PURCLEAN
SPOT-FREE RINSE SYSTEMS

PURWATER
WATER RECOVERY SYSTEMS

Corporate
800.882.8854

PURCLEAN™ WALL & STAND MOUNT

R.O. SPOT FREE RINSE

Technical Manual

3315 Orange Grove Avenue
North Highlands, CA 95660

1.800.882.8854

www.purclean.com

MAKING EVERY DROP COUNT

NEWWAVE INDUSTRIES™ LTD.

Revised November 2018

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Warning!
Hazardous Voltage: Can Cause Serious Injury or Death.

- Disconnect power at main panel before connecting electrical power supply to PurWater unit panel or working on electrical connections.
- Wire unit for correct voltage. See "Installation & Operating Instructions" label on the electrical panel cover.
- Meet National Electrical Code and local codes for wiring.
- Follow wiring instructions in this manual when connecting the PurWater unit to the power source.

Caution! This system has been evaluated for use with water only. Product output is for non-potable use only.

For Assistance, Contact PurWater 800-882-8854

System Installation Requirements

PurClean systems are designed for easy installation. However, if you should have any questions please contact us at (916) 978.9990 or (800) 882.8854 in Sacramento, CA. Our office hours are 7am to 5pm PST, Monday through Friday

Site Requirements:

1) Provide a covered or heated enclosed area with at least 4' X 8' of floor space (see Table 1 below for a list of dimensions; Please ensure that you leave enough room around the equipment to allow technicians clearance to service the machines).
2) Electrical (see Table 2 below for utility requirements).
3) Plumbing (see Table 2 below for utility requirements).
4) 2" drain for Reject Water.

Table 1: Dimensions (WM - Wall Mount; STM - Stand Mount

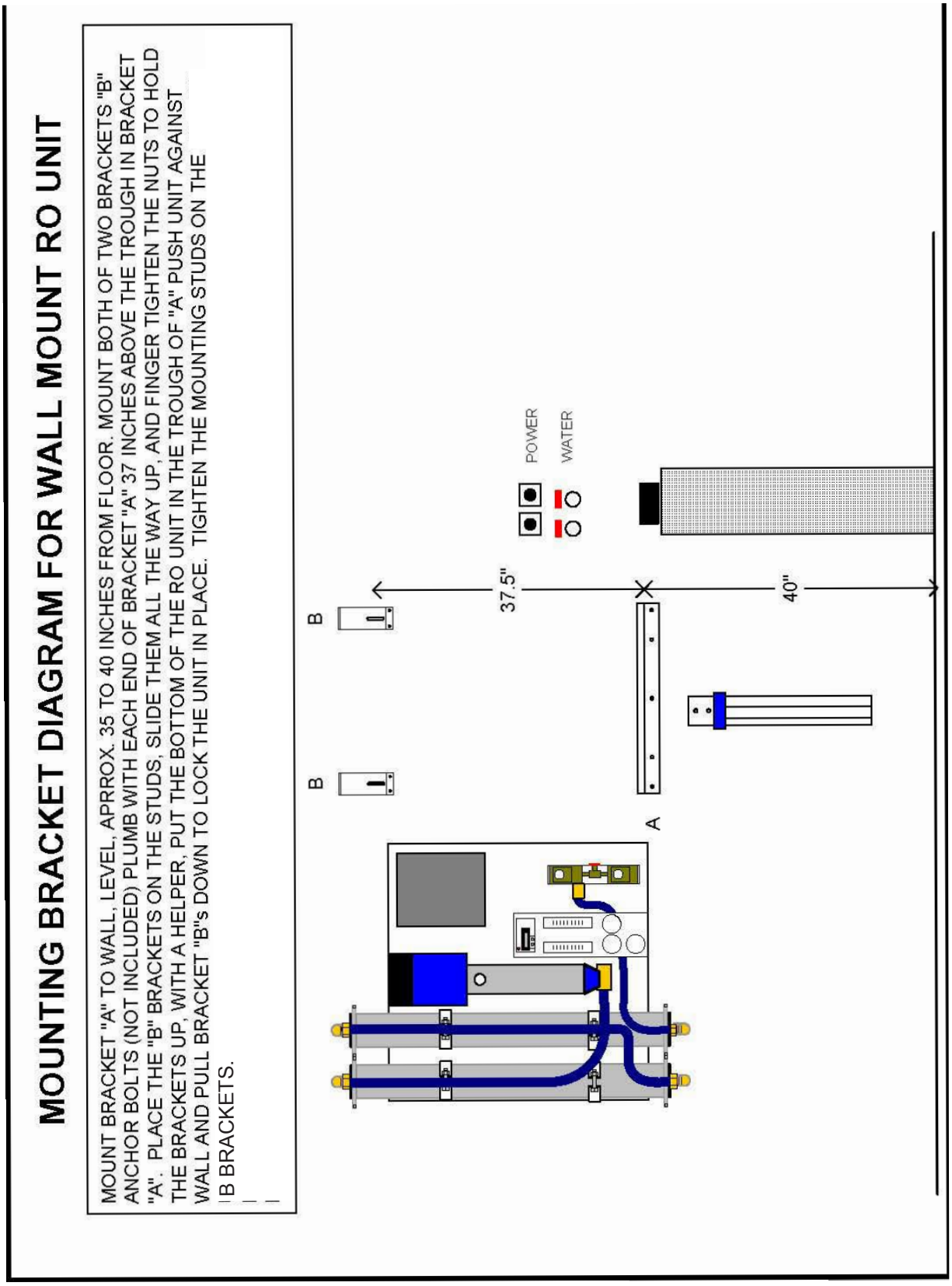
MODEL	H	W	D
PC 1000 WM	36"	29"	11"
PC 2000 WM	44"	29"	11"
PC 3000 WM	44"	29"	11"
PC 4500 WM	44"	36"	11"
PC 3000 STM	75"	36"	24"
PC 4500 STM	75"	36"	24"
PC 6000 STM	77"	36"	24"
PC 8000 STM	96"	36"	24"
PC 10,000 STM	96"	36"	24"
PC 15,000 STM	94"	39"	25"
PC 20,000 STM	94"	39"	25"

Table 2: Utility Requirements

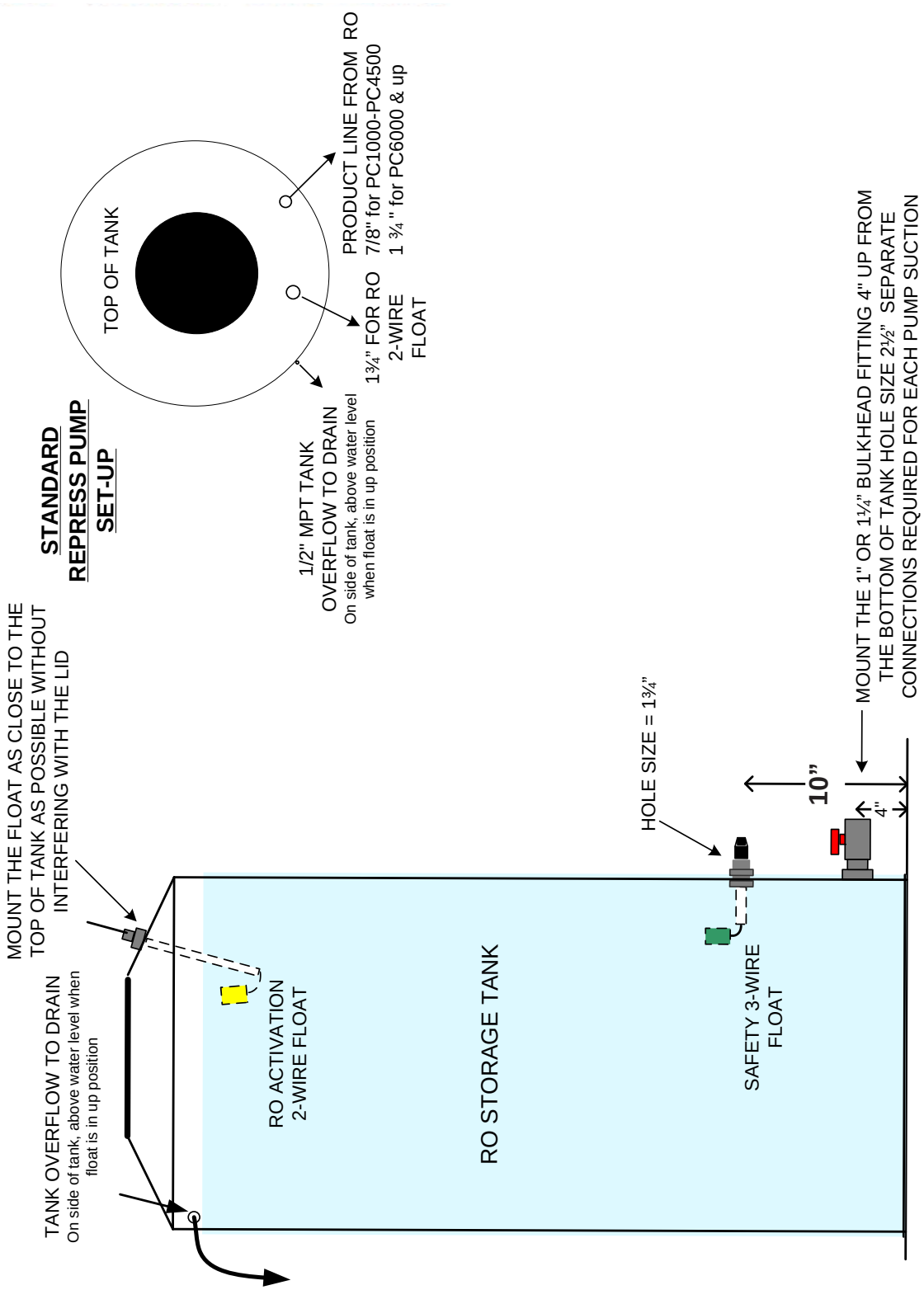
Model Size In GPD (gallons per day)	Water Supply Size / PSI /GPM (gallons per minute)	Power Requirements	
		Volts / Amps Single Phase	Volts / Amps Three Phase
1,000gpd	**1" / 30 @ 20**	**220v / 20A**	**220v / 20a or 460v / 10A**
2,00ogpd	**1" / 30 @ 20**	**220v / 20A**	**220v / 20a or 460v / 10A**
3,000gpd	**1" / 30 @ 20**	**220v / 20A**	**220v / 20a or 460v / 10A**
4,500gpd	**1" / 30 @ 20**	**220v / 20A**	**220v / 20a or 460v / 10A**
6,000gpd	**1" / 40 @ 30**	**220v / 20A**	**220v / 20a or 460v / 10A**
8,000gpd	**1" / 40 @ 30**	**220v / 20A**	**220v / 20a or 460v / 10A**
10,000gpd	**1" / 40 @ 30**	**220v / 20A**	**220v / 20a or 460v / 10A**
15,000gpd	**1.5" /40 @ 40**	**N/A**	**220v / 30a or 460v / 15A**
20,000gpd	**1.5" /40 @ 40**	**N/A**	**220v / 30a or 460v / 15A**

MOUNTING BRACKET DIAGRAM FOR WALL MOUNT RO UNIT

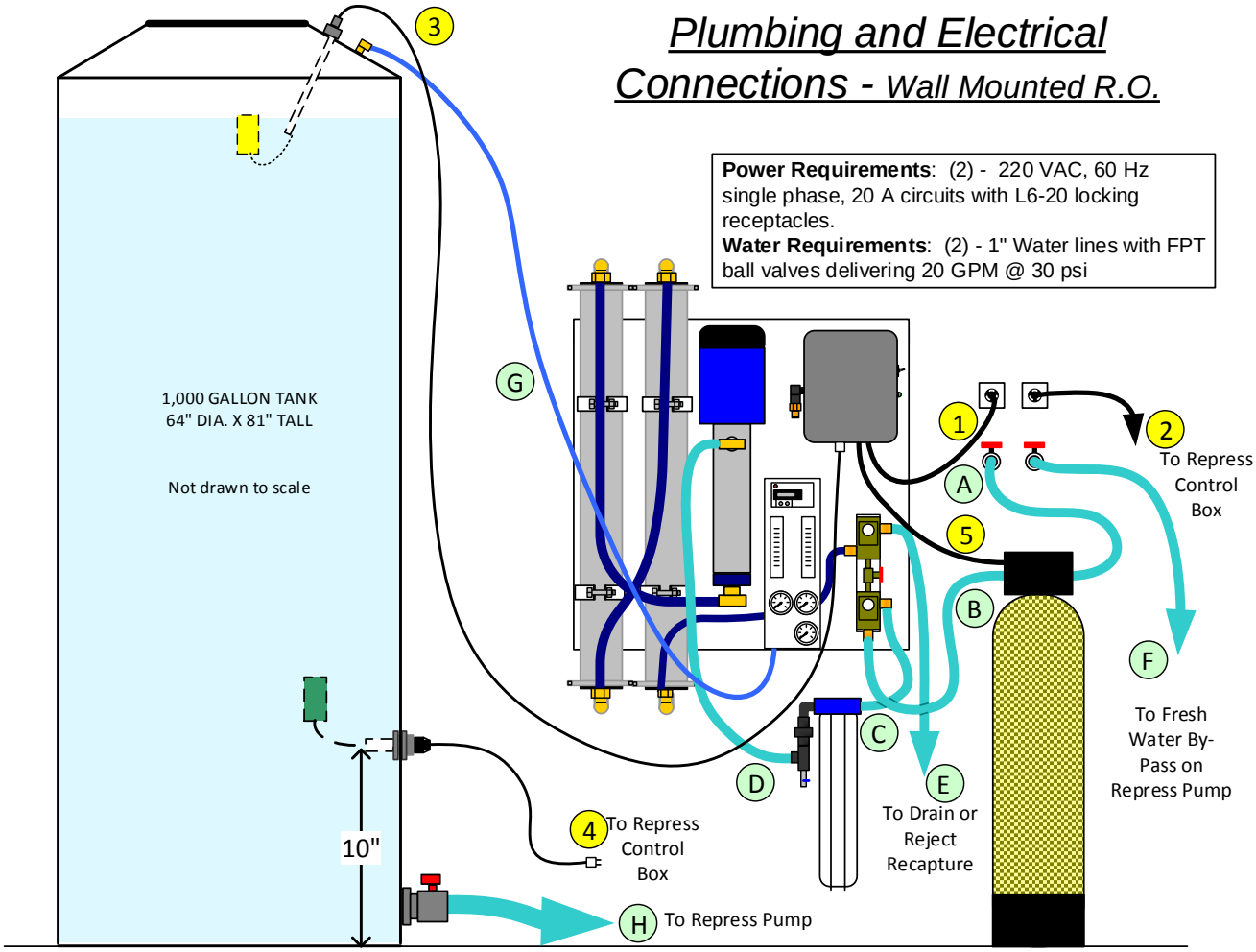
MOUNT BRACKET "A" TO WALL, LEVEL, APRROX. 35 TO 40 INCHES FROM FLOOR. MOUNT BOTH OF TWO BRACKETS "B" ANCHOR BOLTS (NOT INCLUDED) PLUMB WITH EACH END OF BRACKET "A" 37 INCHES ABOVE THE TROUGH IN BRACKET "A". PLACE THE "B" BRACKETS ON THE STUDS, SLIDE THEM ALL THE WAY UP, AND FINGER TIGHTEN THE NUTS TO HOLD THE BRACKETS UP, WITH A HELPER, PUT THE BOTTOM OF THE RO UNIT IN THE TROUGH OF "A" PUSH UNIT AGAINST WALL AND PULL BRACKET "B"s DOWN TO LOCK THE UNIT IN PLACE. TIGHTEN THE MOUNTING STUDS ON THE B BRACKETS.



RO STORAGE TANK CONNECTIONS



Plumbing and Electrical Connections - Wall Mounted R.O.



Power Requirements: (2) - 220 VAC, 60 Hz single phase, 20 A circuits with L6-20 locking receptacles.
Water Requirements: (2) - 1" Water lines with FPT ball valves delivering 20 GPM @ 30 psi

Plumbing Connections:

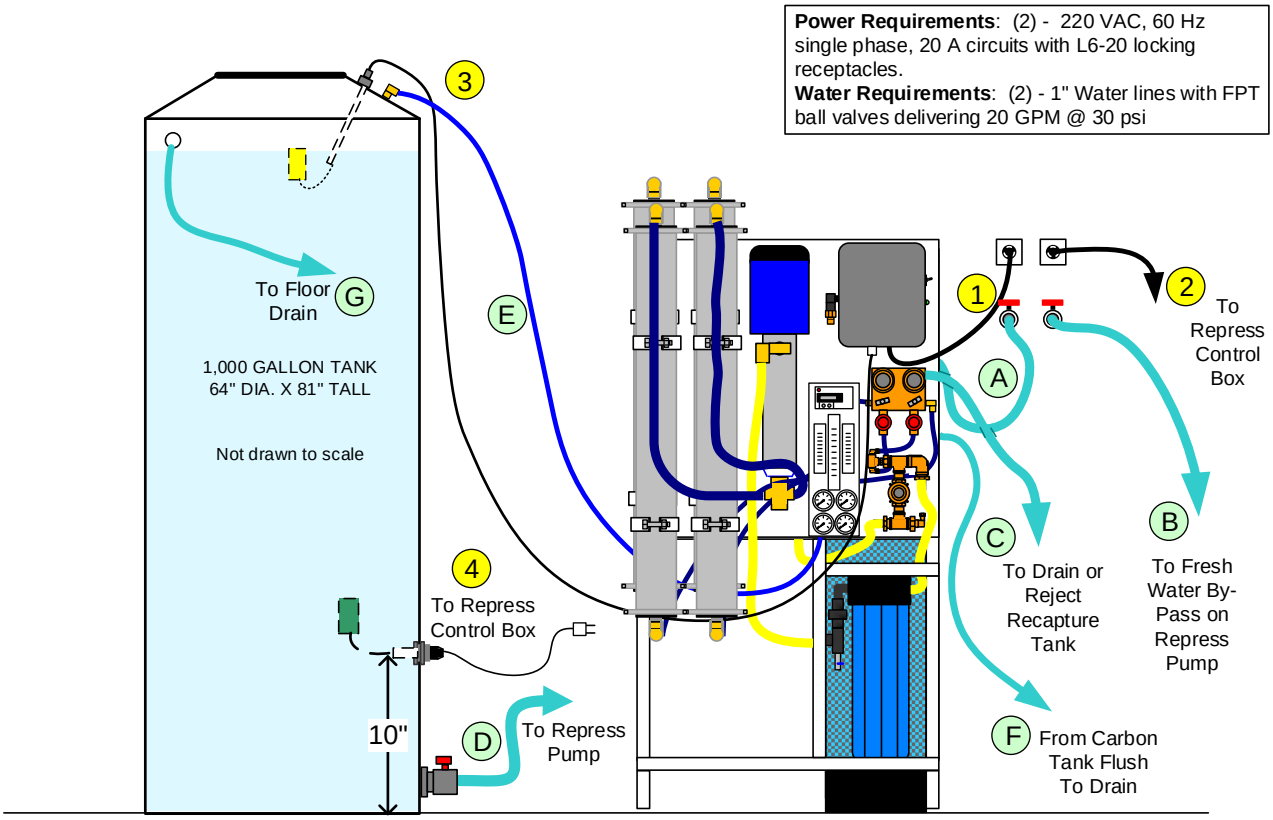
- A Make up a hose connection from the water source to the Carbon Tank Auto Head Inlet.
- B Make up a hose connection from the Carbon Tank Auto Head Outlet to the Inlet Valve block
- C Make up a hose connection from the Inlet valve block to the Inlet of the Pre-Filter.
- D Make up a hose connection from the Stabilizer to the Multi-Stage Pressure pump.
- E Make up a hose connection from the Reject Valve block to Drain or Reject Recapture Tank.
- F Make up a hose connection from the water source to the Fresh Water Bypass of the Repress Pump
- G Connect tubing from product flow meter to the brass fitting at the top of the tank.
- H Make up a hose connection from the tank outlet to the repress pump.

Electrical Connections:

- 1 Connect a 220 VAC, 60Hz, 20A supply to the Power cord from the control box
- 2 Connect a 220 VAC, 60Hz, 20A supply to the Power cord from the repress pump control box
- 3 Connect the yellow two wire float from the top of the tank to the receptacle in the main control box. The receptacle is labeled “FLOAT”.
- 4 Connect the green 3 wire float from the lower part of the tank to the receptacle in the repress control box.
- 5 Wire the Carbon Tank Auto Head to the Control Box.

Plumbing and Electrical Connections -

6,000-20,000 GPD Stand Mount Systems



Plumbing Connections:

- A Make up a hose connection from the water source to the Carbon Tank Auto Head Inlet.
- B Make up a hose connection from the water source to the repress pump fresh water bypass.
- C Make up a hose connection from the Reject Valve block to Drain or Reject Recapture Tank.
- D Make up a hose connection from the tank outlet to the repress pump.
- E Connect tubing from product fitting on the gage panel to the brass fitting at the top of the storage tank.
- F Make up a hose connection from Carbon Tank Flush Port to the floor drain.
- G Make up a hose connection from the storage tank overflow to the floor drain.

Electrical Connections:

- 1 Connect a 220 VAC, 60Hz, 20A supply to the Power cord from the control box
- 2 Connect a 220 VAC, 60Hz, 20A supply to the Power cord from the repress pump control box
- 3 Connect the yellow two wire float from the top of the tank to the receptacle in the main control box. The receptacle is labeled “FLOAT”.
- 4 Connect the green 3 wire float from the lower part of the tank to the receptacle in the repress control box.

Connecting / Flushing The Carbon Tank Auto-Head

Connecting

1. Locate the yellow cord connected to the carbon tank auto back flushing head.
2. Connect the 4pin yellow connector to the receptacle located on the bottom of the RO control box. This cord supplies the power and control wires for the auto head.

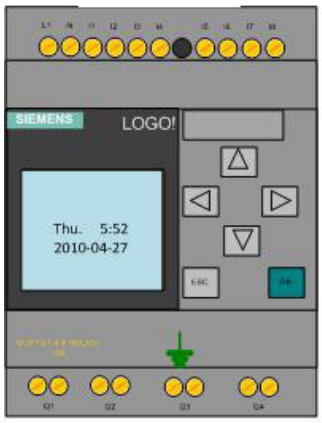
See pages 43-46 to set the correct time on the auto-head and check regen time and frequency.

Important: The carbon tank should be flushed prior to making final plumbing connections to the RO Unit to prevent any carbon media from entering the unit.

1. Connect a hose from the water source to the carbon head inlet.
2. Connect a hose from the carbon head outlet and direct it to a drain.
3. Turn on the water source and allow the water to run for 10-15 minutes until the tank is flushed thoroughly and the water is clear. Initially, the water is likely to be black or dark gray.
4. Turn off the water source and make the final connection to the RO unit inlet.
5. Turn on the water source.
6. Make certain the toggle switch on the side of the RO system control box is in the down position.
7. Plug in the RO power cord or turn on the breaker depending on site power source.
8. Set the time on the carbon tank per the carbon tank supplement on page 43.
9. Run two manual carbon tank backwashes (this takes about 25 minutes each time). Simply press on the up and down arrow keys & hold them down for 5 seconds to initiate each back wash.
10. Proceed with system time / date setting (page 12) & start-up (page 13)

Setting The Time & Date on the PLC

1



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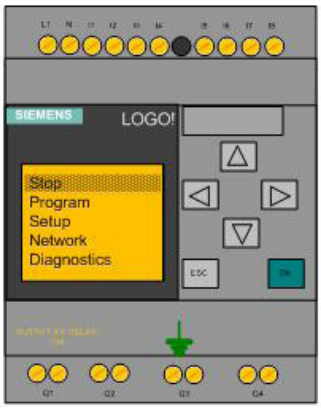

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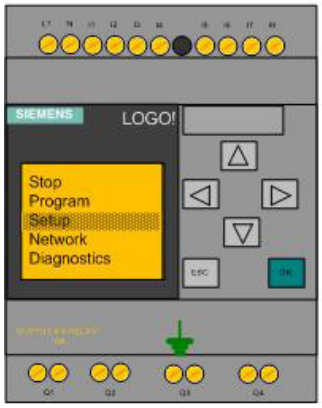

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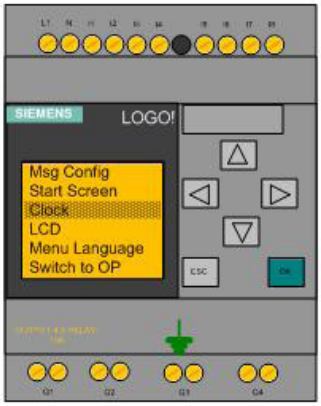

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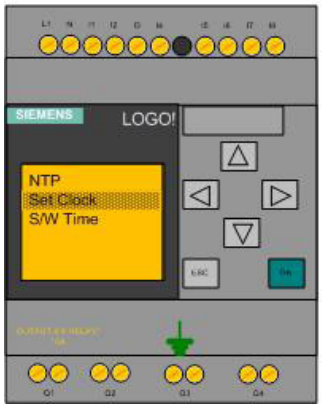

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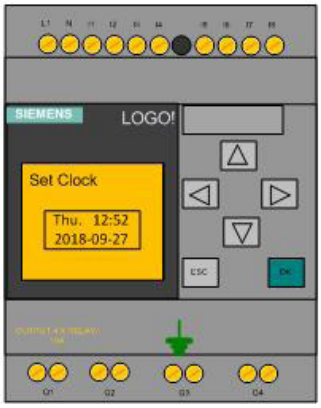


Prior to System Start-up and with the PurClean System connected to facilities power and the toggle switch in the down position:

1. Open the Control Box and locate the PLC- the Time & Date will be flashing as shown in screen shot #1. Press the “ESC” button.

2. “Stop” will appear highlighted on the screen. as shown in screen shot #2.

3. Use the Down Arrow Key and scroll to “Setup” as shown in screen shot #3. Press the OK button.

4. Again, using the Down Arrow Key, scroll to “Clock” as shown in screen shot #4 and press the OK button.

5. Again, using the Down Arrow Key, scroll to “Set Clock” as shown in screen shot #5 and press the OK button.

6. Use the Right Arrow Key and scroll through the Time and Date using the Up / Down Arrow Keys to change and set the numbers. Note that miltary time is required. Ex: 1pm = 13:00. When complete, press ESC 3 times to return to the Initial Blue Screen with correct Time and Date.

