



Watt Wattcher 2000™ Granulator Controller

IMS #121021

(GRXX-WW2)

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REVISIONS				
ECN#	REV	DESCRIPTION	DATE	APPROVED
		Reformat manual, review for safety wording,	5/02	PSH/GDH



SAFETY SUMMARY

This manual uses the following words to call attention to the safety sign and to designate a degree or level of hazard seriousness.

DANGER: indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

WARNING: indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Also used to alert against unsafe practices or property damage only accidents.

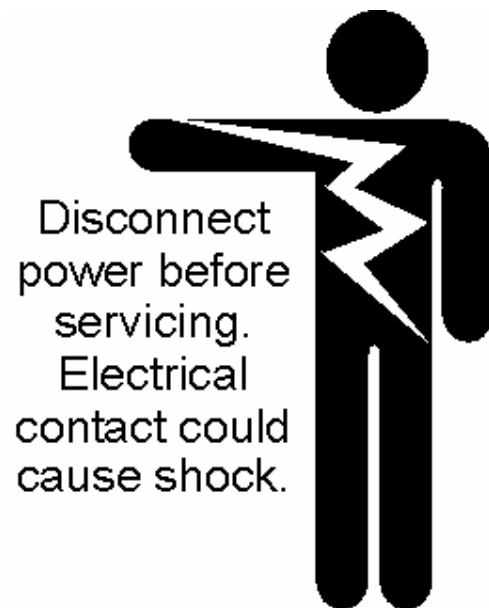
NOTE: indicates general safe practices, machine use instructions and information, property damage only hazards, temporary hazards, precautions to avoid a hazard, results of not avoiding a hazard, or any combination of these messages.

SYMBOL/PICTORIAL: conveys a message without words.

SAFETY ALERT SYMBOL: indicates a potential personal injury hazard; an exclamation point inside a triangle.

SAFETY SUMMARY (continued)

The following is a general warning that applies to the Watt Watcher 2000™ Granulator Controller:





PRODUCT DESCRIPTION

NOTE: PLEASE READ THE ENTIRE OPERATING MANUAL PRIOR TO INSTALLING THE WATT WATTCHER 2000™ GRANULATOR CONTROLLER.

The Watt Wattcher 2000™ Granulator Controller is designed to save you money by cutting energy use. The unit allows your granulator to run only when necessary. A photoelectric eye instantly starts the motor when the granulator is fed and a vibration detector shuts off the motor when the cutting chamber empties. The elimination of costly idling also benefits you by increasing the life of blades, motor belts, bearings and screens, and leads to extended service intervals. Furthermore, the reduction of noise, heat and dirt in your environment is much to you and your employees' advantage.

Your purchase of the Watt Wattcher 2000™ Granulator Controller includes the following:

- WW-2000 Control Box
- Electric Eye Assembly (connected to control box)
- Power Cable Assembly (connected to control box)
- Reflector Plate Kit with Mounting Hardware
- (3) 10-32 Cap Screws w/ Elastic Stop Nuts
- Installation Kit (which includes the following):
 - Connector for Granulator Motor Starter Box
 - Calibration Screwdriver
 - WW-2000 Control Box Mounting Template
 - (4) ¼-20 Socket Head Cap Screws and Lock Washers
 - (2) 6-32 Cap Screws and (2) Matching Elastic Stop Nuts
 - Wire nut

IMS offers optional equipment that may be included in your WW-2000 system:

- Shock Mount Kit – Recommended to reduce excess vibration
- Additional Electric Eye – For granulators with two openings
- 120 Volt Motor Starter Kit – Retrofit kit for granulators with 240/480 motor starters

The Watt Wattcher 2000™ fits on any granulator and can be installed on any new IMS granulator. IMS can assist you in the wiring of your unit for special applications. If you are using a conveyer or a blower, and would like them to shut off when the granulator shuts off, IMS can help. For additional information, or for questions concerning the Watt Wattcher 2000™, contact an IMS Customer Service Representative: 1-800-537-5375 (U.S.A. and Canada).



