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**southbend**

A MIDDLEBY COMPANY

**IMPORTANT FOR FUTURE REFERENCE**

Please complete this information and retain this manual for the life of the equipment:

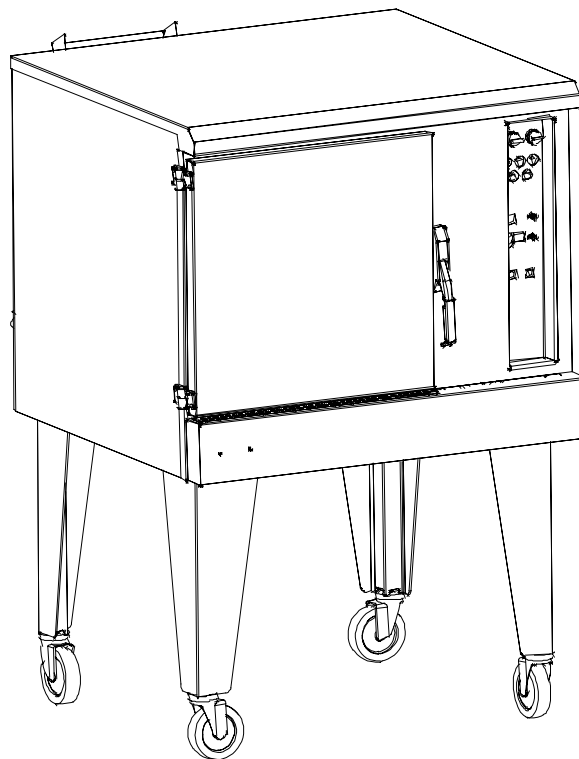
Model #: \_\_\_\_\_

Serial #: \_\_\_\_\_

Date Purchased: \_\_\_\_\_

# OPERATOR'S MANUAL

# Combination (Combi) Oven



Model CG90-1

**! WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

1100 Old Honeycutt Road, Fuquay-Varina, NC 27526  
(800) 348-2558 or (919) 552-9161 • FAX (800) 348-2558 or (919) 552-9798



# SAFETY PRECAUTIONS

Before installing and operating this equipment, be sure everyone involved in its operation is fully trained and aware of precautions. Accidents and problems can be caused by failure to follow fundamental rules and precautions.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to the operator, service personnel, or to the equipment.



This symbol warns of immediate hazards that will result in severe injury or death.



This symbol refers to a potential hazard or unsafe practice that could result in injury or death.



This symbol refers to a potential hazard or unsafe practice that could result in injury, product damage, or property damage.



This symbol refers to information that needs special attention or must be fully understood, even though not dangerous.

## **WARNING** **FIRE HAZARD**

**FOR YOUR SAFETY** do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

Keep area around appliances free and clear of combustibles.

Purchaser of equipment must post in a prominent location, detailed instructions to be followed in the event the operator smells gas. Obtain the instructions from the local gas supplier.

## **WARNING** **SHOCK HAZARD**

Do not open panels that require use of tools.

Unit must be cleaned daily and properly maintained to reduce chances of unsafe operating conditions.

## **WARNING** **BURN HAZARD**

Watch for clogged drain - can create burn hazard when door is opened.

Stand back when opening doors - hot steam, hot air, and/or hot water may escape from oven.

## **NOTICE**

Be sure this Operator's Manual and important papers are given to the proper authority to retain for future reference.

Congratulations! You have purchased one of the finest pieces of heavy-duty commercial cooking equipment on the market.

You will find that your new equipment, like all Southbend equipment, has been designed and manufactured to meet the toughest standards in the industry. Each piece of Southbend equipment is carefully engineered and designs are verified through laboratory tests and field installations. With proper care and field maintenance, you will experience years of reliable, trouble-free operation. **For best results, read this manual carefully.**

RETAIN THIS MANUAL FOR FUTURE REFERENCE.

Model Numbers

This manual is for the Southbend Combination Oven model CG 90-1. The serial plate is located behind the lower front panel on the left side.

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Read these instructions carefully before attempting installation. Installation and initial startup should be performed by a qualified installer. Unless the installation instructions for this product are followed by a qualified service technician (a person experienced in and knowledgeable with the installation of commercial gas an/or electric cooking equipment) then the terms and conditions on the Manufacturer's Limited Warranty will be rendered void and no warranty of any kind shall apply.

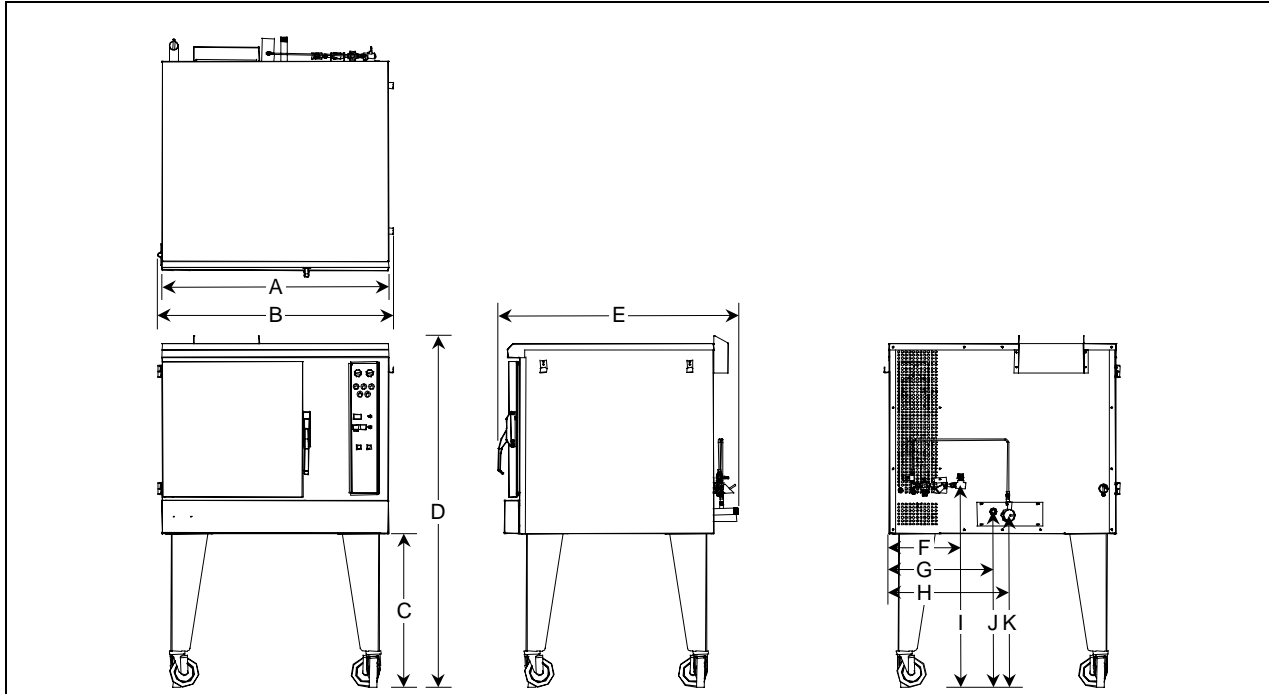
In the event you have questions concerning the installation, use, care, or service of the product, write to:

Technical Service Department  
 Southbend  
 1100 Old Honeycutt Road  
 Fuquay-Varina, North Carolina 27526 USA



# SPECIFICATIONS

## DIMENSIONS



Internal Dimensions: 20.75" Wide, 31.75" Deep, 22" High

Model	Cabinet Width (A)	Overall Width (B)	Leg Height (C)	Overall Height (D)	Overall Depth (E)
CG90-1	38"	39.6"	25.9"	59.1"	40.3"

Model	Water Connection 3/8" NPT (Female)		Gas Supply Connection 3/4" NPT (Male)		Drain Tube 2" OD	
	From Right (F)	Above Floor (I)	From Right (G)	Above Floor (J)	From Right (H)	Above Floor (K)
CG90-1	12.6"	33.9"	17.5"	29.5"	20.2"	28.9"

### GAS

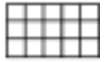
Burners total 90,000 BTU. Supply pressure should be > 7" W.C. for natural gas or > 11" W.C. for propane. One 3/4" NPT male connector located on back, 17.5" from right side, 29.5" above floor (see above figure).

### WATER

Cold water consumption is regulated to approximately 0.5 gallons per minute. Water pressure 30 psi (205 kPa) minimum, 60 psi. (410 kPa) maximum. To minimize service problems and to meet warranty requirements, a water treatment system (softener) is recommended if water quality does not meet the following specifications: total dissolved solids (TDS) 60 ppm, hardness 2 grains or 35 ppm, pH factor 7.0 to 7.5. Install a water treatment system (softener) if necessary. Connector is a 3/8" female NPT "tee" located on the back of the oven, 12.6" from right side, 33.9" above floor (see above figure).

### DRAIN

Drain line is a 2" OD tube extending from the back of the oven, 20.2" from right side, 28.9" above floor (see above figure). Drain outlet must be unobstructed and free-venting to atmospheric pressure! See page 11.



## ELECTRIC

Maximum 8.0 amps (use 15 amp circuit breaker). Three voltage options:

**120 VAC, 60 Hz, 1 phase:** Six-foot cord with three-prong plug (standard option).

**208 VAC, 60 Hz, 1 or 3 phase:** Wire junction box to terminal block located near rear of motor compartment.

**240 VAC, 60 Hz, 1 or 3 phase:** Wire junction box to terminal block located near rear of motor compartment.

All units are shipped single-phase. Single-phase units can be easily operated on three-phase systems.

## CLEARANCES

See page 8.

## CONSTRUCTION (BIDDING) SPECIFICATIONS

Commercial Gas Combination Steamer/Convection Oven, Single Deck:

39.6" Wide, 59.1" High (including 25.9" legs), 40.3" Deep.

Exterior Finish: Oven front, sides, and top #3 finish stainless steel. Back aluminized steel.

Door: Single door, insulated #304 stainless steel construction (interior and exterior), positive door catch, single action release.

Oven Interior: #304 stainless steel, including heat exchangers and baffle.

Rack & Rack Guides: Stainless steel heavy-duty removable wire rack guides spaced on 1-5/8" centers offer 11 rack positions. Stainless steel heavy-duty removable safety-stop racks are provided with each cavity.

Blower Fan & Motor: 1/2 horsepower, 2-speed motor, 1725/1140 rpm. Motor mounted in naturally ventilated compartment, away from heat zone. Motor serviceable from right side.

Control Panel: Located on front, at right side of oven, away from heat zone. Panel slides out for easy servicing.

Solid State Controls allow operator to select Convection Oven, Convection Steamer or Combination modes, in addition to controlling fan speed, steam injection, and cool-down modes. Time/temperature dial controls with digital displays.

## DESIGN FEATURE SPECIFICATIONS

- Condensate spray with free venting exhaust
- Automatic cool down mode
- Interior washdown hose
- Rear condensate drain

### NOTICE

**INTENDED FOR COMMERCIAL USE ONLY. NOT FOR HOUSEHOLD USE.**



# INSTALLATION



## CAUTION

Do not locate unit adjacent to any high heat or grease producing piece of equipment, such as a range top, griddle, fryer, etc., that could allow radiant heat to raise the exterior temperature of the combination oven above 130°F (54°C). DO NOT MOUNT ABOVE OTHER COOKING EQUIPMENT.

## NOTICE

These installation procedures must be followed by qualified personnel or warranty will be void.

Local codes regarding installation vary greatly from one area to another. The National Fire Protection Association, Inc. states in its NFPA 96 latest edition that local codes are the “authority having jurisdiction” when it comes to installation requirements for equipment. Therefore, installations should comply with all local codes.

The unit, when installed, must be electrically grounded and comply with local codes, or in the absence of local codes with the *National Electrical Code*, *ANSI/NFPA 70*, or the *Canadian Electric Code*, *CSA C22.2*, as applicable.

Installation must comply with *National Fuel Gas Code*, *ANSI Z223.1*, *Natural Gas Installation Code*, *CAN/CGA-B149.1*, or the *Propane Installation Code*, *CAN/CGA-B149.2*, as applicable.

## Step 1: Unpack

### IMMEDIATELY INSPECT FOR SHIPPING DAMAGE

All containers should be examined for damage before and during unloading. The freight carrier has assumed responsibility for its safe transit and delivery. If damaged equipment is received, either apparent or concealed, a claim must be made with the delivering carrier.

Apparent damage or loss must be noted on the freight bill at the time of delivery. The freight bill must then be signed by the carrier representative (Driver). If the bill is not signed, the carrier may refuse the claim. The carrier can supply the necessary forms.

A request for inspection must be made to the carrier within 15 days if there is concealed damage or loss that is not apparent until after the equipment is uncrated. The carrier should arrange an inspection. Be certain to hold all contents plus all packing material.

1. Uncrate carefully. Report any hidden damage to the freight carrier IMMEDIATELY.
2. Do not remove any tags or labels until unit is installed and working properly.



## Step 2: Install the Legs

A set of legs is packed in the unit. The legs can be adjusted to overcome a slightly uneven floor. When legs with casters have been ordered, the casters are provided with a Zerk fitting for proper lubrication when required.

