



IMPORTANT FOR FUTURE REFERENCE	
Please complete this information and retain this manual for the life of the equipment:	
Model #:	_____
Serial #:	_____
Date Purchased:	_____

Installation & Operation Manual

TruVection Gas Convection Ovens TVGS/12SC, TVGS/22SC & TVGS/32SC



Model TVGS/12SC



Model TVGS/22SC



Model TVGS/32SC

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.

SOUTHBEND

 **MIDDLEBY** A Middleby Company

1100 Old Honeycutt Road Fuquay-Varina, North Carolina 27526 USA

www.southbendnc.com

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.

** DANGER**

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

** WARNING**

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

** CAUTION**

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

NOTICE

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 smoke. Obtain the instructions from the local electrician/installer.

** WARNING**

Asphyxiation can result from improper ventilation. Do not obstruct the flow of combustion and ventilation air to and from your cooking equipment.

NOTICE

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

NOTICE

This product is intended for commercial use only. NOT FOR HOUSEHOLD USE.

NOTICE

This manual should be retained 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.

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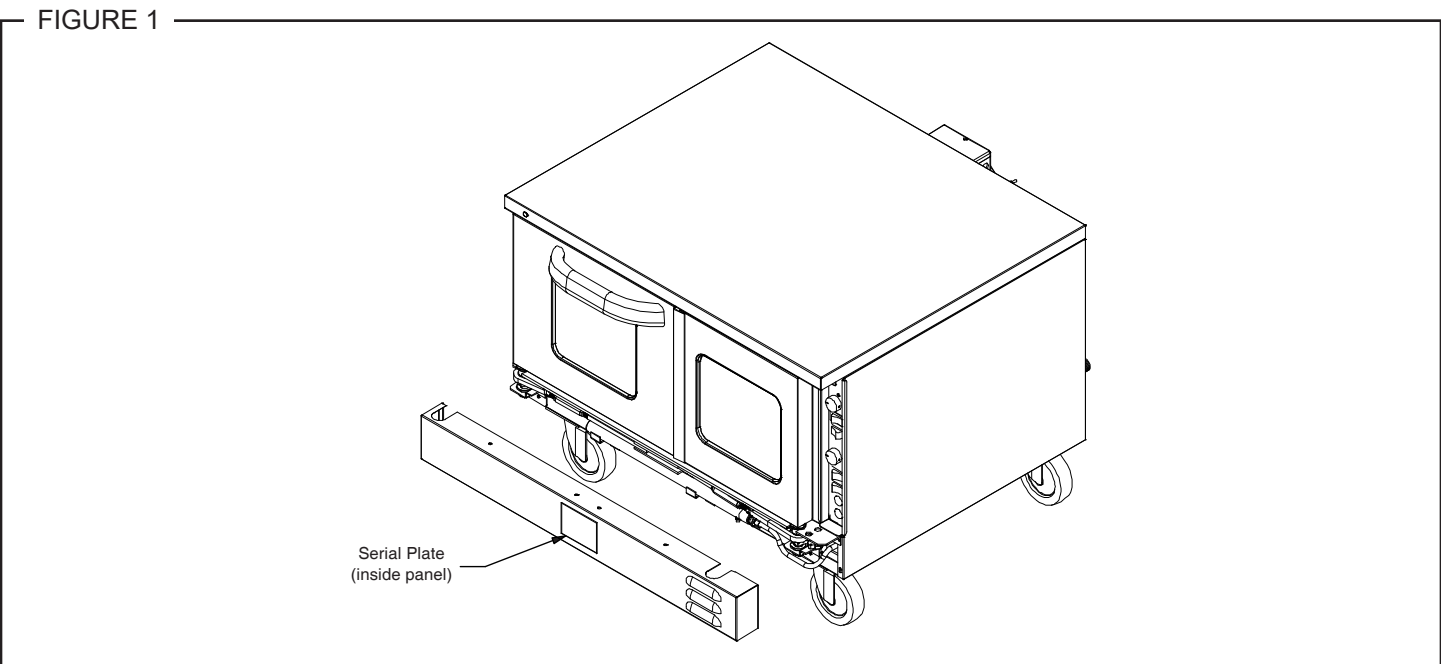
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Read these instructions carefully before attempting installation. Installation and initial startup should be performed by a qualified installer. Unless the installation instructions for this product are followed by a qualified service technician (a 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, contact:

Southbend Technical Service
1100 Old Honeycutt Road
Fuquay Varina, North Carolina 27526 USA
www.southbendnc.com

The serial plate is located on the interior side of the lower front panel, as shown below.



