

LEB SERIES OVENS INSTRUCTION MANUAL

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SERVICE AND TECHNICAL SUPPORT

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Despatch
INDUSTRIES

NOTICE

Users of this equipment must comply with operating procedures and training of operation personnel as required by the Occupational Safety and Health Act (OSHA) of 1970, Section 6 and relevant safety standards, as well as other safety rules and regulations of state and local governments. Refer to the relevant safety standards in OSHA and National Fire Protection Association (NFPA), section 86 of 1990.

CAUTION

Setup and maintenance of the equipment should be performed by qualified personnel who are experienced in handling all facets of this type of system. Improper setup and operation of this equipment could cause an explosion that may result in equipment damage, personal injury or possible death.

Dear Customer,

Thank you for choosing Despatch Industries. We appreciate the opportunity to work with you and to meet your heat processing needs. We believe that you have selected the finest equipment available in the heat processing industry.

At Despatch, our service does not end after the purchase and delivery of our equipment. For this reason we have created the Service Products Division within Despatch. The Service Products Division features our Response Center for customer service. The Response Center will direct and track your service call to ensure satisfaction.

Whenever you need service or replacement parts, contact the Response Center at 1-800-473-7373: FAX 612-781-5353.

Thank you for choosing Despatch.

Sincerely,

Despatch

Standard Products Product Warranty

Products Covered by this Warranty

This warranty (the "Warranty") applies to the following Despatch products: LEB, LBB, LAC, LCC, LCD, LLC, LLD, RAD, RFD, LND, RTFO, TAD, TFD, PR, PN, PW, PTC and the following Ransco products: RTH, RTS, 900 Series.

Parts and Materials

Despatch warrants all parts and materials to be free from defects in material and workmanship for a period of:

1. five (5) years from date of shipment for laboratory oven electric heaters;
2. three (3) years from date of shipment for Protocol Plus and DES 2000 temperature controllers; and
3. one (1) year from the date of shipment, or 2,000 hours of operation, whichever occurs first, for all other components of products covered by this Warranty.

During the applicable Warranty period, Despatch will repair or replace, at Despatch's option, parts and materials covered by this Warranty.

Labor

During the first 90 days of the Warranty period, Despatch will pay labor costs incurred to remove defective parts and materials, and to reinstall repaired or replacement parts or materials; provided, however, that Despatch's obligation to pay such labor costs shall be subject to the limitation that the removal and/or reinstallation service must be performed by a Despatch-authorized technician from Despatch's worldwide network of factory-trained professionals at a location within the contiguous United States.

Transportation Costs

All transportation costs to transport defective parts or materials to Despatch, and to transport repaired or replacement parts or materials to Customer, shall be the responsibility of Despatch.

Terms and Conditions

This Warranty shall be deemed valid and binding upon Despatch if and only if the Customer:

1. installs, loads, operates, and maintains the covered product supplied hereunder in accordance with the instruction manual provided upon delivery and product labeling affixed to the subject equipment;
2. if applicable, follows the Emergency Procedure set forth in this Warranty; and
3. contacts Despatch's Helpline at 1-800-473-7373 for assistance in diagnosing and troubleshooting the problem immediately upon discovering any damage or malfunction.

Despatch's reasonable determination as to whether a repair, replacement, or service is covered by this Warranty shall be final and binding.

Exclusions

This Warranty DOES NOT cover:

1. damage or malfunctions, or expenses incurred in the process of diagnosing and/or repairing damage or malfunctions, resulting from any of the following: operator error, misuse, abuse, inadequate preventive maintenance, normal wear and tear,

service or modifications by other than Despatch authorized technicians, use of the covered product that is inconsistent with the operation manual or labeling, acts of nature (including, without limitation, floods, fire, earthquake, or acts of war or civil emergency), internal or external corrosion, or non-conforming utilities (including, without limitation, electrical, fuel supply, environmental and intake/exhaust installations);

2. repair or replacement of parts or materials designed and intended to be expendable or consumable; refrigerants, filters, lamps;
3. routine maintenance; or
4. labor costs incurred for troubleshooting, diagnostics, or testing (except for testing required to verify that a covered defective part or material has been repaired).

Limitations of Liability

Despatch shall not, in any event, be liable for indirect, special, consequential, incidental, or punitive damages or penalties of any kind, including, without limitation loss of revenue, profits or business opportunities resulting from interruption of process or production. In no event shall Despatch be liable for damages in excess of the amounts paid by Customer to Despatch with respect to the applicable product(s). This Warranty does not cover, and Despatch shall not be liable for any losses, costs, damages or expenses resulting from delays in diagnosing or repairing the products, supplying or obtaining replacement parts or materials, strikes, labor stoppages or shortages, fires, accidents, government acts or regulations, or any other causes beyond the control of Despatch.

Non-Compliance By Customer

Despatch reserves the right to suspend and withhold service under this Warranty in the event of non-compliance by the Customer to any terms and conditions of this Warranty or the applicable purchase order or invoice. Further, Despatch shall not be liable for any loss of production, expenses, and inconveniences incurred due to such suspension.

Customer Furnished Equipment Warranty Limitation

This Warranty does not cover diagnosis or repairs of defects in or caused by, lack of performance of, or fitness for purpose of customer-supplied parts or equipment unless specifically noted in the Despatch written order acceptance confirmation.

Performance Commitment

Despatch provides no guarantee of process performance or fitness for purpose, unless specifically noted otherwise in Despatch written order acceptance confirmation. Despatch is providing equipment with design parameters specific only to its equipment.

Procedure Upon Discovery of Defects and Emergencies

In the event Customer becomes aware of any defect in the applicable products, Customer must immediately: (a) shut off fuel or energy supply (gas and electricity), (b) call for emergency assistance, if needed, and (c) notify Despatch Service.

THE REPRESENTATION AND WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND IN LIEU OF, AND CUSTOMER HEREBY WAIVES AND DISCLAIMS RELIANCE UPON, ALL OTHER REPRESENTATIONS AND WARRANTIES OF EVERY KIND WHATSOEVER, WHETHER EXPRESS OR IMPLIED, OR ARISING BY OPERATION OF LAW OR IN EQUITY, OR BY COURSE OF PERFORMANCE OR DEALING OR USAGE OF TRADE, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY IS PERSONAL TO THE CUSTOMER AND MAY NOT BE TRANSFERRED OR ASSIGNED. ALL LIMITATIONS HEREUNDER, HOWEVER, SHALL BE BINDING ON ALL SUCCESSORS AND ASSIGNS OF CUSTOMER.

Service

Worldwide Phone 952-469-8230; Worldwide Fax 952-469-8193; North American Phone 800-473-7373
e-mail service@despatch.com; www.despatch.com

Despatch Industries

Advantage Service Assurance Program (ASAP)

CONTACT: DESPATCH SERVICE AGREEMENTS SPECIALIST at 800-473-7373 or 952-469-8230
or e-mail: service@despatch.com

Despatch continues to deliver exceptional products backed by a strong sense of responsibility and drive for long term customer satisfaction. Your partnership with Despatch can offer even higher value through your subscription to one of Despatch's Advantage Service Assurance Program(ASAP).

Warranty

Despatch's exclusive, comprehensive service programs start with the 1 year parts only warranty which is described on the other side of this document. This warranty can be expanded immediately to meet your most stringent service needs. Despatch Service Products Group will be able to answer your service questions and provide a quotation for the immediate expansion of your product warranty. Call 800-473-7373 or 952-469-8230; or e-mail service@despatch.com.

Immediate Service Response

The key to an effective service program is response. Wherever your location, Despatch is only a phone call away. Our U.S. and Canadian customers can reach Despatch at 1-800-473-7373. Worldwide customers can call 1-952-469-8230 or FAX 1-952-469-8193. Our Customer Service Technicians have over 150 years combined experience and access to detailed design and manufacturing documentation specific to your Despatch unit(s). This exacting level of service is a benefit only Despatch can provide and means that you can expect speedy, accurate and the most cost effective response.

Field Service Network

A worldwide network of factory trained Service Professionals is available to support your Despatch equipment. From routine repair to certified instrument calibration, the Despatch service network is positioned to respond to your needs. As a manufacturer of custom equipment, our service programs are customized to meet your specific needs regarding:

1. Service scope
2. Response time
3. Preventive maintenance frequency and content
4. Payment method

Sustained Service Support

At Despatch, long term customer satisfaction means more than just responding quickly and effectively to our customers' service needs. It means offering comprehensive customer support well beyond the scope and duration of our initial warranty. Despatch offers two basic service packages which are customized to each individual customer's need. These service packages are titled Full Service and Preventive Maintenance Plus+ service agreement products. Each is unique in the industry and offer the following benefits:

1. Priority response for minimum production interruption
2. Preventive maintenance for longer product life
3. Discounts on parts and services
4. Various payment plans to ease budgeting and recording expenses
5. Reduce purchase ordering costs

PREFACE

This manual is your guide to the Despatch oven. It is organized to give you the information you need quickly and easily.

An efficient way to learn about the oven would be to read the manual while working with the corresponding oven control system. This will give you practical hands-on experience with information in the manual and the oven.

Before operating the equipment, be sure you understand all of the technical information contained in this manual. Information skipped, not understood or misunderstood could create the possibility of operating the equipment in an unsafe manner. This can cause damage to the oven or personnel or reduce the efficiency of the equipment.

Read the entire
INTRODUCTION and
THEORY OF OPERATION
before installing the oven.

WARNING: Failure to heed warnings in this instruction manual and on the oven could result in personal injury, property damage or death.

Revision B: drawings updated

Revision C: drawings updated

Revision D: updates to Specifications section; addition of stand assembly and stacking kit assembly instructions

Revision E: Corrections, additional drawings added, addition of options and features in APPENDIX

Revision F: Update Drawings, Product Warranty, and hi-limit information

Revision G: Update Drawing

Revision H: Parts lists corrections in DRAWING AND SPARE PARTS LISTS section. Corrected Despatch address

Revision I: Update Product Warranty

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INTRODUCTION

The INTRODUCTION section provides an overview of the Despatch LEB Series Ovens. The LEB Series Ovens have the most effective heat distribution and the fastest processing time of any lab ovens their size. Air is discharged from the floor plate of the oven and distributed through the chamber.

Special Features

- The sturdy construction and high grade insulation of the Despatch LEB Series ovens contribute to excellent high temperature performance. Other special features include:
- Proportional digital CONTROL instrument to control temperature fluctuations.
- Manual reset HI-LIMIT instrument to protect the chamber workload as well as the oven itself.
- Unique Despatch design with a system of perforated stainless steel walls for the ultimate in temperature performance.
- Welded double wall construction and fiberglass insulation to reduce heat loss. Silicone rubber gaskets further minimize heat leakage.
- Rapid response heater with a five year warranty.
- Scratch-resistant baked enamel exterior and stainless steel interior for easy cleaning.
- Space-saving, stackable design.

SPECIFICATIONS

Dimensions

Model	Chamber Size inches (cm)			Capacity feet ³ (liters)	Overall Size inches (cm)			Shelves Provided on Shelf Centers	Maximum Number of Shelf Positions	Chamber Doors
	W	D	H		W	D	H			
LEB1-23	18 (46)	18 (46)	12 (30)	2.3 (65)	24 (61)	23 (58)	26 (66)	2 on 2"	5	1
LEB1-69	30 (76)	18 (46)	22 (56)	6.9 (195)	34 (86)	23 (58)	36 (91)	2 on 2"	10	2
LEB2-18	37 (94)	24 (61)	35 (89)	18 (510)	43 (102)	29 (74)	51 (130)	2 on 2"	16	2

Power

Line voltages may vary in some geographical locations. If your line voltage is much lower than the oven voltage rating, warm up time will be longer and motors may overload or run hot. If your line voltage is higher than nameplate rating, the motor may run hot and draw excessive amps.

If the line voltage varies more than 10% from the oven voltage rating, some electrical components such as relays, temperature controls, etc. may operate erratically.

