

Blackmore TopCoater

Instructions/troubleshooting

May 2004



Blackmore TopCoater – an input extension is available

Thank you for choosing the Blackmore TopCoater for your greenhouse operation. This highly versatile machine will top cover plug or market trays with the media of your choice, and may even be used to fill plug trays. The standard machine is four feet long, but the three foot extension is recommended when the machine is being used as a tray filler or not being operated in-line with a seeder.

This instruction sheet is designed to familiarize you with the different controls on the machine. If you have any questions, please don't hesitate to call Blackmore at 1(800) 874-8660 USA/Canada, or (734) 483-8661 internationally. Some electrical components are available in the USA through W.W. Grainger, as noted in parenthesis.

CONTROLS - ELECTRIC

There are four electrical controls on the TopCoater. Two on/off toggle switches for the vibrator and conveyor belt, and two control knobs for SCR's (silicone controlled relays) that control the belt speed and vibrator amplitude to dispense more or less material.

VIBRATOR controls

TOGGLE SWITCH- ON/OFF (Grainger part # 4X846)

The toggle switch energizes the electric eye, but the vibrator dispenses media only when the electric eye is activated. A small red light on the eye indicates if it is “seeing” the reflector.

KNOB - solid state controller

Adjusts vibration and therefore media flow onto the tray. Infinitely variable, so you can just “dust” trays when top coating, or maximize output for filling, just by turning the dial. There is a “gate” on the hopper that may be adjusted to help control the flow of material also. When adjusted properly, the vibratory feeder should empty the hopper in less than a minute at the maximum setting.

Normally set at the factory, vibration can be adjusted by loosening the large jam nut and turning the large slotted screw on the vibratory feeder unit itself. Turn the control knob to maximum (10) and adjust the vibrator until it “hammers” then back it off a little, and retighten the large jam nut. There is also a fine adjustment on the SCR control itself, inside the control box. Look for a small slotted screw located on the potentiometer (small blue rectangular component) on the solid state circuit board.

Caution: when adjusting this screw be very careful not to touch bare wires or other components with the screwdriver. If the vibrator won't shake at all, adjust the control board screw. Turning it in either direction usually starts the unit operating properly. If it vibrates, but only weakly, adjust the large screw/nut on the back of the vibrator feeder.

BELT & BRUSH controls

TOGGLE SWITCH- ON/OFF (Grainger part # 4X849)

Turns belt on and off, the belt will run only if the speed control knob is on, and will run continuously, but the machine will dispense media only when the electric eye is activated.

KNOB - solid state speed control (Grainger part # 6A191)

Controls conveyor belt speed when toggle switch is on. The solid state control permits adjustment to the belt speed, which is also linked to the brush rpm. The maximum belt speed is approximately 2,400 linear feet (700+ meters) per hour, or about 1,200 trays/hr and is infinitely variable.

ELECTRIC EYE – (Grainger # 6C785, relay # 5X841)

Activates hopper Agitator & Vibrator

The electric eye must be adjusted to activate the vibrator just prior to the tray going beneath the dispensing point. If the eye is not set correctly it will “see” the media rather than the tray and not shut off.

ADJUSTMENTS

GUIDE RAILS

There are two adjustments to the guide rails

- 1) HEIGHT - should be set so the rails are *above* the flange of the plug tray. Simply loosen the knobs holding the rail in place on the side frame of the TopCoater and adjust the rails so the plug tray flange is directly beneath them, allowing sufficient clearance so the tray can slide below them.
- 2) WIDTH- the width of the rails must also be adjusted for the plug tray being used, and to properly align the tray with the dispensing pan of the vibrator. Loosen the thumbscrews and slide the rails in or out to properly position the tray next to the guide rail, but not so tightly that the tray can't advance through the machine.

GATE

Just turning the dial on the vibrator control is usually sufficient to make changes in the volume of media being dispensed. If need be the gate is used to adjust the media flow. The gate opening is normally set at 1/2" - 1" (1.25 - 2.5 cm), depending on the media.

ELECTRIC EYE (Grainger #6C785, relay # 5X841)

There are two adjustments to the electric eye. The eye must "see" the reflector to operate. The reflector is positioned opposite the eye on the other side of the conveyor belt and is held in place with magnetic strips attached to the bottom of the bracket.

- 1) FORWARD & BACK - the eye may be moved forward or back on its mounting bracket to sense the tray and activate the vibrator earlier or later.
- 2) UP/DOWN - whenever possible the eye should be adjusted to "see" the plug cell rather than the edge of the tray. Loosen the nuts on the eye housing and slide it up or down in the positioning bracket to the proper height, then tighten the nuts.

PAN HEIGHT-

TopCoaters with serial numbers 1-50 have a series of holes on the hopper support bars permitting multiple pan heights. Later models have just three holes for different depth trays. Typically the height is set at the middle holes. That allows trays 2" (5 cm) deep to pass beneath. When top coating flats, the highest setting (3 1/2") must be used. If you are using the TopCoater for flats *and* plug trays you may find it most convenient to use the highest setting for both. Whether the media falls half an inch or two inches onto the tray should not affect the efficiency of the machine and won't appreciably increase the amount of dust.

PACKING ROLLER

The packing roller aides contact between the mix and seed and is used to slightly pack the mix into the plug tray or container being filled/ covered. It will also, to some degree, even out the material over the tray if it is not coming out evenly or being dispensed in clumps.

