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OPERATING MANUAL – SWEETSPOTTER SS4-4-40

Revised: March 2012

TECHNICAL SPECIFICATIONS

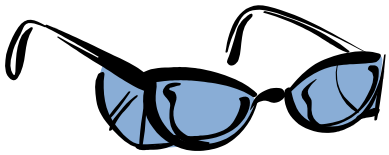
Model	: SS4-4-40
Permeate flow rate	: 40 gallons per hour
Wine flow rate	: 200 gallons per hour
Maximum operating pressure	: 850 psi
Power requirement	: 110V 1 Phase power
Maximum cleaning fluid temp	: 110°F
Recommended cleaning chemical	: TSP – Non Chlorinated

TECHNICAL SUPPORT

Technical support is only available Monday through Friday 7:30am-5:00pm. We do not have technical support available on the weekends unless previously arranged.

SAFETY

It is imperative that safety goggles are worn for all operators operating the equipment at all times.



IMPORTANT TO REMEMBER

- Do not use chlorine in any form!
- PLEASE READ THESE INSTRUCTIONS COMPLETELY PRIOR TO OPERATION. WE ARE NOT RESPONSIBLE FOR WINE LOSS OR DAMAGE
- Operate the machinery at your own risk.
- Do not use Proxycarb for cleaning purposes.
- Do not close a valve on the inlet to the machine without turning off the feed pump first! This will cause the feed pump to cavitate and can lead to damage.
- Check pre-filter regularly for debris build-up and clean regularly.
- Very cold wine will increase the required operating pressure of the system and or decrease the permeate flow rate to unacceptable levels.
- Do not soak the membranes in a solution greater than a pH of 11.

WARNING

Please do not close ALL yellow handled valves at once on any of the lines while the system is running and the intensifier knob is closed. This will cause lines to burst or the feed pump to fail prematurely! The System can generate pressures of up to 1300 psi if blocked completely resulting in catastrophic failure of hoses and loss of product!

Background on the System

The SS4-4-40, hereinafter called the SYSTEM, has been designed for the processing of smaller lots of wine for the removal of VA, 4EP, taints and cold stabilization. The system uses cutting edge technology to generate the necessary pressure required to produce permeate for VA removal without the requirement of a high pressure-pumping device. This means that the wine is handled as gently as possible.

Process flow rates from the system depend a great deal on the wine temperature and turbidity. The cleaner the wine, the longer the system is going to deliver a constant flow rate. Should the wine be dirty, then the system will require more frequent cleaning. If lees are pulled into the system, this may irreversibly foul the membranes requiring complete membrane replacement.

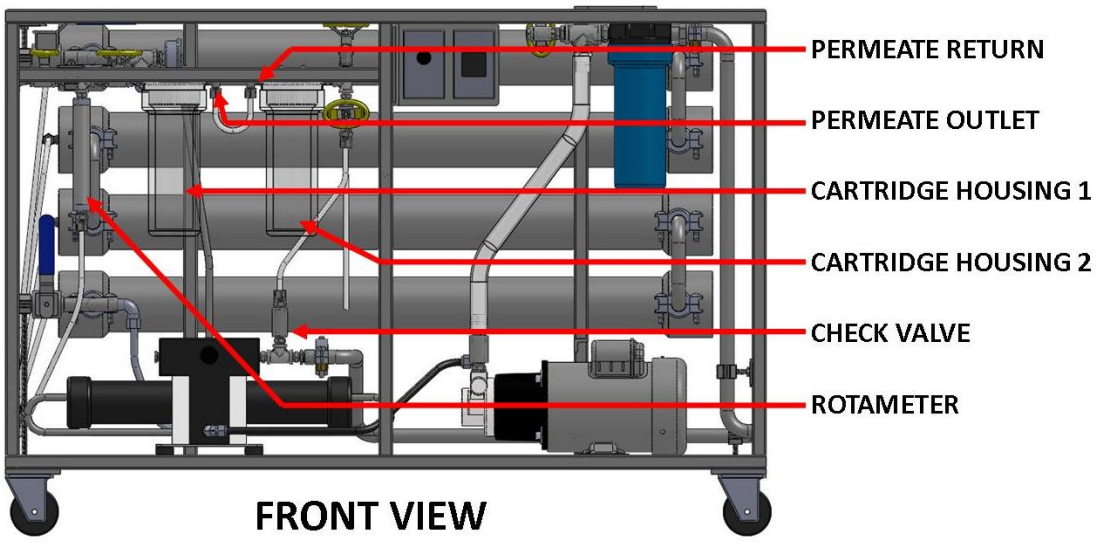
The system is supplied with 1.5” tri-clamp inlet, outlet and permeate connections.