SPECIFICATIONS

NOTICE

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.

Southbend reserves the right to change specifications and product design without notice. Such revisions do not entitle the buyer to corresponding changes, additions, or replacements for previously purchased equipment.

This product is intended for commercial use only, not for household use.

The installation must conform 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, including:

1. The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.45 kPa).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.45 kPa).

ELECTRICITY SUPPLY

Convection ovens require connection to a supply of electricity. The appliance, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical Code, ANSI/NFPA 70, or the Canadian Electrical Code, CSA C22.2, as applicable. An electrical diagram is located on the side of the control panel assembly (see drawing on page 33). Electrical diagrams can also be found in this manual beginning on page 34.

POWER OPTION	POWER TYPE	NUMBER OF OVENS	MAXIMUM AMPS
120/60/1	120 Volts, 60 Hz, Single Phase	Single-Deck	7.9
		Double-Deck	15.8
		Triple-Deck	23.7
208/60/1or3	190-219 Volts, 60 Hz, Single Phase	Single-Deck	4.3
		Double-Deck	8.6
		Triple-Deck	12.9
240/60/1or3	220-240 Volts, 60 Hz, Single Phase	Single-Deck	3.8
		Double-Deck	7.5
		Triple-Deck	11.4
240/50/1or3	208-240 Volts, 50 Hz, Single Phase	Single-Deck	6.0
		Double-Deck	12.0
		Triple-Deck	18.0

Ovens ordered with the 120V power option are equipped with one, two, or three power cords with a standard 120V single-phase plug with a ground prong. Single-deck ovens will have one power cord, double-deck ovens will have two, and triple-deck ovens will have three.

Ovens with other power options have a terminal block on the rear of the oven that must be wired to the power supply.

GAS SUPPLY

The serial plate is located inside the lower front panel. 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.

These models are design-certified for operation on natural or propane gases. For natural gas, the regulator is set to deliver a 6" W.C. pressure to the manifold. For propane gas, it is set to deliver 10" W.C.

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.

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

A 1" NPT female line is provided at the rear for the gas connection. An adequate gas supply is imperative. Undersized or low pressure lines will restrict the volume of gas required for satisfactory performance.

