WHEATON SCIENCE PRODUCTS

R_2P ROLLER APPARATUS
PRODUCTION & MODULAR

W348880-X W348881-X W348882-X W348884-X W348885-X
100V – 230V

INSTRUCTION MANUAL

INCLUDES INSTRUCTIONS FOR OPTIONS

BATTERY BACK-UP OPTION
W348898

TEMPERATURE OPTION
W348890

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50087666 Rev. 02/21/11

WARRANTY

Wheaton Science Products warrants this product to be free from defects in material and workmanship for a period of one (1) year 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, the unit may be returned 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 and should also be insured against carrier damage. Should the unit arrive damaged as a result of transit, a claim will need to 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.

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**

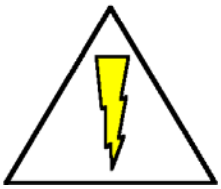
13. **KEEP THE OPERATING MANUAL FOR THE INSTRUMENT IN A SAFE PLACE NEAR THE INSTRUMENT FOR QUICK AND EASY REFERENCE**.

14. IT IS RECOMMENDED THAT A FIRE EXTINGUISHER ALWAYS BE LOCATED IN AREAS WHERE ELECTRICAL INSTRUMENTS ARE BEING USED.

WSP-305

SAFETY SYMBOLS USED IN THIS MANUAL

A <u>Warning</u> 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 <u>Danger</u> symbol indicates attention to an operation, which could cause electrocution or severe injury or death.

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PARTS LISTS AND ILLUSTRATIONS FOR PRODUCTION & MODULAR R_2P

1.0 SPECIFICATIONS – Modular R_2P Roller Apparatus - 100 V – 230V

OPERATING VOLTAGE:	100-253 VAC 50/60 Hz
POWER CONSUMPTION 100V – 230V:	35 Watts
FUSE 100V - 120V: FUSE 230V:	1.0 AT 3AG 250V (2) 0.630 AT 5x20mm
BOTTLE SPEED:	0.25 to 8.75 RPM*
INSTALLATION CATEGORY:	Class II
ENVIRONMENTAL:	
Operating temperature:	15 °C to 40 °C
Humidity:	80% up to 31°C. 50% at 40°C.
Altitude limit	2000 meters

* Assuming 110 mm diameter bottles

NETWORK COMMUNICATION SPEED:	9600 BAUD

DIMENSIONS AND CAPACITIES

CATALOG.#	DESCRIPTION	POSITIONS	WIDTH x DEPTH x HEIGHT	WEIGHT
W348880-X	Base w/ 1 deck	5	31 X 24 ½ X 13 ½ inches	52 lbs
W348881-X	Base w/ 3 decks	15	31 X 24 ½ X 27 inches	85 lbs
W348882-X	Base w/ 11 decks	55	31 X 24 ½ X 74 ¾ inches	217 lbs
W348884-X	Base w/ 3 decks	15	31 X 24 ½ X 27 inches	52 lbs
W348885-X	Base w/ 9 decks	45	31 X 24 ½ X 70 inches	185 lbs
W348888	Extra Deck Prod	5	31 X 24 ½ X 6 inches	16 ½ lbs
WL055984	Extra Deck Mod	5	31 X 24 ½ X 7 1/8 inches	16 ½ lbs
W348898	Battery Back-up Option	N/A	N/A	20 lbs

2.0 INTRODUCTION

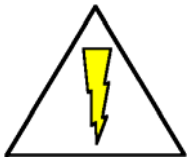
The R_2P Roller Apparatus is a major step forward from the basic roller apparatus of the past. Just about every aspect of roller bottle culture can be controlled and documented. The microprocessor controller, digital display and powerful brushless DC motor, allows smooth and precise control of bottle rotation speed. Easy, user defined soft start and soft stop and user defined reversal of rotation, if desired, round out the bottle control. Optional temperature sensor assemblies allow monitoring of temperature for up to four locations on the unit. Optional battery back up allows 18 hours of normal operation if main power is lost. An eye level control box is an option that allows the display and keypad to be mounted at a convenient height and moved out of the way when loading or unloading bottles. A rotation alarm is standard and will warn of a belt or motor failure.

The roller can be used as a stand-alone or quickly and inexpensively connected to a network of up to 255 units* when used with the new WSP C.A.R.T_2 (**C**omputer **A**ided **R**oller **T**echnology) software for Windows®. The roller base utilizes large diameter casters to allow easier movement of a loaded unit. Its bottom control and motor drive are mounted in a slide out tray for easy maintenance and battery checks. As a modular system, it can grow from 5 positions to 55 positions to cover the full range of standard roller bottle quantities.

The R_2P Roller Apparatus can accommodate bottles 110-121 mm in diameter and up to 550 mm in length, with a bottle speed range of 0.25 to 8.75 rpm assuming 110 mm bottles.

* Up to 255 units with single channel converter box. With optional 8 channel multiplexer, up to 2047 units can be controlled.

3.0 SAFETY CONSIDERATIONS



DANGER ! IMPROPER GROUNDING CAN RESULT IN ELECTRICAL SHOCK. IN THE EVENT OF A SHORT CIRCUIT, GROUNDING REDUCES THE RISK OF SHOCK. 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 line cord that has been provided. If it does not fit the available outlet, contact your nearest WSP distributor for the proper line cord for your area.

4.0 COMPONENT DESCRIPTION

Refer to Figure A for component identification

Power inlet module #3,4,5: Location of the line cord entry and fuse(s) compartment.

Switching Power Supply #7: Supplies 28V DC to the system, automatic sensing and switchover of line voltages from 90-260VAC.

Motor Controller Board #10: Controls the 24V DC brushless motor. Receives an analog speed signal and digital direction signal from the MCU board, and provides motor tach feedback signal back to the MCU board for closed loop control.

Motor #11: Turns all the rollers on the rack via two main belt trains running down the back of the roller rack.

MCU Board #12: Contains an 8 bit CPU which monitors and controls motor speed and direction, roller rotation detection, and serial communications if set up for CART operation.

Power Router Board #8: Directs power to the Motor Controller Board and the MCU Board from either the switching power supply or the optional battery back. Automatically detects power lost and activates battery backup if so equipped, and sends a signal to the MCU board if battery voltage is low.

Battery Backup Board #43 (option): Automatically charges discharged batteries and maintains charged batteries at their proper voltage level.

Communications Board #14: Provides serial communications for CART control and dry contact output for fault relay.

5.0 INITIAL INSPECTION

When you receive your Roller Apparatus, 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, displays or pulleys and that the unit is not dented or scratched.

5.1 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.

5.2 Input Power Requirements

This equipment is designed to operate from a nominal 100V – 230V single-phase AC power source at 47 to 63 Hz. The line voltage / fuse label located on the lower rear of the unit shows the nominal input voltage set for the unit at the factory.

5.3 Power Cord Set

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 WSP dealer for the proper cord. The R_2P Roller Apparatus 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.**

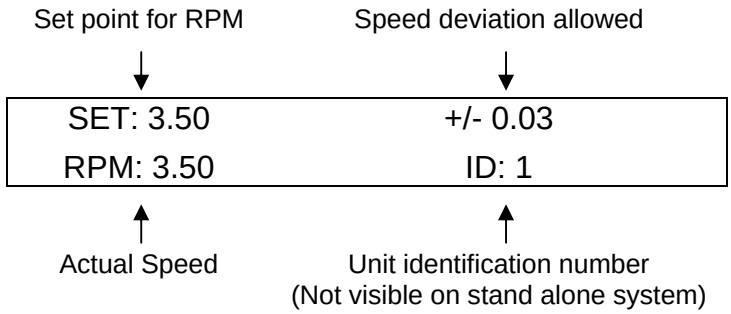
6.0 OPERATION

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 WSP engineering if you have any special application which requires full bottles.

6.1 Start-up

1. Plug the unit into an appropriate source of AC power.
3. Turn the unit on by depressing the power switch.
4. The display will show the unit firmware revision number, then the Wheaton logo and then start the normal display (see below) which consists of the speed setpoint, the actual RPM, the alarm tolerance and the ID# (if a CART unit). The motor will start when the normal display is initiated.



6.2 Keypad Operation

The keypad operation has been designed for very simple and quick operation. The four keys operations are:

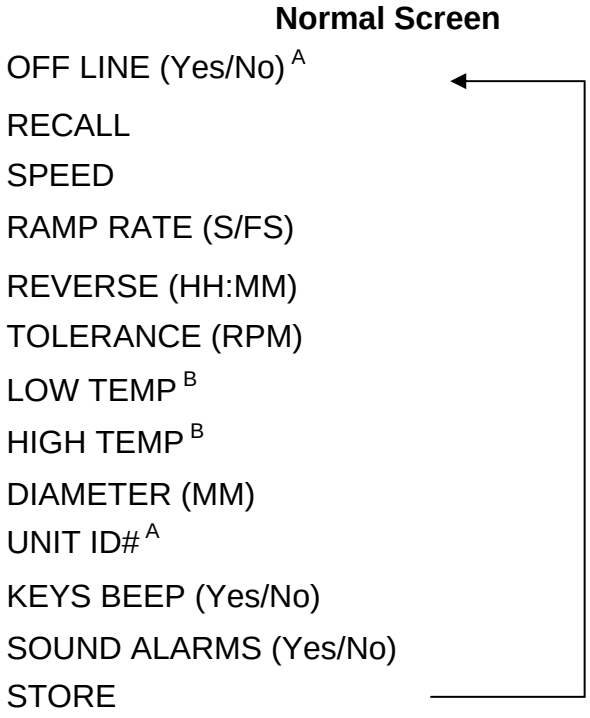
MODE - Use the "MODE" key to move the display through the Menus which allow viewing or changing the parameters of the roller apparatus.

UP ARROW - Use the "UP ARROW" key (after using the mode key to view a specific menu such as SETPOINT) to increase or change the value on that screen.

DOWN ARROW - Use the "DOWN ARROW" key (after using the mode key to view a specific menu such as setpoint) to decrease or change the value on that screen.

ENTER - Use the "ENTER" key to enter the new value once it has been changed. Press "ENTER" again to return to the Normal screen display.

The Menu items that can be accessed using the mode key are in the following order:



[A] Only available if unit is in CART network mode
[B] Only available if temperature sensing option is installed

6.3 Menu Descriptions

OFF LINE Use the arrow keys to change the status from YES (off line) to NO (on line)
Note: This item is for use with CART software and network control. If the unit is configured for stand-alone operation this menu is not shown.

RECALL Will recall settings, which have been stored. This will only show those registers which have information stored in them (see "STORE")

SPEED Will set the speed set point (Range 0.00 – 9.99)

RAMP RATE Sets the time (in seconds) required to change from one speed to another. Used for soft start or soft stop (Range 0.0 – 20.0)

REVERSE Sets the time in Hours and minutes (HH:MM) that the unit will reverse direction. Set to 00:00 for no reversing action. NOTE: The ramp for soft start and stop works during reversing intervals.

TOLERANCE Sets the speed range tolerance for the alarm. If the speed exceeds this range, the alarm will be triggered (Range is 0.00 -1.00)

LOW TEMP (if a temperature option is installed) Sets the low temperature limit. If the measured temperature drops below this point an alarm will be triggered.

HIGH TEMP (if a temperature option is installed) Sets the high temperature limit. If the measured temperature is above this point an alarm will be triggered.

DIAMETER Provides the bottle size being used so the display can accurately display the bottle speed.

UNIT ID# Provides a unique unit identifier for CART software for Windows (0-2047)
NOTE: This menu will not be shown if the unit is configured for stand-alone operation.

KEYS BEEP Sounds a beep when a key is pressed

SOUND ALARMS Turns on or off the audible alarm on the unit.
NOTE: This will NOT disable the software alarm, visual display alarm or the alarm relay output.

STORE The last menu item is used to store all previously set parameters in non-volatile RAM. Up to 10 settings can be stored (0-9) Settings can be retrieved by using RECALL.

6.4 CART Network Mode

The R_2P Roller Apparatus can be connected to a network and be controlled and monitored by a remote computer using the Wheaton $CART_2$ ™ software for Windows. All operational settings can be made from either the unit keypad or the remote computer. A standard unit comes ready from the factory to be connected to a CART network system with no additional modifications or accessories necessary. Once set to network mode, the R_2P Roller Apparatus will start communicating to a host computer automatically.

6.5 Display Back light Operation

In normal operation, the display back light will turn on when a key is pressed on the keypad. The back light will turn off after about I minute of no keys pressed. The display back light will blink on/off during a fault condition for a visual indication of a roller apparatus that has a problem. In order to conserve power, the back light will not operate if the roller apparatus is running in battery backup mode.

7.0 FAULT CONDITIONS

The R_2P Roller Apparatus monitors several different parameters to ensure proper operation. If a problem exists, a FAULT CONDITION will be displayed on the screen. To temporarily view the current running status of the unit while the unit is in fault condition, press the UP arrow key. Following is a description of possible fault conditions.

7.1 Explanation of Fault Messages

BELT1, BELT2 Two magnetic sensors located at the top most deck each sense the rotation of one half of the belt and roller drive train. A fault condition will exist If either half of the drive train fails to rotate due to a broken belt or jammed roller.

TOL This message will be displayed of the bottle rotation speed falls outside the programmed speed tolerance (see section 5.3)

TEMP If equipped with temperature sensing, this message will be displayed if the measured temperature fall outside either the LOW or HIGH temperature settings.

BATTERY LOW If equipped with Battery Backup option, unit will monitor battery voltage and display this message if the battery voltage drops below 21.19 volts. Unit will only monitor battery voltage while running in battery backup mode.

LMT Motor current limit. Will indicate if the motor is jammed.

POWER FAIL If equipped with Battery Backup option, unit will display message if primary power is lost.

7.2 Dry Contact Fault Relay Connections

A dry contact relay is available for interface to remote process monitoring equipment through the two RJ45 connectors on the front panel of the unit. Both connectors are wired in parallel and provide the same function. If a fault condition exists, the relay will activate. The relay will deactivate when the fault condition clears. The dry contacts can be configured for normally open (NO) or normally closed (NC) operation. See figures S and T for dry contact pin locations on the front panel connectors and configuration.

8.0 BOTTLE SPEED VALIDATION

The R_2P Roller Apparatus is designed to accurately display actual bottle rotation speed. Once a bottle diameter has been programmed, the unit will automatically calculate and adjust itself to roll the bottle correctly at its set speed. Different bottle manufacturers naturally produce bottles of different bottle diameters. It is not recommended that bottles of different manufacturers be mixed on the same unit if an accurate bottle speed is to be obtained. Refer to figure V and the steps below to setup and validate proper bottle speed.

