

Blackmore WaterAll Conveyor

October 2010

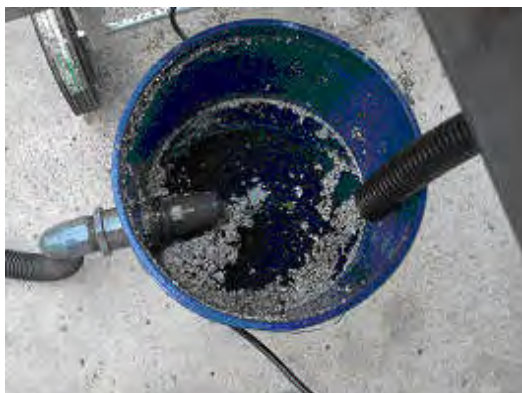
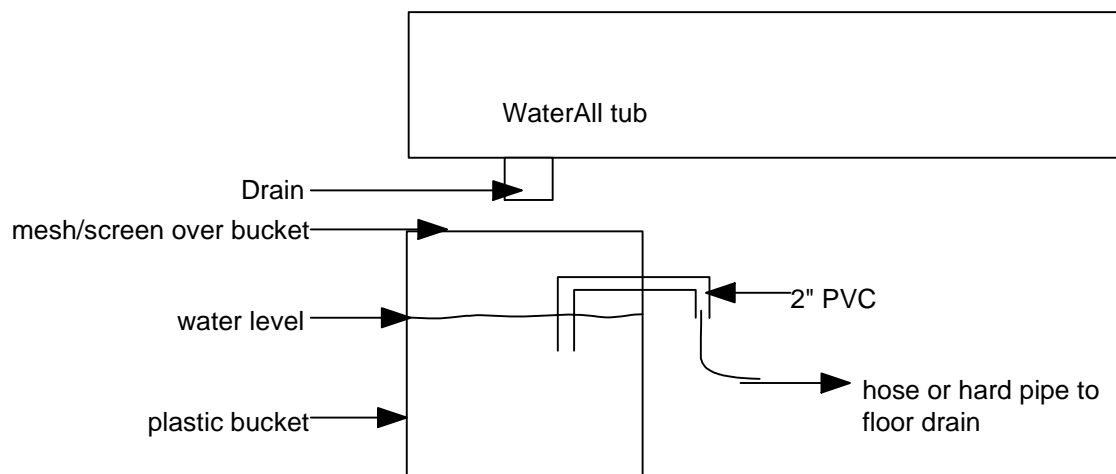
Instruction Manual/Parts List

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 the plug trays at the end of a seeding line without disturbing seed placement. In addition, 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.

CONNECT MACHINE TO PROPERLY GROUNDED 120VAC OUTLET

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 time (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 to 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 of 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 do not mix!

It may also be necessary to **periodically soak the WaterBars 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 plastic 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 a belt that does not 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 (20 micron)

Culligan #S-1A medium filtration

Strainer filter

Brothers 870D

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 website (www.blackmoreco.com) 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, Newark #93F2723 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, replace eye, Grainger #6C785 2. Replace valve if needed, Orbit #57460 3. Turn on water 4. Clean/replace filters, Culligan #S-1A
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 #5JJ56
Conveyor belt slips	<ol style="list-style-type: none"> 1. Drive sprockets 2. Belt tension 	<ol style="list-style-type: none"> 1. Replace drive sprockets, contact Blackmore 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	'O' rings in block	Replace 'O' rings, Apple #R00400-062-70BNB
WaterBar(s) leak, blow out, or are plugged	<ol style="list-style-type: none"> 1. Retainer screw 2. Water Pressure 3. Precipitates in holes 	<ol style="list-style-type: none"> 1. Tighten screw 2. Reduce pressure 3. Soak bars in acid
Drive chain slipping	Drive chain worn or stretched too long (older models)	Replace chain with timing belt and pulleys



Blackmore Company Inc.

10800 Blackmore Avenue, Belleville, MI USA 48111-2500

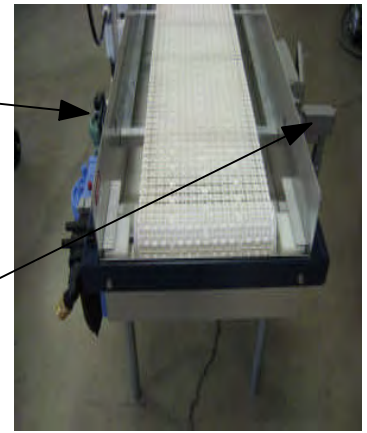
USA/Canada (800) 874-8660 • Int'l (734) 483-8661 • Fax (734) 483-5454/2387

