

WHEATON SCIENCE PRODUCTS

**WHEATON BENCH TOP
SMALL BOTTLE ROLLER**

**CATALOG NUMBERS
W348924-C, D, F & G
(230 VAC)**

INSTRUCTION MANUAL

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WARRANTY

Wheaton Science Products warrants this product to be free from defects in material and workmanship for a period of 365 days from the date of shipment. If repair or adjustment is necessary within the warranty period and has not been the result of mishandling or abuse, you may return the unit freight prepaid, provided that return authorization has been obtained. Wheaton Science Products will correct the defect or adjust the unit at no charge.

Items returned for repair or adjustment should be packed very carefully to prevent damage in transit and also should be insured for your protection. Should damage occur in transit, all claims should be made against the carrier. The shipping carton should not be discarded but retained until inspection by a representative of the carrier is made.

Wheaton Science Products will repair or adjust out-of-warranty products at a nominal charge.

INTRODUCTION

The **Wheaton Bench Top Small Bottle Roller** is designed for small scale propagation of monolayer cell cultures in standard roller culture vessels. The compact size makes it suitable for pilot projects, laboratories with limited space, and use with standard incubators and cold rooms. Continuous rotation of cylindrical vessels at predetermined optimum speeds provide better distribution of culture media and uniform gassing. The solid state circuitry allows excellent speed control of roller culture vessels and is designed to compensate for sudden or prolonged line voltage changes. Positive drive is effected through non-slip gear belts. The roller shafts are mounted in self-lubricating nylon bearings, which eliminate many maintenance problems. The **Wheaton Bench Top Small Bottle Roller** will accommodate roller culture vessels 75-121 mm in diameter and up to 290 mm long, with a bottle speed range of 0.1 to 3.8 RPM (using 110 mm bottle).

Wheaton #W348924-C, D, F & G (230 VAC) is a single deck unit which will accommodate two roller vessels. A maximum of two deck kits can be added for increased capacity.

SAFETY SYMBOLS USED IN THIS MANUAL



A **Warning** symbol indicates attention to an operation, which can cause operator injury, improper function of or damage to the equipment and possible problems with the process.



A **Danger** symbol indicates attention to an operation, which could cause electrocution or severe injury.

SPECIAL SAFETY INSTRUCTIONS



WARNING! IMPROPER GROUNDING CAN RESULT IN ELECTRICAL SHOCK. IN THE EVENT OF A SHORT CIRCUIT, GROUNDING REDUCES THE RISK OF SHOCK BY PROVIDING AN ESCAPE PATH FOR THE ELECTRIC CURRENT. THIS INSTRUMENT MUST BE GROUNDED.

1. This instrument is equipped with a cord having a grounding wire and an appropriate grounding plug. The plug must be used with an outlet that has been installed and grounded in accordance with all local codes and ordinances. The outlet must have the same configuration as the plug. **DO NOT USE AN ADAPTER.**
2. Do not modify the plug that has been provided. If it does not fit the available outlet, contact your nearest Wheaton distributor for the proper line cord for your area.

GENERAL SAFETY INSTRUCTIONS

NOTE: EVEN THE SAFEST EQUIPMENT CAN CAUSE INJURY IF THE USER IS CARELESS.