System Start-Up

Turning on the RO Unit (Note that the internal control box components have power to them once the breaker for the unit is in the on position. The external toggle switch on the control box is a "start switch.")

1. Flip the toggle switch on the side of the control box to the up position.

2. The R.O unit will open the inlet solenoid valve and initiate a 30 second prime to purge any air out of the system. The pump will not be on during the prime cycle. The screen on the PLC will display a status message and time remaining. The green light on the side of the control box will be flashing at this time.

3. At the conclusion of the system prime sequence AND if the pressure switch is satisfied above 4 psi tap pressure, the production pump will start and the R.O. unit will begin the low pressure flush cycle. The inlet solenoid valve remains open, the flush solenoid opens, and the low pressure flush cycle begins. The green light on the side of the control box will remain flashing during this sequence. The screen on the PLC will display a status message and time remaining. If the R.O. unit is a 1,000gpd-4500gpd model having only a single flush solenoid it will be a 2 minute cycle. If the RO unit is a 6,000gpd model or larger with two flush solenoids, the low pressure flush cycle repeats closing the left side (Bank 1) flush solenoid and opening the right side flush solenoid (Bank2) and flushing for an additional 2 minute cycle. The PLC display reflects the status and time remaining as it switches from Bank 1 to Bank 2.

3. After the unit completes the low pressure flush cycle, the flush solenoid(s) will be closed and the R.O. unit is ready to be adjusted for producing spot-free water. Table 3 on page 14 lists models and target settings. Keep in mind that Pump Pressure is adjusted via the Recirculation Gate Valve(s) and Reject Flow Rate(s) are adjusted via the Reject Ball Valve(s). These are the only adjustments to make. Each adjustment will affect the other. It's not at all unusual to have to "fine tune" going back and forth to set the system properly. Also note that if the reject for a larger unit reflects "Total", one-half of that total is for each individual flow meter. Ex: a 6,000gpd unit (4.2 TOTAL) would mean to set each side at 2.1gpm. The green light will be on steady during spot free production. Flow meters are read on the widest part of the floating indicator "bullet" of the flow meter on the 0-5.0gpm flow meters On 6,000gpd models and higher, the 0-10gpm product flow meters are read from the top of the indicator.

4. Pump pressure should be set at 180psi max. See Table 3 on page 14 for reject setting by model number.

If any of your pressures or flow rates do not conform to the criteria in Table 3, please contact PurClean Technical Support at (800) 882.8854.

NOTE: PurClean Instructional videos are available for viewing on YouTube Go to You Tube - search "purcleantech", view either "Setting 1000-4500 GPD RO Systems" OR "Setting 6,000-15,000 GPD RO Systems" - epecially if this is the first experience with a PurClean R.O. Spot Free Unit.

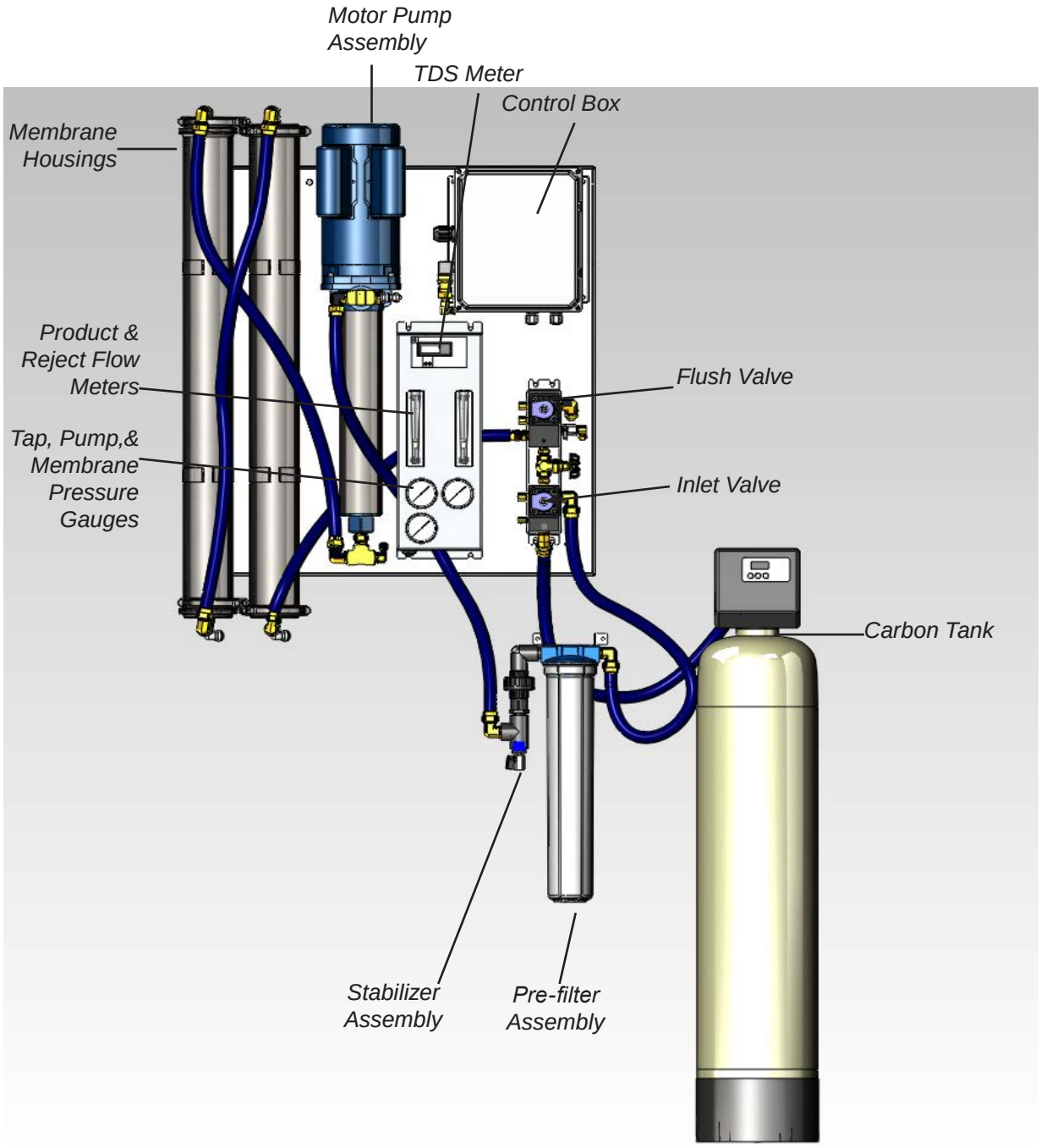
Pressures and Flow Rates By Model

Table 3: Pressures and Flow Rates

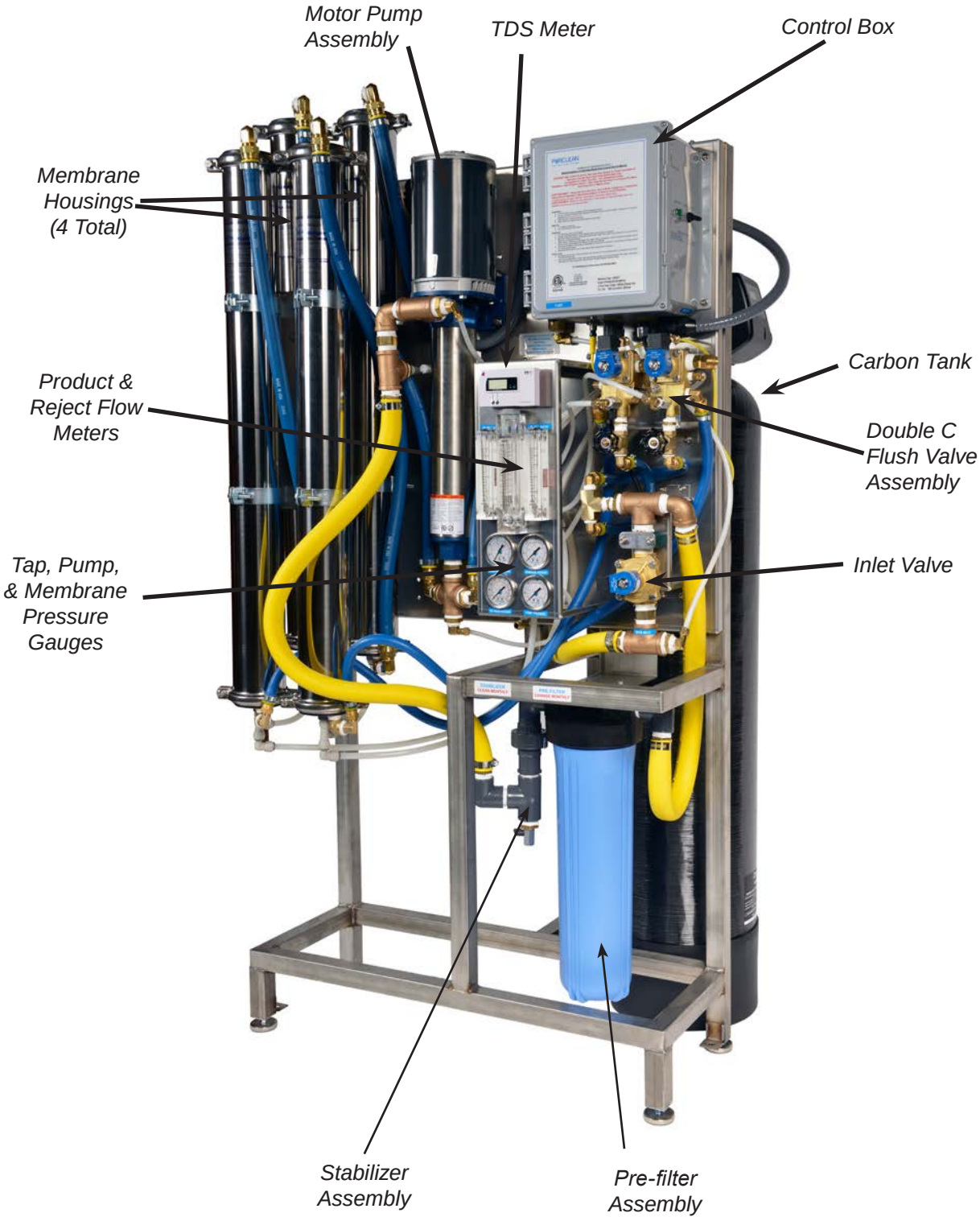
As noted in the System Start Up on page 13, the only required system adjustments are Pump Pressure and Reject Rates. Production of Spot Free Water in gallons per minute and Membrane Gauge Pressure in PSI are merely results and may vary slightly from what is seen in the table below. It is highly reccomended to view the instructional videos on the purcleantech channel of YouTube as noted in red on the bottom of page 13 as a first time user or as a refresher.

MODEL	PRODUCTION GPD	PRODUCTION GPM	REJECT GPM	PUMP PRESSURE	MEMBRANE GAUGE PRESSURE PSI 75% or better of PUMP PRESSURE
PC 1000 WM	1000	0.7	0.9	180	No lower than 135
PC 2000 WM	2000	1.4	1.6	180	No lower than 135
PC 3000 WM	3000	2.1	2.3	180	No lower than 135
PC 4500 WM	4500	2.8	2.3	180	No lower than 125
PC 3000 STAND	3000	2.1	2.3	180	No lower than 135
PC 4500 STAND	4500	2.8	2.3	180	No lower than 125
PC 6000 STAND	6000	4.2	4.2 TOTAL	180	No lower than 130 EACH
PC 8000 STAND	8000	5.6	4.2 TOTAL	180	No lower than 130 EACH
PC 10,000 STAND	10,000	7	4.2 TOTAL	180	No lower than 130 EACH
PC 15,000 STAND	15,000	10.4	6.0 TOTAL	180	No lower than 130 EACH
PC 20,000 STAND	20,000	14	6.0 TOTAL	180	No lower than 130 EACH

Wall Mounted PC 4500
with Carbon Tank and Pre-Filter



PC 8000 with Carbon Tank and Pre-Filter



Adjusting the Reject Flow and Pump Pressure

1. To set the proper reject flow (see Table 3 page 14), turn the reject ball valve (see pic next page) clockwise to decrease the reject flow rate, counter clockwise to increase flow.

2. To adjust the pump pressure to the proper pressure (180psi) turn the recirculation gate valve (see pic next page) clockwise to increase the pressure, counter clockwise to decrease the pressure.

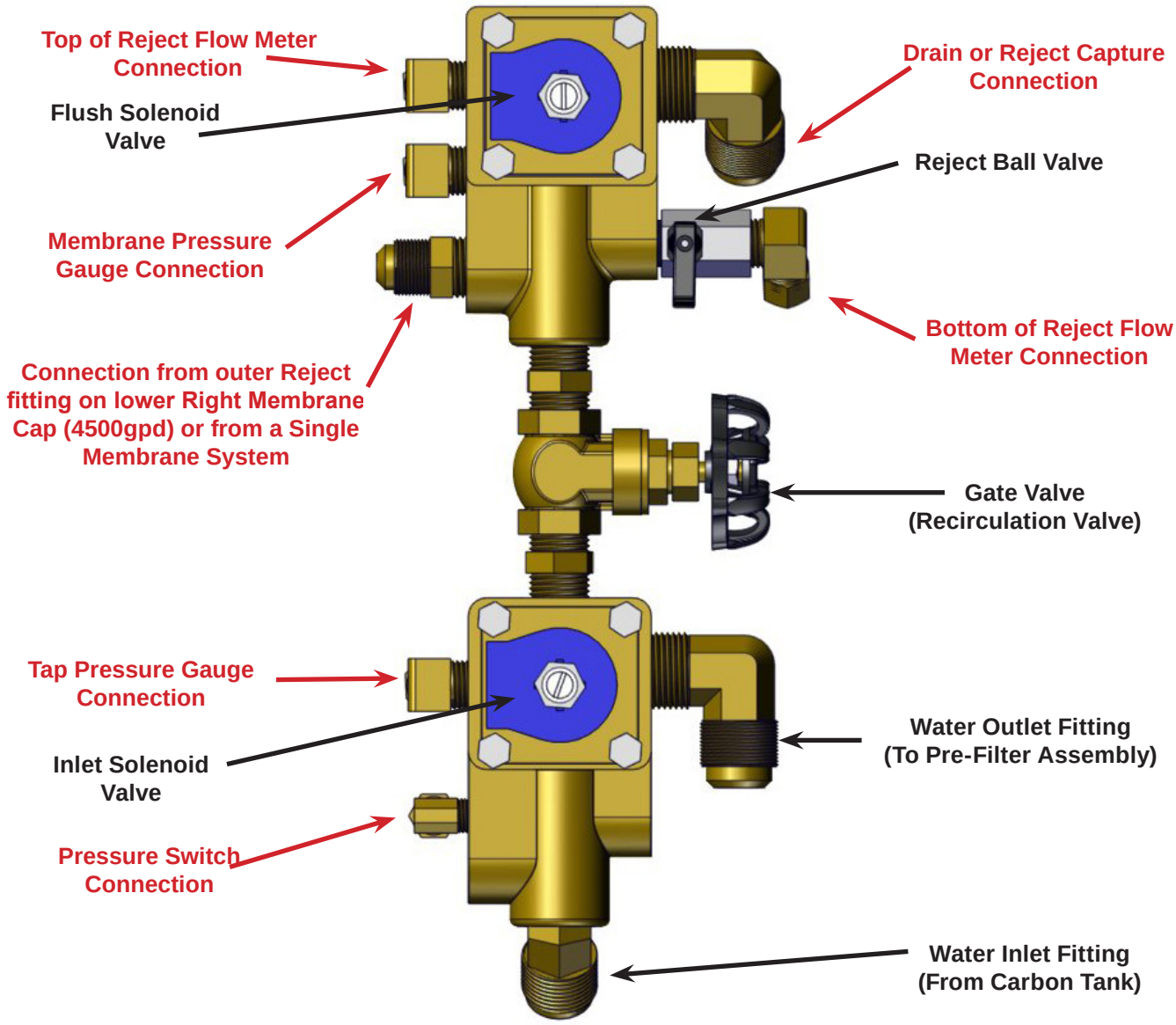
3. Please note that adjusting either the pump pressure or the reject flow will affect both and you may need to go back and forth a few times to get both readings to where they need to be.

4. On the 6,000 GPD and larger units the process is the same except there are two recirculation gate valves and two reject ball valves (see pic page 19). When adjusting the pump pressure, be certain that the pump and both reject settings are correct (see Table 3 on page 14) and that both of the membrane pressures are equal to each other.

NOTE:
PurClean Instructional videos are available for viewing on YouTube
Go to You Tube - search "purcleantech", Select the appropriate video
"Setting 1000-4500 GPD RO Systems" OR
"Setting 6,000-15,000 GPD RO Systems"

These are very helpful - epecially if this is the first experience with a PurClean R.O. Spot Free Unit.

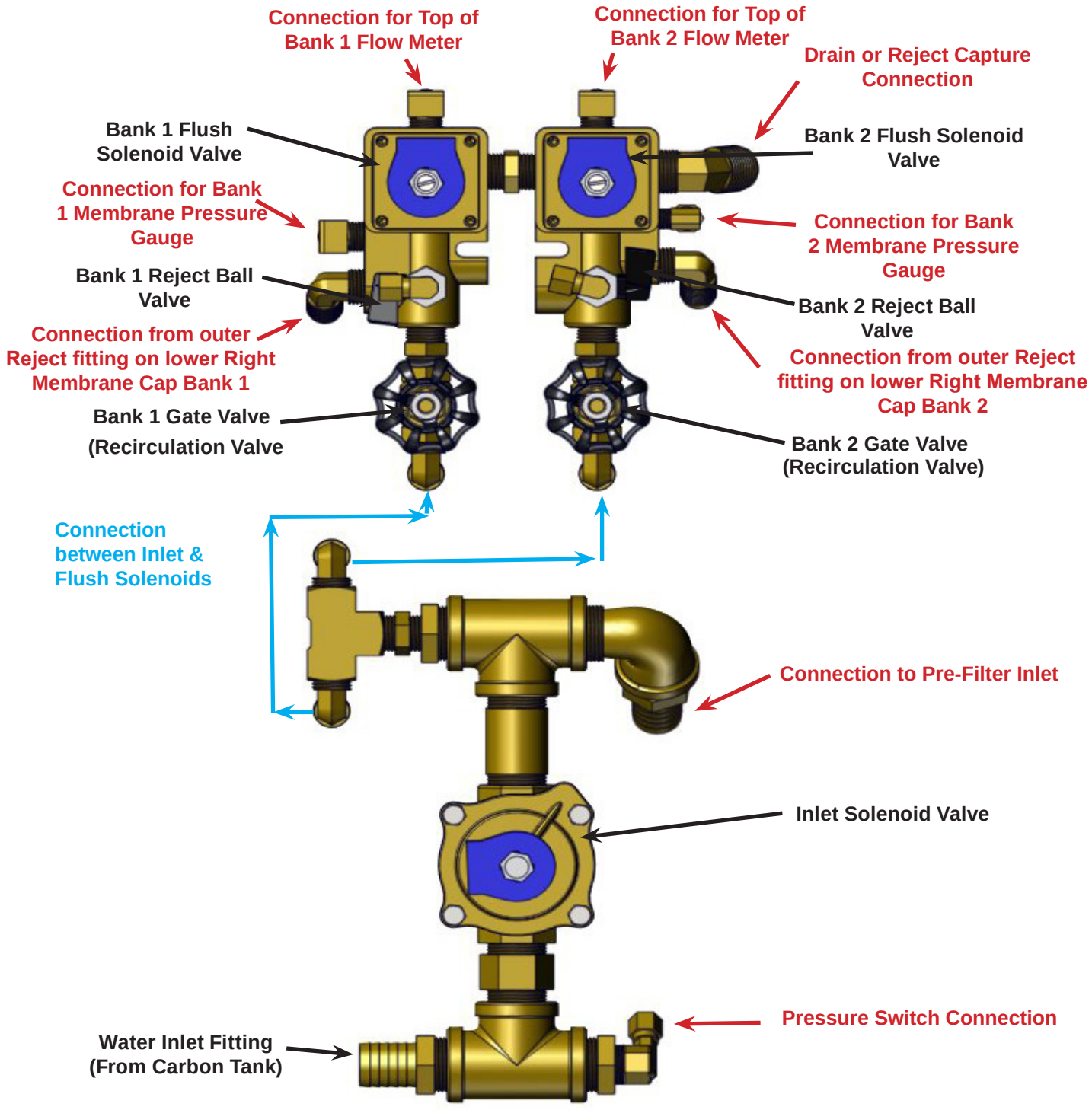
PC 1,000-4,500 GPD Inlet and Reject Valve Block General Assembly



The pictures on pages 18-19 illustrate the parts that make up the assemblies in Black Text.

The Red Text identifies connection points which can easily get crossed when replacing parts in the general assembly.

PC 6,000-20,000 GPD Valve Set



System Operation

Overview
The RO system when running, operates in one of two modes, either flush or fill mode.

Flush mode
(System on, green light flashing.) Flush mode starts any time the Toggle switch on the side of the Control Box is initially toggled “Up” and there are no faults present. See System Start Up on page 13 for more detail. After the flush cycle, the system either runs in fill mode (because the upper float is down) or it shuts off (if the float is up). During the flush cycle, it is normal for some water to enter the storage tank. An overflow drain should be installed on the RO storage tank to prevent any water overflowing onto the floor. Reference the drawings on pages 8 & 9 for drain location suggestions.

Fill mode
(System on, green light solid.) The goal for the RO unit is to keep the storage tank full providing there are no faults, the system is not flushing, and the float is in the down position. The system will run until the float is in the up position. Similar to flush mode, if the pump is not on during the beginning of fill mode (which is initiated by the upper float dropping to the “down” position), the inlet solenoid opens for a 30 second prime of the system before turning on the pump. Once the pump is on, the system runs until the activation float is in the up position as long as it is not in flush mode and there are no faults present.

Remember: The RO system, when not running is in one of two modes, either “Storage Tank Full” or fault mode.

Full mode
(System off, green light solid.) Once the activation float is in the up position there is no reason for the system to run until the activation float goes down or the system is called to run in flush mode.

Fault mode
(System off, green light flashing.) There are conditions which will prevent the system from running, all of which will be indicated by the text screen on the PLC inside the control box. If the city water source is turned off or the carbon tank is plugged a **Pressure Switch Fault message** will be present. If the pressure switch has tripped three times in one minute, **Pressure Switch Fault** message will be present. . If the system is 3 phase and the overload has tripped, an **Oveload Tripped** fault message will be present on the PLC. If the carbon tank is doing its weekly backflush, a **Carbon Tank in Backflush** message will be present. To learn more about the faults and identifying the cause and solution, visit the Troubleshooting Section on pages 28-33.

Major System Components

Before operating the PurClean System, it is helpful to identify and understand the major electrical components and controls.

Programmable Logic Controller (PLC)

The Siemens PLC is mounted inside the control box and operates the system by providing control of various functions of the unit based on inputs. The PLC is programmed at the factory and does not require any field adjustment. The PLC displays status and error messages.

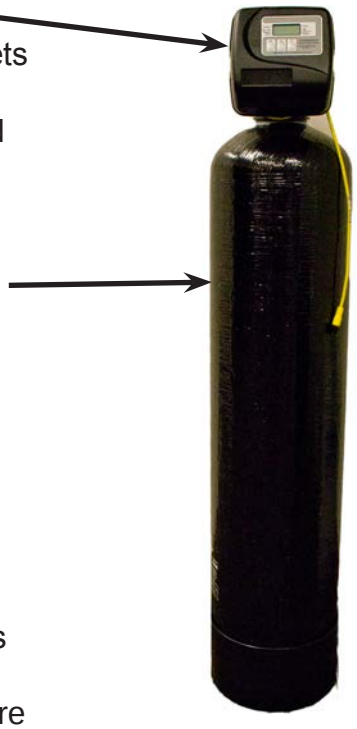
Note: If a PLC is being replaced, it must be ordered from PurClean since it requires factory programming in order to run the Spot Free system!

Carbon Tank Auto Head

The auto head back-flushes once a week for 20 minutes. It does this because the carbon inside gets matted down and ruined if it does not. If needed, manually run the backflush by pressing the up and down arrow for 5 seconds. See pages 43-44 for more details on the Auto Head.

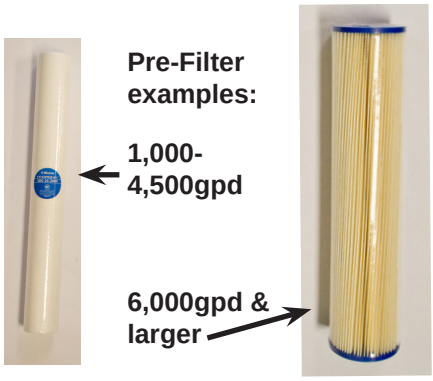
Carbon Tank

The carbon tank on the RO unit will remove 1ppm of chlorine and chloromines from the city or tap water for one year. Chlorine is added to municipal water sources to kill any bacteria in the water supply. Chlorine will attack the RO membrane material and will degrade it over time. Carbon will eventually be expended and will need to be replaced. Checking the chlorine levels after the carbon tank will determine when the carbon needs to be replaced so that the RO membranes are not damaged. As system models get larger in size there is a corresponding increase in the size of the carbon tank. (See System Maintenance pages 24-27).



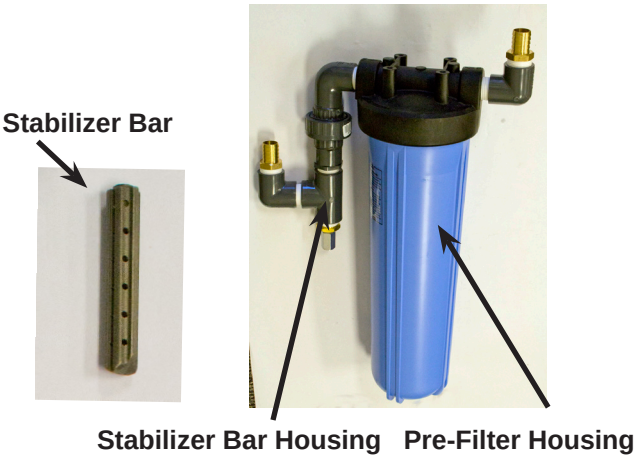
Pre-Filter

The Pre-Filter is a disposable 5 Micron Filter that keeps small particles from entering the membranes. The pre-filter should be replaced once per month. If the pre-filter shows excessive dirt or is collapsed the pre-filter frequency will need to change. (See System Maintenance pages 24-27). There are two different sizes of the 5 micron filters depending on system size / model.



