

TECHNICAL MANUAL
FOR
[*SGML VERSION; SEE CHANGE
RECORD*]
OPERATION & SERVICE
**OVENS, ELECTRIC,
CONVECTION, SHIPBOARD;
MODELS ECO-6M, ECO-7M,
ECO-8M & ECO-9M**

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FOREWORD

This technical manual provides description, operation, maintenance, troubleshooting, repair and parts list information for Shipboard Electric Convection Ovens, Models ECO-6M, ECO-7M, ECO-8M, and ECO-9M. This technical manual is intended for guidance of and use by personnel operating and maintaining the equipment described herein.

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SAFETY SUMMARY

GENERAL SAFETY NOTICES

The following general safety notices supplement the specific warnings and cautions appearing elsewhere in this manual. They are recommended precautions that must be understood and applied during operation and maintenance of the equipment covered herein. Should situations arise that are not covered in the general or specific safety precautions, the commanding officer or other authority will issue orders as deemed necessary to cover the situation. No work shall be undertaken on energized equipment or circuits until approval of the commanding officer is obtained, and then only in accordance with Naval Ships' Technical Manual (NSTM) S9086-KC-STM-010/ Chapter 300.

DO NOT REPAIR OR ADJUST ALONE

Under no circumstances shall repair or adjustment of energized equipment be attempted alone. The immediate presence of someone capable of rendering first aid is required. Before making adjustments, be sure to protect against grounding. If possible, adjustments should be made with one hand, with the other hand free and clear of equipment. Even when power has been removed from equipment circuits, dangerous potentials may still exist due to retention of charges by capacitors. Circuits must be grounded and all capacitors discharged prior to attempting repairs. Equipment should be de-energized and properly tagged out according to the ship's Standard Operating Procedures.

TEST EQUIPMENT

Make certain test equipment is in good condition. If a metal-cased test meter must be held, ground the case of the meter before starting measurement. Do not touch live equipment or personnel working on live equipment while holding a test meter. Do not ground any measuring devices; these devices should not be held when taking measurements.

INTERLOCKS

Interlocks are provided for safety of personnel and equipment and should be used only for the purpose intended. They should not be battle shorted or otherwise modified except by authorized maintenance personnel. Do not depend solely upon interlocks for protection. Whenever possible, disconnect power at the power distribution source.

MOVING EQUIPMENT

Personnel shall remain clear of moving equipment. If equipment requires adjustment while in motion, a safety watch shall be posted. The safety watch shall be qualified to administer CPR, have a full view of the operations being performed, and have immediate access to controls capable of stopping equipment motion.

FIRST AID

An injury, no matter how slight, shall never go unattended. Always obtain first aid or medical attention immediately, and file an injury report in accordance with OPNAVINST 5102.1 series, subj: Mishap Investigation and Reporting.

SAFETY SUMMARY - Continued

RESUSCITATION

Personnel working with or near high voltage shall be familiar with approved methods of resuscitation. Should someone be injured and stop breathing, begin resuscitation immediately. A delay could cost the victim's life. Resuscitation procedures shall be posted in all electrically hazardous areas.

GENERAL PRECAUTIONS

The following general precautions are to be observed at all times.

1. Install and ground all electrical components associated with this system/ equipment in accordance with applicable Navy regulations and approved shipboard practices.
2. Ensure that all maintenance operations comply with Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat, OPNAVINST 5100.19 series.
3. Observe precautions set forth in NSTM S9086-KC-STM-010/Chapter 300 with respect to electrical equipment and circuits.
4. Ensure that protective guards and shutdown devices are properly installed and maintained around rotating parts of machinery and high voltage sources.
5. Do not wear loose clothing while working around rotating parts of machinery.
6. Ensure that special precautionary measures are employed to prevent applying power to the system/ equipment any time maintenance work is in progress.
7. Do not make any unauthorized alterations to equipment or components.
8. Before working on electrical system/equipment, use the correct tag out procedure and check with voltmeter to ensure that system is not energized.
9. Consider all circuits not known to be "dead," "live" and dangerous at all times.
10. When working near electricity, do not use metal rules, flashlights, metallic pencils, or any other objects having exposed conducting material.
11. Deenergize all equipment before connecting or disconnecting meters or test leads.
12. When connecting a meter to terminals for measurement, use range higher than expected voltage.
13. Before operating equipment or performing any tests or measurements, ensure area is dry of water or other liquid conductive material and that frames of all motors and starter panels are securely grounded.
14. Ensure that area is well-ventilated when using cleaning compound or solvent. Avoid prolonged breathing of fumes and compound or solvent contact with skin or eyes.

WARNINGS AND CAUTIONS

Specific warnings and cautions applying to the system/equipment covered by this manual are summarized below. These warnings and cautions appear elsewhere in the manual following paragraph headings and immediately preceding the text to which they apply. They are repeated here for emphasis.

SAFETY SUMMARY - Continued

WARNING

THIS APPLIANCE MUST BE GROUNDED AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE APPLIANCE COULD RESULT IN ELECTROCUTION AND DEATH. (Page 3-1)

WARNING

INSTALLATION OF THE UNIT MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT. UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES. (Page 3-1)

WARNING

KEEP WATER AND SOLUTIONS OUT OF CONTROLS. NEVER SPRAY OR HOSE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC. (Page 5-1)

WARNING

BOTH HIGH AND LOW VOLTAGES ARE PRESENT INSIDE THIS APPLIANCE WHEN THE UNIT IS PLUGGED/WIRED INTO A LIVE RECEPTACLE. BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY. (Page 5-1)

CAUTION

THE OVEN IS EXTREMELY HEAVY. FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN HELP AS NEEDED, OR EMPLOY APPROPRIATE MATERIALS HANDLING EQUIPMENT (SUCH AS A FORKLIFT, DOLLY, OR PALLET JACK) TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO THE PLACE OF INSTALLATION. (Page 3-1)

CAUTION

ANY STAND, COUNTER OR OTHER DEVICE ON WHICH OVEN WILL BE LOCATED MUST BE DESIGNED TO SUPPORT THE WEIGHT OF THE OVEN(S). (Page 3-1)

CAUTION

SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT. (Page 3-1)

CAUTION

ALWAYS KEEP THE AREA NEAR THE APPLIANCE FREE FROM COMBUSTIBLE MATERIALS. (Page 4-1)

CAUTION

KEEP FLOOR IN FRONT OF EQUIPMENT CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY, TO AVOID THE DANGER OF SLIPS OR FALLS. (Page 4-1)

