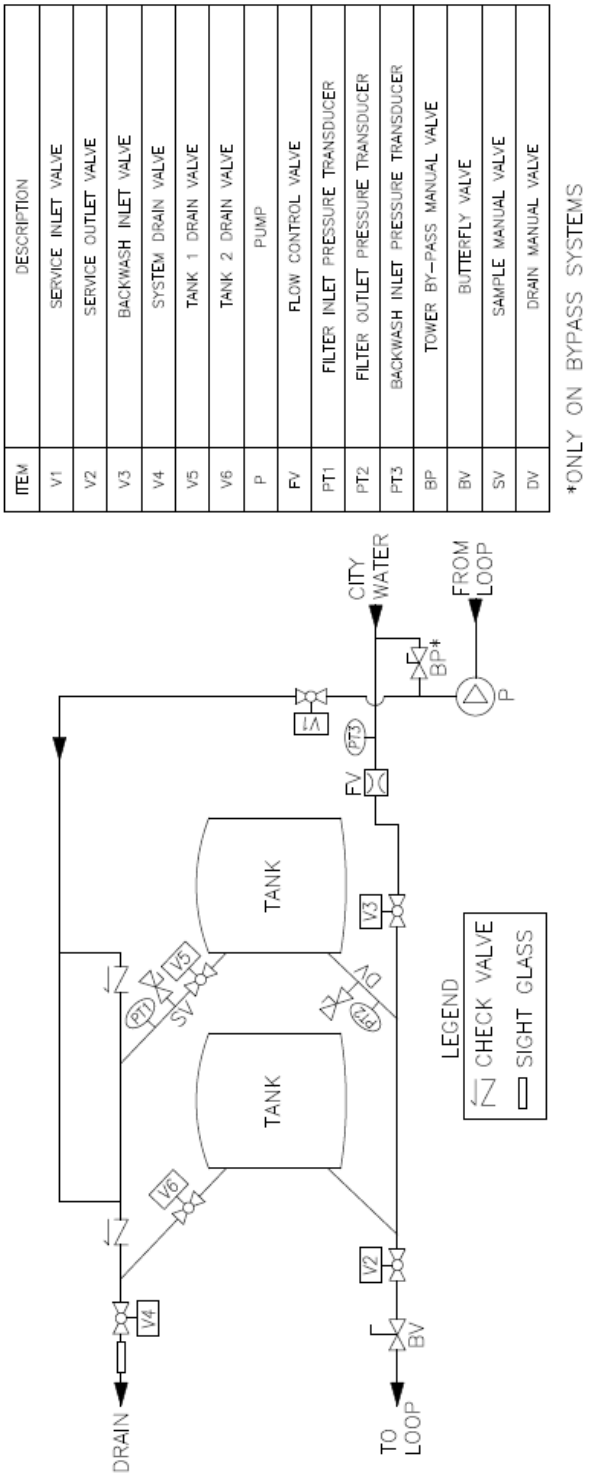

CONTROL PANEL P/N 0153-0220
FLOW CONTROL VALVE (FV) P/N 42-0074
SERVICE INLET VALVE (V1) P/N 051-0041
TOWER BY-PASS MANUAL VALVE (BP) P/N 045730375
BACKWASH INLET PRESSURE TRANSDUCER (PT3) P/N 68-0017
PUMP P/N 80-0073 MECHANICAL SEAL P/N 80-0291
FILTER INLET PRESSURE TRANSDUCER (PT1) P/N 68-0017
BACKWASH INLET VALVE (V3) P/N 051-0040
SAMPLE DRAIN VALVE (SV) P/N 045-0030
FILTER OUTLET PRESSURE TRANSDUCER (PT2) P/N 68-0017
DRAIN MANUAL VALVE (DV) P/N 045531821
INLET/OUTLET GASKET P/N 041730119
RELIEF VALVE P/N 44-0062
TANK GASKET P/N 041730175
SERVICE OUTLET VALVE (V2) P/N 051-0042
BUTTERFLY VALVE (BV) P/N 42-0060
SIGHT GLASS P/N 041750101
SYSTEM DRAIN VALVE (V4) P/N 051-0039
UPPER DISTRIBUTOR P/N 28-0029
LOWER DISTRIBUTOR P/N 28-0022


TANK 1 DRAIN VALVE
(V5) P/N 051-0038
TANK 2 DRAIN VALVE
(V6) P/N 051-0038
TANK 3 DRAIN VALVE
(V7) P/N 051-0038
TANK 4 DRAIN VALVE
(V8) P/N 051-0038
MODEL
430CLPHB
430CLPQ
FLOW CONTROL
42-0074
42-0073
TOWER BY-PASS
MANUAL VALVE
045730375
-

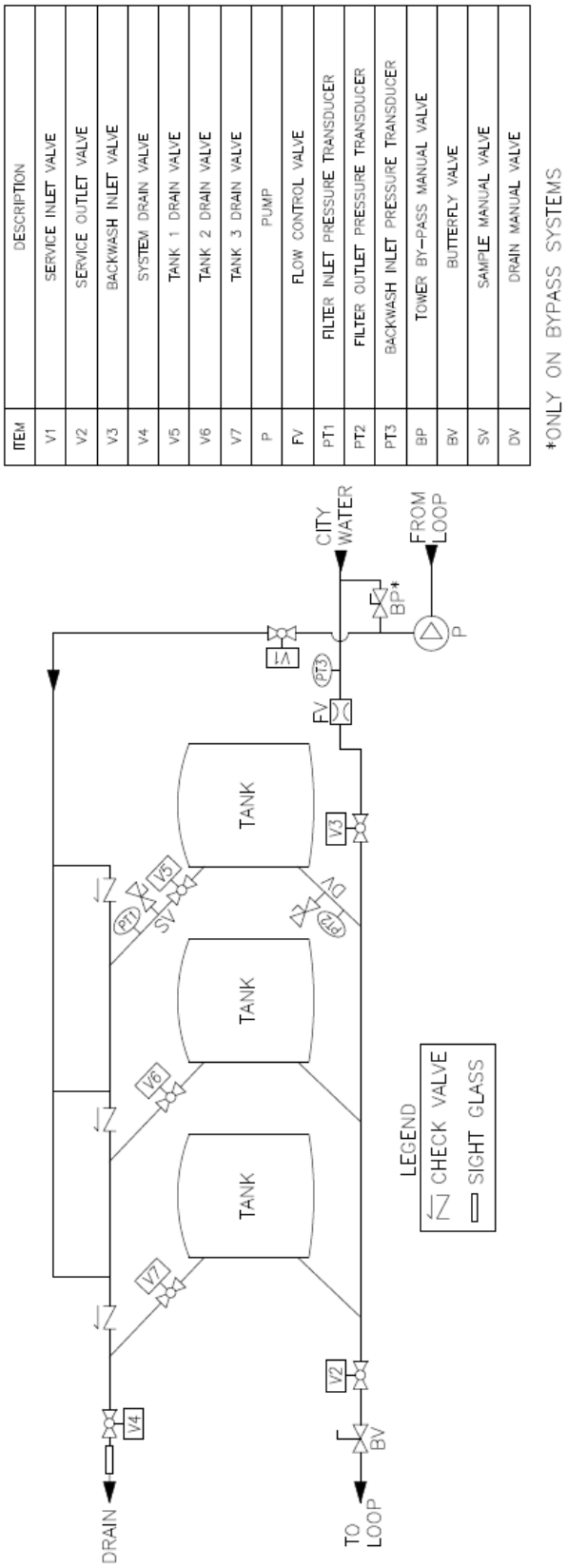
11 DRAWINGS

11.1 Flow Schematics

Two Tank



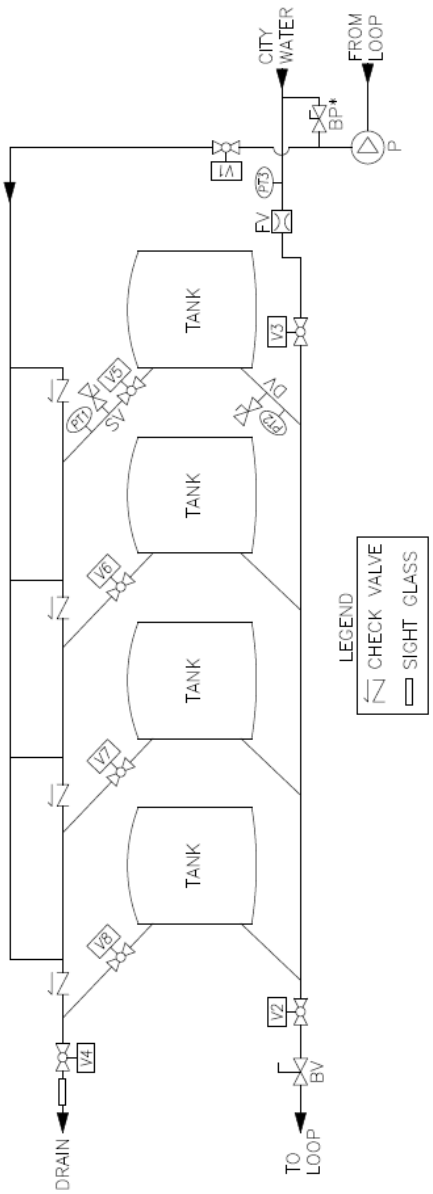
Three Tank


ITEM
DESCRIPTION
V1
SERVICE INLET VALVE
V2
SERVICE OUTLET VALVE
V3
BACKWASH INLET VALVE
V4
SYSTEM DRAIN VALVE
V5
TANK 1 DRAIN VALVE
V6
TANK 2 DRAIN VALVE
V7
TANK 3 DRAIN VALVE
P
PUMP
FV
FLOW CONTROL VALVE
PT1
FILTER INLET PRESSURE TRANSDUCER
PT2
FILTER OUTLET PRESSURE TRANSDUCER
PT3
BACKWASH INLET PRESSURE TRANSDUCER
BP
TOWER BY-PASS MANUAL VALVE
BV
BUTTERFLY VALVE
SV
SAMPLE MANUAL VALVE
DV
DRAIN MANUAL VALVE
*ONLY ON BYPASS SYSTEMS
CITY WATER
FROM LOOP
BP*
P
V1
PT3
FV
TANK
V3
PT1
V5
SV
PT2
DV
V6
V7
V2
V4
BV
DRAIN
TO LOOP
LEGEND
CHECK VALVE
SIGHT GLASS