1. Raise oven sufficiently to allow legs to be bolted to the bottom corners. For safety, “shore up” and



INSTALLATION

Step 3: Check Clearances and Ventilation

**! WARNING**

There must be adequate clearance between oven(s) and construction. Clearance must also be provided for servicing and for operation.

Minimum Clearances:

	From Combustible Construction	From Non-Combustible Construction
Back	7"	0"
Right Side	0"	0"
Left Side	0"	0"
Floor	0"	0"

Adequate clearance must be provided in the aisle and at the side and rear to allow the door to open sufficiently to permit the removal of the racks and for serviceability.

No additional clearance is required for service as the ovens are servicable from the front.

**! WARNING**

Improper ventilation can result in personal injury or death. Ventilation which fails to properly remove flue products can cause headaches, drowsiness, nausea, or could result in death.

All units must be installed in such a manner that the flow of combustion and ventilation air are not obstructed. Provisions for adequate air supply must be provided. Do not obstruct the front or rear of the unit, as combustion air enters through this area. Be sure to inspect and clean the ventilation system according to the ventilation equipment manufacturer's instructions.

**NOTICE**

Proper ventilation is the owner's responsibility. Any problem due to improper ventilation will not be covered by the warranty.

Canopies are set over ranges, ovens, etc., for ventilation purposes. It is recommended that a canopy extend 6" past the appliance and the bottom edge be located 6'6" from the floor. Filters should be installed at an angle of 45° or more from the horizontal. This position prevents dripping grease and facilitates collecting the run-off grease in a drip pan, unusually installed with a filter. A strong exhaust fan tends to create a vacuum in the room and may interfere with burner performance or may extinguish pilot flames. Fresh air openings approximately equal to the fan area will relieve such a vacuum.

The exhaust fan should be installed at least 2" above the vent opening at the top of the unit.

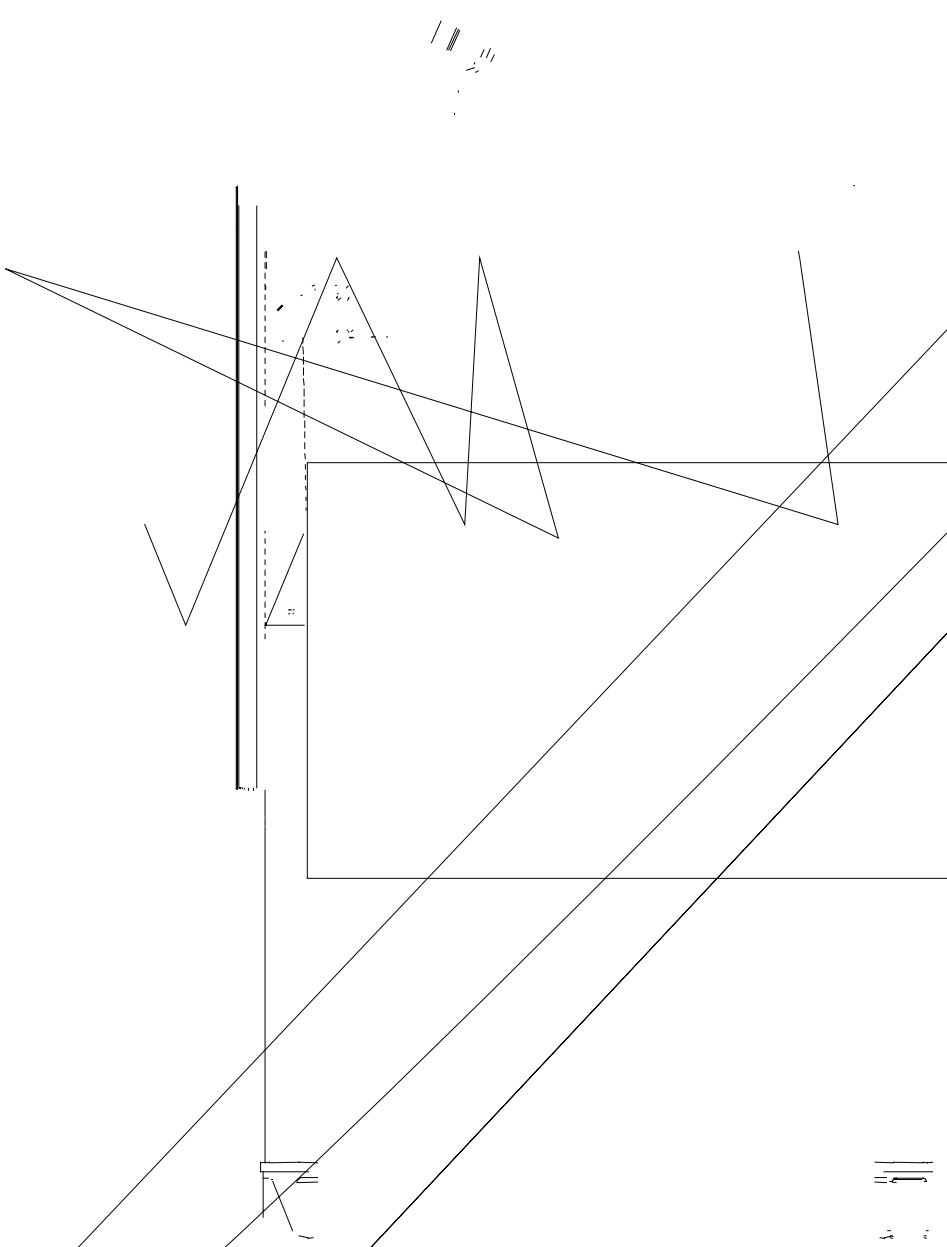
In case of unsatisfactory performance on any appliance, check the appliance with the exhaust fan in the "OFF" position. Do this only long enough to check equipment performance. Then turn hood back on and let it run to remove any exhaust that may have accumulated during the test.





Utility Connections

INSTALLATION





### Step 4: Electrical Connections

A wiring diagram is located inside the control compartment on the right side of the pull-out control-panel assembly. To access the control-panel compartment, remove the screw at the top of the control panel and pull the control panel out.

Units ordered with a **115VAC, 60Hz, single-phase** electrical rating are factory-supplied with three-wire cord and three-prong plug, which fits any standard three-prong grounded receptacle.

Units ordered with a **208/240VAC, 60Hz, single- or three-phase** electrical rating are factory-equipped with a 2-pole terminal block located behind a cover plate located at the rear of the unit. To connect the supply wires, remove the appropriate cover plate. Route the supply wires and the grounding wire through the strain relief fitting to the terminal block. Insert the supply wires, one each, into the two poles of the terminal block and tighten the screws. Insert the ground wire into the grounding lug and tighten the screw. Re-attach the cover plate.

Three phase units are wired as above, using only two supply wires. The third wire is not used and must be properly terminated.

All units are shipped wired as specified by factory order. Conversion between single-phase and three-phase can be accomplished by referring to phase loading and line amperes chart on wiring diagram for wire size and ampere requirements.

**! WARNING**

A POSITIVE GROUND CONNECTION IS ESSENTIAL. DO NOT ALLOW ANY TAMPERING OR ADJUSTMENT OF ANY CONTROL OR WIRING. THE UNIT IS FACTORY SET. ADJUSTING ANY INTERNAL COMPONENT OTHER THAN THE MAIN FUSE BLOCK CAN VOID THE WARRANTY.

**! WARNING**

**ELECTRICAL GROUNDING INSTRUCTIONS**

This appliance is equipped with a three-prong (grounding) plus for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from the plug.

### Step 5: Connect Water Supply

Connect a cold water line to the 3/8" female NPT "tee" connector located on the back of the oven (at the lower left-hand side when facing the back of the oven, see figure on page 9).

To facilitate cleaning, plus allow access to the rear of the unit, flexible connections are recommended.

**NOTICE: WATER SPECIFICATION**

To meet warranty requirements, supply water must meet the following specification:

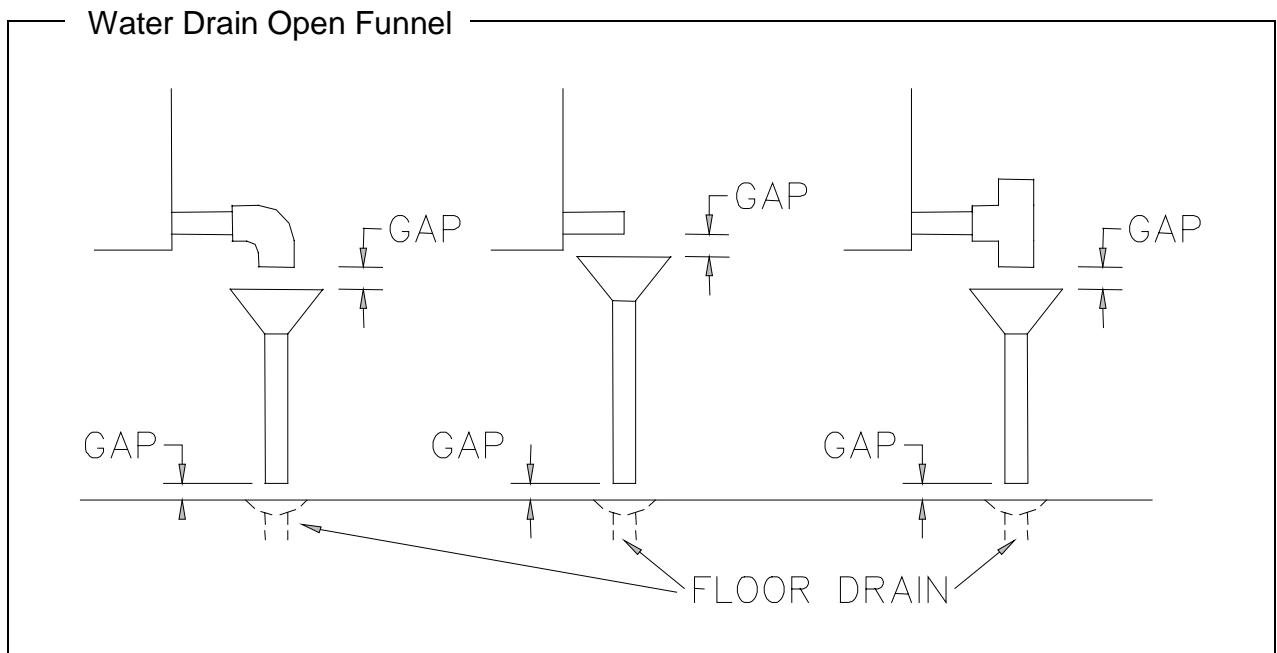
- Pressure ..... 30 to 60 psi (205 to 410 kPa)
- Total Dissolved Solids (TDS) ..... 60 PPM
- Hardness ..... 2 Grains or 35 PPM
- pH Factor ..... 7.0 to 7.5



Step 6: Water Drain

The drain line from the oven is a 2" O.D. tube (see figure on page 9). Position the oven near, but not on top of, an open floor drain. DO NOT directly plumb to the oven unless you also install an "open funnel" downstream of this connection in the drain system. Make the drain line from the unit to the air gap above the "open funnel" as short as possible. There should be no horizontal piping between the oven and the air gap over the "open funnel." The "open funnel" is intended to eliminate any water from entering the oven because of a blocked drain, and it also prevents any back pressure within the oven cavity. The oven must be free-venting to the atmosphere. Any connection that allows the build-up of back pressure in the oven (such as a reduction in pipe size to a line smaller than 2" or a 90 degree angle in the line prior to the "open funnel" drain discharge point) may cause personal or property damage and therefore will void the warranty. This is a pressureless, free-venting oven and will not operate properly unless the drain line is short, at a steep angle, and open!

INSTALLATION





## Step 7: Gas Connection

If this equipment is being installed at over 2,000 feet altitude and that information was not specified when ordered, contact the appropriate authorized Southbend Service Representative or the Southbend Service Department. Failure to install with proper orifice sizing will result in poor performance and may void the warranty.

The serial plate is located behind the lower front panel on the left side. It indicates the type of gas the unit is equipped to burn. All Southbend equipment is adjusted at the factory. Check type of gas on serial plate.

This appliance should be connected **ONLY** to the type of gas for which it is equipped.

A 3/4" male NPT line is provided at the rear for the connection. Each oven is equipped with an internal pressure regulator which is set for 4" W.C. manifold pressure for natural gas or 10.0" W.C. manifold pressure for propane gas. Use the 1/8" tap on the top of the gas valve for checking pressure.

If applicable, the vent line from the gas appliance pressure regulator shall be installed to the outdoors in accordance with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1, Natural Gas Installation Code, CAN/CGA-B149.1, or the Propane Installation Code, CAN/CGA-B149.2*, as applicable.

An adequate gas supply is imperative. Undersized or low pressure lines will restrict the volume of gas required for satisfactory performance. Fluctuations of more than 25% on natural gas or 10% on propane gas will create problems and affect burner operating characteristics. A 1/8" pressure tap is located on the gas valve to measure the manifold pressure.

An adequate gas supply line to the unit should be no smaller than the I.D. of the pipe from the unit to which it is connected.

Purge the supply line to clean out dust, dirt, or other foreign matter before connecting the line to the unit. Each oven has a manual shut off valve located behind the lower front panel.

Use pipe joint compound which is suitable for use with LP gas on all threaded connections.