Water Stabilizer Bar Assembly

The Water Stabilizer is located on the output side of the pre-filter housing and is an integral part of the PurClean RO Unit. This keeps the membrane(s) from becoming plugged with mineral deposits. The stabilizer must be cleaned every time the pre-filter is changed so that the metal is exposed to the water stream. Similar to the pre-filter, the assembly size will be 3/4" or 1" depending on model size. (See System Maintenance pages 24-27).



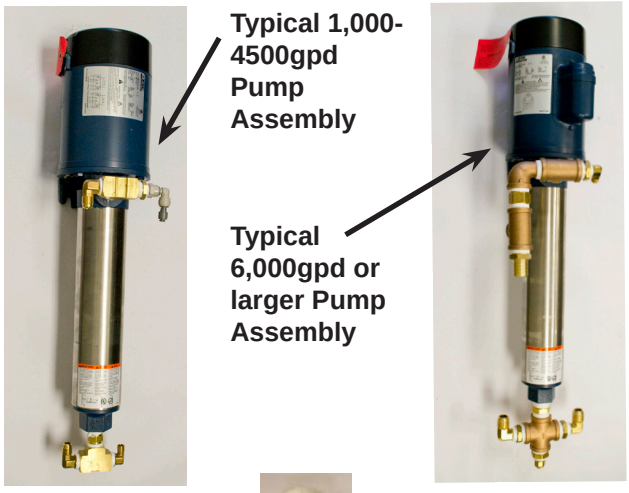
Valve Assembly

The 1,000gpd-4,500gpd models have single inlet and flush solenoids plumbed together with the recirculation valve in between. The 6,000gpd models and larger have a single inlet solenoid and 2 flush solenoids with two recirculation valves which adjust each membrane bank pressure individually.

See the detailed valve assembly breakdown on pages 18 & 19

Booster Pump

The RO booster pump varies based on the size of the RO, they can be single or 3 phase depending on how the system was ordered. The 1,000 GPD and 2,000 GPD uses a 1 hp, the 3,000 GPD – 4,500 GPD uses a 1½ hp, the 6,000 GPD – 10,000 GPD uses a 3 hp, and the 15,000 GPD and 20,000 GPD uses a 5 hp (3 phase only for the 5 hp).



Membrane

The membrane size, quantity, and flow rate will differ depending on the model of the RO Unit. Once the water has passed through the carbon tank, prefilter, and stabillizer - it is pumped at 180psi max through the membrane(s). Calcium and magnesium (solids) are routed to the outer reject path and the spot free water is passed out the center stem of the membrane(s) to the product flow meter eventually arriving in the spot free storage tank. See page 36 for membrane part number and quantity based on RO unit model.

On-Board TDS Meter

Total Dissolved Solids (TDS) is an indication of the mineral content in the water. To make Spot-Free water, the TDS of the product water from the RO should be 25ppm or less (number may vary). The On-Board TDS Meter provides a check of the TDS going into the membrane and the TDS of the product water going to the RO Storage Tank. Checking the readings must be done while the unit is on. The readings will not be valid if the unit is off or in flush mode. It is a good idea to obtain a hand held TDS meter as well to monitor the TDS at the point of delivery - this is generally at the rinse arch and should be consistent with machine readings. The “In” probe is located on the pump inlet. The “Out” probe is located on the back of the product flow meter.

Repress Pumps

The repress pump can be built in many different configurations but the end result is typically the same. The function of the repress is to move the spot free water out of the storage tank to the spot-free rinse arch. The custom and standard variations can include window washing, multiple bays, multiple pumps, transfer to portable tanks, pressure driven systems and more. The typical repress (not pressure driven) requires a signal from the car wash to tell it to run when the rinse cycle is on or the car has reached the rinse arch. **Reference the Repressurization / Delivery Pump Manual insert in the back of this manual.**

Reject Recovery Systems

The reject recovery system is an option that has gained popularity due to the water saving capability it provides. It is simply a tank for holding the RO reject water (as opposed to directing the reject to a floor drain), a pump to deliver the water out to the desired applications, and a mechanical float to add fresh water if the tank gets too low. The reject water has many possible uses for the car wash, contact PurClean for more information. **Reference the example on page 15 of the Repressurization / Delivery Pump Manual insert in the back of this manual.**

System Maintenance

Maintenance Task	Weekly	Monthly	Every 12-18 Mos.	Est. Time
Check On-Board TDS Meter	•			<1 Min
Check Settings During Operation	•			<1 Min
Change the Pre-Filter		•		5 Minutes
Clean the Stabilizer		•		5 Minutes
Check Chlorine Levels		•		1 Minute
Change Carbon			•	1 Hour

Please note: Daily visual checks and periodic PM's can be easily performed by the car wash operator and will ensure proper operation of the RO unit. All recommended monthly and quarterly maintenance / service can be performed by site employees. Contact PurClean Technical Support at 800.882.8854 in the event that technical support is needed.
Note: Two instructional videos on setting and adjusting PurClean RO systems are available on the PurCleanTech YouTube channel.

Check On-Board TDS Meter

• With the unit on and producing water in the "Fill" mode for approximately 10 minutes (not in flush mode) push the power button in the upper left hand corner of the TDS Meter.
• The display will illuminate and show the "In" TDS level.
- To change, press the "Out" button and the RO Product Water TDS will be displayed.
- This reading should be at or below 25ppm. If it is above 25ppm, go to the Troubleshooting section beginning on page 28, or contact a qualified technician to verify the readings and assist with troubleshooting the equipment.
- See page 32 if you are experiencing a high TDS reading. Note that it is a good idea to have a hand held TDS meter to compare results with the on-board meter.

Note: If the display does not illuminate, the batteries may be dead on the meter. Slide the meter up from its brackets and remove four small screws from the back. The meter takes 2 AA batteries.

Check Settings During Operation

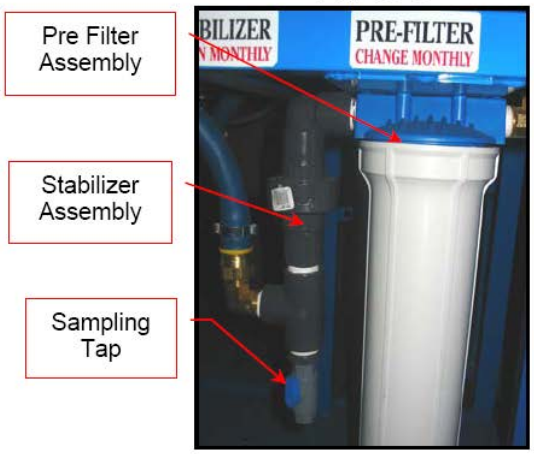
• Verify product flow meter - this is not adjustable. The amount of product is a result.
• Verify pump and membrane pressure (see Table 3 on page 14 for correct settings).

Note: It is a good idea to post a log of some type at the RO system and note the date, time, water temperature (if possible), chlorine level, pump pressure, membrane pressure(s), reject setting(s), tap pressure, and product output. Recording this data along with repair or maintenance events such as part replacements, pre-filter replacement, stabilizer bar cleaning, and carbon tank re-bedding will provide an equipment history and long-term trend information.

Change the Pre-filter

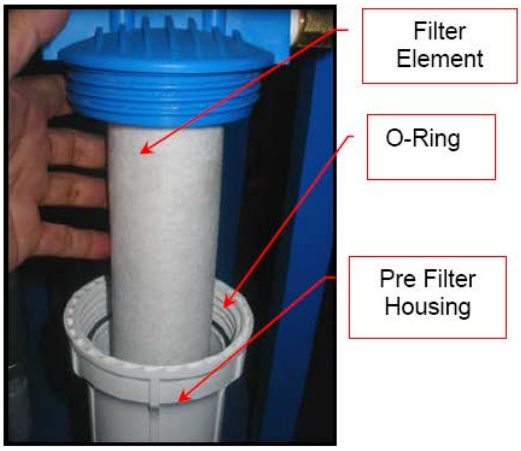
• With the unit off, open the sample tap ball valve on the bottom of the stabilizer housing assembly to relieve any water pressure. Use the filter wrench provided and thread the filter housing cannister counter clockwise off its base.
• Remove the old filter and throw it away. Be careful not to lose the o-ring that is in the upper groove of the filter housing cannister. Flush out or clean the inside of the filter housing. Add approximately 4" of water to cause the filter to "float" in the housing.
• Insert a new filter and tighten by hand. Use the filter wrench to tighten to the base a bit if a leak is detected. Be sure that the o-ring is intact and properly seated on the filter housing.

PHOTO 6



1,000gpd-4500gpd Pre Filter & Stabilizer Assembly

PHOTO 7



1,000gpd-4500gpd Pre Filter Housing & Filter Element

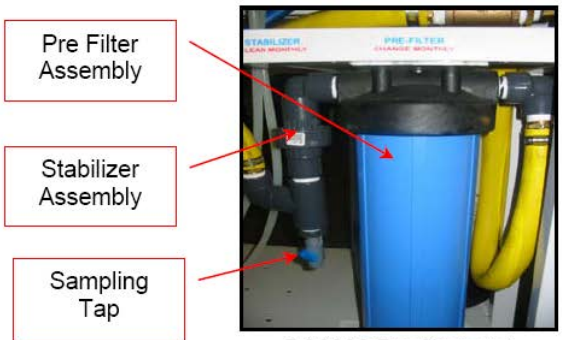


PHOTO 8

6,000gpd & Larger Pre Filter & Stabilizer Assembly

Clean the Stabilizer

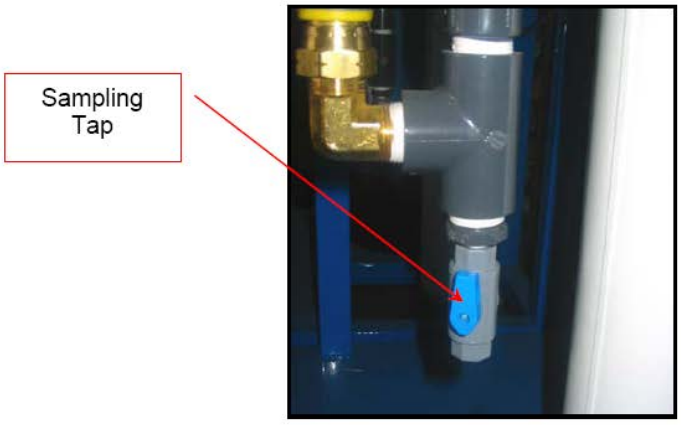
• With the RO unit off, open the sample tap ball valve on the bottom of the stabilizer housing assembly to relieve any water pressure. Unscrew the union housing the stabilizer and remove the stabilizer bar from the housing. Wire brush the bar. If it remains dull or stained proceed to the next step.
• Submerse the stabilizer in a small container containing muriatic acid (pool acid) for about 30-60 seconds. This will dissolve any mineral deposit on the inside and outside surfaces of the stabilizer. Remove from the acid and rinse off.
• Replace the stabilizer in the union housing with the hole facing up on the stabilizer and tighten the union.
• Restart the RO unit and inspect for leaks.

Safety Note: Follow all safety precautions noted on the muriatic acid bottle label. Wear or use proper personal protective equipment at all times when handling this product.

Check the Chlorine Levels (After the RO System has run at least 10 Min)

• Obtain a water sample from the sample tap on the bottom of the stabilizer housing.
• Perform a residual chlorine test for “total chlorine” on the water sample. The test must be able to measure both chlorine and chloramines.
• The result of the test should show 0ppm residual chlorine in the water sample. If chlorine is present, the carbon in the carbon tank will need to be replaced as soon as possible. (see page 27 for instructions)
• A chlorine test should also be done on the incoming source water line before the carbon tank in order to determine how much chlorine is entering the unit. Most municipalities maintain a chlorine level of 1ppm or less. The standard carbon tank is sized for this level and the carbon will normally require replacement in 12-18 months. If the chlorine level in the city water is higher then 1ppm, the carbon will be expended sooner. There may be a need to install a larger carbon filter if the levels are higher then 1ppm to insure protection of the membrane. Contact PurClean technical support for a recommendation.

PHOTO 9



PC4500 Sampling Tap

Changing the Carbon Media

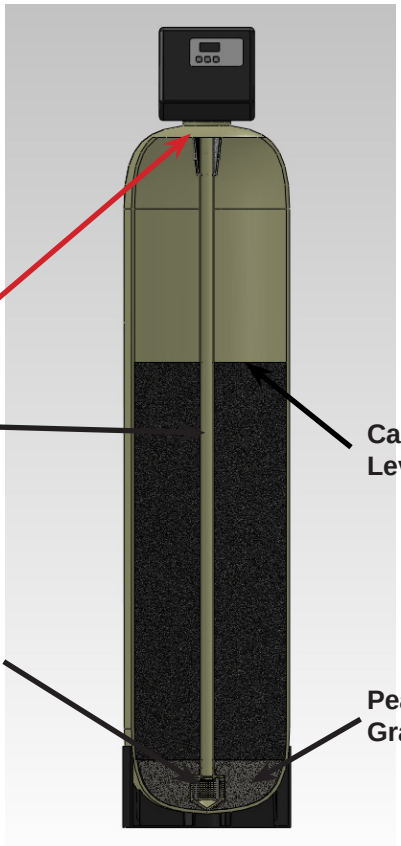
1. Turn off the water supply. Remove the inlet, outlet and drain hoses from the carbon head. Carefully remove the head from the carbon tank by unscrewing it from the tank counter-clockwise.
2. Invert the carbon tank & empty out the contents. Remove the stem and diffuser from the tank. Rinse the tank out using water. Also, rinse some water through the diffuser in both directions.
3. Reinstall and cover the stem of the diffuser with masking tape. (Avoid using duct tape as it can leave a sticky residue which the auto head may catch on and jar the diffuser if pulled off again.) The top of the stem should be level with the top of the carbon tank.

Note #1: The top of the stem should be LEVEL with the top of the carbon tank. If it is up higher it may be damaged when installing the carbon head in Step #8!!

4. Rinse the replacement Pea Gravel to remove all the fines and dirt". Pour the clean pea gravel into the tank. Cover the diffuser completely plus about 2" above it with pea gravel. Then add **XX** cubic feet of PN AGC-MG (Medical Grade Acid Washed Carbon) per the table below based on model number.

Note #2: The tank is not intended to be totally full, see the picture on the right and note the carbon level.

6. Remove the tape covering the stem and diffuser.
7. Check carbon tank threads to be sure there is no stray carbon. Clean if necessary.
8. Thread the carbon tank head on clockwise (see step 1) until it is snug onto the tank.
9. Connect the water line up to the tank, and run the water to drain until the line runs clear and for 30 seconds after.
10. Connect the carbon tank back up to the RO unit.
11. Run two manual carbon tank backwashes (this takes about 20 minutes each time). Simply press on the up and down arrow keys & hold them down for 5 seconds to initiate each back wash.
12. Restart the RO unit.



R.O. Model	Carbon Tank Capacity / Size
PC1000 WM or ST	.5 cu ft 8"x35"
PC2000 WM or ST	.5 cu ft 8"x35"
PC3000 WM or ST	1 cu ft 10"x44"
PC4500 WM or ST	1 cu ft 10"x44"
PC6000 ST*	2 cu ft 12"x52"
PC8000 ST*	2 cu ft 12"x52"
PC10000 ST*	2 cu ft 12"x52"
PC15000 ST*	3 cu ft 14"x65"
PC20000 ST*	3 cu ft 14"x65"
PC30000 ST*	5 cu ft 18"x65"

Note:

1) Use the table on the right to determine how much carbon is needed to rebed the carbon tank based on the model installed.

2) ST* indicates that PC6000 Models and larger typically are Stand Mount only.

System Troubleshooting

When contacting PurClean's Technical Support department, it is often necessary to have your PurWater serial number available. On the RO systems, the serial number is located in the middle of the frame to the left of the control box and above where the flowmeters are mounted.

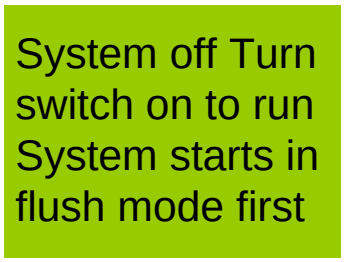
RO Serial Number Label Location

System Troubleshooting - PLC Overview

The status messages on the PLC are helpful troubleshooting aids but a quick description of the PLC itself and a look at the schematics on pages 39-42 will be beneficial as well. Smaller RO units up to 4500gpd use a PLC only. Units sized 6,000gpd and above use a PLC and an extension in order to have enough inputs and outputs. If the PLC's text screen is on and readable it has power. If the extension (if used) has a green light on, it is powered up and is communicating with the PLC. If the extension has a red light - it has power but is not communicating with the PLC. Suggested viewing is the PLC replacement video on the PurCleantech you tube channel and to try reseating the extension to the PLC. The top of the PLC from left to right has L1 (120vAC power black wire) then a Neutral (white wire) followed by eight screw connections labeled I-1 thru 1-8 (inputs one thru eight). On the bottom of the PLC are the four outputs Q1 thru Q4. If the RO unit is a 6,000 gpd or larger it has an extension since one additional output is needed. The PLC is often referred to as a "smart relay" in terms of the outputs. Each output has a 120vAC "hot" on the #1 screw. When the output is given a "close" command from the PLC, the relay "closes" sending 120vAC to the related output device via the #2 screw on that particular output. There are input and output tables on the bottom of each schematic to assist with troubleshooting. A voltmeter is often helpful as well.

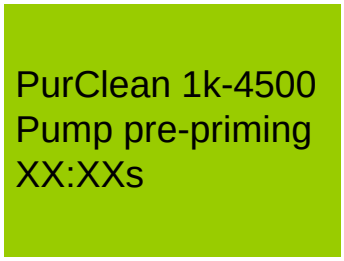
PLC System Status Messages

Below are images of the messages that may be present on the PLC (inside the control box) while operating a PurClean unit. The first step is checking this message. If a message is not present see page 32 for Troubleshooting without a Fault Message. The cause for the message is shown at the right. Please contact PurClean with questions.

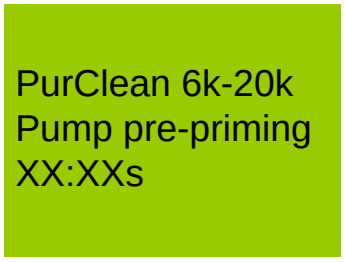


Cause: System is off.

Solution: Turn the toggle switch on the side of the control box to the "Up" position to start the unit in flush mode. (This gives 110Vac to PLC input I-3) Note that the system has power internally prior to toggling the switch. The toggle switch starts the the RO Unit when input 3 goes "Hot" at 120Vac .



Cause: The inlet solenoid (PLC Output Q-1) has been opened to allow a 30 second priming period to ensure that any air in the pump is purged and that water flows through the system prior to starting the pump. It also ensures that a vacuum is not created at the pressure switch. This message will be followed by a message saying that the storage tank is filling or a message indicating the unit has entered flush mode. The same message will appear for the 6,000 GPD - 20,000 GPD except it will say 6k - 20k at the top of the screen in place of the 1k - 4500 as seen here.



PLC System Status Messages (cont)

Note: In light of the current water conservation mindset, PurClean R.O. Systems are now built with a "Flush Jumper" on PLC Input I-8. This jumper overrides the two minute membrane flush that was once a standard occuring every two hours. This will not let the RO System go into flush if the RO has not received an activation signal from the yellow float in the last two hours. If the RO has not gotten an activation signal from the yellow float for 24 hours, it will automatically perform the low pressure flush to keep the membranes fresh.

In the event that this flush is desired, simply remove the jumper on PLC Input I-8.

System flushing
0X:XXm remaining
Flush runs 2 min
Every two hours

Bank 1 flushing
0X:XXm remaining
Flush runs 2 min
Every two hours

Cause: The 1,000 GPD - 4,500 GPD RO unit goes through its standard 2 minute flush every 2 hours. This can also be forced by cycling the toggle switch on the right hand side of the control box, down and then back up. The timer indicates the amount of time the flush has left. The 6,000 GPD and larger RO units go into flush for 4 minutes every 2 hours because it flushes two banks of membranes but only one at a time. The timer indicates how long bank one has left in the flush cycle. After Bank 1 completes it's flush, Bank 2 will start it's 2 minute low pressure flush. The timer indicates how long Bank 2 has left for that flush cycle to complete.

PurClean 1K-4500
Storage tank is
filling Next
flush in 0X:XXm

Cause: The storage tank is not full, so the RO unit is running to try to fill it up. This means that the upper float in the storage tank is providing a 120Vac return signal on PLC input I-2. Observe the flow rates and pressures to make sure that they come close to matching the numbers on the chart (page 14). If the high level float is up and you are receiving this message, AND the tank is overflowing - it is most likely due to a faulty float switch. **See Page 32 regarding RO Storage Tank Overflowing.**

PurClean 1K-4500
Storage tank is
full Next flush
runs in 0X:XXm

Cause: The storage tank is full as a result of the upper float's return signal on PLC input I-2 dropping to zero volts since the float is in the "up" position. The message gives a time frame in which the unit will flush. This message is an indication that the RO unit is working and is keeping the storage tank full. If this message is present and the tank is not full, check the yellow activation float. There should be continuity in the down position and it should show open in the up position.

No pressure seen
at press switch
Check city water
and carbon tank

Cause: There is a pressure switch on the left hand side of the control box that determines if there is enough incoming city water pressure to run the pump. If there is not, this message will be displayed. PLC input I-1 should show 120Vac when the pressure switch is made. There will be no voltage present if this message is seen. Check and make sure that the water is on, and if it is then run the 5 gallon bucket flow test (see page 34).

PLC System Status Messages (cont)

Carbon tank in backflush System will not make RO water until done	**Cause:** The carbon tank is set to backflush once a week for 25 minutes. The RO unit will not produce any water during this short period of time which prevents untreated water from entering the RO system. The PLC is aware of the carbon tank being in backflush based on a 0 Vac return signal on PLC input I-4. There is a micro switch on the carbon tank autohead motor shaft that is triggered when in backflush. The 120Vac signal going to 0 Vac tells the PLC that a backflush is in progress.
System locked! Tap pressure too low Turn switch off/on to reset	**Cause:** To prevent pump motor burnout due to short cycling, the program will shut the RO off if there are 3 trips on the pressure switch noted on PLC input I-1 going from 120Vac to 0Vac before the pump has a chance to run steadily for 1 minute. Cycling the toggle switch on the right hand side of the control box or cycling the system power can reset this fault. Refer to the 5 gallon bucket flow test (see page 34) to determine if the carbon tank is allowing enough flow to the RO unit if this is a recurring fault.
Overload tripped Check motor amp draw and reset w/ blue button	**Cause:** On the three phase RO units there is an overload supplied to protect the pump motor from burning out. The signal from the overload connects to PLC input I-5. Should the overload trip, there will be 120Vac at the input triggering the fault. The overload should be set to around one and a quarter of the full load amps stated on the motor faceplate. Reset with the blue button and check amp draw if this fault recurs.
3 phase wired backward Switch 2 incoming power leads on O/L	**Cause:** On all 3 phase systems, the 3 phase incoming power must be phased so that the pump will spin in the proper forward direction. The phase monitor is primarily installed to verify pump direction at system start up or if any subsequent site electrical work results in a phase change. If the phase monitor trips, PLC input I-6 will receive a 120Vac signal triggering the fault. If this is at start-up, simply change 2 of the leads at the incoming power source. **Do not change the power at the phase monitor.** Once the power is phased correctly the fault will clear and the green light will be on at the phase monitor. If the system has run successfully and this fault triggers **and** there has been no site work, the phase monitor may have failed. To determine this simply remove and isolate the wire on PLC input I-6. If the pump runs, replace the phase monitor.

Note: In the event that an error type of situation cannot be resolved, call 800.882.8854 for Technical Support.

Troubleshooting without a Fault Message

High TDS (above 25ppm)

If possible, verify the on-board meter reading with a hand held TDS meter. Check it coming directly from the RO, in the holding tank and the point of delivery - typically the rinse arch. If a hand held meter is not available, the on-board TDS meter is the only reading available. If a false reading is suspected or suddenly goes quite high - try cleaning the “out” probe positioned on the rear of the product flow meter. Disconnect it by pushing the ring on the fitting that holds it in place and pulling on the probe. Next, wipe it clean with a dry rag. Turn the TDS meter back on and press the ‘out’ button to be sure it reads 0. If not, continue to wipe it until it does. If it will not “zero” - replace the TDS meter. After cleaning, replace the probe and check the reading again after producing water for 10 minutes. If the TDS is still reading high it will be necessary to replace the membrane(s). If the high TDS is coupled with a high volume of product water, the cause is most likely chlorine getting past the carbon tank. If so, be sure to change the carbon in the carbon tank before replacing the membranes or the new membranes will very likely be damaged and fail in a short period of time. **A hand held TDS meter is highly reccomended!**

RO Storage Tank Overflowing

During the flush cycle, there is a small amount of water that goes through the product line and can overflow the tank. **Note: Having the flush jumper in PLC input I-8 greatly reduces the chance of tank overflow. Reference the PLC display message and pages 29-31 for explanations.** If the system is running while the tank is overflowing, check the green signal light on the side of the control box. Is it flashing? If so, the system is in flush. If the green light is on solid, the system should be running to fill the tank. Verify the yellow activation float is in the up position. If so, unplug the float - does the RO turn off? If it does, the yellow activation float has failed and needs to be replaced.

Low Product Water Volume

If all RO system settings are correct (see Table 3 on page 14) and the product water is well under what it should be it is possible the membrane(s) may be plugged. It is also possible that the city water is colder than 55 degrees and that the membrane is responding as it normally does with cold water. The colder the water, the lower the volume of product water the RO can produce. See Table 3 on page 14 for system settings and the temperature impact chart on page 33. Please note, the product water can vary greatly if the incoming water supply is quite cold. If the pump pressure can not be adjusted to 180psi, do the 5 gallon bucket test (see page 34) first - do not perform an acid bath at this time. If the pump pressure is at 180psi, the reject is set correctly and the membrane is definitely plugged, do the acid bath (see page 35). The membrane can tolerate 4 acid baths before it’s ruined.

Do not do the acid bath without being certain that the membrane is plugged!