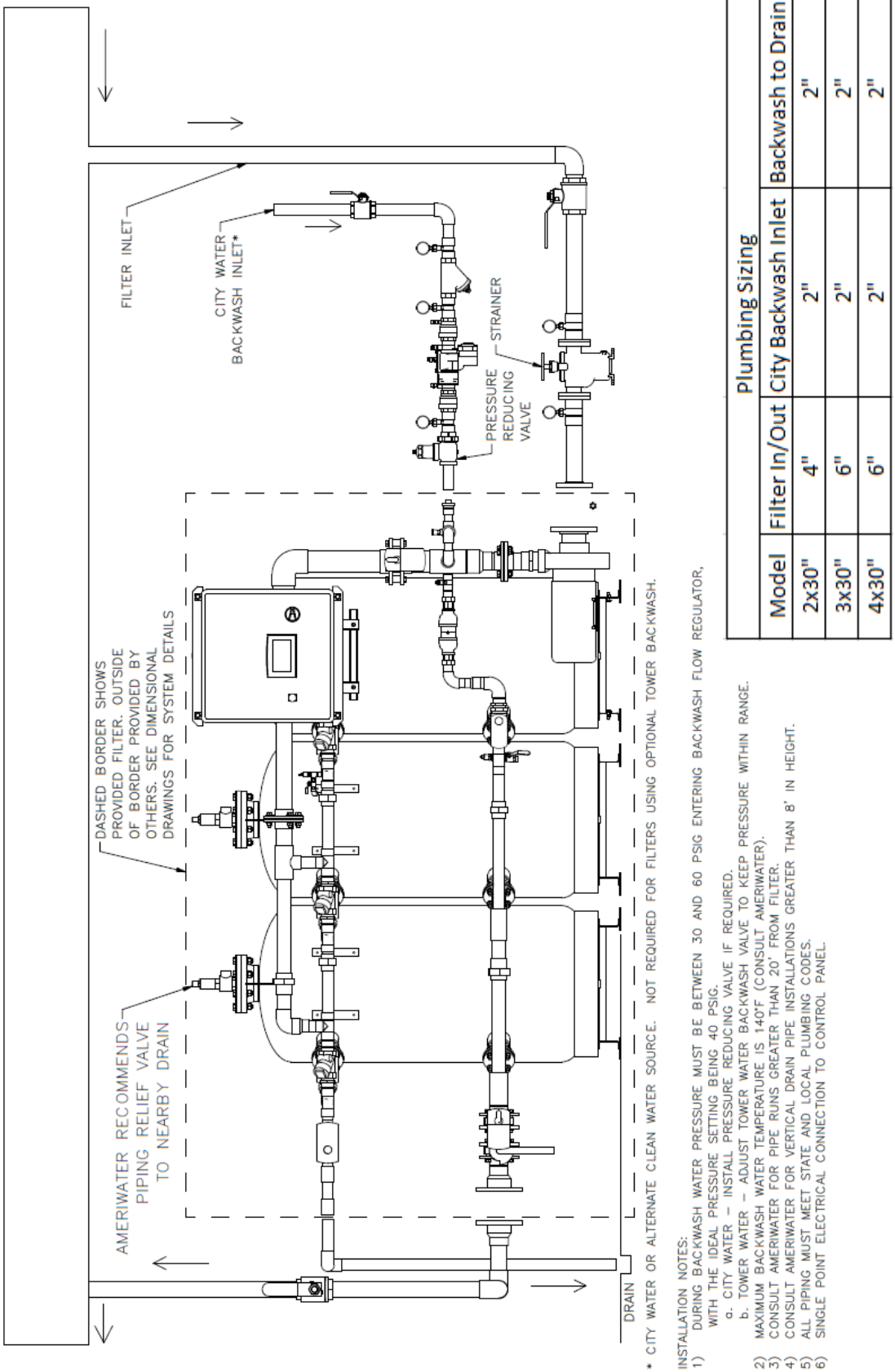
Four Tank

ITEM	DESCRIPTION
V1	SERVICE INLET VALVE
V2	SERVICE OUTLET VALVE
V3	BACKWASH INLET VALVE
V4	SYSTEM DRAIN VALVE
V5	TANK 1 DRAIN VALVE
V6	TANK 2 DRAIN VALVE
V7	TANK 3 DRAIN VALVE
V8	TANK 4 DRAIN VALVE
P	PUMP
FV	FLOW CONTROL VALVE
PT1	FILTER INLET PRESSURE TRANSDUCER
PT2	FILTER OUTLET PRESSURE TRANSDUCER
PT3	BACKWASH INLET PRESSURE TRANSDUCER
BP	TOWER BY-PASS MANUAL VALVE
BV	BUTTERFLY VALVE
SV	SAMPLE MANUAL VALVE
DV	DRAIN MANUAL VALVE

*ONLY ON BYPASS SYSTEMS

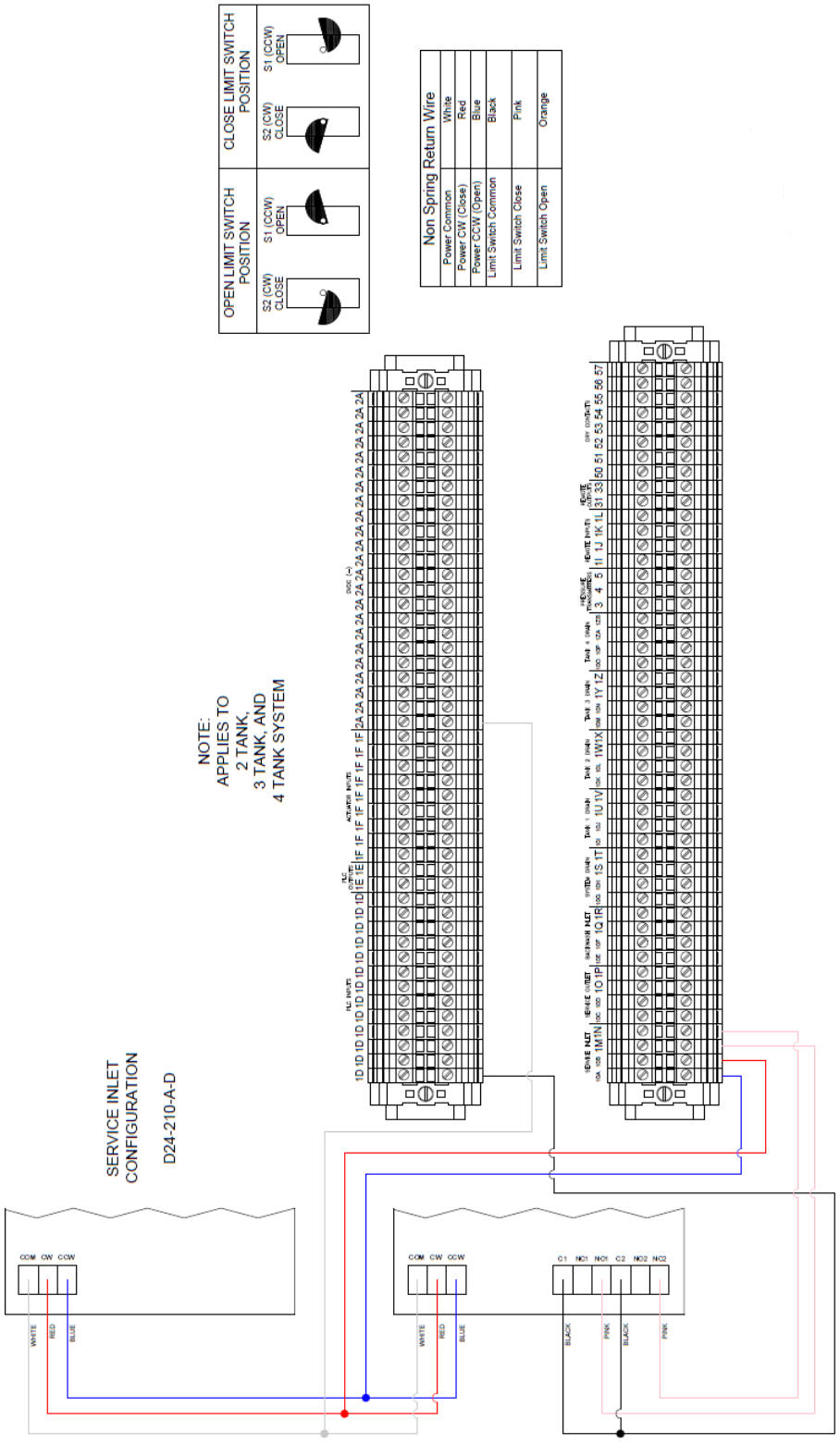


11.2 Installation



Plumbing Sizing			
Model	Filter In/Out	City Backwash Inlet	Backwash to Drain
2x30"	4"	2"	2"
3x30"	6"	2"	2"
4x30"	6"	2"	2"

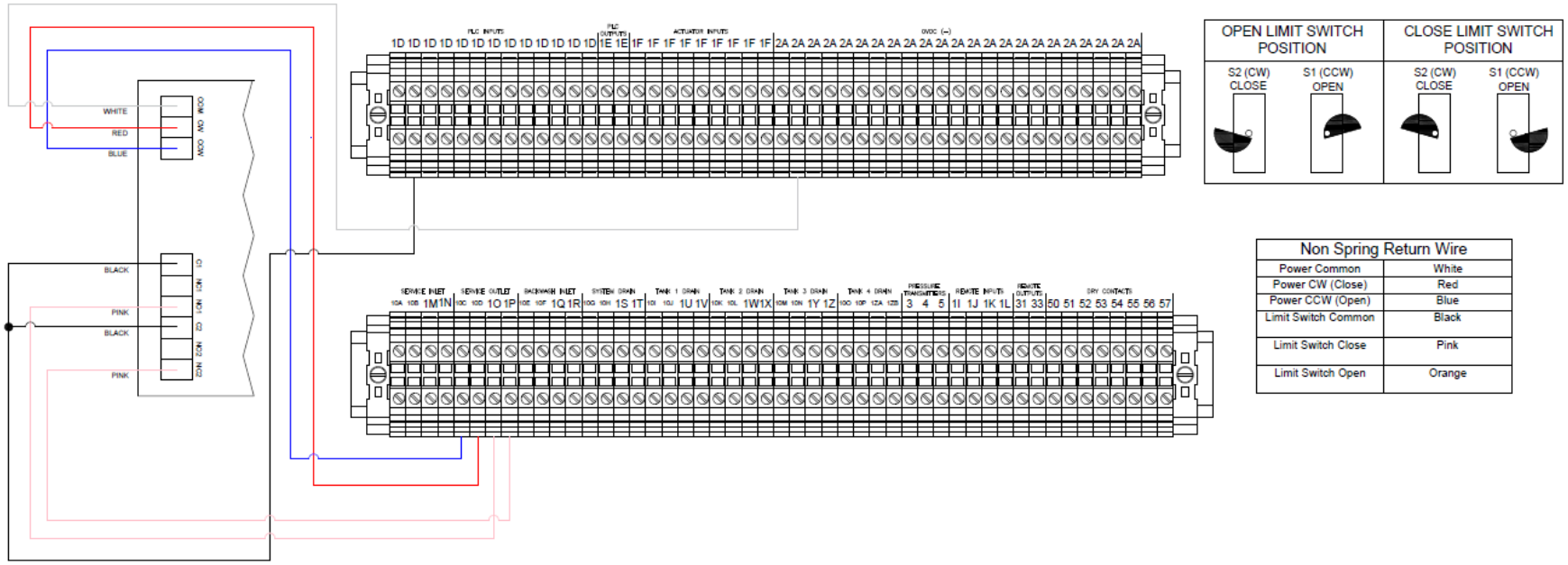
11.3 Wiring of Components



SERVICE OUTLET
CONFIGURATION

D24-210-A

NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM

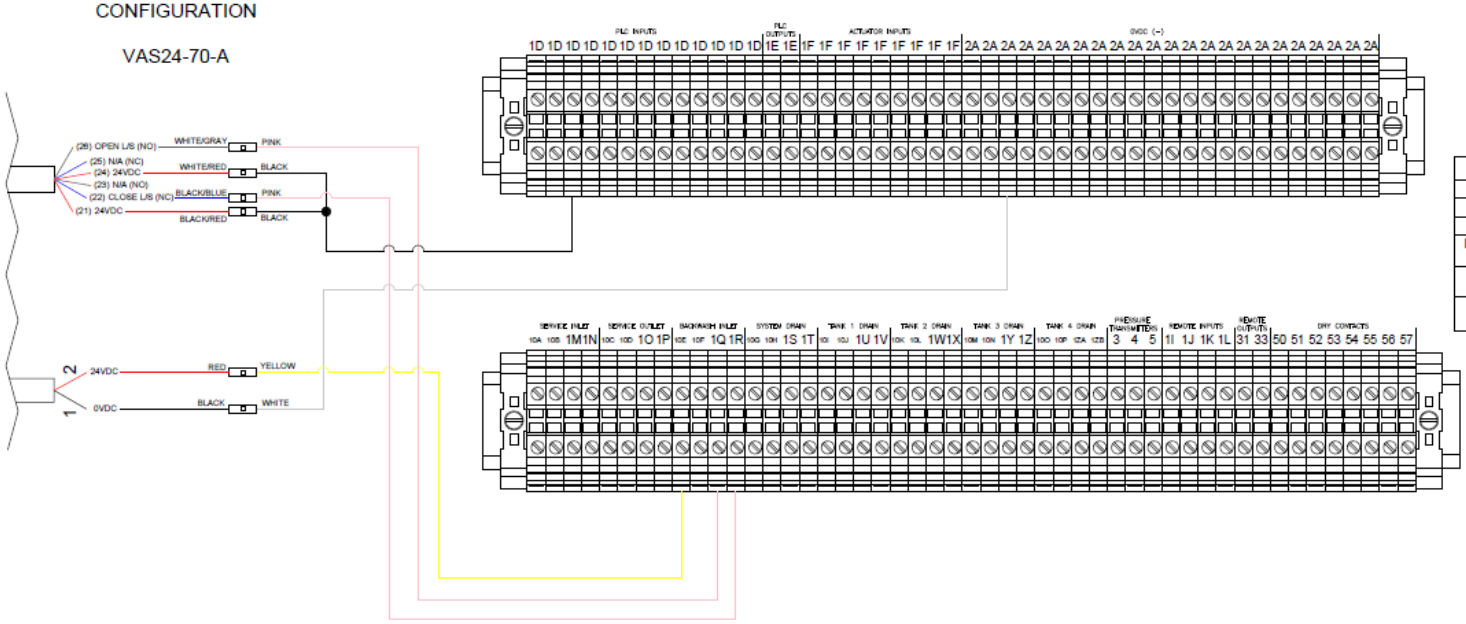


Non Spring Return Wire	
Power Common	White
Power CW (Close)	Red
Power CCW (Open)	Blue
Limit Switch Common	Black
Limit Switch Close	Pink
Limit Switch Open	Orange

NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM

BACKWASH INLET
CONFIGURATION

VAS24-70-A

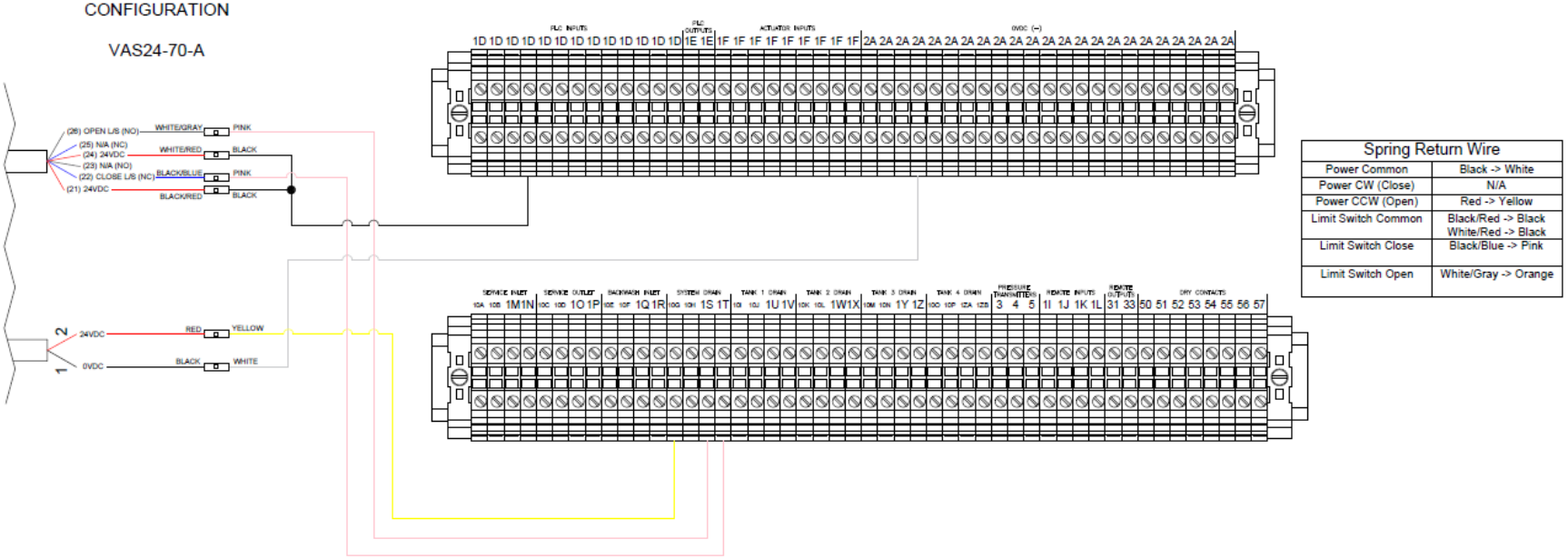


Spring Return Wire	
Power Common	Black -> White
Power CW (Close)	N/A
Power CCW (Open)	Red -> Yellow
Limit Switch Common	Black/Red -> Black White/Red -> Black
Limit Switch Close	Black/Blue -> Pink
Limit Switch Open	White/Gray -> Orange

NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM

SYSTEM DRAIN
CONFIGURATION

VAS24-70-A

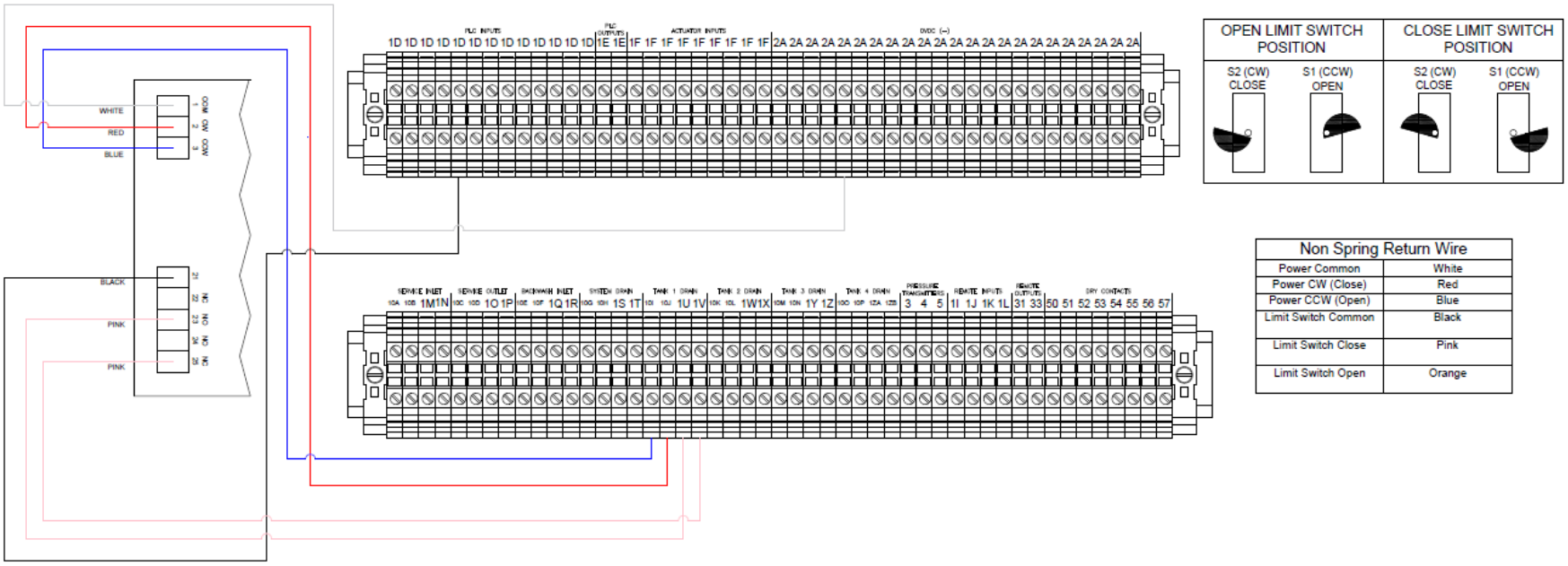


Spring Return Wire	
Power Common	Black -> White
Power CW (Close)	N/A
Power CCW (Open)	Red -> Yellow
Limit Switch Common	Black/Red -> Black White/Red -> Black
Limit Switch Close	Black/Blue -> Pink
Limit Switch Open	White/Gray -> Orange

TANK 1 DRAIN
CONFIGURATION

D24-70-A

NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM



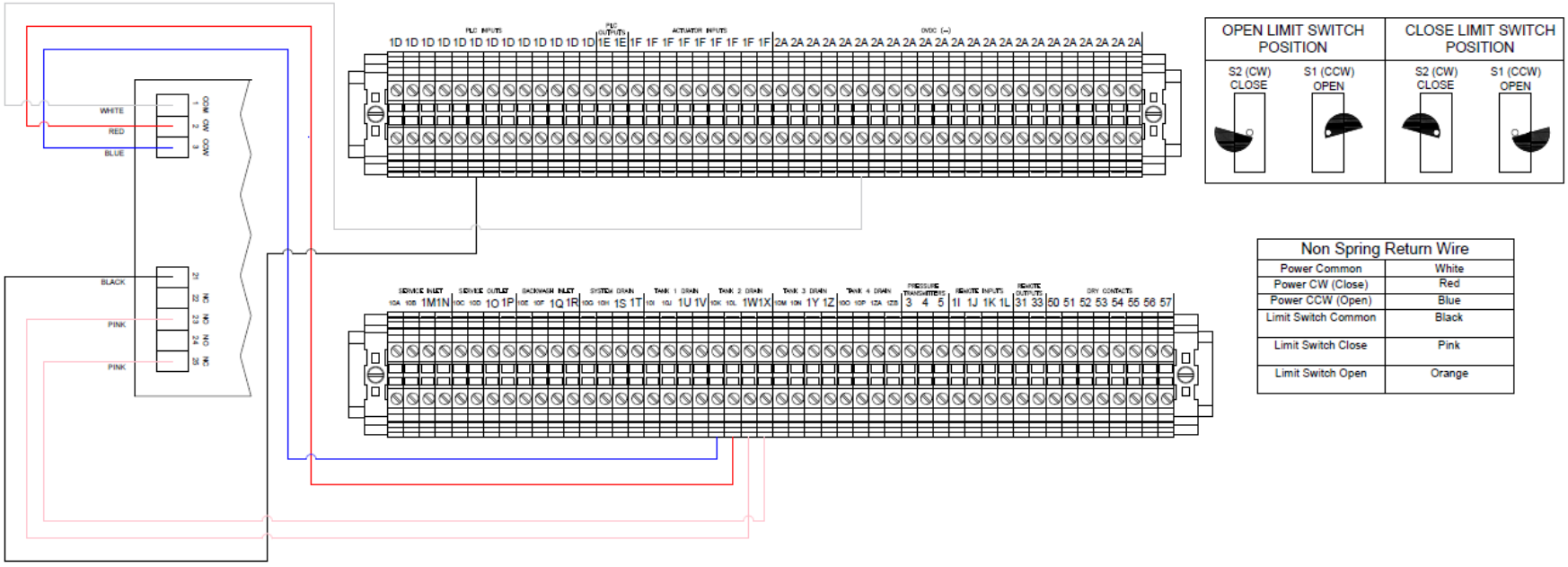
OPEN LIMIT SWITCH POSITION		CLOSE LIMIT SWITCH POSITION	
S2 (CW) CLOSE	S1 (CCW) OPEN	S2 (CW) CLOSE	S1 (CCW) OPEN

Non Spring Return Wire	
Power Common	White
Power CW (Close)	Red
Power CCW (Open)	Blue
Limit Switch Common	Black
Limit Switch Close	Pink
Limit Switch Open	Orange

TANK 2 DRAIN
CONFIGURATION

D24-70-A

NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM



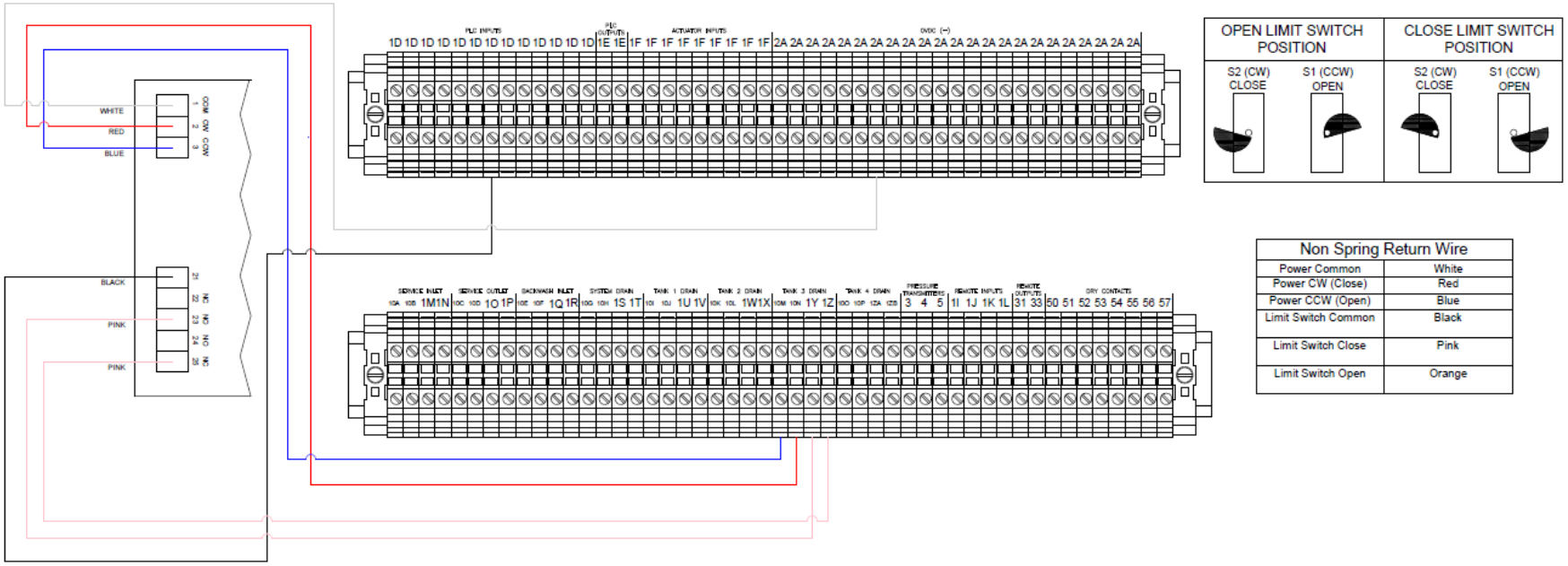
OPEN LIMIT SWITCH POSITION		CLOSE LIMIT SWITCH POSITION	
S2 (CW) CLOSE	S1 (CCW) OPEN	S2 (CW) CLOSE	S1 (CCW) OPEN