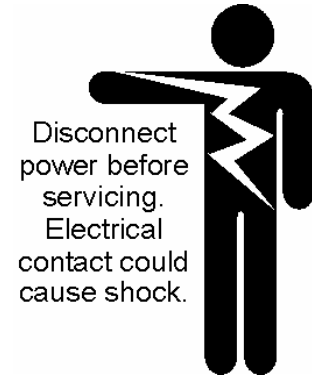
PRODUCT SPECIFICATIONS

Power cable length:	6 ft.
Electric eye length:	5 ft.
Voltage from terminal to ground:	120 V
Minimum time delay:	20 seconds
Maximum time delay:	2 minutes

INSTALLATION

WARNING: Before beginning the installation, disconnect power to the granulator.

NOTE: The Watt Watcher 2000™ is only designed to work with granulators with 120 volt motor starter coils. Before beginning installation, verify that the coil voltage on your granulator motor starter is 120 volt. All IMS LP-series grinders have 120 VAC motor starter coils. If you are unsure, do not proceed. Contact an IMS Customer Service Representative for assistance: 1-800-537-5375 (U.S.A. & Canada).



MOUNTING

Control Box: Mount the control box on the granulator chute near the cutting chamber. The Watt Watcher 2000™ must be mounted LEVEL or it will not operate. Keep in mind the following when choosing the location to mount the Watt Watcher 2000™:

- Electric eye length is 5 ft. (Eye Assembly can be shortened and put on either side of Watt Watcher 2000™ Control Box)
- Power Cable length is 6 ft. (From Watt Watcher 2000™ to Granulator Motor Control)
- Power Cable must reach Motor Control box when tilted in maintenance position.

Once you have decided on a mounting location, use the WW-2000 mounting template to mark the four holes for drilling. Drill and tap 4 holes using a .2010 drill (#7) and a ¼-20 NC tap. Mount the Watt Watcher 2000™ control box using the ¼-20 socket head cap screws and lock washers that are provided.



NOTE: If using the optional shock mount kit, mount the Watt Watcher 2000™ control box on the 4 shock mounts after drilling and tapping the 4 holes.

Electric Eye: The electric eye should be mounted on the feed throat of the granulator where the operator's hand or the material to be ground will break the beam. The beam, infrared and invisible to the human eye, will run between the electric eye and the reflector

INSTALLATION (continued)

plate. For best results, mount the electric eye in the lower quarter or half of the feed throat opening. The optics of the electric eye and the reflector plate must be mounted with both facing directly at each other. If obstructions block the beam then the granulator will continue to run, defeating the purpose of the granulator control. Make sure flaps do not interfere with the lenses of the electric eye.

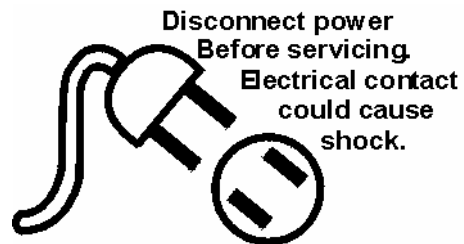
If the feed throat has flanges, is trapezoidal in shape, or has handles etc., mounting brackets must be used so the sender and reflector are parallel and facing each other. Use the electric eye as its own template. Use the 6-32 cap screws and elastic stop nuts for the mounting holes. If it is not possible to use the elastic stop nuts, drill and tap the chute for a 6-32NF thread (#36 tap drill - .1065 dia).

Reflector Plate: The reflector plate should be mounted so that the side with the reflective tape faces the lenses of the electric eye. Use the 10-32 cap screws and elastic stop nuts provided in the kit.

Electrical hookup

NOTE: Disconnect power before servicing. Electrical contact could cause shock.

NOTE: Verify that the motor starter coil for your granulator is 120 volts.



Make a knock-out hole in the granulator motor control box and mount the Watt Watcher 2000™ power cable directly to the motor control box. For your convenience, a connector for your motor control box has been provided in the kit.