Model	Volts	Amps	Hertz	Phase	Heater (KW)	Cord and Plug
LEB1-23	120 240*	10.4 5.2	50/60	1	1.2	Included, 15 Amp
LEB1-69	120 240*	20.4 10.2	50/60	1	2.4	None, Hardwired
LEB2-18	240	15.2	50/60	1	3.6	None, Hardwired

The LEB1-69 and LEB2-18 must be hardwired to the electric supply using 10AWG or larger wires suitable for at least 75°C (167° F).

Ovens designed for 240 volts (see name plate on oven) will operate satisfactorily on a minimum of 208 volts, but with a 25% reduction in heater power. If your power characteristics are lower, contact Despatch Industries.

* Order 240V conversion kit for 240V, on LEB1-23 and LEB1-69.

Temperature

Model		LEB		
		1-23	1-69	2-18
Time to Temperature (approximate minutes with no load)	25°C - 100°C	12	10	12
	25°C - 150°C	20	18	20
	25°C - 204°C	35	30	36
Recovery Time	100°C	2	2.4	2.2
Door Open 1 Min. (approximate minutes with no load)	150°C	4	4	4
	204°C	6	7	7
Operating Range w/20°C Ambient		30°C - 204°C		

Capacities

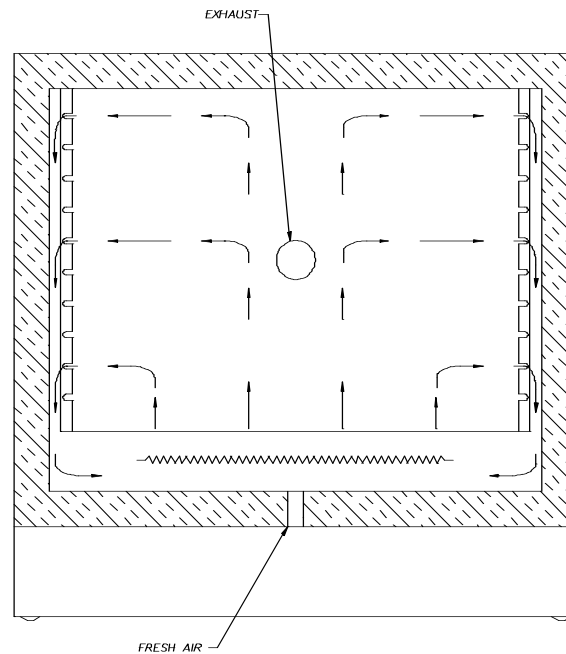
Model	Standard Shelf Capacity	Reinforced Shelf Capacity	Max Load Capacity	Stacked Max Load Capacity
LEB1-23	50 lbs. (23 kg.)	n/a	200 lbs. (91 kg.)	400 lbs. (182 kg.)
LEB1-69*	50 lbs. (23 kg.)	200 lbs. (91 kg.)	400 lbs. (182 kg.)	400 lbs. (182 kg.)
LEB2-18*	50 lbs. (23 kg.)	200 lbs. (91 kg.)	600 lbs. (273 kg.)	n/a

NOTE that the shelves supplied with the LEB1-69 and 2-18 are reinforced. The standard shelf is optional for these ovens.

THEORY OF OPERATION

The Despatch LEB Series Ovens have the most economical approach when productivity and ease of operation are the deciding factors. These ovens are especially useful for testing, preheating, sterilizing, drying, aging and curing as well as other production applications. Gravity convected airflow with precision digital control to deliver fast processing. The overall result is efficient productivity under strenuous conditions. The LEB Series Ovens are precise and practical.

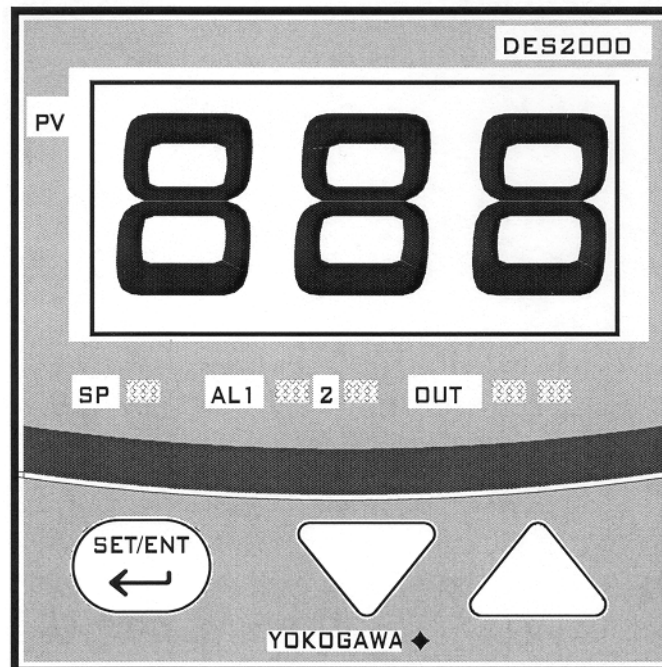
The unique Despatch design moves gravity convected heat through stainless steel ducts on each side. The chamber can be densely loaded without interfering with the process. Air temperature near the sensing element in the chamber is within 1°C of the process temperature appearing on the digital display. For your convenience the fresh air intake is fixed. The exhaust rate is regulated by a damper on the back of the unit.



Gravity Convected Airflow in the Despatch LEB Oven


CONTROL Instrument

The oven is equipped with a microprocessor based digital control instrument. The Despatch CONTROL instrument has been configured as a proportional controller and set to its optimum operating values. Initially, the CONTROL will allow the heater to operate at full power. However; as the actual oven temperature reaches the setpoint, the Proportional Control will cycle the heater on and off, minimizing process temperature fluctuations.



CONTROL Instrument

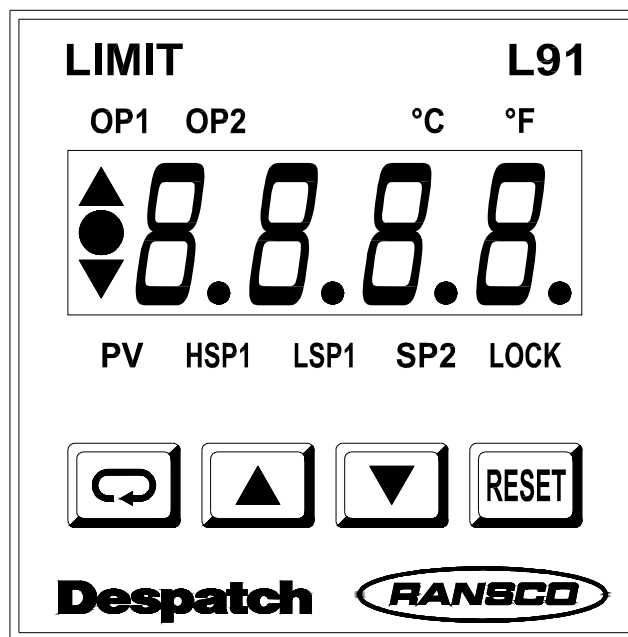
CONTROL Instrument Features

Features	Description
Main (PV) Display	Displays the actual oven temperature or displays the setpoint when the set key is pressed. Displays parameter code and value.
 Key	Switches between PV and SP displays. Enters the data changed by the ▲ or ▼ keys. Switches through parameter displays.
Down Key ▼	Decreases a setpoint or setup parameter.
Up Key ▲	Increases a setpoint or setup parameter.
LED SP Indicator	Lights when the setpoint value is displayed.
LED OUT Indicator	Lights when the control is calling for heat.
LED AL1-2 Indicator	N/A


HI-LIMIT Instrument

The oven is equipped with a HI-LIMIT instrument. The purpose of the HI-LIMIT instrument is to provide a protective measure for the product and/or the oven itself. If the setting on the HI-LIMIT is exceeded, the heating process will discontinue, thus protecting the product and/or the oven.

Set the HI-LIMIT instrument to a temperature 10°C - 14°C higher than the CONTROL instrument setpoint or a temperature that should not be exceeded in the process. If the setting on the HI-LIMIT instrument is exceeded the heater will shut down. The HI-LIMIT instrument must be manually reset by pushing the **RESET** button on the HI-LIMIT instrument.



HI-LIMIT Instrument

Features	Description
OP1	Output 1 status value. (OP2 normally not used for LBB Ovens).
°C/°F	Degree indicator.
PV	Process value.
HSP1	High limit setpoint 1. (LSP1 normally not used for LBB Ovens).
SP2	Setpoint 2 for output 2 (normally not used for LBB Ovens).
LOCK	Lock status indicator.
	Scroll Key, used for advancing available displays.
Up Key ▲	Increases a setpoint or mode parameter.
Down Key ▼	Decreases a setpoint or mode parameter.
RESET	Reset the high limit, return to normal display.

Product HI-LIMIT Instrument

If the product being processed has a critical high temperature limit, the HI-LIMIT instrument should be used as a product HI-LIMIT instrument. The HI-LIMIT instrument should be set to a temperature somewhat below the temperature at which the product could be damaged.

Oven HI-LIMIT Instrument

If the product does not have a critical high temperature limit, the HI-LIMIT can be used as an oven HI-LIMIT instrument. An oven HI-LIMIT instrument protects oven equipment. The HI-LIMIT should be set at 204°C

Oven Theory

The oven has an efficient gravity convected airflow to 204°C (400°F). A gravity convected oven relies on gravity to move air through the chamber. The process of moving air by relying on gravity is a slow responding process. Thus, the overall chamber temperature takes a finite amount of time (roughly a few minutes) to soak in at the desired operating temperature. The time that it takes the unit to soak in at setpoint is related to such parameters as chamber area, load mass, and exhaust rate. The unique Despatch design and CONTROL action compensates for this fact.

The oven uses an indicating microprocessor based digital control that displays the actual chamber temperature at the sensing point. Despatch strategically locates the CONTROL's temperature sensor to optimize the control action for the entire chamber for various load conditions. The CONTROL display will fluctuate a few degrees around the setpoint, but the overall chamber temperature will remain very stable. The underlying reason for this is that the display is showing temperature fluctuations at the temperature sensor location, not the overall chamber temperature. The strategic location of the sensor compensates for delays in gravity convection and enhances the performance and temperature control of the oven. The oven has been engineered to have an overall result of quality productivity while still maintaining an economical approach and ease of use.

INSTRUCTIONS

The INSTRUCTIONS section provides directions on unpacking, installation, operation and maintenance of the Despatch LEB Series Ovens.

Unpacking and Inspection

Remove all packing materials and thoroughly inspect the oven for damage of any kind that could have occurred during shipment.

- See whether the carton and plastic cover sheet inside carton are still in good condition.
- Look at all outside surfaces and corners of the oven for scratches and dents.
- Check the oven controls and indicators for normal movement, bent shafts, cracks, chips or missing parts such as knobs and lenses.
- Check the door and latch for smooth operation.

If there is damage, and it could have happened during shipment follow these instructions.

1. Contact the shipper immediately and file a written damage claim.
2. Contact Despatch Industries to report your findings and to order replacement parts for those that were damaged or missing.
3. Please send a copy of your filed damage claims to Despatch.

Next, check to make sure you have received all the required materials. Your shipment should include:

- One (1) Despatch oven,
- One (1) Instruction manual,
- One (1) Warranty card,
- Two (2) Shelves
- One (1) Damper assembly

If any of these items are missing from the packaged contents, contact Despatch Industries to have the appropriate materials forwarded to you.

Setup

1. Place oven on a bench top or an optional stand.

The oven must have a minimum of two (2) inches clearance in the rear to provide proper ventilation. The oven may be placed next to another cabinet, or next to another oven, with three (3) inch clearance (the doors will still open).

Make sure oven is level and plumb; this will assure proper heat distribution and operation of all mechanical components.

2. Identify correct power source indicated on the specification plate.

WARNING: All grounding and safety equipment must be in compliance with applicable codes, ordinances and accepted safe practices.