What you need before you start

- Cold pressurized water (preferably de-chlorinated).
- 110 Volt, 1 phase power supply nearby.
- A handheld pH meter or accurate lab based pH meter
- Wine to be processed in tank at 55°F or higher.
- A tee and 2 valves on the inlet line to the machine.

Please note that there are four connections to the System. These are as follows:

- Wine Inlet (1.5” tri clamp)
- Wine Outlet (1.5” tri clamp)
- Permeate Outlet (3/8” tubing with 1.5” tri-clamp on the end)
- Permeate Return (3/8” tubing with 1.5” tri-clamp on the end)



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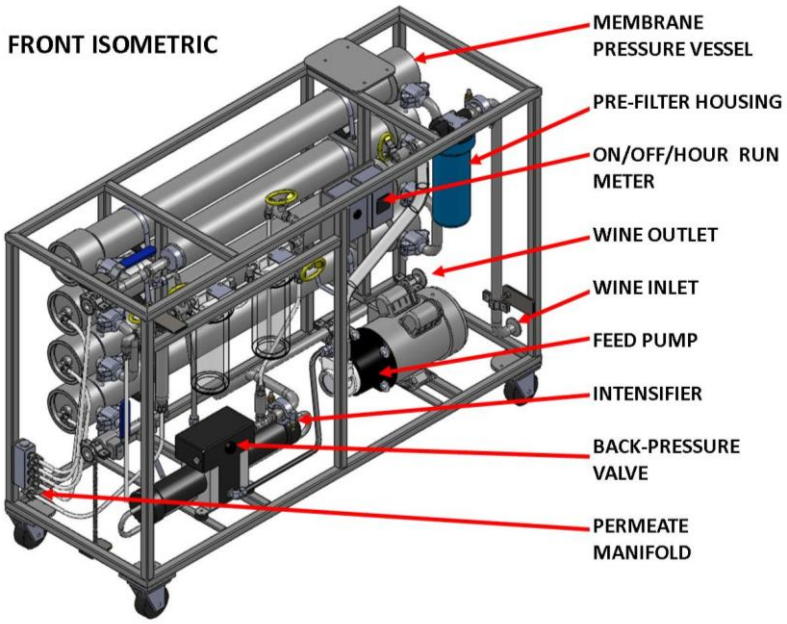

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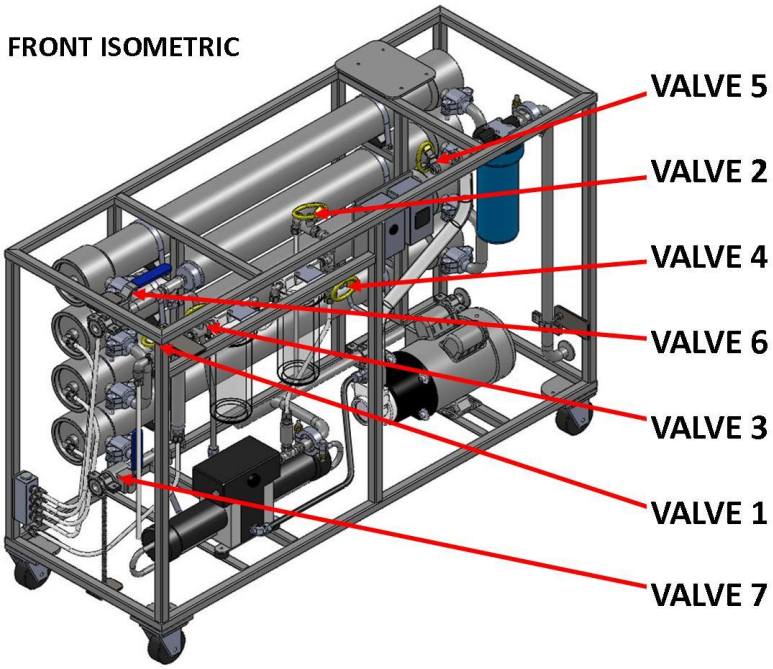