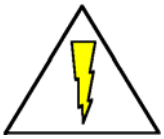
1) The R_2P Roller Apparatus relies on the MAXIMUM bottle diameter for proper bottle speed indications. Traction rings and ridges must be considered in calculating the maximum bottle diameter.
2) Carefully measure, with a pair of calibrated calipers, the maximum diameter of as sample bottle to be rolled. If traction rings or ridges are at both ends of the bottle, measure both ends and take the average.
3) Use measurement obtained in step 2 for the bottle diameter to be entered into the unit. Refer to section 6.3 for programming the bottle diameter into the unit.

To validate the bottle speed, make a mark on the roller unit frame and another on a sample bottle to be tested, or better, make a 360° template and attach it to a bottle cap as shown in figure V. Start the unit and set to a desired speed. Using a calibrated stopwatch, record the number of bottle revolutions in one minute and compare with the indicated speed on the display (see section 6.1)

NOTE: The speed control and feedback used on the New WSP Roller is completely digital. Once the speed indicator is properly set and validated, it will not drift over time, or temperature. Additional calibration is unnecessary although most protocols require periodic validation checks.

9.0 MAINTENANCE - FOR QUALIFIED SERVICE PERSONNEL ONLY

CAUTION ! A fully loaded roller apparatus is extremely heavy, care should be taken when moving the equipment.



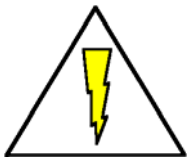
DANGER! NEVER ATTEMPT TO PERFORM REPAIRS IF THIS INSTRUMENT IS PLUGGED IN! IN ORDER TO AVOID SERIOUS ELECTRIC SHOCK OR ELECTROCUTION, THIS INSTRUMENT MUST BE DISCONNECTED FROM THE SOURCE OF AC POWER BEFORE MAINTENANCE.

As with any piece of laboratory equipment, periodic inspection for worn and/or damaged parts should be performed on a regular basis.

9.1 Instrument Maintenance Schedule

Item	Action	Interval
Roller Bearings	Roller bearings are greaseless and require no lubrication. Inspection is required for physical damage only.	Once a year
Rubber Rollers	Check rollers for residue buildup. Rollers can be wiped with Alcohol or a common household spray cleaner.	At each harvest interval
Nuts, Bolts msc. Hardware	Check for general tightness, replace missing hardware	Once a year
Drive Belts (black)	Replace belts if frayed or internal cords are showing	Once a year
Horizontal Belts (clear)	Replace belts if excessively yellow or cracked	Every six months
Pulleys	Check for tightness on roller shafts, replace if damaged.	Once a year
Batteries Optional	Check that they are securely mounted and connected	Once a year

9.2 Trouble Shooting



DANGER! NEVER ATTEMPT TO PERFORM REPAIRS IF THIS INSTRUMENT IS PLUGGED IN !
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: Switch power switch to "on" position.

Motor runs but roller(s) will not turn;

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

Switch on but motor fails to rotate;

Cause: Speed control set too low.
Remedy: Increase motor speed as required.
Cause: Motor control board defective.
Remedy: Replace defective board.

Switch on but motor fails to rotate;

Cause: Drive motor defective.
Remedy: Replace defective motor.

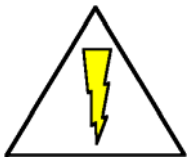
Motor fails to maintain constant rotation speed;

Cause: Motor control board defective.
Remedy: Replace defective board.
Cause: Drive motor defective.
Remedy: Replace defective motor.

Display speed (RPM) reading does not match calibration value;

Cause: Diameter value set wrong
Remedy: Set the Diameter value correctly. NOTE: Some bottles have traction rings or ridges, which has a larger diameter than the main bottle. If so you must measure the diameter at this section. Always measure the bottle at its maximum diameter. See section 8.0

9.3 Fuse Replacement (see figures Q, R)



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

1. Disconnect the cord-set from the AC power source.
2. Locate power input connector/voltage selector module
3. Remove the fuse drawer by using a small flat screwdriver to lift the tab.
4. Replace with new fuses:

100 - 120 VAC unit (gray fuse drawer) use 1 ¼ x ¼ (3AG), 250V, 1.0 AT fuses, be sure the correct cord set is used.
230 VAC unit (black fuse drawer) use 5 x 20 mm 0.630 AT fuses, be sure the correct cord set is used.

10.0 BATTERY BACK-UP

The Battery Backup option on the new R_2P Roller Apparatus provides 18 hours of full operation if primary power to the unit fails. Full functionality of the unit is maintained. All programmed settings via the front panel keypad are accessible, and full motor speed is available under battery backup. If the unit is connected to the CART® network and is under remote computer control, full communications is maintained. To conserve battery power, the display backlight and the audible alarm are disabled during operation in battery backup mode.

10.1 Specifications (Battery Backup)

This integrated system consists of two sealed lead acid batteries and automatic charging system. Batteries are charged whenever power is applied and the unit is switched ON.

Batteries used:	(2) Yuasa NP12-12 12V, 12AH
Battery duration:	18 hours at 5.00 RPM bottle speed assuming 110mm bottles. Longer at slower speeds, shorter at faster speeds.
Battery recharge time:	about 12 hours for fully discharged batteries, shorter for partially discharged batteries.
Battery life expectancy:	about 3 years assuming battery storage and operation in a 37°C incubator.

10.2 Operation (Battery Backup)

The battery backup system utilizes two sealed lead acid batteries, which must be maintained in a fully charged state to insure proper auxiliary operation. The charging circuitry charges the batteries whenever the roller apparatus is plugged in and the power switch is ON. If primary power is lost while a roller apparatus is in normal operation, the charger circuitry will automatically switch the roller apparatus to operate on its internal batteries. Once primary power is restored, the charger will automatically switch the apparatus back to mains power operation.

10.3 Battery Maintenance and Storage

Proper battery maintenance and storage will ensure peak battery duration and lifetime.

NOTE: Never discharge batteries beyond 18 hours. If batteries are discharged beyond their duration times, damage may result and the ability to recharge batteries may be impeded. It is recommended that deep discharged batteries be replaced.

Sealed Lead Acid (SLA) batteries will self discharge over time. The self-discharge rate is dependent on storage temperature. New batteries received by the manufacturer are fully charged. A SLA battery should not be allowed to self-discharge below 80% of its capacity. SLA batteries will typically self-discharge to 80% in 18 months in a 4.4ºC or cooler warehouse. SLA batteries will self-discharge to 80% in less than 3 months if left in a 40º C or warmer warehouse.

11.0 TEMPERATURE SENSORS

The new WSP Roller Apparatus can monitor the temperature of a warm room or incubator using on-board solid-state temperature sensors. Up to four sensors can be located on the roller unit. Temperature is monitored with a resolution of ±0.1 °C and an accuracy of ±0.5 °C.

To view temperatures on the front panel display during normal operation press the DOWN arrow on the keypad (see section 6.2)

Temperature sensors are arranged on the rack so that the sensor located at the bottom of the rack is sensor #1, and the highest number sensor is at the top of the rack. Sensors can be renumbered if the user desires (see the **R_2P Roller Apparatus Technical Service Manual**).

Sensors are arranged on the front panel display as follows:

If only one sensor installed:

Sensor 1	

If all four sensors installed:

Sensor 1	Sensor 2
Sensor 3	Sensor 4

FIGURE A - WHEATON R_2P – CONTROL HOUSING PARTS LIST

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	SLIDE TRAY, CONTROL HOUSING	1	WL055609
2	LID, SLIDE TRAY, CONTROL HOUSING	1	WL055608
3	POWER ENTRY MODULE	1	WL055583
4	FUSE DRAWER, 1 ¼ X ¼ “, GREY (120V)	1	WL055581
*	FUSE DRAWER, 1 ¼ X ¼ “, BLACK (230V)	1	WL055582
5	FUSE, 1.0AT, 3AG, 250V (120V)	1	I051320
*	FUSE, 0.630 AT (230V)	2	WL055580
6	POWER SWITCH, DPST	1	I055305
7	POWER SUPPLY, 28V, 75W	1	WL055578
8	PCBA, POWER ROUTE R2P	1	WL055607
9	ASS’Y JUMPER BLOCK (NO BBU INSTALLED)	1	WL055606
10	BRUSHLESS MOTOR CONTROLLER	1	WL055577
11	BRUSHLESS MOTOR, 24V 60:1 GR	1	WL055576
12	PCBA, MCU, R2P	1	WL055605
13	ASS’Y KEYPAD	1	WL055604
14	PCBA, RS-485 DRY CONTACT	1	WL055603
15	JUMPER, SHORTING BLOCK	1	50026879
16	ASS’Y LCD BACKLIT DISPLAY	1	WL055602
17	ASS’Y WIRE HARNESS, R2P	1	WL055601
18	ASS’Y INTERNAL COMM CABLE	1	WL055611
19	#8-32 NUT, HEX	2	50029987
20	¼”-20 X ½” LG SCREW, PPHM	2	50027151
21	#4-40 X 7/16” LG SPACER, NYLON	3	50041541
22	#6-32 X .812” LG STANDOFF, HEX	4	50027087
23	#6-32 X 3/8” LG STANDOFF, HEX	4	I051285
24	SCREW, #2-56 X ¾ “ LG, NYLON	4	50027619
25	SCREW, #4-40 X 3/8” LG, PFHM	2	I053401
26	SCREW, #6-32 X 3/8” LG, PPHM	12	I052240
27	WASHER, STAR, #8, INT. TOOTH	4	50029959
28	NUT, HEX, #6-32	17	50029919
29	NUT, HEX, #10-32	2	I052340
30	NUT, HEX, #2-36 NYLON	4	50027622
31	#10-32 X ½” LG SCREW, PPHM	4	I052320
32	#10 WASHER, FLAT	4	I052337
33	#10 INT. TOOTH STAR WASHER	4	I052338
34	#4-40 X 3/8” SCREW LG PPHM	4	50029858
35	COVER PLATE, BLANK	1	WL055641
36	LABEL, MAIN GROUND	1	50028527
37	LABEL, GROUND	1	50028530
38	FERRITE SUPPRESSION CORE (SEE FIG U)	1	WL055610
39	EMI FILTER, 3VQ1, CORCOM	1	WL055653
40	WASHER, STAR, #4, INT. TOOTH	4	50029863
41	#6 INT. TOOTH STAR WASHER	4	I052273
42	BATTERY, 12V, 12AH	2	WL055575
43	PCBA, BATTERY BACKUP BOARD (Optional)	1	WL055647
44	ASS’Y WIRE HARNESS, BATTERY BACKUP (Optional SEE FIG U)	1	WL055643
45	BRACKET, BATTERY BACKUP	1	WL055638
46	WASHER, STAR, ¼” INT. TOOTH	8	I052370
47	NUT, HEX, ¼-20	8	50030018
48	LABEL !, (INTERNATIONAL CAUTION)	1	50028414
49	LABEL, USE LEAD ACID BATTERY	1	50028903
50	STF, ¼” HEX X ½” L #6-32 THRD	4	I054203
51	CABLE, INT DISP – R2P EYE LEVEL DISP (Optional SEE FIG U)	1	WI056035

FIGURE B - WHEATON R_2P – MAIN UNIT ASSEMBLY (55 POS. PRODUCTION)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASS'Y BASE W/UPRIGHTS & DECKS	1	WL055620
2	ASS'Y DRIVE UNIT (120V)	1	WL055598
	ASS'Y DRIVE UNIT (230V)	1	WL055599
3	BELT GUARD	2	WL055632
4	CAB, MOTOR BELT GUARD	1	50026982
5	BELT, ROUND ENDLESS, 4 ½" DIA.	44	I052737
6	PULLEY, WELDED W/ 3/8" I.D. HOLE	1	I054216
7	BELT, DRIVE 225L025	2	I052719
8	PULLEY, TOOTHED	86	I052714
9	SCREW, HEX HEAD, ¼-20 X ½ LG	4	I052363
10	SCREW, SET, #10-32 X ¼" LG	4	I052353
11	WASHER, STAR, #6 INT. TOOTH	24	I052273
12	SCREW, #6-32 X 3/8" LG., PPHM	24	I052240
13	SPACER, 3/8" HEX 6-32 THD	24	I051433
14	TIE, CABLE	4	I051479
15	BELT, TIMING, 187L025	20	I051188
16	PULLEY, TOOTHED W/MAGNET	2	I050990
17	¼-20 LOCK WASHER	4	I052370
18	LABEL, PINCH CRUSH	2	50028829
19	LABEL "!" (INTERNATIONAL CAUTION)	1	50028414
20	LABEL, CE MARK (230V ONLY)	1	50028416
21	LABEL, MET NRTL LISTED	1	50028394
22	LABEL, WHEATON SERIAL NUMBER	1	50030538
23	LABEL, FUSE/LINE VOLTAGE	1	50028826
24	WASHER, STAR, #8, INT. TOOTH	4	50029959
25	SCREW, #8-32 C 3/8" LG., PPHM	4	50029922
26	SCREW, #4-40 C 3/8" LG., PPHM	4	50029858
27	WASHER, STAR, #4, INT. TOOTH	4	50029863
28	NUT, HEX #4-40	4	50029894
29	ASSY, CABLE, ROT. ALM	1	WL055629

FIGURE C - WHEATON R_2P – DECK & BASE ASSEMBLY (55 POS. PRODUCTION)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	BASE, 55 POSITION ROLLER APPARATUS	1	WL055621
2	ASSEMBLY, DECK	11	WL055614
3	SCREW, HEX HEAD, ¼-20 X ½" LG.	144	I052363
4	SCREW, HEX HEAD, ¼-20 X ¾" LG.	16	50030016
5	WASHER, STAR, ¼ INT. TOOTH	160	I052370
6	CASTER, SWIVEL	2	WL055588
7	CASTER, SWIVEL LOCKING	2	WL055587
8	UPRIGHT RAIL, LF & RR	2	WL055628
9	UPRIGHT RAIL LR & RF	2	WL055627
10	RAIL, SIDE SUPPORT	12	I052861
11	WASHER, PLAIN ¼ X 5/8, SS, ANSI	16	50027727