1. **KNOW YOUR INSTRUMENT** - Read the operating manual carefully. Learn the equipment's application and limitations.
2. **GROUND ALL EQUIPMENT** - If electrical, this instrument is equipped with a grounding type plug. The green/yellow conductor in the cord is the grounding wire and should never be connected to a live terminal.
3. **AVOID DANGEROUS ENVIRONMENT** - Electrical instruments designed to process liquids must be operated with extreme caution. If liquid comes in contact with internal electrical components or wires, fire or electrical shock may occur. Adequate surrounding work space should be provided during use. Do not operate electrical instrumentation in a combustible atmosphere.
4. **WORK SURFACE** - Keep well lighted. Be certain the work surface is clean, level and sturdy enough to support the weight of the unit, particularly if it is to be filled with liquid.
5. **WEAR PROPER APPAREL** - Do not wear loose clothing, neckties or jewelry that might get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
6. **WEAR SAFETY GOGGLES** - Wear safety goggles at all times. Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.
7. **DON'T OVERREACH** - Keep proper footing and balance at all times.
8. **MAINTAIN INSTRUMENT WITH CARE** - Keep screws tight and unit clean. Check periodically for worn or damaged parts. Inspect the plug and cord before each use. Do not operate this instrument if there are signs of damage.
9. **AVOID ACCIDENTAL START UP** - If electrical, always make sure the switch is in the "OFF" position before plugging instrument into outlet.
10. **DISCONNECT INSTRUMENT** - Always disconnect the instrument from the power source before servicing.
11. **DO NOT BLOCK COOLING VENTS IF PROVIDED**
12. **DO NOT OPERATE THIS EQUIPMENT IN ANY MANNER NOT SPECIFIED IN THIS MANUAL**
13. **KEEP THE OPERATING MANUAL FOR THE INSTRUMENT IN A SAFE PLACE NEAR THE INSTRUMENT FOR QUICK AND EASY REFERENCE.**
14. **IT IS RECOMMENDED THAT A FIRE EXTINGUISHER ALWAYS BE LOCATED IN AREAS WHERE ELECTRICAL INSTRUMENTS ARE BEING USED.**

WSP-305

GENERAL INFORMATION

This section contains a general description of the Wheaton Bench Top Small Bottle Roller. This section also contains instructions for initial inspection, installation, selecting the power-line voltage and connecting the unit to AC power.

1. **OPTIONS - Wheaton #W348930-CH** Small Bottle Deck Kit (sold separately), can be added to accommodate an additional two bottles per deck.
2. **INITIAL INSPECTION** - When you receive your Wheaton Bench Top Small Bottle Roller, inspect it for any obvious damage that may have occurred during shipment. If any damage is found, notify the carrier at once. Warranty information is shown in the front of this manual. Check to confirm that there are no broken switches, or pulleys and that the unit is not dented or scratched.
3. **INSTALLATION** - Install the unit where there will be adequate room for the unit to operate. Provide enough clearance around the unit to keep items away from the rotating belts and pulleys.
4. **INPUT POWER REQUIREMENTS** - This equipment is designed to operate from a nominal 230 VAC single phase ac power source at 47 to 63 Hz. An indication on the rear of the unit shows the nominal input voltage set for the unit at the factory.
5. **POWER LINE CORD** - This unit has been shipped from the factory with a power line cord that has a plug appropriate for your area. If the wrong power cord has been shipped for your particular application, contact your nearest Wheaton dealer for the proper cord. The Wheaton Bench Top Small Bottle Roller has been equipped with a 3-wire grounding type power cord. The unit is only grounded when it is plugged into an appropriate receptacle. Do not operate the unit without adequate grounding protection.
6. **POWER LINE VOLTAGE SELECTION** - Power line voltage selection is accomplished by adjusting two components: the power line voltage selector and the power line fuse in the power line module on the rear of the unit.

OPERATION
(refer to fig. A)



CAUTION: Keep hands and fingers away from rotating parts of the machine. Do not remove any safety guards or operate the machine without the safety guards.

IMPORTANT: This apparatus was designed to run partially filled bottles for standard cell culture applications. Please consult Wheaton engineering if you have special applications.

1. Plug the unit into an appropriate source of AC power.
2. Place bottle(s) on unit.
3. Turn on the power switch located on the rear of the unit.
4. Adjust the speed control knob until the desired rotational speed is obtained. Turn the speed control knob clockwise to increase roller speed, or counterclockwise to decrease roller speed.



CAUTION: Because a fully loaded roller apparatus can become very heavy, care should be taken when moving the equipment while it is loaded with bottles.

