

# **OPERATING AND INSTRUCTION MANUAL**

**LAC1-33H, LAC1-33V**

Manual C-15 Rev 6/77

**Despatch Industries**

1-800-473-7373

# WARNING

1. BEFORE OPERATING THIS EQUIPMENT, CAREFULLY READ INSTRUCTION MANUAL.
2. THE USER(S) OF THIS EQUIPMENT MUST COMPLY WITH OPERATING PROCEDURES AND TRAINING OF OPERATING PERSONNEL AS STATED IN THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) OF 1970, SECTION 5, AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), 86A OF 1973 (ARTICLE 100, SECTION 2D, 5 AND APPENDIX I).
3. DO NOT USE ANY ENCLOSED CONTAINERS, FLAMMABLE SOLVENT, OR OTHER FLAMMABLE MATERIALS IN THIS EQUIPMENT. (EXAMPLES: SPRAY CAN, SEALED JAR OF WATER, ALCOHOL, KEROSENE, OIL, PAPER, ETC.). (SEE DESIGN SPECIFICATION SHEET).
4. HIGH VOLTAGE PRESENT ON THIS EQUIPMENT. SERVICE BY AUTHORIZED PERSONNEL ONLY.
5. DO NOT ATTEMPT ANY SERVICE ON THIS EQUIPMENT WITHOUT OPENING MAIN POWER DISCONNECT SWITCH.

FAILURE TO FOLLOW THESE WARNINGS CAN RESULT IN PROPERTY DAMAGE, INJURY, OR DEATH.

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INSTRUCTIONS FOR OPERATING  
DESPATCH OVEN MODEL LAC 1-33

Remove all packing materials and inspect unit and accessories for damage.

Attach rubber feet to the bottom corners of the oven. They are required for proper cooling of the control compartment and to prevent damage to counter surfaces.

Install shelf angles and shelves supplied.

Placing material on the oven floor will cause poor temperature uniformity within the work chamber.

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DO NOT ATTEMPT ANY SERVICE ON THIS EQUIPMENT WITHOUT OPENING MAIN POWER DISCONNECT SWITCH.

POWER CONNECTIONS

The twelve prong plug at the rear of the oven is wired for 120/240 dual voltage operation. The operating voltage of the oven is determined by the internal wiring of the power cord socket. The correct power cord for customer's operating voltage is shipped with each new oven. To convert oven from one voltage to the other, purchase power cord wired for the desired voltage from Despatch Oven Company.

<u>Operation Voltage</u>	<u>Power Cord</u>
120 volts	Type I-120V
208 volts	Type J-240V*
240 volts	Type J-240V

\*For 208V operation, 240V power cord is used and internal jumper 2-5 on terminal strip is changed to 2-3.

START-UP

See additional instructions regarding operation of control instrument.

Set hi-limit instrument 10-15 degrees above operating temperature. If hi-limit is exceeded, it must be manually reset.

Set control instrument to desired temperature.

Turn control switch "on". The pilot light will indicate when the heater is on.

There are fresh air and exhaust dampers located on the back of the oven. These dampers are controlled by knobs on the front of the oven. To open damper, pull knob out.

When placing material in oven, allow the maximum amount of air space around the various parts being processed. This will tend to equalize the temperature throughout the work chamber.

#### SHUT DOWN

Turn control switch "off".

#### OPTIONAL FORCED EXHAUST

This oven can be equipped with a forced exhaust system. This unit is field installed and can be purchased from Despatch Oven Company. (Not available for 120 volt units).

#### ADJUSTMENT OF CONTROLLER

Before making any adjustments, allow oven to operate at desired temperature for one hour. Remove front cover by removing screw beneath the dial. Pull cover out from the bottom. There are two potentiometers; the band width and manual reset. After making adjustments, allow oven to stabilize for 10 minutes. Repeat if necessary.

Band Width - This is factory set at 5°F., which is the minimum setting. If oven is operating at low temperatures with light loads, a temperature overshoot may result. This can be observed on the deviation meter. To reduce or eliminate overshoot, increase band width; for best control sensitivity, use smallest possible band width.