FIGURE D - WHEATON R_2P – MAIN UNIT ASSEMBLY (15 POS. PRODUCTION)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASS'Y BASE W/UPRIGHTS & DECKS	1	WL055619
2	ASS'Y DRIVE UNIT (120V)	1	WL055598
	ASS'Y DRIVE UNIT (230V)	1	WL055599
3	GUARD, DECK BELT	1	WL055631
4	CAB, MOTOR BELT GUARD	1	50026982
5	BELT, ROUND ENDLESS, 4 ½" DIA.	12	I052737
6	PULLEY, WELDED W/ 3/8" I.D. HOLE	1	I054216
7	BELT, DRIVE 225L025	2	I052719
8	PULLEY, TOOTHED	22	I052714
9	SCREW, HEX HEAD, ¼-20 X ½ LG	4	I052363
10	SCREW, SET, #10-32 X ¼" LG	4	I052353
11	WASHER, STAR, #6 INT. TOOTH	12	I052273
12	SCREW, #6-32 X 3/8" LG., PPHM	12	I052240
13	SPACER, 3/8" HEX 6-32 THD	12	I051433
14	TIE, CABLE	5	I051479
15	BELT, TIMING, 187L025	4	I051188
16	PULLEY, TOOTHED W/MAGNET	2	I050990
17	¼-20 LOCK WASHER	4	I052370
18	LABEL, PINCH CRUSH	1	50028829
19	LABEL "!" (INTERNATIONAL CAUTION)	1	50028414
20	LABEL, CE MARK (230V ONLY)	1	50028416
21	LABEL, MET NRTL LISTED	1	50028394
22	LABEL, WHEATON SERIAL NUMBER	1	50030538
23	LABEL, FUSE/LINE VOLTAGE	1	50028826
24	WASHER, STAR, #8, INT. TOOTH	4	50029959
25	SCREW, #8-32 C 3/8" LG., PPHM	4	50029922
26	SCREW, #4-40 C 3/8" LG., PPHM	4	50029858
27	WASHER, STAR, #4, INT. TOOTH	4	50029863
28	NUT, HEX #4-40	4	50029894
29	ASSY, CABLE, ROT. ALM	1	WL055629
30	GUARD, DECK BELT (BOTTOM)	1	WL055637
31	GUARD, DECK BELT (ROT. ALM)	1	WL055636

FIGURE E - WHEATON R_2P – DECK & BASE ASSEMBLY (15 POS. PRODUCTION)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	BASE, 15 POSITION ROLLER APPARATUS	1	WL055621
2	ASSEMBLY, DECK	3	WL055614
3	SCREW, HEX HEAD, ¼-20 X ½" LG.	48	I052363
4	SCREW, HEX HEAD, ¼-20 X ¾" LG.	16	50030016
5	WASHER, STAR, ¼ INT. TOOTH	64	I052370
6	CASTER, SWIVEL	2	WL055588
7	CASTER, SWIVEL LOCKING	2	WL055587
8	UPRIGHT RAIL, LF & RR	2	WL055628
9	UPRIGHT RAIL LR & RF	2	WL055627
10	RAIL, SIDE SUPPORT	4	I052861
11	WASHER, PLAIN ¼ X 5/8, SS, ANSI	16	50027727
12	RAIL, UPRIGHT, CORNER PIECE	4	WL055622

FIGURE F - WHEATON R_2P – MAIN UNIT ASSEMBLY (55 POS. MODULAR)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASS'Y BASE W/UPRIGHTS & DECKS	1	WL055619
2	ASS'Y DRIVE UNIT (120V)	1	WL055598
	ASS'Y DRIVE UNIT (230V)	1	WL055599
3	GUARD, DECK BELT (ROT. ALM)	1	WL055636
4	CAB, MOTOR BELT GUARD	1	50026982
5	BELT, ROUND ENDLESS, 4 ½" DIA.	44	I052737
6	PULLEY, WELDED W/ 3/8" I.D. HOLE	1	I054216
7	BELT, DRIVE 225L025	2	I052719
8	PULLEY, TOOTHED	86	I052714
9	SCREW, HEX HEAD, ¼-20 X ½ LG	4	I052363
10	SCREW, SET, #10-32 X ¼" LG	4	I052353
11	WASHER, STAR, #6 INT. TOOTH	24	I052273
12	SCREW, #6-32 X 3/8" LG., PPHM	24	I052240
13	SPACER, 3/8" HEX 6-32 THD	24	I051433
14	TIE, CABLE	5	I051479
15	BELT, TIMING, 110L025	20	I052734
16	PULLEY, TOOTHED W/MAGNET	2	I050990
17	¼-20 LOCK WASHER	4	I052370
18	LABEL, PINCH CRUSH	2	50028829
19	LABEL "!" (INTERNATIONAL CAUTION)	1	50028414
20	LABEL, CE MARK (230V ONLY)	1	50028416
21	LABEL, MET NRTL LISTED	1	50028394
22	LABEL, WHEATON SERIAL NUMBER	1	50030538
23	LABEL, FUSE/LINE VOLTAGE	1	50028826
24	WASHER, STAR, #8, INT. TOOTH	4	50029959
25	SCREW, #8-32 C 3/8" LG., PPHM	4	50029922
26	SCREW, #4-40 C 3/8" LG., PPHM	4	50029858
27	WASHER, STAR, #4, INT. TOOTH	4	50029863
28	NUT, HEX #4-40	4	50029894
29	ASSY, CABLE, ROT. ALM	1	WL055629
30	GUARD, DECK BELT (BOTTOM)	1	WL055637
31	GUARD, DECK BELT	7	WL055631

FIGURE G - WHEATON R_2P – DECK & BASE ASSEMBLY (55 POS. MODULAR)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	BASE, 55 POSITION ROLLER APPARATUS	1	WL055621
2	ASSEMBLY, DECK	11	WL055614
3	SCREW, HEX HEAD, ¼-20 X ½" LG.	144	I052363
4	SCREW, HEX HEAD, ¼-20 X ¾" LG.	16	50030016
5	WASHER, STAR, ¼ INT. TOOTH	160	I052370
6	CASTER, SWIVEL	2	WL055588
7	CASTER, SWIVEL LOCKING	2	WL055587
8	RAIL, UPRIGHT DECK	32	WL055983
9	RAIL, UPRIGHT, CORNER PIECE	4	WL055627
10	RAIL, SIDE SUPPORT	12	I052861
11	WASHER, PLAIN ¼ X 5/8, SS, ANSI	16	50027727
12	RAIL, UPRIGHT BASE	4	WL055623

FIGURE H - WHEATON R_2P – MAIN UNIT ASSEMBLY (15 POS. MODULAR)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASS'Y BASE W/UPRIGHTS & DECKS	1	WL055618
2	ASS'Y DRIVE UNIT (120V)	1	WL055598
	ASS'Y DRIVE UNIT (230V)	1	WL055599
3	GUARD, DECK BELT	1	WL055631
4	CAB, MOTOR BELT GUARD	1	50026982
5	BELT, ROUND ENDLESS, 4 ½" DIA.	12	I052737
6	PULLEY, WELDED W/ 3/8" I.D. HOLE	1	I054216
7	BELT, DRIVE 225L025	2	I052719
8	PULLEY, TOOTHED	22	I052714
9	SCREW, HEX HEAD, ¼-20 X ½ LG	4	I052363
10	SCREW, SET, #10-32 X ¼" LG	4	I052353
11	WASHER, STAR, #6 INT. TOOTH	12	I052273
12	SCREW, #6-32 X 3/8" LG., PPHM	12	I052240
13	SPACER, 3/8" HEX 6-32 THD	12	I051433
14	TIE, CABLE	5	I051479
15	BELT, TIMING, 110L025	4	I052734
16	PULLEY, TOOTHED W/MAGNET	2	I050990
17	¼-20 LOCK WASHER	4	I052370
18	LABEL, PINCH CRUSH	1	50028829
19	LABEL "!" (INTERNATIONAL CAUTION)	1	50028414
20	LABEL, CE MARK (230V ONLY)	1	50028416
21	LABEL, MET NRTL LISTED	1	50028394
22	LABEL, WHEATON SERIAL NUMBER	1	50030538
23	LABEL, FUSE/LINE VOLTAGE	1	50028826
24	WASHER, STAR, #8, INT. TOOTH	4	50029959
25	SCREW, #8-32 C 3/8" LG., PPHM	4	50029922
26	SCREW, #4-40 C 3/8" LG., PPHM	4	50029858
27	WASHER, STAR, #4, INT. TOOTH	4	50029863
28	NUT, HEX #4-40	4	50029894
29	ASSY, CABLE, ROT. ALM	1	WL055629
30	GUARD, DECK BELT (BOTTOM)	1	WL055637
31	GUARD, DECK BELT (ROT. ALM)	1	WL055636

FIGURE I - WHEATON R_2P – DECK & BASE ASSEMBLY (15 POS. MODULAR)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	BASE, 15 POSITION ROLLER APPARATUS	1	WL055621
2	ASSEMBLY, DECK	3	WL055614
3	SCREW, HEX HEAD, ¼-20 X ½" LG.	48	I052363
4	SCREW, HEX HEAD, ¼-20 X ¾" LG.	16	50030016
5	WASHER, STAR, ¼ INT. TOOTH	64	I052370
6	CASTER, SWIVEL	2	WL055588
7	CASTER, SWIVEL LOCKING	2	WL055587
8	UPRIGHT RAIL, BASE	4	WL055623
9	UPRIGHT RAIL, DECK	8	WL055983
10	RAIL, SIDE SUPPORT	4	I052861
11	WASHER, PLAIN ¼ X 5/8, SS, ANSI	16	50027727
12	RAIL, UPRIGHT, CORNER PIECE	4	WL055622

FIGURE J - WHEATON R_2P – MAIN UNIT ASSEMBLY (5 POS.)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASS'Y BASE W/UPRIGHTS & DECKS	1	WL055618
2	ASS'Y DRIVE UNIT (120)	1	WL055598
	ASS'Y DRIVE UNIT (230V)	1	WL055599
3	GUARD, DECK BELT (SINGLE DECK UNIT)	1	WL055630
4	CAB, MOTOR BELT GUARD	1	50026982
5	BELT, ROUND ENDLESS, 4 ½" DIA.	4	I052737
6	PULLEY, WELDED W/ 3/8" I.D. HOLE	1	I054216
7	BELT, DRIVE 225L025	2	I052719
8	PULLEY, TOOTHED	6	I052714
9	SCREW, HEX HEAD, ¼-20 X ½ LG	4	I052363
10	SCREW, SET, #10-32 X ¼" LG	4	I052353
11	WASHER, STAR, #6 INT. TOOTH	4	I052273
12	SCREW, #6-32 X 3/8" LG., PPHM	4	I052240
13	SPACER, 3/8" HEX 6-32 THD	4	I051433
14	TIE, CABLE	5	I051479
15	PULLEY, TOOTHED W/MAGNET	2	I050990
16	¼-20 LOCK WASHER	4	I052370
17	LABEL, PINCH CRUSH	1	50028829
18	LABEL "!" (INTERNATIONAL CAUTION)	1	50028414
19	LABEL, CE MARK (230V ONLY)	1	50028416
20	LABEL, MET NRTL LISTED	1	50028394
21	LABEL, WHEATON SERIAL NUMBER	1	50030538
22	LABEL, FUSE/LINE VOLTAGE	1	50028826
23	WASHER, STAR, #8, INT. TOOTH	4	50029959
24	SCREW, #8-32 C 3/8" LG., PPHM	4	50029922
25	SCREW, #4-40 C 3/8" LG., PPHM	4	50029858
26	WASHER, STAR, #4, INT. TOOTH	4	50029863
27	NUT, HEX #4-40	4	50029894
28	ASSY, CABLE, ROT. ALM	1	WL055629

FIGURE K - WHEATON R_2P – DECK & BASE ASSEMBLY (5 POS.)

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	BASE, 5 POSITION ROLLER APPARATUS	1	WL055621
2	ASSEMBLY, DECK	1	WL055614
3	SCREW, HEX HEAD, ¼-20 X ½" LG.	24	I052363
4	SCREW, HEX HEAD, ¼-20 X ¾" LG.	16	50030016
5	WASHER, STAR, ¼ INT. TOOTH	40	I052370
6	CASTER, SWIVEL	2	WL055588
7	CASTER, SWIVEL LOCKING	2	WL055587
8	RAIL, UPRIGHT	4	WL055623
9	RAIL, SIDE SUPPORT	2	I052861
10	WASHER, PLAIN ¼ X 5/8, SS, ANSI	16	50027727
11	RAIL, UPRIGHT, CORNER PIECE	4	WL055622

FIGURE L - WHEATON R_2P APPARATUS – SINGLE DECK ASSEMBLY PRODUCTION

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASSEMBLY, DECK	1	WL055614
2	RAIL, UPRIGHT, SINGLE DECK	4	WL055657
3	RAIL, SIDE SUPPORT	2	I052861
4	RAIL, UPRIGHT, CORNER PIECE	4	WL055622
5	SCREW, HEX HEAD, ¼-20 C ½" LG.	24	I052363
6	WASHER, STAR, ¼ INT. TOOTH	24	I052370

FIGURE M - WHEATON R_2P APPARATUS – SINGLE DECK ASSEMBLY MODULAR

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASSEMBLY, DECK	1	WL055614
2	RAIL, UPRIGHT, SINGLE DECK	4	WL055983
3	RAIL, SIDE SUPPORT	2	I052861
4	RAIL, UPRIGHT, CORNER PIECE	4	WL055622
5	SCREW, HEX HEAD, ¼-20 C ½" LG.	24	I052363
6	WASHER, STAR, ¼ INT. TOOTH	24	I052370

FIGURE N - WHEATON R_2P APPARATUS – DECK ROLLER ASSEMBLY

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	ASSEMBLY, FRONT RAIL W/ BEARING	1	WL055613
2	ASSEMBLY, REAR RAIL W/ BEARING	1	WL055612
3	ASSEMBLY, ROLLER / SHAFT	6	I054128
4	WASHER, NYLON	12	50028196
5	ROD, SUPPORT	2	I052885
6	WASHER, #8, INT. TOOTH, STAR	2	50029959
7	SCREW, 8-32 X 3/8" LG., PPHM	2	50029922