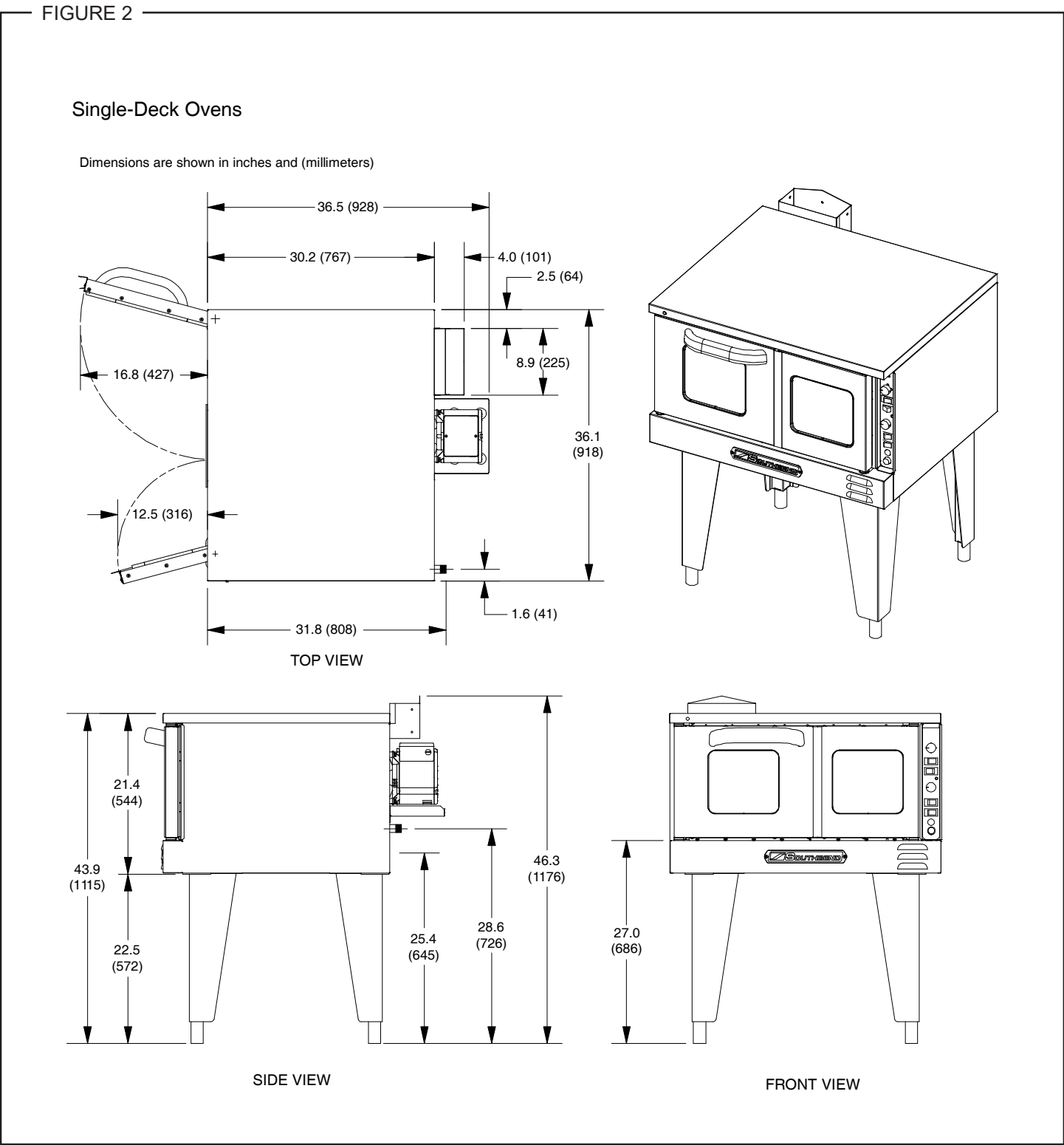
An adequate gas supply line to the unit should be no smaller than the inside diameter of the pipe from the unit to which it is connected.

Purge the supply line to clean out dust, dirt, or other foreign matter before connecting the line to the unit.

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 1/2" W.C.

MODEL NUMBER	NUMBER OF OVENS	OVEN DEPTH	TYPE OF GAS	ORIFICE SIZE	NUMBER OF BURNERS	TOTAL BTU
TVGS/12SC	Single-Deck	Shallow	Natural Gas	53	4 @ 13,000 BTU	52,000
			Propane	60	4 @ 13,000 BTU	52,000
TVGS/22SC	Double-Deck	Shallow	Natural Gas	53	8 @ 13,000 BTU	104,000
			Propane	60	8 @ 13,000 BTU	104,000
TVGS/32SC	Triple-Deck	Shallow	Natural Gas	53	12 @ 13,000 BTU	156,000
			Propane	60	12 @ 13,000 BTU	156,000

