

Blackmore WaterAll Conveyor

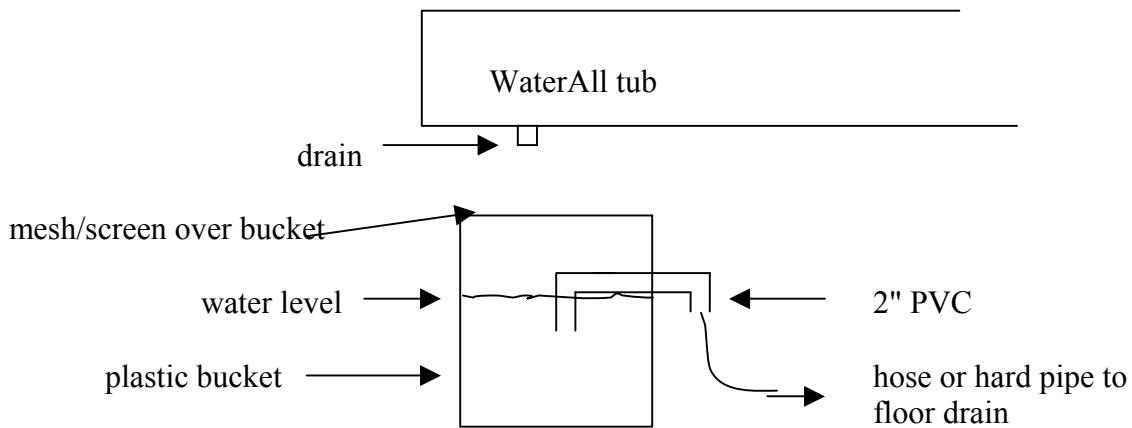
April, 2004

Instruction manual/Parts list

Thank you for purchasing a Blackmore WaterAll Conveyor. It makes conventional water *tunnels* obsolete. This versatile machine permits a metered amount of water to be applied to trays. It irrigates plug trays at the end of a seeding line without disturbing seed placement. Or, it will water in plugs or other crops on the end of a planting line, assuring they have plenty of moisture to survive a hot spring day, or go into a cooler with uniform irrigation. The standard machine comes with precision drilled WaterBars with a 13" (33cm) long pattern. Longer bars are available with a 17" (43cm) pattern.

Simple to operate and maintain, the WaterAll has an ON/OFF switch and two dial knobs to control its operation. An electric eye triggers the solenoid valve to begin dispensing water. A delay timer (three to thirty seconds is standard equipment) set with the upper dial control determines how long the water remains on. The lower dial knob controls the conveyor speed. A valve on each water bar allows them to be individually regulated or turned off. A strainer filter and micro filter remove particles in the water.

Excess water from the machine runs to a drain. To prevent the drain hose from plugging and floor drain traps from filling with silt, use a five-gallon bucket similar to that shown below. The bucket is easily cleaned when necessary.



Using a bucket as diagramed above allows light material to float on top of the water, and heavy materials sink to the bottom rather than going into the floor drain. Use a mesh over the bucket to keep out any foliage or tags that may come out the drain.

Regular maintenance

Hose the machine off at the end of each day's operation, clean out the tub and make sure the drain is clear of any debris. **Avoid directly spraying the control box**. Water and electronic components don't mix!

It may also be necessary to **periodically soak the water bars in acid** to "burn out" any precipitates in the orifices. Simply remove the bar(s) from the machine and immerse them in acid for a few hours. A shallow plastic pan works well. Although any acid should work, we recommend a safe acid such as GreenCare's *non-hazardous* Seplex-L Organic acid to get the job done. Household vinegar will also work. If necessary, use a small wire to poke the holes clear.

Periodically inspect the orange drive sprockets on the motor (output) end of the machine for wear. There should be a flat spot on top of the teeth about ½" (12mm) long. If the sprockets are badly worn, the flat spot worn to half the original dimension or less, then the sprocket(s) should be replaced. Or at the very least, a replacement set should be ordered. Check the sprockets on the other end also. Since these are not driving the belt, they wear much less. The drive motor brushes, drive chain and sprockets should be checked annually.

Early model machines had a chain drive off the motor, but later models use timing pulleys and belt which don't stretch, require no lubrication and little maintenance. The newer belt and pulleys are easily retrofitted to older units.

Check the strainer and micro filters weekly, or as often as necessary to keep them clean. The strainer filter can usually just be washed clean, or replacements are available from Blackmore. Replacement cartridges for the micro filter are available at many hardware or home improvement stores, or call Blackmore at (800) 874-8660.

Micro filters

Culligan # S1 medium filtration

or

Aqua-pure # AP110

Strainer filter

LST 1100

Off season storage: remove the filters and disconnect the pipe union connection near the solenoid valve to insure that all water is drained from the unit, especially if it will be stored in a location subject to freezing. Turn the unit on with water supply disconnected to help drain water from the solenoid valve. Ideally all lines should be blown out with compressed air.

Operation

Establish a conveyor speed corresponding to the rate of sowing or transplanting, then set the timer delay so the water stays ON until the first tray clears the last bar. If a second tray trips the electric eye, the timer will reset. The valves on each bar regulate the amount of water dispensed. If dealing with a high-pressure supply, it may also be helpful to install a valve at the water supply point to control the volume of water entering the machine. The rate at which the soil mix absorbs water will determine speed and volume of application.

Parts:

A parts list is on the Blackmore web site and also included with the machine. Many of the electrical parts are available from W.W. Grainger. (www.grainger.com)

Trouble shooting:

Problem	Check	Remedy
Water won't shut off	<ol style="list-style-type: none"> 1. Water on reflector 2. Timer has failed, often caused by water in the control box 3. Water pressure too high to solenoid and it can't close 	<ol style="list-style-type: none"> 1. Wipe water off reflector, turn waterbar slightly to help keep spray off reflector, lower pressure 2. Replace timer, Grainger #5B403 3. Restrict pressure/volume to valve, install boiler water pressure regulator if water feed is from boiler system
Water won't come on	<ol style="list-style-type: none"> 1. Make sure indicator light (inside housing) on electric eye lights when beam is broken 2. Solenoid valve 3. Water supply is turned on 4. Filters may be plugged 	<ol style="list-style-type: none"> 1. If indicator light won't come on, eye may be bad 2. Replace valve if needed 3. Turn on water 4. Clean/replace filters
Conveyor won't run	<ol style="list-style-type: none"> 1. Power supply to machine 2. Motor brushes 3. Speed control – DC output voltage on A+ A- terminals should vary when knob is turned 	<ol style="list-style-type: none"> 1. plug in machine 2. Replace brushes 3. Replace speed control Grainger #6A191
Conveyor belt slips	<ol style="list-style-type: none"> 1. Orange drive sprockets 2. Belt tension 	<ol style="list-style-type: none"> 1. Replace drive sprockets 2. Tighten belt, or if necessary make belt shorter by removing some sections. Heat plastic "rods" ends so they may be pulled out, then reheat and "mush" over ends to secure after reinstalling
WaterBar(s) leak	<ol style="list-style-type: none"> 1. O'rings in block 	<ol style="list-style-type: none"> 1. Replace o'rings
WaterBar(s) leak or blow out	<ol style="list-style-type: none"> 1. Retainer screw 2. Water pressure 	<ol style="list-style-type: none"> 1. Tighten screw 2. Reduce pressure
Drive chain slipping	Drive chain worn or stretched too long	Replace chain with timing belt and pulleys



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