3. Plug or hardwire oven directly to the electric supply.

Operating

Users and operators of this oven must comply with operating procedures and training of operating personnel as required by the Occupational Safety and Health Act (OSHA) of 1970, Section 5 and relevant safety standards, and other safety rules and regulations of state and local governments. Refer to the relevant OSHA and National Fire Protection Association (NFPA) safety standards.

WARNING: Do not use oven in wet, corrosive or explosive atmospheres unless this oven is specifically designed for a special atmosphere.

Loading the Oven

Despatch Industries cannot be responsible for either the process or process temperature used, or for the quality of the product being processed. It is the responsibility of the purchaser and operator to see that the product undergoing processing in a Despatch oven is adequately protected from damage.

WARNING: Never operate oven at a temperature in excess of the maximum operating temperature of 204°C (400°F).

Carefully following the instructions in this manual will help the purchaser and operator in fulfilling that responsibility.

When loading the oven avoid spills of anything onto the heater elements or onto the floor of the oven. Do not place the load on the oven floor plate. This may cause the load to heat unevenly and the weight may cause shorting out of the heater elements. Use the shelves provided.

The two shelves are designed to be pulled out about half way without tipping. The support capacity of the shelves is listed in the Capacities Table in the Specifications section in this manual. Do not overload the shelves.

Distribute the workload evenly so that airflow is not restricted. Do not overfill your oven. The workload should not take up more than two-thirds of any dimension of the inside cavity.

Pre-Startup Checklist

- ✓ Know the system. Read this manual carefully. Make use of its instructions and explanations. The know how of safe, continuous, satisfactory, trouble-free operation depends primarily on the degree of your understanding of the system and of your willingness to keep all parts in proper operating condition.
- ✓ Check line voltage. Voltage must correspond to nameplate requirements of motors and controls. Refer to the section on power connections in the INTRODUCTION of this manual.

- ✓ Fresh air, exhaust, and electrical cabinet openings. Do not be careless about restrictions in and around the fresh air and exhaust openings. Under no condition permit them to become so filled with dirt that they appreciably reduce the air quantity. Refer to the Set-up instructions in this manual.

NOTE:
The exhaust vent may have to be adjusted to achieve maximum performance at various operating temperatures.

- ✓ Ventilation. There is an exhaust opening in the rear of the unit.

The exhaust vent may have to be closed to reach the maximum temperature of 204°C, especially if operating on 208 volts. They may need to be opened to operate properly at the lower range of the oven's design.

- ✓ Helpful hints

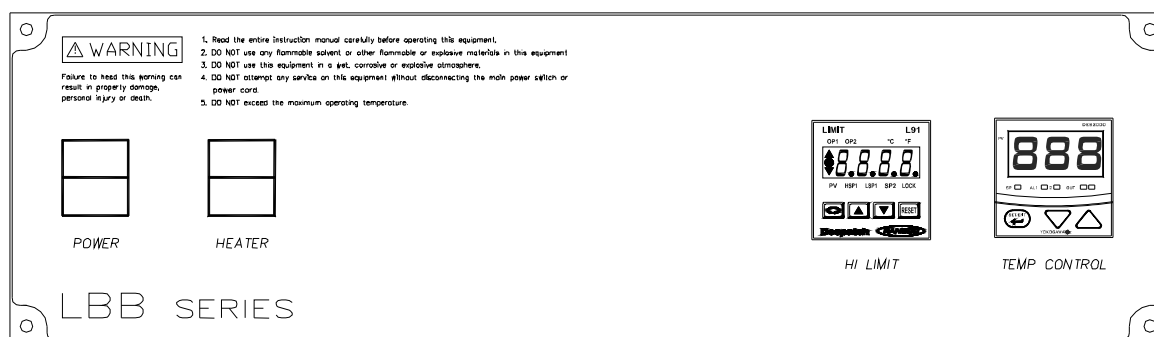
- For drying ovens, open vent to prevent buildup of moisture.
- For sample heating, close the vent when no ventilation is required.

Startup

For fastest oven heat-up time, close the exhaust vent. After the desired temperature is reached, the vent may be adjusted as needed.

WARNING: Do not use flammable solvent or flammable material in this oven. Do not process closed containers of any substance or liquid in this oven because they may explode under heat.



1. Start oven.
 - a. Turn **POWER** switch to on. The circulating fan will start.
 - b. Set exhaust vent to desired opening. The vent may have to be adjusted to achieve maximum performance at various operating temperatures.



LBB Control Panel

2. Enter setpoint on the HI-LIMIT instrument. Set HI-LIMIT instrument to a temperature 10°C to 14°C higher than the setpoint or to a temperature that should not be exceeded in the process.
 - a. If the **LOCK** on the HI-LIMIT is lit, press and hold the **RESET** for four (4) seconds to enable the **▲** and **▼** keys
 - b. Press **↻** key, HSP1 will be lit.
 - c. Use **▲** key and **▼** key to set hi limit temperature.
 - d. Press **RESET** or **↻** once to return (also enters the value) to the process variable PV mode.
3. Enter setpoint on the CONTROL instrument.
 - a. Press **SET/ENT** key until the SP LED is lit.
 - b. Use **▲** key and **▼** key to set operating temperature.

NOTE:
If the HI-LIMIT instrument is exceeded the heater will shut down. Reset the HI-LIMIT by pushing **RESET** on the HI-LIMIT instrument.

- c. Press  key to enter setpoint.
 - d. Press  key again to display process temperature.
4. Turn HEATER switch to the on position. When process value on the CONTROL reaches setpoint, the OUT LED will cycle on and off to maintain the temperature setpoint. The OUT LED will be lit when the control is calling for heat.
 5. Turn the HEATER switch off after heating cycle is complete. Do not turn the fan off until the oven chamber temperature is below 100°C (212°F).

Control Instructions

The oven has been tested and preset at the factory for normal operating conditions. In most applications, it will not be necessary to alter the oven's settings, except for the Setpoint. This section contains information and reference material to change Setpoint, display from °C to °F, and access the Operating and Set-up modes. This section also covers oven zone calibration for the CONTROL.




WARNING: Failure to heed warnings in this manual and on the oven could result in death, personal injury or property damage.

The CONTROL instrument was carefully programmed at the factory using the Operating and Set-up modes. The parameters that may be accessed include tuning and display functions, and thermocouple selection.

The Oven Zone Calibration section covers the procedure necessary to recalibrate the CONTROL. Recalibration may be necessary to align the CONTROL for a specific operating condition.

Changing Setpoint

To enter Setpoint on the CONTROL instrument:

1. Press , the SP LED will be lit.
2. Use ▲ key or ▼ key to set operating temperature. The right decimal point LED will flash indicating that the Setpoint is being changed. This will stop flashing when the new value has been entered.
3. Press  to enter Setpoint.
4. Press  again to display process temperature.

WARNING: Never operate oven at a temperature in excess of the maximum operating temperature of 204°C (400°F).





Parameter Programming Mode

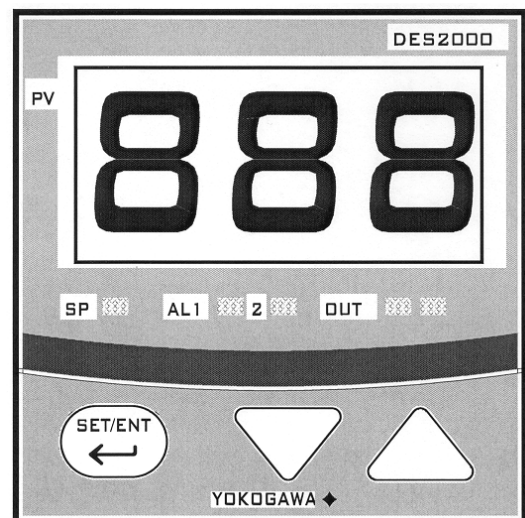
The control parameters are set through the Operating and Set-up modes. In most applications, it is not necessary to alter the oven settings. The following instructions describe how to access, view and, if desired, change the parameters.

WARNING: Make sure you understand what you are changing before doing so. Changing the program parameters will alter the functions of the CONTROL.

Once the Operating and Set-up modes are accessed, the SP LED will start blinking on and off. The CONTROL will not allow the display to be altered improperly.

The CONTROL will automatically exit the Parameter Programming mode if no keys are pressed for about 2 minutes.

1. Press  for three (3) seconds.
2. Press the  until the desired parameter is displayed. See Operating and Set-up Parameter tables on the following pages.
3. Press the ▲ or ▼ to display value.
4. Use the ▲ or ▼ to the desired setting.
5. Press the  to enter the value.
6. Press and hold the  for three (3) seconds to return to the display mode.



CONTROL Instrument

Operating Parameter Outline

Code	Name	Settings
CtL	Control Mode	PID
At	Auto-tuning	OFF
P	Proportional Band	4 (8 if °F)*
I	Integral Time	15
d	Derivative Time	0
nr	Manual Reset (only when I & d are OFF)	N/A
HyS	Hysteresis (only when CtL is ONF, change CtL to PID)	N/A
Ct	Cycle Time	1
FL	Input Filter	0
bS	PV Bias (Offset)	0
LoC	Key Lock	1

*If P is not displayed the Control Mode (**CtL**) must be first set to **PID**.

CtL Control Mode - This parameter determines whether controller functions as a time proportional or an on/off control.

At Auto-tuning – **OFF** for PID tuning, **ON** for controller to tune process.

P Proportional Band - Expressed in degrees. This value determines the band width on both sides of the setpoint within which the control provides proportional control.

I Integral Time - Expressed in seconds. This parameter corrects for errors in actual temperature versus the setpoint.

D Derivative Time - Expressed in seconds. This effect of the derivative time is in direct proportion to the time setting.

nr Manual Reset - Expressed in percent. Controller outputs this value when process variable equals setpoint (Only if **I = 0**).

HyS Hysteresis - Expressed in degrees. When **CtL = OFF**, this value determines the change in temperature needed to turn controller output from full off to full on.

Ct Cycle Time - Expressed in seconds. This is the total time for one ON/OFF cycle of the controller output during the proportional action.

FL Input Filter – Expressed in seconds. This function should be used when the PV may fluctuate greatly (i.e. input signal contains noise).

bS PV Bias - Expressed in degrees from –199 to 999. This parameter is used to set the actual oven temperature to the controller display.

LoC Key Lock - This provides levels of access to the controller.

0 = No key lock, full access to controller.



1 = Prevents changing of all parameters except setpoint.

2 = Prevents all parameters from being changed including the setpoint.

-1 = Set to enter the Setup parameter setting display.

The controller is set to **LoC=1** at the factory. This prevents inadvertent changing of control parameters with the exception of setpoint.

If it becomes necessary to alter control parameters, change the **LoC=1** to **LoC=0**. Follow the parameter programming mode found earlier in this manual.

When **LoC = -1**, the parameters are displayed in the order shown in the Set-Up Parameters section, below. **Note:** If you are unable to change the setup parameters, go back out and change the **LoC = 0**. Press the  key until **LoC** appears again, change **LoC = -1** and press the  key.

Set-Up Parameters

Set-up Parameter Outline

Code	Name	Settings
In	Input Type	5 (35 if °F)
SPH	Setpoint High	204 (400 if °F)
SPL	Setpoint Low	30 (86 if °F)
Dr	Direct/Reverse Action	0
DSP	PV/SP Display	0

In Input Type – This parameter is set for type of input and whether PV is in °C or °F.

SPH The maximum setpoint limit for oven. The user cannot set the setpoint above the maximum setpoint.










SPL The minimum setpoint limit of oven. The user cannot change the setpoint below this lower setpoint limit.

dr Direct/Reverse action. This value is set for **0** (reverse action).

dSP Priority of PV/SP display. This parameter either displays the PV (process variable) or SP (setpoint). **0** = process variable, and **1** = setpoint.

Changing Display From °C To °F

The control can be configured for either °C or °F. Use the following steps to change control from displaying °C to °F.