CAUTION

MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN TO WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ THE WARNING AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED. (Page 5-1)

CAUTION

USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY LANG OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE BODILY INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES. (Page 5-1)

CHAPTER 1**SPECIFICATIONS**

LANG MANUFACTURING COMPANY
 MANUAL FOR MODEL ECO
 ELECTRIC CONVECTION OVENS
 ISSUE DATE FEBRUARY 1999
 LANG MANUFACTURING COMPANY
 6500 MERRILL CREEK PARKWAY
 EVERETT, WA 98203

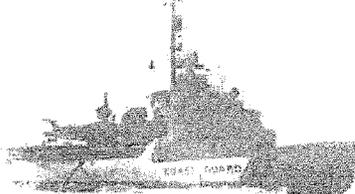
1-1. CONVECTION OVENS PER MIL-0-0043633E.**Table 1** Ovens Per MILSPEC

MIL-SPEC	LANG MODEL #	SPECIFIC NSN
Type I, Size 1	ECO-7	
Type I, Size 1 N.S.A.*	ECO-7M	7310-01-290-0463
Type I, Size 2	ECO-6	
Type I, Size 2 N.S.A.*	ECO-6M	7310-01-314-7939
Type II, Size 1	ECO-9	7310-01-230-0559
Type II, Size 1 N.S.A.*	ECO-9M	7310-01-277-4105
Type II, Size 2	ECO-8	
Type II, Size 2 N.S.A.*	ECO-8M	7310-01-227-8214

*N.S.A. for "Naval Shipboard Application". All components will fit through a 26" x 66" watertight door.

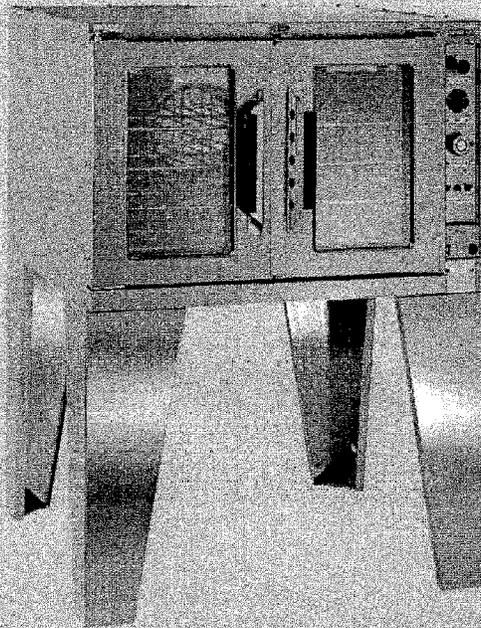


- **Hatchable equipment!**
Equipment easily passes through 26" x 66" watertight doorway. No expensive hull cuts necessary.
- Available in two (2) sizes: Standard or Extra deep.
- **Heavy Duty Marine Door Latches.**
Secure all oven doors, drip pans, crumb trays and grease drawers. Stainless steel flatbar construction.
- **All Stainless Steel Construction** - inside and out. More corrosion-resistant than 430 stainless. 12- and 16-gauge sheetmetal to withstand physical abuse in tight, busy galleys.
- Two-speed motor and interior oven light.
- Double-pane windowed doors.
- U.L. and N.S.F. Listed.
- Designed and manufactured to comply with military specifications MIL-0-0043633E. For both land base and Naval Shipboard application.
- Positive Door Locks.
- Five Oven Racks.



LANG MANUFACTURING COMPANY
6500 Merrill Creek Parkway
Everett, WA 98203
TOLL FREE (800) 882-6368
PHONE (425) 349-2400
SERVICE (800) 224-5264
FAX (425) 349-2518

LANG MILITARY CONVECTION OVENS



Meets Military Specifications MIL-0-0043633E

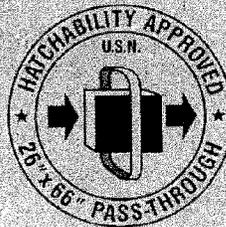


Figure # 1

Specifications subject to change without notice.

Figure 1 Picture of Oven

Designed and manufactured to comply with military specification MIL-0-0043633E. For both land base and Naval Shipboard application. Available in standard and extra deep.

INTERIOR OVEN DIMENSIONS	
STANDARD DEPTH:	
20" HIGH	22" DEEP 29" WIDE
EXTRA DEEP:	
20" HIGH	29" DEEP 29" WIDE

WEIGHT	
ECO-6	500#
ECO-7	450#
ECO-8	1000#
ECO-9	900#

MIL-0-0043633E CONVECTION OVENS

MIL-0-0043633E Classifications:

- TYPE I – One Oven Compartment
- TYPE II – Two Oven Compartments
- SIZE 1 – Standard Depth
- SIZE 2 – Extra Deep Oven Cavity

Navy Shipboard Application

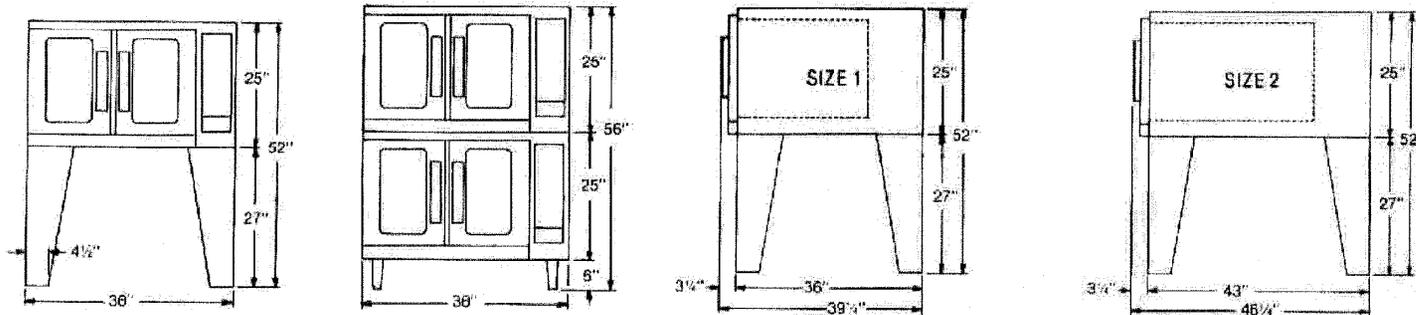
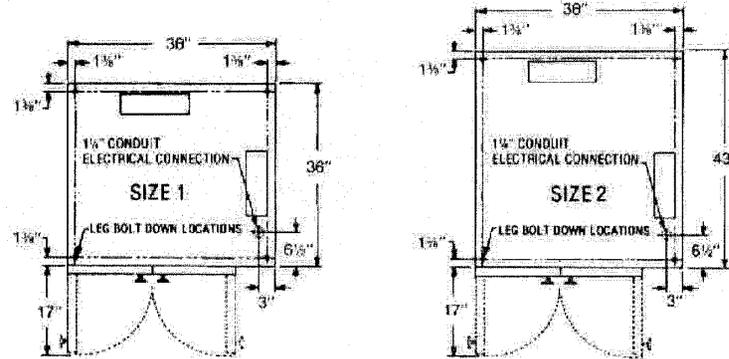