MAINTENANCE **QUALIFIED SERVICE PERSONNEL ONLY**



DANGER! NEVER ATTEMPT TO PERFORM REPAIRS IF THIS INSTRUMENT IS PLUGGED IN! IN ORDER TO AVOID SERIOUS ELECTRIC SHOCK OR ELECTROCUTION, THIS INSTRUMENT MUST BE DISCONNECTED FROM THE SOURCE OF AC POWER BEFORE MAINTENANCE IS ATTEMPTED.

As with any piece of laboratory equipment, periodic inspection for worn and or damaged parts should be performed on a regular basis in order to maintain optimum performance. How often is dependent upon amount of usage, working environment, motor speed, etc. The maintenance interval is best determined by the user.

MOTOR REPLACEMENT (refer to fig. A & B)



DANGER! BE CERTAIN UNIT IS DISCONNECTED FROM THE AC POWER SOURCE.

1. Unplug the unit from power source.
2. Loosen the Allen screw, which secures the shaft extender (27) to the output shaft of motor (29). Remove shaft extender assembly along with drive belt (2) and set aside.
3. Remove the four screws (underneath unit) which secure the cabinet lid to the cabinet base. Remove lid.
4. Noting their location, unplug wires from rear of motor.
5. Remove the four screws (13) and lock washers (14) that secure the motor to the cabinet base (19). Remove motor.
6. Remove the two screws that hold adapter plate (26) to the motor. Remove adapter plate from motor.
7. For re-assembly, reverse the above order using new motor. When replacing the four screws removed in step 5, do not tighten until re-assembly has been completed. Drive belt tension is effected by moving the four screws either up or down before tightening. Do not over tighten the drive belts.

CONTROL BOARD REPLACEMENT

(refer to fig. A & B)



DANGER! BE CERTAIN UNIT IS DISCONNECTED FROM THE AC POWER SOURCE.

1. Unplug the unit from power source.
2. Loosen the Allen screw, which secures the shaft extender (27) to the output shaft of motor (29). Remove shaft extender assembly along with drive belt (2) and set aside.
3. Remove the four screws (underneath unit) which secure the cabinet lid to the cabinet base. Remove lid.
4. Unplug the wire harness (31) from the control board (28).
5. Remove the four screws (11) that secure the control board to the cabinet base. Remove control board.
6. Unplug the harness connectors from the control board noting their location for proper replacement.
7. For re-assembly, reverse the above order using new control board.

Roller Adjustment (refer to fig A)

As shipped from the factory, the rollers are spaced to accommodate bottles 108-121mm in diameter. In order to accommodate smaller bottles, (down to 75mm in diameter) the outer two rollers will have to be moved closer to the center roller. The following procedure should be followed.

1. Unplug the unit from the power source.
2. Using a small regular tip screwdriver, remove the retaining rings (3) 2-each per roller - which hold the roller in place and set safely aside.
3. Grasp the roller (18) and pull towards the rear of the unit, freeing the shaft from the front bearing.
4. With one hand, grasp the roller and lift the front "freed" end of the roller shaft (23) in order to clear the front of the deck (20). Place the thumb of the other hand over the opposite end of the shaft. While pressing forward on the shaft with the thumb, twist the roller back and forth until the shaft is free. Repeat the procedure on the other side of the deck.
5. The nyliner bushings (25) must now be moved to accommodate the new roller shaft position. Looking at the flanged side of the nyliner, find where the nyliner is separated. Using your thumbnail behind the flange of the nyliner on the right side of the separation, press towards the center of the hole, pull and remove. Repeat for the other three bushings.
6. To facilitate reinstallation of nyliners, it is best to insert the left side of the nyliner into the hole first.
7. Reinstall rollers by inserting grooved end of shaft into the nyliner on the rear of the deck. Grasp the roller with one hand and place the thumb of the other hand over the front end of the shaft. While pressing on the shaft with the thumb, twist the roller back and forth until the roller shaft slides through the nyliner.
8. Install the rear retaining ring on the shaft. Slide the front end of the shaft through the nyliner and install the other retaining ring.