1. Press and hold the  for three (3) seconds.
2. The display will read **CtL**. The SP LED will flash indicating that Operating Parameter mode has been entered.
3. Press the  until **LoC** appears on the display. Press the ▲ or ▼ to enter the parameter.
4. Press the ▼ to set the value to **-1**. The SP LED will flash rapidly, indicating that the Set-Up Parameter mode has been entered.
5. Press the  to enter the value. The display will read **In**. Press the ▲ or ▼ to enter the parameter. **Note:** If you are unable to change the setup parameters, go back out and change the **LoC = 0**. Press the  key until **LoC** appears again, change **LoC = -1** and press the  key.
6. Enter a value of **35**. The right decimal point LED will flash indicating that the setpoint is being changed. This will stop flashing when the new value has been entered.
7. Press the  to enter the value.
8. Press the  until **SPH** is displayed. Press the ▲ or ▼ to enter the parameter.
9. Enter a value of **400**.
10. Press the  to enter the value.
11. Repeat steps 12 –14 for **SPL**; the value is **32**.
12. Press and hold the  for three (3) seconds to return to the operation mode. The control now reads °F. Enter the desired setpoint.
13. Refer to Parameter Programming Mode, Operating Parameters section to change tuning parameters, if necessary.

WARNING: Make sure you understand what you are changing before doing so. Changing the program parameters will alter the functions of the CONTROL.

NOTE: To change from °F to °C repeat the above steps. The following are the values to be entered:
In = 5
SPH = 204
SPL = 0

Oven Zone Calibration

The CONTROL instrument has been tested and calibrated at the factory. Under normal operating conditions, recalibration should not be necessary. However, if the user would like to recalibrate the CONTROL for a specific operating condition, then recalibration is easily accomplished.

Set-Up Parameters

(Equipment needed: temperature measuring device with a Compatible Temperature sensor)

1. Verify that the **bS** (PV Bias) programmed in the CONTROL is **0**. Refer to Instructions on viewing the parameter in the PARAMETER PROGRAMMING mode.
2. Locate the temperature sensor of the temperature measuring device at the center of the chamber.
3. Operate the oven until it reaches the desired operating temperature and the CONTROL is regulating. The user may wish to have a loaded chamber with a standard amount of product to simulate a specific operating condition. It will take several minutes for the unit to stabilize at the controlled temperature. Allow at least 30 minutes of operation at the stabilized temperature before proceeding.
4. Subtract the average controlled temperature (number appearing on the CONTROL display) from the actual oven temperature (number appearing on the temperature measuring device display). The CONTROL and the device must be in the same scale (°C or °F).

WARNING: Make sure you understand what you are changing before doing so. Changing the program parameters will alter the functions of the CONTROL.

Actual Oven Temperature - Controlled Temperature = calculated value

5. Enter the calculated value from Step 4 as the new **bS** (PV Bias) value in the instrument.

HI-LIMIT INSTRUCTIONS

The oven has been tested and the HI-LIMIT preset at the factory for normal operating conditions. In most applications, it will not be necessary to alter the oven's settings, except for the Setpoint. This section contains information and reference material to change Setpoint, access the Set-up mode and change display between °C and °F.



WARNING: Failure to heed warnings in this manual and on the oven could result in death, personal injury or property damage.

The HI-LIMIT instrument was carefully programmed at the factory using the Operating and Set-up mode. The parameters that may be accessed include; display functions, and thermocouple selection.

Changing Setpoint

Enter setpoint on the HI-LIMIT instrument. Set HI-LIMIT instrument to a temperature 10°C to 14°C higher than the setpoint or to a temperature that should not be exceeded in the process.

WARNING: Never operate oven at a temperature in excess of the maximum operating temperature of 204°C (400°F).

1. If the **LOCK** on the HI-LIMIT is lit, press and hold the **RESET** for four (4) seconds to enable the ▲ and ▼ keys.
2. Press  key, HSP1 will be lit.
3. Use ▲ key and ▼ key to set hi limit temperature.
4. Press **RESET** or  once to return (also enters the value) to the process variable PV mode.
5. If the HI-LIMIT instrument is exceeded the heater will shut down. Reset the HI-LIMIT by pushing **RESET** on the HI-LIMIT instrument.

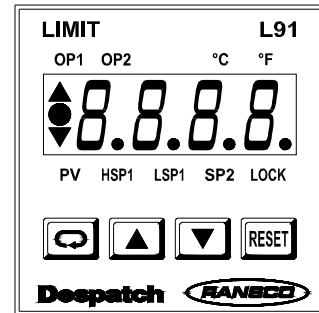
Parameter Setup Mode

The HI-LIMIT parameters are set through the Operating and Set-up modes. In most applications, it is not necessary to alter the oven settings. The following instructions describe how to access, view and, if desired, change the parameters.

WARNING: Make sure you understand what you are changing before doing so. Changing the setup parameters will alter the functions of the HI-LIMIT.

If the **LOCK** on the HI-LIMIT is lit, press and hold the **RESET** for four (4) seconds to enable the **▲** and **▼** keys. The HI-LIMIT will automatically exit the Setup mode if no keys are pressed for about two (2) minutes.

1. Press and hold the **↻** key for four (4) seconds, the setup mode has now been entered.
2. Press the **↻** key until the desired parameter is displayed. See the Setup Parameter Table on the following page.
3. The display will alternate between the parameter name and value.
4. Use the **▲** or **▼** to move to the desired setting.
5. Press the **↻** key, this enters the value and advances to the next parameter.
6. To get out of the setup parameters press the **RESET** key. The HI-LIMIT will automatically exit the Setup mode if no keys are pressed for about two (2) minutes.



HI-LIMIT Instrument

Setup Parameters

Note: When changing between °C and °F, the setup parameters **Filt**, **o1.Hy**, **HSP.L**, and **HSP.H** settings convert automatically.

Code	Name	Settings
inPt	Input type.	J_tC
unit	Process unit.	°C (or °F)
rESo	Display resolution.	No.dP
SHif	PV shift value (offset).	0
Filt	PV filter.	0
out1	Output 1 function.	Hi.
o1.Hy	Output 1 hysteresis value.	2.0
HSP.L	Lower limit of HSP1.	0 (32 if °F)
HSP.H	Upper limit of HSP1.	204 (400 if °F)
out2	Output 2 function. (N/A)	None
Addr	Address assignment for digital communication. (N/A)	1
bAud	Baud rate of digital communication. (N/A)	4.8
PAri	Parity bit of digital communication. (N/A)	EVEN
diSP	Normal display format.	PV

inPt Input type – this selects thermocouple type. LBB ovens use type J thermocouple.

unit Process unit – selects between °C and °F for reading process temperature.

rESo Display resolution – selects the location of the decimal point on process related parameters.

SHif PV shift value (offset) – this moves the display temperature to the oven temperature.

Filt PV filter – if process value is unstable to read, increasing this value will steady the input signal.

out1 Output 1 function – this the function of the output. This must be set to **.Hi** for HI-LIMIT control.

o1.Hy Output 1 hysteresis value – the amount of degrees that the temperature must be below the setpoint temperature before the HI-LIMIT can be reset.

HSP.L Lower limit of HSP1 – the minimum temperature that the HI-LIMIT can be set.

HSP.H Upper limit of HSP1 – the maximum temperature that the HI-LIMIT can be

set.

out2 Output 2 function. (N/A)

Addr Address assignment for digital communication. (N/A)

bAud Baud rate of digital communication. (N/A)

PAri Parity bit of digital communication. (N/A)

out2 Output 2 function. (N/A)

diSP Normal display format – used to select the display in normal condition.

PV = Process value.




SP1 = HI-LIMIT setpoint.

SAFE = the word safe in normal condition.

Changing Display From °C To °F

The HI-LIMIT can be configured for either °C or °F. Use the following steps to change HI-LIMIT from displaying °C to °F (and for changing back to °C).

WARNING: Make sure you understand what you are changing before doing so. Changing the setup parameters will alter the functions of the HI-LIMIT.

1. If the **LOCK** on the HI-LIMIT is lit, press and hold the **RESET** for four (4) seconds to enable the ▲ and ▼ keys.
2. Press and hold the  key for four (4) seconds, the setup mode has now been entered.
3. Press the  key until the *unit* is displayed.
4. Press the ▲ or ▼ to display value.
5. Use the ▲ or ▼ to move to the desired setting.
6. Press the  key, this enters the value and advances to the next parameter.
7. Press the **RESET**, this will return the HI-LIMIT to the normal mode.
8. The HI-LIMIT has been changed, enter the desired setpoint.

Maintenance

Do not attempt any service on this oven before opening the main power disconnect switch.

Checklist

- ✓ **Keep equipment clean.** Gradual dirt accumulation retards airflow. A dirty oven can result in unsatisfactory operation such as unbalanced temperature in the work chamber, reduced heating capacity, reduced production, overheated components, etc. Keep the walls, floor and ceiling of the oven work chamber free of dirt and dust. Floating dust or accumulated dirt may produce unsatisfactory work results. Keep all equipment accessible. Do not permit other materials to be stored or piled against it.
- ✓ **Protect controls against excessive heat.** This is particularly true of controls, motors or other equipment containing electronic components. Temperatures greater than 51.5°C (125°F) should be avoided.
- ✓ **Establish maintenance & checkup schedules.** Do this promptly and follow the schedules faithfully. Careful operation and maintenance will be more than paid for in continuous, safe and economical operation.
- ✓ **Maintain equipment in good repair.** Make repairs immediately. Delays may be costly in added expense for labor and materials and in prolonged shut down.
- ✓ **Practice safety.** Make it a prime policy to know what you are doing before you do it. Make CAUTION, PATIENCE, and GOOD JUDGMENT the safety watchwords for the operation of your oven.
- ✓ **Lubrication.** Fan motor bearings are permanently lubricated. All door latches, hinges, door operating mechanisms, bearing or wear surfaces should be lubricated to ensure easy operation.

Tests

Tests should be performed carefully and regularly. The safety of personnel as well as the condition of equipment may depend upon the proper operation of any one of the functions of these controls. Test the CONTROL instrument every 40 hours. Check that the CONTROL instrument OUT LED is cycling on and off. Also, verify that the heater is working.

WARNINGS:
Failure to heed warnings in this manual and on the oven could result in death, personal injury or property damage.

Test the HI-LIMIT instrument every 40 hours. With the oven operating at a given temperature, set the HI-LIMIT down to the setpoint operating temperature. The HI-LIMIT instrument has tripped when **OP1** is lit. Push **RESET** after adjusting the HI-LIMIT instrument back to a higher setting, or letting the oven temperature drop a few degrees based on the hysteresis value of the HI-LIMIT.

WARNING:
Disconnect the main power switch or power cord before attempting any repair or adjustment.

Replacement

Parts

To order or return parts, contact the Service Products Group at Despatch. The Service Products Group features our Parts Center for customer service at 1-800-473-7373, option #2. When returning parts, the Despatch representative will provide you with an RMA (Return Material Authorization) number. The RMA number must be attached to the returned part for identification. When you are ordering parts, be sure to give the model number, serial number and the part number. This will expedite the process of obtaining a replacement part.

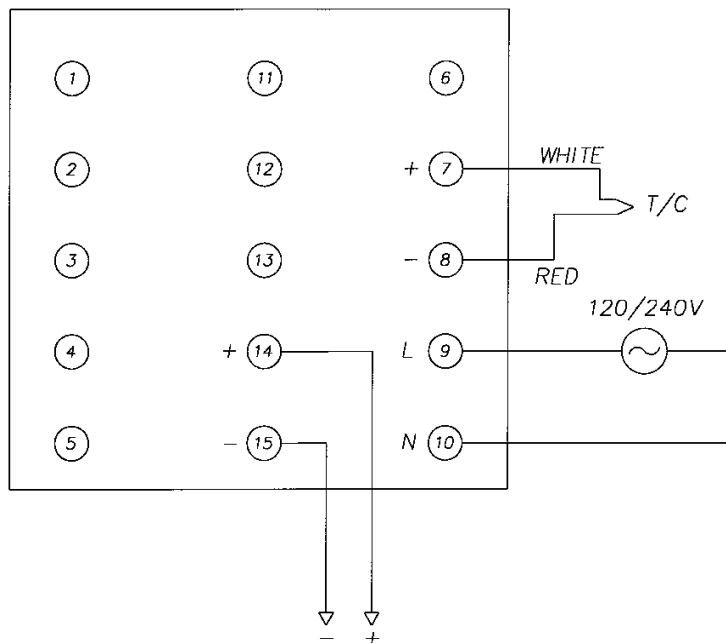
WARNING:
Disconnect the main power switch or power cord before attempting any repairs or adjustments.