### CAUTION

ALL PIPE JOINTS AND CONNECTIONS MUST BE TESTED THOROUGHLY FOR GAS LEAKS. USE ONLY SOAPY WATER FOR TESTING ON ALL GASES. NEVER USE AN OPEN FLAME TO CHECK FOR GAS LEAKS. ALL CONNECTIONS MUST BE CHECKED FOR LEAKS AFTER THE UNIT HAS BEEN PUT INTO OPERATION. TEST PRESSURE SHOULD NOT EXCEED 14" W.C.



### Step 8: Installation and Performance Check

The following items should be checked by a qualified service technician:

1. Verify that oven is level.
2. Verify proper electrical characteristics (voltage, cycle, phase).
3. Check ventilation.
4. Check electrical connections (external and internal).
5. Check door(s) for proper alignment, tension, seal, and adjustment.
6. Check timers, switches and motor for proper installation and operation.
7. Check for any damage to unit from shipping or installation.
8. Check for proper clearance from combustible materials.
9. Verify proper type of gas.
10. Verify gas supply pressure (pressure regulator is already installed at factory).
11. Check gas connection and check for gas leaks.
12. Check water connection and check for water leaks.

It is common for new products to require a burn-off time to dry out insulation and metal cooking surfaces.



# OPERATION

## NOTICE

No attempt should be made to operate oven during a power failure.  
 A manual gas shutoff valve is located behind front lower panel for turning gas on and off.

### OPERATION (FOR STANDARD CONTROL OPTION)

OPERATION

**Lighting the Combi** – The Combi has an intermittent standing pilot. When the unit is turned on, the lighting sequence is controlled by an ignition module. A hot surface ignitor ignites the pilot, which stays lit for the entire time the Combi is turned on and the flame is proven by the flame sensor.

**Re-Lighting the Combi** – If the Combi does not light on the first attempt, do the following:

1. Shut off all gas.
2. Wait five minutes.
3. Repeat lighting instructions above.

**Turning the Combi On and Off** – The power switch at the top left corner of the control panel turns the unit on and off. When the power switch is turned on, the Combi begins a diagnostic check and initiates the pilot lighting sequence. If the diagnostic check or the lighting sequence fails, a code word will appear in the time display and operation will be suspended. Otherwise the unit will begin operation in the startup default mode, which is oven mode at 350°F.

**Choosing Fan Speed** – The Combi has a two speed fan which can be controlled with the fan speed selector switch at the upper right hand corner of the control panel.

#### Choosing the Cooking Mode

*Oven Mode* is selected by pressing the OVEN button, which causes the light above the OVEN button to illuminate. In oven mode, the Combi acts exactly like a convection oven. If when the OVEN mode button was pressed the unit is not at the setpoint temperature, the temperature display will flash until the setpoint temperature is reached.

*Steam Mode* is selected by pressing the STEAM button, which causes the light above the STEAM button to illuminate. In steam mode, the Combi acts exactly like a pressureless countertop convection steamer. If when the STEAM mode button was pressed the unit is not at the setpoint temperature, the temperature display will flash until the setpoint temperature is reached. In steam mode, the setpoint temperature is preset to 215°F, to allow pure, slightly superheated steam to circulate within the cavity.

*Combi Mode* is selected by pressing the COMBI button, which causes the light above the COMBI button to illuminate. In combi mode, a high moisture cooking environment is created through carefully controlled humidification. If when the COMBI mode button was pressed the unit is not at the setpoint temperature, the temperature display will flash until the setpoint temperature is reached.

*Steam Inject Mode* is the only mode that can used in conjunction with another cooking mode, namely oven mode. Pressing the STEAM INJECT button causes steam to be delivered to the cavity for as long as the button is held. The intent is to provide the desired surface characteristics (crispy, shiny crust) on bread products, and for any other products that would benefit from timely steam injections.

*Vent/Cool Mode* is designed to quickly cool the cavity from a high setpoint temperature to a low temperature using a combination of high fan speed and a cooling spray of water



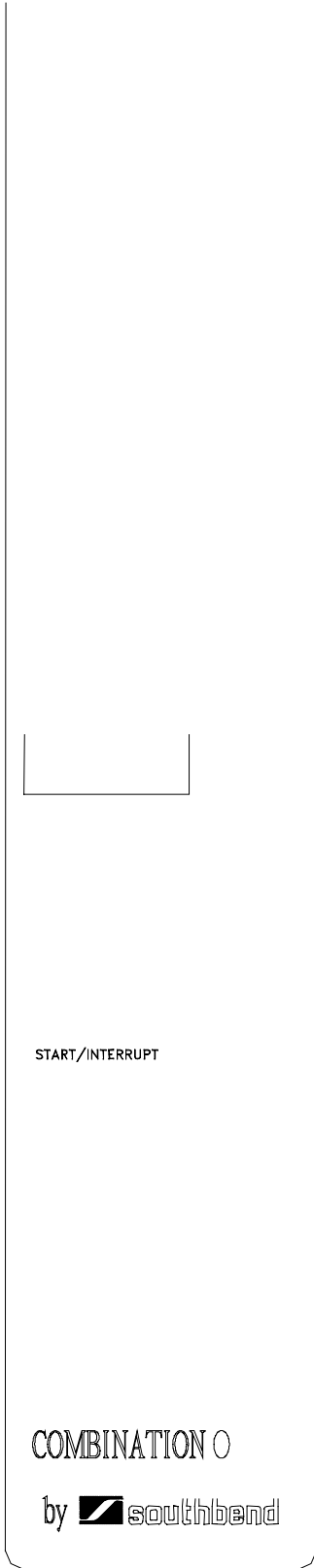
**Setting Cooking Temperature** – The cooking temperature can be set in oven mode and Combi mode but not in steam mode. In steam mode, the setpoint temperature is preset to 215°F, to allow pure, slightly superheated steam to circulate within the cavity. The temperature range in oven mode and Combi mode is 145°F to 500°F.

**Setting Cooking Time** – The cooking time can be set by turning the time knob to the desired setting and pressing the START/INTERRUPT button. When the timer times out, the alarm sounds. However, **the oven continues to run in the mode and at the temperature that were in effect when the time expired.** If the cooking mode is changed while the timer is counting down, the timer simply continues to count down. If the timer is timed out (00:00) when the cooking mode is changed, then the unit runs continuously in the new mode. To disable the beeper after the timer has expired, press the START/INTERRUPT button again. The CANCEL button will reset the time to zero.



Operation of Combination Oven with Standard Controls

OPERATION







# COOKING HINTS

All times and temperatures are estimates and should be verified in actual practice. Starting temperature of food, pan size/fullness, and opening oven during cooking will affect cooking times.

## Baked Goods

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Apple pie, mile-high	Oven	350°F/175°C	50 min.	Pie tins on wire racks	
Biscuits	Oven	325°F/165°C	15 min.	Sheet pan	Can also use Combi mode at 350°F/175°C
Biscuits, cinnamon raisin	Oven	325°F/165°C	15 min.	Sheet pan	Also try in Combi mode
Bread sticks (soft style, raw dough)	Combi	325°F/165°C	10 min.	Sheet pan	375°F/190°C for crispier sticks
Cake layers	Oven	300°F/150°C	25 min.	Sheet pans	
Carrot cake layers	Oven	325°F/165°C	25 min.	Sheet pans	
Cheesecake	Combi	325°F/165°C	1 hour		
Cherry crisp	Combi	325°F/165°C	30 min.	2 ½" pan, uncovered	
Chocolate brownies	Oven	325°F/165°C	25 min.	Sheet pans	
Coffee cake, apple	Oven	300°F/150°C	25 min.		
Coffee cake, sour cream	Oven	300°F/150°C	25 min.		Also try in Combi mode
Cookies, butter sugar	Combi	300°F/150°C	10 min.	Sheet pan	Also try in oven mode
Cookies, oatmeal raisin	Oven	325°F/165°C	15 min.	Sheet pan	
Cookies, peanut butter chocolate chunk	Oven	300°F/150°C	12 min.	Sheet pan	Higher temperature for crispier cookies
French bread	Combi	375°F/190°C	20 min.	Sheet pan	See hard roll procedure
Hot seasoned apples	Combi	250°F/120°C	15 min.	2 ½" pan, uncovered	
Muffins (blueberry, banana nut)	Oven	350°F/175°C	20 min.	Muffin pans	Preheat to 400°F/205°C, load oven,, turn off for 6-8 min., then bake at indicated temperature
Rolls, dinner	Combi	325°F/165°C	20 min.		
Rolls, hard	Combi	375°F/190°C 250°F/120°C 350°F/175°C	Preheat 5 min. 15 min.	Sheet pan	Low temp stage produces better crust – can be eliminated – keep total time
Rolls, sweet	Combi	325°F/165°C	20 min.	Sheet pan	Also try in oven mode
Rolls, whole wheat	Combi	325°F/165°C	25 min.	Sheet pan	



## Beef and Veal

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
BBQ beef (raw brisket)	Combi	250°F/120°C 375°F/190°C	90 min. + 10 min at higher temp.		Cook with sauce at low heat, raise temp. to set glaze
Beef Sausage links	Steam	350°F/175°C	10 min.		May also be steamed
Braised beef w/mushrooms	Combi	250°F/120°C	1 hour	2 ½" pan, uncovered	
Corned beef hash	Combi	250°F/120°C	25 min.	2 ½" solid pan	
Fillet steak	Combi	500°F/260°C	10 min.	Oiled sheet pan	
Grilled flank steak	Combi	500°F/260°C	10 min.	Wire rack	Oil steak
Hamburger pie	Combi	325°F/165°C	30 min.	2 ½" pan, uncovered	
Hamburgers (Frozen patties)	Combi	400°F/205°C	10 min.	Perforated sheet pan	
Herbed pot roast	Combi	250°F/120°C	3 hours	2 ½" solid pan	
Hot dogs	Steam	N/A	7 min.	2 ½" perforated	
London broil	Combi	500°F/260°C	15 min.	Preheated racks	Oil steaks
Marinated sirloin steak	Combi	500°F/260°C	10 min.	Oiled sheet pan	
Meatloaf	Combi	300°F/150°C	40 min.	2 ½" pan, uncovered	
New York strip	Combi	500°F/260°C	8 min.	Wire racks	Oil steaks
Prime Rib	Combi	275°F/135°C	2 ½ hours	Wire rack	Bone in - Export 10-12lbs
Ribeye sandwich steak	Combi	500°F/260°C	5 min.	Wire rack and catch pan on bottom	Brush w/melted butter, preheat oven well
Roast beef	Combi	275°F/135°C	2 ½ hours	Sheet pan or wire rack	
Roast beef hash (re-therm)	Combi	250°F/120°C	25 min.	2 ½" solid pan	
Rump steak	Combi				
Salisbury steak w/gravy (re-therm)	Combi	250°F/120°C	20 min.	2 ½" solid pan	
Teriyaki steak	Combi	400°F/205°C	10 min.	Sheet pan	

COOKING HINTS



## Fish and Shellfish

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Crab	Steam	N/A	8-10 min.	2 ½" perforated pan	
Halibut	Combi	325°F/165°C	6-7 min.	½ size sheet pan	
Perch	Oven	400°F/205°C	5 min.	Sheet pan	Brush pan w/oil and season fish
Salmon (fresh)	Combi	325°F/165°C	8-10 min.	2 ½" perforated	
Shrimps – frozen	Steam	N/A	3-5 min.	2 ½" perforated pan	20-25 ct.
Trout	Oven	400°F/205°C	5 min.	Sheet pan	Brush pan w/oil and season fish

## Pork and Lamb

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Bacon slices	Combi	325°F/165°C	15 min.	Sheet pan	Single layer
Baked ham	Combi	300°F/150°C	1 hour	Sheet pan	
Baked pork chops	Combi	325°F/165°C	20 min.	Sheet pan	Single layer
BBQ boneless rib for sandwich (retherm)	Combi	250°F/120°C	15 min.	Sheet pan	
BBQ pork for sandwich (Boston butts, raw)	Combi	250°F/120°C	2 hours	Sheet pan, with sauce	
Bratwurst	Steam	N/A	10 min.	2 ½", uncovered	
Canadian bacon	Combi	400°F/205°C	5 min.	Sheet pan	Single layer
Grilled butterflied pork chops	Combi	400°F/205°C	10 min	Sheet pan	Oil chops
Grilled ham slice	Combi	400°F/205°C	10 min.	Wire rack	Preheat to 450F
Grilled pork cutlet	Combi	400°F/205°C	15 min.	Sheet pan	Single layer
Grilled pork tenderloin	Combi	400°F/205°C	15 min.	Oiled, wire rack	
Italian sausage	Combi	375°F/190°C	15 min.	Sheet pan	
Kielbasa	Combi	375°F/190°C	15 min.	Sheet pan	Single layer
Knockwurst	Steam	N/A	15 min.	2 ½" perforated pan	
Pork sausage link	Combi	350°F/175°C	15 min.	Sheet pan	Single layer
Roast pork	Combi	300°F/150°C	50 min.	Sheet pan or wire rack	150F internal, rest 20 minutes
Sausage patties	Combi	300°F/150°C	15 min.	Sheet pan	Steam for better yield



### Potatoes, Pasta, and Grains

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Baked potatoes	Oven	375°F/190°C	40 min.	Sheet pan	
New, red potatoes	Steam	N/A	17 min.	2 ½" perforated	Cut in quarters
Rice (short grain)	Steam	N/A	20 min.	2 ½" pan, covered	2 parts rice, 1 part stock