Non Spring Return Wire	
Power Common	White
Power CW (Close)	Red
Power CCW (Open)	Blue
Limit Switch Common	Black
Limit Switch Close	Pink
Limit Switch Open	Orange

TANK 3 DRAIN
CONFIGURATION

D24-70-A

NOTE:
APPLIES TO
3 TANK AND
4 TANK SYSTEM

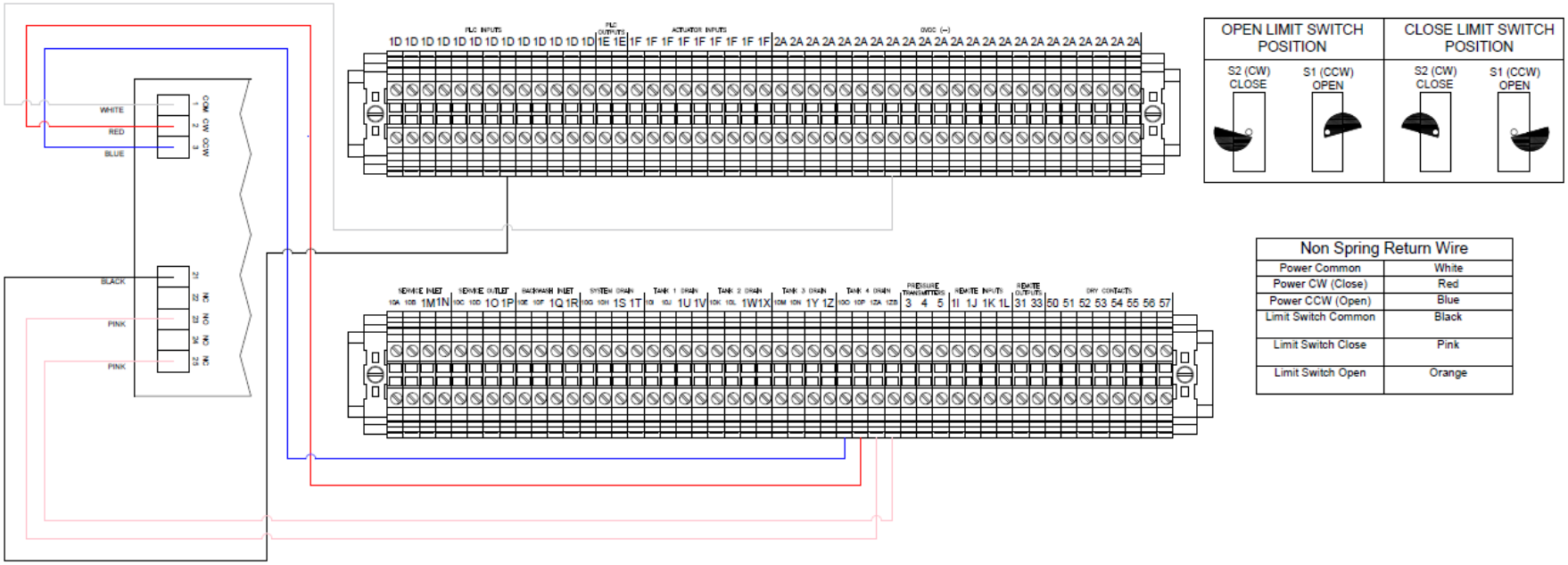


Non Spring Return Wire	
Power Common	White
Power CW (Close)	Red
Power CCW (Open)	Blue
Limit Switch Common	Black
Limit Switch Close	Pink
Limit Switch Open	Orange

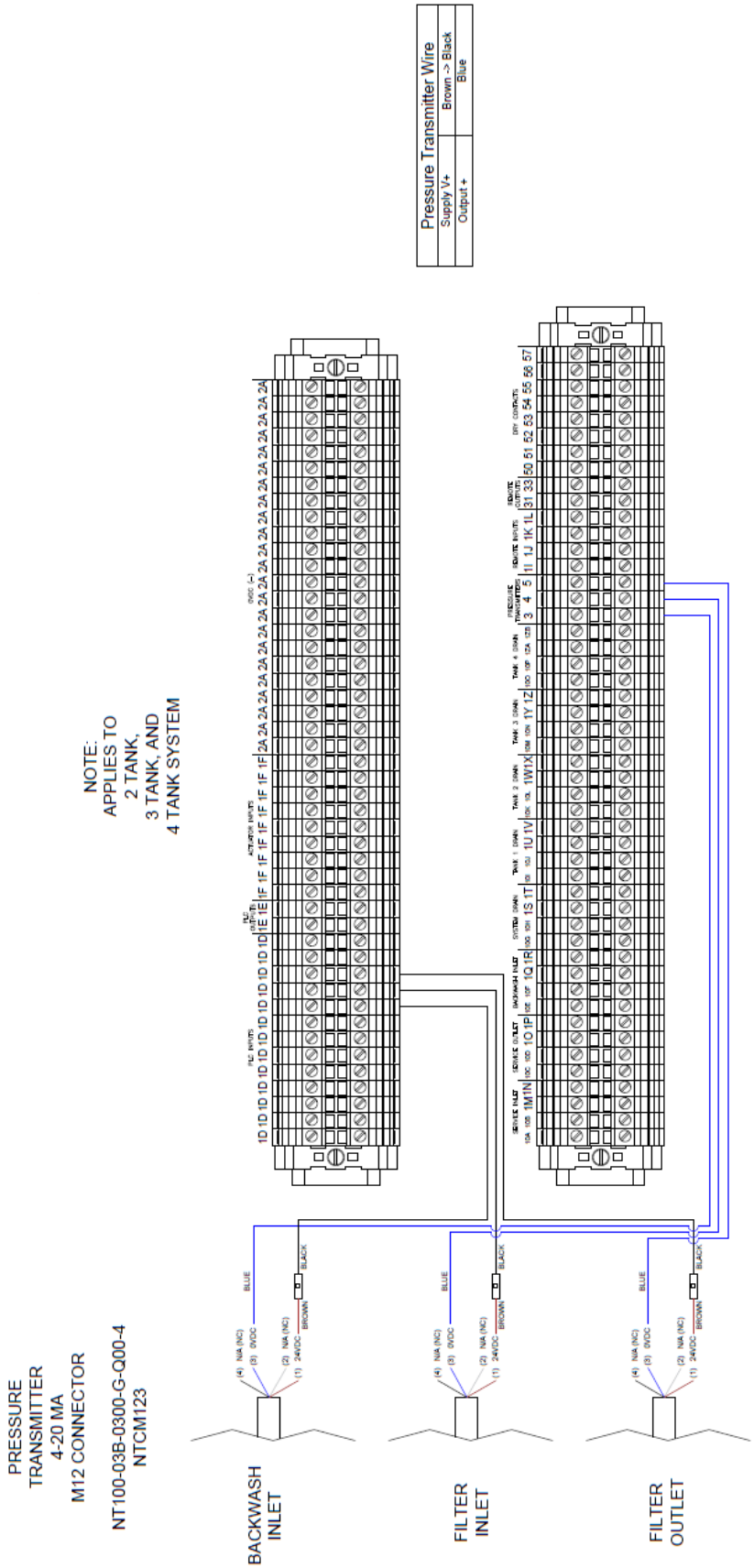
TANK 4 DRAIN
CONFIGURATION

D24-70-A

NOTE:
APPLIES TO
4 TANK SYSTEM



Non Spring Return Wire	
Power Common	White
Power CW (Close)	Red
Power CCW (Open)	Blue
Limit Switch Common	Black
Limit Switch Close	Pink
Limit Switch Open	Orange


Pressure Transmitter Wire
Supply V+
Brown -> Black
Output +
Blue
NOTE:
APPLIES TO
2 TANK,
3 TANK, AND
4 TANK SYSTEM
PRESSURE
TRANSMITTER
4-20 MA
M12 CONNECTOR
NT100-03B-03000-G-Q00-4
NTCM123
BACKWASH
INLET
FILTER
INLET
FILTER
OUTLET

11.4 Electrical Schematic

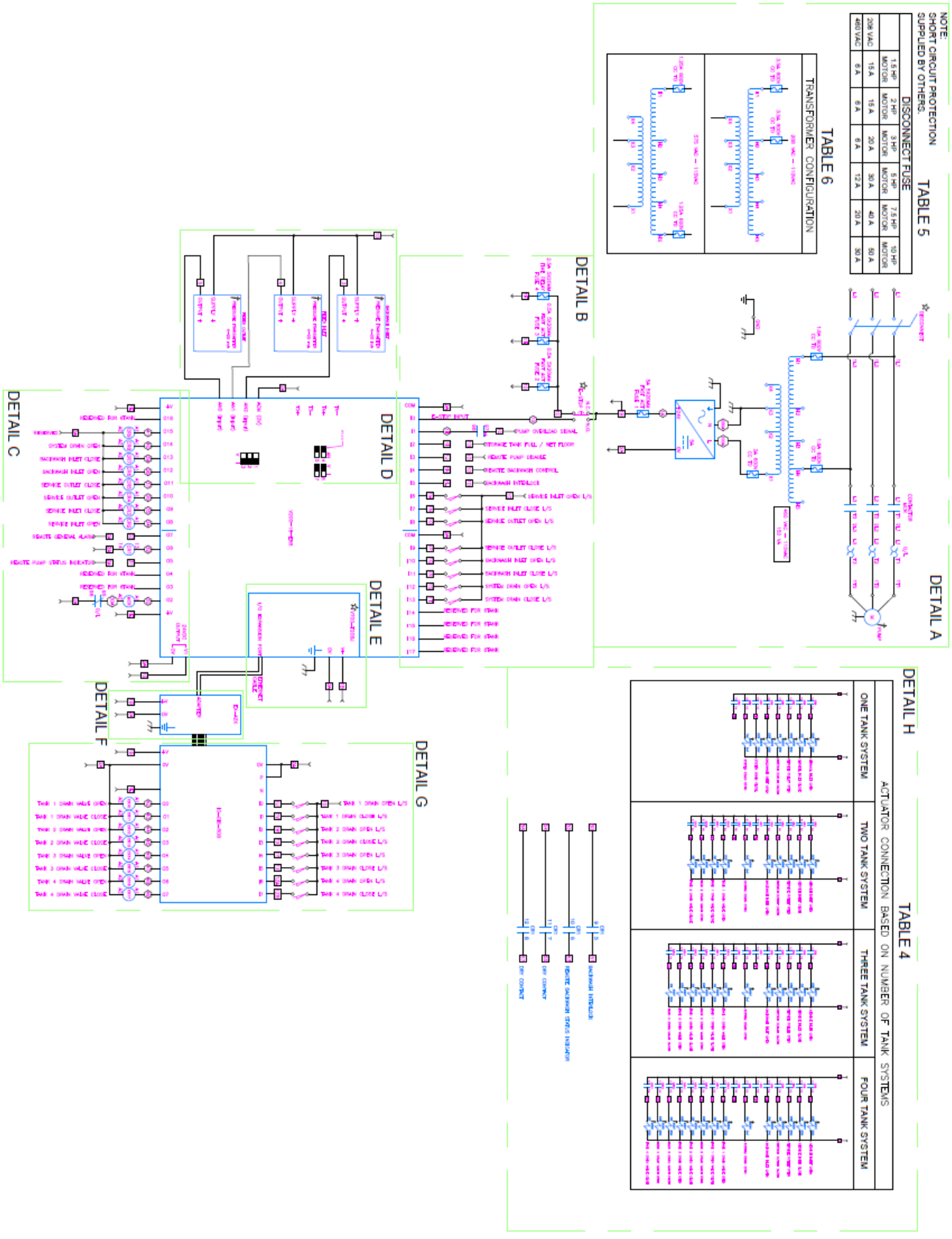


TABLE 1

ELECTRICAL LEGEND	
100A – DENOTES WIRE NUMBER	TC – WIRING NUMBER ON TERM. BLOCK
– WIRE CONNECTION	– FUSE
– PANEL GROUND	– EARTH GROUND
– FIELD REMOTE ITEM	– ITEM MOUNTED ON DOOR
MCR – MOTOR CONTROL RELAY/STARTER	CR1 – CONTROL RELAY
– DIP SWITCH	– MOTOR OPERATED VALVE
O/L – NORMALLY CLOSED PUMP MOTOR OVERLOAD	O/L – NORMALLY OPEN PUMP MOTOR OVERLOAD
CR1 – NORMALLY OPEN RELAY	– NORMALLY OPEN ACTUATOR LIMIT SWITCH
– SINGLE–PHASE THERMAL TRIP	– 3 PHASE MOTOR
– EMERGENCY STOP BUTTON	– TRANSFORMER