www.blackmoreco.com • email: info@blackmoreco.com



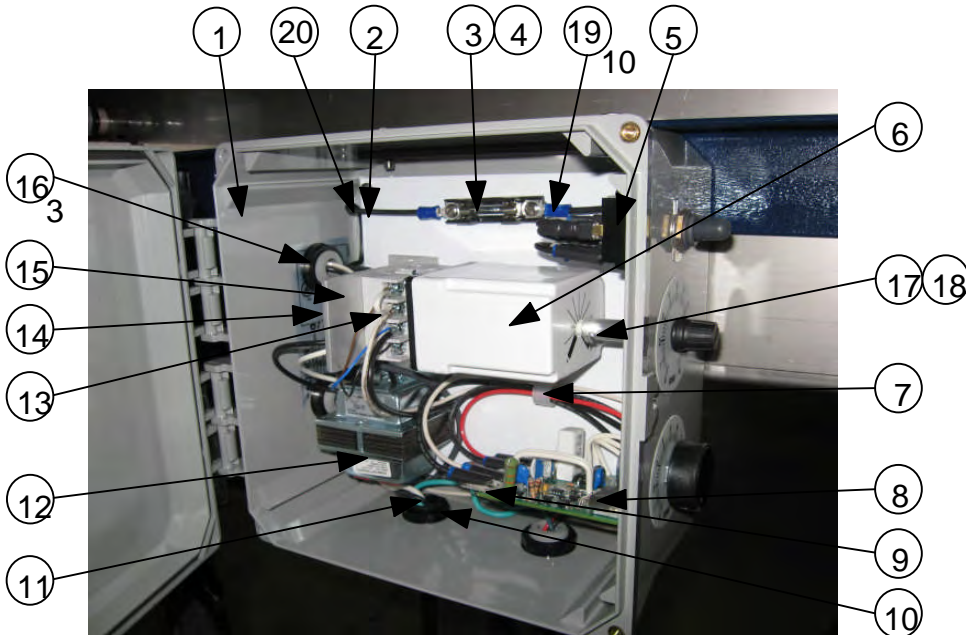
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Water-All Electrical Box



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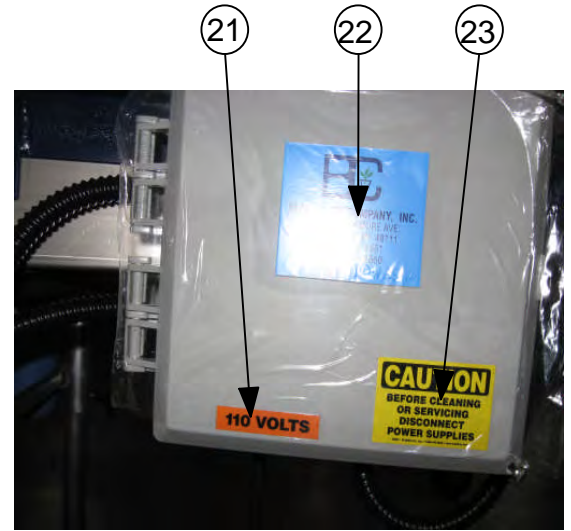
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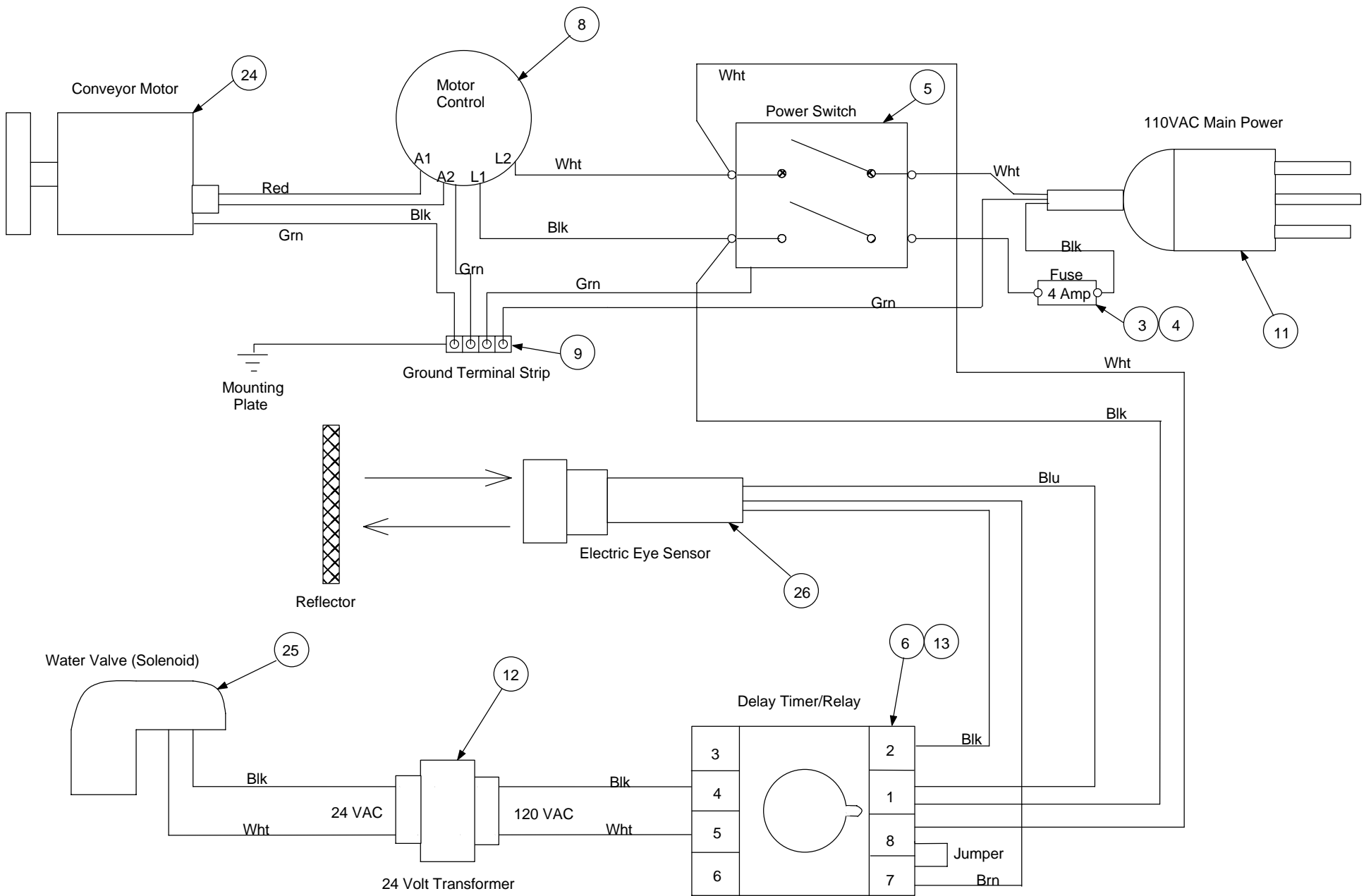