### Poultry

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Chicken wings	Combi	375°F/190°C	15 min.	Sheet pan	
Chicken, half	Combi	325°F/165°C	25 min.	Sheet pan	
Chicken, whole	Combi	325°F/165°C	35 min.	Sheet pan	
Turkey	Combi	375°F/190°C	2 hrs, 15 min.	Sheet pan	
Turkey breast	Combi	325°F/165°C	1 hour	Sheet pan	

### Vegetables

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Asparagus	Steam	N/A	8 min.	2 ½" perforated	
Asparagus & egg au gratin	Steam	N/A	14 min.	2 ½" solid	
Beans (frozen, whole or cut)	Steam	N/A	12 min.	2 ½" perforated	Blanch fresh, cold water
Broccoli (fresh spears)	Steam	N/A	8 min.	perforated	
Broccoli cheese casserole	Combi	300°F/150°C	30 min.	2 ½" solid	
Cabbage	Steam	N/A	15 min.	2 ½" perforated	Remove stalk
Cabbage, red (frozen)	Steam	N/A	18 min.	2 ½" perforated	
Carrots, fingerling	Steam	N/A	10 min.	2 ½" perforated	
Carrots, glazed (frozen w/ sauce)	Steam	N/A	10 min.	2 ½" pan, uncovered	
Carrots, sliced (raw)	Steam	N/A	12min.	2 ½" perforated	
Cauliflower (fresh florets)	Steam	N/A	8 min.	2 ½" perforated	
Corn (frozen niblets)	Steam	N/A	8 min.	2 ½" perforated	
Corn on the cob	Steam	N/A	12 min.	2 ½" perforated	

COOKING HINTS



## Vegetables, continued

Menu Item	Mode	Temperature	Cooking Time	Proper Pan	Tips
Green beans w/water chestnuts	Steam	N/A	10 min.	2 ½" perforated	
Green beans, French cut (frozen)	Steam	N/A	10 min.	2 ½" perforated	Separate ice-encased vegetables
Green beans, whole	Steam	N/A	10 min.	2 ½" perforated	
Italian vegetables (frozen)	Steam	N/A	13 min.	2 ½" perforated	
Mixed vegetables (frozen)	Steam	N/A	10 min.	2 ½" perforated pan	
Mushrooms	Steam	N/A	8 min.	2 ½" solid pan	Sprinkle w/lemon, white wine
Peas and mushroom (frozen)	Steam	N/A	14 min.	2 ½" perforated	Separate ice-encased vegetables
Peas, garden (frozen)	Steam	N/A	7 min.	2 ½" perforated	
Ratatouille	Combi	300°F/150°C	20 min.	2 ½" solid pan	Toss with oil before cooking
Snap peas, sugar (frozen, seasoned)	Steam	N/A	10 min.	2 ½" pan, uncovered	
Spinach (fresh)	Steam	N/A	7 min.	2 ½" perforated pan	
Spinach (frozen)	Steam	N/A	14 min.	2 ½" perforated	
Squash (fresh)	Steam	N/A	7 min.	2 ½" perforated	
Vegetable primavera casserole	Combi	275°F/135°C	30 min.	2 ½" solid pan	
Vegetarian stir-fry	Combi	375°F/190°C	10 min.	2 ½" perforated	Toss w/oil, add sauce after cooking
Zucchini (fresh)	Steam	N/A	7 min.	2 ½" perforated	
Zucchini w/ basil	Steam	N/A	7 min.	2 ½" perforated	



# CLEANING

Southbend equipment is constructed with the best quality materials and is designed to provide durable service when properly maintained. To expect the best performance, your equipment must be maintained in good condition and cleaned daily. Naturally, the frequency and extent of cleaning depends on the amount and degree of usage.

Following daily and more extensive periodic maintenance procedures will increase the life of your equipment. Climatic conditions (i.e., salt air, seasonings, and water quality) may result in the need for more thorough and more frequent cleaning in order to keep equipment performing at optimal levels.



### WARNING: BURN HAZARD

For proper and safe operation, this oven must be cleaned daily as described in this manual. Failure to do so could result in serious injury or damage.

Drains must be kept clean and clear of debris.



### WARNING: SHOCK HAZARD

DO NOT GET WATER IN THE CONTROLS.

This could result in expensive repairs and/or electrical shock.

De-energize all power to equipment before cleaning the equipment.

### NOTICE

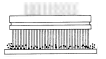
**VENT SYSTEM:** At least twice a year, the unit's venting system should be examined and cleaned.

**MOTOR:** Lubrication information can be found on the permanent label located on motor.

CLEANING

## DAILY CLEANING

- Use pump-up sprayer (Southbend Part# 1180973) supplied with the unit to spray RCS Special Cleaning Agent (Southbend Part# 1180974) inside the oven cavity, behind the air baffle, and on the inner side of the door. (CAUTION: Do not spray RCS Special Cleaning Agent into a hot oven! Discoloration of the interior surfaces will result. The oven temperature must be below 130°F (55°C) before spraying cleaner into the cabinet.)
- Turn the oven on and place the oven in STEAM mode for 15 minutes.
- If the unit is heavily soiled, repeat the above steps.
- Thoroughly rinse the inside of the oven cavity with the spray nozzle and spray hose assembly supplied with the unit.
- Make sure drain opening is clear.
- Leave the door open at night after cleaning.
- Do not clean the door gasket with a high-chlorine solution or bleach.
- Do not use steel wool or other metallic pads in the oven.



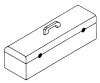
## PERIODIC CLEANING

- If lime or mineral deposit starts to build up in the interior, clean the unit by using Southbend “descaler” or other non-caustic deliming solution. Follow manufacturer’s recommended procedures. Thoroughly rinse out unit with clean water.
- To remove normal dirt, grease, or product residue from stainless steel, use ordinary soap and water applied with a sponge or cloth. Dry thoroughly with a clean cloth. **Never use vinegar or any corrosive cleaner.**
- To remove grease and food splatter or condensed vapors that have baked on the equipment, apply cleanser to a damp cloth or sponge and rub cleanser on the metal in the direction of the polishing lines on the metal. Rubbing cleanser as gently as possible in the direction of the polished lines will not mar the finish of the stainless steel. **NEVER RUB WITH A CIRCULAR MOTION.** Soil and burnt deposits which do not respond to the above procedure can usually be removed by rubbing the surface with SCOTCH-BRITE scouring pads. **DO NOT USE ORDINARY STEEL WOOL**, as any particles left on the surface will rust and further spoil the appearance of the finish. **NEVER USE A WIRE RUSH, STEEL SCOURING PAD, SCRAPER, FILE OR OTHER STEEL TOOLS.** Surfaces which are marred collect dirt more rapidly and become more difficult to clean. Marring also increases the possibility of corrosive attack. Refinishing may then be required.

## SEMIANNUAL CLEANING

At least twice a year, have your Southbend Authorized Service Agency or another qualified service technician clean and adjust the unit for maximum performance.

Consult the Southbend Authorized Parts/Service Distributor list for the Authorized Service Representative in your area or contact Southbend at 1-800-348-2558 for this information.



# TROUBLESHOOTING

## NOTICE

Service work should be performed only by a qualified technician who is experienced in, and knowledgeable of, the operation of commercial gas cooking equipment. Contact the authorized Southbend Service Agency for reliable service, dependable advice or other assistance, and for genuine factory parts.

Warranty will be void and the manufacturer is relieved of all liability if:

- (A) Service work is performed by other than a qualified technician,
- OR
- (B) Other than genuine Southbend replacement parts are installed.



## CAUTION

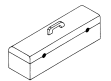
Whenever servicing or cleaning the oven, the main power supplies to the oven must be disconnected.

This section contains a troubleshooting key and referenced flowcharts to assist a qualified service technician in the servicing of a Southbend Combi oven. The Southbend Combi is equipped with a printed circuit board controller that undergoes a diagnostic check every time the Combi is turned on. This diagnostic check requires between 35 and 105 seconds. During this time, every segment in the display LEDs will be illuminated. In the event of a diagnostic error, "Err" will appear in the TEMPERATURE display and a descriptive error code will appear in the TIME display. To recover from error mode, the problem must be fixed and the unit turned off and back on again. A table of error codes and their causes is listed below:

Error Code	Cause
CP:U	The controller has failed a check of its on-board RAM (controller will need replaced)
bu:tn	A button on the control panel is sticking in the down position or a button was held by the operator during startup
FA:n	The cavity temperature limit switch or the centrifugal switch incorporated into the motor has tripped, indicating a possible failure of the blower motor
GA:S	A gas error can be caused by a variety of problems and is listed separately as a symptom in the following troubleshooting guide (see page 28)
Pr:0b	At least one of the RTD probes has failed in either an open or shorted condition.

TROUBLESHOOTING





## TROUBLESHOOTING KEY

Find the symptom below that corresponds to the malfunction, then turn to the corresponding figure and page. Follow the flowchart on that page until the problem is solved.

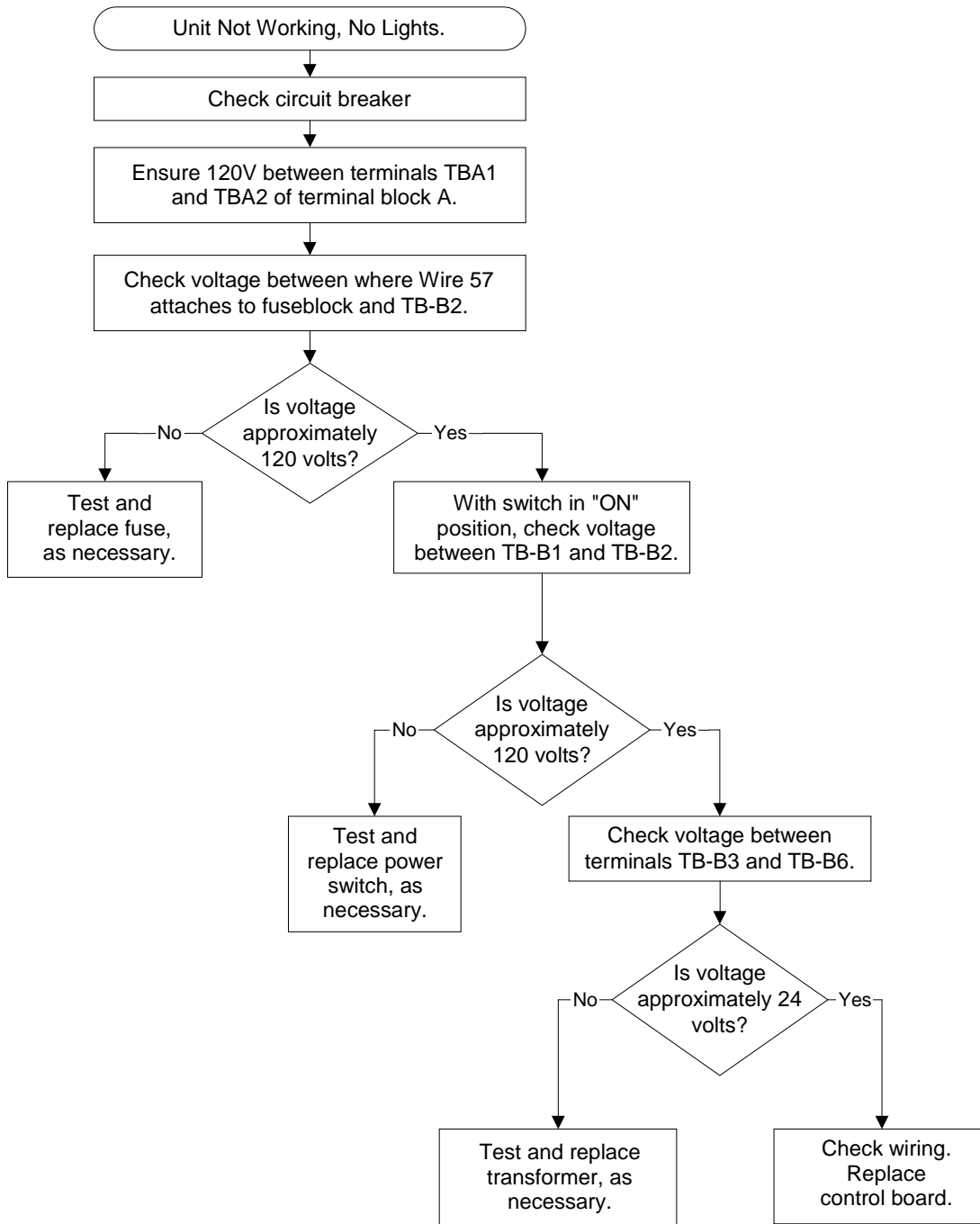
Symptom	Page
Unit Not Working, No Lights	26
Unit Not Heating Properly (No Gas Error)	27
Gas Error	28
Unit Not Steaming Properly in Steam Mode or Combi Mode	29
Blower Not Running Properly	30

## TROUBLESHOOTING FIGURES AND PROCEDURES

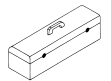
Figure and/or Procedure	Page
Electric Schematic for 120 Volt 60 Hz Models	31