FIGURE O - WHEATON R_2P APPARATUS – FRONT RAIL BEARING ASSEMBLY

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	RAIL, FRONT SUPPORT	1	WL055617
2	BEARING, SLOTTED MTG.	6	WL055615

FIGURE P - WHEATON R_2P APPARATUS – REAR RAIL BEARING ASSEMBLY

ITEM NO.	DESCRIPTION	USE QTY.	WHEATON NO.
1	RAIL, REAR SUPPORT	1	WL055616
2	BEARING, SLOTTED MTG.	6	WL055615

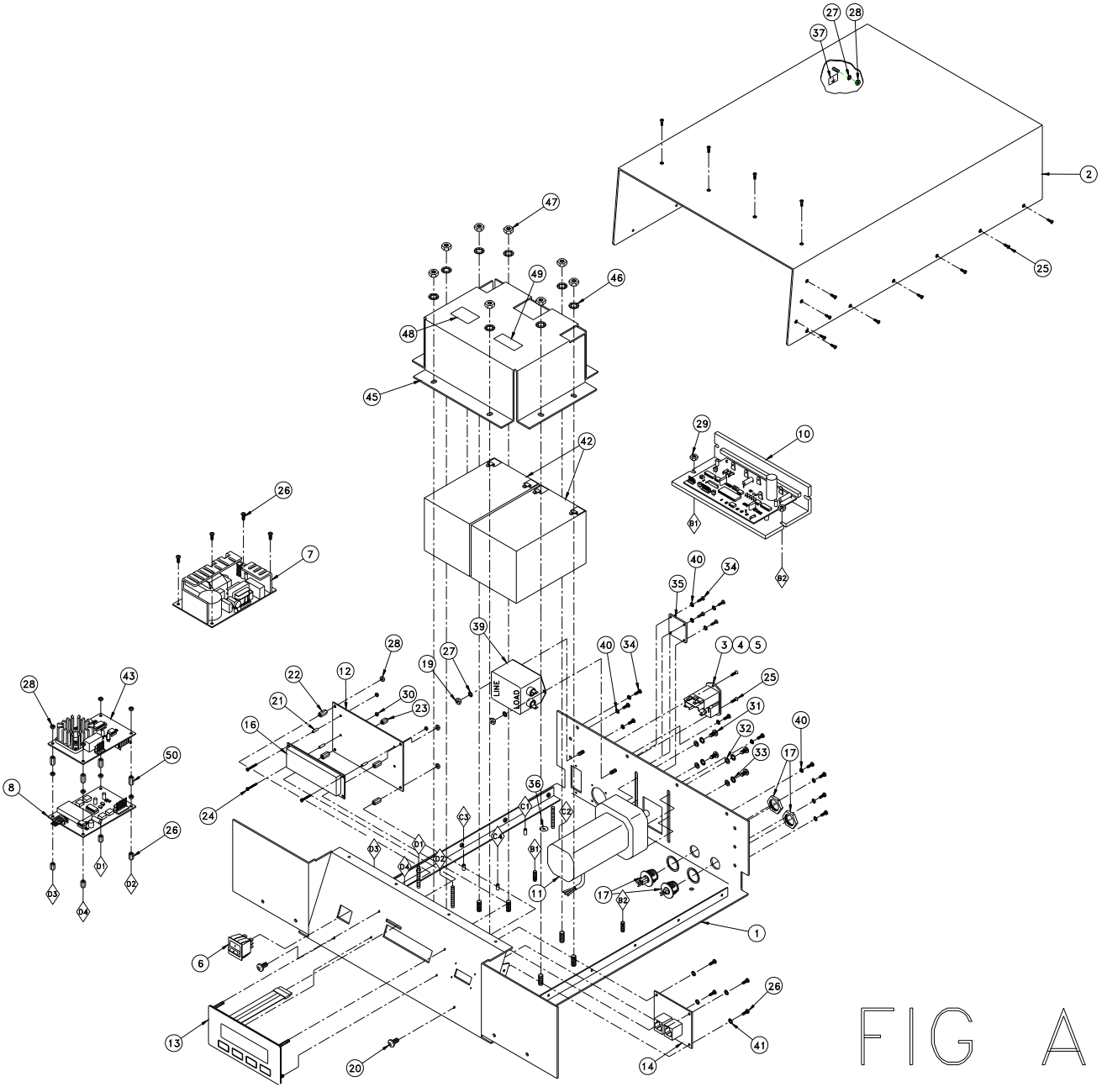


FIG A

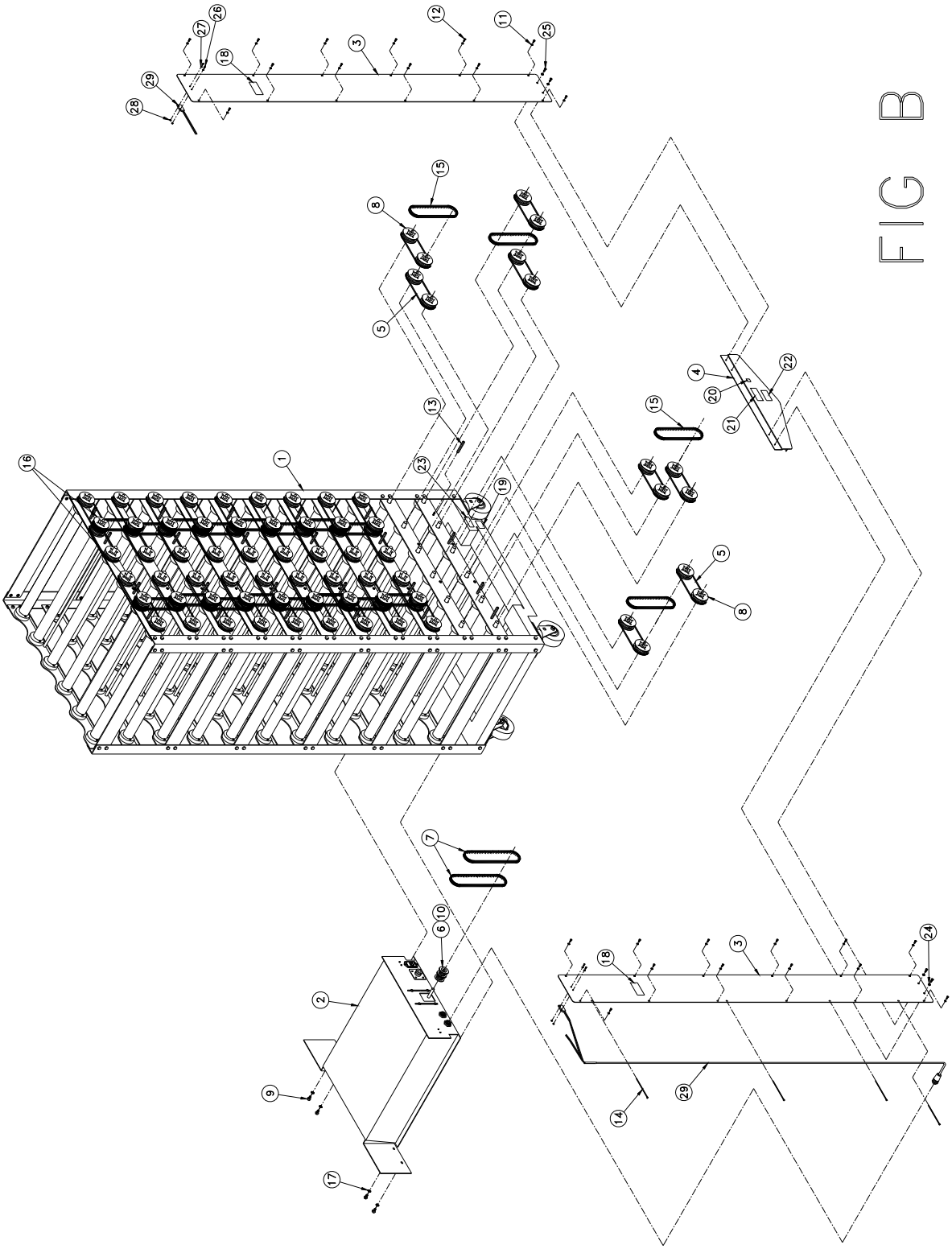


FIG B

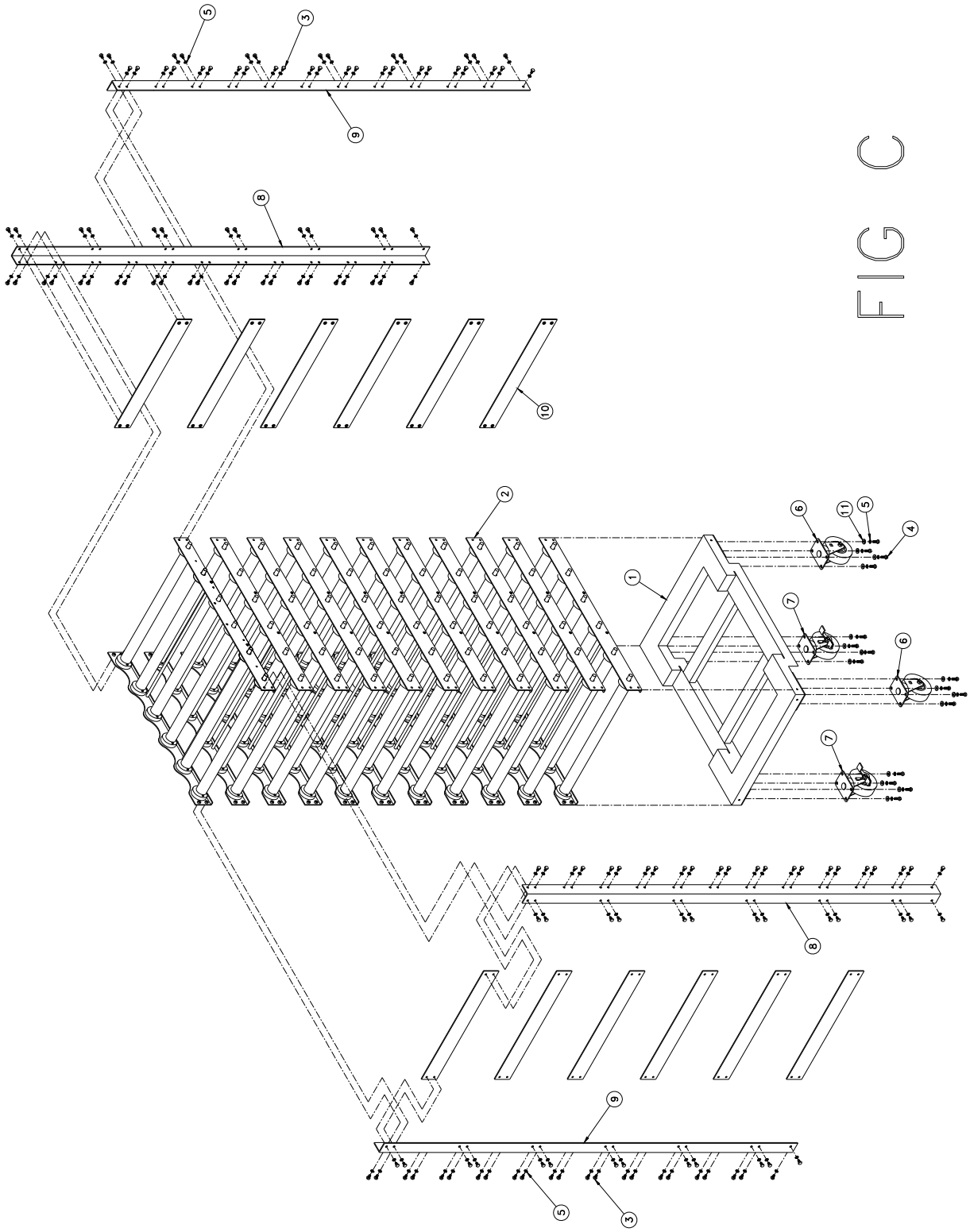


FIG C

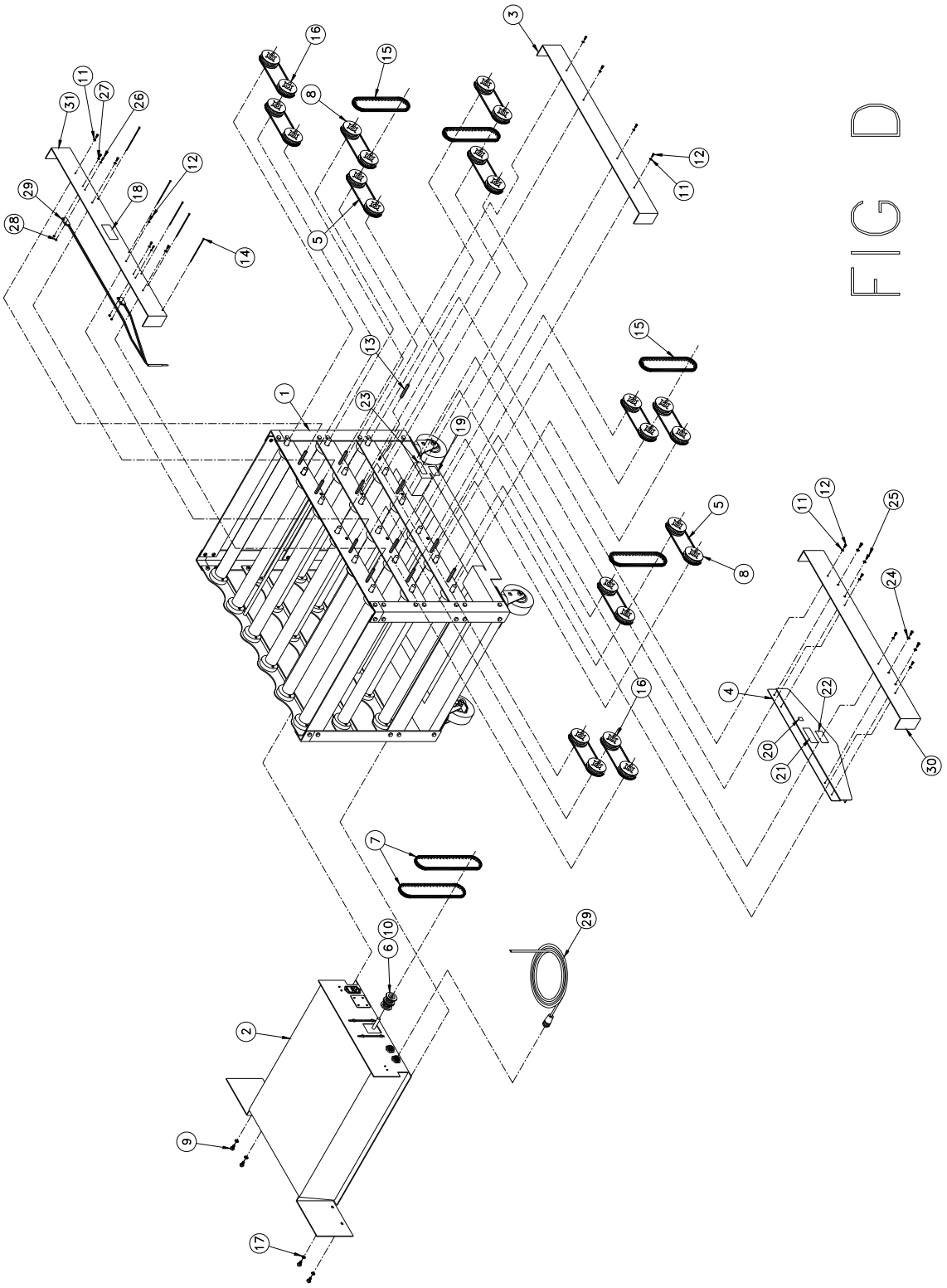


FIG D

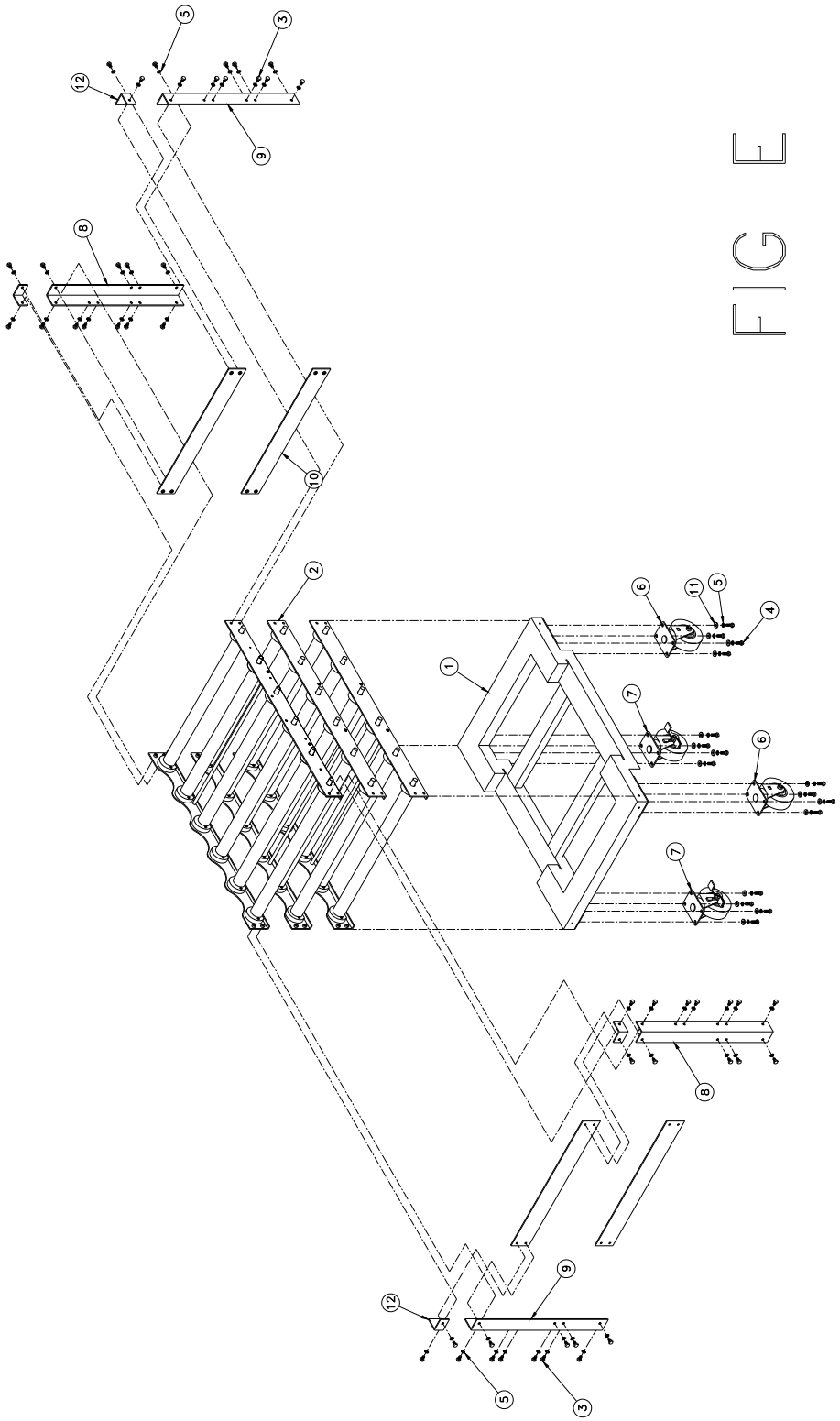
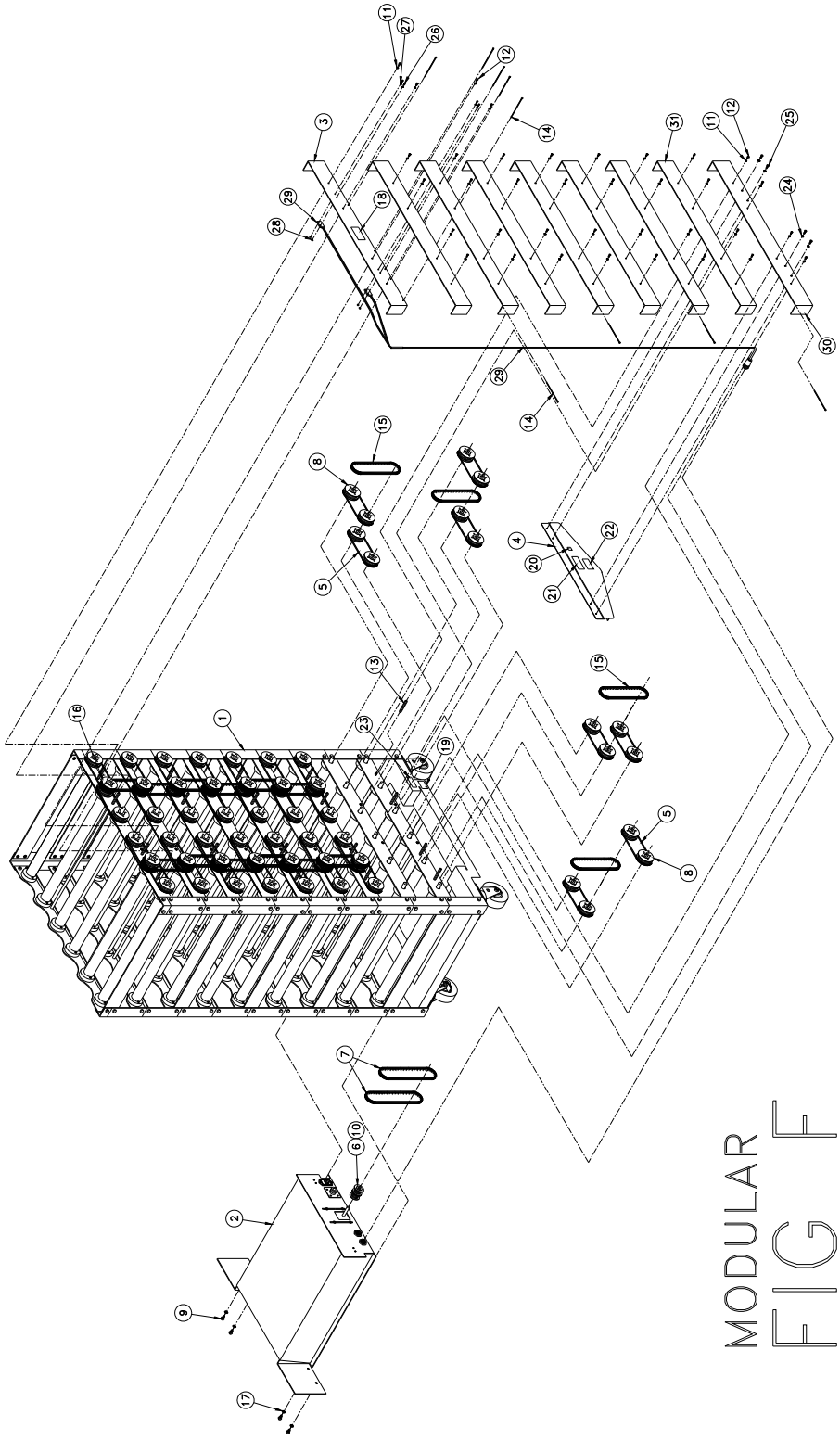
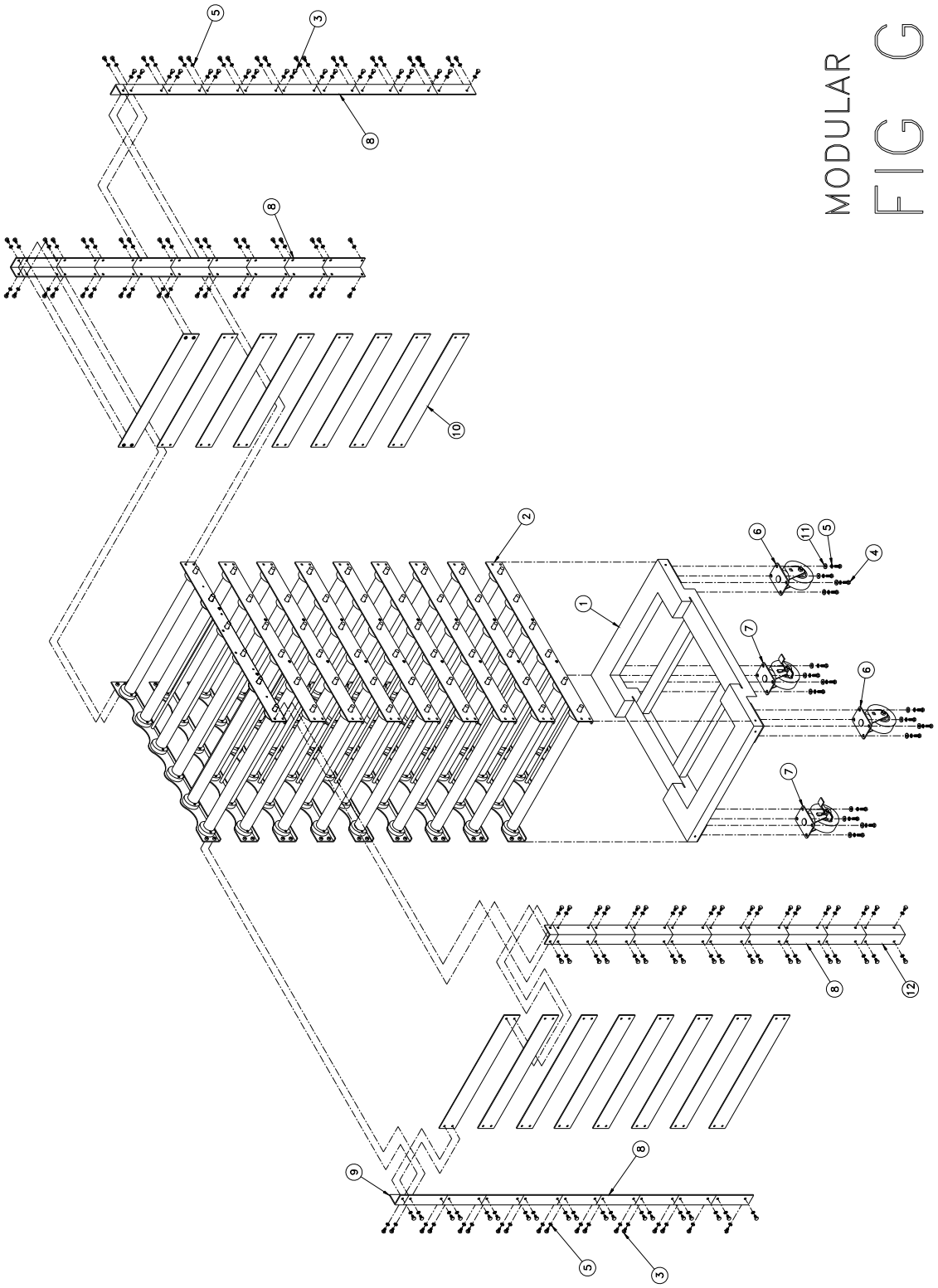
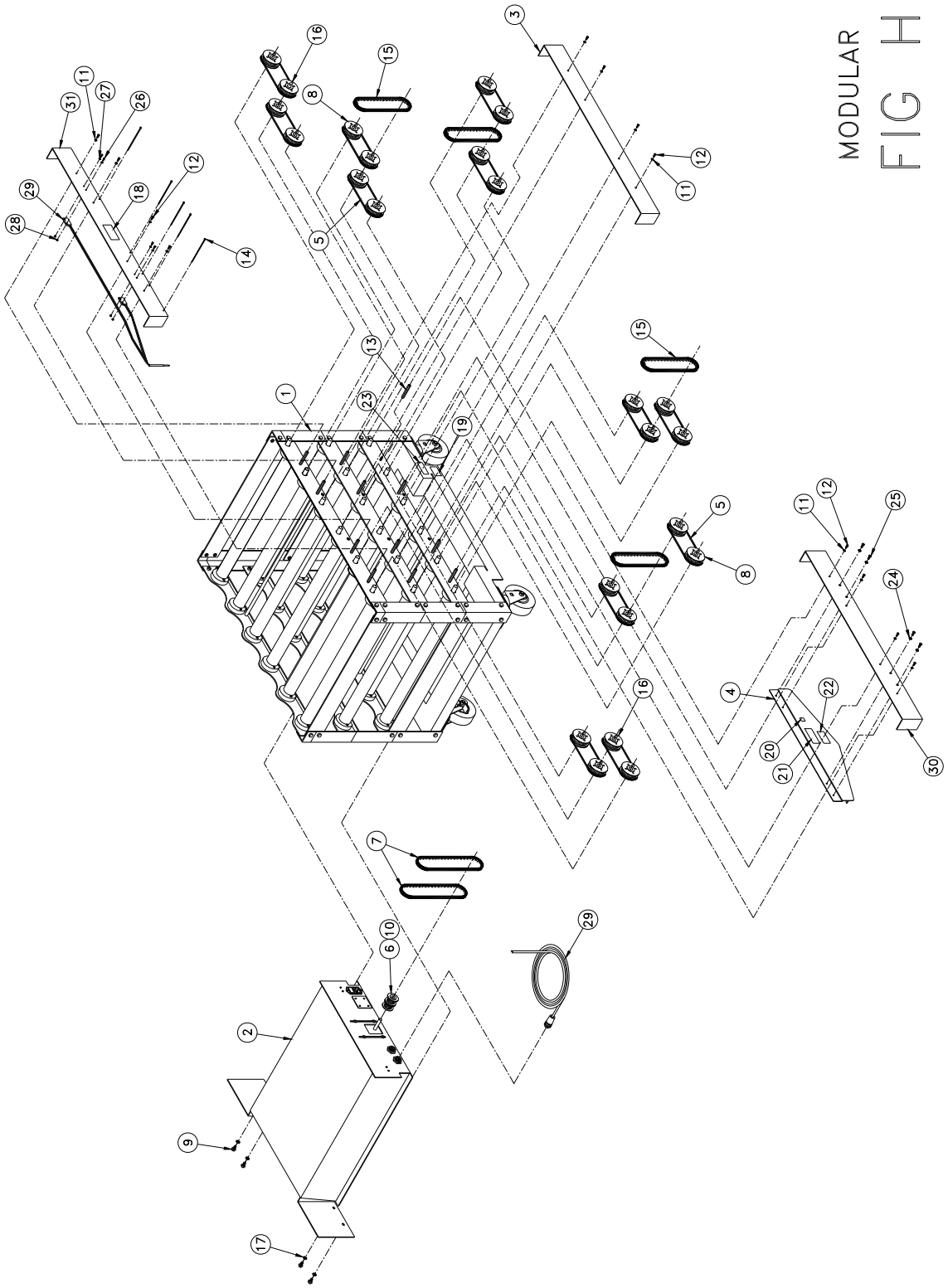