When you have a service need, just contact a product service technician at **1-800-473-7373** option #3 or FAX 612-781-5485.

Control Instrument

(Tools needed: one-quarter (1/4) inch socket set screwdriver with Torx drive)

1. Disconnect power.
2. Remove screws from the face of the control panel and slide it forward.
3. Remove wires from the old control instrument, noting which wires connect to which terminals.



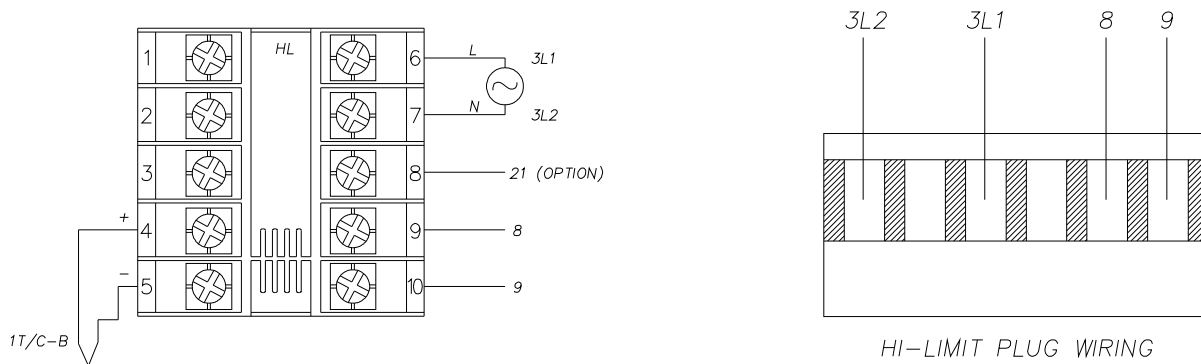
Connections to the CONTROL Instrument

4. Disconnect the CONTROL mounting bracket.
5. Remove old CONTROL instrument from control panel.
6. Install new CONTROL instrument into the control panel.
7. Secure CONTROL with mounting bracket.
8. Reattach wires to the new CONTROL instrument. Make sure that the wires are connected correctly.
9. Replace control panel.

Replacement of Hi-limit Instrument

(Tools needed: one quarter (1/4) inch socket set; screwdriver)

1. Disconnect power.
2. Remove screws from the face of the control panel and slide it forward.
3. Disconnect HI-LIMIT PLUG from circuit board.
4. Disconnect the thermocouple wires.
5. Press and hold down the tabs holding the HI-LIMIT instrument to the control panel and slide it out.



Connections to HI-LIMIT Instrument

6. Install new HI-LIMIT instrument into the control panel.
7. Replace mounting screws.
8. Connect HI-LIMIT plug to the circuit board. Make sure that the wires are connected correctly.
9. Reattach thermocouple wires.
10. Replace control panel.

Heater Unit

(Tools needed: 3/8" wrench, screwdriver, one-quarter (1/4) inch socket set with Torx drive)

1. Remove shelves.
2. Remove side ducts (right and left)
 - a. Remove screws from each duct.
 - b. Remove duct from oven.
3. Remove heater cover.
 - a. Remove screws from heater cover.
 - b. Remove heater cover from oven.
4. Disconnect heater leads from heater element with wrench. Note which wires go on which terminals.
5. Remove screws holding the heater frame to the oven body.
6. Remove heater and discard.
7. Install new heater frame to oven body.
8. Attach heater leads to appropriate terminals.
9. Replace heater cover.
10. Replace side ducts.
11. Replace shelves.

Troubleshooting

Equipment which operates for long periods of time may develop problems. Below are possible problems and suggested solutions. If you have a problem not listed and do not know what to do, contact Despatch industries at our toll-free Help Line 800-473-7373.

Difficulty	Probable Cause	Suggested Remedy
Failure to heat	No power	Check power source and/or oven and wall fuses
	Burned-out heater(s)	Replace element (see warranty statement)
	CONTROL instrument malfunction	Replace controller if OUT LED on controller does not turn on.
	Loose wire connections	Disconnect power and check connections behind control panel.
Slow heat up	Improperly loaded workload	Reduce load or redistribute load in chamber.
	Low line voltage	Supply sufficient power and proper connections. Check for circuit overload.
	One or two heating elements burned out	Check heater amperage on the nameplate. Replace burned out element (see warranty statement, back page)
	Vent is wide open	Close vent.
Frequent heater element burnout.	Harmful fumes generated by load	Increase vent opening or discontinue process.
	Spillage or splattering of material on heater elements	Disconnect power and clean oven chamber and elements.
	Overheating oven	Check the CONTROL and HI-LIMIT instruments.
Erratic temperature	CONTROL instrument malfunction	Check control parameters before replacing the CONTROL instrument
Inaccurate temperature	CONTROL instrument malfunction	Recalibrate CONTROL instrument
Excess surface or door temperature	Door seal deterioration	Replace door seal.
	Door closed into top or bottom latch only	See specific difficulty below for this problem.
Oven will not control at setpoint	HI-LIMIT instrument set too low	Set the HI-LIMIT higher.
	CONTROL instrument malfunction	Check control parameters before replacing CONTROL instrument.

Difficulty	Probable Cause	Suggested Remedy
	Exhaust air vent	Adjust exhaust air vent. Unit will not control at minimum operating temperature with vent(s) closed.
Heater does not shutdown until temperature reaches the HI-LIMIT setting	CONTROL instrument malfunction	Verify control parameters. Replace relay if no output exists. Replace CONTROL instrument if 5 VDC output exists.
	SSR Relay malfunction	Replace relay if no CONTROL output exists.
Door closes into top or bottom latch only.	Uneven latch tension adjustment	Ensure that latch strike is contacting center of latch. Adjust mounting angle as required. Adjust door for even top and bottom latch tension by turning screws on ends of latch. Clockwise increases tension on latch. Counterclockwise decreases tension.
Door will not stay closed.	Inadequate latch tension	Ensure that latch strike is contacting center of latch. Adjust mounting angle to center as required. Increase latch tension by turning screws on end of latch clockwise. Adjust in even increments on all four screws to keep door pull even.

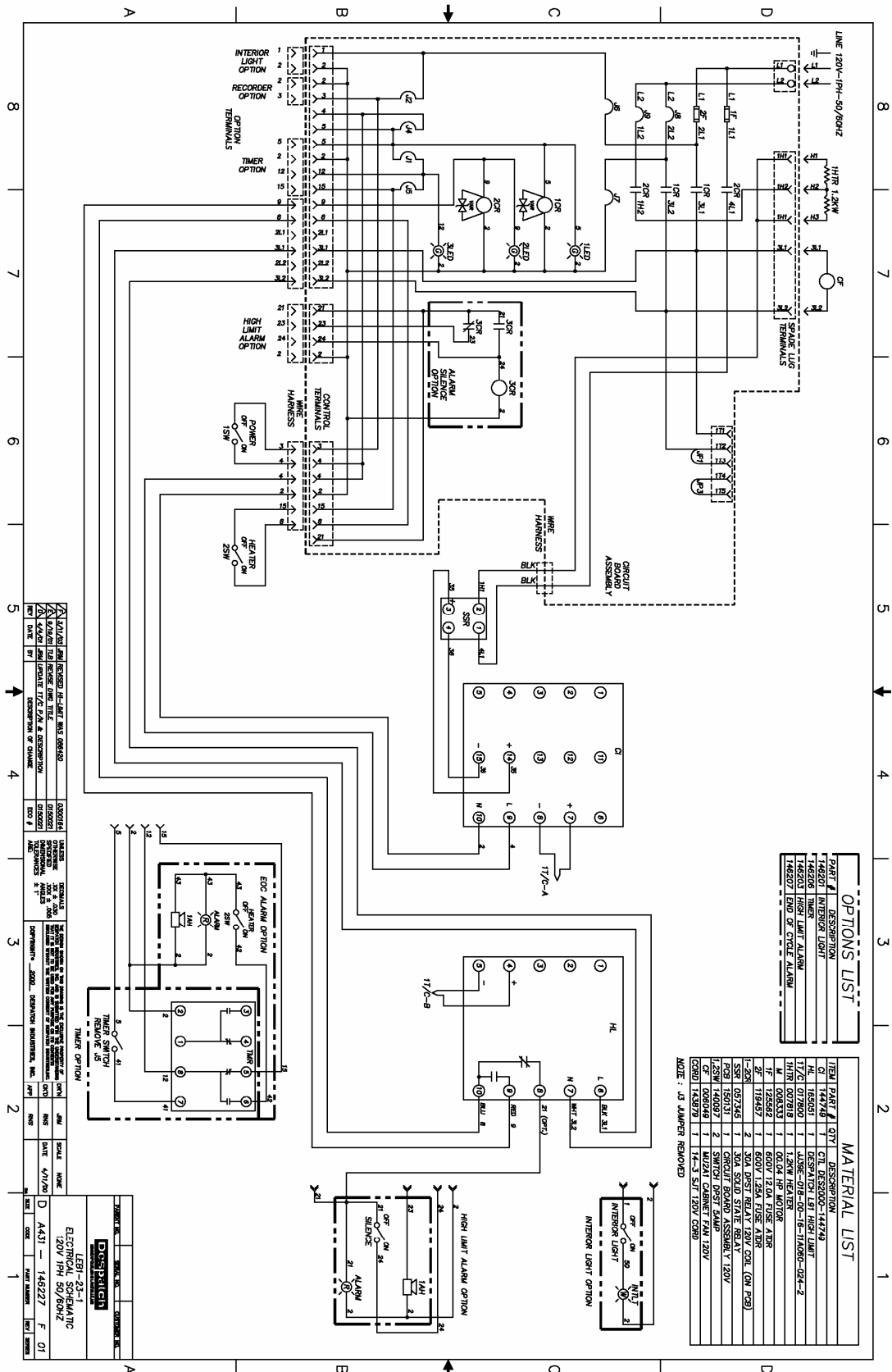
DRAWINGS

Drawings and parts lists begin on the next page.

