AZS Rinse Conveyor
A Users Guide

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http://go.uvm.edu/azsuserguide

This guide is the result of conversations with several current farmers using the rinse conveyor. Their contributions are greatly appreciated.
Overview of Components
STAGE 1
Low-Pressure High-Volume Rinse
(White PVC pipe with drilled holes)

STAGE 2
High-Pressure Spinning Spray Bars
(Stainless Pipe with Metal Nozzles)

STAGE 3
Low Pressure Final Spray
(Plastic Hose with Plastic Nozzles)
Rubber straps secure the top portion down during operation, movement or storage.
OPENS UP FOR CLEANING
PNEUMATIC CYLINDERS for opening the top

RUBBER STRAP LATCH one each side

RUBBER STRAP CATCH one each side
Note: It is important to keep debris from building up in the tufts. Newer white brushes are available and offer easier cleanout.

Any greens will have to be lifted off before going over the Transfer Brush. If running all greens, consider removing the transfer brush & discharge tray.
Directs water into the tank or permits mud to the ground when removed
BACK
(opposite control panel)

BELT TENSIONER
(One, each side)

Lower PVC Assembly Clean Out
Actual power & plug requirement will be dependent on the machine's model. (Refer to sales info or plug info on the actual machine to provide the electrical requirements)
STAGE 3: FRESH WATER INLET & VALVE FOR FINAL SPRAY NOZZLES
Pressure range 20-80PSI
CONTROL PANEL or HUMAN MACHINE INTERFACE (HMI)

Belt Speed

Stop Switch

Mode Selection

Start Switch
ADJUSTABLE FOOT

TIE DOWN POINT for shipping
LOW PRESSURE, HIGH VOLUME RINSE (STAGE 1) HEIGHT ADJUSTMENT
STAGE 1, HIGH VOLUME, LOW PRESSURE RINSE
UPPER PVC ASSEMBLY

HEIGHT ADJUSTMENT BAR

Upper PVC Assembly Clean Out
MOTOR (Green) to run the HIGH PRESSURE PUMP

MOTOR & PUMP PAN
HIGH PRESSURE PUMP
PRESSURE GUAGE
PRESSURE REGULATOR
OIL SIGHT GLASS
STAGE 2, HIGH PRESSURE LOW VOLUME, SUPPLY SYSTEM

FLOAT VALVE ASSEMBLY/BUFFER TANK

FRESH WATER INLET

FILTER

BALL VALVE (To fill tank)

WATER LINE TO HP PUMP
STAGE 2, HIGH PRESSURE LOW VOLUME, SUPPLY SYSTEM BUFFER TANK

FLOAT VALVE
STAGE 2, HIGH PRESSURE LOW VOLUME, SUPPLY SYSTEM
Looking inside BUFFER TANK

LOW-FLOW PUMP CUT OFF SWITCH
STAGE 1
FLOAT VALVE IN
RECIRCULATION TANK
STAGE 2
HIGH PRESSURE, LOW VOLUME
SPINNER ARM HEIGHT ADJUSTMENT
STAGE 2
HIGH PRESSURE, LOW VOLUME
HIGH PRESSURE SPINNER BAR
Adjusting the position of the elbow changes the speed of the spinner arm.
The yellow, low pressure nozzles give a final rinse with fresh water or water treated with sanitizer.

Other tip sizes or blank caps are available upon request if spray volume needs to be changed.
ACCESS COVER TO LOWER SPINNERS

Lower lip should be directed inside the machine
STAGE 2
High Pressure Spinner Bar

STAGE 3
Low Pressure Final Spray Nozzles

UNDER THE BELT
INSIDE ACCESS COVER
Use of a chain belt allows maximum water to product contact and easy water draining.
Ships with RV antifreeze, if casters are ordered they are in the box.
Screen filter for recirculated water
INSIDE THE TANK

2nd Stage screen filter for recirculated water
SCREWS TO ADJUST TRANSITION PLATE
(View from underneath product outlet)

Too Tight

View from top of product outlet

About Right
Tips & Tricks
Using the Machine

- Think of belt speed as dwell time
- Flushing the Low Pressure (Stage 1) PVC lines with the gate valve helps to reduce plugging.
- Keeping produce in a single layer will provide best cleaning results
Setting up the High-Pressure Nozzles

- Plug in the machine
- Ensure fresh water is connected, valve open, and buffer tank full
- Turn Mode Selector to HP or Combo and press the green start button
- Adjust pressure regulator to desired pressure
- Verify speed of spinning arms (see next page)
Stage 2 Layout

Stage 2 pressure is equal in both spinner arms but the nozzles differ to provide even coverage.
Setting Arm Speed

The speed of the spinner arms is determined by the angle of the elbows on the arm.

Proper calibration of arm speed is set by watching the tips of the arms. They should spin faster than you can count the revolutions, but slow enough you should still see the ends of the arm.