Adjustment- thumbscrews in the support brackets

BRUSH

The brush is designed to sweep excess media off the tray onto the belt. Place a box beneath the end of the TopCoater to catch the excess. To minimize possible disease travel between plug cells, brush all media off the top of the tray so cell wall tops are clearly visible. Dibbling the trays is necessary if this procedure is followed. To dibble trays, stack and nest them after filling, or install a Blackmore Roller/Dibbler on your seeder to optimize center placement of seeds in the cells. The Blackmore Roller/Dibbler may also be attached to the TopCoater, just after the brush.

Height adjustment- turn the knob at the end of the brush. A cog belt and pulleys beneath the unit keep it parallel to the tray.

Speed is automatically synchronized with conveyor belt speed.

SPECIAL APPLICATIONS:

MEDIA SELECTION and PREPARATION-

If using a peat lite mix to fill or topcoat trays, it must be somewhat dry. A moist mix will stick together, come out in clumps or possibly stick in the pan. This prevents even distribution across the tray. The TopCoater was designed to cover with the same media you are growing in to make observing moisture content easier. It works very well on vermiculite or perlite, but these media make it more difficult to judge moisture levels in the soil.

FILLING PLUG TRAYS-

Although not intended as a plug tray filler the Blackmore TopCoater is often utilized for that purpose, typically with the recommended three foot extension.

The 4 cu.ft. hopper holds enough media for 50-80 trays. Expect to fill a 512 tray in about 10 seconds. The more evenly screened your media is the better the TopCoater will spread it. Blackmore's Greenway Seedling Mix (GSM) is an excellent germination media easily dispensed by the TopCoater, and it will give you excellent results in the greenhouse.

Soil that is too moist tends to clump badly and not fill trays satisfactorily. Still, you want a little moisture in the media, particularly when using a roller/dibbler, to help the soil "hold" the dibble profile. When filling plug trays, insert them in the machine end to end to insure that the first few rows are filled with the excess from the prior tray. See the section below for special instructions on filling trays for sowing marigolds.

MARIGOLDS-

The TopCoater, with its speed and volume controls, is ideal for covering marigold seeds after sowing. Fill the plug trays as you normally would, then nest the trays in stacks of 10-15 and push down on them, compressing the mix so the cells are only about half full. Then sow the marigolds. The seeds will fall into the partly empty cells for better placement. Run the trays through the TopCoater to cover the seed, setting the brush to sweep the tops of the trays clean. That prevents lateral root growth, thus keeping the marigolds growing in the cells in which they were sown for more efficient transplanting.

MAINTENANCE

The Blackmore TopCoater is designed to be relatively maintenance free. However, there are a few periodic inspections that should be made on the unit.

CONVEYOR BELT

Check for signs of wear and stretching. Slack may be removed by tightening (turning clockwise) the two large screws in the conveyor roller adjusting blocks on the input end of the machine. The blocks should be equal distance from end of the frame to apply equal tension to both sides of the belt and conveyor roller bearings. **DO NOT** over tighten the belt. Use enough tension so it does not slip when moderate pressure is applied to the belt surface with palms of your hands. Over tightening will cause unnecessary wear and premature bearing failure. A "V" belt rib in the middle of the conveyor belt keeps it tracking properly.

"V" DRIVE BELTS

Remove the black plastic belt/pulley guard to inspect the "V" drive belts and pulleys for signs of wear.

EXTENSION INSTALLATION

The three foot long TopCoater extension is easily installed in less than half an hour. It slides inside the frame of the main unit and is held in place with four bolts. An extra piece of conveyor belt is also spliced into the existing belt to allow for the extra length, so the extended version of the TopCoater actually has a two piece conveyor belt.

SPECIFICATIONS:

LENGTH - 4 ft. or 7ft. with extension
 HOPPER VOLUME- 4 cubic feet approximately (113 liters)
 TRAYS PER HOUR- 1,200 maximum
 CONVEYOR HEIGHT- adjustable
 WHEELS - solid plastic, 6 inch
 ELECTRIC- 120VAC, 10 amp, 50/60 Hz
 FUSE - 6 amp circuit breaker to protect motors and controllers.
 MOTOR - 1/17 HP 90VDC (Leeson #M1125004 for most units)

TROUBLE SHOOTING

Problem	Test	Solution
Vibrator won't vibrate or vibrates very little, material won't dispense	1. Is vibrator moving or "humming" at all? See instruction section on Vibrator Controls Check Toggle switch, replace if needed 2. Check electric eye, indicator light should go off when beam is broken	No - Try adjusting small brass screw on then end of the small rectangular blue potentiometer that is on the printed circuit board SCR inside control box. This may "break it loose" and it will start working, if not SCR must be replaced Yes - Try adjusting large screw on back of vibrator, first loosen the large jam nut and follow instructions in Vibrator Control instructions above 2. Position reflector so eye can "see" it. Replace eye if indicator light does not work.
Conveyor belt won't move	1. Is motor running? 2. Check that V Drive belt and or pulleys under belt guard are not slipping 3. Check toggle switch 4. Is conveyor belt tight enough?	1. Check motor brushes, and voltage input 2. Tighten/replace idler pulley spring or tighten drive pulley set screws or replace drive belt if necessary 3. Replace toggle switch 4. Belt should be tight enough so you <i>can't</i> stop it by laying the palms of your hands against it and applying moderate pressure. Adjust tension with blocks on input end of machine
Material dispenses continuously	Check position of electric eye	Adjust electric eye so it <i>can't</i> "see" material being dropped
Agitator bar/motor won't turn	Check set screws on shaft Check motor/gearbox	Tighten set screws on shaft or replace motor and gearbox as needed
Belt speed won't adjust	Check 0-90 VDC output from motor controller	Replace motor controller Grainger part # 6A191

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