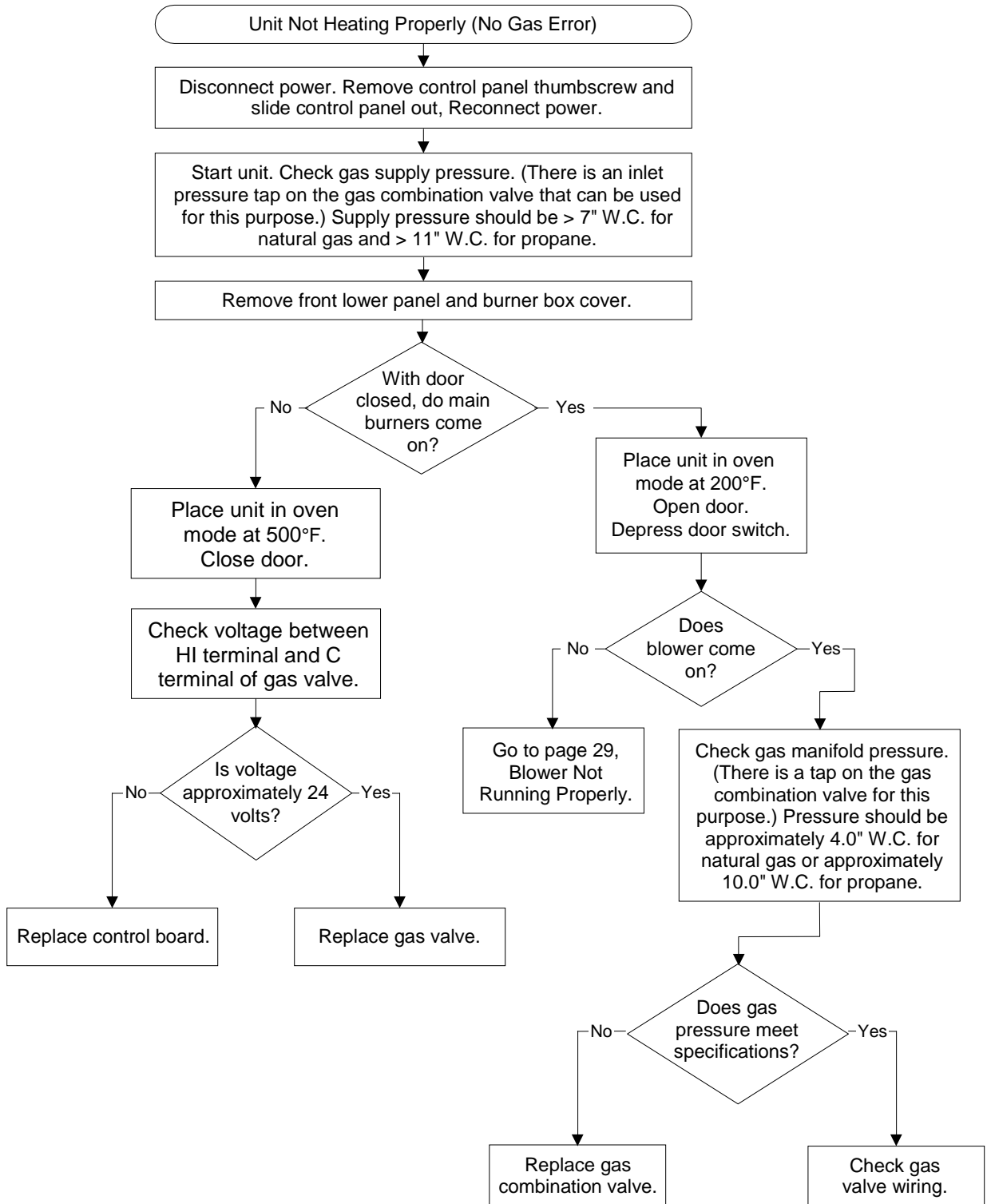
## Unit Not Working, No Lights



TROUBLESHOOTING



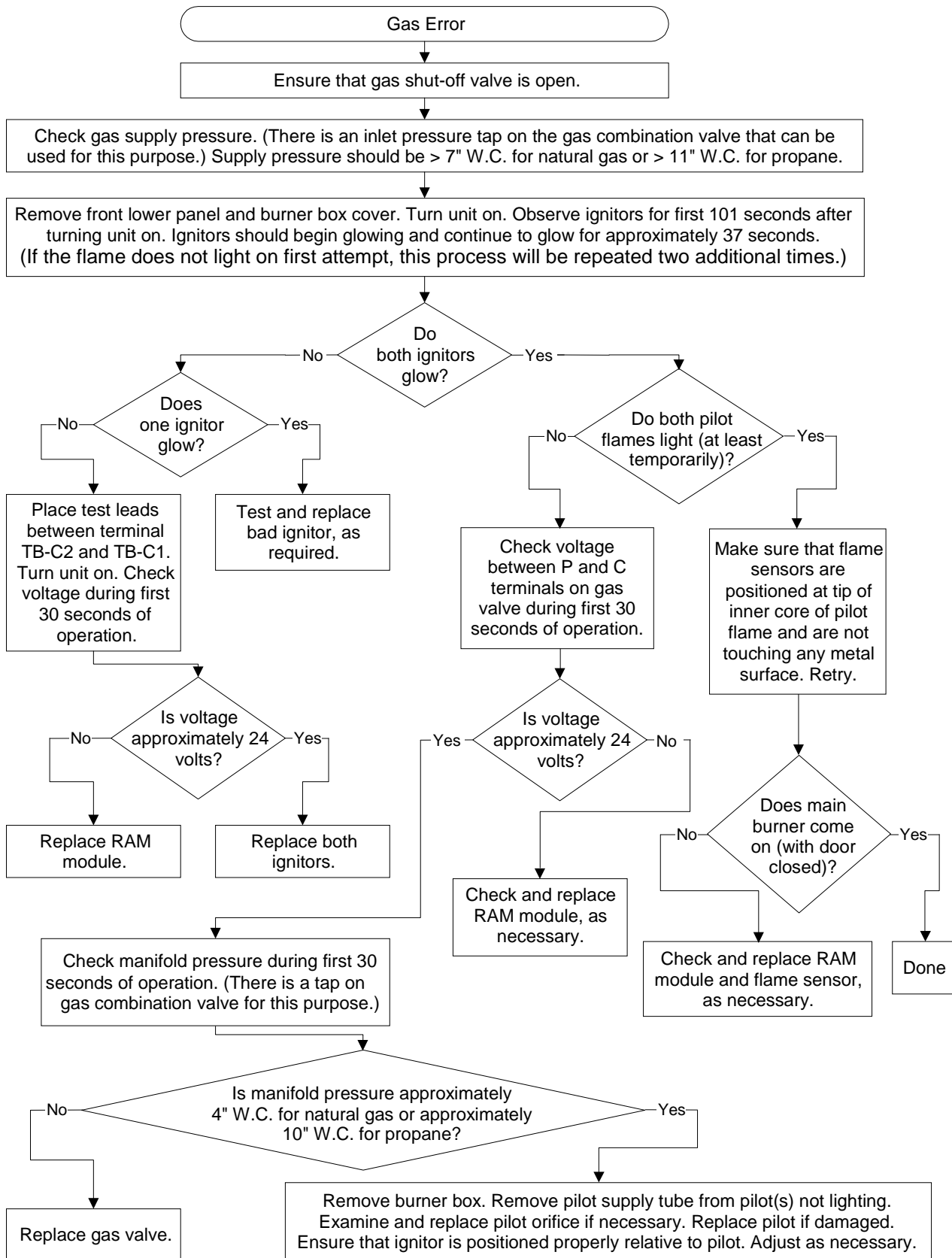
Unit Not Heating Properly (No Gas Error)