There are five leads from the Watt Watcher 2000™ to be connected to the granulator motor starter. The five leads have the following colors: red, orange, yellow, blue, and green. Higher gauge wire is used in the red and orange leads. These two leads carry the power to the motor starter.

Cable Leads: Connect cable leads according to the following instructions. Refer to the *Wiring Diagram* on *Page 9* for an example of an IMS LP Series Granulator control circuit.



INSTALLATION (continued)

ORANGE – Connect orange lead to hot side of start switch or hot side of motor relay holding contacts. This can be verified by checking voltage from terminal to ground. Voltage should be 120 VAC.

YELLOW – Connect yellow lead to cold side of start switch or cold side of motor relay holding contacts. This can be verified by checking voltage from terminal to ground. Voltage should be 0 volts.

RED – Lift connection going from cold side of start switch to high side of motor starter coil and connect to the red lead. A wire nut has been provided for this connection. **NOTE:** The high side of the motor starter (relay coil) is the side opposite ground.

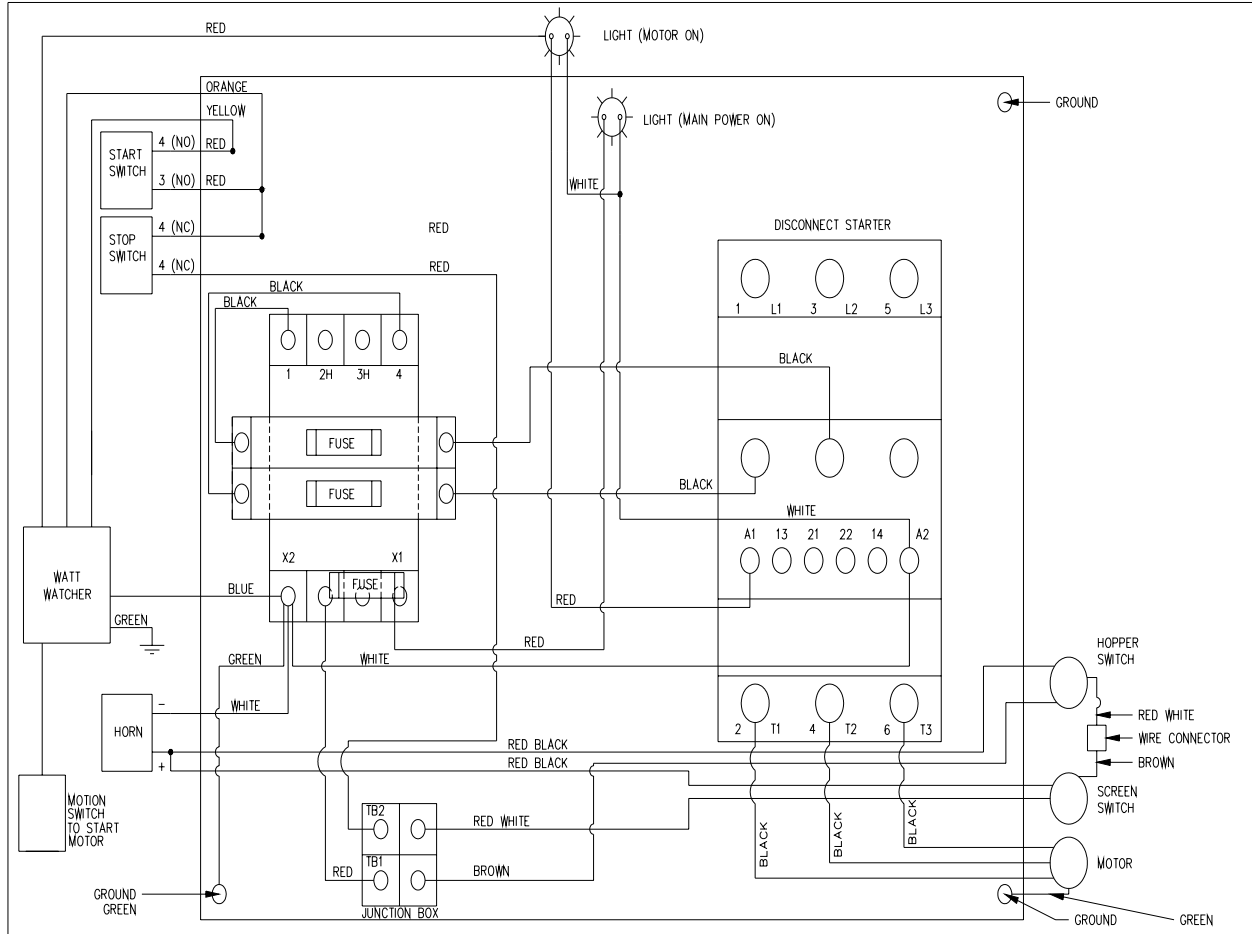
BLUE – Connect blue lead to low side of motor starter (relay coil).