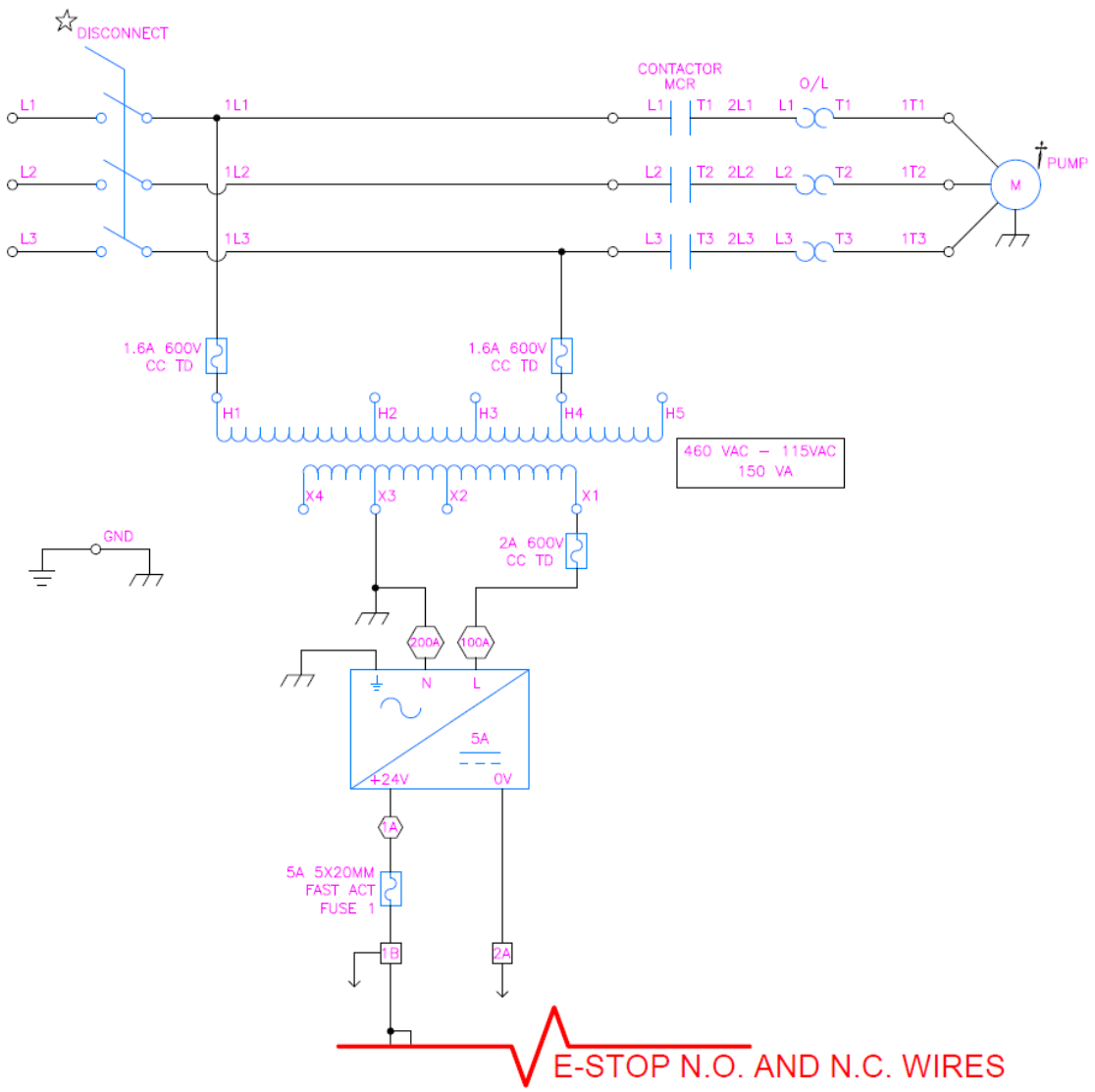
TABLE 2

WIRE SIZE AND COLOR (AT A MINIMUM)		
WIRE TYPE	SIZE	COLOR
POWER	8 AWG	BLACK
VAC CONTROL	18 AWG	RED
VAC NEUTRAL	18 AWG	WHITE
VDC CONTROL	18 AWG	BLUE
VDC NEUTRAL	18 AWG	WHITE/BLUE STRIPE
REMOTE	18 AWG	ORANGE
SHIELDED 2 or 3 COND	18 AWG	BLACK – RED + BLUE WIPER
MTR/DRV GND	8 AWG	GREEN/YELLOW STRIPE
OTHER GND	16 AWG	GREEN/YELLOW STRIPE

TABLE 3

NOTE:
OVERLOAD RELAY PART NUMBER BASED ON VOLTAGE AND HORSE POWER.

PANEL CURRENT RATING & MOTOR FULL LOAD AMPS							
	PANEL WITHOUT PUMP	1.5 HP MOTOR	2 HP MOTOR	3 HP MOTOR	5 HP MOTOR	7.5 HP MOTOR	10 HP MOTOR
208 VAC	0.72 A	6.9 A OVERLOAD RELAY 4-20A: XTOE020CCS	7.8 A OVERLOAD RELAY 4-20A: XTOE020CCS	11.0 A OVERLOAD RELAY 4-20A: XTOE020CCS	17.5 A OVERLOAD RELAY 4-20A: XTOE020CCS	25.3 A OVERLOAD RELAY 9-45A: XTOE045CCS	32.2 A OVERLOAD RELAY 9-45A: XTOE045CCS
460 VAC	0.33 A	3.0 A OVERLOAD RELAY 1-5A: XTOE005CCS	3.4 A OVERLOAD RELAY 1-5A: XTOE005CCS	4.8 A OVERLOAD RELAY 1-5A: XTOE005CCS	7.6 A OVERLOAD RELAY 4-20A: XTOE020CCS	11.0 A OVERLOAD RELAY 9-45A: XTOE045CCS	14.0 A OVERLOAD RELAY 9-45A: XTOE045CCS

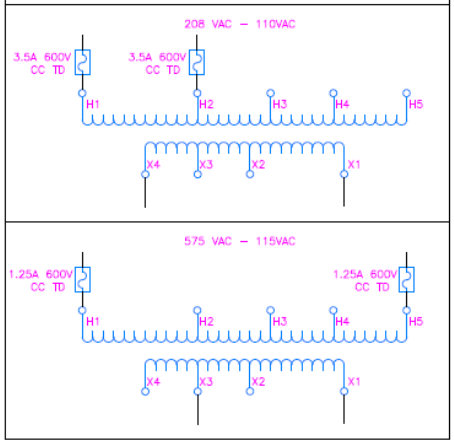


NOTE:
SHORT CIRCUIT PROTECTION
SUPPLIED BY OTHERS.

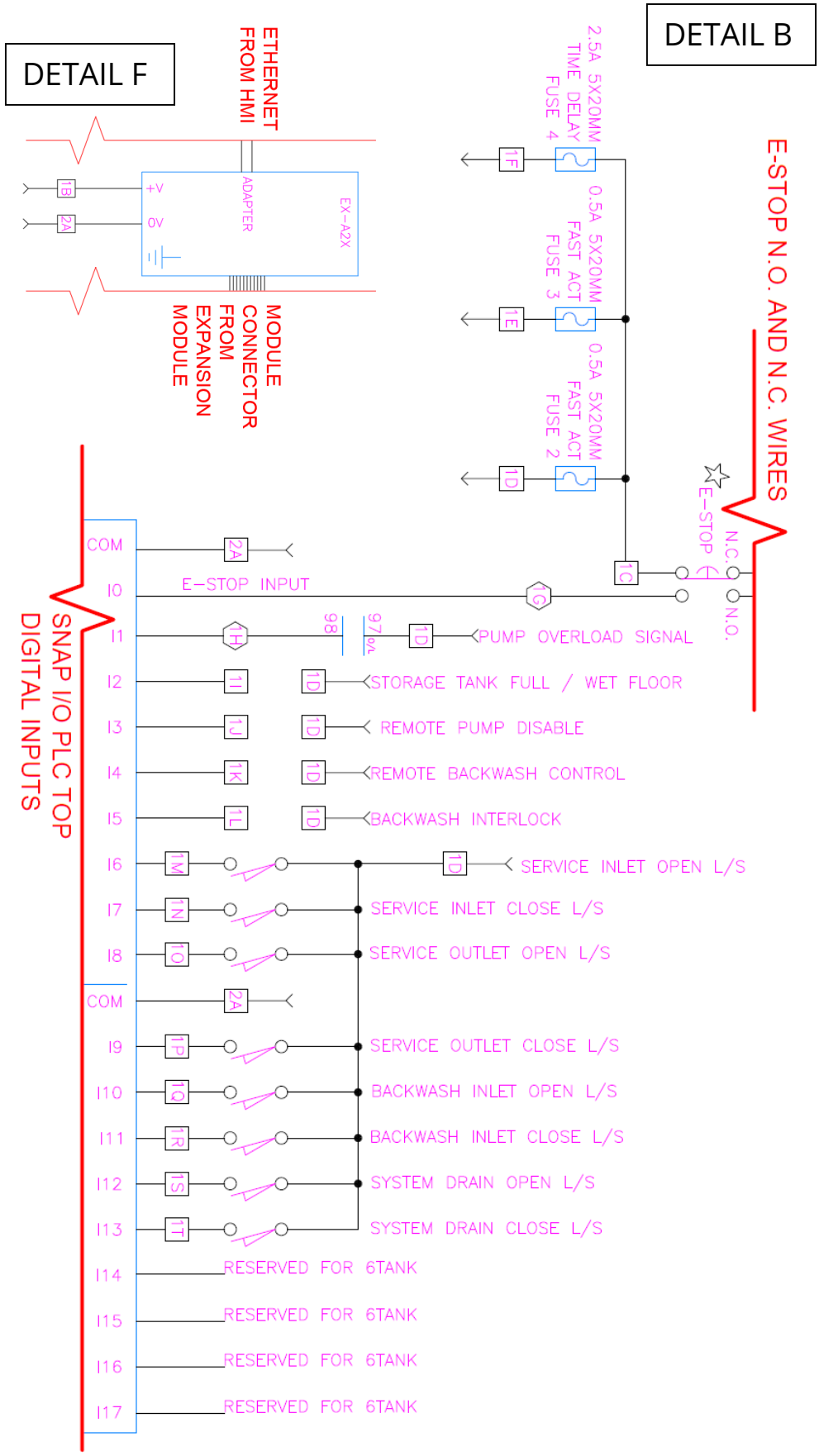
TABLE 5

DISCONNECT FUSE						
	1.5 HP MOTOR	2 HP MOTOR	3 HP MOTOR	5 HP MOTOR	7.5 HP MOTOR	10 HP MOTOR
208 VAC	15 A	15 A	20 A	30 A	40 A	50 A
460 VAC	6 A	6 A	6 A	12 A	20 A	30 A