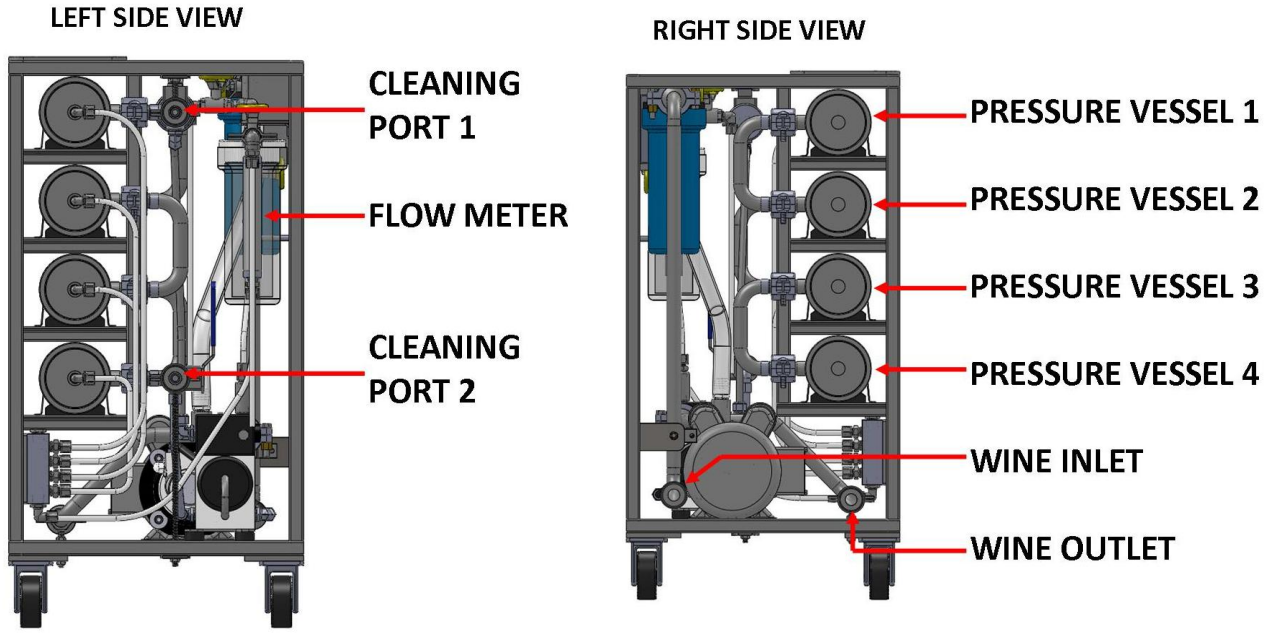

GETTING STARTED

ELECTRICAL

- Connect the power cable to a 110V outlet.
- Do not turn on the pump yet.

Water Rinse

- Connect a pressurized cold water line to the *WINE INLET*.
- Connect a wine hose to the *WINE OUTLET* and run to drain.
- Open *Valve 1*.
- Open the valve on your recently connected water line and let run for 5 minutes. Warm water can be used at this stage and is advised.
- Close the *PRESSURE VALVE* on the *INTENSIFIER* for 2 minutes to ensure complete water rinsing. Open again and let run.

Please note that if the mains water pressure or flow is insufficient, you may suck water using the system pump from a previously filled container for rinsing purposes.

Citric acid rinsing

It is good practice to rinse the system with a citric acid solution prior to using it to treat wine. This does not have to take place between lot changes but should take place after each clean and prior to each run after the system has been left with a cleaning solution inside.

- Mix up approximately 50 gallons of a 1% citric acid solution in a container or tank
- Connect the citric acid container to *the WINE INLET*
- Connect a hose to the *WINE OUTLET* leave the other end open to drain.
- Open *Valve 1*
- Switch on the pump using the rotary switch.

The system will now suck up the citric solution and pump it through the system.

If the system does not suck up the citric, check that the *PRESSURE VALVE* on the *INTENSIFIER* is open.

Water Rinse

Once the Citric acid wash is complete. Follow up with a water rinse again until all the citric acid is gone.

- Disconnect the line from the *WINE INLET*
- Connect a pressurized/mains water line to the *WINE INLET*.
- Check that *Valve 1* is open
- Open the valve on your water line and let run for 5 minutes. Warm water can be used at this stage if preferred.
- Close the *PRESSURE VALVE* on the *INTENSIFIER* for 2 minutes to ensure complete water rinsing. Open again and let run.
- Once the water rinse is complete, please open the inlet strainer housing and check the strainer for debris. Clean out if necessary.

Please note that if the mains water pressure or flow is insufficient, you may suck water from a previously filled container for rinsing purposes

PROCESSING WINE FOR VA OR TAINT REMOVAL

Treatment Columns

IMPORTANT Prior to use:

Please check your treatment columns (VA, pHC or Brett).