GREEN – Connect to system or case ground.

NOTE: It is important that all wiring connections are made as close as possible to hot and cold sides of the start switch and/or holding contacts and to the high and low sides of the motor starter (relay coil) to avoid bypassing circuit overloads and safety features.

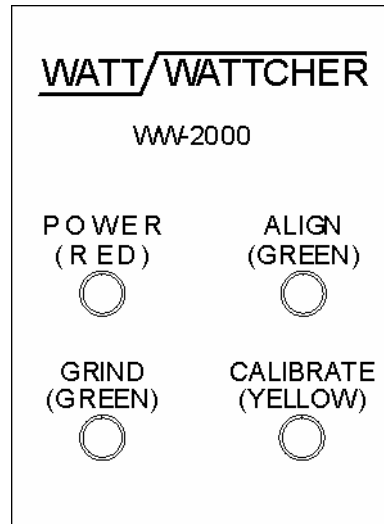
This completes the electrical hookup. Before reconnecting the power to the granulator, make sure the Watt Watcher 2000™ is in **MANUAL** mode. There is a slide switch at the top of the circuit board in the control box for **MAN** (manual) and **AUTO** (automatic) position.

WIRING DIAGRAM



DRAWING APPROVAL					TOLERANCES: UNLESS OTHERWISE SPECIFIED: .XX DECIMALS ± .005 .XX DECIMALS ± .010 FRACTIONS ± 1/64 ANGLES ± 1/2°	TITLE: WIRING DIAGRAM FOR LP-144/LP-86/LP-187/LP-288				
APPROVED BY: _____	DATE: _____	A	4/28			ADDED WATT WATCHER WIRING	DB	CUSTOMER: _____	DATE: 4/1/99	
THIS DRAWING IS THE PROPERTY OF IMS COMPANY AND SHALL NOT BE REPRODUCED, NOR THE PARTS MANUFACTURED, WITHOUT WRITTEN PERMISSION FROM IMS COMPANY.		LET.	DATE	DESCRIPTION	CHGD. BY	INS COMPANY 10373 STAFFORD RD. CHAGRIN FALLS, OHIO 44023	DRAWN BY: JMB	SCALE: NONE	MACHINE TYPE: GRINDER	REV: _____
		REVISIONS			FILE DIR: E:\GRINDER\WIRING DIAGRAM	STD MACHINE CONTROL BOX		A		

OPERATION



The Watt Wattcher 2000™ should be in **MANUAL** mode before reconnecting power to the granulator. If it is not in **MANUAL** mode, open the Watt Wattcher 2000™ control box and locate the slide switch at the top of the control box. Position the slide switch into the **MAN** (manual) mode.

In the **MANUAL** mode the granulator should operate normally as though the Watt Wattcher 2000™ is not attached. Press the granulator start button, let the machine run for 15-20 seconds, and then press the stop button. If the granulator does not operate normally in the **MANUAL** position, check for wiring errors.

After determining that the granulator operates normally in the **MANUAL** mode, open the Watt Wattcher 2000™ control box and position the slide switch into the **AUTO** (automatic) mode.