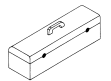
TROUBLESHOOTING



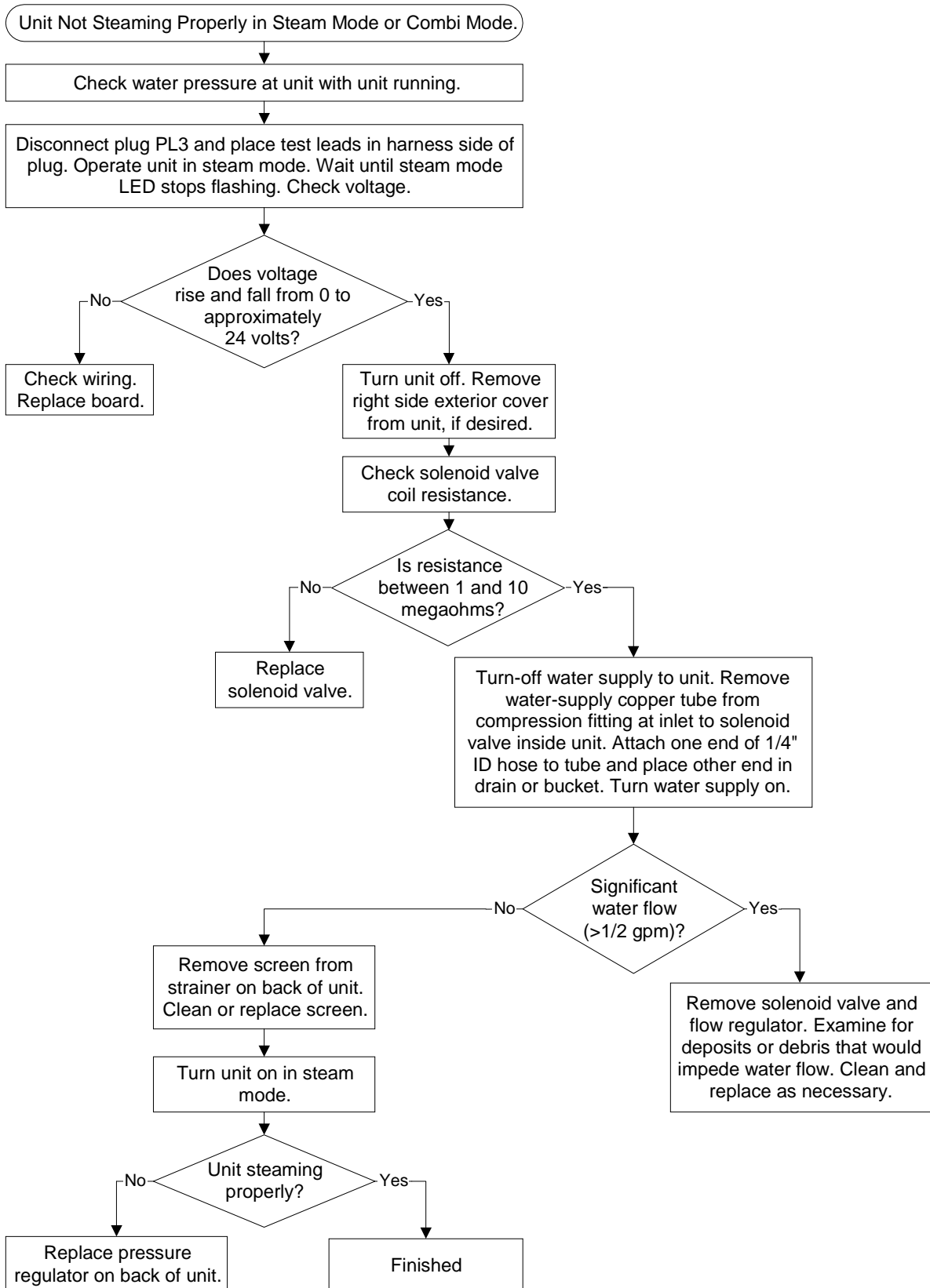
## Gas Error



TROUBLESHOOTING



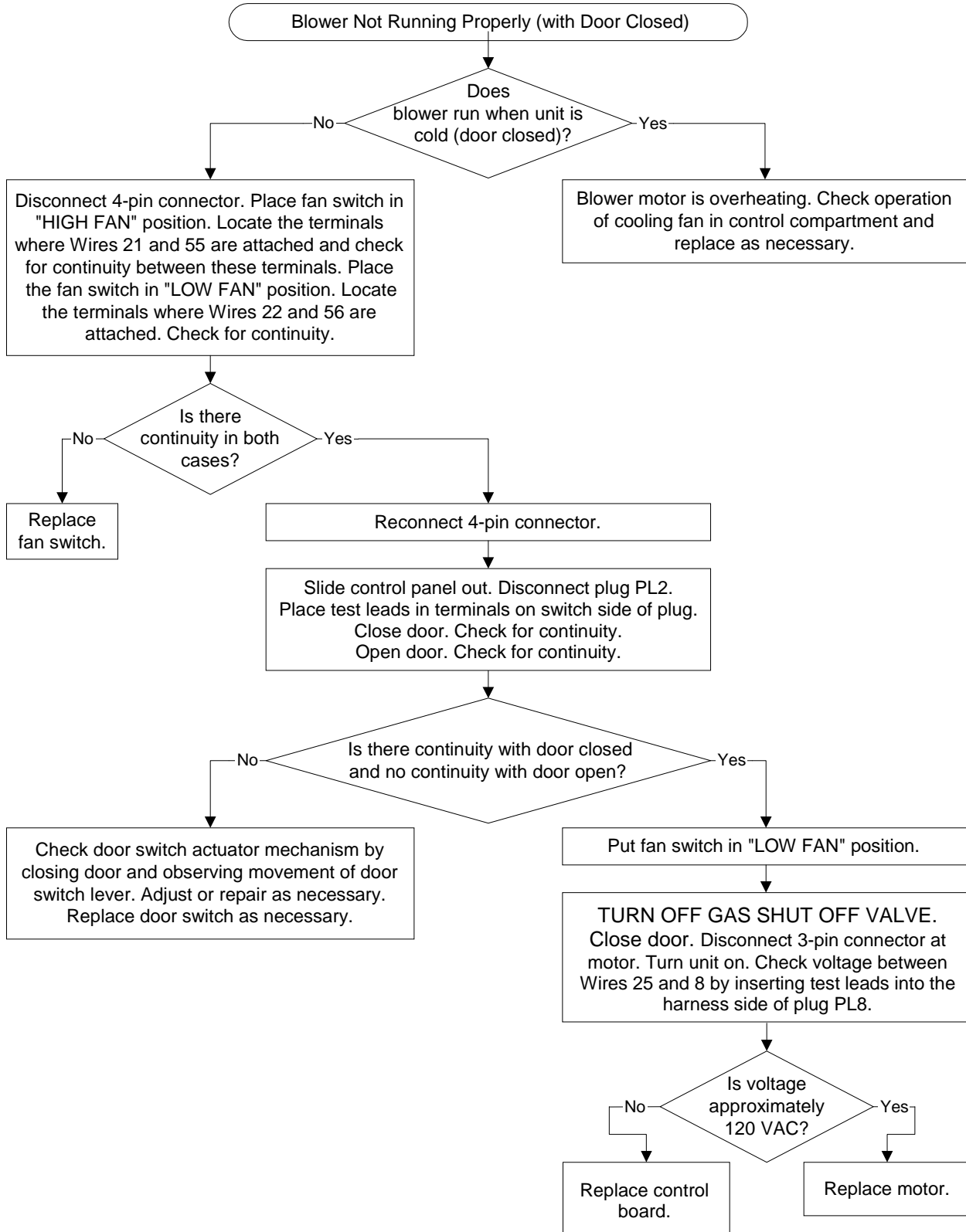
Unit Not Steaming Properly in Steam Mode or Combi Mode



TROUBLESHOOTING



## Blower Not Running Properly



TROUBLESHOOTING

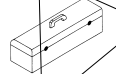
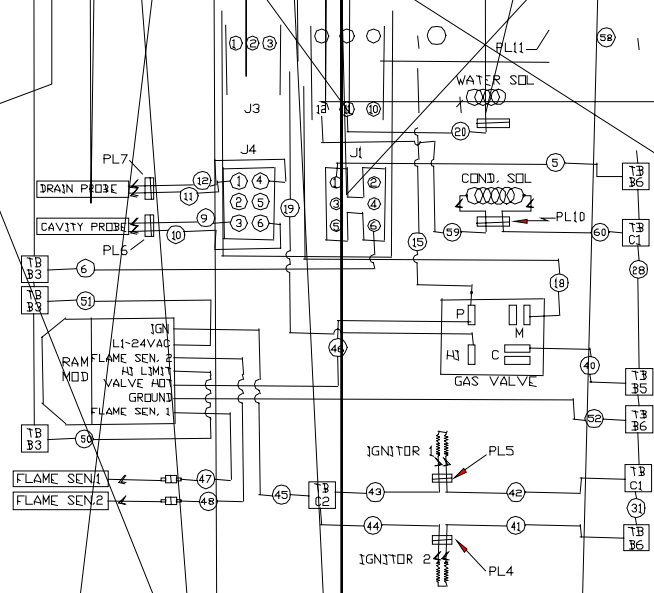


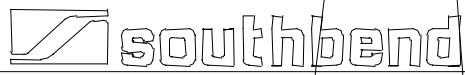
Figure 4

Electric Schematic for 120 Volt 60 Hz Models



- MULTI-PIN CONNECTOR
- COMPONENT LEAD
- TERMINAL BLOCK CONNECTIONS
- WIRE NUMBERS
- PLUG CONNECTOR

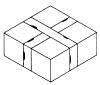
VOLTAGE	120
PHASE	1
AMPERAGE	15



WIRING DIAGRAM COMBI  
120 V, 60 Hz

P/N  
1180638

TROUBLESHOOTING



# PARTS

## NOTICE

INSTALLATION OF OTHER THAN GENUINE SOUTHBEND PARTS WILL VOID THE WARRANTY ON THIS EQUIPMENT.

The serial plate with voltage, model, and serial information is located behind the lower front panel on the left side.

Replacement parts may be ordered either through a Southbend Authorized Parts Distributor or a Southbend Authorized Service Agency.

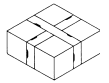
When ordering parts, please supply the Model Number, Serial Number, Part Number, Description, Finish, and Electrical Characteristics as applicable.

For parts not listed, consult a Southbend Authorized Parts Distributor or Southbend Authorized Service Agency. Consult the Southbend Authorized Parts/Service Distributor list for the Authorized Parts supplier in your area. If this list is not available, call Southbend at 1-800-348-2558 to obtain this list.

### Index of Combination Oven Parts Diagrams

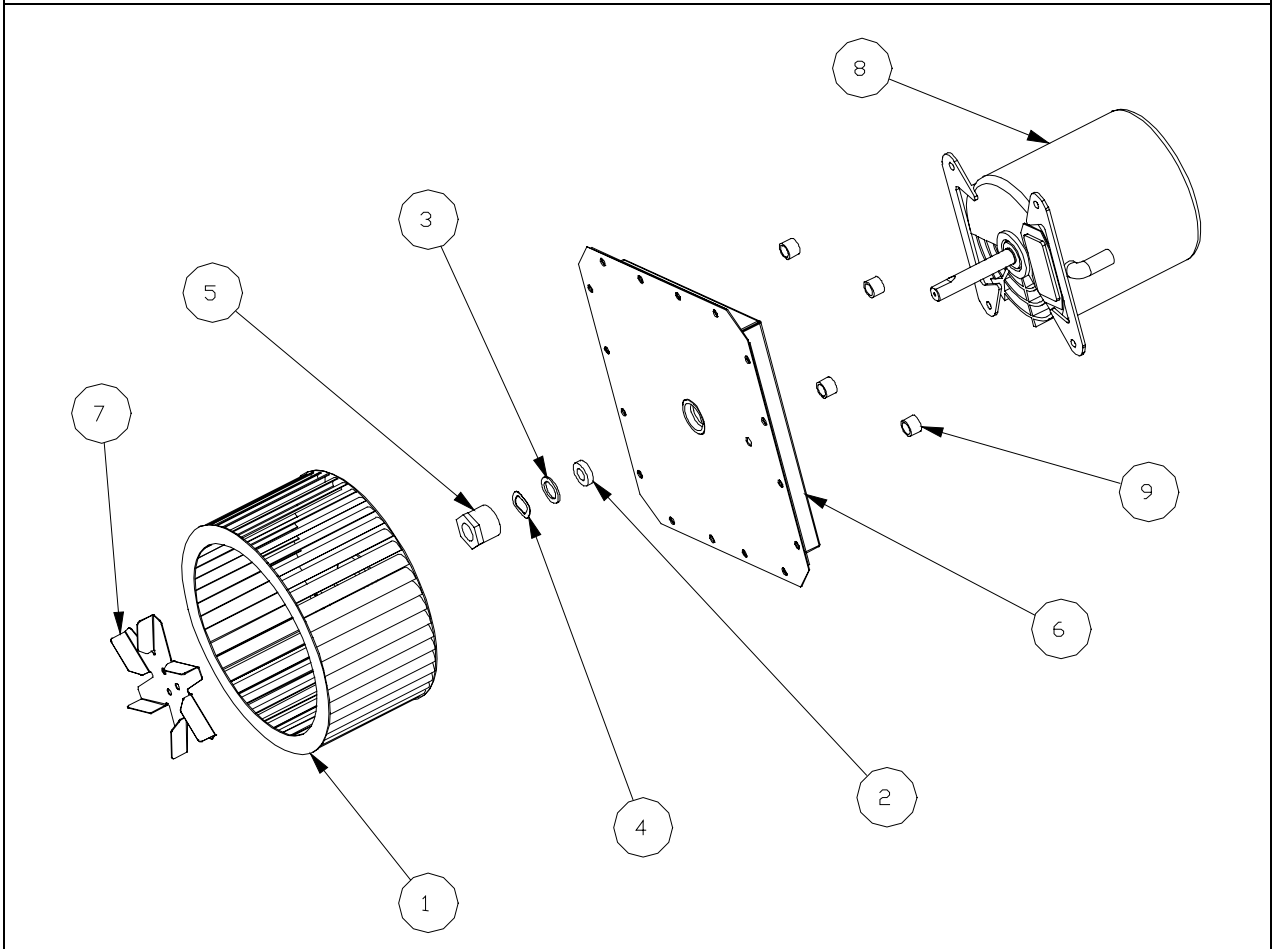
Page Number	Description	Module or S/A #
33	Blower and Motor Parts	0-11-0045
34	Control Panel Subassembly Parts	0-11-0046
36	Frame and Exterior Parts	0-11-0047
38	Cavity Parts	0-11-0048
40	Door Subassembly Parts	0-11-0049
41	Sprayer and Water Train Parts	0-11-0050
42	Burner and Gas Train Parts	0-11-0051
44	Water Inlet Subassembly Parts	1180668 (S/A)
45	Black Legs with Casters Parts	0-40-0498



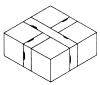


**Blower and Motor Parts**

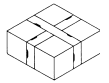
**0-11-0045**



Key	Part Number	Qty	Description
1	1180934	1	Blower Wheel Weld Assembly
2	1180932	1	Packing Material, FDA Approved
3	1180910	1	Washer, Flat
4	1180909	1	Washer, Wave Spring, SS
5	1180903	1	Fitting, Motor Shaft Seal
6	1180686	1	Motor Pocket S/W/A
7	1180633	1	Fan, Water Dispersing
8	1180621	1	Motor, 115V 60CC 2 Speed
9	1179710	4	Spacer, Blower, Motor

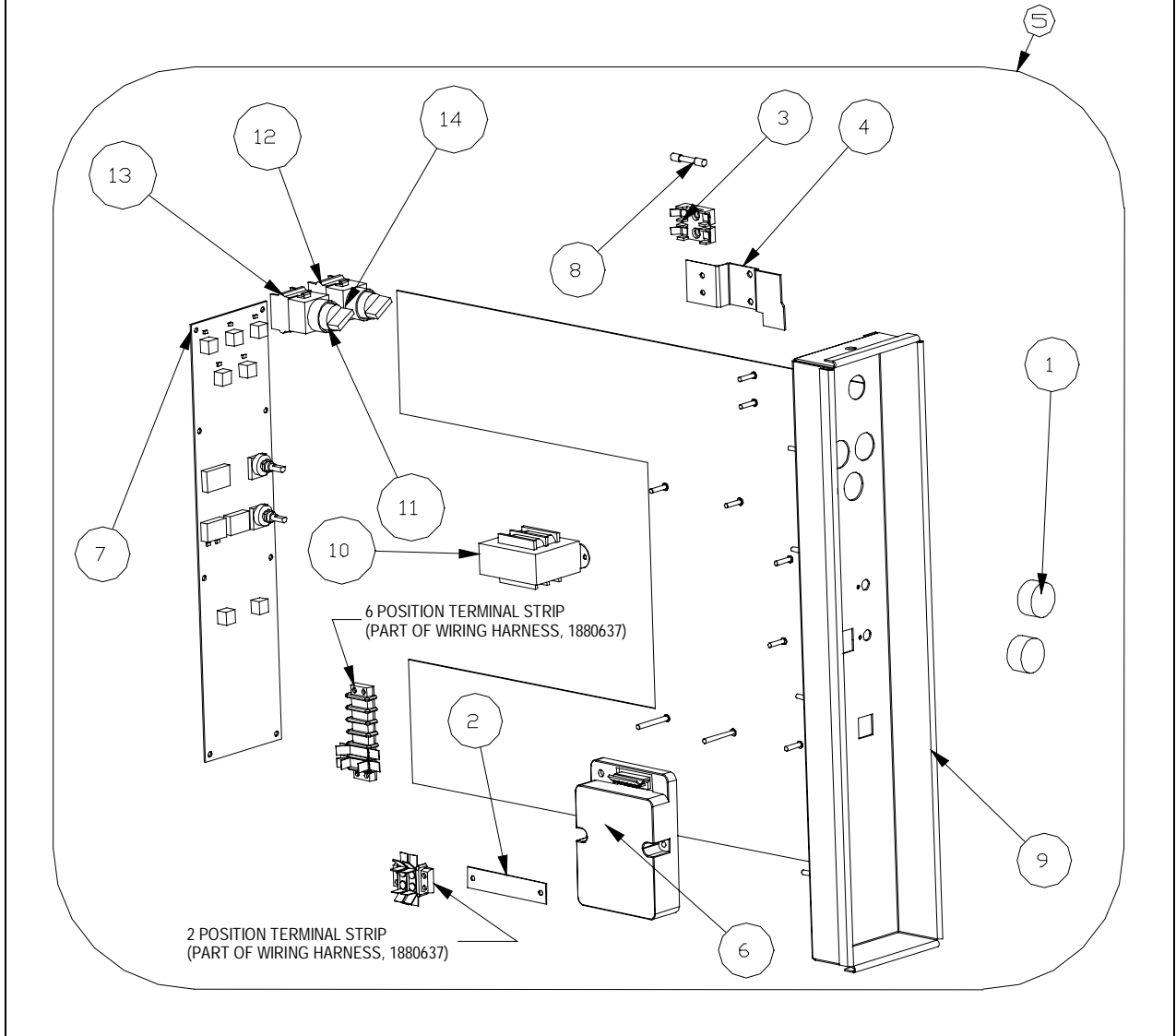


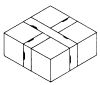
<b>Control Panel Subassembly Parts</b>			<b>0-11-0046</b>
See drawing on following page.			
Key	Part Number	Qty	Description
1	1172275	2	Plastic Knob
2	1177515	1	Bracket, Ignition Module
3	1178391	1	Fuseblock, Controls
4	1178534	1	Bracket, On/Off Switch
5	1180617	1	Control Panel, Subassembly (assembled)
6	1180635	1	Ignition Module
7	1180636	1	Control Board
8	1180906	1	Fuse, Time-Delay, 20 A
9	1180931	1	Panel Weld Assembly, Control
10	1180971	1	Transformer 115V, 24V, 75VA
11	1180987	2	Switch, Rotary, Actuator
12	1180988	1	Switch, Rotary, NO/NC
13	1180989	1	Switch, Rotary, NO
14	1180990	2	Bezel, Rotary Switch, Black
*	1170336	1	Marker Strip
*	1180610	1	Polypanel
*	1180637	1	Wiring Harness
*	1180638	1	Electrical Schematic
*	1180970	1	Sticker, Fuse Replacement
*	1180972	8	Spacer, Control Panel (Combi)
* not shown on drawing.			