Site Water Temperature Impact Table

	TEMPERATURE IN DEGREES F					
MODEL	77	70	65	60	55	50
PC1000	0.76	0.75	0.73	0.71	0.69	0.63
PC2000	1.53	1.50	1.46	1.42	1.39	1.25
PC3000	2.29	2.25	2.19	2.13	2.08	1.88
PC4500	3.44	3.38	3.28	3.19	3.13	2.81
PC6000	4.58	4.50	4.38	4.25	4.17	3.75
PC8000	6.11	6.00	5.83	5.67	5.56	5.00
PC10,000	7.64	7.50	7.29	7.08	6.94	6.25
PC15,000	11.46	11.25	10.94	10.63	10.42	9.38
PC20,000	15.28	15.00	14.58	14.17	13.89	12.50
PC30,000	22.92	22.50	21.88	21.25	20.83	18.75
FLOW SHOWN IN GPM AS READ ON THE PRODUCT WATER FLOWMETER						

The table above illustrates the effect of water temperatue to the production output of spot free water by the RO Unit. In colder climates it may be a good idea to use a heated water “blend valve” to deliver warmer water in the winter months to maintain the expected desired output.

5 Gallon Bucket Flow Test

This test is used to determine if there is adequate flow through the carbon tank to meet the minimal inlet flow requirements of the RO unit. A high performing unit needs both volume and pressure coming into and out of the carbon tank auto head.

Required Tools: 1 ¼" or adjustable wrench (for 1,000 GPD - 4,500 GPD) or a 5/16" nut driver (for 6,000 GPD - 20,000 GPD) and a 5 gallon bucket

1. Turn off city water source valve to the carbon tank.

2. Using wrench / nut driver, disconnect the carbon tank outlet water line at the inlet solenoid.

3. Point hose toward 5 gallon bucket and time exactly how long it takes to fill the bucket and compare that to the table below left by unit size and the time guideline below right.

4. **If it takes longer to fill the 5 gallon bucket than the target time in the note below**, shut the city water source off, disconnect the carbon tank inlet hose and repeat the test to compare the time it takes to fill the bucket directly from the city water source. If the time to fill the bucket is virtually identical, the carbon tank is not a restriction point. If the time to fill the bucket is much longer on the outlet side compared to the the inlet side, manually backflush the carbon tank and run the test again. If no improvement is noted after multiple attempts it is time to change the carbon in the tank.See the page 27 for instructions.

Model Size In GPD (gallons per day)	Water Supply Size / PSI /GPM (gallons per minute)
1,000gpd	1" / 30 @ 20
2,00ogpd	1" / 30 @ 20
3,000gpd	1" / 30 @ 20
4,500gpd	1" / 30 @ 20
6,000gpd	1" / 40 @ 30
8,000gpd	1" / 40 @ 30
10,000gpd	1" / 40 @ 30
15,000gpd	1.5" /40 @ 40
20,000gpd	1.5" /40 @ 40

5 Gallon Bucket Test Targets

For 1,000gpd-4500gpd units with a 20gpm target..... 5 gallons in 15 seconds = 20 gallons / min

For 6,000gpd-10,000gpd units with a 30gpm target.....5 gallons in 10 seconds = 30 gallons / min

For 15,000gpd-20,000gpd units with a 40gpm target.... 5 gallons in 8 seconds = 40 gallons / min

Acid Bath Procedure

Do not give any machine an acid bath without being instructed by a PurClean technician. It is not a routine part of the maintenance schedule.

To clean the membrane with muriatic acid (swimming pool acid). Follow these steps:

1. Turn system off with top float in the down position.
2. Remove float plug from the socket on the bottom of the control box to stop the unit.
3. Remove the product line from the top of the storage tank and put it where the water can go down the drain. If a reject recapture unit is in place, remove reject line from reject holding tank(s) and direct it to a drain.
4. Turn unit back on: unit will start in flush mode for approximately 2 minutes; 4 minutes if 6,000 GPD - 20,000 GPD
5. Wait for unit to complete the flush cycle, it will shut down once completed.
6. Remove filter housing.
7. Dump out the water - remove the filter - check to make sure the O-ring stays seated.
8. Fill the housing half way with muriatic acid,replace the filter, and reinstall the housing.
9. Open the re-circulation gate valve(s) fully.
10. Close reject ball valve(s).
11. Replace float plug.
12. Run unit in this mode for 20 minutes.
13. Remove float plug to stop the unit.
14. Open the reject ball valve(s) all the way.
15. Close the re-circulation gate valve(s) off.
16. Replace or jumper the float plug, then toggle the RO unit “Off” then “On”.
17. Run unit in this mode for 10 minutes.
18. Open re-circulation gate valve(s) 2 full turns.
19. Slowly close reject valve(s) until reject flow meter(s) show correct flow. See Table 3 Page 14.
20. Open or close the re-circulation gate valve(s) until pump pressure shows 180psi. See Table 3 Page 14
21. If after two 2 cleanings your membrane(s) performance is still unacceptable, it may be necessary to replace the membrane(s). See next page for instructions.

Safety Note: Follow all safety precautions noted on the muriatic acid bottle label. Wear or use proper personal protective equipment at all times when handling this product.

Replacing the Membranes Instructions and Chart

1. Remove the top cap of the membrane(s) via removal of the band clamp(s).
2. Remove the membrane(s) by grabbing the product center tube with pliers.

Note: If the RO System is a 6,000 GPD or larger, when removing old membranes, keep the old coupler do not use the one that is in the new membrane box!!

3. Put water based lube on the product center tubes and on the V-rings of new membranes and install with the V-ring on top of the membrane and the flow arrow pointing downward. The lube on the center tubes will help prevent rolling the orings in the center caps.
4. Be sure not to roll the V-ring and to get the center posts in the bottom and top housings without displacing the O-rings in the center of each cap.

Note: In systems with 61” membrane housings: Install the 40” membrane first and the 21” second. (The 21” membrane will be at the top of the membrane housing).

Model	Membrane Housing Size and Quantity	Membrane Quantity and Model
PC 1000	4"x21" - 1ea	(1) 4x21 ESPA1
PC 2000	4'x40" - 1ea	(1) 4x40 ESPA1
PC 3000	4'x40" - 1ea	(1) 4x40 ESPA3
PC 4500	4"x40" - 2ea	(2) 4x40 ESPA 1
PC 6000	4"x61" - 2ea	(2ea) 4x21 (2ea) 4x40 ESPA1
PC8000	4"x40" - 4 ea	(4) 4x40 ESPA 1
PC10000	4"x40" - 4 ea	(4) 4x40 ESPA3
PC15000	4"x61" - 4ea	(4ea) 4x21 ESPA1 (4ea) 4x40 ESPA3
PC20000	4"x61" - 6ea	(6ea) 4x21 ESPA1 (6ea) 4x40 ESPA3
PC30000	4"x61" - 8ea	(8ea) 4x21 ESPA1 (8ea) 4x40 ESPA3
PC40000	4"x61" - 12ea	(12ea) 4x21 ESPA1 (12ea) 4x40 ESPA3

Control Box Layout, Function, and Electrical Diagram Tips

There are four electrical / control panel diagrams included in this manual. Two are for single phase models and two cover three phase RO models. They are very similar in layout and content. 1,000gpd thru 4500gpd units have a PLC only. The 6,000gpd units and larger have a PLC and an extension since one additional output is needed on larger units. See page 29 for a PLC overview.

Layout:

The far right of the schematics show a green light as well as a toggle switch. Both of these components are on the outside / right side of the control box. Power is on to internal components when the unit is either plugged in, or, in the case of a hard wired conduit - the breaker is on. The toggle switch “starts” the unit by giving a 110Vac signal to PLC input I-3. The green signal light gets it’s voltage from PLC output Q3. On the bottom of the control box is a 2 wire float receptacle. The yellow upper activation float from the RO storage tank plugs in here. If the float is in the “down” position a 110Vac return signal is present on PLC input I-2 telling the PLC to make spot free water to fill the tank. On the left side of the control box is a pressure switch. If the pressure switch is made, a 110Vac return signal is present on PLC input I-1 telling the PLC there is sufficient pressure to safely run the pump in order to flush the system or make spot free water.

There is a transformer in the upper right side of each control box. The purpose of the transformer is to provide a110Vac source labeled “X1” to operate the PLC, valves, source voltages for the float, the pressure switch, solenoid valves, motor contactor, etc. The transformer also has a 12Vac tap labeled “X2” that provides the power for the carbon tank autohead control board and motor. Lastly, there is a tap labeled “X3” that provides a “common” or “neutral” for the unit.

The PLC and Extension (6000gpd & larger) is mounted on a DIN Rail below the transformer. To the left of the PLC is a series of grey “Wago” terminal blocks that are jumped together. The X3 tap off the transformer is connected here providing the connecting point for all the white neutrals in the control box. The X1 tap of the transformer is connected to the top of a fuse holder via a solid black wire which in turn provides a “fused 110Vac” that is connected to the series of black “Wago” terminal blocks to the left of the grey ones. All control box 110Vac hot voltages including PLC power are on the downside of this fuse. The X2 tap of the transformer is attached to the top side of a fuse holder via a red/black “tiger striped” wire which provides a “fused 12Vac” for the carbon tank auto head as noted. On the left side of the fuse holders are four connections for the carbon tank. On the immediate left note blue wire (bottom side) / red wire (top side) returning the 110Vac signal from the microswitch to PLC input I-4. Just to the left of that, the black wire (top side) / brown (bottom side) take 110Vac to the carbon tank micro switch. If the carbon tank goes into a back flush, the 110Vac signal drops out & the PLC will recognize a back flush is in progress and stops the RO Unit from producing spot free water. On the far left of the DIN rail are the other two wires for the carbon head. The red “tiger striped” (top wire) 12Vac wire comes from the fuse holder and pairs with the black (bottom) wire to power the carbon head display board & mechanical components. There is a white (top) neutral wire that pairs with a white (bottom) wire that runs out to the carbon tank autohead. One final input of note is PLC input I-8 for the flush relay jumper. See the in depth explanation on page 30. This input will not be of any concern from a troubleshooting standpoint.

Control Box Layout, Function, and Electrical Diagram Tips (cont.)

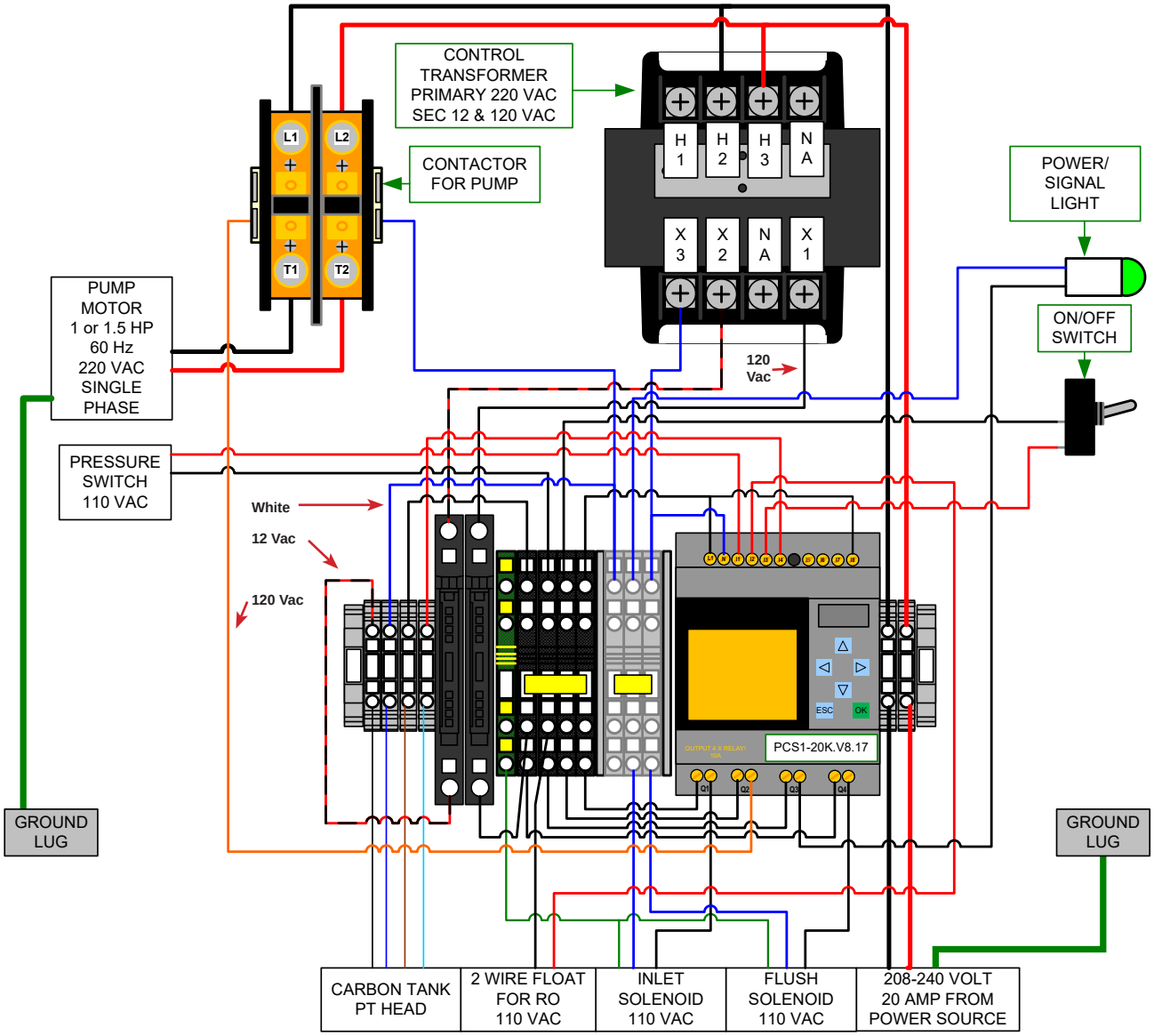
Single Phase Pump Details

The single phase RO units are fairly simple from a component function and diagram perspective. If the PLC determines (based on PLC inputs) that the pump should be on, it closes PLC output Q-2 providing a 110Vac coil voltage to the contactor. The coil then “pulls in” and the 120-240 Vac is passed from the power source to the pump which will turn it on.

Three Phase Pump Details

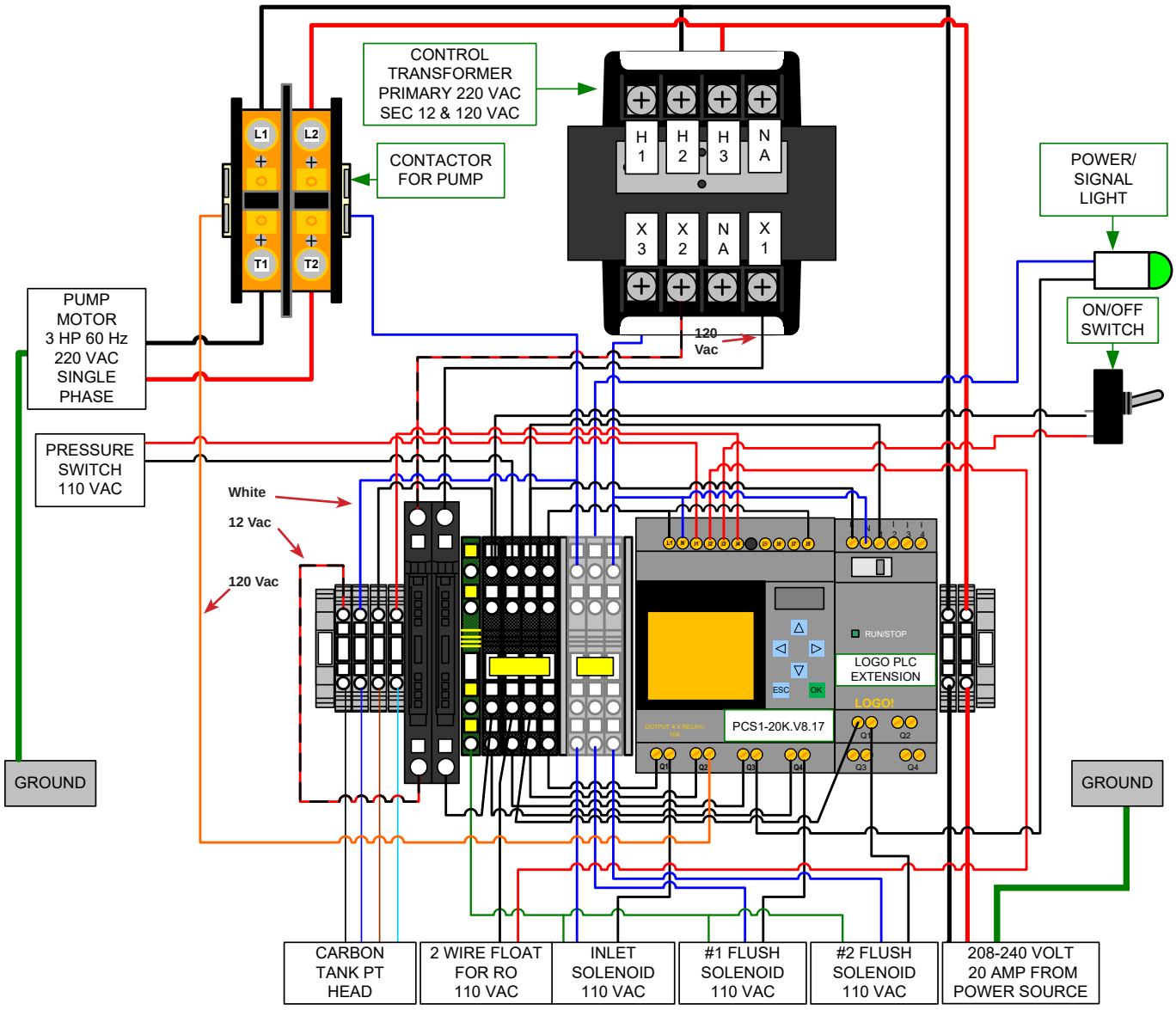
The control box is the same size but is packed a bit tighter with more components. Three phase RO units have a contactor that works in exactly the same manner as single phase units reacting to PLC output Q-2 with an additional two components in place. There is an overload for the pump on the far right of the DIN rail. Incoming three phase power is shown on the bottom and exits the overload on the top. The overload should be set at approximately 1.25 times the FLA (full load amps) that is found on the pump nameplate or label. If the overload is tripped it can be reset with the blue reset button. In the event that the overload has tripped, a 110Vac signal is detected by the PLC on input I-5 and displayed on the text screen as seen in the troubleshooing section on page 31. Note that the FLA will depend on whether the pump is low voltage or high voltage three phase. Two legs of the overload are used for the transformer similar to single phase systems. If low voltage three phase, the wires are color coded black-red-blue and the H2-H3 lugs are used on the top of the transformer as shown in the diagrams. If high voltage three phase, the wires are color coded brown-orange-yellow and the H1-H3 lugs are used on top of the transformer. To the left of the transformer is a phase monitor that is a pump protection device. It’s purpose is to prevent a pump from running out of phase (backwards) and being damaged. In the event that an out of phase situation is detected on PLC input I-6 -- the PLC interprets a 110Vac signal as the pump being out of phase. This is covered in the troubleshooting section page 31 requiring a reversal of two of the 3 leads on the incoming power.

1,000 – 4,500 GPD
RO CONTROL PANEL



INPUTS	OUTPUTS
I1 - PRESSURE SWITCH I2 - RO FLOAT I3 - ON/OFF SWITCH I4 - CARBON HEAD DRY CONTACT I8 – FLUSH JUMPER	Q1 - INLET SOLENOID Q2 - CONTACTOR Q3 - SIGNAL LIGHT Q4 - FLUSH SOLENOID

6,000 – 20,000 GPD
RO CONTROL PANEL



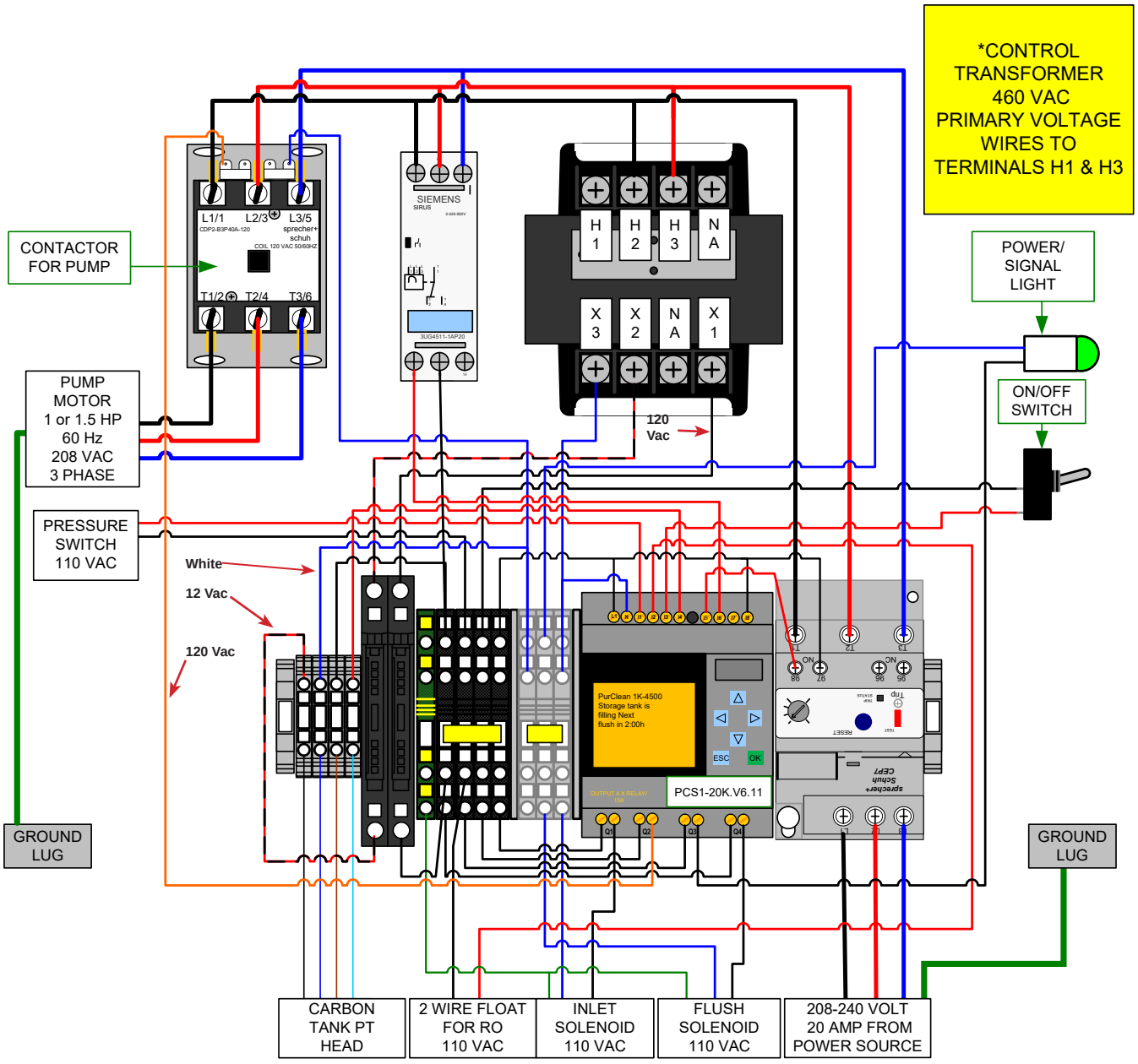
INPUTS

I1 - PRESSURE SWITCH
I2 - RO FLOAT
I3 - ON/OFF SWITCH
I4 - CARBON HEAD DRY CONTACT
I8 – FLUSH JUMPER

OUTPUTS

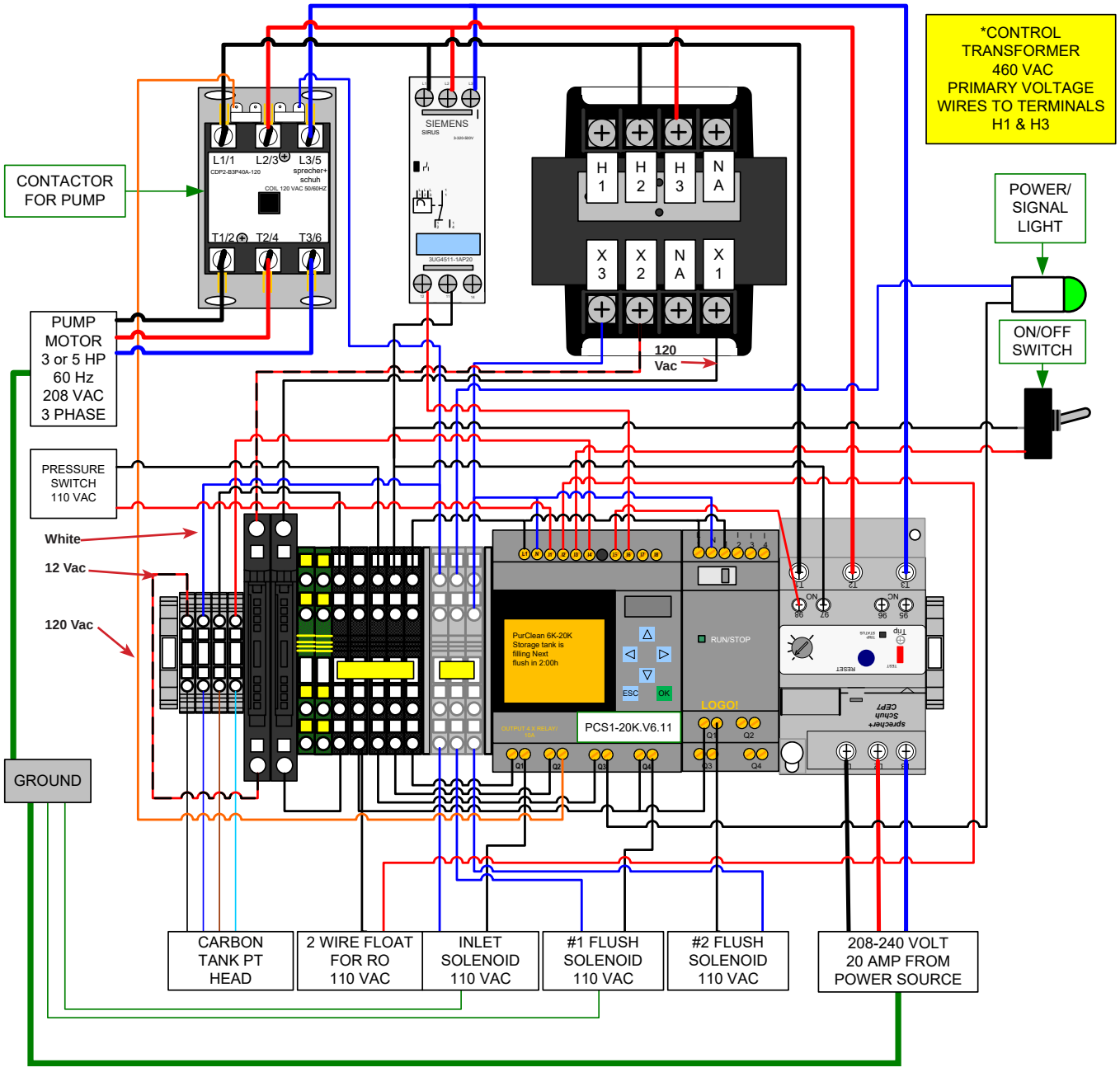
Q1 - INLET SOLENOID
Q2 - CONTACTOR
Q3 - SIGNAL LIGHT
Q4 - FLUSH SOLENOID #1
Q5 – FLUSH SOLENOID #2

1,000 – 4,500 GPD - 3 PHASE
RO CONTROL PANEL



INPUTS	OUTPUTS
I1 - PRESSURE SWITCH I2 - RO FLOAT I3 - ON/OFF SWITCH I4 - CARBON HEAD DRY CONTACT I5 - OVERLOAD RELAY I8 – FLUSH JUMPER	Q1 - INLET SOLENOID Q2 - CONTACTOR Q3 - SIGNAL LIGHT Q4 - FLUSH SOLENOID

6,000 – 20,000 GPD - 3 PHASE
RO CONTROL PANEL



INPUTS

I1 - PRESSURE SWITCH
I2 - RO FLOAT
I3 - ON/OFF SWITCH
I4 - CARBON HEAD DRY CONTACT
I5 - OVERLOAD RELAY
I6 – PHASE MONITOR
I8 – FLUSH JUMPER
I9 – 6K-20K JUMPER

OUTPUTS

Q1 - INLET SOLENOID
Q2 - CONTACTOR
Q3 - SIGNAL LIGHT
Q4 - FLUSH SOLENOID #1
Q5 – FLUSH SOLENOID #2

Three Button Carbon Tank Auto-Head Supplement

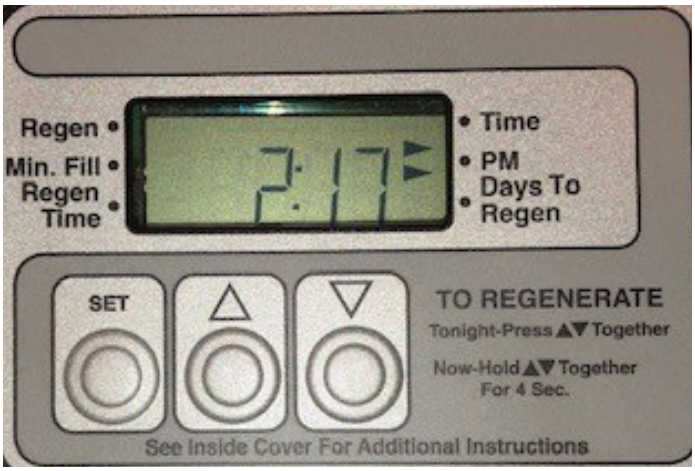
The Carbon Tank Auto-Head connecting / flushing prior to start-up is covered on page 11 of this manual. If there are any questions in that area, please review that section. The Auto-Head will require setting the correct time once the RO system is up and running. The exact time is not critical plus or minus a few minutes.