Manual Reset - This is factory set for operation at 400°F. and dampers closed. When using different temperatures and damper settings the meter may indicate a deviation from the set point. If close accuracy is required and meter is left of center, turn manual reset clockwise. If meter is to the right of center, turn manual reset counter-clockwise. One-eighth turn on the adjustment potentiometer will result in one division of correction on the deviation meter.

#### HI-LIMIT CALIBRATION

Turn oven on and allow oven to control at operating temperature for 15 minutes. Slowly turn down hi-limit until the instrument light comes "on". If this temperature is not the same as the control, the hi-limit should be re-calibrated. Remove knob or dial from the hi-limit shaft. Calibrating screw is located in center of the shaft. If temperature was higher than the control, turn calibrating screw counter-clockwise. If temperature was lower, turn the screw clockwise. Replace knob on shaft. Repeat above process if necessary. One turn of the calibration screw results in 120°F. correction. Caution: if there is doubt on the accuracy of the control, use a separate temperature indicating device.

POWER REQUIREMENT

120/208/240 volt - 1 phase - 60 cycle

1800 watts heating capacity 19/10.7/9.5 amps

500°F. maximum temperature

Additional information available upon request.

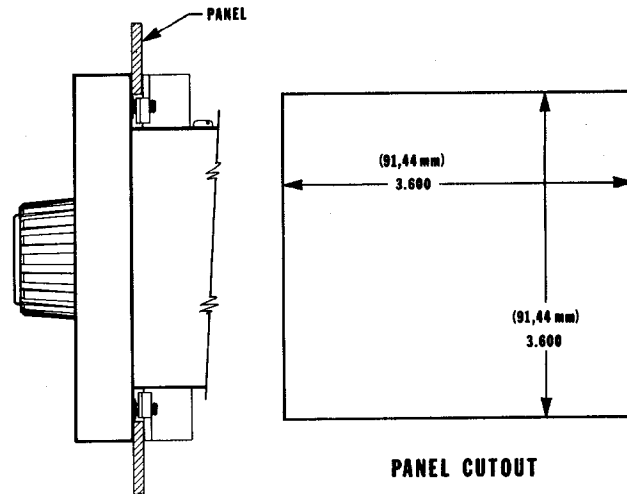
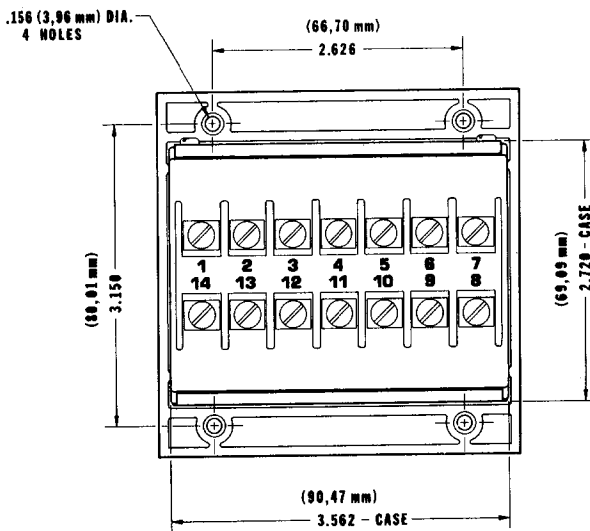
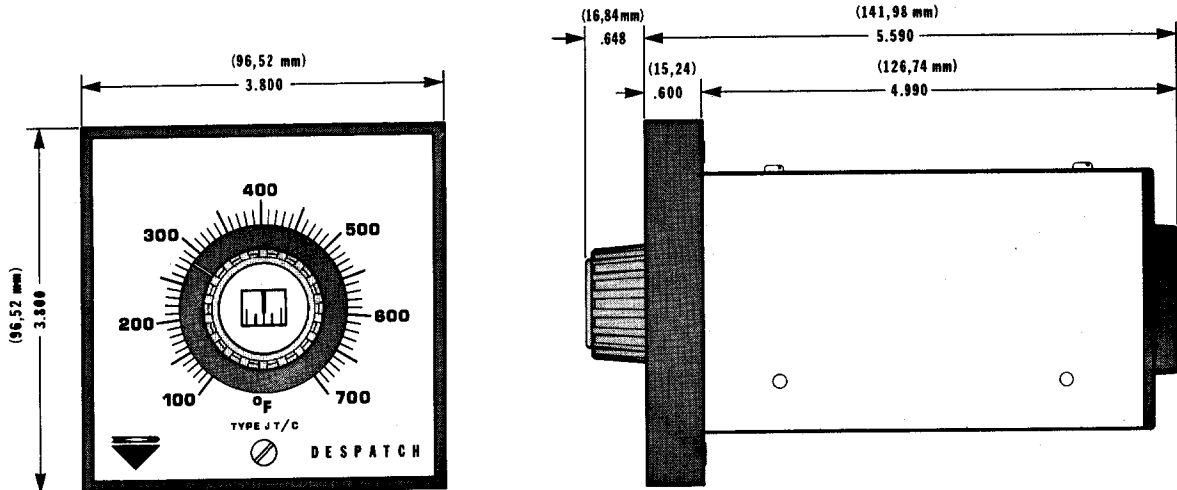
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THERMOCOUPLE TEMPERATURE CONTROLLER