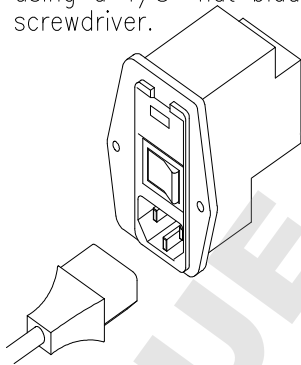
FUSE REPLACEMENT (see below)



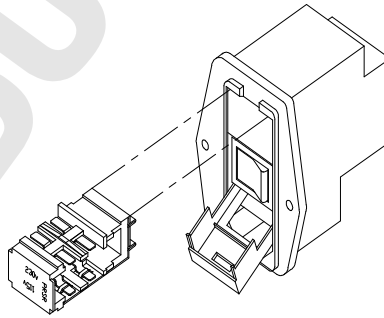
DANGER! BE CERTAIN UNIT IS DISCONNECTED FROM THE AC POWER SOURCE.

1. Unplug the unit from power source.
2. Locate the fuse holder on the rear of the unit.
3. Use a small screwdriver to pry open the fuse holder and remove the fuses.
4. Replace with new fuses.

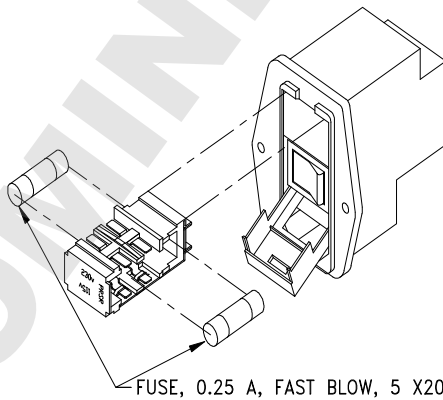
1. Remove the power cord.
Open the fuse module
using a 1/8" flat blade
screwdriver.



2. Remove the fuse drawer
from the module.



3. Remove the fuse from
the fuse drawer.



4. Replace the fuse drawer. Make sure
the proper voltage setting (230)
shows through the window.

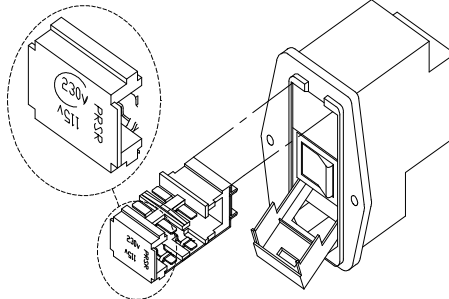


FIG. 1

TROUBLE SHOOTING
QUALIFIED SERVICE PERSONNEL ONLY



DANGER! NEVER ATTEMPT TO PERFORM REPAIRS IF THIS INSTRUMENT IS PLUGGED IN! IN ORDER TO AVOID SERIOUS ELECTRIC SHOCK OR ELECTROCUTION, THIS INSTRUMENT MUST BE DISCONNECTED FROM THE SOURCE OF AC POWER BEFORE REMOVAL OF ANY PROTECTIVE COVERS.

Unit will not operate;

- | | |
|---------|--|
| Cause: | Fuse blown. |
| Remedy: | Replace fuse with proper size and type (see fuse replacement). |
| Cause: | Supply voltage low or at zero. |
| Remedy: | Check house receptacle with a voltmeter. |
| Cause: | On/Off power switch in "off" position. |
| Remedy: | Turn on power by depressing the power switch. |

Motor runs but roller(s) will not turn;

- | | |
|---------|---|
| Cause: | Drive and/or deck gear pulley(s) loose.
Belt(s) worn or broken. |
| Remedy: | Tighten gear pulley(s) with Allen wrench.
Replace defective belts. |