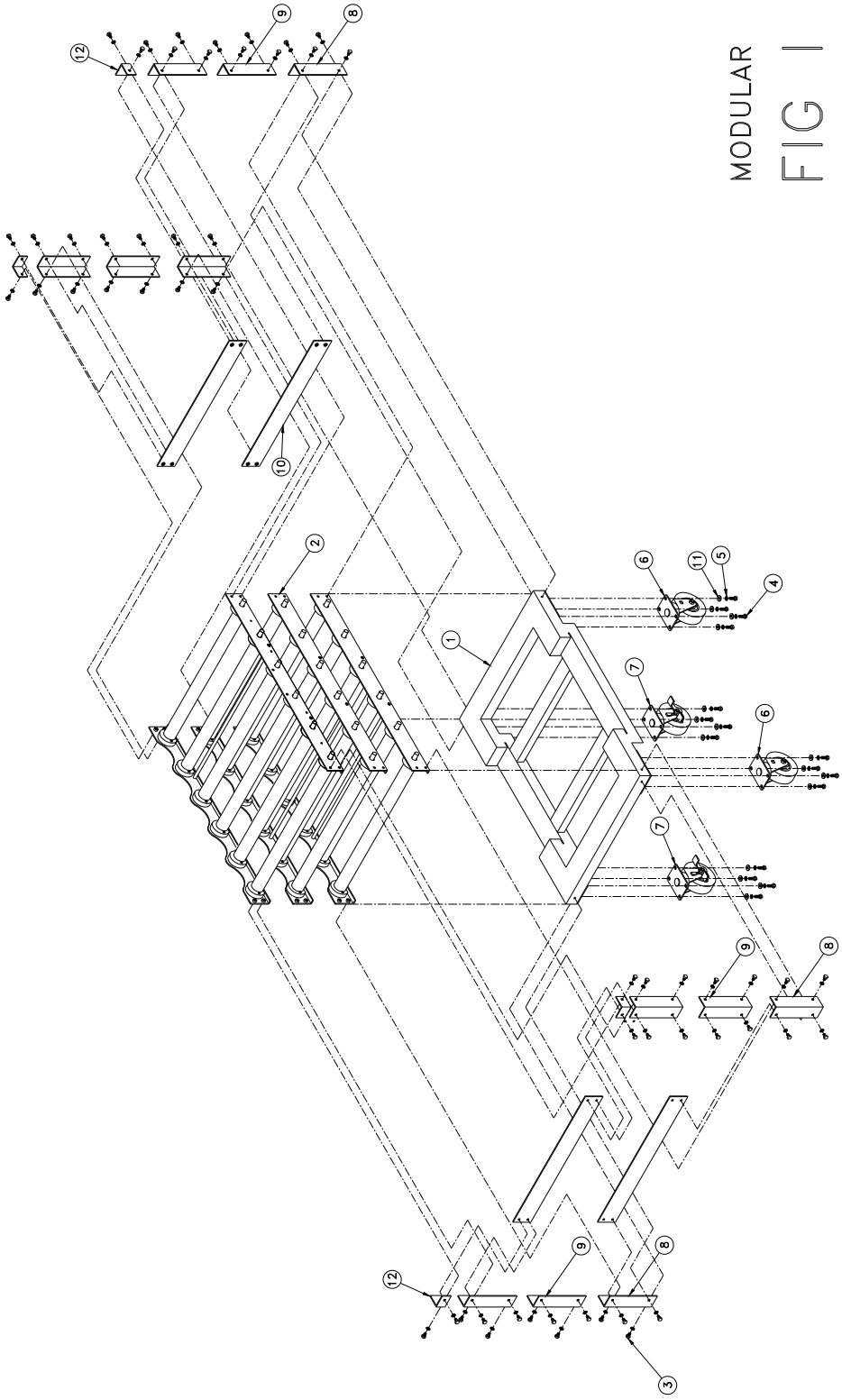
FIG E



MODULAR
FIG F


MODULAR
FIG G


MODULAR
FIG H


MODULAR
FIG 1

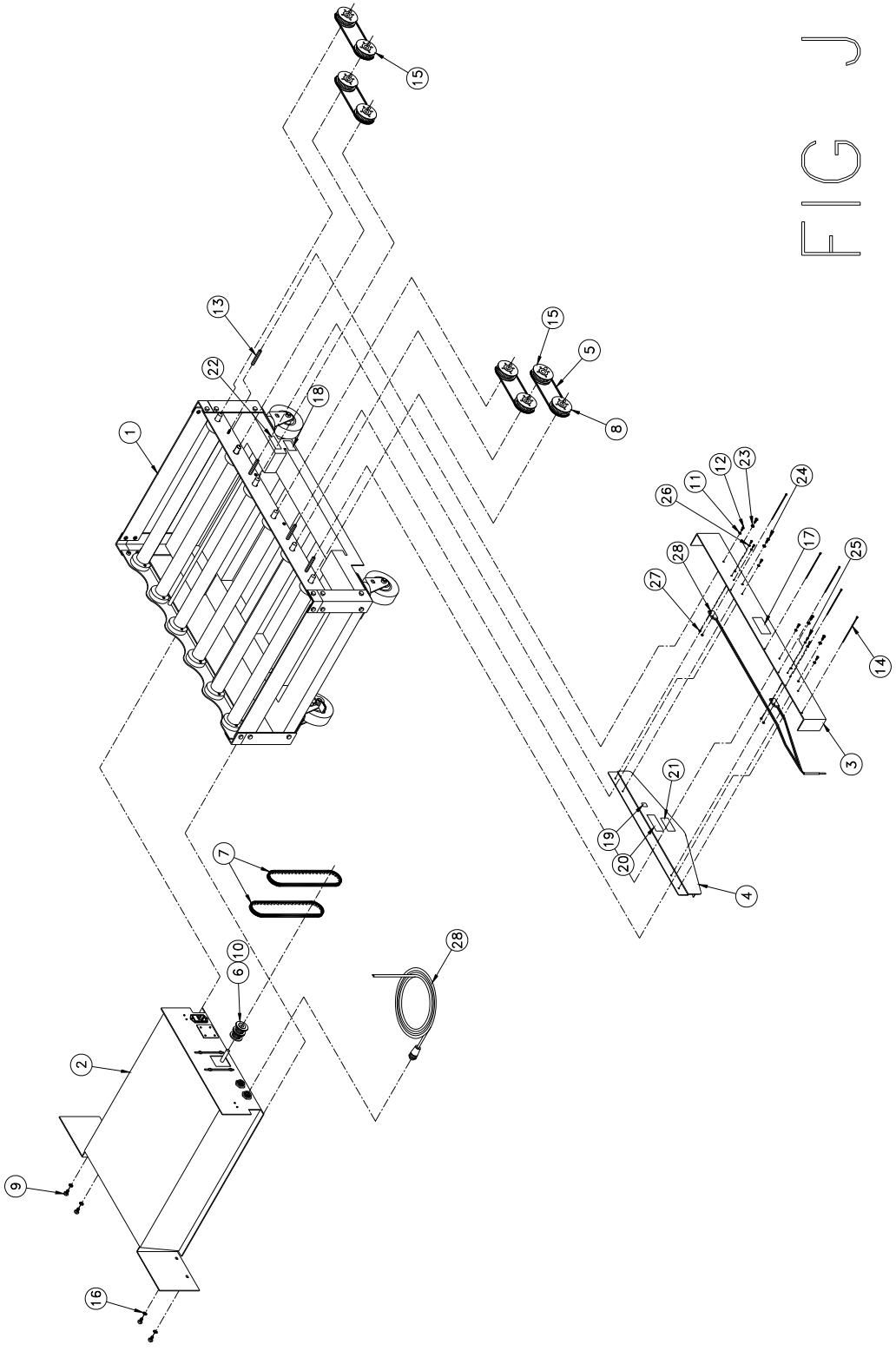

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FIG J

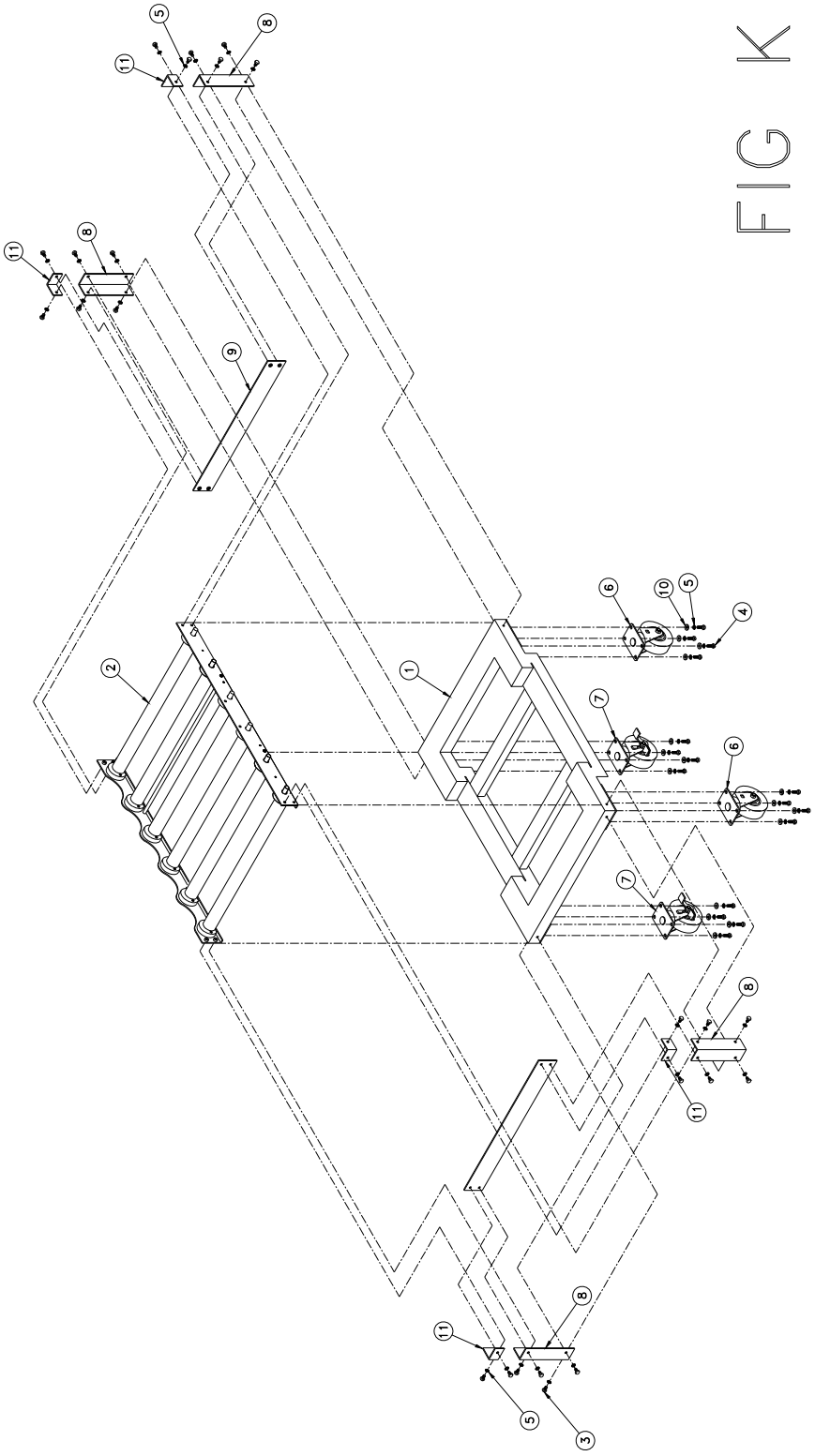
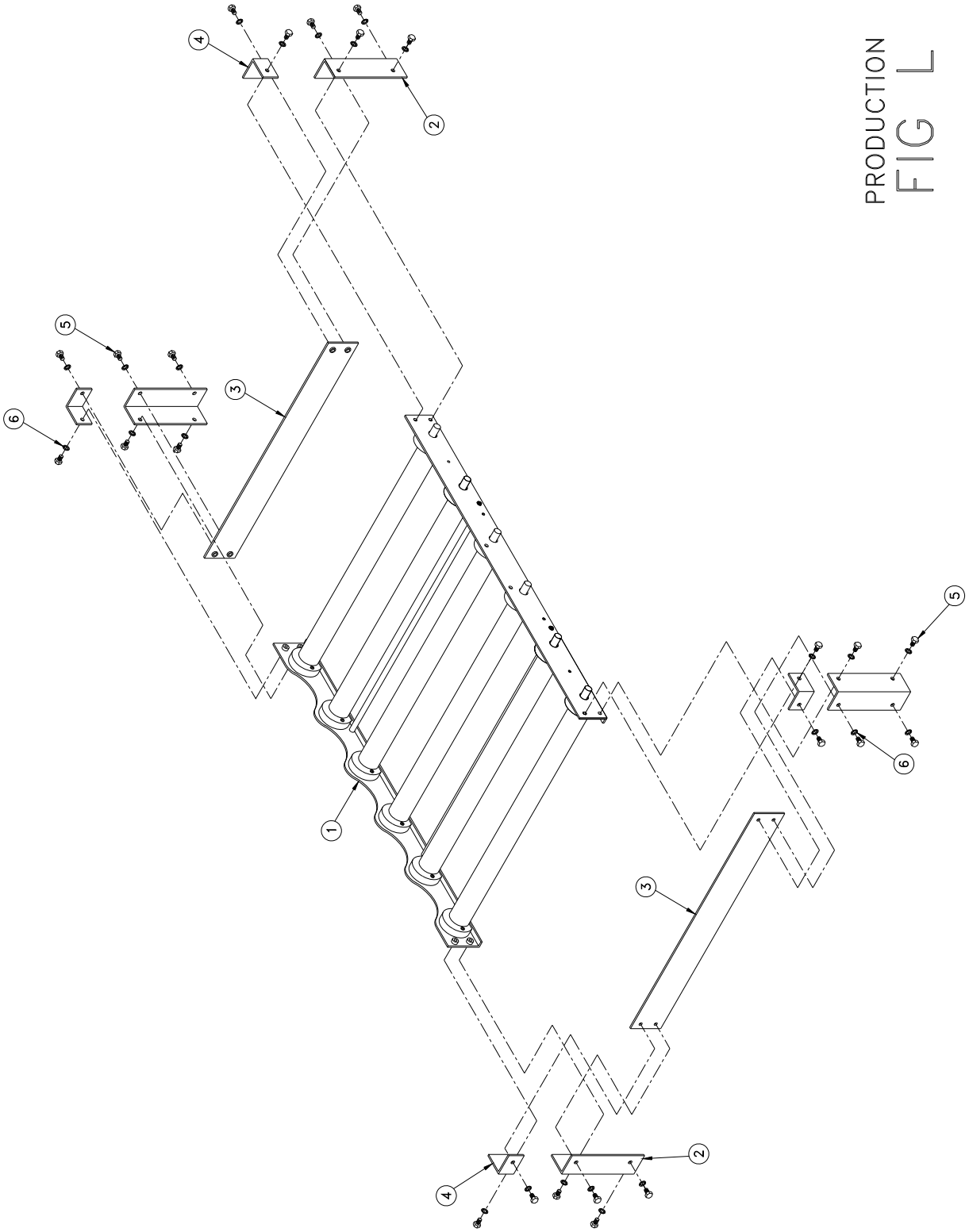
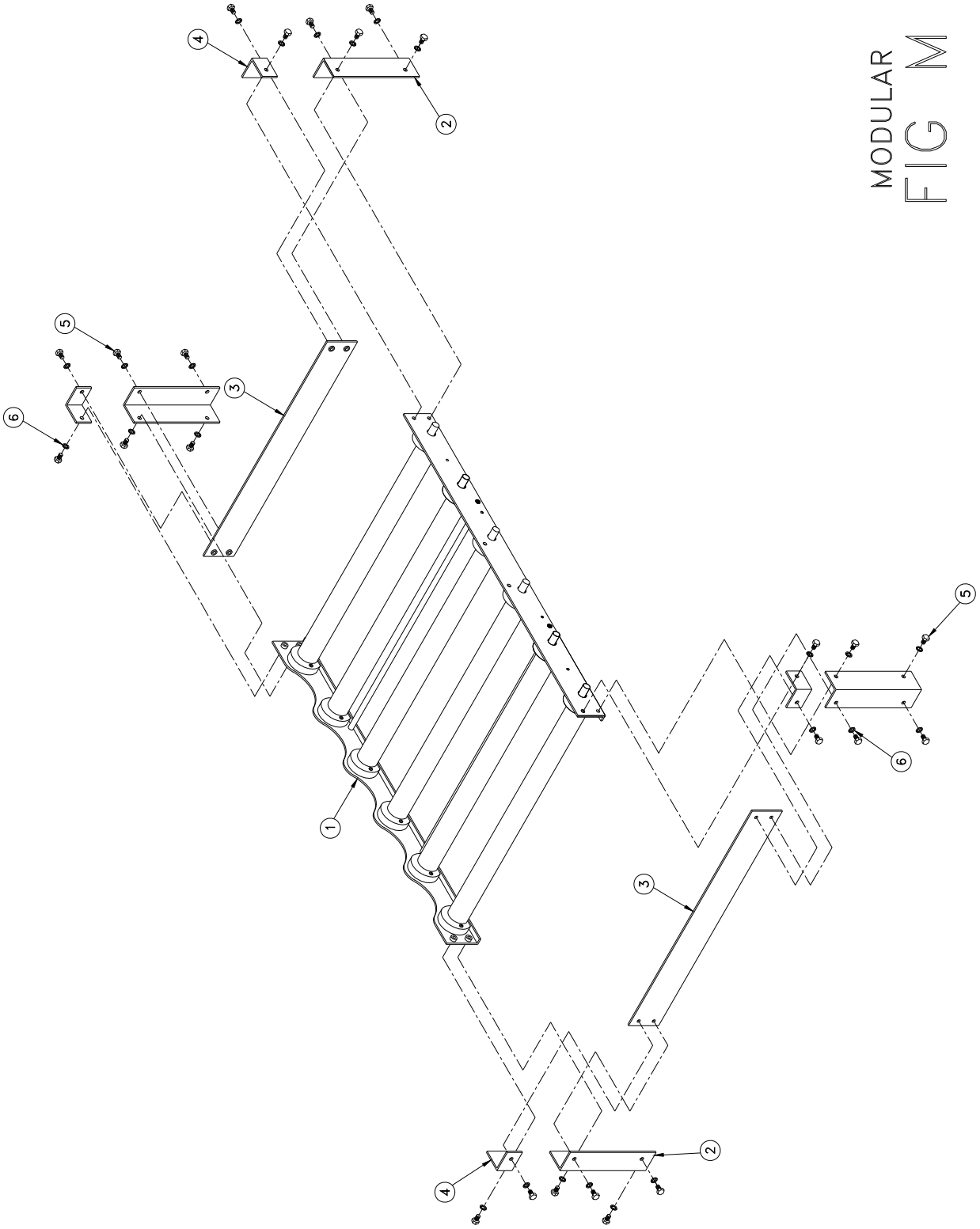