SEE PAGE 2 and 3 FOR SPECIFICATIONS.

SEE Page 4 for EXTERNAL WIRING DIAGRAM.



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GENERAL: The 35-06-AV thermocouple temperature controller is a time-proportioning, solid state switching controller that provides operation with the minimization of objectionable RFI. The panel mount DIN size case features an easily read dial scale and high resolution set-point potentiometer of instrument quality to provide greater set-point accuracy. The high torque feature of the potentiometer prevents set-point changes due to equipment vibration. It includes deviation meter to give indication of process temperature.

The solid-state output will handle inductive or resistive loads, and can be used to actuate solenoids, magnetic contactors, and relays. It will also actuate solid-state SCR's and triacs in single or three phase applications. The output is externally mounted for quick and easy replacement in the event of field shorting or failure.

TEMPERATURE RANGES & SENSOR: 100 - 700°F. Type "J" T/C.

LINE VOLTAGE: 120/240 VAC ( $\pm$  10%) 50/60 Hz.

POWER CONSUMPTION: 2.0 VA (Controller only).

OPERATING AMBIENT: 30° to 125°F.

OUTPUT: Zero-switching, isolated, normally open solid-state contact 1 ampere at 115 or 230 VAC resistive or inductive load. Isolated from controller supply voltage. Contact closes when T.C. sensor temperature below set-point.

TIME PROPORTIONING: Fixed cycle time of 10 seconds.

PROPORTIONAL BAND ADJUSTMENT: Typically 5 to 50°F.

SENSOR: Type "J" or "K" thermocouple.

T.C. BREAK PROTECTION: In the event of open T.C. the controller will de-energize load power.

COLD JUNCTION COMPENSATION: Automatic cold junction compensation eliminates the need for external reference. T.C. is connected directly to unit.

INDICATION: Null meter in center of knob indicates temperature relative to set-point. First index mark on either side of center mark indicates width of proportional band.

SET-POINT CALIBRATION ACCURACY:  $\pm$  1% of span, for T.C. resistance of 100 ohms or less.

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**WATLOW WINONA, INC.**

WINONA, MINNESOTA 55987

1265 EAST SANBORN STREET

PHONE 507 454-5300



12-5-73

SET-POINT SHIFT WITH LINE VOLTAGE:  $\pm 10\%$  variation of line voltage will produce a set-point shift of less than  $\pm .25\%$  of span.

SET-POINT SHIFT WITH AMBIENT: Typically  $5\mu\text{v}/^\circ\text{F}$  ambient referred to the input.

CONTROL ACCURACY: Typically  $\pm 1$  degree, depending on design of thermo system.

ISOLATION: T.C. input to load, line and frame ground.

D.C. Resistance 1011 Ohm.

Capacitance 50 Pf.

MANUAL RESET: Includes manual reset adjustment to correct for offset (droop) present in the process system under constant load condition.

Example: Set-point  $400^\circ\text{C}$  and measured temperature  $390^\circ\text{C}$  - droop  $10^\circ\text{C}$ . Turn manual reset pot clockwise approximately  $1/4$  turn. Allow system to stabilize and re-adjust if necessary.