Time is set at the factory to a default of 12 noon prior to shipment. Picture 1 shows a current time of 2:17 PM. Time is set by pressing the **SET** button for approximately 3 seconds. Adjust the hour by using the up / down arrows to the correct hour. (if it is PM, the indicator will light up as in Picture 1). Once the hour is correct, press the **SET** button once - then adjust the minutes using the up / down arrows. Once the minutes are correct, press the **SET** button.

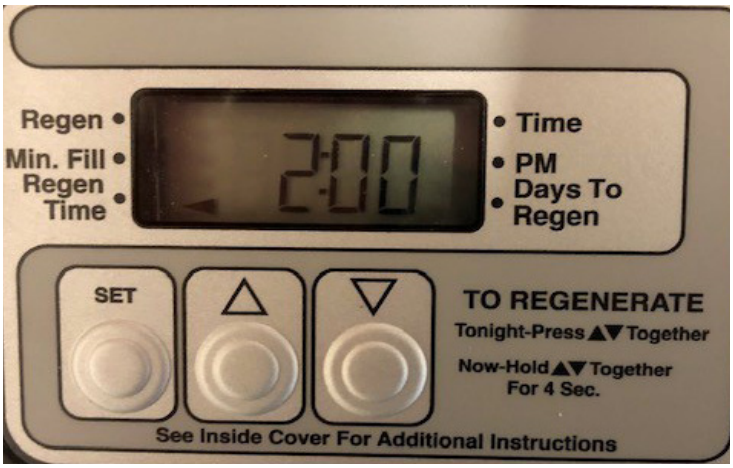
The Regen Time is factory set for 2am as a default since most washes are closed & the RO system is likely idle. To reset the time for some reason, press the **SET and Up** arrows for approximately 3 seconds. There will be an arrow next to the regen time as seen in Picture 2. Set hour to 2 am using the up / down arrows and press **SET**. This will take the screen to the Days to Regen which should be 7. Note the arrow next to the 7 in picture 3. If it is not 7, use the up / down arrows and then press **SET** again - this will return the Auto-Head to normal operation.

In the event that a manual regeneration is desired press and hold the up / down arrows for approximately 5 seconds as noted on page 11 & it will begin immediately.

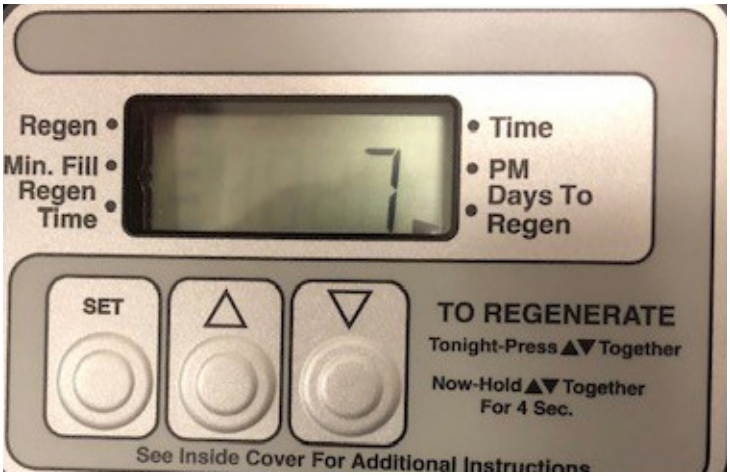
Picture 1



Picture 2

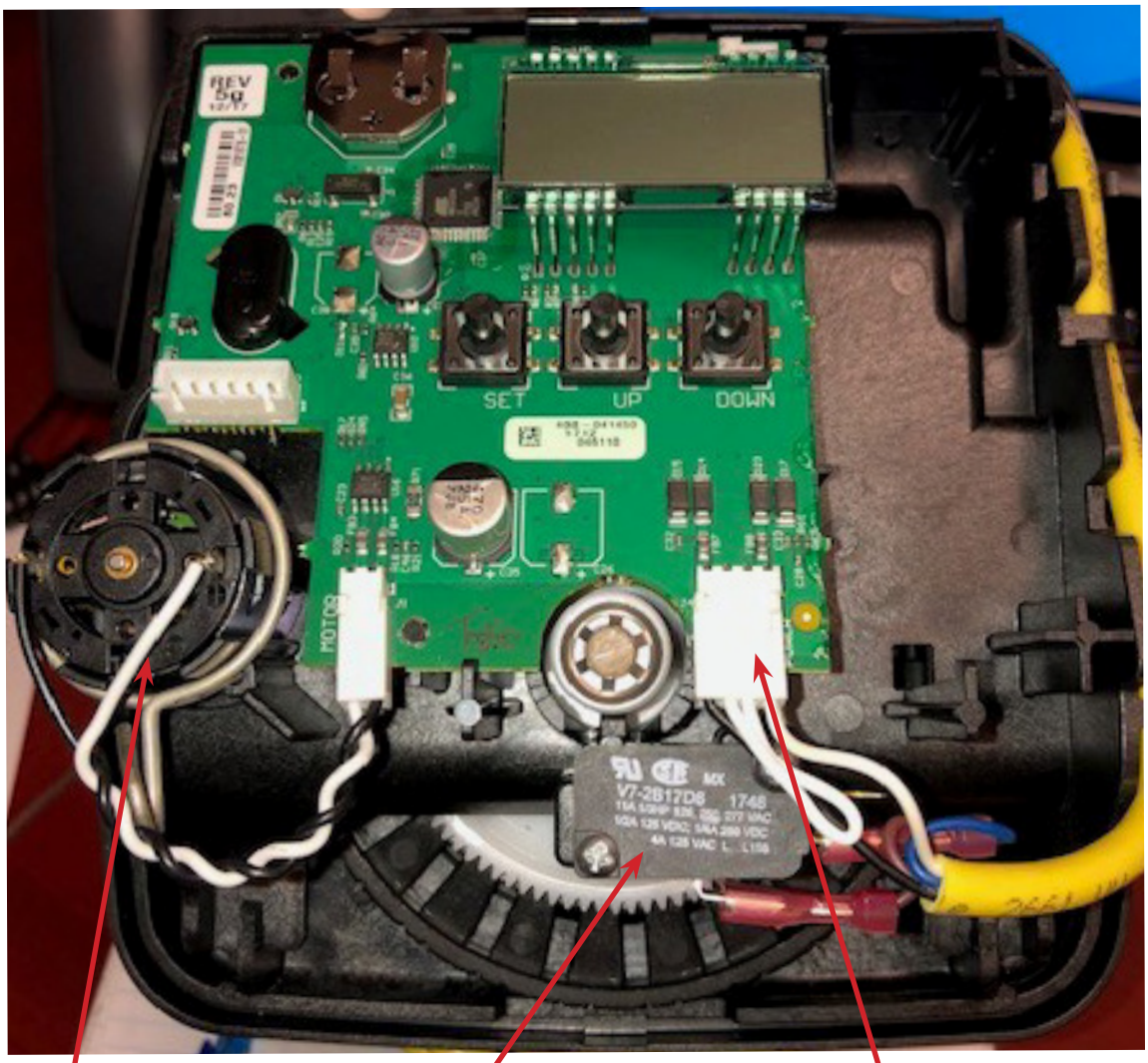


Picture 3



Three Button Carbon Tank Auto-Head Supplement (con't.)

The picture below shows some of the the internals after removing the carbon head cover. Note that the drive board clips on to the back plate which, in turn, clips to the auto head base. At times, usually due to vibration in shipping, the back plate needs to be popped out & back in to seat it correctly to the base so the motor is engaged correctly.



PT Auto-Head Motor **Micro-switch (120vAC)** **12vAC connector**

The auto-head itself is a fairly stable device. It does not require regular maintenance but is removed when changing out the carbon as discussed in the maintenance section on page 27. Occasionally an error will be present on the digital display. If an "E1, E2, E3, or an E4" is displayed it can usually be cleared by reseating the back plate to the base as described above.

Five Button Carbon Tank Auto-Head Supplement

The Carbon Tank Auto-Head connecting / flushing prior to start-up is covered on page 11 of this manual. If there are any questions in that area, please review that section. The Auto-Head may require setting the correct time once the RO system is up and running. The exact time is not critical plus or minus a few minutes.

Time is set at the factory to a default of 12 noon prior to shipment. Picture 1 shows a current time of 8:44 AM. Time is set by pressing the **CLOCK** button. Adjust the hour by using the up / down arrows to the correct hour. (if it is AM, the indicator will light up as in Picture 1). Once the hour is correct, press the **NEXT** button once - then adjust the minutes using the up / down arrows. Once the minutes are correct, press the **NEXT** button to go to the next setting.

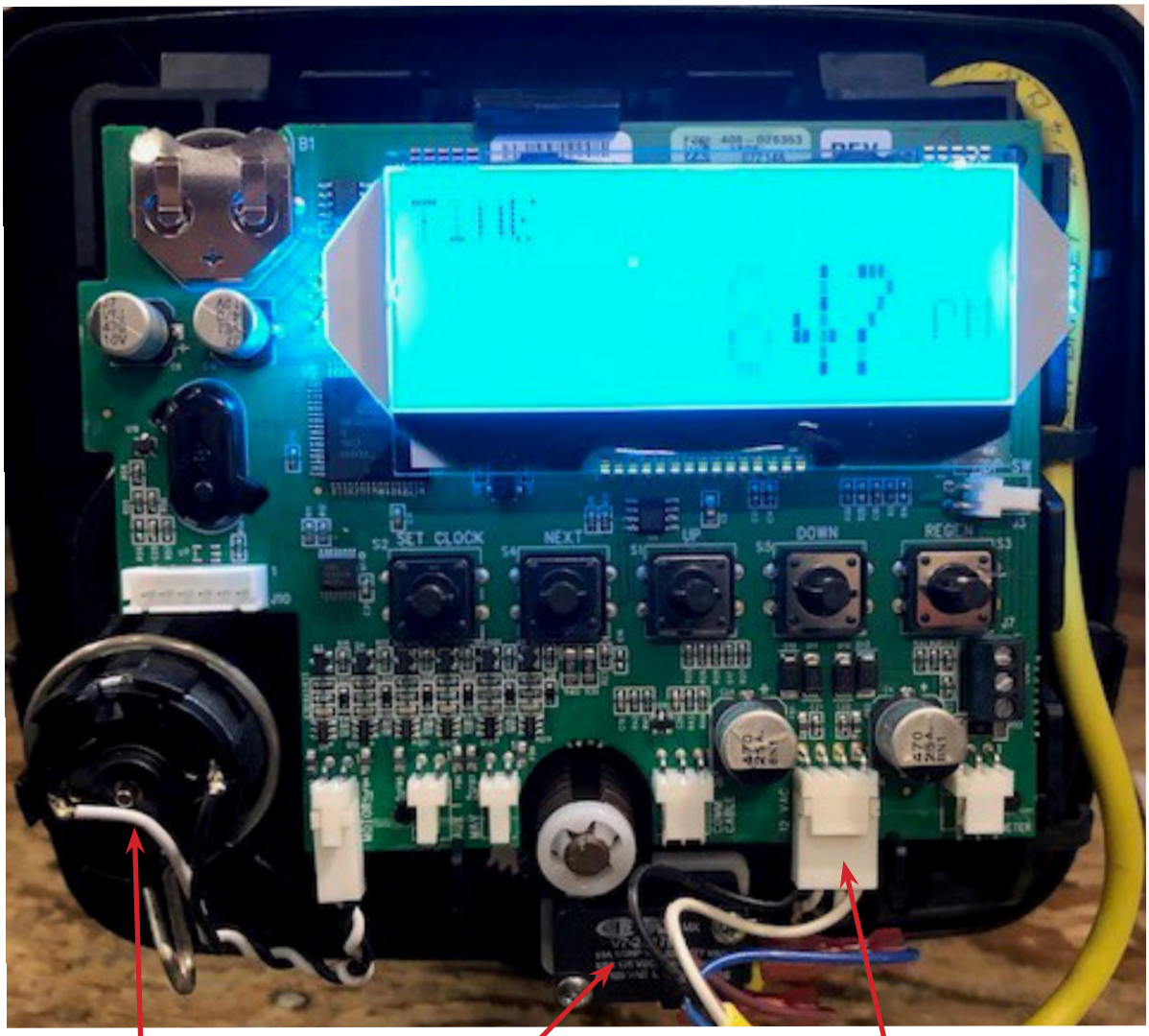
The days between regen is factory set for 7. In the event it needs to be reset - hold Down the **NEXT** and **UP** buttons for a few seconds until the “DAYS BETWEEN REGEN” screen appears. Use the Up / Down arrow keys until the days between is 7. Then press the **NEXT** button to go the next setting.

The Regen Time is factory set for 12am as a default since most washes are closed & the RO system is likely idle. To reset the time for some reason, use the up / down arrow buttons to set hour to 12 am and press **NEXT**. This will take the screen to the next setting.

The Energy Save is the last screen setting from the factory and should reflect the **ON** setting. This will put the screen into the energy saving mode where it will remain dim unless accessed. Press **NEXT** to exit the programming mode.

Five Button Carbon Tank Auto-Head Supplement (con't.)

The picture below shows some of the the internals after removing the carbon head cover. Note that the drive board clips on to the back plate which, in turn, clips to the auto head base. At times, usually due to vibration in shipping, the back plate needs to be popped out & back in to seat it correctly to the base so the motor is engaged correctly.



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NEW WAVE INDUSTRIES, LTD. LIMITED WARRANTY

NEW WAVE INDUSTRIES, LTD. Warrants to the original purchase only, that all PUR-CLEAN REVERSE OSMOSIS Models and PUR-CLEAN MOBILE PRESSURE WASHER SYSTEMS will be free of defects in materials and/or workmanship for a period of one (1) year (spiral wound membranes, six (6) months) from the date of delivery to the original customer, provided the enclosed instructions for operation, maintenance and care have been strictly complied with and the validation page has been sent to and received by NEW WAVE INDUSTRIES, LTD.

This warranty is expressly limited to the repair or replacement of the defective component. Excluded from warranty are hoses, guns, hose reel spindles, gauges, unloaders and pump seals.

This warranty does not extend to damages to person(s) or property or liabilities incidental, consequential or contingent.

Purchaser shall notify NEW WAVE INDUSTRIES, LTD. in writing or by telephone should any defect appear or should any damage occur to the unit(s) for notification of valid warranty claim.

NEW WAVE INDUSTRIES, LTD. will issue a Returned Goods Authorization (RGA) number for defective parts (see RGA Policy and Procedure Insert).

There are no other warranties expressed or implied.

RETURN GOODS POLICY

NEW WAVE INDUSTRIES, LTD. RGA POLICY AND PROCEDURE POLICY

- All returns must be authorized by NEW WAVE INDUSTRIES, LTD. (Service Department) with a Returned Goods Authorization (RGA) form prior to return.
- All returned goods must be received by NEW WAVE INDUSTRIES, LTD. within 30 days or you will not receive credit. All goods not received within 30 days will not receive credit.
- Credit is contingent upon a credit evaluation inspection. 6

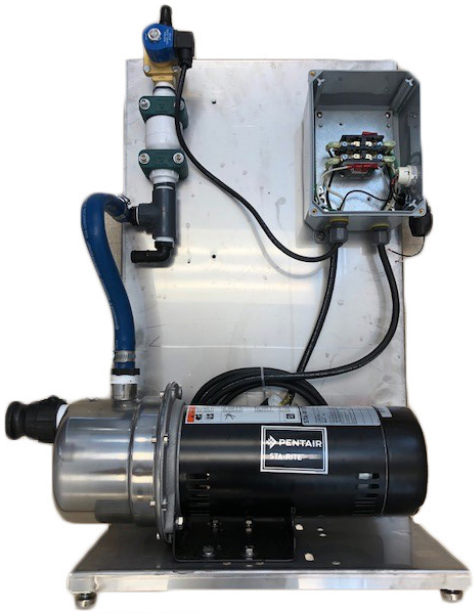
  Customer must prepay freight. **PROCEDURE**
- Contact New Wave's Service Department and give original invoice number and date of order to request an RGA.
- New Wave's Service Department will issue an RGA form and send it via fax or mail.
- Include the RGA form inside the package and clearly write the RGA number on the outside of the package.
- Customer must prepay freight.
- When returned parts are received by NEW WAVE INDUSTRIES, LTD., credit for the parts is contingent upon credit evaluation inspection and warranty terms.
- If the customer wants to place an order for the part(s) during the return process, then the customer is agreeing to purchase the replacement part(s) and pay the invoice when received. If the returned part(s) is found to be a warranty item NEW WAVE INDUSTRIES, LTD. will issue a credit redeemable in parts.
- If New Wave Industries, LTD. sends a part that was not ordered by the customer, the customer needs to get an RGA number from NEW WAVE INDUSTRIES, LTD.
- Include the RGA number clearly on the outside of the box and the part(s) to be returned.
- NEW WAVE INDUSTRIES, LTD. will issue a call tag to the customer for pickup of the wrong part(s) and ship it back to New Wave's factory, at New Wave's expense.
- NEW WAVE INDUSTRIES, LTD. will pay standard ground freight for warranty replacement parts. If the distributor/customer requires overnight/second day air delivery, shipping will be at customer's expense.

Revision History

December 2018	**Manual Updated / Reformatted**

PURCLEAN™
SPOT-FREE RINSE SYSTEMS

PURCLEAN™ REPRESSURIZATION / DELIVERY PUMP Technical Manual



3315 Orange Grove Avenue
North Highlands, CA 95660

1.800.882.8854

www.purclean.com

MAKING EVERY DROP COUNT

NEWWAVE INDUSTRIES™ LTD.

MADE IN THE USA

Revision 04/18

Warning!
Hazardous Voltage: Can Cause Serious Injury or Death.

- Disconnect power at main panel before connecting electrical power supply to PurWater unit panel or working on electrical connections.
- Wire unit for correct voltage. See "Installation & Operating Instructions" label on the electrical panel cover.
- Meet National Electrical Code and local codes for wiring.
- Follow wiring instructions in this manual when connecting the PurWater unit to the power source.

Caution! This system has been evaluated for use with water only.
Product output is for non-potable use only.

For Assistance, Contact PurWater 800-882-8854

Table of Contents

Repressurization / Delivery Pump General Description

The repressurization, (often called a “Repress” or simply a Delivery Pump), is typically used to deliver Reverse Osmosis (often called “R.O.” or “Spot Free”) water from a holding tank to a car wash rinse application. In some cases, Reverse Osmosis reject water is collected in a tank and is similarly delivered by a different pump to an application in the car wash. This is know as a “Reject Capture” or “Reject Recovery” type of pump.

There are two basic types of pumps available with options for each type. This manual will cover the most common pump configurations that are found in the PurClean Equipment pump catalog line.

Low Pressure Pumps

LP or low pressure pumps are available in 1, 1.5, 2 horsepower models and can deliver 15-35 gallons per minute over a 30-50psi range. In the event that a 3hp requirement exists there is an option for that as well. The low pressure pumps are available in either single or three phase voltage configurations. The three phase pumps can be ordered and built in either low (230) or high (460) voltage fashion - again, based on the car wash requirements. In addition, these low pressure pumps can be ordered as “voltage activation” (typically 24V or 110V) or “pressure activation” where the car wash demand triggers a pressure switch that reacts to a drop in line pressure that turns the pump on. The pump type should be selected based on the specific car wash requirements.

High Pressure Pumps

HP or high pressure pumps are available in 1hp (10 gallons per minute), 2hp (19gpm), or 3hp (27gpm) and typically deliver in the 150 psi range. These pumps are available in either single or three phase voltage configurations. The three phase pumps can be ordered and built in either low (230) or high (460) voltage configurations - again, based on the car wash requirements. These high pressure pumps are ordered with a 24V, 110V, or 220V “voltage activation”. The pump type should be selected based on the specific car wash requirements.

Fresh Water Bypass

The fresh water bypass (FWB) is an option that will provide fresh water as a substitute for the water in the tank in the event that the tank is low. If the pump is used to deliver spot free water, the FWB is mounted on the pump package and has a solenoid that is activated when the bypass is engaged. If the pump is set up as a reject capture, the fresh water bypass (FWB) function is accomplished using a mechanical float valve mounted on the storage tank. More details on the FWB are illustrated later in this manual. The reject capture mechanical bypass is shown on pg 15.

For any other delivery pump information please contact PurClean Equipment Sales or Technical Support 800-882-8854.

Repressurization / Delivery Pump General Description

Set-up Transfer To Portable (STTP)

The STTP is a pump package type designed typically to transfer spot free water from a storage tank to a portable unit - often a truck mounted tank used for mobile vehicle washing type of requirements. It an be built in single or three phase voltage configurations. If it is voltage activated it can be built to meet either 24V or 110V wash activation needs. Most STTP units are built in a “push button” / timer configuration to prevent secondary tank overflow issues.

Self-Serve

The Self-Serve High Pressure Pump Package is designed for a multi-bay wash facility and is typically used at the end of the wash sequence for the spot free rinse portion of the wash. The self serve water is typically delivered via an overhead rotating boom that has a flexible hose with a trigger gun attached. The pump size is determined by the number of bays in a “worst case” scenario in terms of maximum demand in gallons per minute. This can be calculated by the delivery rate in gallons per minute required for each wash bay multiplied by the number of wash bays at the facility.

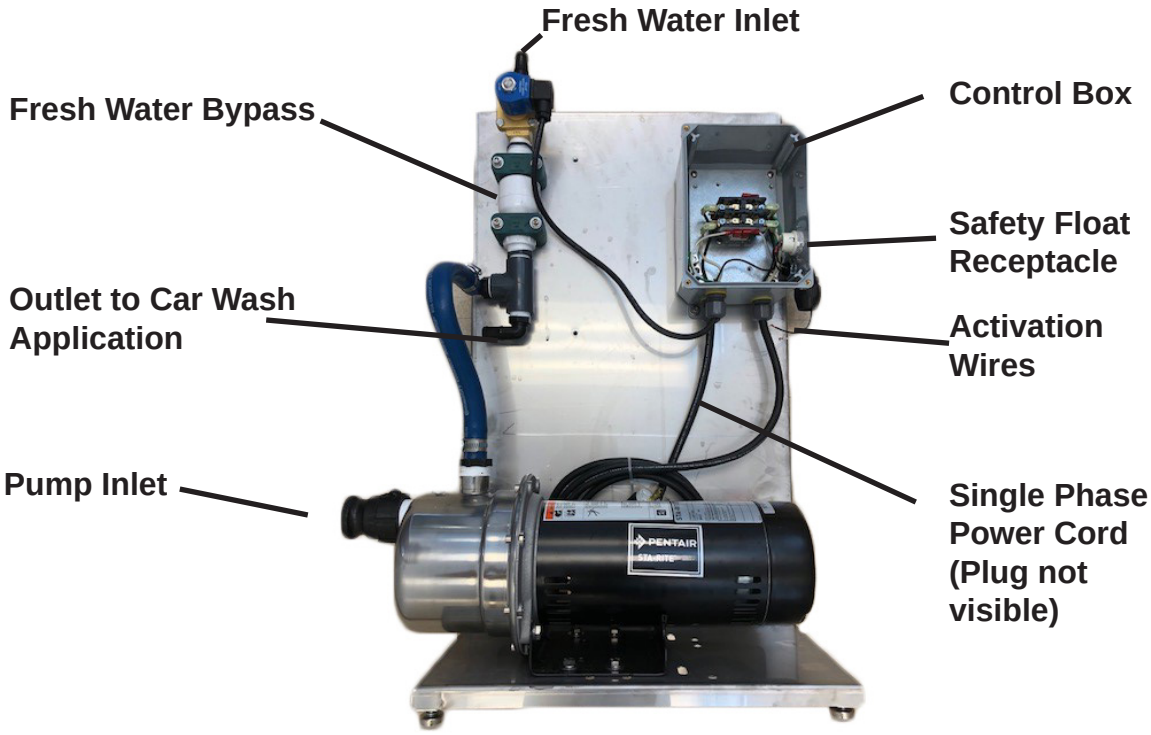
Reference the Data Sheet on the next page to assist with pump selection or to answer any questions on pump capacity or power requirements.