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10/19/2010		D599A0002 Water-All, Control Box-Bill of Material		
Item.	Part Number	Description	Quantity	Manuf/Vendor
1	A311A0016	Box, Enclosure, Electrical, 2-Hinge	1	Carlou #NJ884
2	A306A0035	Plate, Control Box Enclosure, 2-Hinge	1	Hoffman #A8P8
3	B628A0024	Block, Fuse Strip, 1 Position	1	McMaster-Carr #7687K5
4	A508A0014	Fuse, 4 Amp, AGC	1	McMaster-Carr #7085K77
5	A629A0022	Switch, Toggle, DPST	1	Grainger #4X849
6	A593A0016	Controller, delay relay	1	Newark #93F2723
7	A142A0004	Clip, Wire, Medium, Gray	1	Newark #32N1294
8	A593A0015	Controller, DC Motor	1	Grainger #5JJ56
9	A628A0016	Block, Grounding	1	McNaughton McKay #ITEECGB20
10	A306A0028	Mount, Cable Gland, Medium, Black	1	McMaster-Carr #7935K11
11	A537A0001	Cord, Power	1	Frank David 89
12	A506A0003	Transformer, 120-24V, 20 amp	1	Grainger #4X744
13	A630A0009	Socket, Relay, 8 pin round	1	Grainger #5X852
14	B628A0015	Block, Terminal, 2 Position	1	Newark #101M9998
15	B282A0068	Bracket, Mounting, Delay Timer	1	Blackmore
16	A306A0029	Mount, Conduit Fitting, Large, Gray	3	Grainger #6D089
17	B257A0038	Shaft, Relay Extension to knob	1	Blackmore
18	A131A0028	Screw, Pan Hd, 4-40x1/4	1	McMaster-Carr
19	A627A0003	Connector, Wire Terminal	10	3M
20	A534A0004	Wire, 16 gauge, price/ft	20	3M
21	A293A0016	Label, 110 Volts	1	Em edco #EM1375D
22	B293A0023	Nameplate, Label, BC Information	1	MSW
23	A293A0019	Label, Caution, Disconnect Before Cleaning	1	Em edco #SQS11
24	A623A0006	Motor, 90VDC, 1/17 Hp, 100 RPM	1	Leeson #M1125004
25	A631A0001	Solenoid, Water-All Valve	1	Orbit #57460
26	A594A0007	Electric Eye, Water-All	1	Grainger #6C785



Blackmore Company	
Description: Water-All Wiring Diagram	
Part Number: D599A0002	Rev: B
Used On: F970A0001 Water-All Conveyor	Date: 10/29/2010
Drawn By: J. Bartlett	