Figure # 1A

Figure 1A Specifications (Sheet 1 of 2)

MILITARY SPECIFICATIONS AND ELECTRICAL DATA										
ECO CONVECTION OVENS										
MODEL NO.	MIL0-0-0043633E SPECIFICATION DESCRIPTION			NSN	APL	TECH. MAN. NO.	TOTAL K.W. CONN.	NOMINAL AMPS PER LINE THREE PHASE		
	TYPE	SIZE	*N.S.A.					440 VOLT		
								L1	L2	L3
ECO-6	I	2	NO	7310-01-314-7939	CONTACT FACTORY	CONTACT FACTORY	11.5	16.6	16.6	11.2
ECO-6M	I	2	YES							
ECO-7	I	1	NO							
ECO-7M	I	1	YES	7310-01-290-0463						
ECO-8	II	2	NO							
ECO-8M	II	2	YES	7310-01-227-8214						
ECO-9	II	1	NO							
ECO-9M	II	1	YES				7310-01-227-4105			

*FOR NAVAL SHIPBOARD APPLICATION

Specifications subject to change without notice.

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Figure # 1A

CHAPTER 2

EQUIPMENT DESCRIPTION

2-1. INTRODUCTION.

This manual contains the necessary information to install, operate, maintain, and service the Lang Model ECO Convection Ovens.

Replacement parts should be genuine Lang parts. Failure to use genuine Lang replacement parts may result in malfunction of the appliance or possible injury to the contractor or service technician.

2-2. PURPOSE AND FUNCTION.

Convection ovens constantly circulate air over the product. This removes a layer of moisture and cool air from around the product. This allows heat to penetrate the product more quickly. Cooking times are shortened and cooking temperatures are reduced.

2-3. CAPABILITIES.

This convection oven is suitable for cooking all types of products requiring baking or roasting.

2-4. ENVIRONMENTAL REQUIREMENTS.

The following minimum spacing from combustible surfaces must be maintained: Sides - 2 inches, Back - 2 inches.

2-5. ITEMS FURNISHED (LISTED BY MODEL NUMBER).

2-5.1. Model ECO-6 Or ECO-6M.

- 1 ea. Oven, Type I, Size 2
- 4 ea. Legs
- 16 ea. 3/8-16 X 5/8 Bolts (for mounting Legs)
- 16 ea. 3/8-16 Hex Nuts (for mounting Legs)
- 32 ea. Washers (for mounting Legs)
- 2 ea. Rack Slides, Extra Deep
- 5 ea. Racks, Extra Deep
- 2 ea. Manuals, Technical

2-5.2. Model ECO-7 Or ECO-7M.

- 1 ea. Oven, Type I, Size 1
- 4 ea. Legs
- 16 ea. 3/8-16 X 5/8 Bolts (for mounting Legs)

- 16 ea. 3/8-16 Hex Nuts (for mounting Legs)
- 32 ea. Washers (for mounting Legs)
- 2 ea. Rack Slides, Standard Depth
- 5 ea. Racks, Standard Depth
- 2 ea. Manuals, Technical

2-5.3. Model ECO-8 Or ECO-8M.

- 2 ea. Ovens, Type II, Size 2
- 4 ea. Legs
- 16 ea. 3/8-16 X 5/8 Bolts (for mounting Legs)
- 16 ea. 3/8-16 Hex Nuts (for mounting Legs)
- 32 ea. Washers (for mounting Legs)
- 4 ea. Rack Slides, Extra Deep
- 10 ea. Racks, Extra Deep
- 2 ea. Manuals, Technical
- 1 ea. Stacking Kit

2-5.4. Model ECO-9 Or ECO-9M.

- 2 ea. Ovens, Type II, Size 1
- 4 ea. Legs
- 16 ea. 3/8-16 X 5/8 Bolts (for mounting Legs)
- 16 ea. 3/8-16 Hex Nuts (for mounting Legs)
- 32 ea. Washers (for mounting Legs)
- 4 ea. Rack Slides, Standard Depth
- 10 ea. Racks, Standard Depth
- 2 ea. Manuals, Technical
- 1 ea. Stacking Kit

2-6. ITEMS REQUIRED.

An adequate supply of wire suitable for the loads and application specified on the data sheet must be provided.

2-7. TOOLS AND TEST EQUIPMENT REQUIRED.

2-7.1. For Installation:

- 1 set - Open End Wrenches
- 1 - Flat Blade Screwdriver
- 1 - Cross Point Screwdriver
- 1 - Wire Cutter/Stripper
- 1 - AMP Probe
- 1 - Voltmeter
- 1 - Drill
- 4 - #27 Drill Bits

2-7.2. For Service: All of the above plus

- 1 - Needle Nose Pliers
- 1 - Crimping Pliers
- 1 - Allen Wrench Set
- 1 - Temperature Meter
- 1 - very small Flat Blade Screwdriver
- 1 - #10 Square Drive Screwdriver

CHAPTER 3
INSTALLATION

WARNING

THIS APPLIANCE MUST BE GROUNDED AT THE TERMINAL PROVIDED. FAILURE TO GROUND THE APPLIANCE COULD RESULT IN ELECTROCUTION AND DEATH.

WARNING

INSTALLATION OF THE UNIT MUST BE DONE BY PERSONNEL QUALIFIED TO WORK WITH ELECTRICITY AND PLUMBING. IMPROPER INSTALLATION CAN CAUSE INJURY TO PERSONNEL AND/OR DAMAGE TO EQUIPMENT. UNIT MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES.