FIG K


PRODUCTION
FIG L


MODULAR
FIG M

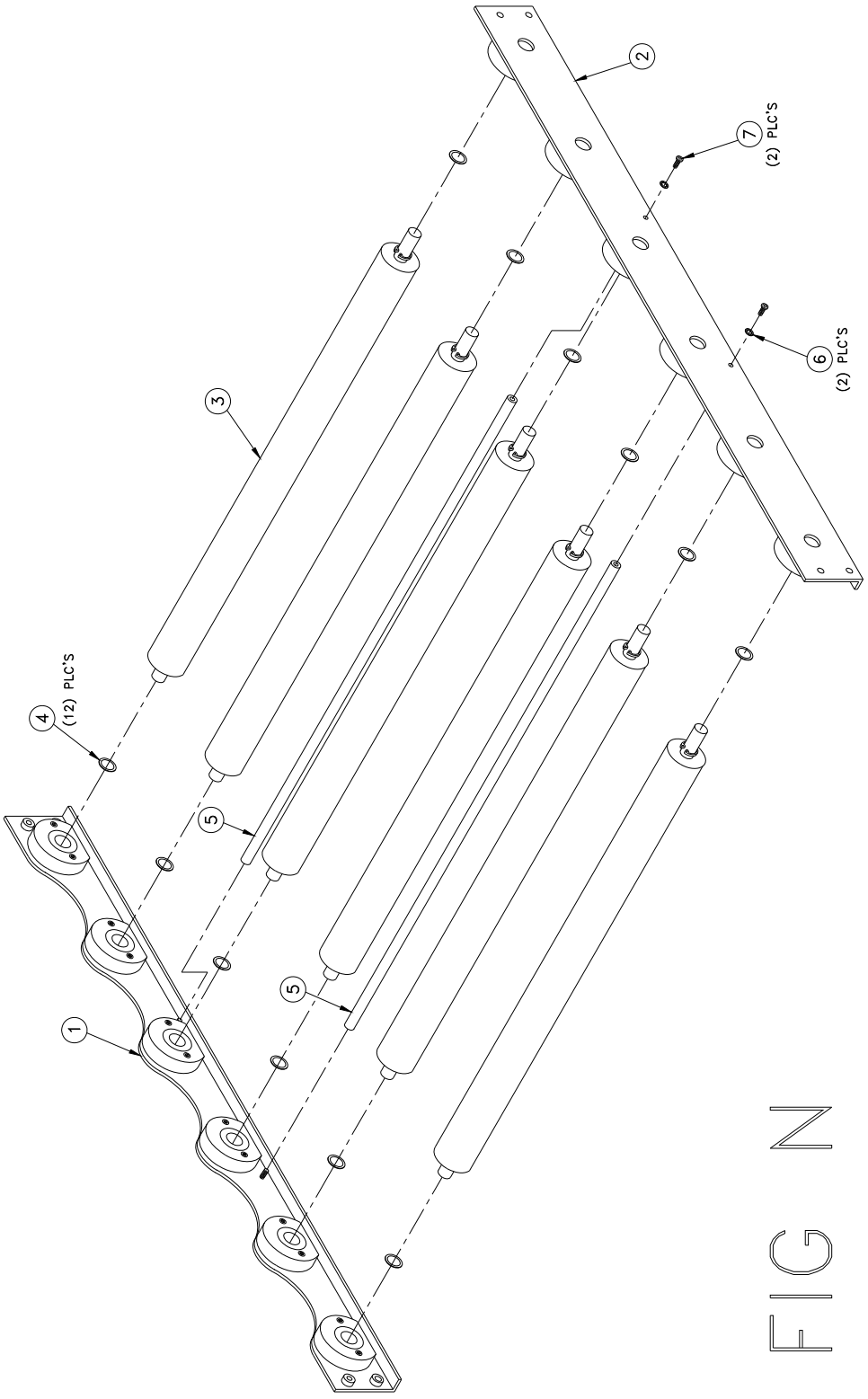


FIG N

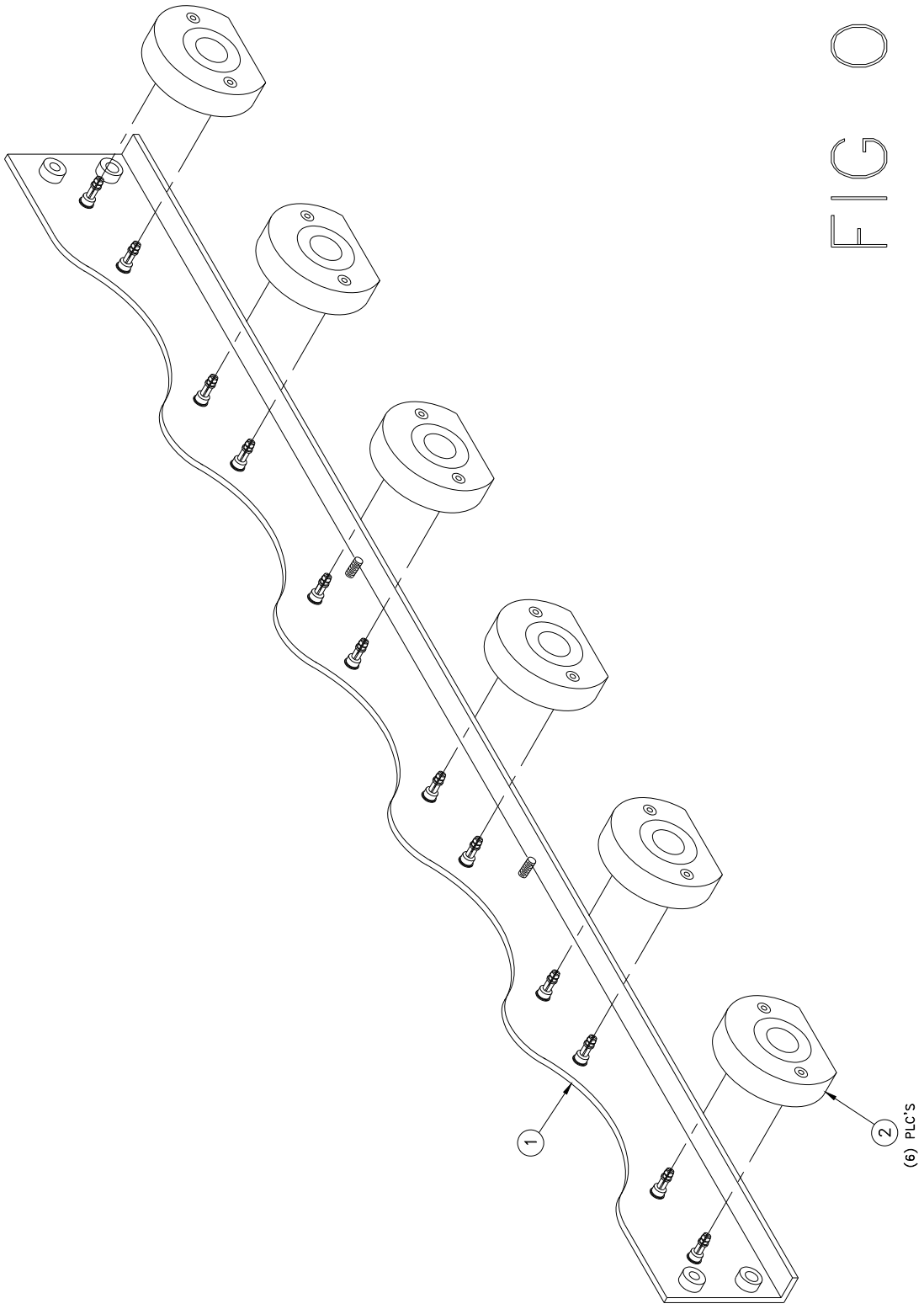


FIG O

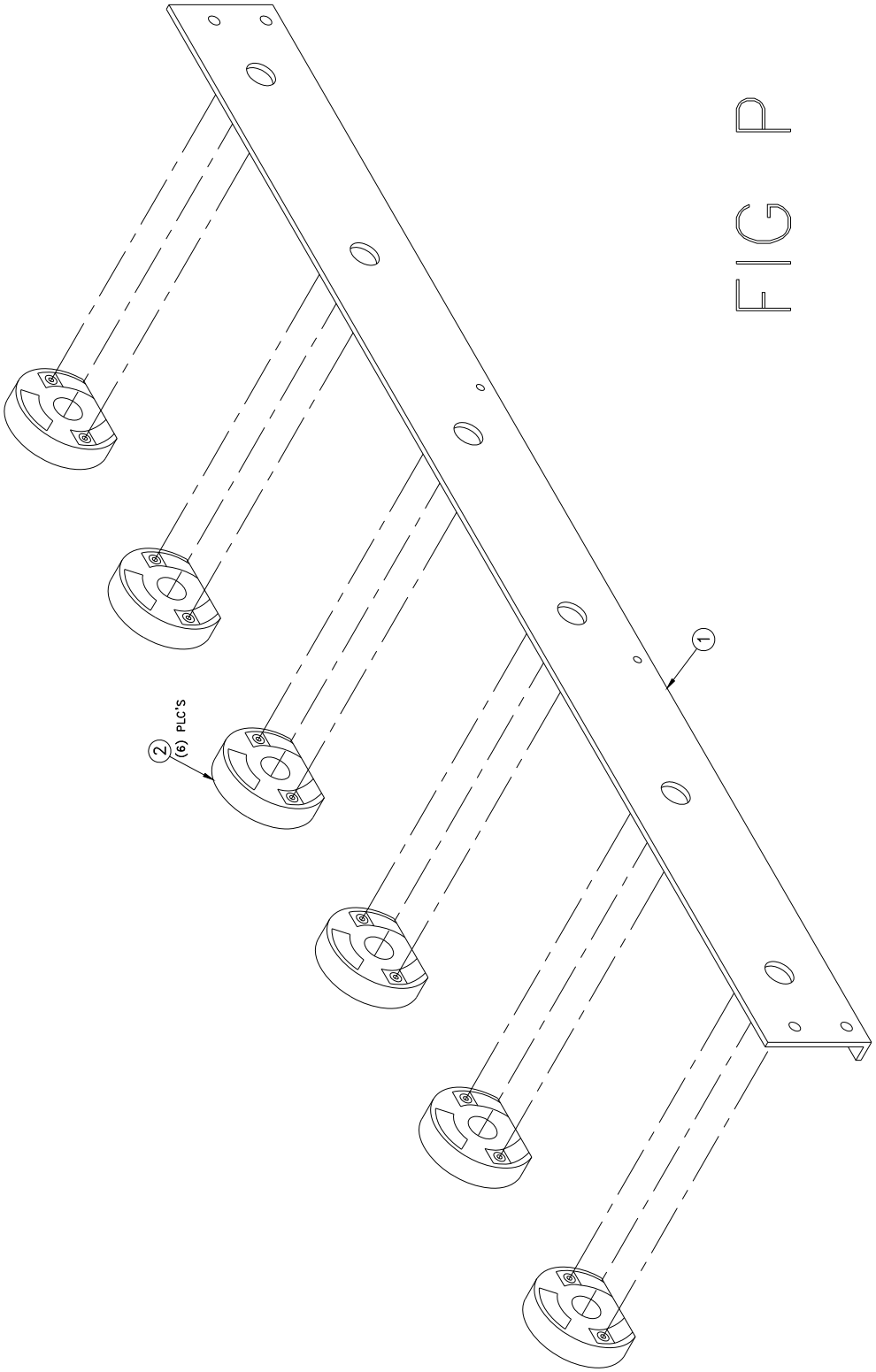
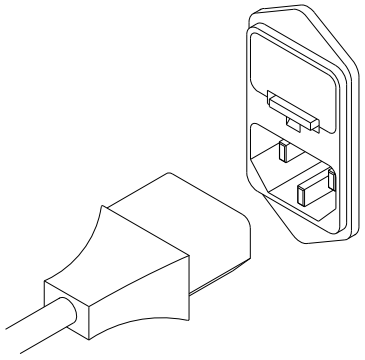
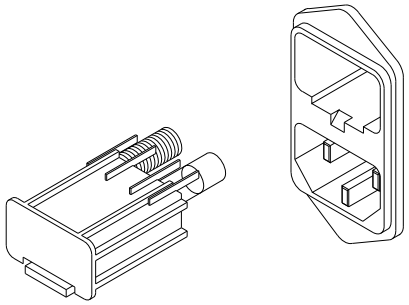