- **The VA column needs to be rinsed until the pH of the water exiting the outlet is 10.5.**
- **The HpH column needs to be rinsed for 20 minutes prior to use.**
- **The pHC column needs to be rinsed for 20 minutes prior to use.**
- **The Brett column needs to be forward rinsed for 5 minutes and should be purged prior to use – see "*Purging Permeate*" below.**

After rinsing the column please purge out the water by connecting a nitrogen line to the inlet of the column. Connect the outlet of the column to drain. Run the nitrogen to the column at 15-30 psi until nitrogen gas is heard escaping from the outlet line.

The column is now ready for use.

Wine Processing

Please ensure that your wine for processing is as clean as possible. The cleaner the wine, the longer the membrane elements will last.

- Connect the wine to be processed to the *WINE INLET*. Ensure your hoses are secure prior to opening the tank valve and make sure the tank lid is open to avoid tank collapse.
- Connect a tri-clamp tee-piece to the Wine Out line (for taste-out purposes). Place a valve on one side of the Tee-piece. Connect a wine line from this valve to the top of the tank from which wine will be processed. Leave the valve closed.
- Connect another valve to the other side of the same tee-piece and leave open. This valve is for tasting out purposes before and after the run.
- Connect the 3/8" tubing from the *Permeate Outlet* Connection (see FRONT VIEW drawing above) to the treatment vessel being used for the relevant treatment process. Leave *Valve 3* closed and open *Valve 1*.
- Connect the return line from the treatment column back to the inlet of cartridge Housing 2 – *Permeate Return*. OPEN *Valve 2* and CLOSE *Valve 4*.
- Open the valve on your wine tank so that wine flows to the machine.

- Open *Valve 5* slowly until wine is seen filling up the clear feed hose to the pump. Close *Valve 5* when the line is full.
- Switch on the pump.
- Watch for wine exiting the open valve on the tee-piece that you installed.
- Leave running and taste out the wine at the outlet line tee-piece.
- Once wine is tasted at the outlet line, switch off the machine pump. Close the open valve on the outlet tee-piece and open the valve that allows wine to flow back to the feed tank.
- Switch on the pump again.
- Check the pressure gauge and make sure pressure is at 0-15 psi for at least 30 seconds. (If the pressure is seen increasing, switch off the machine pump immediately and check that all the necessary valves are open, including the *PRESSURE VALVE* on the *INTENSIFIER*.)

Pressurizing the System and tasting out permeate

- Close the *PRESSURE VALVE* on the intensifier – THUMB TIGHT.
- Watch the pressure increase slowly and watch for flow in the *FLOW METER* – bubbles accompanied by liquid.
- The system will be pulsing as pressure builds up.
- Liquid should be seen exiting *Valve 1* after about 30 seconds.
- **Taste out for alcohol and then OPEN *Valve 3* and CLOSE *Valve 1* in that order.**
- The treatment column is now receiving permeate.
- Wait for 2-5 minutes until liquid is seen exiting *Valve 2* (the time depends on the size of treatment column).
- Taste the liquid exiting *Valve 2* for alcohol. **Once alcohol is tasted then OPEN THE BLEEDER VALVE AT THE TOP OF THE COLUMN and Close *Valve 2***.
- Wait for between 1 and 10 minutes for the column to fill (again this depends on the size of column being used and the flow rate of permeate).
- When liquid exits the bleeder valve, OPEN *Valve 4* **AND THEN** close the bleeder valve.
- If running Brett removal, the permeate stream exiting *Valve 2* may have a grey tint to it. Please do not worry; this will clear up within 30 seconds to a minute.

Treating the Permeate

- What is permeate?
  Permeate is a clear liquid containing water, alcohol and acetic acid.
- Which columns do I need to use?
  a. **VA Reduction**
     i. Use a pHC column followed by a VA resin column only. The pHC column stabilizes the wine pH. If the system is operated on the pHC alone without the VA resin or if the VA resin is saturated, the pH of the wine will decrease.
  b. **Ethyl acetate Reduction**
     i. Use HPH (high pH Resin) followed by pH Correction
  c. **4EP Reduction**
     i. Use a phenolic adsorption column only
  d. **Smoke Taint**
     i. Use a phenolic adsorption column only
  e. **pH Correction**
     i. Use a pH correction column only. The pHC column will only lower the pH of the wine by removing potassium ions.
  f. **Tartrate stabilization**
     i. Use pH Correction column only

VA Reduction Checks

- Measure the pH of the **permeate exiting the VA resin column** on a regular basis to gauge when the column is saturated.
- Take a sample at *Valve 2.* It should be between 5 and 10.5.
- If the pH drops below 5, the VA resin column will require regeneration. Repeat the section titled “Treating the Permeate” if changing of the column is necessary.
- Please do not worry if the pH shows 4.5. Just stop and change columns as soon as possible. The pH can drop as much as 3 points within 5 minutes when the column saturates.
- Please also sample the permeate at the top of the VA column. The pH should be less than 3.5, otherwise a column change will be necessary.