ISO-DRIVE OUTPUT: Will drive one or more solid state contactors such as the 50-07-03 and 50-07-04.

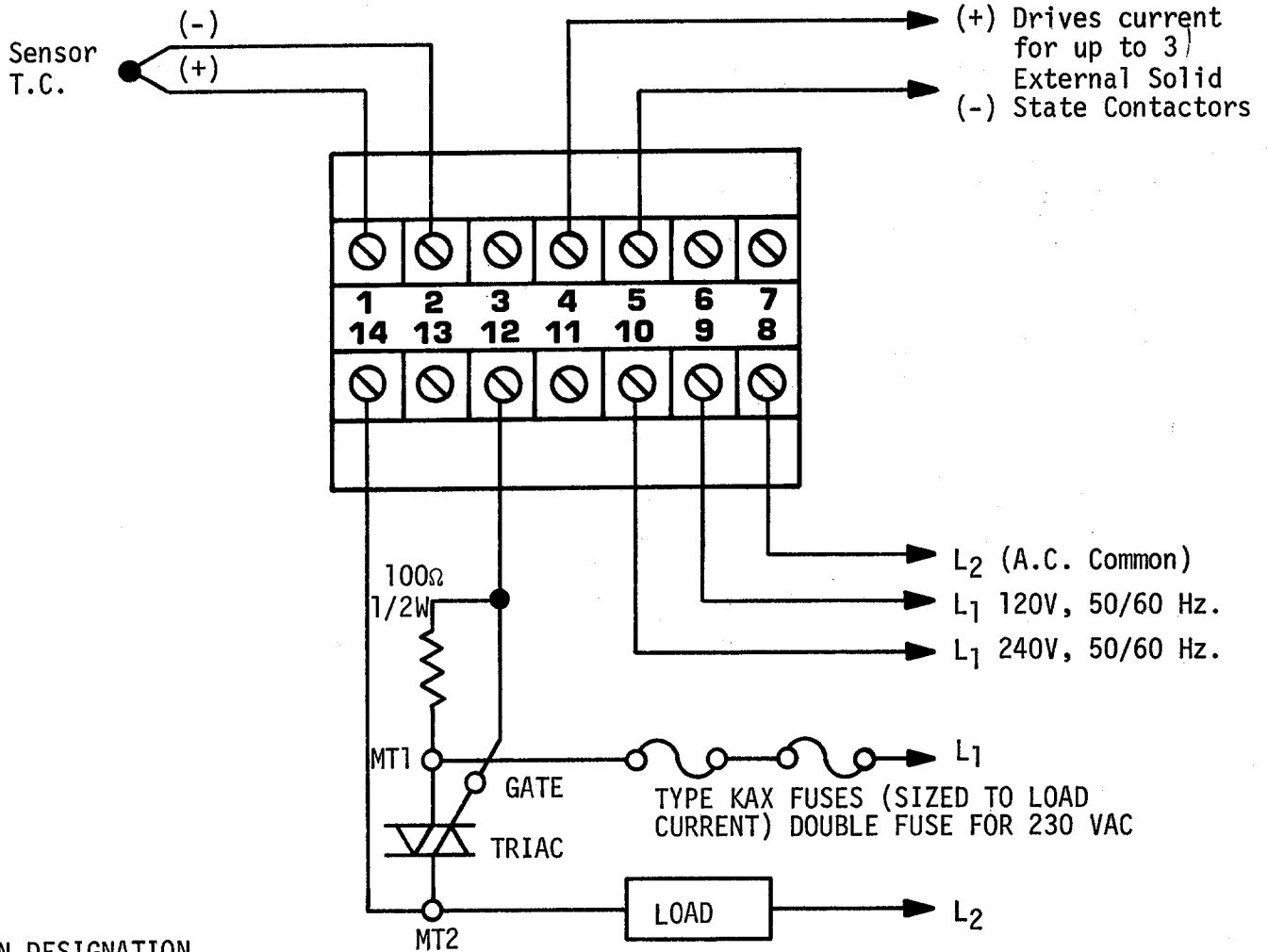
ORDERING INFORMATION: Specify model number, thermocouple type and range.