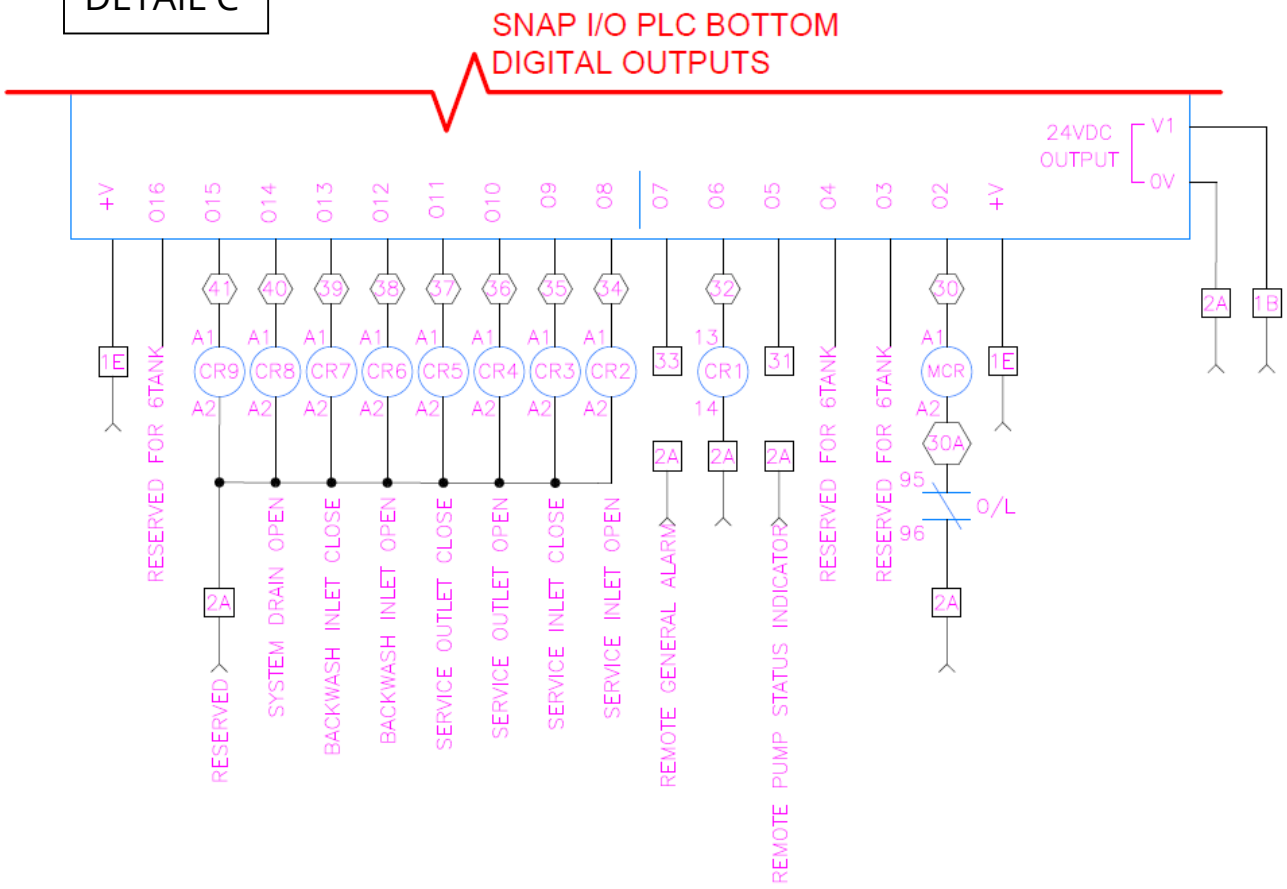
TABLE 6

TRANSFORMER CONFIGURATION


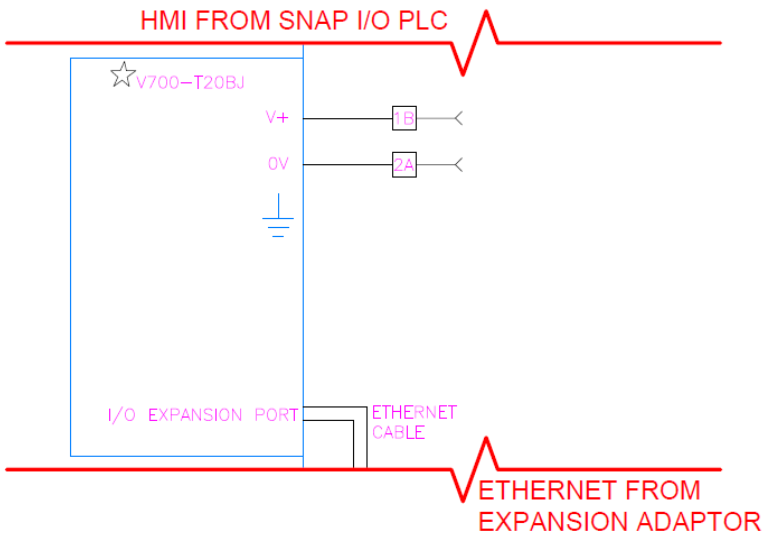
DETAIL A


DETAIL F
ETHERNET FROM HMI
1B
2A
+V
0V
ADAPTER
EX-A2X
MODULE CONNECTOR FROM EXPANSION MODULE
DETAIL B
2.5A 5X20MM TIME DELAY FUSE 4
0.5A 5X20MM FAST ACT FUSE 3
0.5A 5X20MM FAST ACT FUSE 2
1F
1E
1D
E-STOP N.O. AND N.C. WIRES
E-STOP
N.C.
N.O.
1C
SNAP I/O PLC TOP DIGITAL INPUTS
COM
2A
I0
E-STOP INPUT
1G
I1
1H
98
97
1D
PUMP OVERLOAD SIGNAL
I2
1I
STORAGE TANK FULL / WET FLOOR
I3
1J
REMOTE PUMP DISABLE
I4
1K
REMOTE BACKWASH CONTROL
I5
1L
BACKWASH INTERLOCK
I6
1M
SERVICE INLET OPEN L/S
I7
1N
SERVICE INLET CLOSE L/S
I8
1O
SERVICE OUTLET OPEN L/S
COM
2A
I9
1P
SERVICE OUTLET CLOSE L/S
I10
1Q
BACKWASH INLET OPEN L/S
I11
1R
BACKWASH INLET CLOSE L/S
I12
1S
SYSTEM DRAIN OPEN L/S
I13
1T
SYSTEM DRAIN CLOSE L/S
I14
RESERVED FOR 6TANK
I15
RESERVED FOR 6TANK
I16
RESERVED FOR 6TANK
I17
RESERVED FOR 6TANK

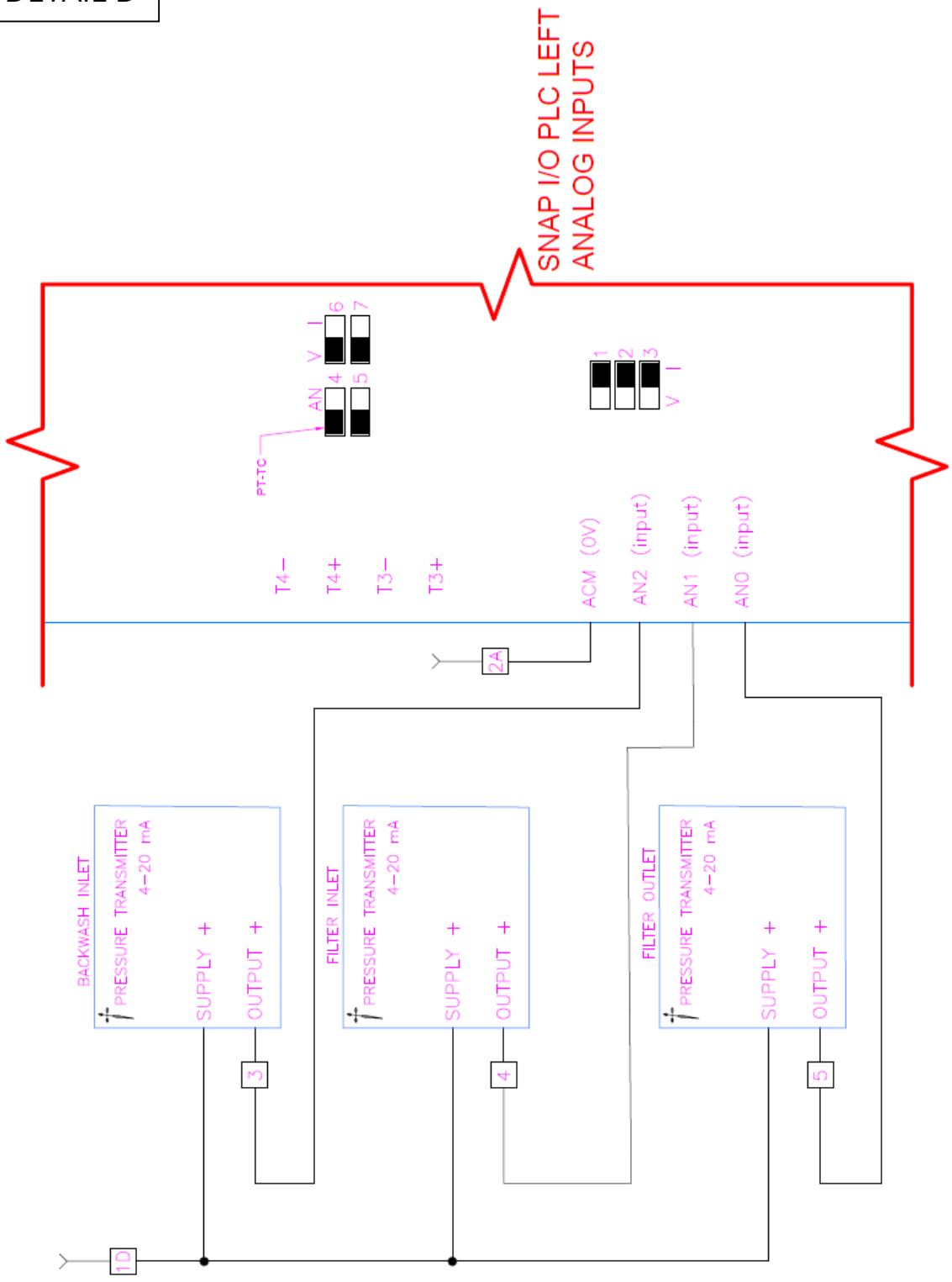
DETAIL C



DETAIL E



DETAIL D


SNAP I/O PLC LEFT
ANALOG INPUTS
PT-TC
AN V I 4 5 6 7
V I 1 2 3
T4−
T4+
T3−
T3+
ACM (0V)
AN2 (input)
AN1 (input)
AN0 (input)
2A
BACKWASH INLET
PRESSURE TRANSMITTER
4−20 mA
SUPPLY +
OUTPUT +
3
FILTER INLET
PRESSURE TRANSMITTER
4−20 mA
SUPPLY +
OUTPUT +
4
FILTER OUTLET
PRESSURE TRANSMITTER
4−20 mA
SUPPLY +
OUTPUT +
5
1D

MODULE CONNECTOR
FROM EXPANSION ADAPTOR

DETAIL G

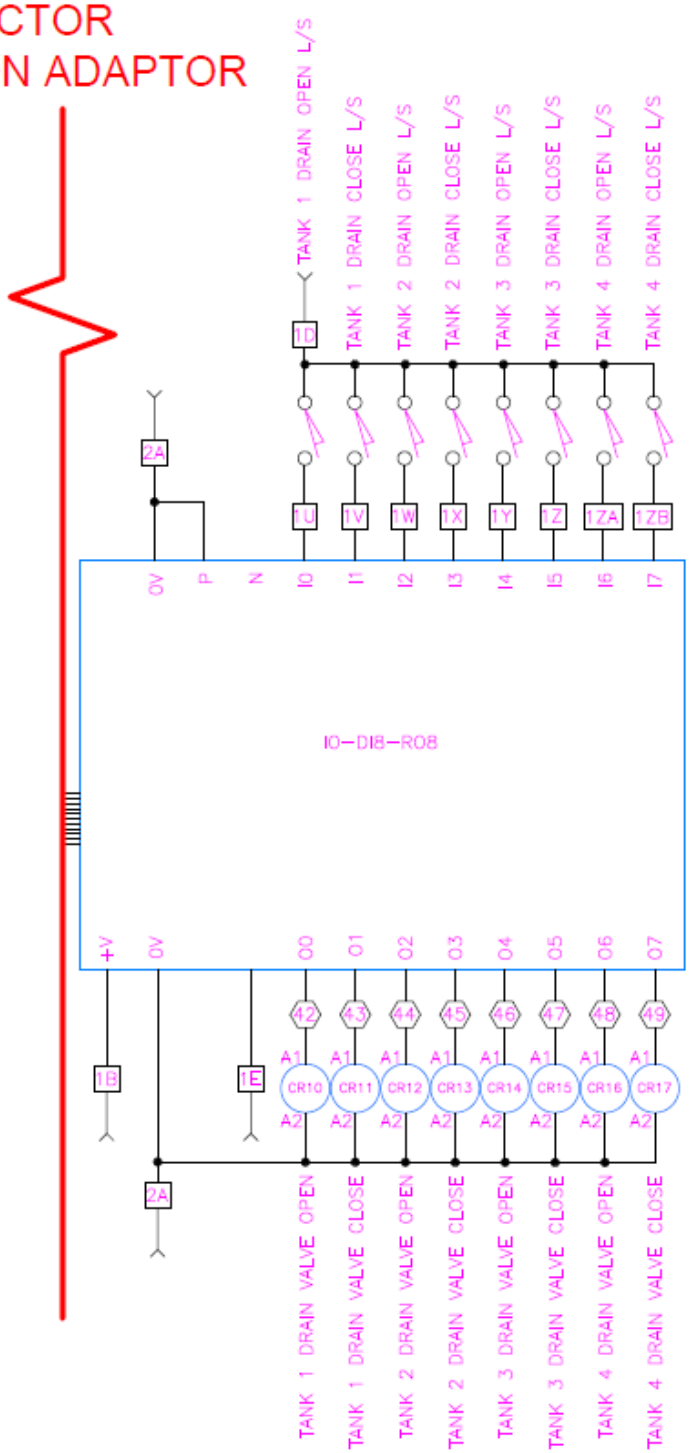
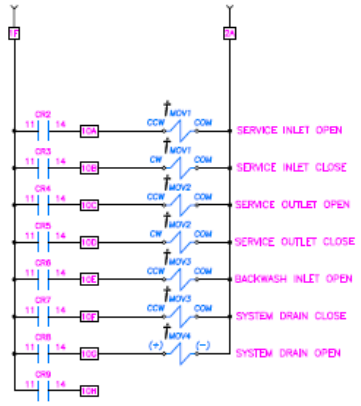