CAUTION

THE OVEN IS EXTREMELY HEAVY. FOR SAFE HANDLING, INSTALLER SHOULD OBTAIN HELP AS NEEDED, OR EMPLOY APPROPRIATE MATERIALS HANDLING EQUIPMENT (SUCH AS A FORKLIFT, DOLLY, OR PALLET JACK) TO REMOVE THE UNIT FROM THE SKID AND MOVE IT TO THE PLACE OF INSTALLATION.

CAUTION

ANY STAND, COUNTER OR OTHER DEVICE ON WHICH OVEN WILL BE LOCATED MUST BE DESIGNED TO SUPPORT THE WEIGHT OF THE OVEN(S).

CAUTION

SHIPPING STRAPS ARE UNDER TENSION AND CAN SNAP BACK WHEN CUT.

NOTE

The data plate is located on the door of the oven. The oven voltage, wattage, serial number, wire size, and clearance specifications are on the data plate. This information should be carefully read and understood before proceeding with the installation.

NOTE

The installation of any components such as a vent hood, grease extractors, fire extinguisher systems, must conform to their applicable National, State and locally recognized installation standards.

3-1. INSPECTION AND INSTALLATION.

Upon receipt of the oven(s) any damage should be noted on the Bill of Lading and countersigned by the carrier. If concealed damage is discovered the carrier should be notified. All claims must be filed with the carrier.

Move the crate(s) containing the oven(s) as close to the place of installation as possible before removing the protective crating. Uncrate the oven(s) and move them as close as practical to the final installation site.

Bolt the legs to the bottom oven. (See [Figure #2](#)) Use the 3/8-16 X 5/8 Bolts, Hex Nuts and Washers provided. There are pre-punched holes provided in the legs and oven bottom to aid in leg installation. Now the oven can be set upright in or near its final position.

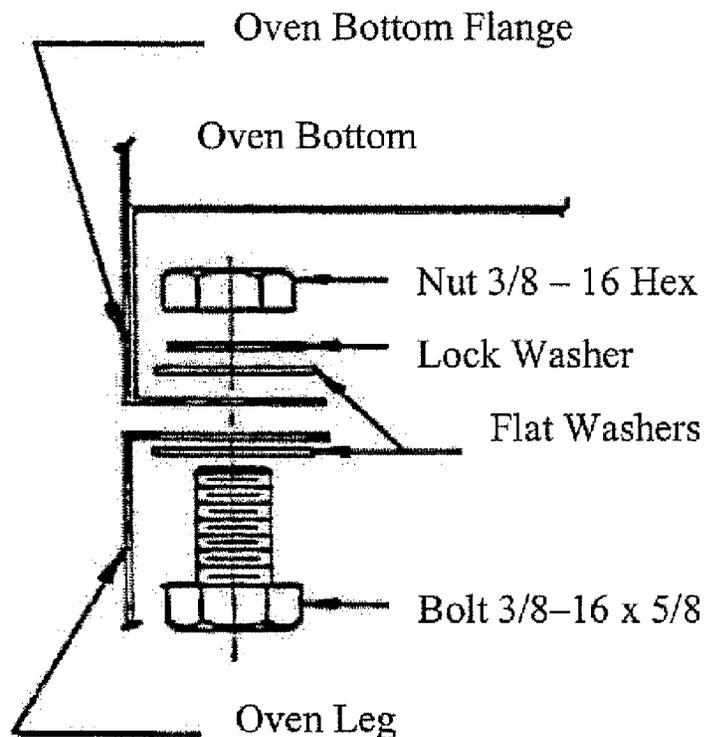


Figure #2

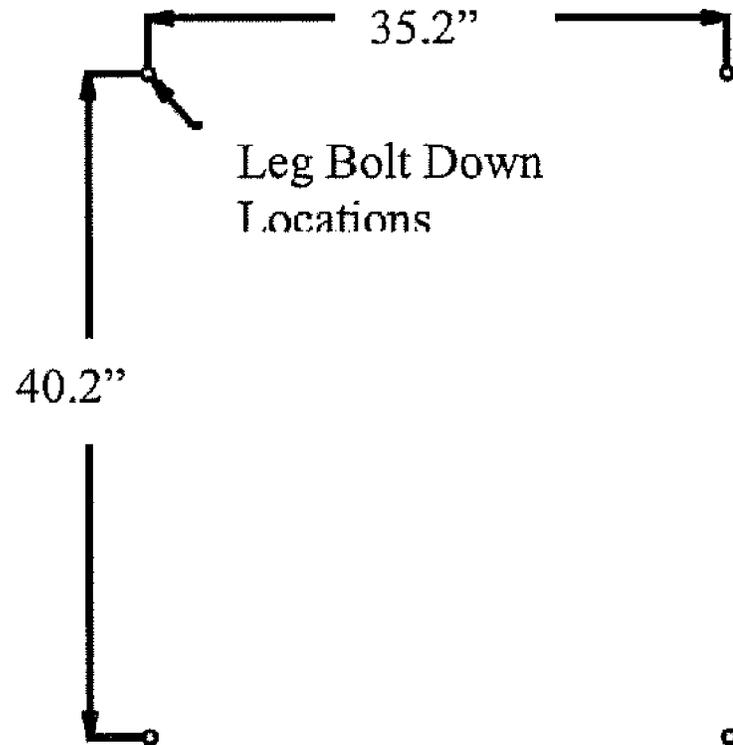


Figure #3

For single cavity ovens, they can now be connected to power through the knockout in the bottom. The oven can be placed in its final position and leveled. The oven is ready for initial start-up procedures now. (See the [Operation](#) section)

For two cavity ovens, place the upper oven on top of the bottom oven. Be careful to route the power supply wire between the two ovens using the holes provided. Do not pinch or cut the supply wires when stacking the ovens. Use the stacking kit provided to secure the top oven to the bottom oven. The stacking kit contains four (4) identical corner braces. One brace goes on each corner. Do the following for each corner: Put a brace on a corner. Drill pilot holes for the mounting screws using the pre-punched holes as a guide. Secure the top oven to the bottom oven with the sheet metal screws provided. (See [Figure #4](#))