EA Reduction Checks

- Measure the pH of the **permeate exiting the HpH column** on a regular basis to gauge when the column is saturated. This can be sampled at the bleeder valve on the top of the pHC column. The pH should be above 6.
- Take a sample at *Valve 2 (after the pHC column).* It should be between 2 and 3.5.

- If the pH exiting the HpH column drops below 6, the column will require regeneration. Repeat the section titled "*Pressurizing the system and tasting out permeate*" if changing of the column is necessary.
- Please do not worry if the pH shows 4.5. Just stop and change columns as soon as possible. The pH can drop as much as 3 points within 5 minutes when the column saturates.
- Please also sample the permeate at *Valve 2*. The pH should be less than 3.5, otherwise a column change will be necessary.

Brett Reduction checks

Evaluate the permeate entering and exiting the phenolic adsorption column on a sensory basis. If taint is detected after the column, then replacement of the column will be necessary.

pH Correction

It might be necessary to pH correct the permeate during process to prevent the pH of the wine from increasing. This is accomplished using the pHC (pH Correction) column that would have been supplied with the machine.

In order to use the column, connect the permeate line exiting the VA resin column to the inlet of the pHC column. Connect the outlet of the pHC column to the Permeate Return on the machine.

The pH Correction column efficacy can be measured by the pH exiting this column. If the pH is above 7 exiting the column, then a regeneration or change of column will be required.

SYSTEM CHECKS

Once running, please check the following for correct operation:

- Permeate is flowing at 36 gal/hr or 0.6 gal/min.
- The System is pulsing. If no pulsing is taking place, check troubleshooting.
- The permeate is clear (it might have a pink tinge in the beginning, but this should clear up).
- We would recommend recording the start-up pressure and flow on a log sheet. Re-check every half hour and record the latest values on the log sheet.

PLEASE CHECK THE SYSTEM EVERY 30-60 MINUTES OR MORE FREQUENTLY AS IS DEEMED NECESSARY.

CHECK pH FREQUENTLY TO ENSURE ADEQUATE REMOVAL OF ACETIC ACID

CHECK PERMEATE AROMA EXITING TREATMENT COLUMN TO TELL IF BRETT COLUMN IS STILL REMOVING 4EP AND 4EG.

PRESSURE ABOVE 850 PSI

If at any time the pressure of the system exceeds 850 psi, the membranes are fouled and the system needs cleaning. If the system reaches 850 psi within minutes of starting up after a clean, then the RS of the wine is high and this will result in high pressure low flow conditions. Check with the office if it is appropriate to run at these conditions.

FLOWRATE AND NECESSARY RUN TIME

Your system is equipped with a rotameter (Flow Meter). Your system permeate flow rate should be between 20 and 40 gal/hr depending how the system is configured.

Please read the flow rate at the top of the float for accuracy. Note that for a 30% reduction in the VA, approximately 50% of the volume of wine as permeate needs to pass through the resin vessels. This is the same for 4EP/4EG reduction. For instance, a 600 gallon tank would require 300 gallons as permeate to be passed through the treatment column in order to achieve a 30% reduction in the VA or 4EP level. This equates to a run time of approximately 7 hours on the SS4-4-40.

Here are approximate volumes to be processed based on percentage drops of VA:

20% VA or 4EP Reduction	: Treat 40% of the volume as permeate
30% VA or 4EP Reduction	: Treat 50% of the volume as permeate
40% VA or 4EP Reduction	: Treat 60% of the volume as permeate
50% VA or 4EP Reduction	: Treat 70% of the volume as permeate

IMPORTANT

If you run this system on clean, filtered or well-racked wine, you will have a longer life expectancy from the membranes.

Please check the inlet screen daily or between runs to ensure it is clean. It can be pressure washed.

End of wine Run – Follow the steps carefully below

Once finished with the wine, you can either go onto another wine or clean the system with water. As long as the system is not dirty, it can be used to process another tank or cleaned as necessary.