EXTERIOR DIMENSIONS

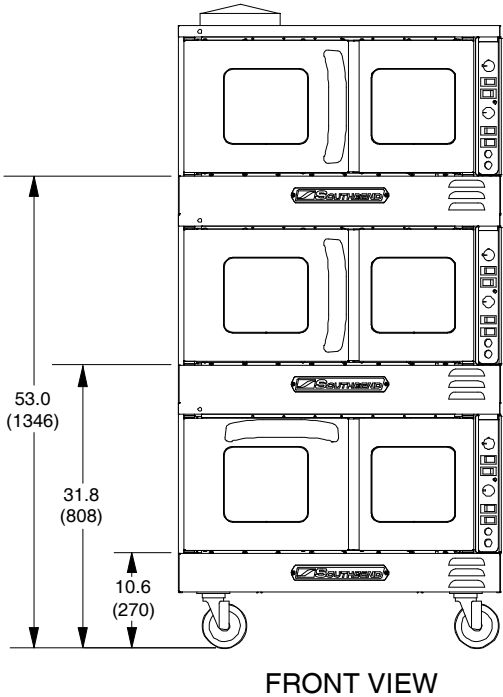
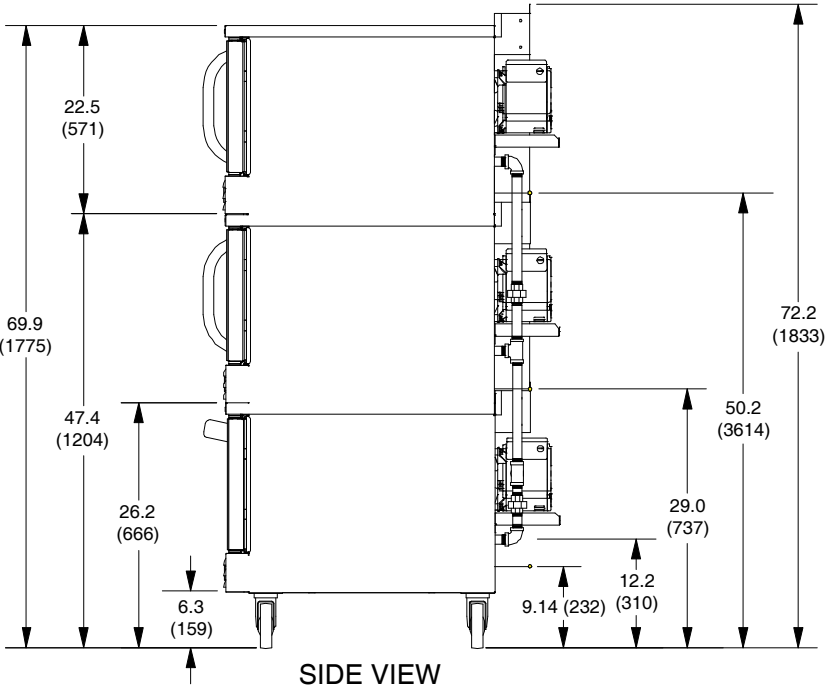
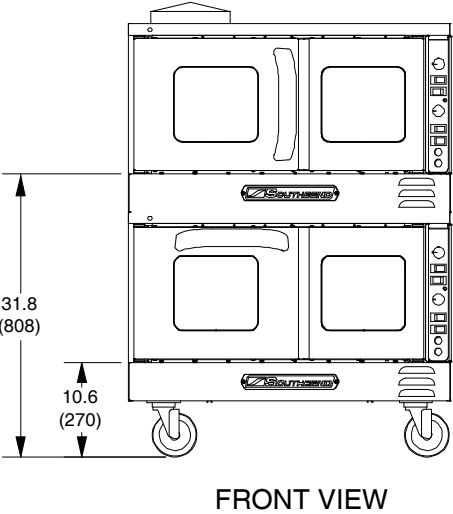
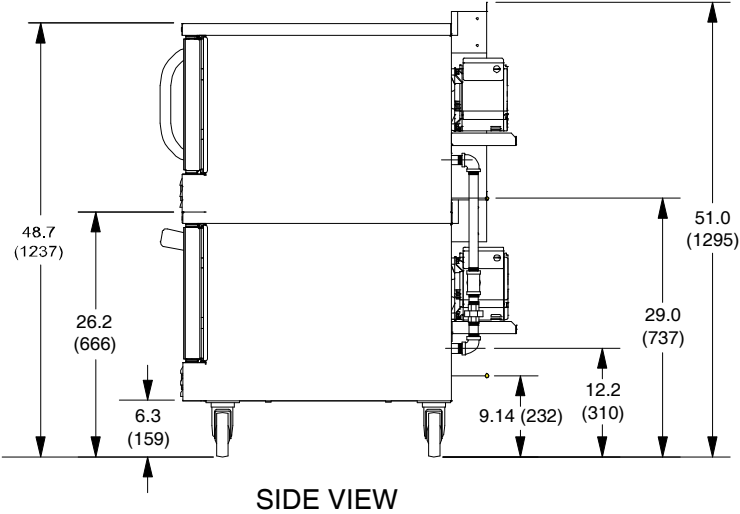