SPECIFICATIONS

OPERATING VOLTAGE:	230 VAC 50/60 Hz
POWER CONSUMPTION:	14 watts
FUSE:	FUSE, 0.25 A, FAST BLOW 5 X 20mm 250v (220)
VESSEL SIZE:	75-121 mm diameter X 290 mm lg. (max.) 2-61/64" - 4-49/64" X 11-13/32"
BOTTLE SPEED:	0.1 to 3.8 RPM (110mm dia.)
INSTALLATION CATEGORY:	Class II
ENVIRONMENTAL:	
Operating temperature:	5 °C to 40 °C
Humidity:	80% up to 31 °C 50% at 40 °C
Altitude limit:	2000 meters

DIMENSIONS AND CAPACITIES

CABINET SIZE:	12 1/2" (w) X 12 3/4" (d) X 7-1/8" (h) 317.5mm X 323.85mm X 180.9mm
WEIGHT:	18 lbs. 8.16kg

WHEATON ROLLER APPARATUS #348924 - PARTS LIST (FIG. A-B)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	FOOT, GRAY	4	50029504
2	BELT, DRIVE, 110XL187	1	I051305
3	RING, RETAINING, 1000-37 ST	6	I051343
4	#10 LOCK WASHER	2	I052338
5	KNOB, FOR 1/8" SHAFT	1	I054954
6	VIBRATION ISOLATOR 8-32 THD	4	I051499
7	FUSE, 0.25 A, FAST BLOW 5 X 20MM 250V	2	50028423
8	MODULE, POWER INPUT	1	50063467
9	SCREW, #4-40 X 3/8" LG., PFHM	2	I053401
10	SCREW, #6-32 X 3/8" LG., PPHM	8	I052240
11	SCREW, #6-32 X 1/4" LG., PPHM	4	I052239
12	WASHER, STAR, #6, INT. TOOTH	3	I052273
13	SCREW, #8-32 X 1/4" LG., PPHM	4	I052287
14	WASHER, #8, INT. TOOTH, STAR	4	50029959
15	SCREW, #10-32 X 3/8" LG., PPHM	2	I052319
16	SCREW, SET, #10-32 X 3/8" LG.	2	I052355
17	SCREW, 1/4-20 X 1/2" LG., PPHM	2	50027151
18	ROLLER, RUBBER	3	I053003
19	CABINET, BASE, COMPACT ROLLER	1	WI056104
20	CABINET LID, SMALL ROLLER	1	WI056105
21	ROLLER PULLEY	1	I053004
22	STOP, NYLON	2	I053005
23	SHAFT, ROLLER	2	I053006
24	SHAFT, DRIVE, ROLLER APP.	1	I053007
25	NYLINER, #6L2FF	6	I051341
26	PLATE, MOTOR MOUNT	1	I054562
27	SHAFT EXTENDER, 1/4"	1	I053015
28	PCBA, CONTROL BOARD MOTOR I/O	1	I055017
29	MOTOR, 24VDC, 218.4:1 PRO UNI	1	I057205
30	PULLEY, DRIVE, 12XL037	1	I053009
31	WIRE HARNESS	1	50028803
32	NUT, HEX, #6-32	5	50029919