- Open the PRESSURE VALVE on the INTENSIFIER.
- Wait 1 minute.
- Switch off the system pump.
- Close the wine inlet valve from the feed tank.
- Disconnect the Wine Inlet line from the machine.
- Close *Valve 2*.
- Disconnect the 3/8” tubing from the inlet to the treatment column/s.

Purging Permeate

- Permeate is still sitting in the treatment column/s and requires purging back to the tank. Nitrogen is best for this purpose.
- Connect a nitrogen line to the column inlet.
- Set nitrogen pressure at 15-30 psi.
- Open the valve to allow nitrogen to enter the treatment column.
- Leave until gas is seen in *Cartridge Housing 2*.
- Please note that this liquid is clear and should not be mistaken for water!
- Close the gas line.
- Close *Valve 4*.
- Connect a cold water line to the *WINE INLET*.
- Open the water and allow water to push out the wine back to the feed tank.
- Taste out by cracking the valve slightly on the tee-piece located on the *WINE OUTLET*.
- When water is tasted, close the valve on the wine hose side and open the valve at which you were tasting for water.
- Disconnect the wine hose from the machine and use nitrogen to push the remaining wine out of the line back into the tank.
- Open *Valve 1*
- Leave the machine flushing for 1-2 minutes.

Warm Water Flushing

- Warm water can now be used for flushing. This will aid in the removal of colloids from the membranes. Please do not exceed 120°F on the water flush.
- Close the PRESSURE VALVE every 5 minutes for 2 minutes to flush through the permeate line too.

Treatment Column Storage

Please note that your permeate treatment column still has life to run more wine if the pH was above 9 when you stopped. Please rinse with water, making sure the column is full and store without purging to prevent bacteria growth. If you are not going to use the column again within a week, please return to VA Filtration or regenerate as necessary.

CLEANING INSTRUCTIONS FOR SYSTEM

Once you have completed the filtration of the wine, please follow the cleaning instructions to ensure that the wine is cleaned out of the system prior to storage.

WATER RINSE 1

- Warm water can now be used for flushing if required. This will aid in the removal of colloids from the membranes. Please do not exceed 120°F on the water flush.
- Close the *PRESSURE VALVE* on the Intensifier every 5 minutes for 2 minutes to flush through the permeate line too.
- Rinse system for 5 to 10 minutes to ensure removal of most of the color.

Non Chlorinated TSP Wash 1 (or Caustic potash if available)

The ideal cleaning solution is warm (120F) TSP.

Please use a winery pump with a variable speed flow rate and connect it between *Valve 7* (Inlet) and *Valve 6* (Outlet) and your cleaning tank/drum. The pump should deliver between 10 and 15 gal/min.

Open *Valve 7* and *Valve 6*. Close the Pressure Valve on the intensifier.

Connect the 3/8” tubing used to deliver permeate to and from your treatment column together using the tri-clamp fittings. Open *Valve 2* and 3 for cleaning on the permeate

side of the machine. Please do not run the cleaning solution through the treatment column.

Mix up a 1% solution (i.e. 1 kg of TSP in 100 liters (25 gallons) of water). Pump this solution through the Membranes using your winery pump to drain. When you first run the cleaning solution through the membranes, the solution exiting the membranes will be black and will turn to orange slowly over time. Once all liquid is drained. Mix another 1% solution and this time recirculate to the same tank for 10 minutes. To prevent liquid escaping, close all yellow handled valves at this point.

Check the INLET SCREEN. If dirty, rinse out and put back.

WATER WASH 2

Once the TSP wash has been completed, rinse the system again with warm water. Close *Valve 6* and 7 and use a pressurized water line connected to the Wine Inlet. Open and close the Pressure Valve every couple of minutes. .

CITRIC WASH 1

Please use a winery pump with a variable speed flow rate and connect it between *Valve 7* (Inlet) and *Valve 6* (Outlet) and your cleaning tank/drum.

Open *Valve 7* and *Valve 6*. Close the Pressure Valve on the intensifier.

Connect the 3/8" tubing used to deliver permeate to and from your treatment column together using the tri-clamp fittings. Open *Valve 2* and 3 for cleaning on the permeate side of the machine. Please do not run the cleaning solution through the treatment column

Mix up a 1% solution (i.e. 1 kg of Citric acid in 100 liters (25 gallons) of water). Pump this solution through the Membranes using your winery pump to drain. When you first run the cleaning solution through the membranes, the solution exiting the membranes should be clear. If it is pink. Repeat the TSP cleaning procedure again after you have rinsed out the citric acid

Please note that citric acid is used as a neutralizing agent as well as to convert tannins that have not been removed from the membrane elements into tannic acid. Soaking the membrane elements in Citric Acid converts the tannin into tannic acid. If you follow this with a warm water rinse, and a TSP wash, these tannins eventually get removed.