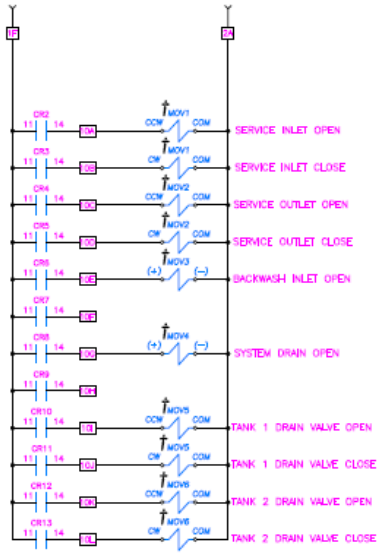
TABLE 4

ACTUATOR CONNECTION BASED ON NUMBER OF TANK SYSTEMS

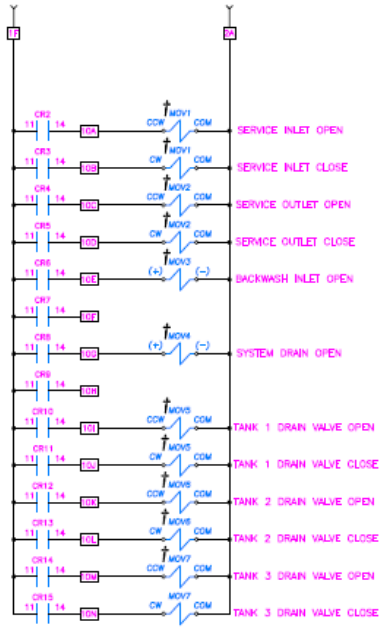
ONE TANK SYSTEM



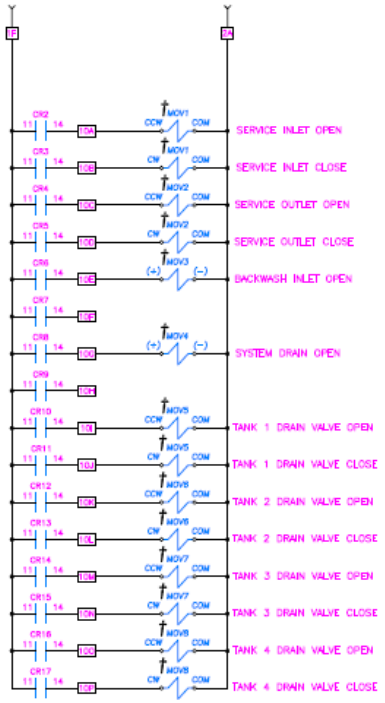
TWO TANK SYSTEM

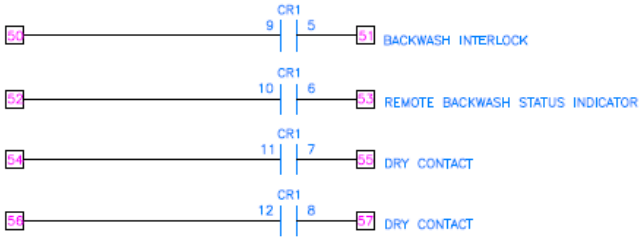


THREE TANK SYSTEM

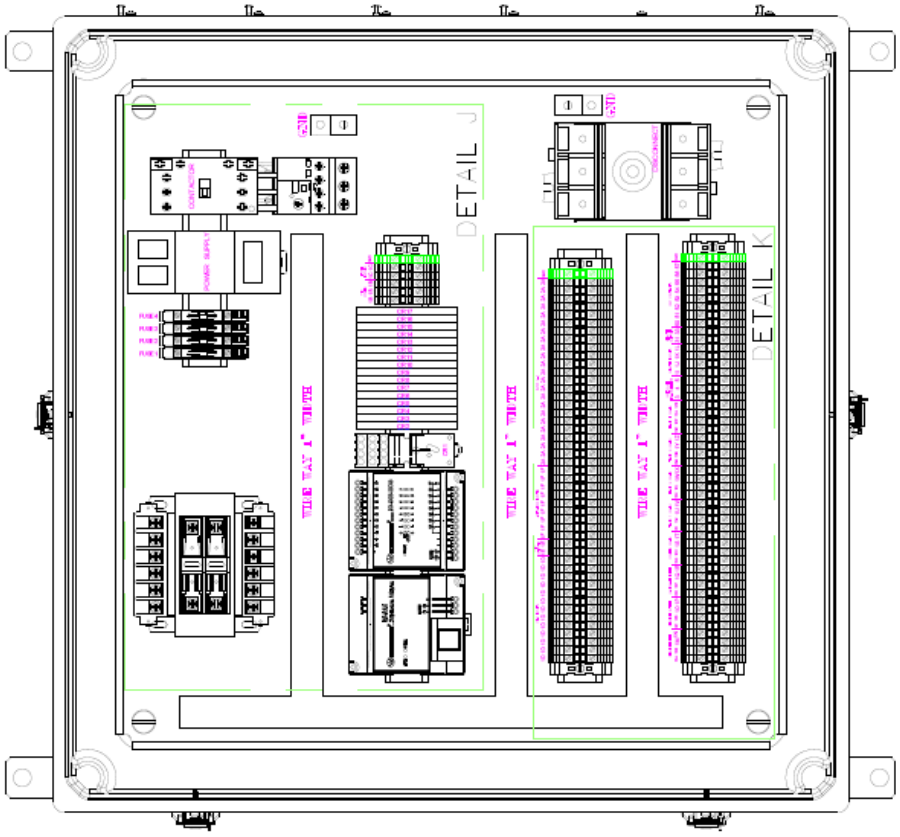


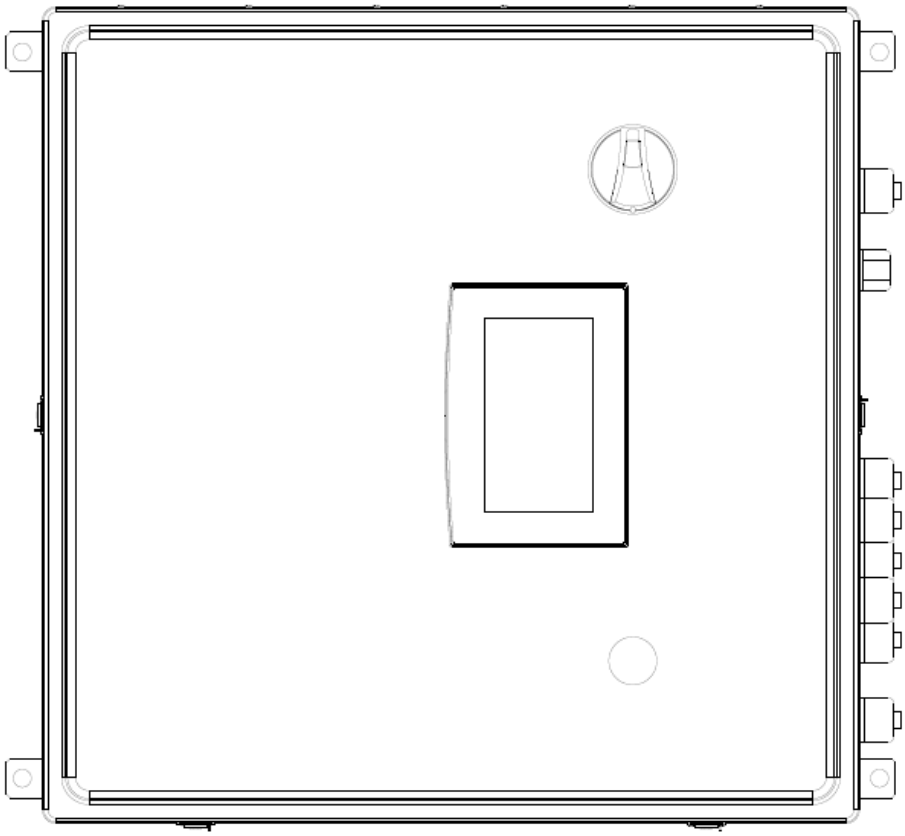
FOUR TANK SYSTEM



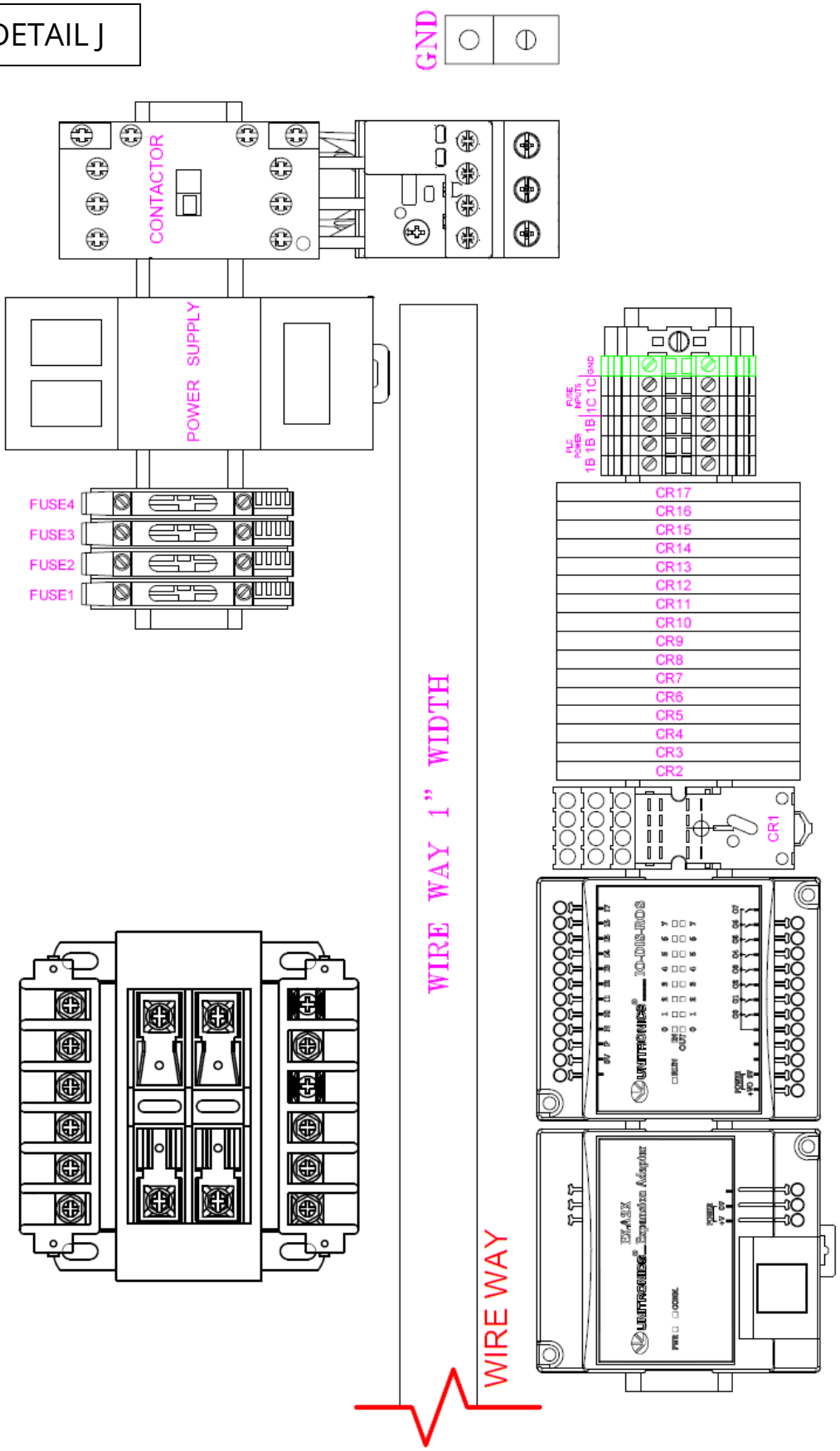


DETAIL H

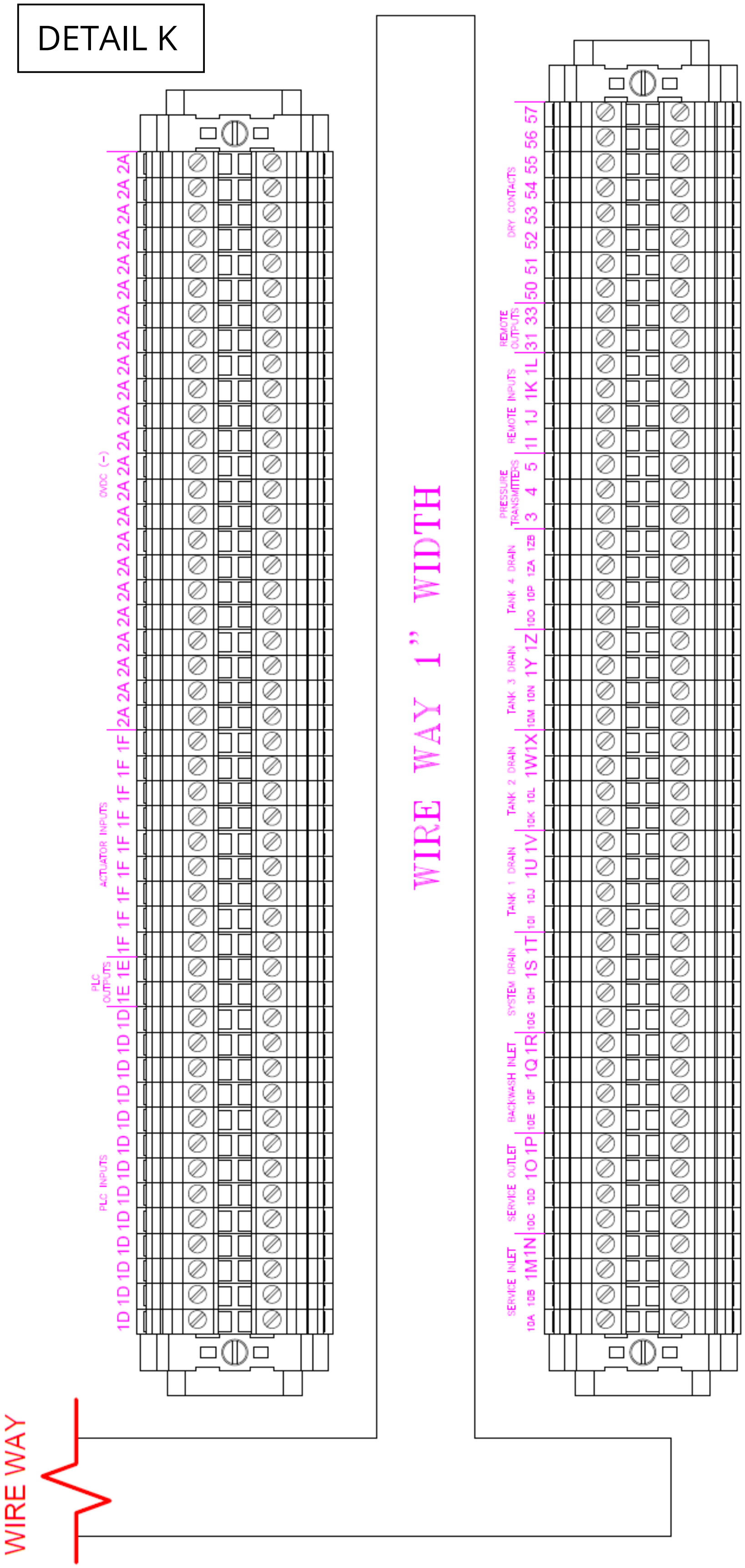

DETAIL J
DETAIL K



DETAIL J


GND
CONTACTOR
POWER SUPPLY
FUSE4
FUSE3
FUSE2
FUSE1
CR17
CR16
CR15
CR14
CR13
CR12
CR11
CR10
CR9
CR8
CR7
CR6
CR5
CR4
CR3
CR2
CR1
WIRE WAY 1" WIDTH
WIRE WAY

DETAIL K



WIRE WAY 1" WIDTH
WIRE WAY
0VDC (-)
2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A
ACTUATOR INPUTS
1F 1F 1F 1F 1F 1F 1F 1F 1F
PLC OUTPUTS
1E 1E
PLC INPUTS
1D 1D 1D 1D 1D 1D 1D 1D 1D 1D 1D 1D 1D 1D
DRY CONTACTS
50 51 52 53 54 55 56 57
REMOTE OUTPUTS
31 33
REMOTE INPUTS
1I 1J 1K 1L
PRESSURE TRANSMITTERS
3 4 5
TANK 4 DRAIN
10O 10P 1ZA 1ZB
TANK 3 DRAIN
10M 10N 1Y 1Z
TANK 2 DRAIN
10K 10L 1W 1X
TANK 1 DRAIN
10I 10J 1U 1V
SYSTEM DRAIN
10G 10H 1S 1T
BACKWASH INLET
10E 10F 1Q 1R
SERVICE OUTLET
10C 10D 1O 1P
SERVICE INLET
10A 10B 1M 1N

12 OPTIONAL BACKWASH STORAGE TANK

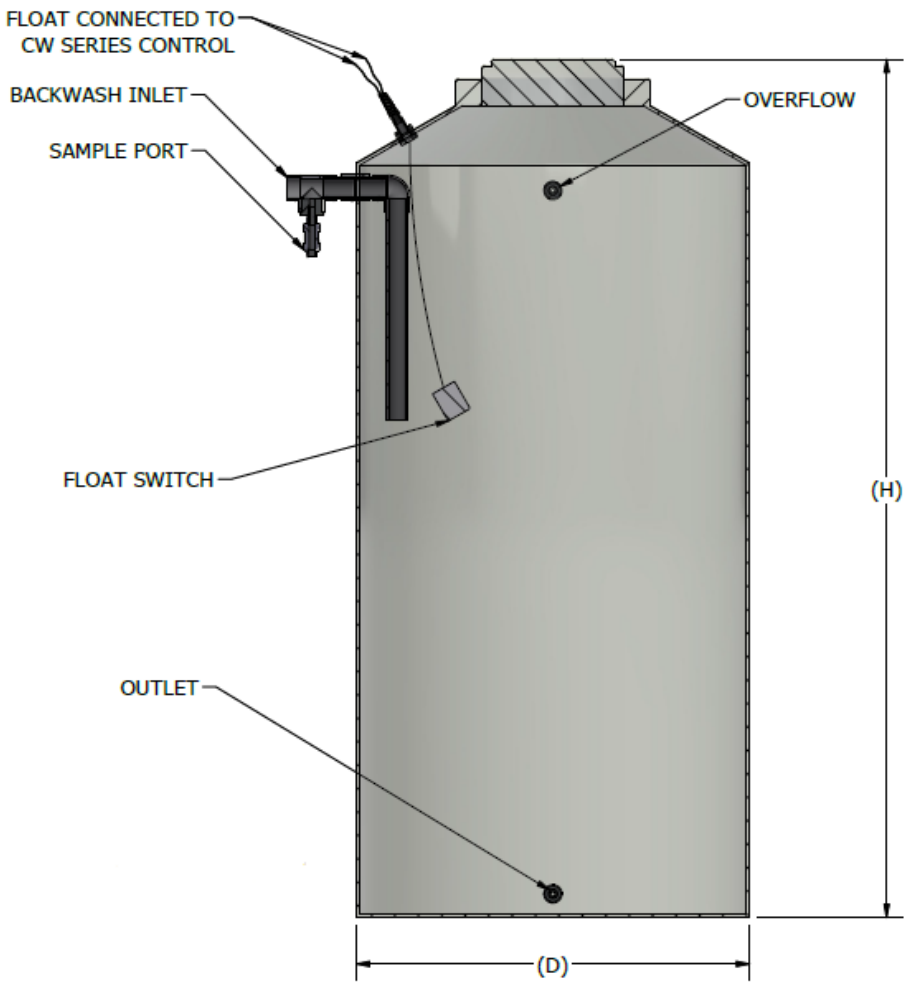
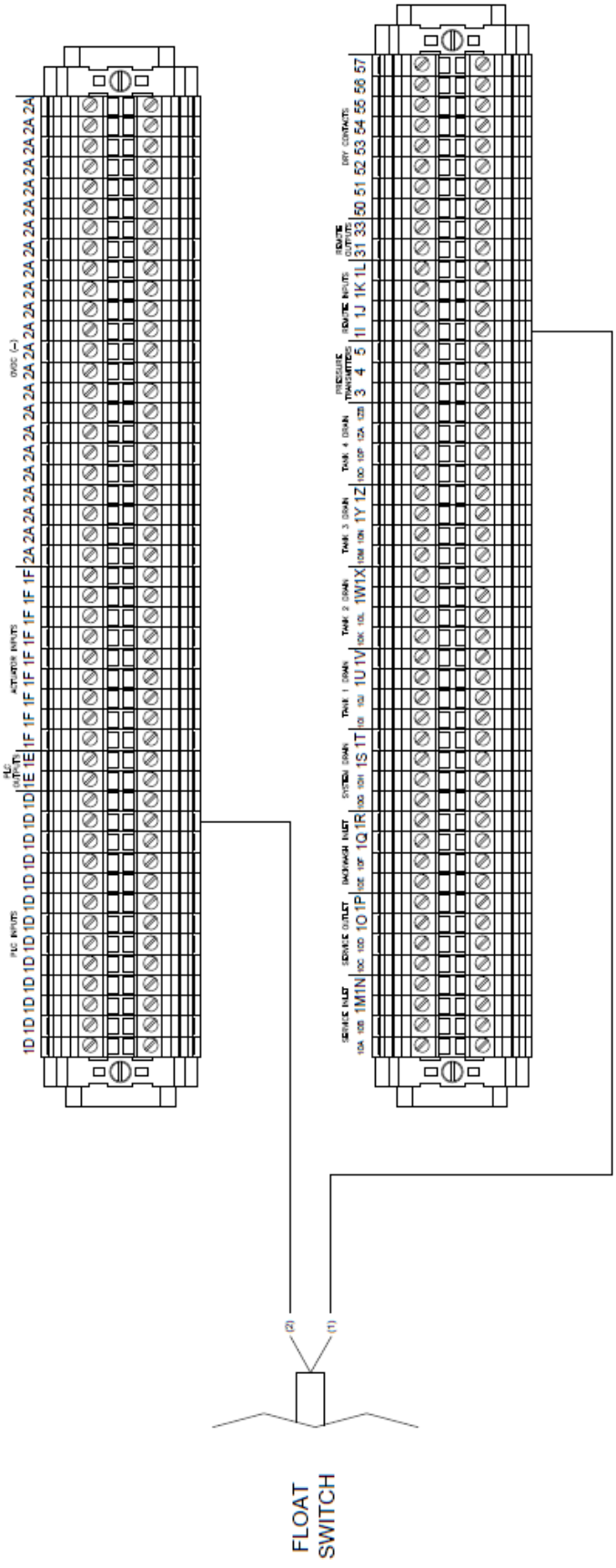


TABLE						
MODEL	**CAPACITY IN GALLONS**	**INLET**	**OUTLET**	**OVERFLOW**	**D**	**H**
CWBWST130	130	1"	1" FPT	1" FPT	23"	76"
CWBWST200	200	1"	1" FPT	1" FPT	30"	72"
CWBWST300	300	2"	2" FPT	2" FPT	35"	81"
CWBWST550	550	2"	2" FPT	2" FPT	45"	97"
CWBWST750	750	2"	2" FPT	2" FPT	46"	119"
CWBWST1000	1000	2"	2" FPT	2" FPT	64"	81"

The float switch needs to be wired to the filter system's control panel. Route the cable to the control panel and through a strain relief on the underside. There are two float wires, wire one to 1D and one to 1I. See the diagram on the next page for wiring locations.