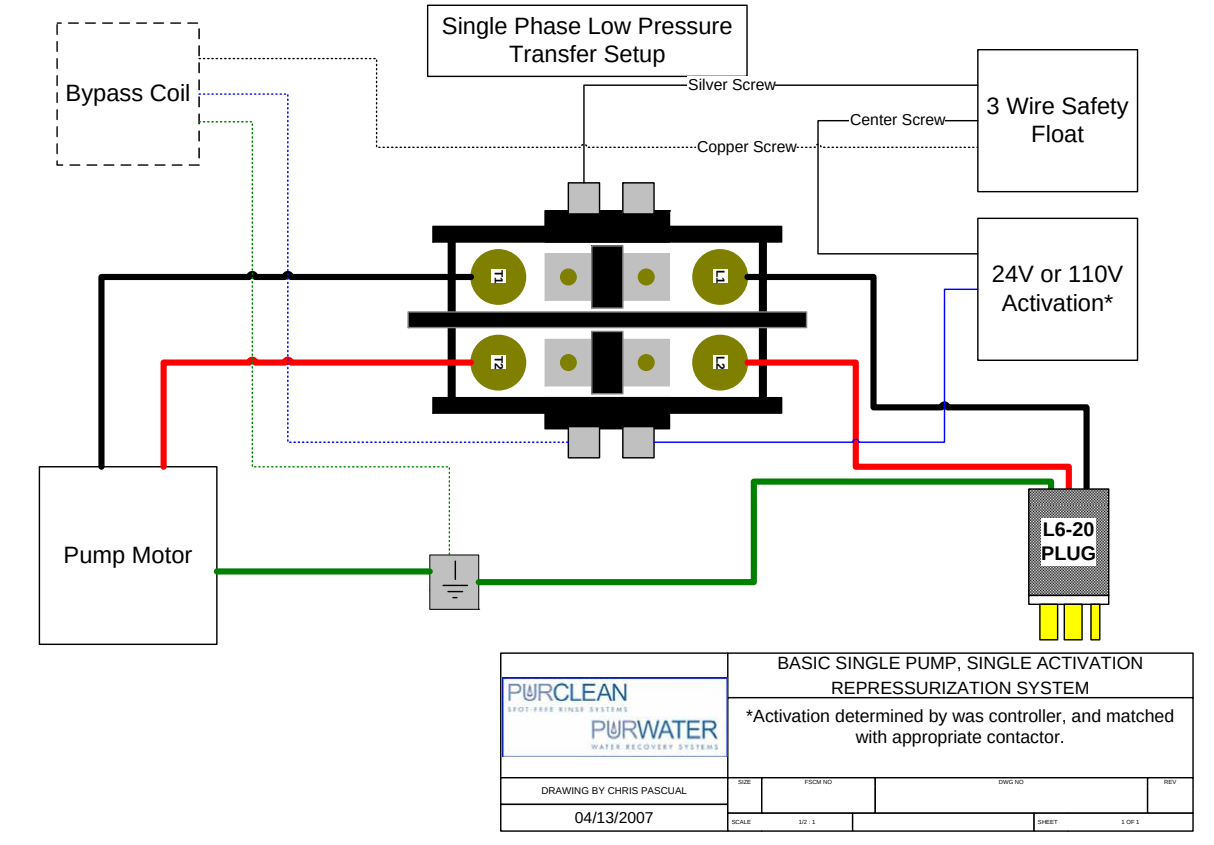
For any other delivery pump information please contact PurClean Equipment Sales or Technical Support 800-882-8854.

Repress Pump Data Sheet

	POWER AMPS				MOTOR SIZE	SUCTION LINE SIZE INTO EQUIPMENT	CITY WATER BYPASS SIZE	DISCHARGE PRESSURE AT THIS GPM
	115 VOLT / FLA	220 VOLT SINGLE PHASE	220 VOLT 3 PHASE / FLA	460 VOLT / FLA				
RO DELIVERY								
PC1HP DELIVERY	15	10.25	5.5	3.25	1 HP	1"	3/4"	13 GPM/150 PSI
PC1HP3P DELIVERY	15	10.25	5.5	3.25	1 HP	1"	3/4"	13 GPM/150 PSI
PC2HP DELIVERY	N/A	20	10	5	2 HP	1 1/4"	3/4"	19 GPM/150 PSI
PC2HP3P DELIVERY	N/A	12	10	5	2 HP	1 1/4"	3/4"	19 GPM/150 PSI
PC21MS DELIVERY	N/A	12	6.1	2.8	2 HP	1 1/4"	3/4"	30 GPM/50 PSI
PC21MS19GB	N/A	12	6.1	2.8	2 HP	1 1/4"	3/4"	30 GPM/50 PSI
PC21MS19GB3P	N/A	N/A	6.1	2.8	2 HP	1 1/4"	3/4"	30 GPM/50 PSI
PC3HP DELIVERY	N/A	14.5	9.5	5	3 HP	1 1/2"	1"	27 GPM/150 PSI
PC3HP3P DELIVERY	N/A	14.5	9.5	5	3 HP	1 1/2"	1"	27 GPM/150 PSI
CJ90F DELIVERY	19.2	9.6	N/A	N/A	1.5 HP	1 1/4"	3/4"	15 GPM/50 PSI
CJ90F /BLAD DELIVERY	19.2	9.6	N/A	N/A	1.5 HP	1 1/4"	3/4"	15 GPM/50 PSI
1MS DELIVERY	20	10.8	10	5	2 HP	1 1/4"	3/4"	30 GPM/50 PSI
PCLB1035 DELIVERY	12.6	6.6	5.6	1.7	1 HP	1 1/4"	3/4"	15 GPM/50 PSI
2MS1H2A4 DELIVERY	N/A	17	8.6	4.2	3 HP	1 1/2"		
1MS1G2A4 DELIVERY	N/A	12	6.1	2.8	2 HP	1.1/4"		

Low Pressure Single Phase Pump Example
Voltage Activated with Fresh Water Bypass Option

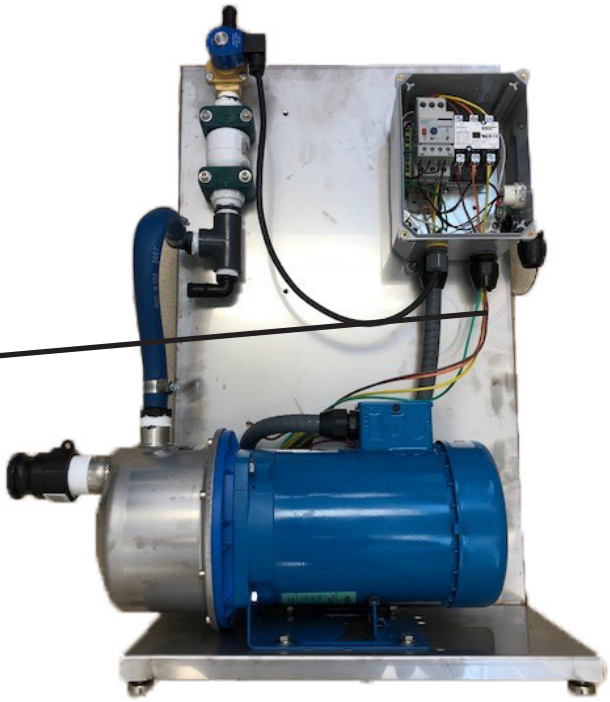




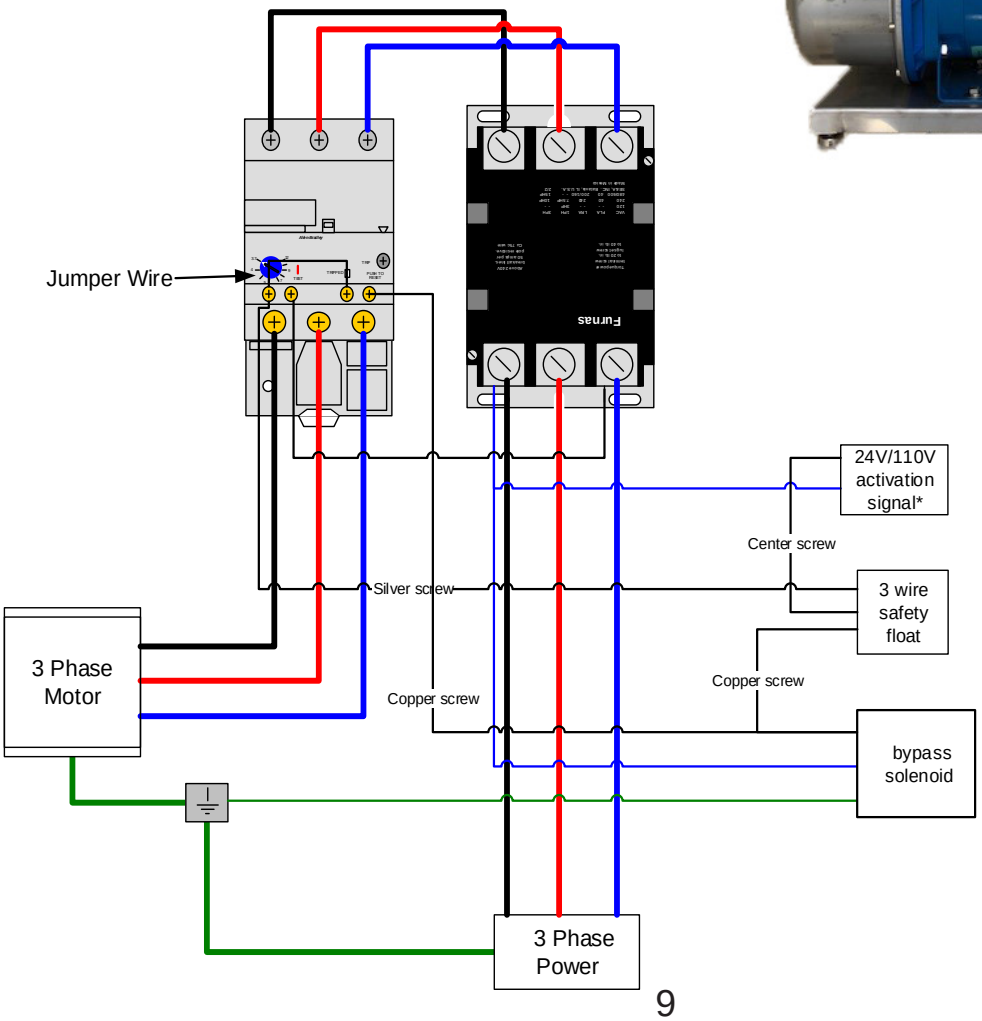
Low Pressure Three Phase Pump Example
Voltage Activated with Fresh Water Bypass Option

Note: The connections for the fresh water, outlet to the car wash application, the pump inlet, safety float, and activation wires are identical between the single & three phase units. Note the presence of a a larger contactor, and the need to include an overload component as shown in the schematic. See start up & check pump rotation!

There is a factory "pigtail" provided for incoming power.



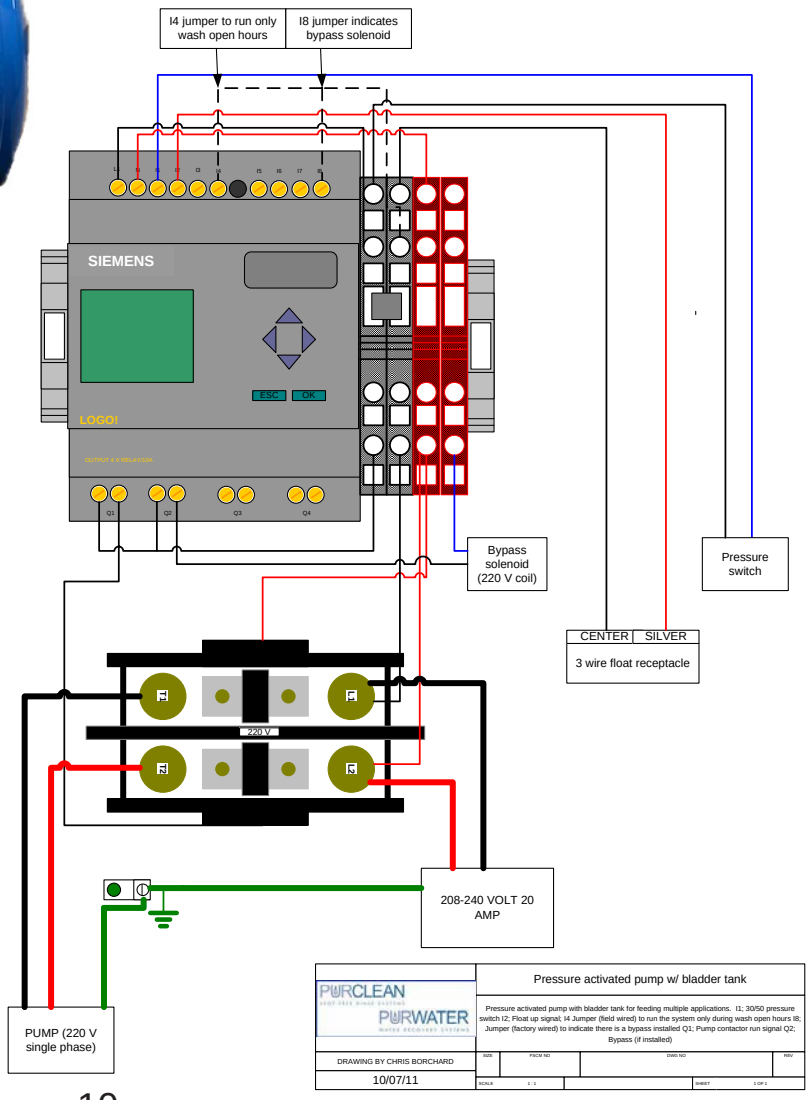
3 Phase Low Pressure
Transfer System



Low Pressure Single Phase Pump Example
Pressure Activated Standard - No Fresh Water Bypass

Note: This pump without the Fresh Water Bypass is often used in a Reject Capture situation. The fresh water is often "backed up" via a mechanical float in the storage tank - see the tanking example page 15 of this manual.

Note: The Pressure Activated pump control boxes are a bit different than the voltage activated control boxes. This type of pump uses a drop in line pressure to activate or turn on the pump. When the wash application solenoid opens & the pressure switch senses a drop in line pressure (either 30 or 40 psi depending on pump model), the pump will come on after a 1/2 second delay. When the wash application solenoid closes, the pump continues to run until the line pressure satisfies the pressure switch (either 50 or 60 psi based on pump model) and the pump will shut off after a 5 second delay. See the note on the next page on setting bladder tank pressure.



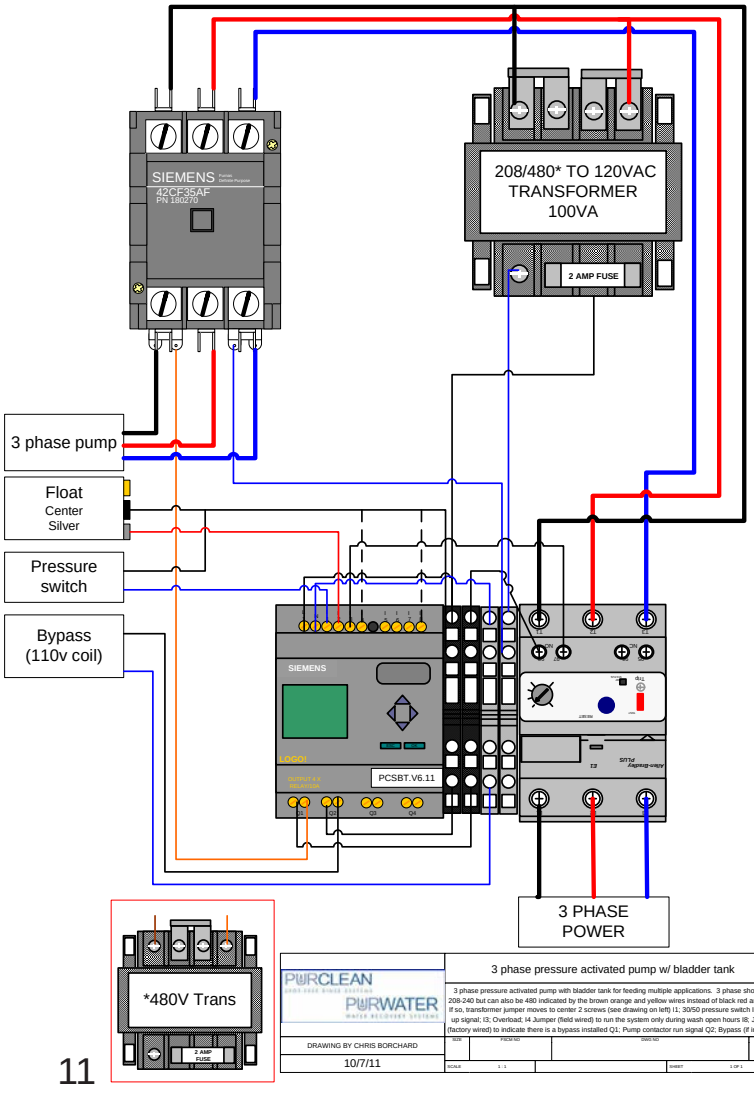
Low Pressure Three Phase Pump Example
Pressure Activated Standard - No Fresh Water Bypass

Three Phase Wiring Pigtail

Note: If the Fresh Water Bypass Option was ordered and installed it would be located to the left of the control box above the pump outlet.

Setting / Checking Bladder Tank Pressure Note: When initially installing or checking the bladder tank pressure - remove the rubber cover, and with the bladder tank empty of water - set the pressure to 2psi below the "cut on pressure". It will be 28psi on a 30/50 switch or 38psi on a 40/60 switch.

Note: The Three Phase version of the Pressure Activated Pump has identical plumbing connections to the single phase model. The control box differs in size to accommodate the additional components required for three phase power needs. Note the presence of a transformer, a larger contactor, and the need to include an overload component as shown in the schematic. See start up & check pump rotation!



Low Pressure Delivery Pumps Fresh Water Bypass Detail

3/4 Inch Fresh Water Bypass For Chair Stand

This assembly is most commonly used on the CJ90F-MS2, the LB1035, and the 1MS Series pumps when mounted on a chair stand - No Bladder Tank.

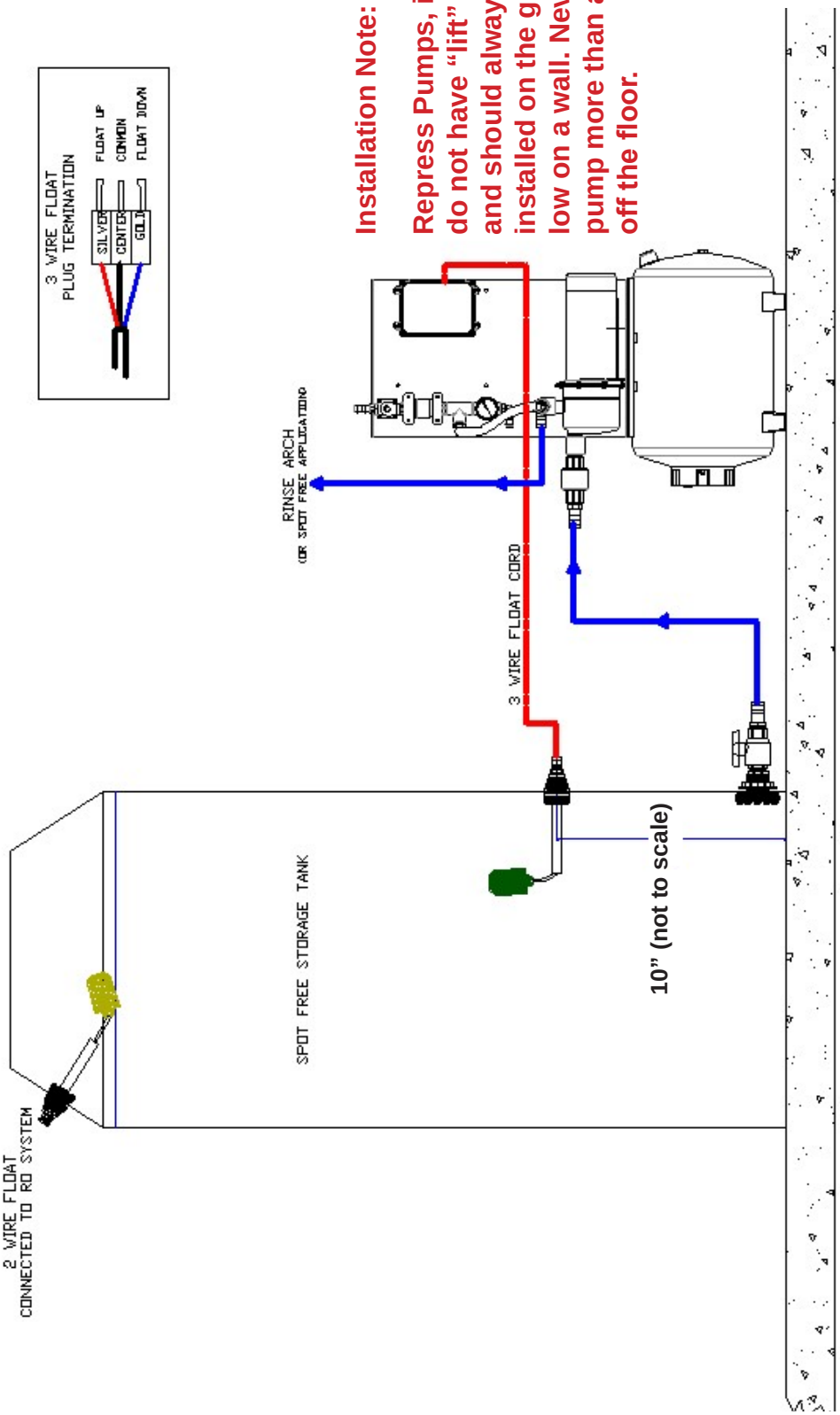
3/4 Inch Fresh Water Bypass For Bladder Tank

This assembly is most commonly used on the CJ90F-MS2, the LB1035, and the 1MS Series pumps when mounted on a chair stand With Bladder Tank.

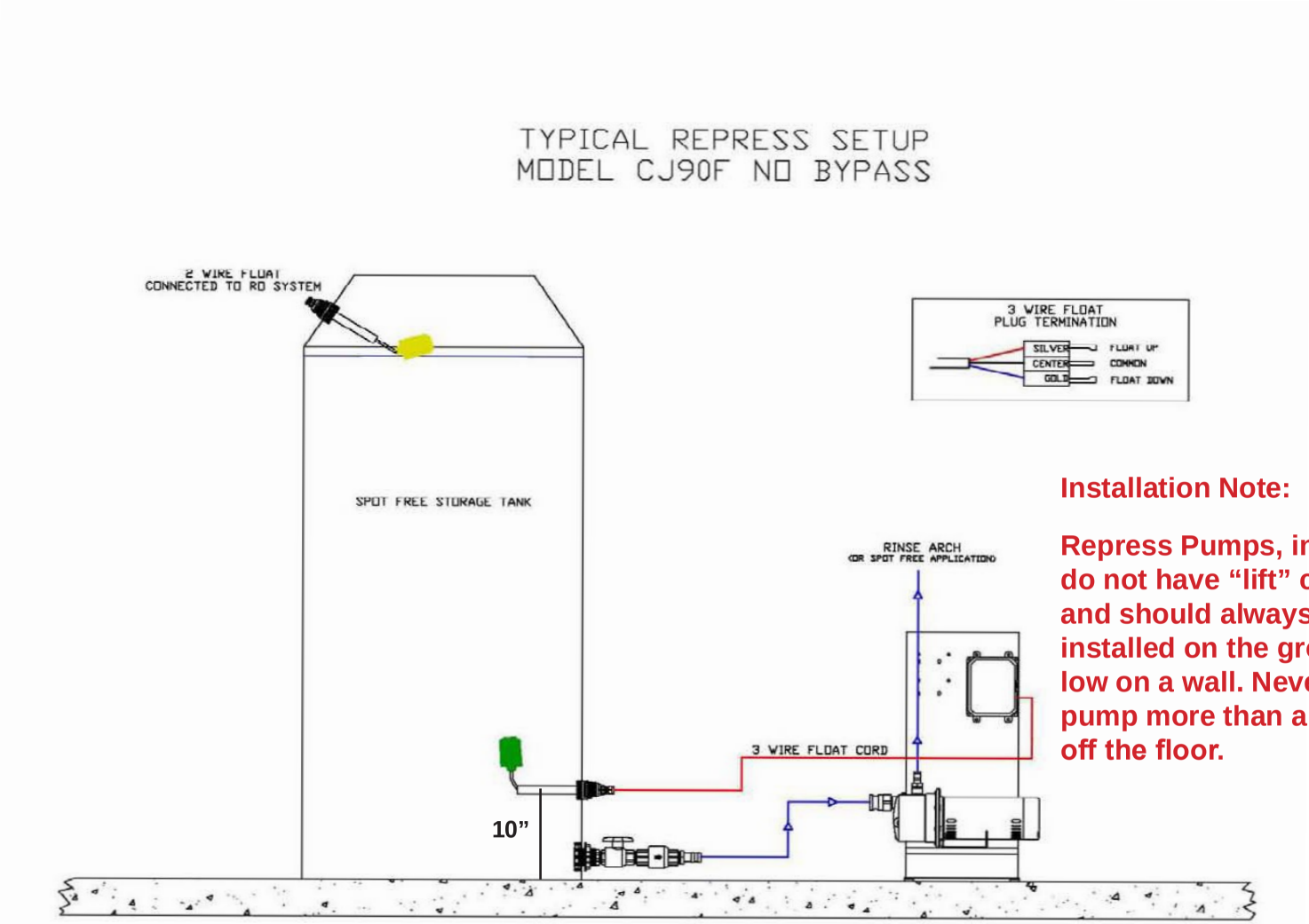
1 Inch Fresh Water Bypass For 2 HP Pump - Bladder Tank

This assembly is made up of 1”components and is most commonly used on the 1MS Series pumps in a pressure activated assembly utilizing a 19 gallon bladder tank.