END OF CLEAN

Once the citric acid is run clear, add a little KMBS to the citric solution. Rrecirculate through the membranes, switch off the recirc pump and Close valves 6 and 7. You can leave the system in this state for up to a month after which we would recommend cleaning of the system again to prevent mold and or bacteria growth.

EXTENDED SOAK.

If the system has been used for a long period of time or is not delivering a sufficient volume of permeate, it may be necessary to soak the system over night in a high pH solution or in TSP. To do this carry out the clean as above, but stop after the first TSP clean. Check the pH of the solution recirculation through the membranes and make sure it is between 11 and 12. If it is too high, adjust the pH slightly with some citric acid.

LONG TERM STORAGE

Recirculate a sulphur solution (0.1%) through the membrane elements only using *Valve 6* and 7. When complete, close all valves and store machine. Please remove filter bowls and rinse storing externally from the machine.

TROUBLESHOOTING

The system does not deliver any permeate after cleaning or during start-up.

Cause

- This may be caused by a blockage in the filter screen located at the back end of the feed pump.
- Another cause could be that the back pressure valve has not been closed.

Solution

- Check the Pressure Valve on the intensifier is closed! If it is, proceed to the next step.
- Switch off the pump and close all valves from the wine tank. Remove the Inlet Filter housing by unscrewing to the left. Once loose, the filter cartridge inside can be inspected for debris or blockage. Clean with hot water if necessary.

- If this fails to solve the problem, switch off the system and carry out a full chemical clean.

- If this still fails to solve the problem, then call our service department to schedule a service on the machine.

The System only delivers 12 gal/hr of permeate flow

Cause

- The sugar level in the wine is higher than the recommended 10%.
- The wine is less than 35°F
- The system is fouled and requires chemical cleaning.

Solution

Try a chemical clean. If this does not sort out the problem, the system may be fouled. Check the 40 micron screen for signs of lees. Clean it out as necessary.
If the wine being processed has a high sugar level or is very cold, adjust the pressure relief valve to allow the feed pump to deliver more pressure to the system.

The Feed pump is running, but is not pumping

Cause

Air lock on the inlet line to the feed pump.

Solution

Bleed out the air on the inlet hose to the system as much as possible. If the pump is still not pumping the please call for advice.

Wine or Water is seen leaking from the bottom of the pump assembly

Cause

Feed pump has a cracked can.

Solution

Push the wine out of the system using water. Rinse until no color is detected. Purge permeate columns and call the office. This is a catastrophic failure that requires disassembly of the pump.

Regenerating the VA or HPH Resin column

Your system has been supplied with a regenerable resin column for purposes of VA Reduction.

You will require the following for correct operation of this column:

- 1 x Water line with tri-clamp fitting
- 1 x Nitrogen gas line to tri-clamp
- 1 x bottle of nitrogen
- A 6% Potassium hydroxide (CAUSTIC POTASH) solution
- Floor drain
- Handheld pH Meter
- Chemical pump in box + 2 hoses (supplied with the column)

Safety

Please make sure you protect your eyes and lungs when mixing up any chemical solution. Safety goggles and a gas mask rated for caustic fumes are necessary.

Connection Type

The resin column has the following connections

- Inlet and outlet 1.5" tri-clamp
- A bleed valve is located on the top of the resin column (in the column head).

Chemical pre-mix (please use necessary protection)

Mix up the water & caustic solution as follows:

8" diameter resin column : 12 gallons water with 6 pounds caustic potash
12" diameter resin column : 20 gallons water with 10 pounds caustic potash
14" diameter resin column : 25 gallons water with 12.5 pounds caustic potash

Your resin column diameter is written on the lower part of the column in the form of 844 or 1447 etc. The first 2 numbers are the vessel diameter size in inches.

Prior to Use (of after prolonged storage)

1. Connect a water line to the fitting on the "INLET" line
2. Connect a drain line to the fitting on the "OUTLET" line

3. Make sure the bleeder valve is closed
4. Open the water line to the column
5. After a minute, water should be seen flowing from the OUTLET water line
6. Open the bleeder valve (air will be heard escaping) until water escapes through the valve.
7. Smell the water for “off” odors, if any strange odors are detected, regenerate the system.