Too slow will not provide sufficient coverage to the product, too fast will wear out the swivel joint prematurely and not provide sufficient coverage of product.
Adjusting Arm Speed

You can use an adjustable or the box end of a large wrench to carefully adjust the elbows. Set the speed at the pressure you find yourself using most.
Use the Right STAGE 2 Pressure for the Right Crop

- Some crops will not need the high-pressure rinse (Stage 2) at all
- Fragile crops like zucchini can be cleaned using the high-pressure bars if the pressure is turned down.

**DO NOT TEST THE PRESSURE WITH YOUR HANDS!**

Injury can result, test pressure on crops not your skin!
Cleaning the Machine

- Power off the machine and turn off water lines
- Disconnect power cable
- Drain the recirculation tank
- Remove collection screens and rinse off
- Spray off chain belt and basin
- Rinse/Brush PVC Assemblies
- Use appropriate detergent for cleaning food contact surfaces
- Consider using a sanitizer as needed
- Allow to completely dry
Cleaning Tools

A bench scraper removed the caked on dirt from a catch pain with just a few swipes.

A narrow brush flosses the crack between the frame and the chain conveyor.

Visit: go.uvm.edu/ffcleaningtools
Pretty much any brush takes care of this splatter that the machine doesn’t rinse off itself.

A long handed brush can make scrubbing the PVC assembly easier.

This Transport hand brush cleans the basin of the machine well.

Visit: go.uvm.edu/ffcleaningtools
Winterization – A MUST before any Freeze

- Remove inlet filter cup or drain cap
- Drain circulation pump and tubes
- Opening the top of the machine eases the draining of lines
- Add RV antifreeze to pressure pump
- Purge nozzles with antifreeze or compressed air
Troubleshooting
Spinners not Spinning

- Low Pressure
- Improperly adjusted nozzle elbow position
- Low oil level in the high-pressure pump
- Degraded oil
- Clogged Nozzles
Washer shuts off repeatedly

- Low incoming water supply
- Other water usages or leaks that are abnormal
- Clean the fresh water inlet filter
<table>
<thead>
<tr>
<th>Problem</th>
<th>Suggestion</th>
<th>Correctional suggestions</th>
</tr>
</thead>
</table>
| Pressure Pump shuts down when releasing the Green start button | Not sufficient water source | Close other water Taps  
Increase Water line capacity  
Decrease Water pressure @ Pressure pump on the washer (will use less water @ lowerer pressures)  
Press-& Hold Green Start for a few seconds will verify if the motor & pump works (this will over-ride the low level switch) |
| Spinners not spinning | To low Pressure from High Pressure pump | Regulator on pump set to low  
Adjust Black knob on top of pressure pump  
Pump not pumping as it should  
Repair or replace pressure pump |
| | Pressure Nozzles Not correct angle | All pressure nozzles need to be tilted in same direction  
If tilted towards each-other – they will not spin  
Tilt of nozzles has to be more aggressive for lower water pressure |
| | Pressure Nozzle Clogged | Remove Nozzle from elbow & clean out  
When installing – Confirm correct angle |
| **Make sure nozzles do not spin over-speed**  
*Not slow enough to count – Not so fast that they can not be seen* | | |
| Circulation tubes Clogging | Dirty water in Flume | Drain water after every several hours – depending on amount of dirt on product to clean |
| | Rinse circulation tubes more frequently | Open Gate-Valve  
- on side of the conveyor to flush tubes  
- inside inlet end to flush tubes |
| | Debri caught in holes | Open holes with a pick |
## Settings Per Crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Belt Speed</th>
<th>Spinner PSI</th>
<th>Soil Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunched Greens</td>
<td></td>
<td>300-400</td>
<td></td>
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<tr>
<td>Need additional input from growers</td>
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</tbody>
</table>

Need additional input from growers
What do I need to ask for when I order?

Customizations/Upgrades

• 32” and 40” wide machines get 2 spinners
  • Two 10hp pumps, one for top, one for the bottom
  • Or open a ball valve and use one pump for both at reduced pressure
• Pressure washer wand to attach to the HP pump
• Caster Wheels
• Infeed crate shelf
• Chemical injection pump
What Other Equipment is Available?

- Soak tank
- Barrel Washer
- Sorting table
- Roller Sizers
Can I add Sanitizer?

Yes, it can be used in low pressure (Stage 1) and final spray (Stage 3)

- Use of a Dosatron into the freshwater inlet of the final rinse is the easiest addition

- The recirculation tank is constantly getting fresh water added, as well as containing a heavy soil load making the concentration of a sanitizer difficult to maintain

- Do not inject sanitizer into the high pressure (stage 2) pump or pump failure will occur
Use as a Hydrocooler?

Absolutely!

- Using well water (~50F) helps remove field heat
- Add some ice to the recirculation tank for additional chilling
- Pay attention to water quality and temperature difference between water and product. Refer to GAPS and PSA training.
Use as a Crate Washer?

• Ensure clean breaks between use as produce washer and use as a bin washer
Contacts

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