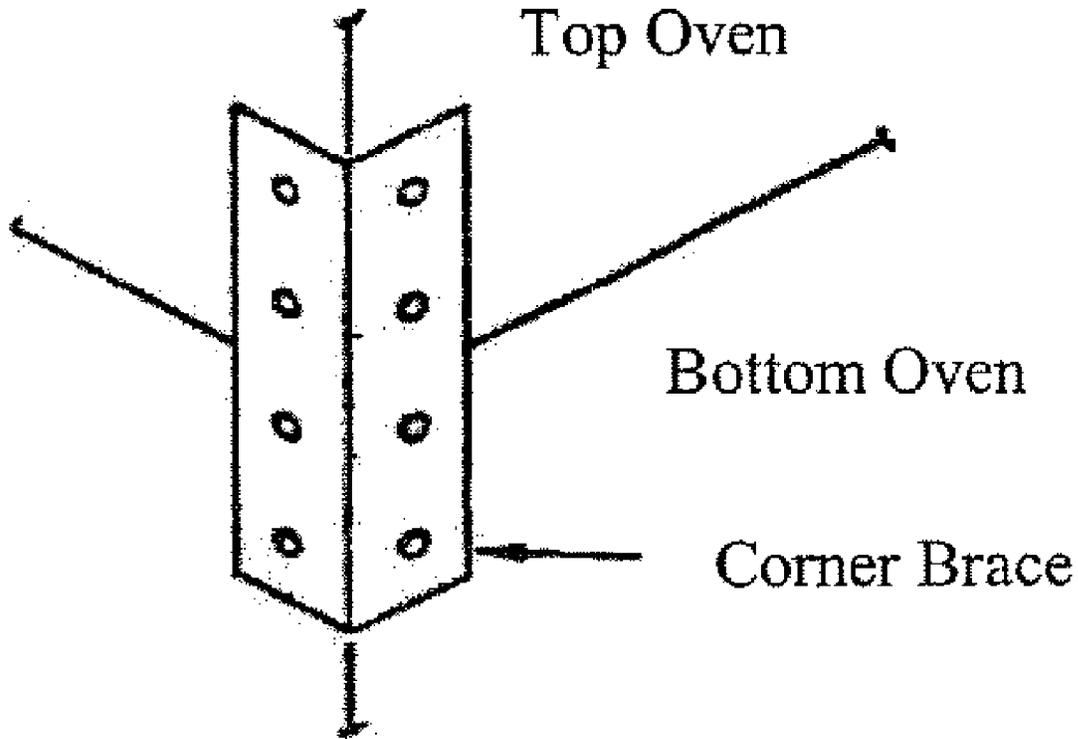


Figure #4

Connect the power supply leads from the top oven to the power supply leads of the bottom oven and incoming power per the wiring diagram ([Figure 6](#)).

Now the bottom oven can be connected to the incoming power supply through the knockout provided in the bottom of the oven. Be sure the power supply voltage matches the voltage specified on the nameplate located on the front of the oven! Then the oven can be placed in its final position and leveled. The oven is ready for initial start-up procedures now. See the [Operation](#) section.

CHAPTER 4

OPERATION

CAUTION

ALWAYS KEEP THE AREA NEAR THE APPLIANCE FREE FROM COMBUSTIBLE MATERIALS.

CAUTION

KEEP FLOOR IN FRONT OF EQUIPMENT CLEAN AND DRY. IF SPILLS OCCUR, CLEAN IMMEDIATELY, TO AVOID THE DANGER OF SLIPS OR FALLS.

NOTE

During the first few hours of operation you may notice a small amount of smoke coming off the oven, and a faint odor from the smoke. This is normal for a new oven and will disappear after the first few hours of use.

4-1. OPERATING INSTRUCTIONS.

Each oven has the following controls:

Vent, Timer, Temperature, Power Switch, Light Switch and Motor Speed Switch.

Vent - Pull to Open, Push to Close.

Timer - Adjust to desired setting.

Temperature - Turn to desired Cooking Temperature.

Power Switch - Pull Up to turn oven ON, Push Down to turn oven OFF.

Light Switch - Pull Up to turn oven light ON, Release and oven light goes out automatically.

Motor Speed Switch - Pull Up for High Speed, Push Down for Low Speed.

4-2. INITIAL START-UP.

Set oven(s) at 350° and allow oven to operate empty for 3 hours. After this time, the oven is ready for use.

4-3. NORMAL OPERATION.

Turn the Power Switch ON, turn to the desired temperature and select motor speed. (HI or LOW) Blower motor rotates clockwise as viewed from front of oven.

4-4. MAINTENANCE.

Wash the stainless interior & exterior often with a solution of hot water and detergent to prevent grease build-up and preserve the oven's appearance. Wipe up spillage as soon as possible. Never use scouring powder. It is difficult to remove completely and a residue build-up can damage the oven. The oven racks, slides and stainless steel oven liners are removable for easier cleaning of the oven interior.

CHAPTER 5

MAINTENANCE AND TROUBLESHOOTING

WARNING

KEEP WATER AND SOLUTIONS OUT OF CONTROLS. NEVER SPRAY OR HOSE CONTROL CONSOLE, ELECTRICAL CONNECTIONS, ETC.

WARNING

BOTH HIGH AND LOW VOLTAGES ARE PRESENT INSIDE THIS APPLIANCE WHEN THE UNIT IS PLUGGED/WIRED INTO A LIVE RECEPTACLE. BEFORE REPLACING ANY PARTS, DISCONNECT THE UNIT FROM THE ELECTRIC POWER SUPPLY.

CAUTION

MOST CLEANERS ARE HARMFUL TO THE SKIN, EYES, MUCOUS MEMBRANES AND CLOTHING. PRECAUTIONS SHOULD BE TAKEN TO WEAR RUBBER GLOVES, GOGGLES OR FACE SHIELD AND PROTECTIVE CLOTHING. CAREFULLY READ THE WARNING AND FOLLOW THE DIRECTIONS ON THE LABEL OF THE CLEANER TO BE USED.

CAUTION

USE OF ANY REPLACEMENT PARTS OTHER THAN THOSE SUPPLIED BY LANG OR THEIR AUTHORIZED DISTRIBUTORS CAN CAUSE BODILY INJURY TO THE OPERATOR AND DAMAGE TO THE EQUIPMENT AND WILL VOID ALL WARRANTIES.

NOTE

Service on this, or any other, LANG appliance must be performed by qualified personnel only. Consult your authorized service station directory or call the factory at 1-800-224-LANG (5264), or WWW.LANGWORLD.COM for the service station nearest you.