Regeneration

Regeneration is made up of 3 stages: *Rinsing with water, pumping in the caustic potash solution and rinsing again with water for 20 minutes (HPH resin) or to a final pH of 10.5 (VA resin).* This is carried out as follows:

1. Connect the water line to the INLET tri-clamp connection on the column
2. Open the water line to the column
3. After a minute, water should be seen flowing from the outlet line
4. Open the bleeder valve (air will be heard escaping) until water escapes through the top of valve. Close the valve.
5. Rinse for 10 minutes
6. Position your 6% caustic potash solution near the column
7. Using the pump provided, pump the pre-mixed caustic solution through the resin column.
8. Once the caustic potash solution is empty, switch the pump off. Do not pump air into the column.
9. Add 5 gallons water to the empty caustic potash solution bucket. Switch on the regen pump and pump the water through the column for approximately 2 minutes. *This process is done mainly to flush out the pump*.
10. Disconnect the pump hose from the Column **Inlet.** Connect your water line to the column **inlet** and rinse down **for 30 minutes (HPH resin only).**
11. **For VA resin, rinse until the rinse water pH exiting the resin column is less than 10.5**
12. Purge the water out of the column with nitrogen or argon.
13. Now you are ready to start reprocessing your wine.

TROUBLESHOOTING REGENERATION OF VA RESIN

My resin column only lasted 2 hours before it was spent.

- An incomplete regeneration or incorrect caustic potash concentration was used. Purge the column and carry out a regeneration as per the instructions above.

Regenerating the PH Correction Resin column

Your system has been supplied with a regenerable resin column for purposes of pH correction and/or tartaric stabilization.

You will require the following for correct operation of this column:

- 1 x Water line with tri-clamp fitting
- 1 x Nitrogen gas line to tri-clamp
- 1 x bottle of nitrogen
- A 5% HCl (Hydrochloric acid/Muriatic acid) solution
- Floor drain
- Handheld pH Meter
- Chemical pump in box + 2 hoses (supplied with the column)

Safety

Please make sure you protect your eyes and lungs when mixing up any chemical solution. Safety goggles and a gas mask rated for KOH or hydrochloric acid fumes are necessary.

Connection Type

The resin column has the following connections

- Inlet and outlet 1.5" tri-clamp
- A bleed valve is located on the top of the resin column (in the column head).

Chemical pre-mix (please use necessary protection)

Mix up the water & acid solution (assuming 31% HCl strength) as follows:

8" diameter resin column : 6 gallons water with 1 gallon acid
12" diameter resin column : 20 gallons water with 4 gallons acid

14" diameter resin column : 25 gallons water with 5 gallons acid

Your resin column diameter is written on the lower part of the column in the form of 844 or 1447 etc. The first 2 numbers are the vessel diameter size in inches.

Prior to Use (or after prolonged storage)

i. Connect a water line to the fitting on the “INLET” line
ii. Connect a drain line to the fitting on the “OUTLET” line
iii. Make sure the bleeder valve is closed
iv. Open the water line to the column
v. After a minute, water should be seen flowing from the OUTLET water line
vi. Open the bleeder valve (air will be heard escaping) until water escapes through the valve.
vii. Smell the water for “off” odors, if any strange odors are detected, regenerate the system.

Regeneration

Regeneration is made up of 3 stages: *Rinsing with water, pumping in the acid solution and rinsing again with water for 20 minutes.* This is carried out as follows:

i. Connect the water line to the INLET tri-clamp connection on the column
ii. Open the water line to the column
iii. After a minute, water should be seen flowing from the outlet line
iv. Open the bleeder valve (air will be heard escaping) until water escapes through the top of valve. Close the valve.
v. Rinse for 10 minutes
vi. Position your 5% acid solution near the column
vii. Using the pump provided, pump the pre-mixed solution through the resin column.
viii. Once the solution is empty, switch the pump off. Do not pump air into the column.
ix. Add 5 gallons water to the empty solution bucket. Switch on the regen pump and pump the water through the column for approximately 2 minutes. *This process is done mainly to flush out the pump*.
x. Disconnect the pump hose from the Column **Inlet.** Connect your water line to the column **inlet** and rinse down **for 20 minutes.**
xi. Purge the water out of the column with nitrogen or argon.
xii. Now you are ready to start reprocessing your wine.

TROUBLESHOOTING REGENERATION OF pH CORRECTION RESIN

My resin column only lasted 2 hours before it was spent.

- An incomplete regeneration or incorrect acid concentration was used. Purge the column and carry out a regeneration as per the instructions above.