The granulator may start when you shift to **AUTO** mode or you may have to start the granulator by passing your hand through the beam of the electric eye.

The Watt Wattcher 2000™ is shipped with the calibration in its most sensitive position and will need adjustment. The Watt Wattcher 2000™ will not shut off if the calibration light on the front panel is on. The light should stay on before you start calibrating. Before making adjustments, please verify the following on the front panel:

The **POWER** light (red) is **on**. This light should remain on as long as power is applied to the granulator. The only time this light should turn off is when the granulator **STOP** button is pressed.



OPERATION (continued)

The **GRIND** light (green) is **on**. This light will remain on as long as the motor is running.

The **ALIGN** light (green) is **off**. Pass your hand through the beam of the electric eye and this will turn the **ALIGN** light on. Once you remove your hand from the beam, the **ALIGN** light should go off. If the **ALIGN** light remains on, check the alignment of the electric eye and the reflector plate. Check also for dirt or dust on the reflective tape.

The **CALIBRATE** light (yellow) is **on**. This light is picking up vibrations of the granulator in the idling position. The sensitivity should be adjusted so this light will be **off** when the granulator is idling with no material in the grinding chamber.



CALIBRATION

The Watt Wattcher 2000™ unit should be in the *AUTO* position before calibrating the unit. The Watt Wattcher 2000™ unit is shipped from the factory with the calibration setting in its most sensitive position (turned completely to the right). In this position, the *CALIBRATE* light on the front panel should be on with the light at full intensity or flickering significantly. There should be no material in the cutting chamber and the granulator should be idling normally.

A calibration screwdriver has been included in your installation kit. Remove the small plug at the bottom side of the Watt Wattcher 2000™ unit. Remove the plug by opening the Watt Wattcher 2000™ control box and gently pushing the edge of the plug with your finger to loosen it. Be careful not to damage the adjusting pot when you remove the plug. **DO NOT LOSE THE PLUG**, as you will replace the plug once calibration is complete. It is okay to keep the plug off during the calibration of the Watt Wattcher 2000™. **CLOSE AND SECURE** the Watt Wattcher 2000™ control box before adjusting the calibration screw.

With the granulator running, begin turning the calibration screw to the left until the flickering of the yellow light reduces and then completely stops. This may require 4-5 complete revolutions depending on your granulator. When the yellow *CALIBRATION* light remains off as the granulator is idling, the adjustment is complete. Once the yellow light remains off for 20-25 seconds, the granulator should shut off.

Restart the granulator by breaking the beam. The calibration light should remain off for the entire 20-25 second cycle until the granulator shuts off. Replace the calibration plug. It is now time to test the unit by adding material to the granulator.

Place a handful of material into the granulator. The granulator should start instantly once the material passes the beam. Notice how much the yellow light flickers once the material gets to the cutting chamber. If the yellow light does not come on when the material is being ground, adjust the calibration screw to the right to make it more sensitive.



TIME SET ADJUSTMENT

The Watt Watcher 2000™ has an adjustable time set feature. Once the yellow *CALIBRATE* light stops flickering, indicating grinding is complete, the Watt Watcher 2000™ comes preset from the factory to run for an additional 20 seconds to purge any remaining material from the cutting chamber. The timer shut off can be set from 20 seconds to 2 minutes, in 20 second intervals, by adjusting the *TIME SET* switch next to the *MAN/AUTO* slide switch at the top of the control box.

For a time delay of 20 seconds, only the pin in the #1 Slot should be on. All the remaining pins should be off. This is how the Watt Watcher 2000™ is shipped from the factory.

For a time delay of 40 seconds, only the pin in the #2 Slot should be on. The pins in Slots #1, #3, #4, #5, and #6 should be off.

For a time delay of 60 seconds, only the pin in the #3 Slot should be on, all other pins should be off. Continue this with pins in Slots #4, #5, and #6 for time delays of 80 seconds, 100 seconds and 120 seconds.



MAINTENANCE RECORDS AND NOTES