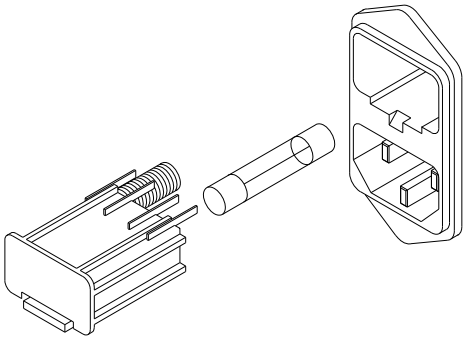
FIG P



1. Remove line cord from unit

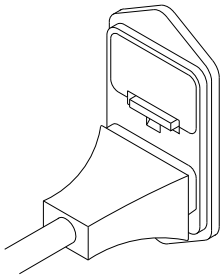


2. Use a small flat tipped screwdriver to remove fuse drawer from unit



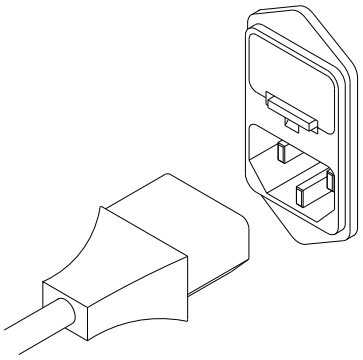
3. Remove fuse from drawer. Replace with fuse type:

1.0AT 3AG 250VAC

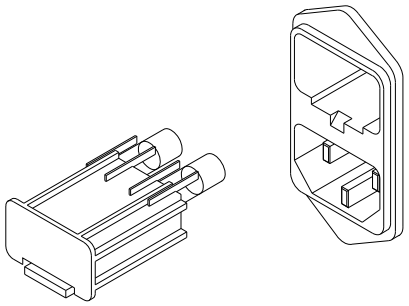


4. Reinsert fuse drawer and line cord into unit.

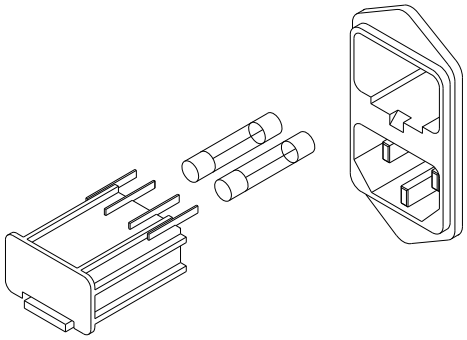
FIG. Q
120V



1. Remove line cord from unit

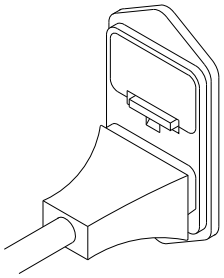


2. Use a small flat tipped screwdriver to remove fuse drawer from unit



3. Remove fuses from drawer. Replace with fuse type:

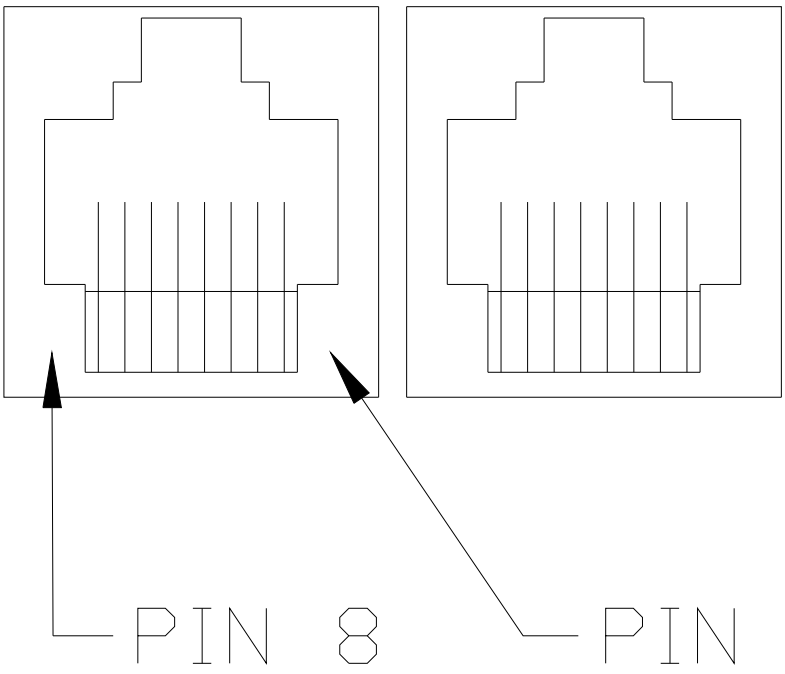
.630AT 5x20mm 250VAC



4. Reinsert fuse drawer and line cord into unit.

FIG. R
230V

FRONT PANEL COMMUNICATIONS / DRY CONTACT CONNECTOR



PIN FUNCTIONS

1) RS485 TX+	5) RS485 GND
2) RS485 TX-	6) RS485 GND
3) RS485 RX+	7) DRY CONTACT
4) RS485 RX-	8) DRY CONTACT

BOTH CONNECTORS
FUNCTIONALLY IDENTICAL

FIG S

TO RECONFIGURE DRY CONTACT FUNCTIONS

LOCATE JUMPER JP102 ON THE FRONT PANEL CPU BOARD (SEE FIG A)

PLACING JUMPER BLOCK ON UPPER 2 PINS WILL MAKE DRY CONTACT RELAY NORMALLY OPEN (NO) AND CLOSE ON ALARM CONDITION.

PLACING JUMPER BLOCK ON LOWER 2 PINS WILL MAKE DRY CONTACT RELAY NORMALLY CLOSED (NC) AND OPEN ON ALARM CONDITION.

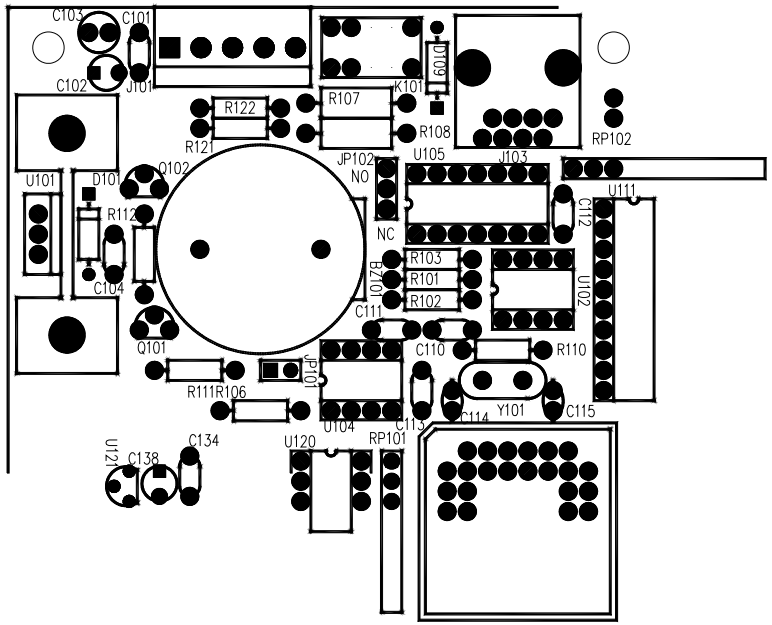


FIG T

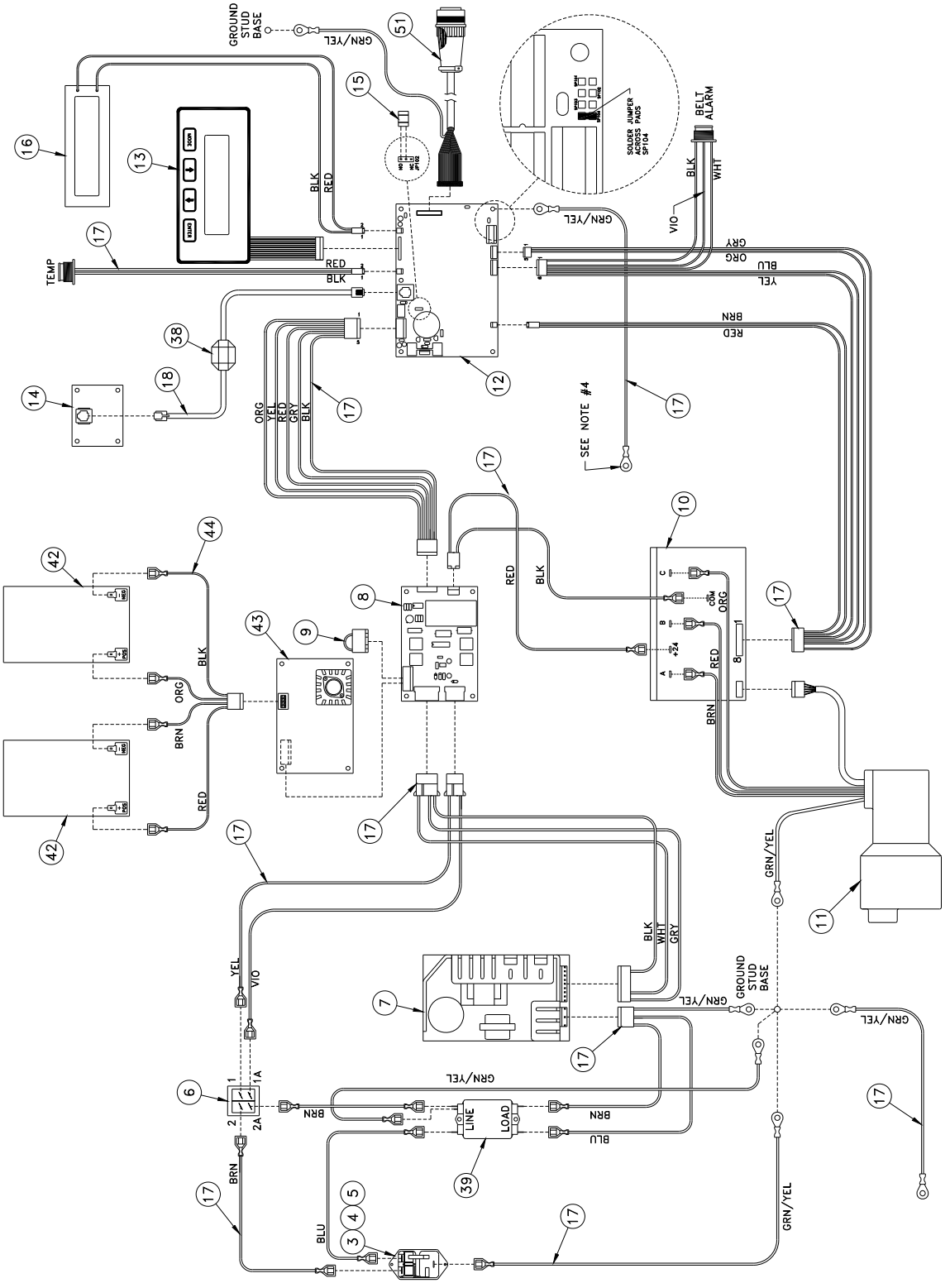

GROUND STUD BASE
GRN/YEL
BELT ALARM
SOLDER JUMPER ACROSS PADS SP104
BLK
WHT
VIO
TEMP
RED
BLK
ORG
GRY
YEL
BLU
BRN
SEE NOTE #4
ORG
YEL
RED
GRY
BLK
GRN/YEL
BLK
WHT
GRY
YEL
VIO
1A
2A
BRN
LINE
LOAD
BLU
GROUND STUD BASE
GRN/YEL
GRN/YEL
BRN
BLU
GRN/YEL

FIG U

1) Measure bottle at its maximum diameter. Traction rings and ridges must be considered in calculating maximum bottle diameter.

2) Make measurements at each end and use the average of the two measurements for programming the bottle diameter.

Use template at left or make a similar one to accurately determine bottle speed with a calibrated stopwatch.

FIG V

NOTICE

Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe A respecte toutes les exigences du Reglement sur le material du Canada

United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

12.0 WHEATON SCIENCE PRODUCTS

12.1 Declaration of Conformity

We, Wheaton Science Products
An Alcan Packaging Company
1501 North Tenth Street
Millville, NJ 08332-2093
USA

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 by Wheaton Science Products.

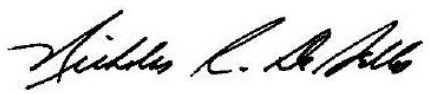
Designation of the device: R_2P Roller Apparatus

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

Standards: EN 50082-1
EN 55011 (CISPR 11): 1991
EN 55011 (CISPR 22): 1991
EN 61326: 1997
EN 61000-4-2: 1995
EN 61000-4-3: 1995
EN 61000-4-4: 1995
EN 61000-4-5: 1995
EN 61000-4-6: 1996
EN 61000-4-8: 1993
EN 61000-4-11: 1994

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

Standards: EN 61010-1; 1993, including Amendment 1 and 2



February 22, 2011

Nicholas R. DeBello, Date
Vice President Quality Management Systems