5-1. TROUBLESHOOTING GUIDE.**Table 2** Troubleshooting Guide

SYMPTOM	PROBLEM	REMEDY
Oven will not turn on	* Internal Circuit Breakers off * Power supply circuit breakers off * Improperly Phased * Fuses Open	* Turn on * Turn on * Phase per wiring diagram * Change fuses
Power Supply Circuit Breakers Trip	* Supply circuit breakers of insufficient size * Supply voltage & oven voltage do not match	* Install proper size breakers * Change voltage to match oven
Internal circuit breakers trip	* Supply voltage & oven voltage do not match	* Change voltage to match oven
Oven takes too long to bake and won't maintain temperature	* Improperly phased	* Phase oven to match power supply per wiring diagram

5-2. PERFORMANCE AND INSPECTION.

A periodic check of thermostat calibration should be performed. To check oven calibration attach a thermocouple to the mid-point of the thermostat bulb in the oven cavity. Turn the temperature dial to 350° and turn the oven ON. Wait approximately 20 minutes until the oven temperature has stabilized. If the average of the ON and OFF thermostat readings is within 10° of 350° the oven is in calibration. If not, remove the temperature knob and turn the small screw in the middle until oven is in calibration. Replace the knob and the oven is ready for normal operation.

5-3. MAJOR COMPONENT DISASSEMBLY, REPAIR, REPLACEMENT AND REASSEMBLY.

(Refer to [Figure 5](#))

5-4. THERMOSTAT, CONTACTORS (RELAYS), SWITCHES.

These parts are located behind the control panel assembly on the right hand side of each oven. Remove the screws attaching the control panel to the front of the oven. Slowly pull out the control panel until the component requiring replacement is accessible.

5-5. THERMOSTAT REPLACEMENT:

Inside the oven cavity remove the retaining clips holding the thermostat-sensing bulb in place. Feed the bulb through the oven wall into the control panel area. Remove the wires attached to the thermostat terminals. Remember the terminal each wire was on and attach the wires to the same terminal on the new thermostat. Remove the screws holding the old thermostat to the front of the control panel. Discard old thermostat. Mount the new thermostat to the control panel, carefully feed the sensing bulb through the oven wall, and reattach the sensing bulb to the oven side using the retaining clips removed earlier. Close control compartment. Restore power to oven. Refer to the [Performance And Inspection](#) section to verify proper operation of the new thermostat.

5-6. ELEMENT REPLACEMENT:

The element is located inside the oven cavity. To replace the element, remove the baffle at the back of the oven. This will expose the elements to plain view and allow easy access. Remove the element mounting screws

located near the top of the oven. Gently , pull the element into the oven cavity. There is enough wire connected to the element to allow easy access to the terminals located behind the element mounting plate. Move each wire from the existing terminal to the corresponding terminal on the new element. DO NOT mix up these wires! After all wires are transferred to the new element, feed the wire back through the access hole in the back of the oven and attach the element to the oven wall with the screws removed earlier. Replace the baffle. Refer to the [Initial Start-Up](#) section to restore the oven to proper operation.

5-7. CONTACTOR (RELAY), SWITCH REPLACEMENT:

Pull out control panel as previously outlined. Remove the wires from the contactor or switch being changed. Place those wires on the corresponding terminal of the new part. Remove old part and mount new part with wires attached in the spot where the old part use to be. Reinstall the control panel, restore power to the oven. Turn oven on, set thermostat to 200° and allow oven to cycle 3 times or until the technician is satisfied with the proper operation of the oven.

5-8. BLOWER WHEEL REPLACEMENT:

The blower wheel is located inside the oven cavity. To replace the blower wheel, remove the baffle at the back of the oven. This will expose the blower wheel to plain view and allow easy access. Loosen the two (2) set screws holding the blower wheel onto the motor shaft. Using a three-finger blower wheel puller, grasp the puller ring with all three fingers and tighten the puller until the blower wheel hub clears the motor shaft. Place new blower wheel on the motor shaft and position exactly 5/8" from the oven back motor plate. Tighten the set screw positioned over the flat on the motor shaft. Spin the fan to make sure it spins straight. Tighten the second set screw and re-tighten the first set screw. Replace the baffle. The oven is now ready to re-start.

5-9. MOTOR REPLACEMENT:

The motor is located inside the oven cavity. To replace the motor, remove the baffle at the back of the oven. This will expose the blower wheel and motor shaft to plain view and allow easy access. Remove the blower wheel as described in [Blower Wheel Replacement](#). Next, remove the bolts holding the motor plate to the back wall of the oven cavity. Gently pull the motor forward and lay on the bottom of the oven cavity. Mark the wires so they can be placed on the same terminals of the new motor. Remove the motor wires. Remove the motor from the oven. Remove the motor mounting bolts, remove the old motor and replace with the new one. Reverse the above steps to remount the motor and see [Blower Wheel Replacement](#) for proper re-installation of the blower wheel.

5-10. TRANSFORMER REPLACEMENT:

Pull out control panel as previously outlined. Mark the wires attached to the transformer. Remove the wires. Remove the screws holding the transformer to the control panel. Install the new transformer. Reconnect the wires making sure they are attached to the same terminals as on the original transformer. Reinstall the control panel, restore power to the oven. The oven is now ready for normal operation.

5-11. MICROSWITCH REPLACEMENT:

Open the oven doors and remove the screws from the microswitch cover located below the doors. Remove the microswitch cover. Remove the two (2) small screws (6/32) holding the microswitch to its mount. Mark the wires attached to the microswitch, then remove the wires. Attach the wires to the new microswitch. Mount the microswitch with the two 6/32 screws. Adjust the microswitch arm for proper switch actuation. Replace cover and restart oven.