LEB 1-23-1 (120 VAC) Parts

<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
144755	1	Thermocouple
140097	2	Switch For Power And Heater
142861	1	Cord For Muffin Fan
057345	1	Relay Heater SSR
165051	1	Hi-Limit Despatch L91
144749	1	Control - Des2000
007818	1	Heater 1.2kw 120/240v
145858	1	Door Seal
148048	1	Door Pull
008199	2	Latch Ay
146010	1	LBB Exhaust Damper Assembly
145828	2	Standard Shelf
006049	1	Control Compartment Muffin Fan
150131	1	Circuit Board 120v
119457	1	Fuse Atdr-01.25A Control
125562	1	Fuse Atdr-12.00A Heater

LEB 1-23-1 (120 VAC) Drawing



OPTIONS LIST	
146201	INTERIOR LIGHT
146206	RECORDER
146207	TIMER
146208	HIGH LIMIT ALARM
146209	HEATER

MATERIAL LIST		
ITEM #	QTY	DESCRIPTION
144748	1	CTL. DESKTOP-144748
144901	1	DESIGNATED BY HIGH LIMIT
144902	1	1.2KW HEATER
144903	1	0.004 HP MOTOR
144904	1	500V 12.0A FUSE AIRS
144905	1	30A SOLID STATE RELAY
144906	1	CIRCUIT BOARD ASSEMBLY 120V
144907	2	SWITCH DEST. AMP.
144908	1	W/2X1 CABINET PAN 120V
144909	1	5/16-18 X 1/2 IN. SUT 120V (END)

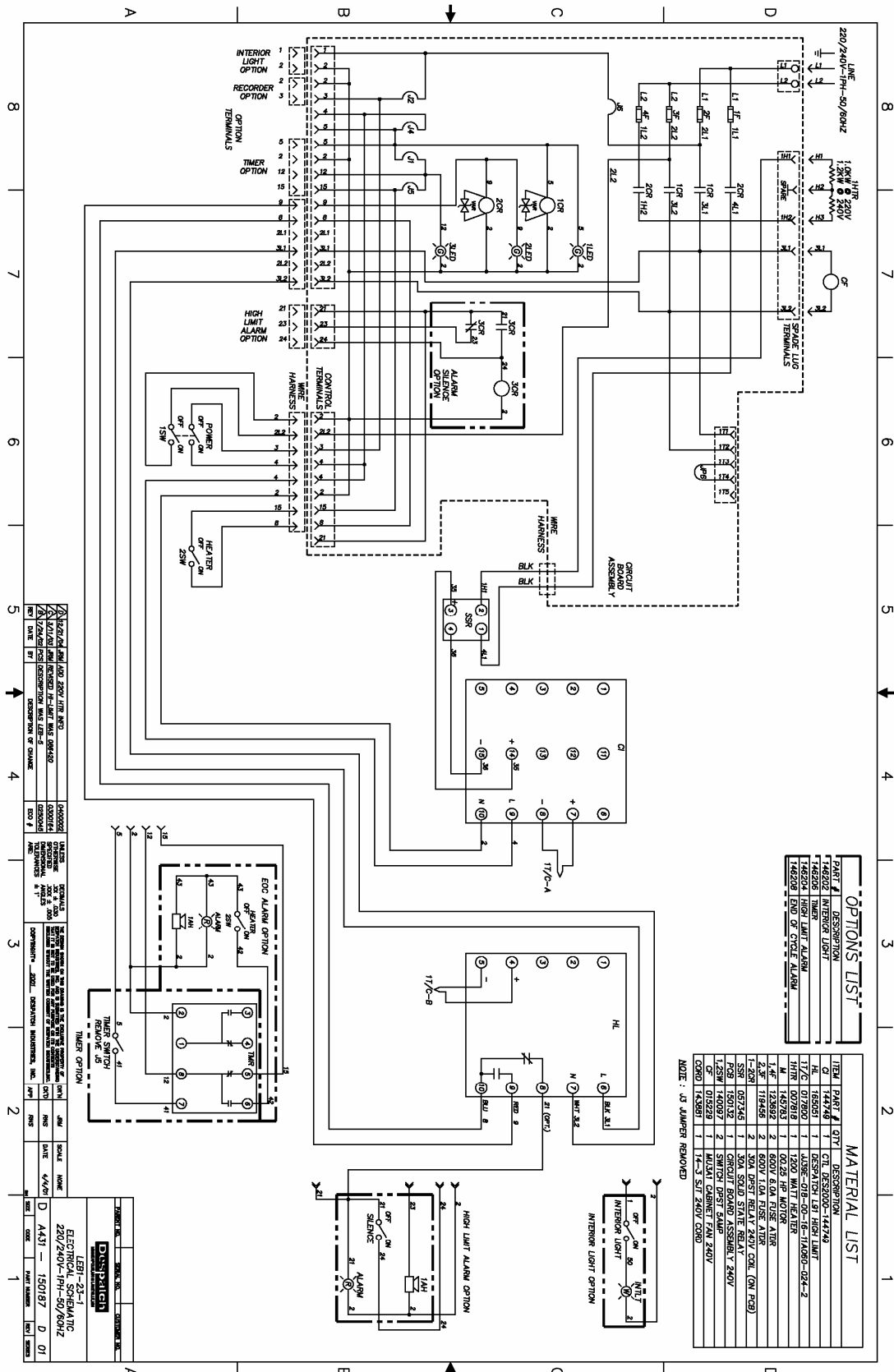
NOTE: J3 JUMPER REMOVED

DESIGNER	
DATE	4/1/70
BY	DAJ
CHKD	DAJ
APP'D	DAJ
REV	1
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REV	3
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REV	8

LEB 1-23-1 (240 VAC) Parts

<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
144755	1	Thermocouple
140097	2	Switch For Power And Heater
142861	1	Cord For Muffin Fan
057345	1	Relay Heater SSR
165051	1	Hi-Limit - Despatch L91
144749	1	Control - Des2000
007819	1	Heater 1.2kw 120/240v
145858	1	Door Seal
148048	1	Door Pull
008199	2	Latch Ay
146010	1	LBB Exhaust Damper Assembly
145828	2	Standard Shelf
006049	1	Control Compartment Muffin Fan
150132	1	Circuit Board 240v
119456	1	Fuse Atdr-01.00A Control
125692	1	Fuse Atdr-6.00A Heater

LEB 1-23-1 (240 VAC) Drawing



PART #		DESCRIPTION
144502	INTERIOR LIGHT	
144504	HIGH LIMIT ALARM	
144508	END OF CYCLE ALARM	

ITEM		PART #	QTY	DESCRIPTION
1	144502	1	INTERIOR LIGHT	
2	144504	1	HIGH LIMIT ALARM	
3	144508	1	END OF CYCLE ALARM	
4	144509	1	RECORDER BOARD ASSEMBLY	
5	144510	1	TIMER BOARD ASSEMBLY	
6	144511	1	HIGH LIMIT ALARM BOARD ASSEMBLY	
7	144512	1	ECO ALARM BOARD ASSEMBLY	
8	144513	1	CONTROL BOARD ASSEMBLY	
9	144514	1	TERMINAL BLOCK	
10	144515	1	WIRE HARNESS	
11	144516	1	INTERIOR LIGHT SWITCH	
12	144517	1	HIGH LIMIT ALARM SWITCH	
13	144518	1	ECO ALARM SWITCH	
14	144519	1	RECORDER SWITCH	
15	144520	1	TIMER SWITCH	
16	144521	1	WIRE HARNESS	
17	144522	1	WIRE HARNESS	

NOTE: - JS JUMPER REMOVED

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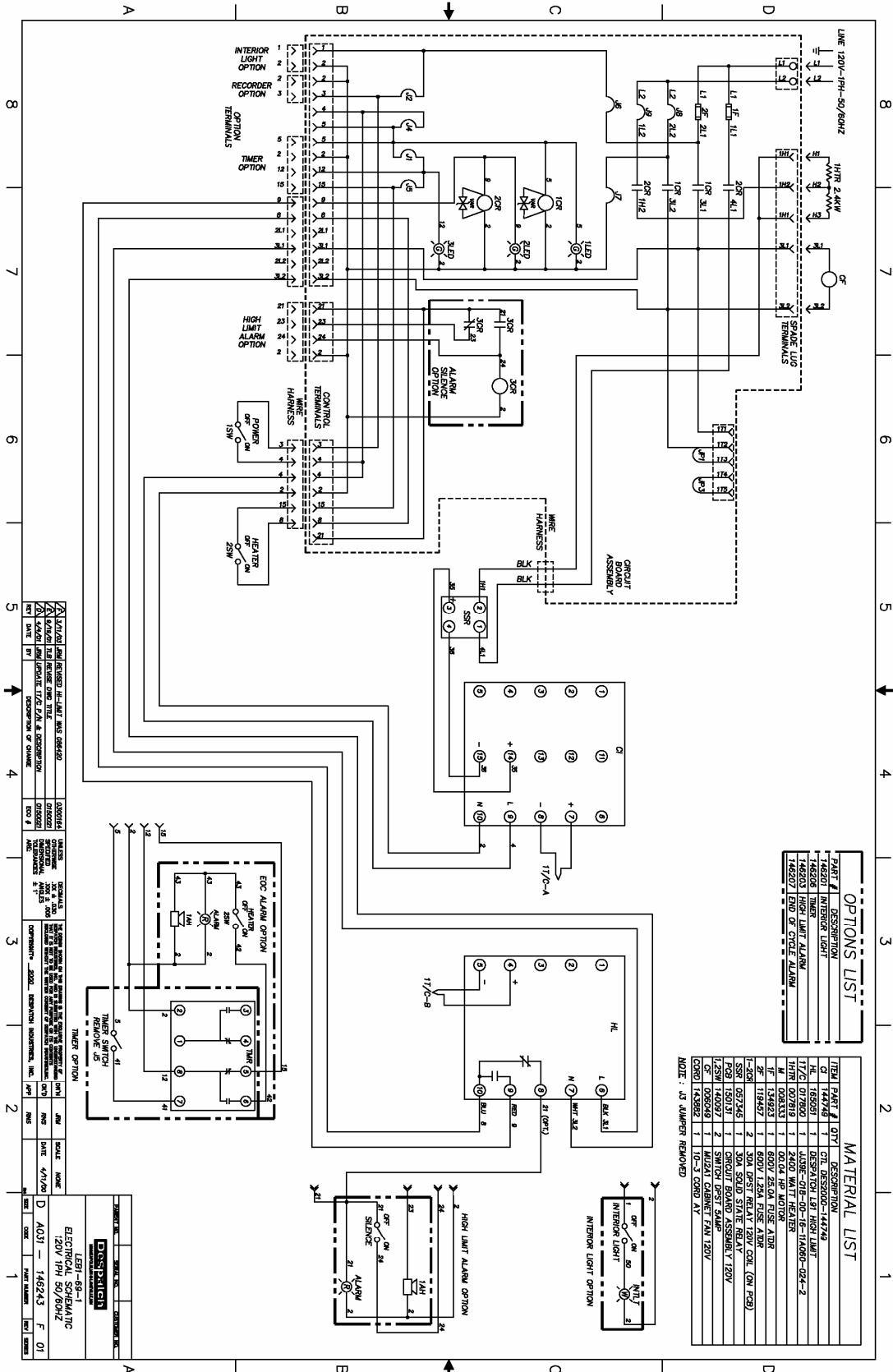
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LEB 1-69-1 (120 VAC) Parts

<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
144755	1	Thermocouple
140097	2	Switch For Power And Heater
142861	1	Cord For Muffin Fan
057345	1	Relay Heater SSR
165051	1	Hi-Limit - Despatch L91
144749	1	Control - Des2000
007819	1	Heater 2.4kw 120/240v
145725	1	Door Seal
008057	2	Center Door Seal
148048	1	Door Pull
008199	2	Latch Ay
146010	1	LBB Exhaust Damper Assembly
146024	2	Standard Shelf
094717	2	Reinforced Shelf
006049	1	Control Compartment Muffin Fan
150131	1	Circuit Board 120v
119457	1	Fuse Atdr-01.25A Control
134923	1	Fuse Atdr-25.00a Heater

LEB 1-69-1 (120 VAC) Drawing



OPTIONS LIST	
PART #	DESCRIPTION
146301	INTERIOR LIGHT
146303	HIGH LIMIT ALARM
146307	END OF CYCLE ALARM

MATERIAL LIST			
ITEM	PART #	QTY	DESCRIPTION
1	146301	1	INTERIOR LIGHT
2	146303	1	HIGH LIMIT ALARM
3	146307	1	END OF CYCLE ALARM