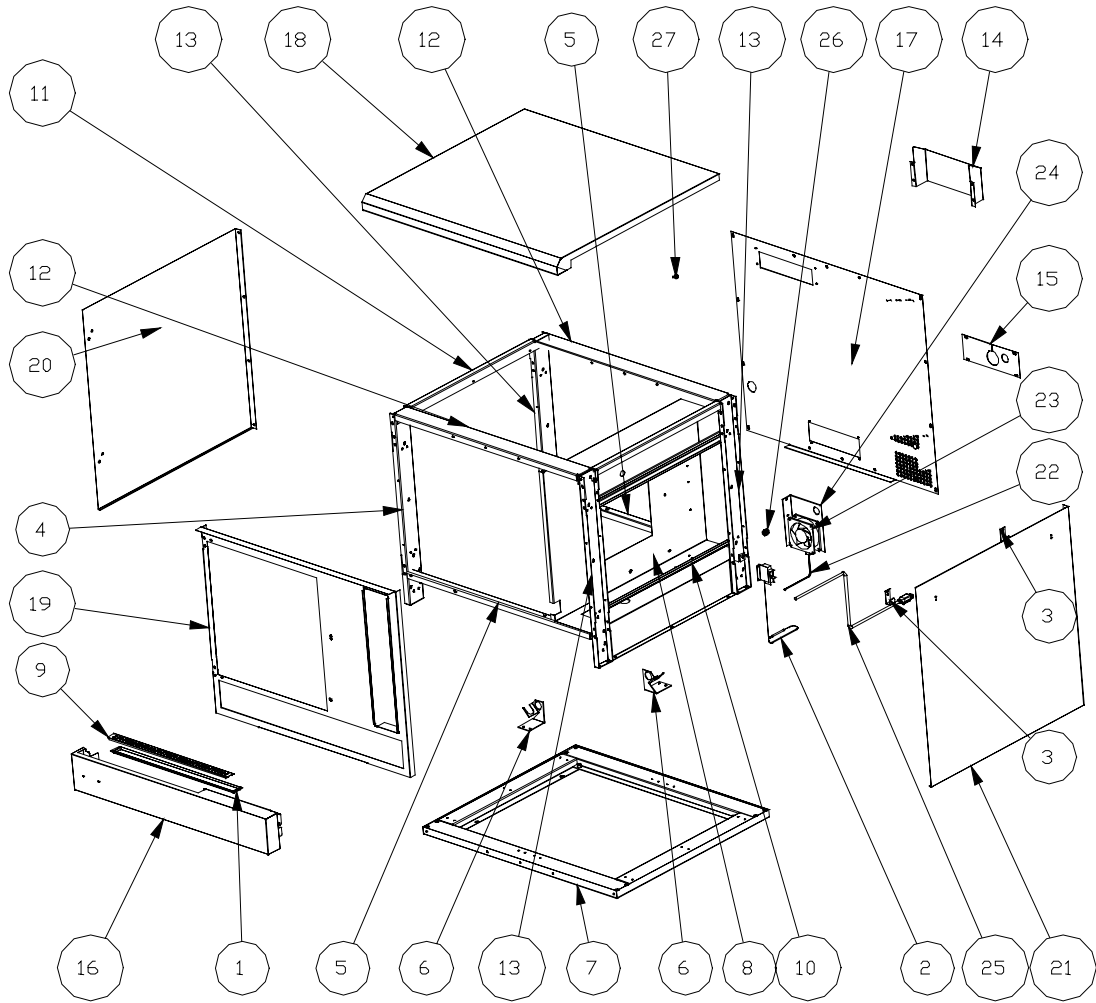
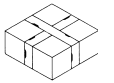
### Control Panel Subassembly Parts

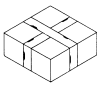
See parts list on previous page.



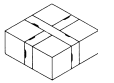


Frame and Exterior Parts			0-11-0047
See drawing on following page.			
Key	Part Number	Qty	Description
1	1180641A	1	Trough, Drain
2	1180974	1	Switch, CO High Limit
3	1180953	2	Hanger, Hose
4	1180936	1	Frame, Vertical, Weld Assembly
5	1180935	2	Frame, Horizontal, Cavity, Weld Assembly
6	1180660	2	Bracket, Front and Rear Pipe Support
7	1180655	1	Base Weld Assembly
8	1180649	1	Retainer, Insulation
9	1180642	1	Cover, Drain Trough
10	1180631	2	Rail, Slide
11	1180625	2	Frame, Horizontal, Left/Right
12	1180624	2	Frame, Horizontal, Front/Back
13	1180623	3	Frame, Vertical
14	1180615	1	Flue Riser
15	1180613	1	Cover, Gas and Drain
16	1180612	1	Front Lower Panel
17	1180609	1	Body Back
18	1180607	1	Body Top
19	1180606	1	Body Front
20	1180605	1	Body Side, Left
21	1180604	1	Body Side, Right
22	1179709	1	Plug, Fan Power Cord
23	1179704	1	Fan, Cooling, 120V
24	1177523	1	Bracket, Rear Gas Pipe
25	1172769	1	CO Power Cord
26	1172285	1	Bushing, Strain Relief
27	1160031	1	Lug, Grounding



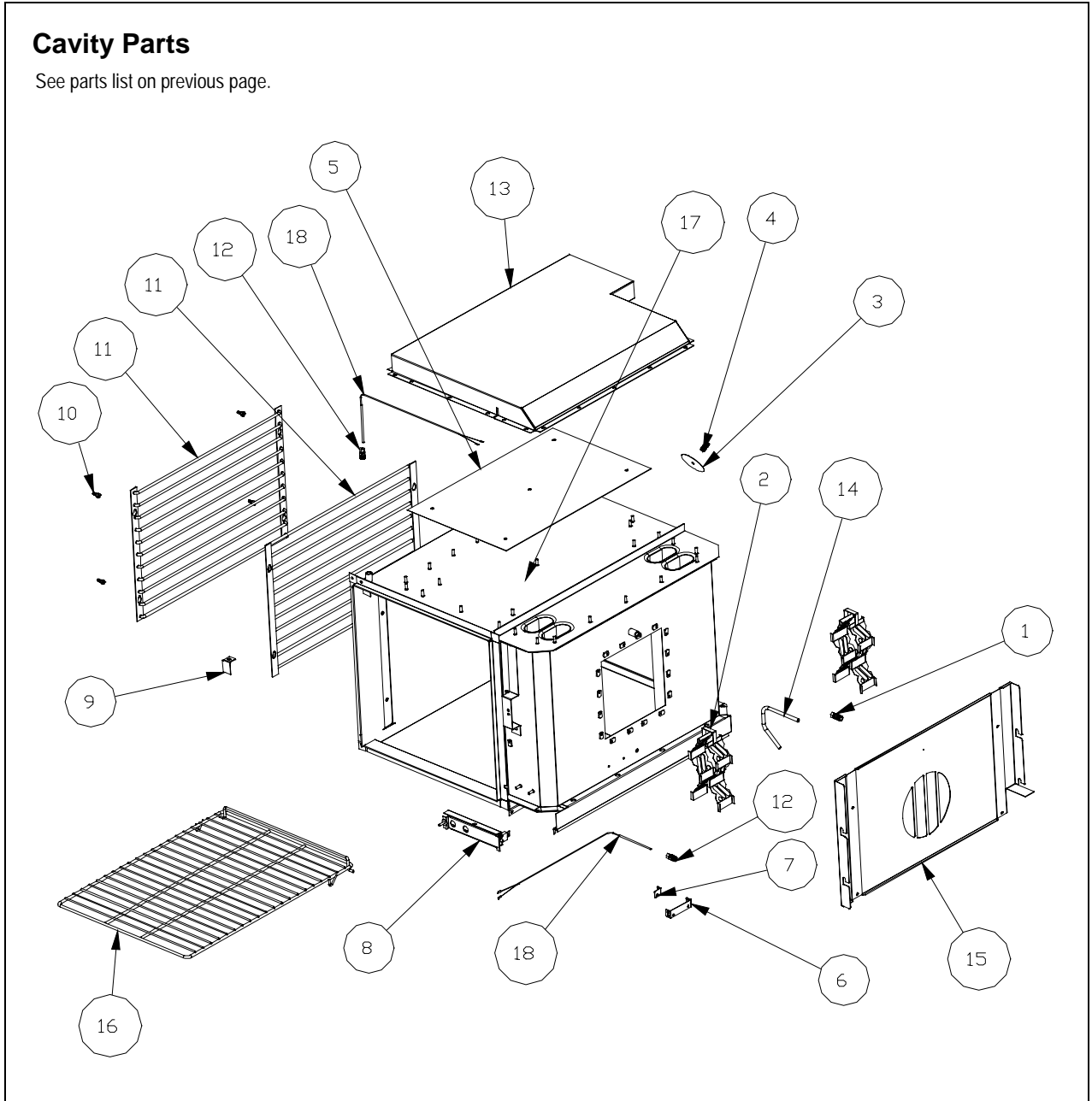


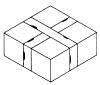
<b>Cavity Parts</b>			<b>0-11-0048</b>
See drawing on following page.			
Key	Part Number	Qty	Description
1	P6016	1	Fitting, Brass, STRT, 68C-6-4
2	1180998	2	Baffle, Weld Assembly
3	1180997	1	Disk, Pressure Relief
4	1180996	1	Spring, Relief Valve
5	1180992	1	Insul. Cover for Flue
6	1180983	1	Probe Bracket
7	1180982	1	Probe Bracket Clamp
8	1180962	1	Door Switch Assembly
9	1180961	1	Cover, Probe
10	1180921	8	Bolt, Shoulder 1/4-20
11	1180911	2	Rack Guide, 11 Position
12	1180682	2	Fitting, 1/4 inch MPT x 3/16 inch Tube
13	1180671	1	Flue Duct Weld Assembly
14	1180670	1	Tube, Water Supply
15	1180656	1	Baffle, Air
16	1180639	5	Racks
17	1180616	1	Cavity Weld Assembly
18	1172753	2	Thermostat Probe



### Cavity Parts

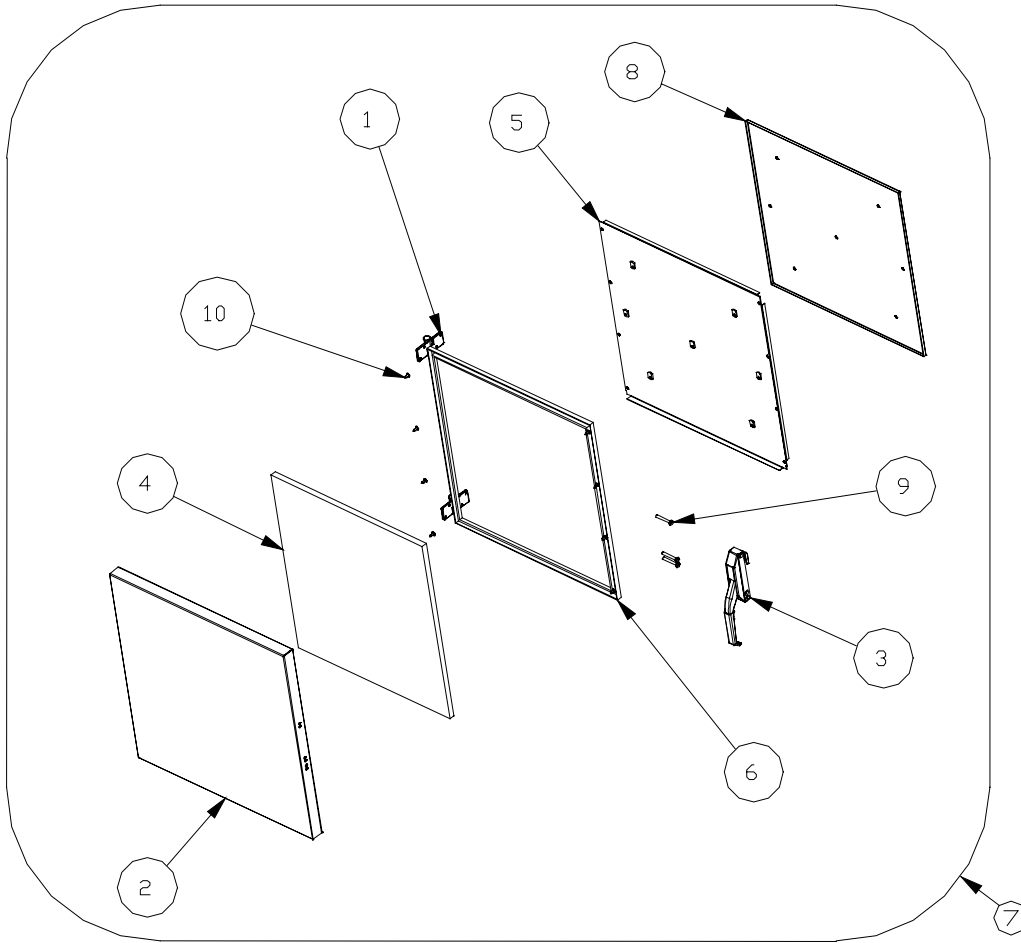
See parts list on previous page.