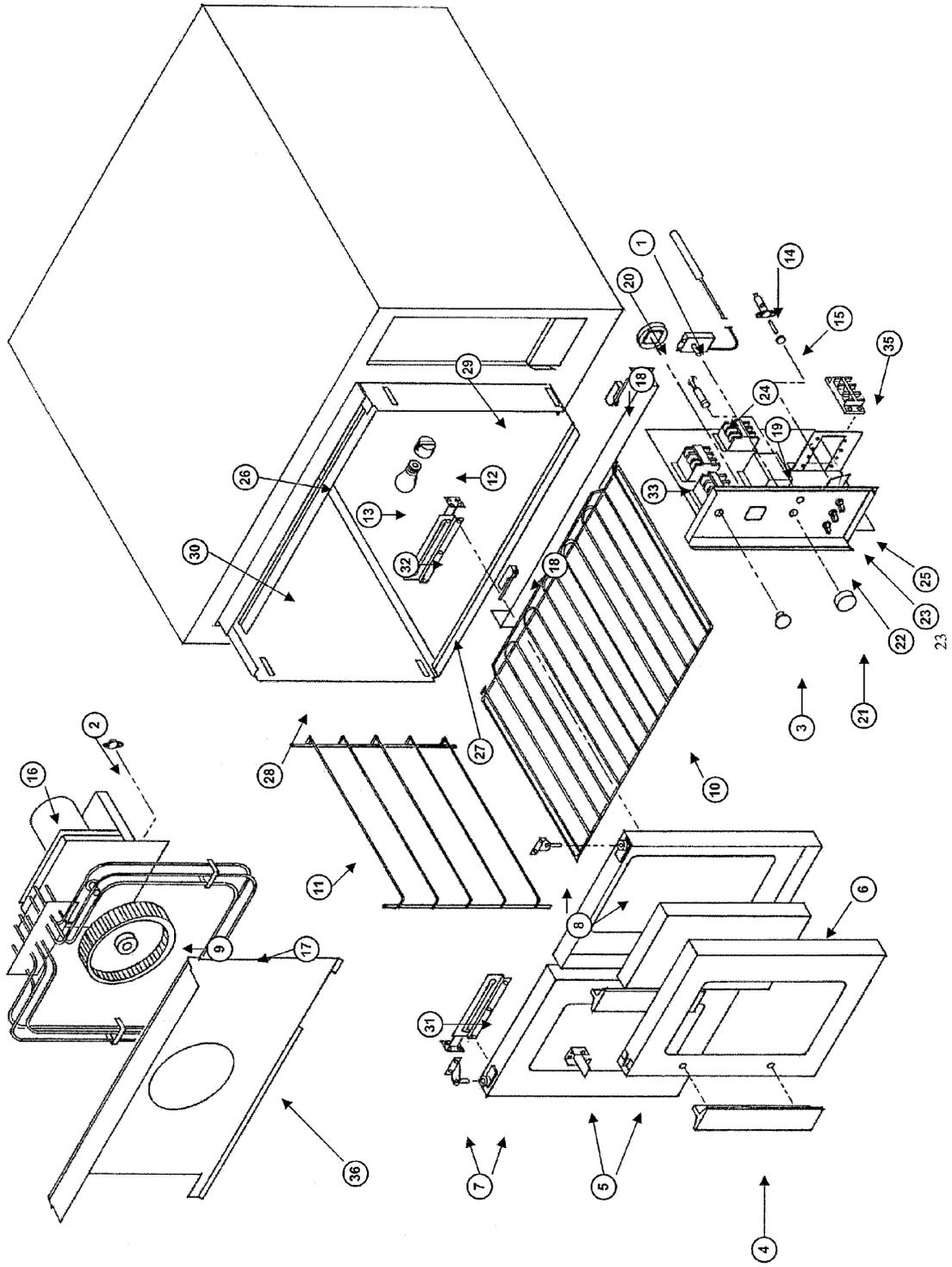
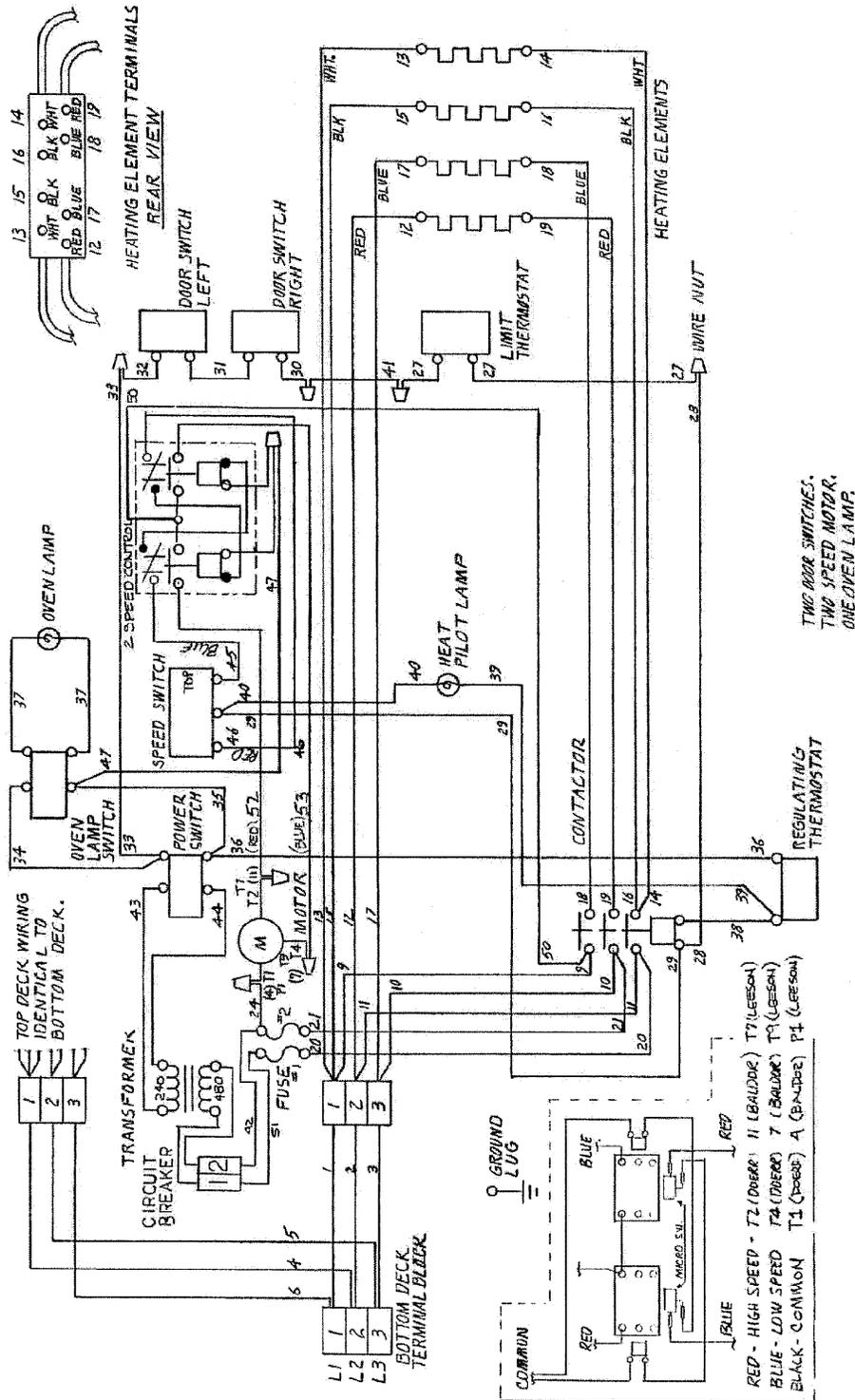