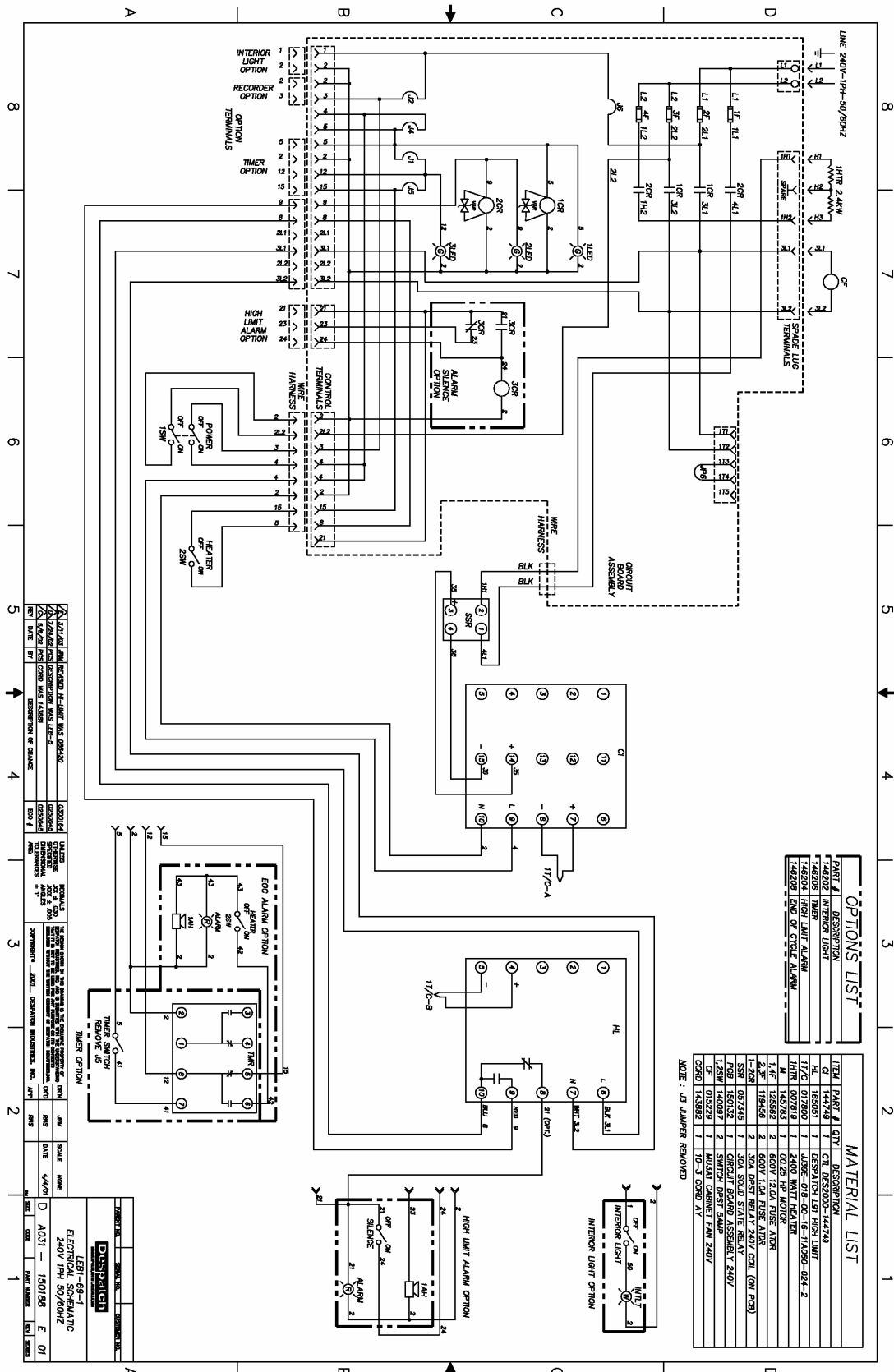
NOTE: US DAMPER REMOVED

DESIGNER	
LEB-69-1	ELECTRICAL SCHEMATIC
120V 1PH 50/60HZ	

LEB 1-69-1 (240 VAC) Parts

<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
144755	1	Thermocouple
140097	2	Switch For Power And Heater
142861	1	Cord For Muffin Fan
057345	1	Relay Heater SSR
165051	1	Hi-Limit - Despatch L91
144749	1	Control - Des2000
007819	1	Heater 2.4kw 120/240v
145725	1	Door Seal
008057	2	Center Door Seal
148048	1	Door Pull
008199	2	Latch Ay
146010	1	LBB Exhaust Damper Assembly
146024	2	Standard Shelf
094717	2	Reinforced Shelf
015229	1	Control Compartment Muffin Fan
150132	1	Circuit Board 240v
119456	2	Fuse Atdr-01.25A Motor
125562	2	Fuse Atdr-12.00A Heater

LEB 1-69-1 (240 VAC) Drawing



OPTION'S LIST	
PART #	DESCRIPTION
144702	INTERIOR LIGHT
144703	RECORDER
144704	HIGH LIMIT ALARM
144705	END OF CYCLE ALARM

MATERIAL LIST			
ITEM	PART #	QTY	DESCRIPTION
1	144702	1	INTERIOR LIGHT
2	144703	1	RECORDER
3	144704	1	HIGH LIMIT ALARM
4	144705	1	END OF CYCLE ALARM
5	144706	1	240VAC WATT HEATER
6	144707	1	240VAC STATE RELAY
7	144708	1	240VAC FUSE
8	144709	1	240VAC BREAKER
9	144710	1	240VAC LAMP
10	144711	1	240VAC LED
11	144712	1	240VAC SWITCH
12	144713	1	240VAC RELAY
13	144714	1	240VAC TERMINAL BLOCK
14	144715	1	240VAC WIRE HARNESS
15	144716	1	240VAC CONTROL PANEL

NOTE: US JUMPER REMOVED

REV	DATE	BY	DESCRIPTION
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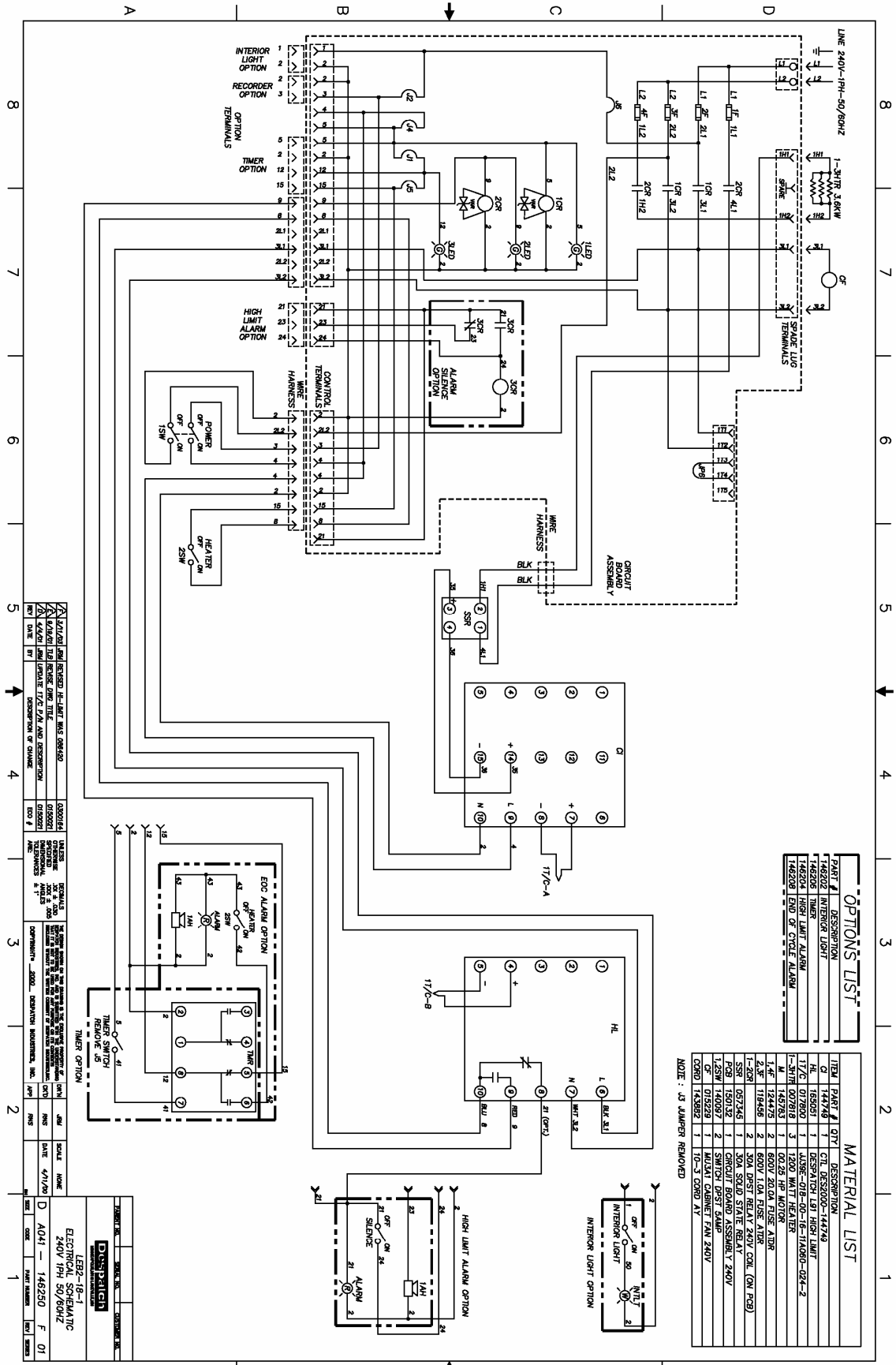
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4			REVISION
5			REVISION

LEB2-18-1 Parts

<u>Part #</u>	<u>Qty.</u>	<u>Description</u>
144755	1	Thermocouple
140097	2	Switch For Power And Heater
142861	1	Cord For Muffin Fan
057345	1	Relay Heater SSR
165051	1	Hi-Limit - Despatch L91
144749	1	Control - Des2000
007818	3	Heater 1.2kw 120/240v
145814	1	Door Seal
008057	3	Center Door Seal
148048	1	Door Pull
008199	2	Latch Ay
146010	1	LBB Exhaust Damper Assembly
016471	2	Standard Shelf
105498	2	Reinforced Shelf
015229	1	Control Compartment Muffin Fan
150132	1	Circuit Board 240v
119456	2	Fuse Atdr-01.00a Motor
124475	2	Fuse Atdr-20.00a Heater

LEB 2-18-1 Drawing



OPTIONS LIST

PART #	DESCRIPTION
146202	INTERIOR LIGHT
146204	TIMER
146206	SPRING LAMP ALARM
146208	SPRING LAMP ALARM

MATERIAL LIST

ITEM #	PART #	QTY	DESCRIPTION
1	144748	1	CTL DES2000-144748
2	155031	1	DESIGNATION LAMP HIGH LIMIT
3	155036	1	DESIGNATION LAMP HIGH LIMIT
4	155037	1	DESIGNATION LAMP HIGH LIMIT
5	155038	1	DESIGNATION LAMP HIGH LIMIT
6	146783	1	00.25 HP MOTOR
7	124475	2	600V 20.0A FUSE ALTR
8	118458	2	600V 1.0A FUSE ALTR
9	057245	1	50A SPED STATE RELAY DCL (ON P28)
10	140827	2	SWITCH DYST AMP
11	019229	1	ALUMI CABINET FAN 240V
12	145982	1	10-3 CABRD AY

NOTE: 3-3 JUMPER REMOVED

DESIGNED	DATE	SCALE	NAME
DRAWN	DATE	4 1/2" X 3 1/2"	LEB2-18-1
CHECKED	DATE		146250
APPROVED	DATE		F 01

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Despatch Customer Service

Procedures and Customer Responsibilities

To provide the most effective service to our customers under this warranty, all requests for repairs are to be initiated by the Customer by telephone to the Despatch Service Help Line, 800-473-7373. The Standard Period of Maintenance (SPM) is defined as 8 a.m. to 5 p.m. local time, excluding weekends and Despatch Holidays. Calls placed within the SPM will be handled as follows.

Help Line calls connect the customer with the Despatch Service Group. The technician will record all pertinent information, including SERIAL and MODEL NUMBER of the unit(s), the urgency and nature of the problem, and the name and phone number of the caller or other contact. The technician will advise the customer on suggested steps and/or tests to either resolve the problem or help to confirm the diagnosis of the problem.