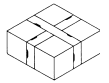
Door Subassembly Parts

0-11-0049

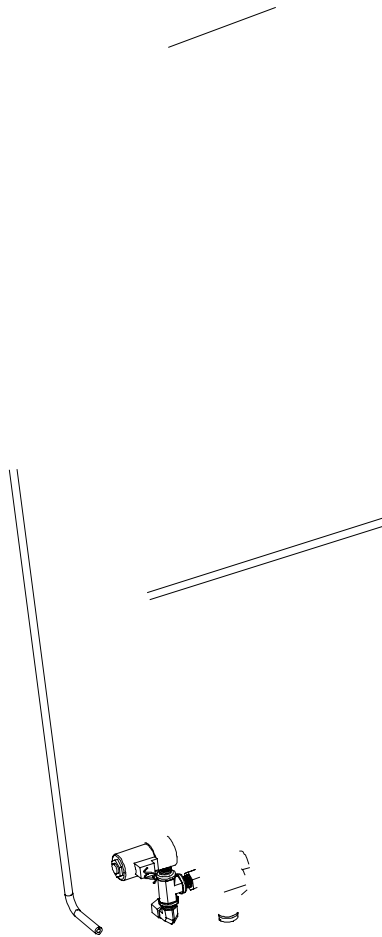


Key	Part Number	Qty	Description
1	1180977	2	Hinge, Door
2	1180940	1	Panel, Door, Weld Assembly
3	1180938	1	Door Latch & Striker
4	1180691	1	Insulation, Door
5	1180685	1	Panel Assembly, Inner Door
6	1180627	1	Gasket, Door
7	1180618	1	Door Subassembly (assembled)
8	1180614	1	Door Gasket Retainer
9	1146363	3	Screw, 1/4 -20x2, SS, Slotted Flat Head
10	1146303	8	Screw, #8 x 1/2





**Sprayer and Water Train Parts** **0-11-0050**



2	1174620	1
3	1180668	1
4	1180908	1
5	1180943	1
6	1180944	1
7	1180958	1

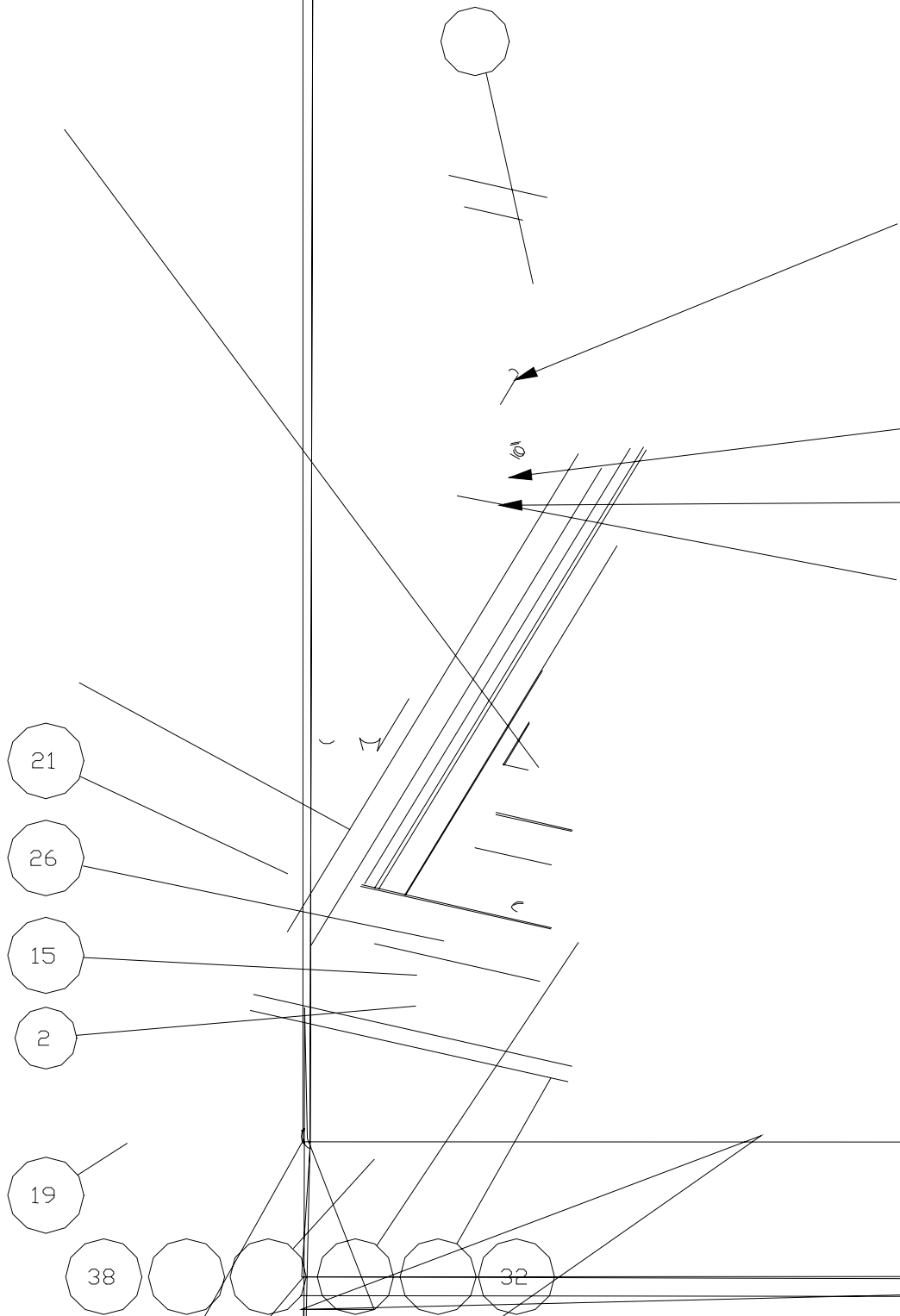
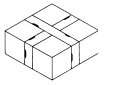
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11	PP-	2	7	0	1	Reduc er,
13	PP-6	3	6	1	Regulator,	

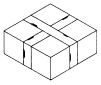


<b>Burner and Gas Train Parts</b>			<b>0-11-0051</b>
See drawing on following page.			
Key	Part Number	Qty	Description
1	1036600	4	Orifice Fitting
2	1036603	8	Screw, Brass, 5/16-18x3/4 Hexhead
3	1036604	4	Nut Air Collar
4	1036605	4	Air Collar PLTD
5	1036607	4	Burner, Fry Pot, 4 inch
6	1036611	4	Burner Orifice - Nat #44 Drill
	1036610	1	Orifice Spud Propane #54 Drill (option)
7	1054118	2	Pilot Orifice - Nat
	1054111	1	Orifice, R-011, Propane (option)
8	1061298	1	Union, Brass
9	1099114	1	Nut, Male
10	1146304	6	Screw, #10 x 1/2 Phil Truss Head
11	1146398	4	Screw, 6-32x3/8, SS, Phil Pan Head
12	1146405	4	Nut, 6-32, Hex
13	1146501	4	Lockwasher, 3/16
14	1146526	2	Washer, #10, Flat
15	1146529	8	Washer, 5/16, Lock, SS
16	1146806	1	Nipple, Pipe, Close, Blk, 1/2"
17	1146913	1	Elbow, Red., Blk, 3/4 x 3/8, 90 Deg
18	1147007	1	Plug, Pipe Blk. 1/8
19	1160008	3	Elbow, Brass
20	1173524	1	Tee, 1/4 Tube Compr All Direct
21	1173595	2	Insert, Knurled, Threaded
22	1175283	2	Flame Sensor
23	1177545	2	Ignitor, Hot Surface
24	1180634	1	Gas Valve, Nat
	1180955	1	Gas Valve, Propane (option)
25	1180659	1	Tube, Gas Supply
26	1180667	1	Cover, Burner Box
27	1180675	1	Burner Box
28	1180676	1	Manifold
29	1180678	2	Tube, Pilot Supply
30	1180679	1	Tube, Main Pilot, Up
31	1180681	1	Tube, Burner Supply
32	1180692	1	Tube, CV Outlet
33	1180693	1	Tube, Main Pilot, Down
34	1180694	2	Bracket, Pilot Mounting
35	1180945	1	Tail Pipe
36	1180960	2	Pilot
37	1180964	1	Union, Brass, 5/8 CC
38	1-5771	1	Valve, Shut Off, 1/2"
39	P9158	1	Connector, Brass, 68C-10-8



PARTS

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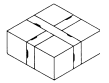


# PARTS

COMBINATION OVEN

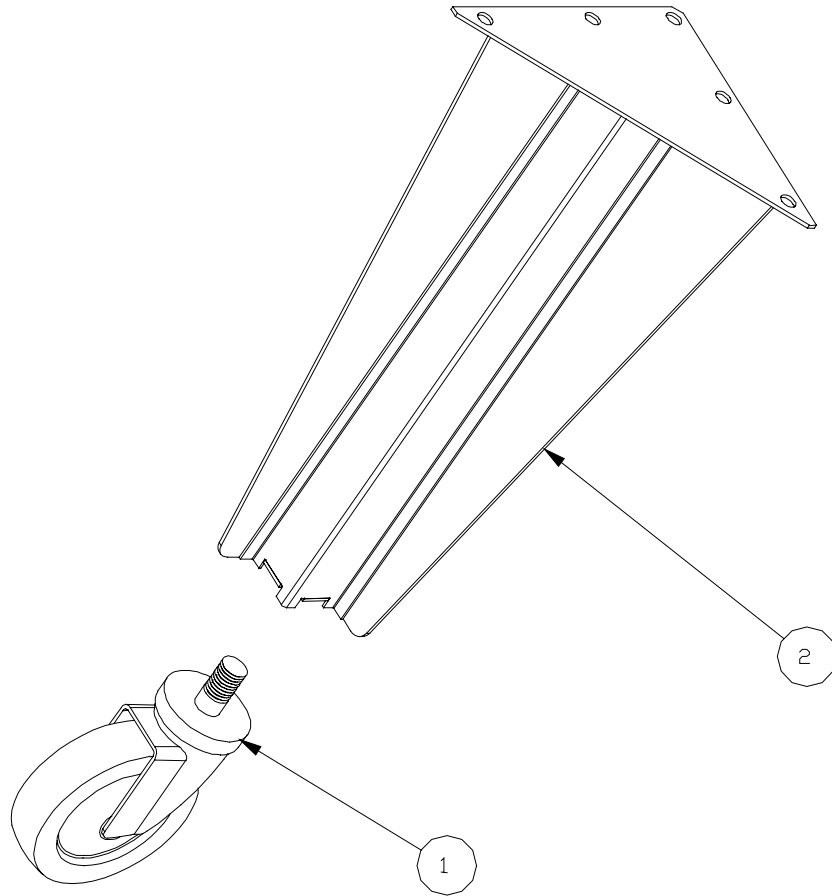
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PARTSW



**Black Legs with Casters Parts**

**0-40-0498**



Key	Part Number	Qty	Description
1	1174265	1	Caster Package, 4 Bolt
2	1177850	1	Leg Assembly, Caster
*	1146213	20	Bolt, 3/8-16x1 Hex Head
*	1146505	20	Washer 5/16, Flat
*	1146513	20	Washer 3/8, Lock
*	1176351	1	Sticker. Legs

\* not shown on drawing.

# COMBINATION OVEN

A product with the Southbend name incorporates the best in durability and low maintenance. We all recognize, however, that replacement parts and occasional professional service may be necessary to extend the useful life of this unit. When service is needed, contact a Southbend Authorized Service Agency, or your dealer. To avoid confusion, always refer to the model number, serial number, and type of your unit.



Southbend

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