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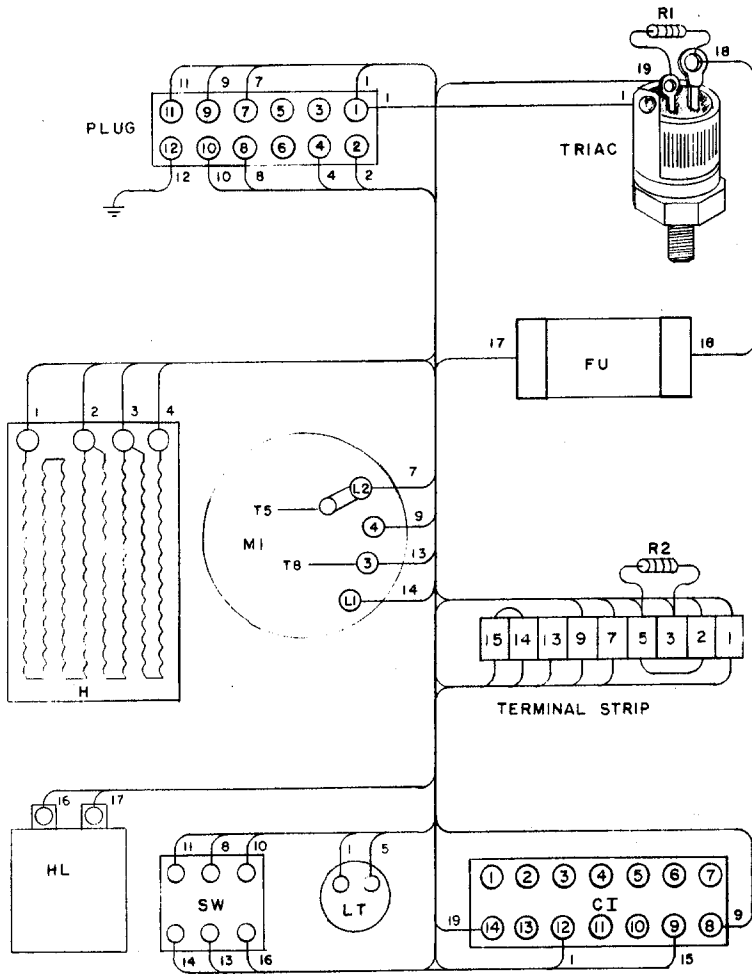
EXTERNAL WIRING DIAGRAM



PIN DESIGNATION

- 1 - T.C. (+)
- 2 - T.C. (-)
- 3 - Blank
- 4 - Iso-Drive (+) Used for driving single or
- 5 - Iso-Drive (-) Multiple Solid State Contactors.
- 6 - Blank
- 7 - Blank
- 8 - A.C. Line Common, L<sub>2</sub>
- 9 - 120 VAC Line, L<sub>1</sub>
- 10 - 240 VAC Line L<sub>2</sub>
- 11 - Blank
- 12 - Triac - Gate
- 13 - Triac - MT<sub>1</sub>
- 14 - Triac - MT<sub>2</sub>