OVEN INTERIOR (PER DECK)			RACK CLEARANCE	
WIDTH	DEPTH	HEIGHT	WIDTH	DEPTH
29"	21.5"	14"	28.19"	21"

FIGURE 3

Double-Deck and Triple-Deck Ovens

Dimensions are shown in inches and (millimeters)



MINIMUM CLEARANCES

WARNING

There must be adequate clearance between the left side of the ovens and combustible construction.

	MINIMUM CLEARANCE FROM COMBUSTIBLE CONSTRUCTION	MINIMUM CLEARANCE FROM NON-COMBUSTIBLE CONSTRUCTION
Back	0"	0"
Right Side	0"	0"
Left Side	2"	0"
Floor	0"	0

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

Although no clearance is required behind the motor on the rear of the oven, care must be taken to provide adequate air circulation to prevent the motor from overheating.

Do not locate the oven 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 oven above 130°F (54°C).
DO NOT MOUNT ABOVE OTHER COOKING EQUIPMENT.

VENTILATION

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 these areas.

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.

If a ventilation canopy is used, it is recommended that a canopy extend 6" past the appliance and that 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.

If an exhaust fan is used, it should be installed at least 2" above the flue opening at the top of the unit. A strong exhaust fan tends to create a vacuum in the room and may interfere with burner performance. Fresh air openings approximately equal to the fan area will relieve such a vacuum. 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 the exhaust fan back on and let it run to remove any exhaust that may have accumulated during the test.

If the oven flue is connected directly to an outside flue, a CSA International design certified down draft diverter must be installed at the flue outlet of the oven and connected to the outside flue.

INSTALLATION

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 installation must conform 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, including:

1. The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.45 kPa).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.45 kPa).

STEP 1: UNPACKING

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.