Customer Agrees to cooperate in performing such tests and attempting to resolve the problem as quickly as possible. Customer also agrees to replace minor parts such as fuses, latches, etc. as instructed by Despatch Service Technicians. This approach has Despatch and the Customer cooperating to effect the most expedient and cost effective repair and minimize down time. If in Despatch's sole judgment, the equipment cannot be repaired in this manner, an on-site visit by a Despatch authorized service representative may be scheduled to repair the equipment. Customer agrees that, when requested and authorized, such charges will be paid by the Customer within 30 days from receipt of invoice.

Attachment A - Sustained Service Support

At Despatch, long term customer satisfaction means more than responding quickly and effectively to our customers' service requirements. It means offering comprehensive customer support well beyond the scope of our initial contractual commitment. Despatch's Service Products Group offers a Full Service Agreement package or a Preventive Maintenance Plus agreement (PM+). These service products are unique in the industry and offer the following benefits to our customer:

- Priority response for minimum production interruption.
- Preventive maintenance for longer product life.
- Discount on parts and services where applicable.
- Single payment for reduced billing expense.
- Elimination of need for a separate purchase order for each service requested.

These extra service options are aimed at extending our new equipment productivity, we will also extend the Despatch one year manufactured parts warranty for another 12 months. This bonus warranty is automatically yours when you purchase a service agreement from Despatch within the first 12 months after shipment of the equipment.

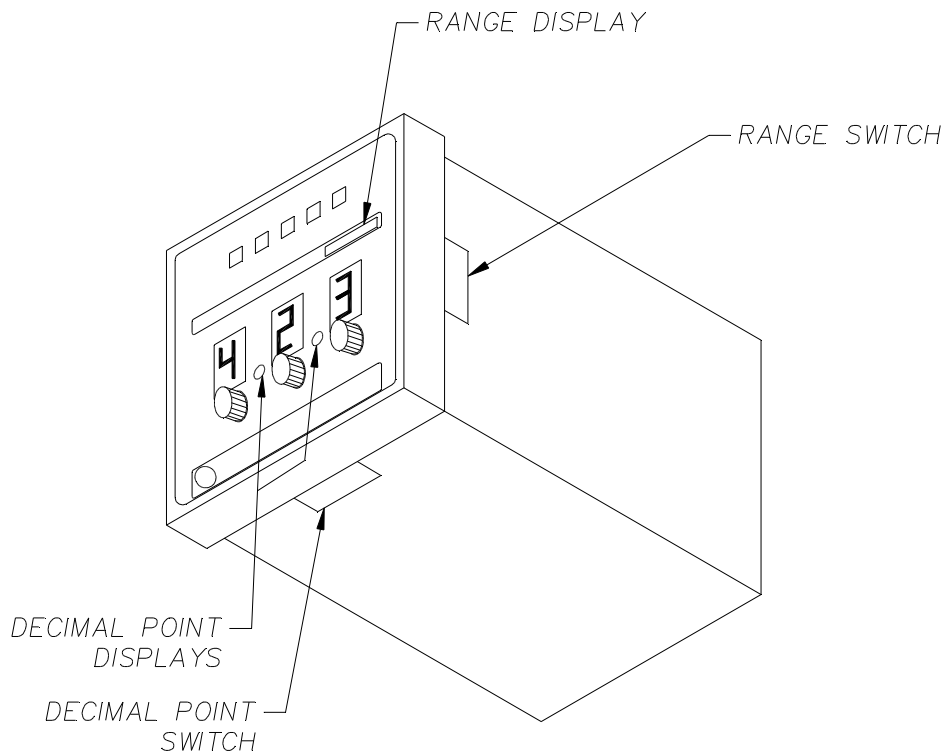
APPENDIX: OPTIONAL FEATURES

Protocol Plus Control Option

If the oven is equipped with the Despatch Protocol Plus Controller, consult the Protocol Plus manual (included).

Timer Option

The timer, which is set-up in hours, is used as a countdown timer. When the timer is on, the delayed contact remains closed allowing power to the heater. During the first 20% of the timing cycle, the first LED blinks. During the next 20% of the timing cycle, the first LED stays on and the second LED blinks. The LED indicators continue in the same manner until all LED's are lit. When the LED's are all lit, the timing cycle is complete, the delayed contact opens and shuts off the heater. The heater will remain off until either the TIMER switch is turned OFF, or resetting the timer.



Timer Displays and Switches

Timer Operation

1. Turn the dials on the timer to the desired time.
2. Turn the Timer switch to ON. The timer is now counting down to zero.
3. Turn the HEATER switch to ON, if it is not already on.
4. When the timer counts down to zero the heater will shut off.
5. To reset the timer, turn the timer switch OFF then to ON.
6. To manually control the time, leave the timer switch OFF.

Timer Configuration

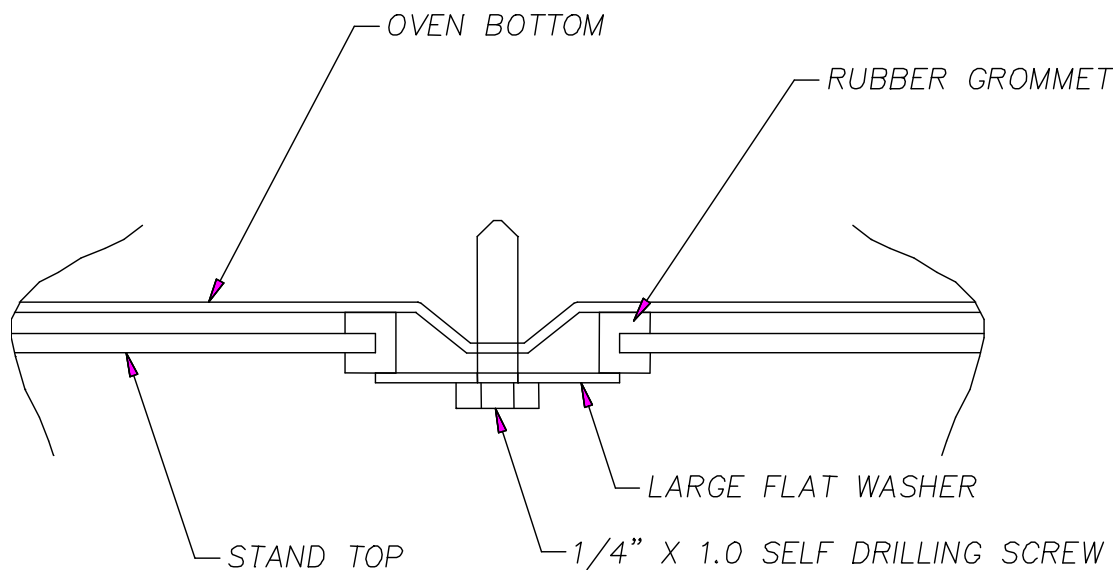
The timer is configured for XX.X hours from our facility. The timer can be easily set up for different timing ranges. The following are instructions to configure the timer to suit your needs.

1. Remove power from oven.
2. Remove top cover.
3. Remove socket from rear of timer.
4. Remove timer panel mounting bracket and remove timer from panel.
5. Using a small screwdriver, insert it the adjusting slots for the timer. The slots are located behind the flange near the front of the timer. See Figure 1 for locations of switches and displays.
 - a. Slide the switch to the desired range position.
 - b. Verify range by looking in face of timer in the range window.
 - c. Slide the switch to the desired decimal point position.
 - d. Verify decimal position by looking at the decimal position in face of timer.
6. Remount timer back into panel.
7. Reattach timer socket to timer.
8. Replace top cover.

9. Apply power to oven, and follow instructions in the timer operation section.

Stand Assembly Instructions

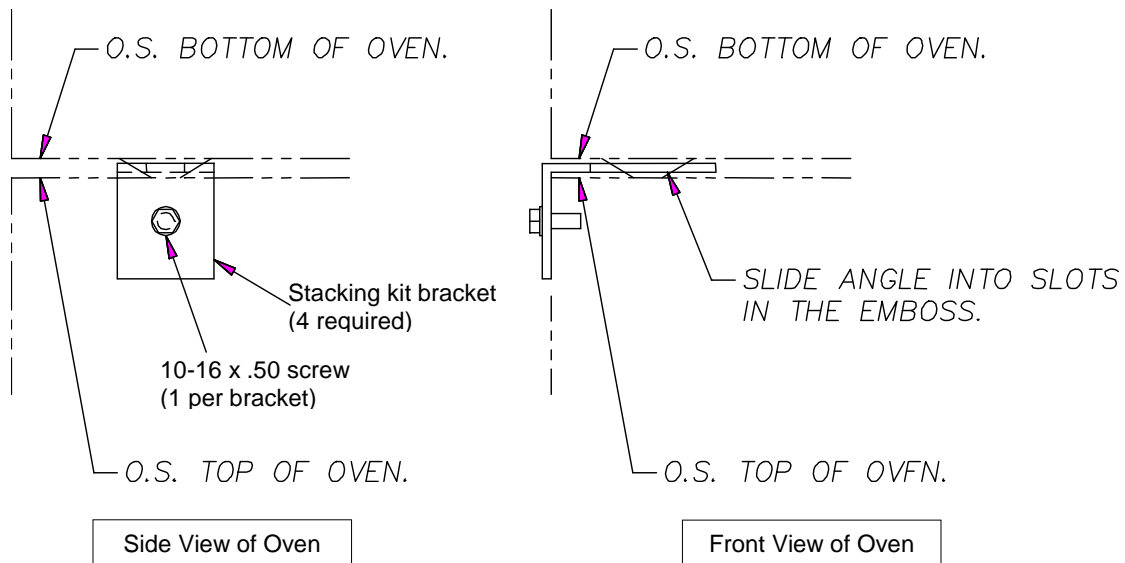
1. Install four rubber grommets into holes in the stand. On LEB1-69 stands, the rear grommets mount into the forward set of rear holes. On LEB2-12 stands the rear grommets mount into the set of holes closest to the rear of the stand.
2. Place the oven on top of the stand. The four embossed areas in the bottom of the oven should center in the grommets.
3. Using the self-drilling screw and large flat washer provided, install through each embossed area as shown below.



Stand Assembly Components

Stacking Kit Assembly Instructions

1. Locate the four stacking kit brackets found in the kit.
2. Place each of the brackets on top of each of the four corners of one of the lower ovens in the stack being assembled. Slide the angle of each bracket into the slots in the embossed area on top of the oven. See the illustration below for placement.
3. Use the four 10-16 x .50 screws included in the kit to attach the brackets to the oven top.
4. Place the upper oven onto the lower one. The embossed "feet" on the upper oven should fit into the brackets attached in the last three steps.



Stacking Kit Assembly Components

Timer Option with Audible and Visual Alarm

This option sounds the alarm and a light comes on when the timer times out.

Turning the heater switch off will clear the alarm condition. Do not turn the heater switch on before resetting the timer.

Turning the timer switch off will also clear the alarm condition but the heater will remain on.

Wiring for this option is shown in the DRAWINGS section of this manual.

High Limit Alarm Option

This option sounds the alarm and a light comes on when a high limit condition occurs.

To silence the alarm horn, press the alarm silence switch; the light will remain on.

It is necessary to clear the high limit condition to clear the alarm. See the TROUBLESHOOTING section of this manual for solutions for high limit conditions.

It will be necessary to reset the high limit instrument whenever it has tripped. The high limit instrument may be reset by first allowing the oven chamber to cool slightly (or by setting the high limit instrument up several degrees), then pushing the black reset button.

The wiring for this option is shown on the electrical schematic in the DRAWINGS section of this manual.

Recorder Option

The circular chart recorder is used to record the user's process. This is done by an independent thermocouple. The charts used are 24 hour or 7 day. See the recorder manufacturer's manual supplied with this manual.

The wiring for this option is shown on the electrical schematic in the drawing section of this manual.