# WIRING DIAGRAM

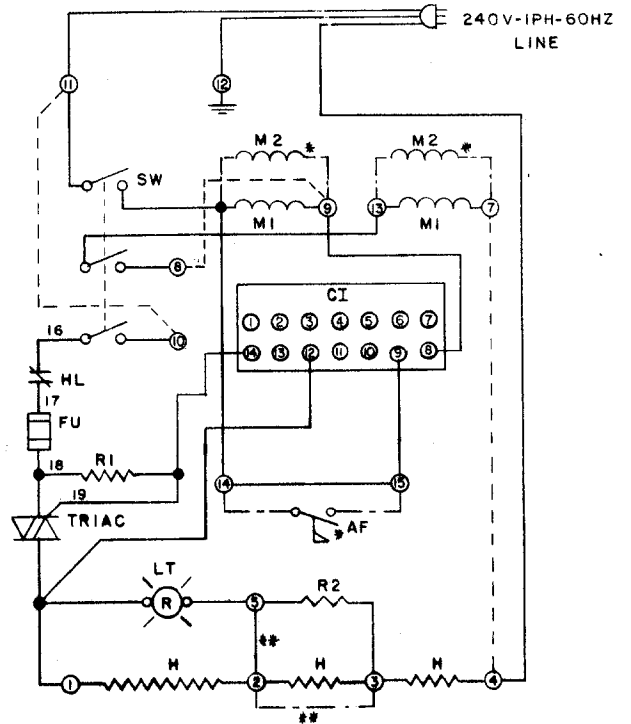
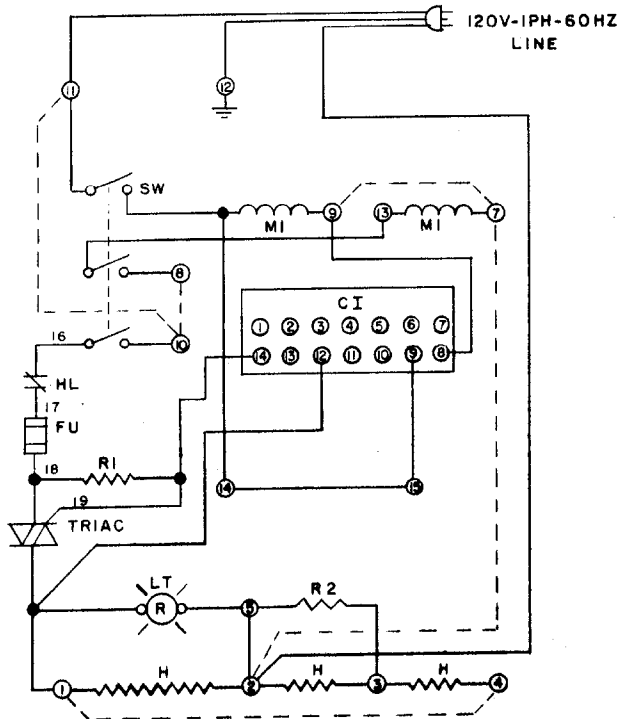


## NOTES

- CI- CONTROL
- HL- HI-LIMIT
- SW- SWITCH
- R1 - 27 OHM RESISTOR
- R2- 10K OHM RESISTOR
- LT-PILOT LIGHT
- FU- AMP-TRAP FUSE
- M1- RECIRCULATION MOTOR
- \*M2- EXHAUST MOTOR
- \* AF- AIRFLOW SWITCH
- H- FEATER

- \* EXHAUST SYSTEM OPTIONAL
- 1) CONNECT M2 LEADS SAME AS M1 LEADS
- 2) REMOVE JUMPER 14-15, REPLACE WITH AIRFLOW SWITCH
- \*\* 208 VOLT OPERATION- CHANGE JUMPER 2-5 TO 2-3
- INTERNAL POWER CORD JUMPERS
- OPTIONAL CHANGES

## SCHEMATIC



REVISED 2-24-76 DLH-CONTROL

CUST. NO.

SERIAL NO.

**DESPATCH OVEN COMPANY**  
MINNEAPOLIS, MINNESOTA

DESIGNED FOR

LACI-33H,V

ENGINEER D.L. SCALE -1FT DATE 3-18-74

CHECKED BY  
APPROVED BY  
**BE-7134**

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# Material List

## LAC1-33

Item	Part Number	Description
C	N/A	Cord and Plug
CI	208745	DES2000 Digitronic Replacement Controller Kit
T/C	051443	Thermocouple Type J
HL	055143	H-2 Hi-limit
M	202935	Motor Kit
	007289	Fan Wheel 9-1/8" Dia.
F	007470	Fuse Block 1 Pole 250V
	007457	A25X20 Fuse 250V
H	007775	1800 Watt Heater 208/240V
TR	203580	SSR Relay replacement Kit
R2	010499	10K Ohm Resistor 1W. +/-5%
ILT	008661	#36EN21111-24 Red Light
ISW	012185	Power Switch DPST
Seal	018663	Door Seal
Latch	008199	Latch Adjustable