Low Pressure Delivery Pumps Typical Installation Layout



Low Pressure Delivery Pumps Typical Installation Layout

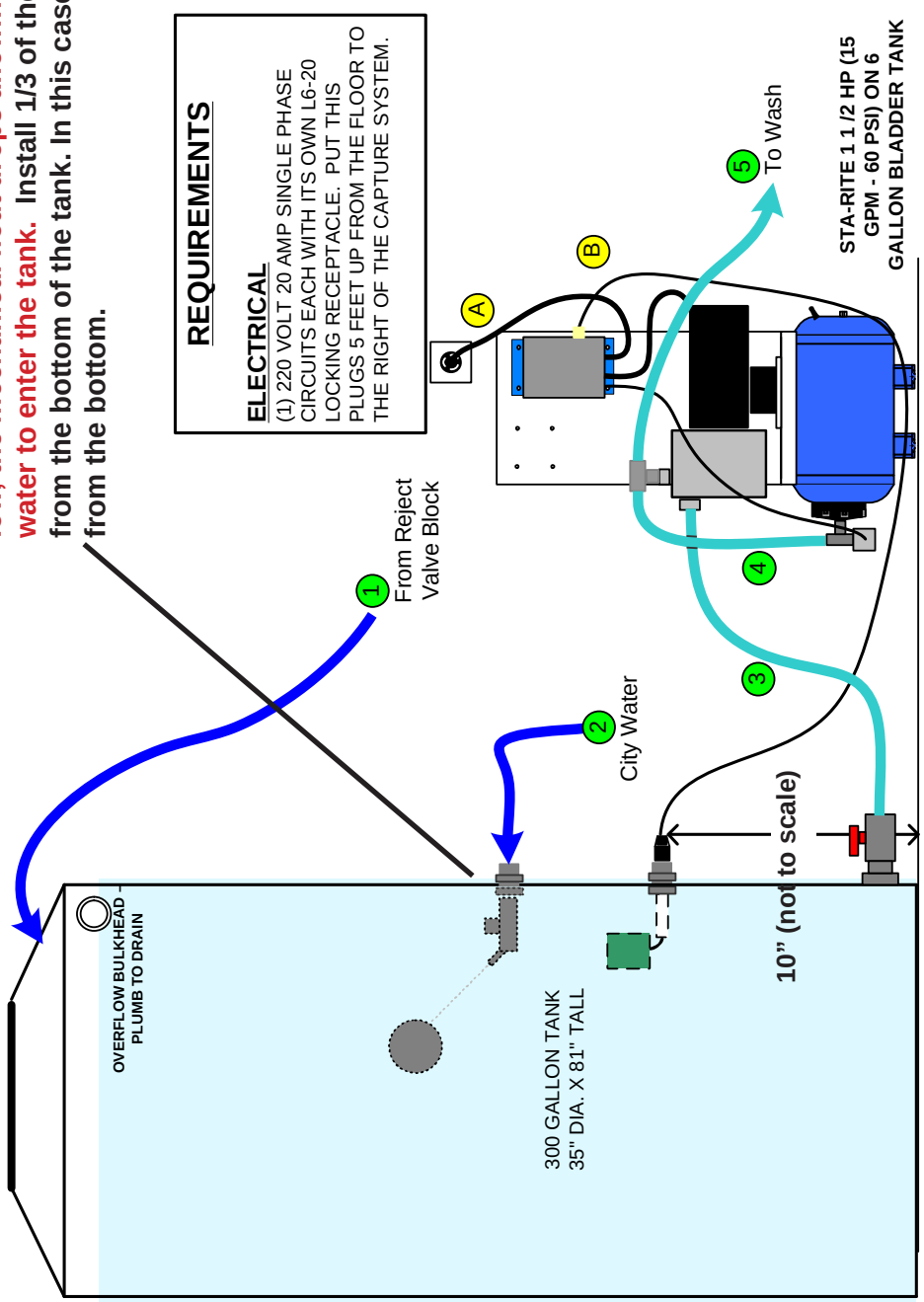


Installation Note:

Repress Pumps, in general, do not have “lift” capability and should always be installed on the ground or low on a wall. Never hang the pump more than a foot or two off the floor.

Low Pressure Reject Capture Tanking Example

Note: The The RO Reject Capture Low Pressure Pump does not have an "on board" fresh water bypass installed. In this tanking example, the fresh water bypass feature is accomplished using a mechanical float. If the tank level goes low, the mechanical float drops allowing city water to enter the tank. Install 1/3 of the way from the bottom of the tank. In this case at 27" from the bottom.



Low Pressure Delivery Pumps

Start-Up

Note Before running a 3 Phase pump - Verify the pump rotation is correct. “Bump” the pump by manually depressing the contactor or give it about 1 second of power to rotate the pump while observing the pump direction.. Also, when starting a repress pump - initially leave the pump discharge line open. Run the pump briefly to flush out the pump and displace any air pockets to purge the pump.

Starting up a repress pump is relatively simple since the signal comes either directly (Voltage Activated) or indirectly (Pressure Activated) from the car wash controller. Simply verify the pump runs when it should and that water is being delivered to the car wash equipment. This can be accomplished with a manual signal from the controller or running a car through the car wash.

Operation

The repress pump will either run or not. Again, force it on as mentioned in the Start-Up section & verify operation.

Maintenance

There is no required maintenace for the repress pump. Simply perform daily visual checks to verify it is operating correctly.

Troubleshooting

The major issue with Repress pumps is that they will not turn on. Pictures,drawings, and schematics included in this section should aid in troubleshooting any problems.

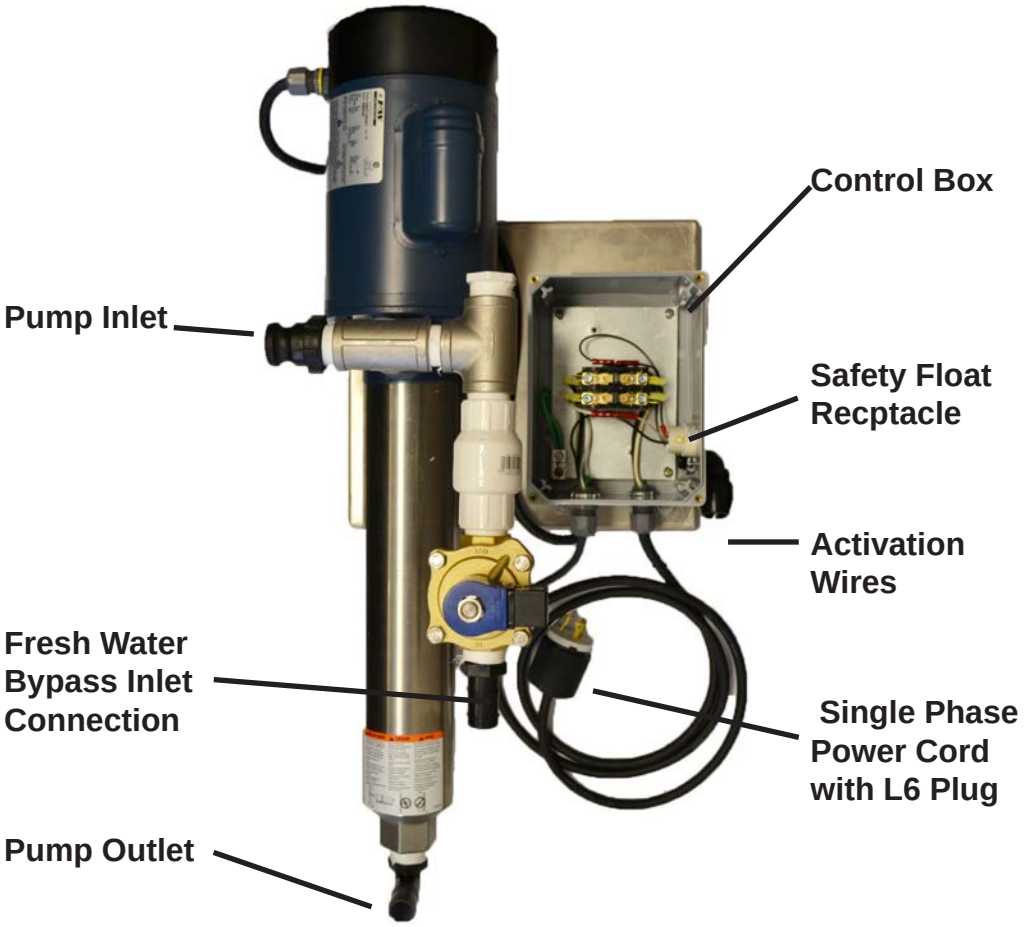
Keep in mind that:

1) For a low pressure / voltage activated pump to run that the low level safety float needs to be “up” indicating that water is in the storage tank and that the car wash controller activation voltage needs to be present.

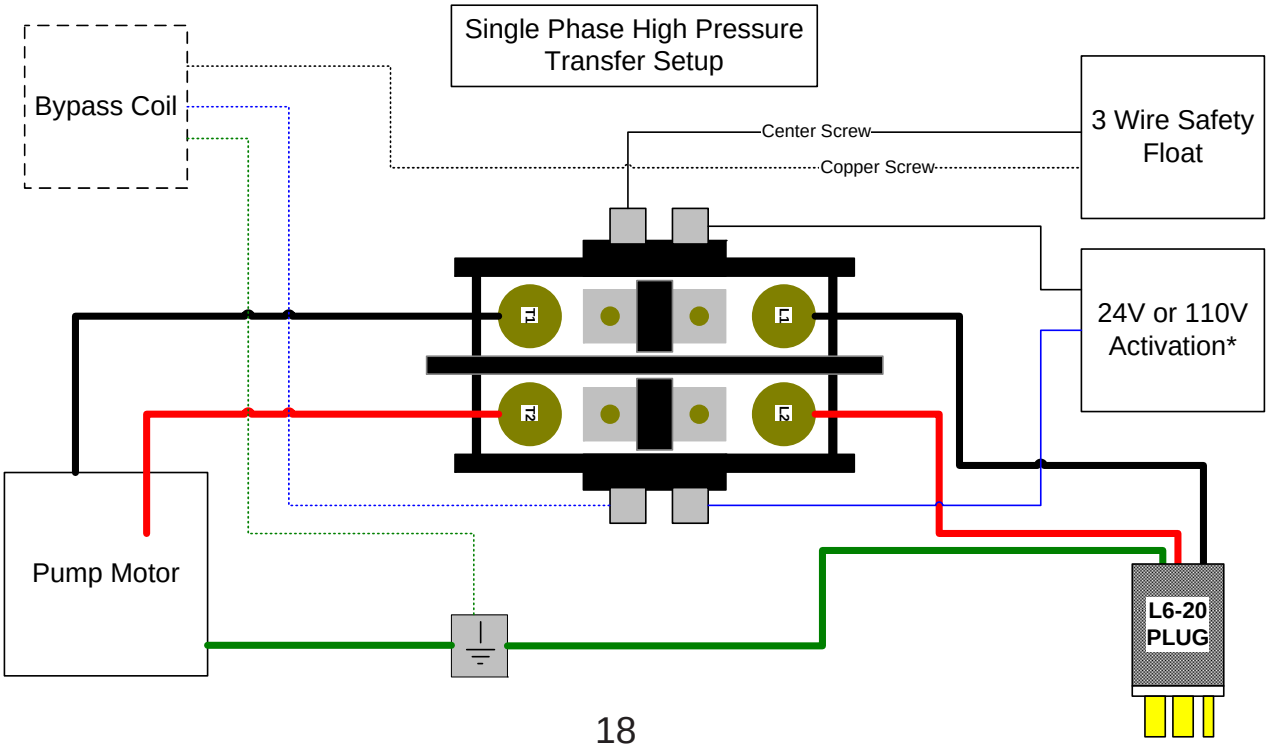
2) For a low pressure / pressure activated pump to run that the low level safety float needs to be “up” indicating that water is in the storage tank and that when the pressure on the delivery side of the pump drops below the minimum set point of either 30 or 40 psi - the contacts in the pressure switch should close which powers the pump on.

Contact PurClean at 800-882-8854 for Technical Support Monday thru Friday from 7am to 5pm Pacific time.

High Pressure Single Phase Pumps



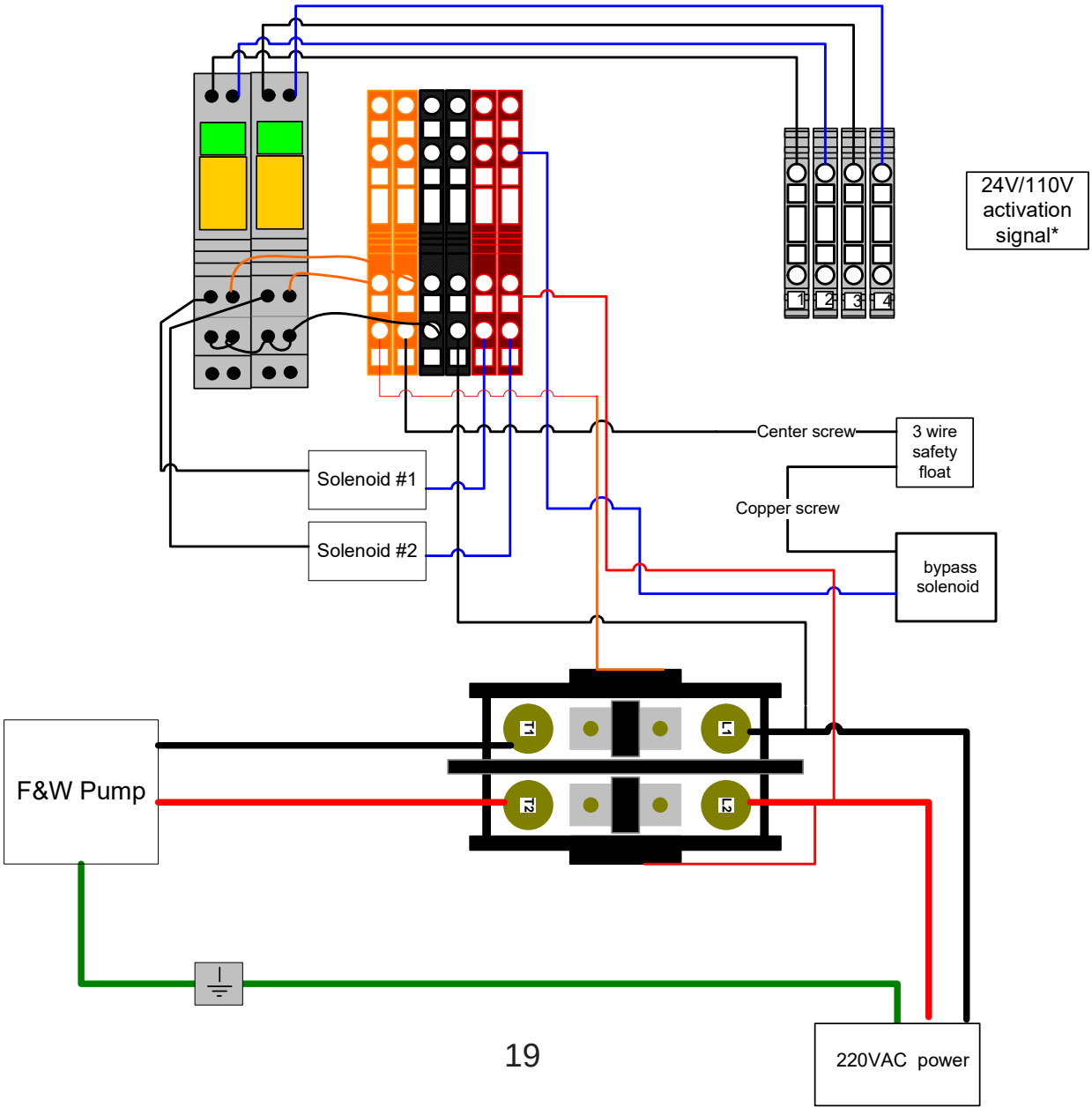
Note: the basic plumbing & electrical connections are called out on this page. There are 3 plumbing connections and 3 electrical connections



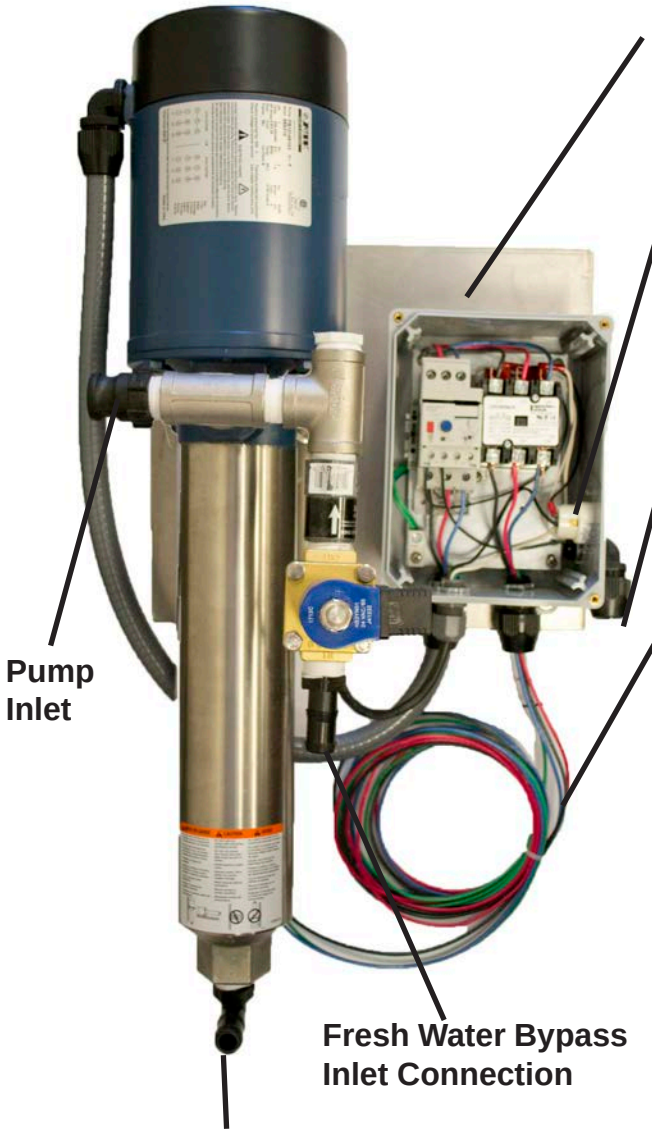
High Pressure Single Phase Pumps

Note: In the event that the car wash has more than one activation or demand signal there will be internal connections to "land" the wires from the car wash controller. It should also be noted that the contactor coil voltage, the fresh water bypass solenoid coil, AND the activation voltage should all be the same. -- either 24V or 110Vac.

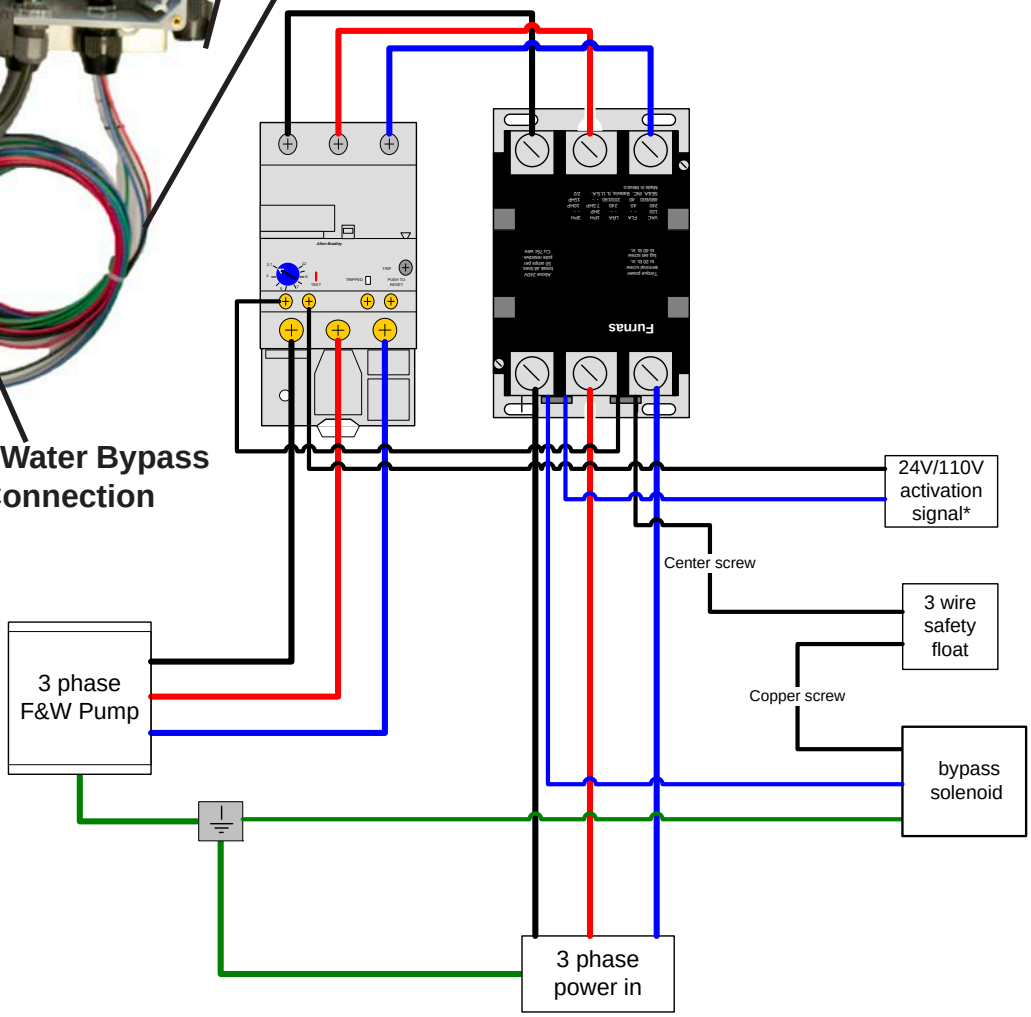
High Pressure
(2) Act/Solenoid
Transfer System



High Pressure Three Phase Pumps



Note: The Three Phase version of the High Pressure Pump has identical plumbing connections to the single phase model. The control box differs to accommodate the additional components required for three phase power needs. Note the presence of a larger contactor, and the need to include an overload component as shown in the schematic. See start up & check pump rotation!



High Pressure Delivery Pumps Fresh Water Bypass Detail

3/4 Inch Fresh Water Bypass

This assembly is used on the One and Two Horsepower High Pressure Repress Pump assemblies regardless if single or three phase.

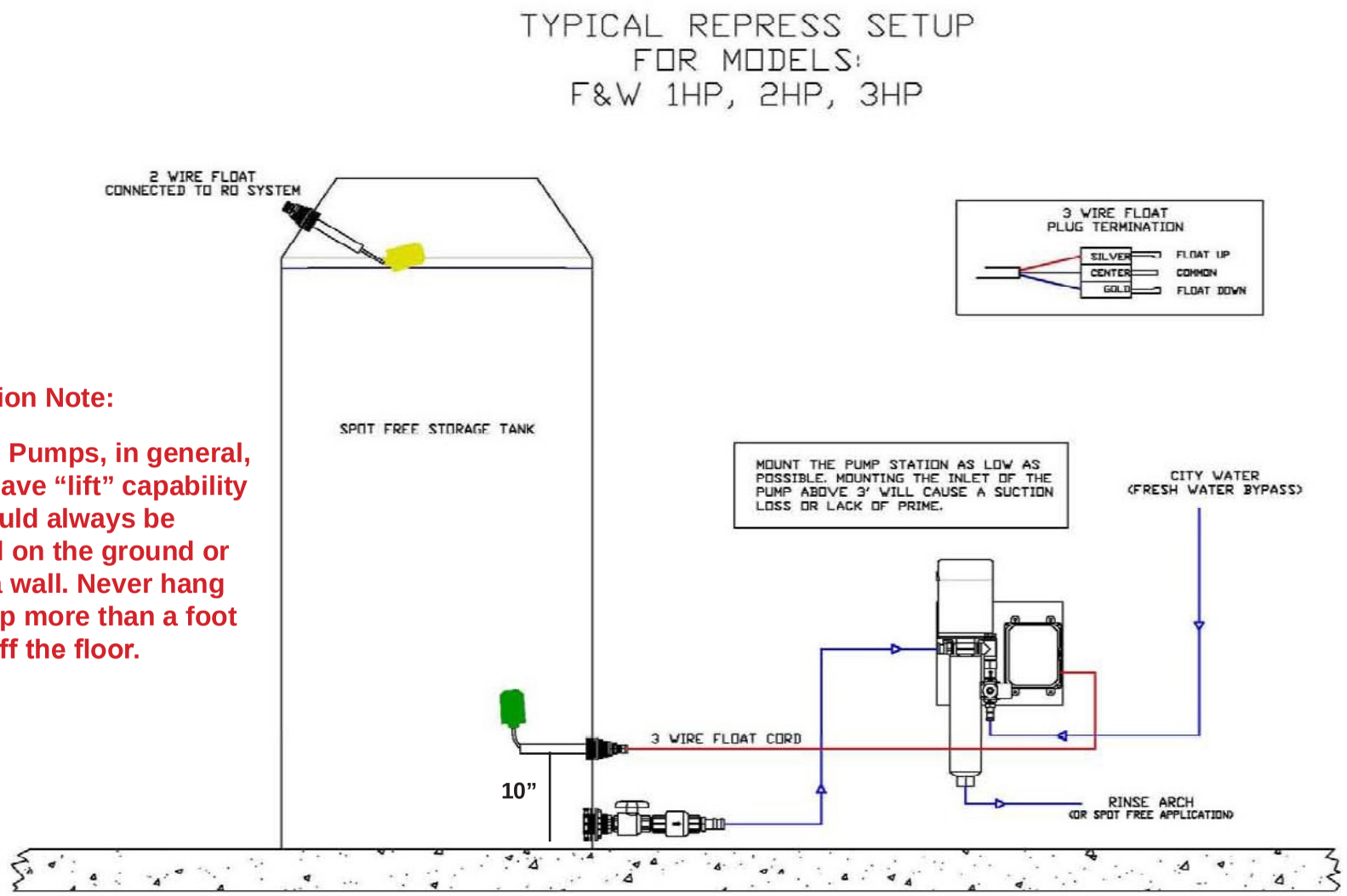
Note that the bypass assembly is located on the pump inlet since the pump does need to run when in fresh water bypass. This is diffrent from the low pressure pump assemblies where the Fresh Water Bypass is located on the outlet side of the pump.