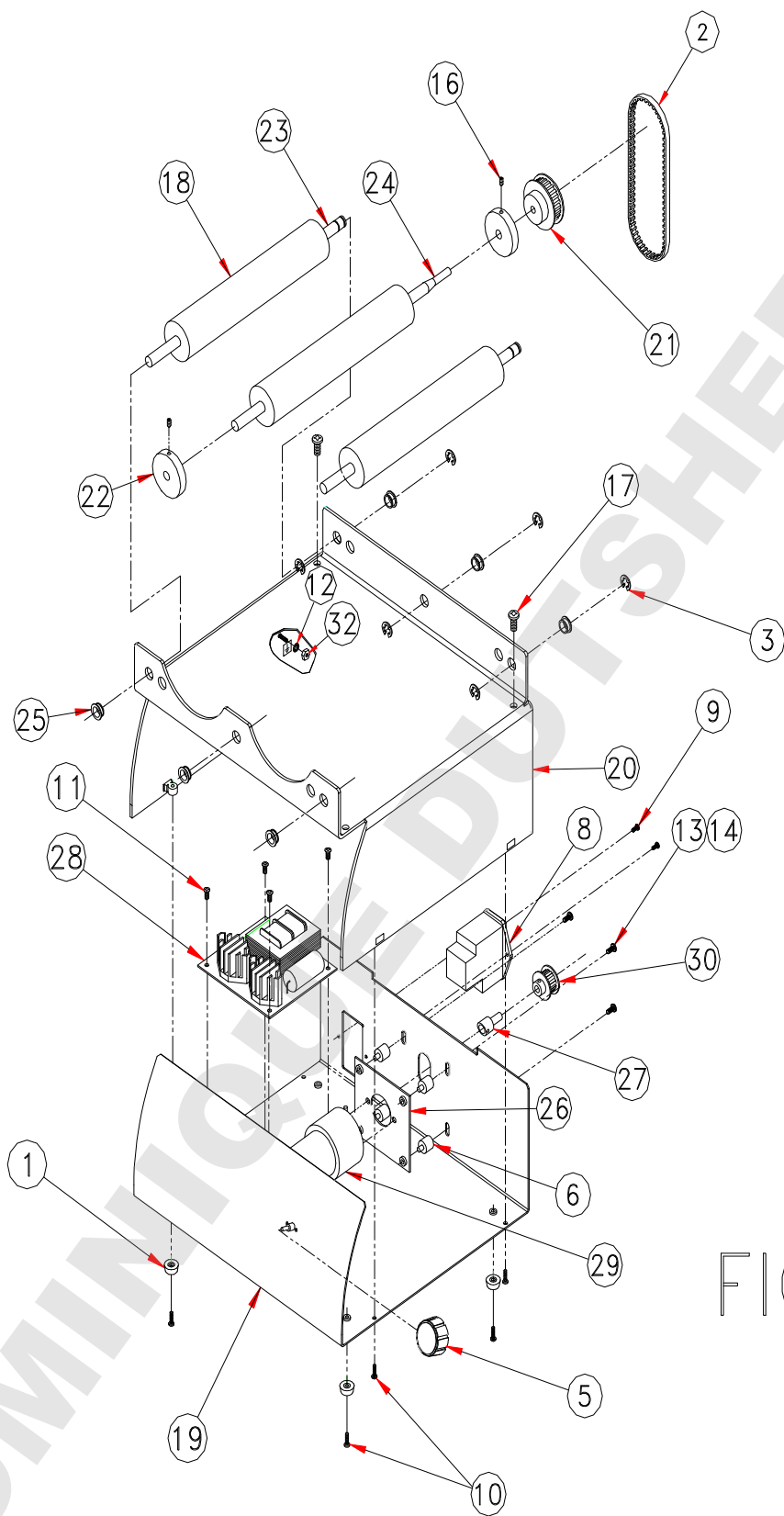
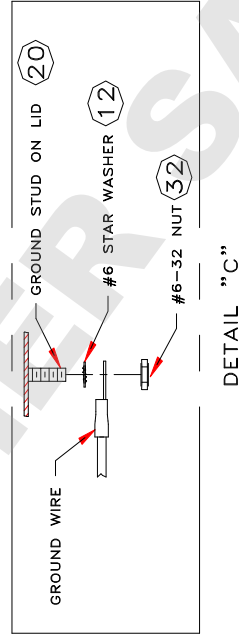
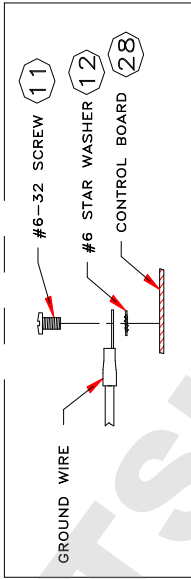
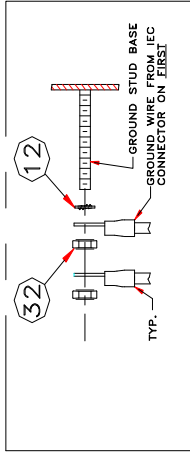
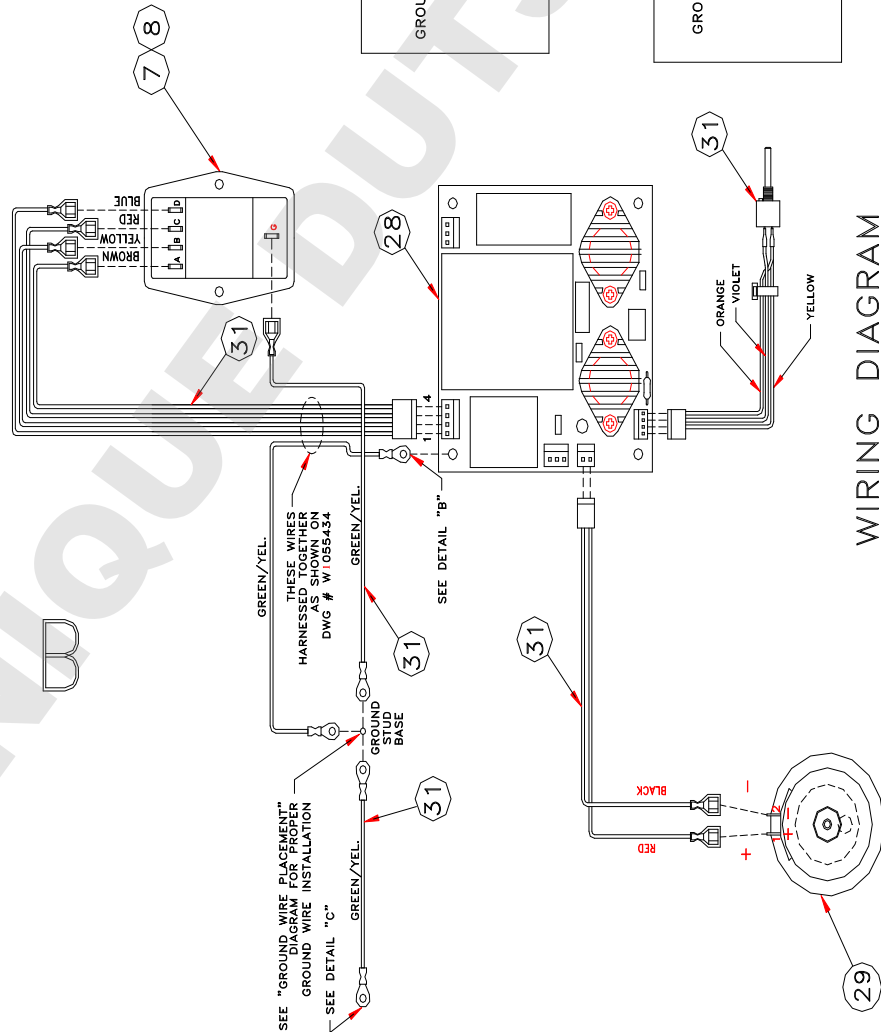


FIG. A

FIG. B



WIRING DIAGRAM

SCALE: NOT TO SCALE



WHEATON SCIENCE PRODUCTS

Declaration of Conformity

Wheaton Industries Inc.
1501 North Tenth Street
Millville, NJ 08332-2093
USA

We, declare that the device described below - marked with CE - fulfills the relevant fundamental EMC and safety requirements specified by the appropriate EU - Directive, with respect to the design and construction of the commercialized version.

This declaration is invalid if modifications are performed on the device which have not been certified, in writing, by Wheaton Science Products.

Designation of the device: Small / Mini Roller Apparatus

Relevant Directives: EMC 89/336/EEC as amended by 92/31/EEC and 93/68/EEC

Standards: EN 50082-1
EN 55011 (CISPR 11)
EN 61000-4-2
ENV 50140
EN 61000-4-4

Relevant Directives: LVD 73/23/EEC as amended by 93/68/EEC

Standards: EN 61010-1; 1993, including Amendment 1

Date: February 22, 2007

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