Tanks that hold 550 Gallons or more are drop shipped. The float switch assembly is sent with the filter system and will need to be assembled on site.


FLOAT
SWITCH

⚠ WARNING

This product can expose you to chemicals such as vinyl chloride (used in the production of PVC) or Nickel (used in the production of stainless steel), that are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Dear Valued Customer,

California Proposition 65 (Prop 65) is the Safe Water and Toxic Enforcement Act of 1986. The State of California began enforcing amendments to California Prop 65 at the end of August 2018. Prop 65 requires manufacturers to provide a clear and reasonable warning to residents of California about chemicals used in products that they purchase that are included on the Prop 65 Chemical List. The chemicals included on the list are chemicals that are known to the State of California to cause cancer, birth defects, or other reproductive harm. One such chemical is Vinyl Chloride, a compound used to produce Polyvinyl Chloride (PVC). The AmeriWater system you have purchased may contain PVC or stainless steel parts.

While warnings are only required in the State of California, AmeriWater has initiated the use of Prop 65 labeling for all products to ensure compliance with California regulations. Please note that the above warning does not necessarily mean that the product that you have purchased is unsafe. Products that have been cleared for market by FDA have been determined to be safe and effective by the United States Food and Drug Administration. The warning is simply a requirement by the State of California. If you wish to obtain additional information, please visit: p65warnings.ca.gov. You may also contact your AmeriWater representative if you have any questions.

Thank you for your understanding and we look forward to continuing to serve you.