1 Inch Fresh Water Bypass

This assembly is used on the Three Horsepower High Pressure Repress Pump assemblies regardless if single or three phase. The larger size is used in order to supply the volume of water required for the three horsepower pump.

Corporate
800.882.8854

High Pressure Delivery Pumps Typical Installation Layout



Installation Note:

Repress Pumps, in general, do not have "lift" capability and should always be installed on the ground or low on a wall. Never hang the pump more than a foot or two off the floor.

PURCLEAN PURWATER
SPOT-FREE RINSE SYSTEMS WATER RECOVERY SYSTEMS

High Pressure Pumps

Start-Up

Note Before running a 3 Phase pump - Verify the pump rotation is correct. “Bump” the pump by manually depressing the contactor or give it about 1 second of power to rotate the pump while observing the pump direction.. Also, when starting a repress pump - initially leave the pump discharge line open. Run the pump briefly to flush out the pump and displace any air pockets to purge the pump.

Starting up a high pressure repress pump is relatively simple since the signal comes directly (Voltage Activated) from the car wash controller. Simply verify the pump runs when it should and that water is being delivered to the car wash equipment. This can be accomplished with a manual signal from the controller or running a car through the car wash.

Operation

The repress pump will either run or not. Again, force it on as mentioned in the Start-Up section & verify operation.

Maintenance

There is no required maintenace for the repress pump. Simply perform daily visual checks to verify it is operating correctly.

Troubleshooting

The major issue with Repress pumps is that they will not turn on. Pictures,drawings, and schematics included in this section should aid in troubleshooting any problems.

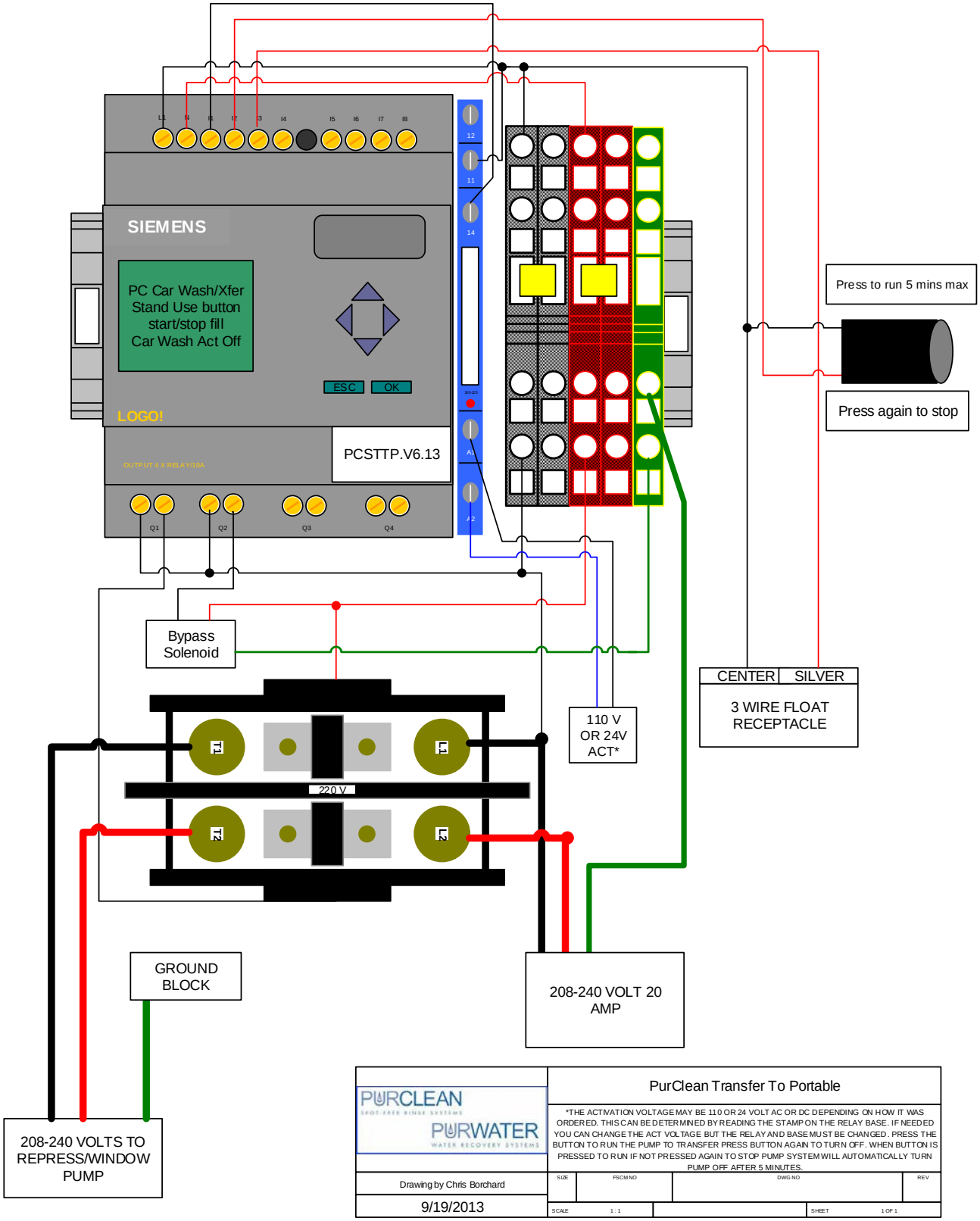
Keep in mind that:

For a high pressure pump to run - the low level safety float needs to be “up” indicating that water is in the storage tank and the car wash controller activation voltage needs to be present.

In the event that the tank is low **OR** the green low level float has failed giving a false “tank low” status, the pump will run in the Fresh Water Bypass Mode. It is a good idea to monitor the tank volume during daily walk-throughs. The majority of high pressure repress pump assemblies are used for spot free water delivery. It is normal for the storage tank level to drop throughout the day which will signal the spot free machine to refill the tank when getting a signal from the upper yellow float.

Contact PurClean at 800-882-8854 for Technical Support Monday thru Friday from 7am to 5pm Pacific time.

STTP - Storage Transfer to Portable - Single Phase



PurClean Transfer To Portable

*THE ACTIVATION VOLTAGE MAY BE 110 OR 24 VOLT AC OR DC DEPENDING ON HOW IT WAS ORDERED. THIS CAN BE DETERMINED BY READING THE STAMP ON THE RELAY BASE. IF NEEDED YOU CAN CHANGE THE ACT VOLTAGE BUT THE RELAY AND BASE MUST BE CHANGED. PRESS THE BUTTON TO RUN THE PUMP TO TRANSFER PRESS BUTTON AGAIN TO TURN OFF. WHEN BUTTON IS PRESSED TO RUN IF NOT PRESSED AGAIN TO STOP PUMP SYSTEM WILL AUTOMATICALLY TURN PUMP OFF AFTER 5 MINUTES.

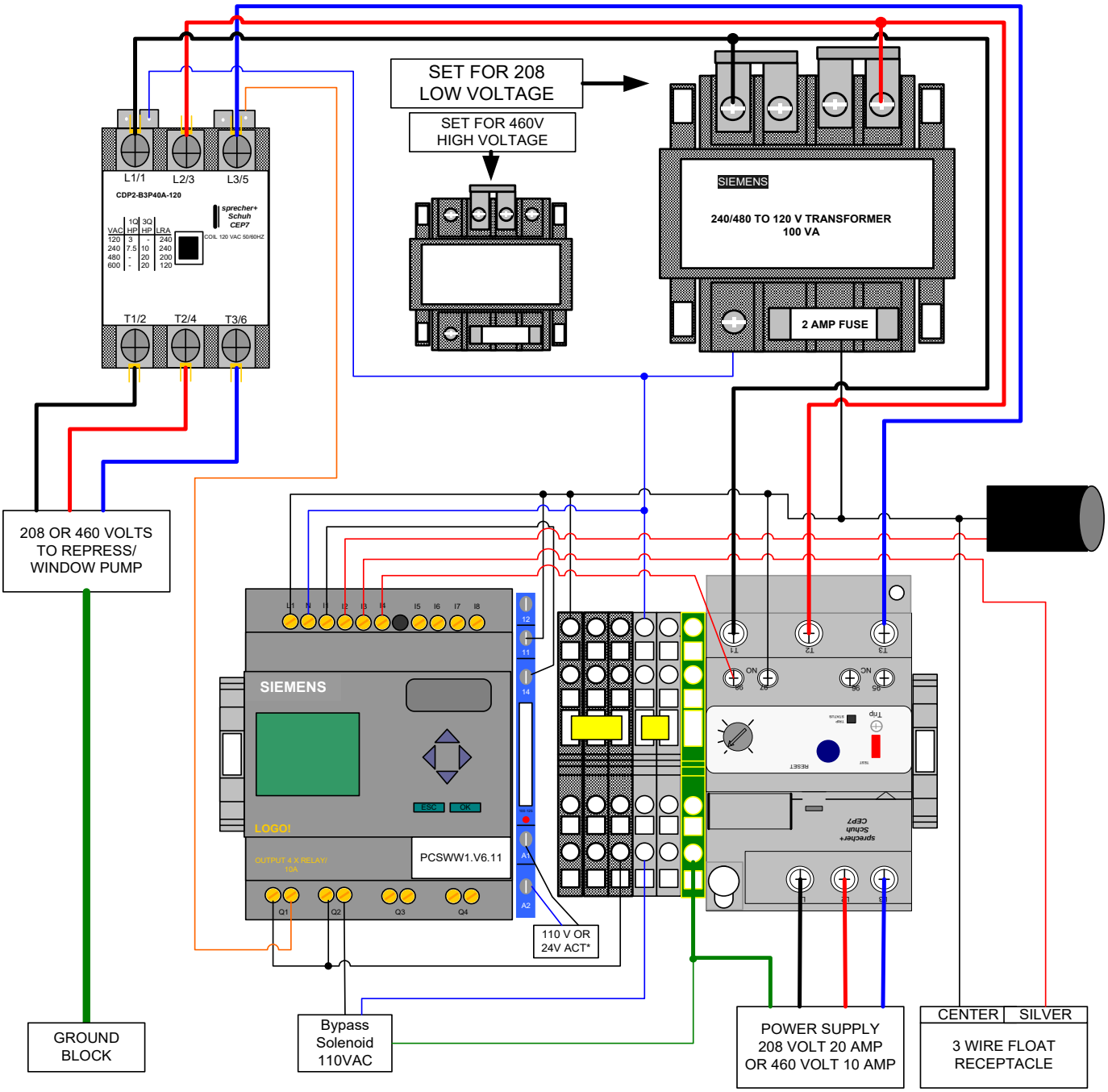
Drawing by Chris Borchard

9/19/2013

SIZE | FSCM NO | DWG NO | REV

SCALE 1 : 1 | SHEET 1 OF 1

STTP - Storage Transfer to Portable - Three Phase



PURCLEAN SPOT-FREE RINSE SYSTEMS / PURWATER WATER RECOVERY SYSTEMS	3 Phase Transfer to Portable
	*THE ACTIVATION VOLTAGE MAY BE 110 OR 24 VOLT AC OR DC DEPENDING ON HOW IT WAS ORDERED. THIS CAN BE DETERMINED BY READING THE STAMP ON THE RELAY BASE. IF NEEDED YOU CAN CHANGE THE ACT VOLTAGE BUT THE RELAY AND BASE MUST BE CHANGED.
2-7-18	SIZE / FSCM NO / DWG NO / REV; SCALE 1 : 1; SHEET 1 OF 1

STTP - Storage Transfer to Portable

Start-Up

Starting up a STTP pressure repress pump is relatively simple since the signal comes directly (Voltage Activated) from the car wash controller or the push button on the control box. Simply verify the pump runs when it should and that water is being delivered to the car wash equipment. The push button, when pressed, starts a 5 minute timer and the pump will begin transferring water from the storage tank to the portable tank which is typically a tank on a mobile unit used for fleet washing. Pressing the button a second time ends the transfer.

Operation

The STTP repress pump will either run or not. Again, force it on as mentioned in the Start-Up section & verify operation.

Maintenance

There is no required maintenace for the STTP repress pump. Simply perform daily visual checks to verify it is operating correctly.

Troubleshooting

The major issue with STTP Repress pumps is that they will not turn on. The schematics included in this section should aid in troubleshooting any problems.

Keep in mind that:

For a voltage activated STTP repress pump to run - the low level safety float needs to be “up” indicating that water is in the storage tank and the car wash controller activation voltage needs to be present.

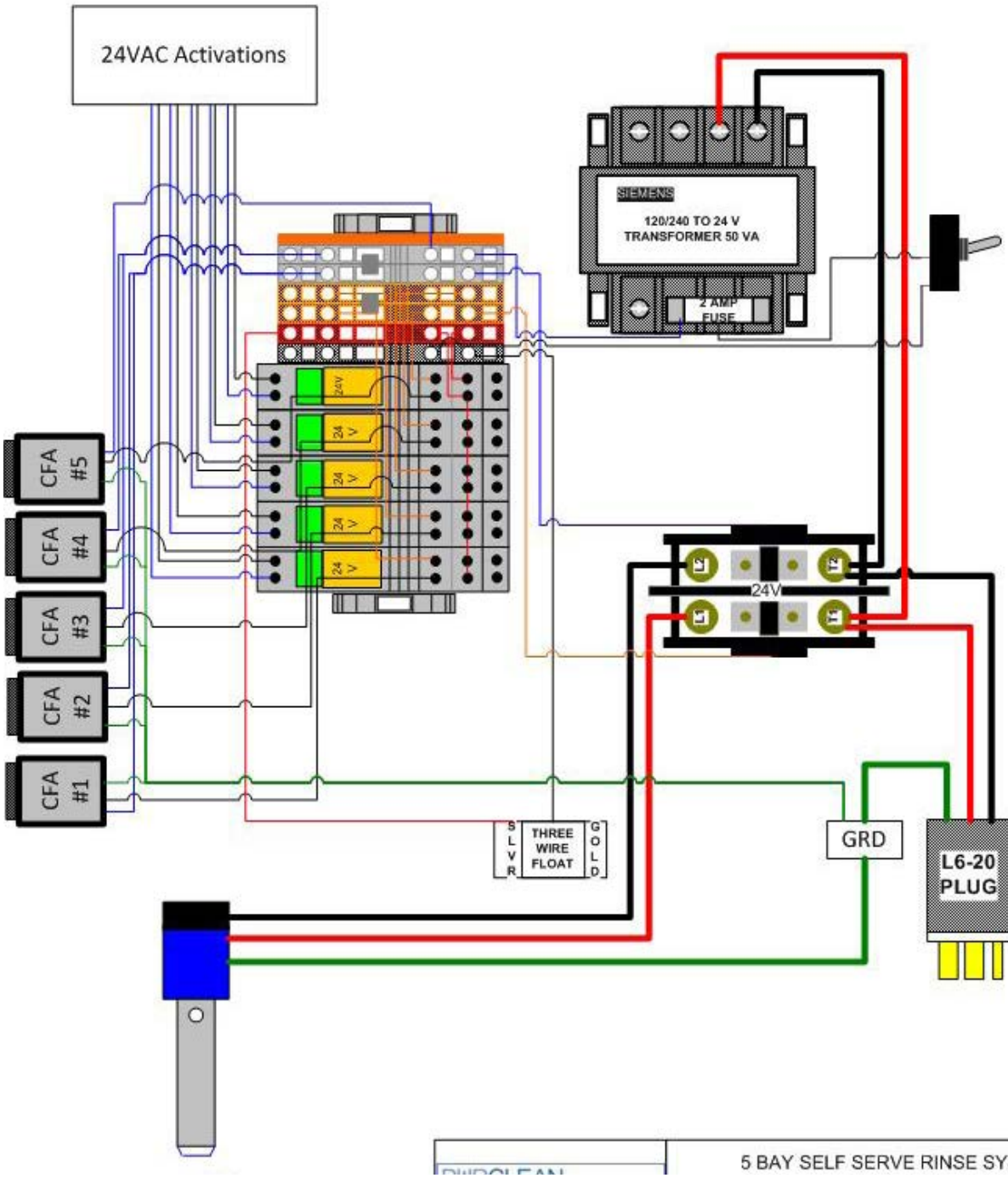
For a “Push Button” activated STTP repress pump to run - the low level safety float needs to be “up” indicating that water is in the storage tank and the “Push Button” is depressed once. The pump will run for 5 minutes or until the push button is depressed again which will shut off the pump.

In the event that the tank is low **OR** the green low level float has failed giving a false “tank low” status, the pump will not run in either mode.

Contact PurClean at 800-882-8854 for Technical Support Monday thru Friday from 7am to 5pm Pacific time.

Self Serve High Pressure - Single Phase - Multi Bay

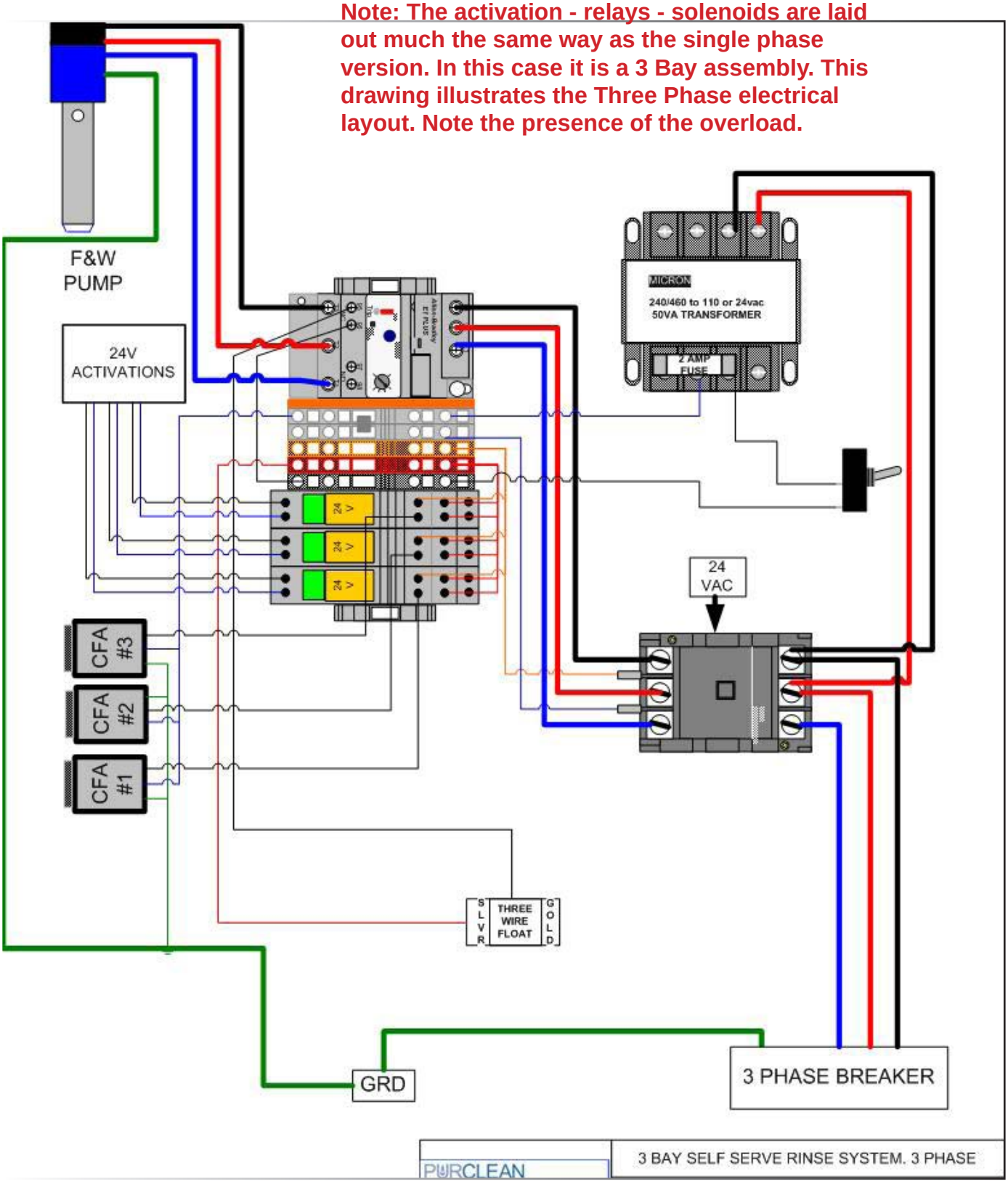
Note: This is a typical single phase self-serve layout. In this 5 Bay layout - there are 5 individual 24Vac activation connections with 5 corresponding relays and solenoids.The pump outlet is plumbed to the end of the valve block along with the 5 solenoid valves. Each individual bay is activated independantly. When the activation is present, the solenoid coil opens the valve to feed water to that bay.



5 BAY SELF SERVE RINSE SYSTEM.

Self Serve High Pressure - Three Phase - Multi Bay

Note: The activation - relays - solenoids are laid out much the same way as the single phase version. In this case it is a 3 Bay assembly. This drawing illustrates the Three Phase electrical layout. Note the presence of the overload.



Self Serve High Pressure - Multi Bay

Start-Up

Note Before running a 3 Phase pump - Verify the pump rotation is correct. "Bump" the pump by manually depressing the contactor or give it about 1 second of power to rotate the pump while observing the pump direction.. Also, when starting a repress pump - initially leave the pump discharge line open. Run the pump briefly to flush out the pump and displace any air pockets to purge the pump.

Starting up a Self Serve High Pressure repress pump is relatively simple since the signal comes directly from the car wash controller. In the case of this being a self serve pump there is typically a rotary switch or an array of push buttons in each indiviual wash bay. When "spot free rinse" is selected, (or whatever portion of the wash cycle that uses the repress pump), the pump should come on and provide water via the overhead boom - hose - trigger gun assembly.

Operation

The Self Serve High Pressure repress pump will either run or not. Again, force it on as mentioned in the Start-Up section & verify operation.

Maintenance

There is no required maintenace for the Self Serve High Pressure repress pump. Simply perform daily visual checks to verify it is operating correctly. If there is an issue it will generally be noted by a customer in the wash bay.

Troubleshooting

The major issue with Self Serve High Pressure Repress pumps is that they will not turn on. The schematics included in this section should aid in troubleshooting any problems.

Keep in mind that:

For a voltage activated Self Serve High Pressure repress pump to run - the low level safety float needs to be "up" indicating that water is in the storage tank and the car wash controller activation voltage needs to be present.

In the event that the tank is low **OR** the green low level float has failed giving a false "tank low" status, the pump will not run.

Contact PurClean at 800-882-8854 for Technical Support Monday thru Friday from 7am to 5pm Pacific time.

NEW WAVE INDUSTRIES, LTD. LIMITED WARRANTY

NEW WAVE INDUSTRIES, LTD. Warrants to the original purchase only, that all PUR-CLEAN REVERSE OSMOSIS Models and PUR-CLEAN MOBILE PRESSURE WASHER SYSTEMS will be free of defects in materials and/or workmanship for a period of one (1) year (spiral wound membranes, six (6) months) from the date of delivery to the original customer, provided the enclosed instructions for operation, maintenance and care have been strictly complied with and the validation page has been sent to and received by NEW WAVE INDUSTRIES, LTD.

This warranty is expressly limited to the repair or replacement of the defective component. Excluded from warranty are hoses, guns, hose reel spindles, gauges, unloaders and pump seals.

This warranty does not extend to damages to person(s) or property or liabilities incidental, consequential or contingent.

Purchaser shall notify NEW WAVE INDUSTRIES, LTD. in writing or by telephone should any defect appear or should any damage occur to the unit(s) for notification of valid warranty claim.

NEW WAVE INDUSTRIES, LTD. will issue a Returned Goods Authorization (RGA) number for defective parts (see RGA Policy and Procedure Insert).

There are no other warranties expressed or implied.

RETURN GOODS POLICY

NEW WAVE INDUSTRIES, LTD. RGA POLICY AND PROCEDURE POLICY

- All returns must be authorized by NEW WAVE INDUSTRIES, LTD. (Service Department) with a Returned Goods Authorization (RGA) form prior to return.
- All returned goods must be received by NEW WAVE INDUSTRIES, LTD. within 30 days or you will not receive credit. All goods not received within 30 days will not receive credit.
- Credit is contingent upon a credit evaluation inspection. 6

  Customer must prepay freight. **PROCEDURE**
- Contact New Wave's Service Department and give original invoice number and date of order to request an RGA.
- New Wave's Service Department will issue an RGA form and send it via fax or mail.
- Include the RGA form inside the package and clearly write the RGA number on the outside of the package.
- Customer must prepay freight.
- When returned parts are received by NEW WAVE INDUSTRIES, LTD., credit for the parts is contingent upon credit evaluation inspection and warranty terms.
- If the customer wants to place an order for the part(s) during the return process, then the customer is agreeing to purchase the replacement part(s) and pay the invoice when received. If the returned part(s) is found to be a warranty item NEW WAVE INDUSTRIES, LTD. will issue a credit redeemable in parts.
- If New Wave Industries, LTD. sends a part that was not ordered by the customer, the customer needs to get an RGA number from NEW WAVE INDUSTRIES, LTD.
- Include the RGA number clearly on the outside of the box and the part(s) to be returned.
- NEW WAVE INDUSTRIES, LTD. will issue a call tag to the customer for pickup of the wrong part(s) and ship it back to New Wave's factory, at New Wave's expense.
- NEW WAVE INDUSTRIES, LTD. will pay standard ground freight for warranty replacement parts. If the distributor/customer requires overnight/second day air delivery, shipping will be at customer's expense.

Revision History

July 2018 ------- Stand Alone Manual Created