Figure 5

Item #	Description	Lang Part #	Vendor	Vendor #
1	Thermostat	30402-27	Robertshaw Youngswood, PA	KXP-356-48
2	Thermostat, Safety	30401-09	Elmwood Pawtucket, RI	345-ORC-174-0067
3	Knob, Damper	70701-25	Aimsco Seattle, WA	DK-49-REID
4	Handle, Door	70603-20	Lang Mfg Everett, WA	70603-20
5	Latch, Marine Door	ECO-762	Lang Mfg Everett, WA	ECO-762
6	Window, Door	71301-04	Mills Products Farmington, MI	1001453
7	Hinge, Door Upper Left	70601-02	Kason Shenandoah, GA	1532
	Hinge, Door Lower Left	60101-81	Lang Mfg Everett, WA	60101-81
8	Hinge, Door Upper Right	70601-07	Kason Shenandoah, GA	1533
	Hinge, Door Lower Right	60101-81	Lang Mfg Everett, WA	60101-81
9	Blower Wheel	71500-05	Revcor Carpentersville, IL	1-8149
10	Rack, Deep, ECO-6M & ECO-8M	50200-31	Lang Mfg Everett, WA	50200-31
	Rack, Std., ECO-7M & ECO-9M	50200-20	Lang Mfg Everett, WA	50200-20
11	Rack Slide, ECO-6M & ECO-8M	50200-33	Lang Mfg Everett, WA	50200-33
	Rack Slide, ECO-7M & ECO-9M	50200-32	Lang Mfg Everett, WA	50200-32
12	Socket, Light	31602-04	Lang Mfg Everett, WA	31602-04
13	Lamp, Light	31603-04	Litecore Seattle, WA	1139750A/250V
14	Holder, Fuse	30901-08	H.D. Campbell Seattle, WA	HPF-EE Bussman
15	Fuse	30900-10	H.D. Campbell Seattle, WA	SC-15
16	Motor, 440 VAC, 2 speed	30200-16	Leeson Electric Milwaukee, WI	101354.00
17	Element, 440 VAC	11090-30	Caloritech, Inc. Buffalo, NY	IXI-11090-30
18	Microswitch, Door	30301-02	Unimax Boston, MA	HL2KJC3T055C
19	Transformer, 480/240 VAC	31400-04	Argo International New York, NY	HD/2221109T00
20	Timer, Mechanical	30801-03	M.H. Rhodes Chicago, IL	22007
21	Knob, Thermostat	70701-19	Lang Mfg Everett, WA	70701-19

Item #	Description	Lang Part #	Vendor	Vendor #
22	Switch, Toggle	30303-06	Carlingswitch Inc. Plainsville, CT	2GL231-78-XLN2
23	Switch, Toggle	30303-06	Carlingswitch Inc. Plainsville, CT	2GL231-78-XLN2
24	Pilot Light, 250 VAC	31601-01	Indicator Lites Chicago, IL	10422250012221
25	Switch, Toggle	30303-06	Carlingswitch Inc. Plainsville, CT	2GL231-78-XLN2
26	S/S Liner, Top ECO-6M & ECO-8M	ECO-750	Lang Mfg Everett, WA	ECO-750
	S/S Liner, Top ECO-7M & ECO-9M	ECO-751	Lang Mfg Everett, WA	ECO-751
27	S/S Liner, Bottom ECO-6M & ECO-8M	ECO-752	Lang Mfg Everett, WA	ECO-752
	S/S Liner, Bottom ECO-7M & ECO-9M	ECO-753	Lang Mfg Everett, WA	ECO-753
28	S/S Liner, Left ECO-6M & ECO-8M	ECO-754	Lang Mfg Everett, WA	ECO-754
	S/S Liner, Left ECO-7M & ECO-9M	ECO-755	Lang Mfg Everett, WA	ECO-755
29	S/S Liner, Right ECO-6M & ECO-8M	ECO-756-01	Lang Mfg Everett, WA	ECO-756-01
	S/S Liner, Right ECO-7M & ECO-9M	ECO-757-01	Lang Mfg Everett, WA	ECO-757-01
30	S/S Liner, End Cover Bottom	ECO-758	Lang Mfg Everett, WA	ECO-758
	S/S Liner, End Cover Top	ECO-758-1	Lang Mfg Everett, WA	ECO-758-1
31	Door Stop Assy, Left Hand	50301-50	Lang Mfg Everett, WA	50301-50
32	Door Stop Assy, Right Hand	50301-88	Lang Mfg Everett, WA	50301-88
33	Contactor, Element	30700-05	Products Unlimited Chicago, IL	3100-30U8198LM
34	Contactor, 2 Speed Motor	30705-01	Products Unlimited Chicago, IL	3120-30K8198Q
35	Terminal Block, 3 Pole 95 Amp	30500-09	All-west Fasteners Seattle, WA	14002-3A
36	Rear Baffle Assembly	ECO-351	Lang Mfg Everett, WA	ECO-351
	Circuit Breaker, 2/10 AMP 2 Pole	31800-07	Carlingswitch Inc. Plainsville, CT	CB2BO2422022CC
	Knob, Timer	70701-55	Lang Mfg Everett, WA	70701-55
	Lamp, Lens	31604-01	VWR Scientific Brisbane, CA	66110-065
	Lamp, Lens Gasket	31604-02	Atlas Supply Seattle, WA	31604-02
	Light Ring	50301-21	Lang Mfg Everett, WA	50301-21

Item #	Description	Lang Part #	Vendor	Vendor #
	Wing Nut	20304-01	Lang Mfg Everett, WA	20304-01
	Capillary Tube Holder	ECO-276	Lang Mfg Everett, WA	ECO-276



TWO DOOR SWITCHES.
TWO SPEED MOTOR.
ONE OVEN LAMP.

Figure 6

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INCLUDE COMPLETE ADDRESS

**USE PROPER
POSTAGE**

FOR OFFICE USE ONLY

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4363 MISSILE WAY
PORT HUENEME, CA 93043-4307

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