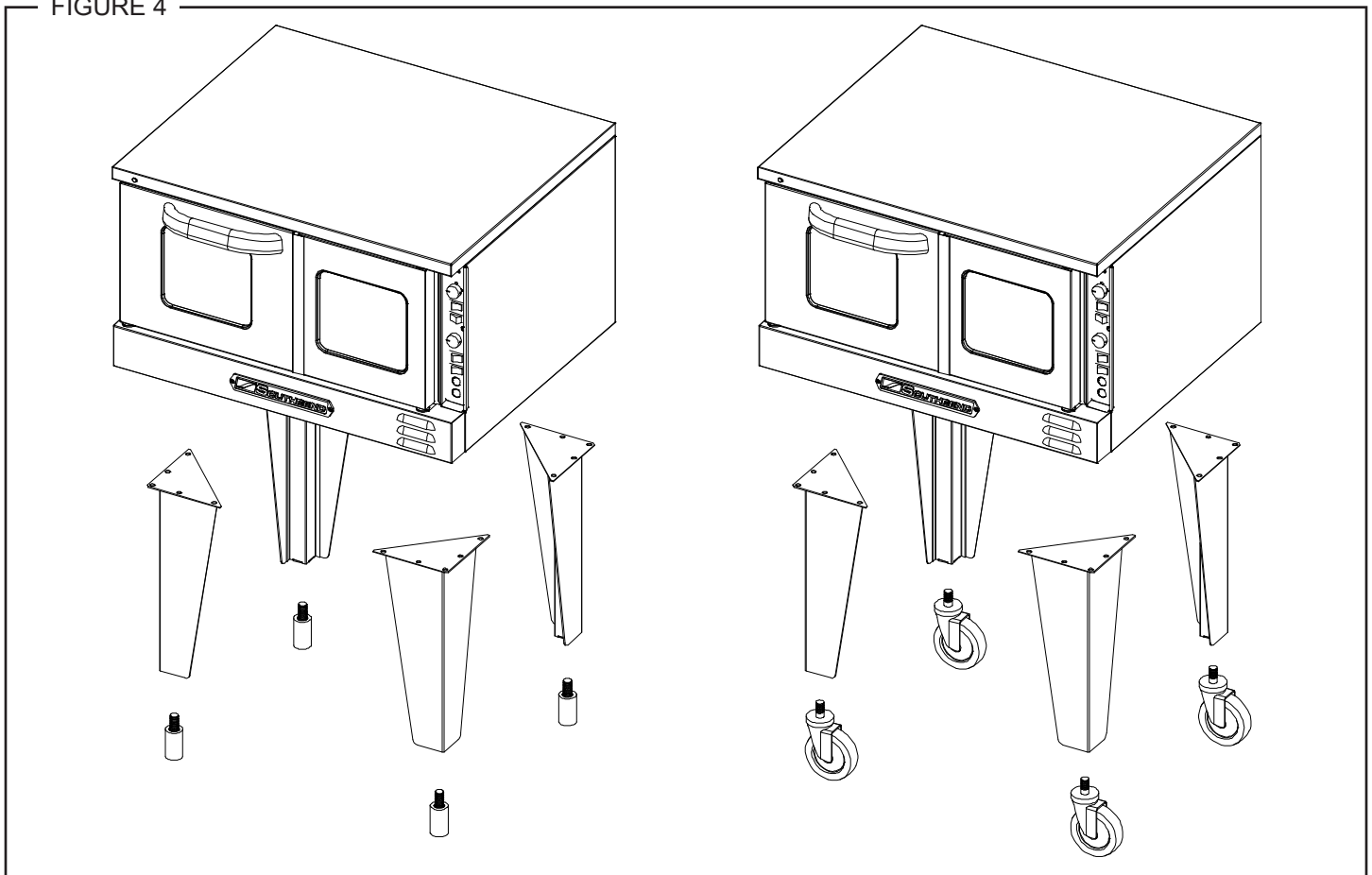
1. Cut banding straps and remove packing material.
2. Remove tie-down strap holding oven to wooden skid.
3. If you are installing a single-deck oven, go to Step 2a.

If you are installing a double-deck or triple-deck oven, go to Step 2b.

STEP 2A: INSTALLATION OF LEGS ON SINGLE-DECK OVENS

1. Raise oven sufficiently to allow clearance for the legs to be attached. Use of a lift truck or other mechanical lifting means is recommended. For safety, "shore up" and support the oven with an adequate blocking arrangement strong enough to support the load. (If it is absolutely necessary to rest the oven on its side, rest it on its left side or back side. Take care to protect the finish on the left side, and to prevent the weight from resting on the motor on the back.)
2. Attach the legs to the bottom corners of the oven using the provided machine screws, flat washers, and lock washers. Each leg is secured by five screws. The mounting holes are pre-drilled and threaded.
3. Screw into the bottom of each leg either an adjustable foot or a caster (depending on which option was ordered). If attaching casters, the two casters with brakes should be attached to the front legs.
4. Lower the oven gently onto a level surface. Never drop or allow the oven to fall.
5. Use a level to make sure that the oven is level. The adjustable feet can be screwed in or out to lower or raise each corner of the oven.
6. If casters were installed, go to Installation Step 3 on page 12, otherwise go to Step 4 on page 13.

FIGURE 4

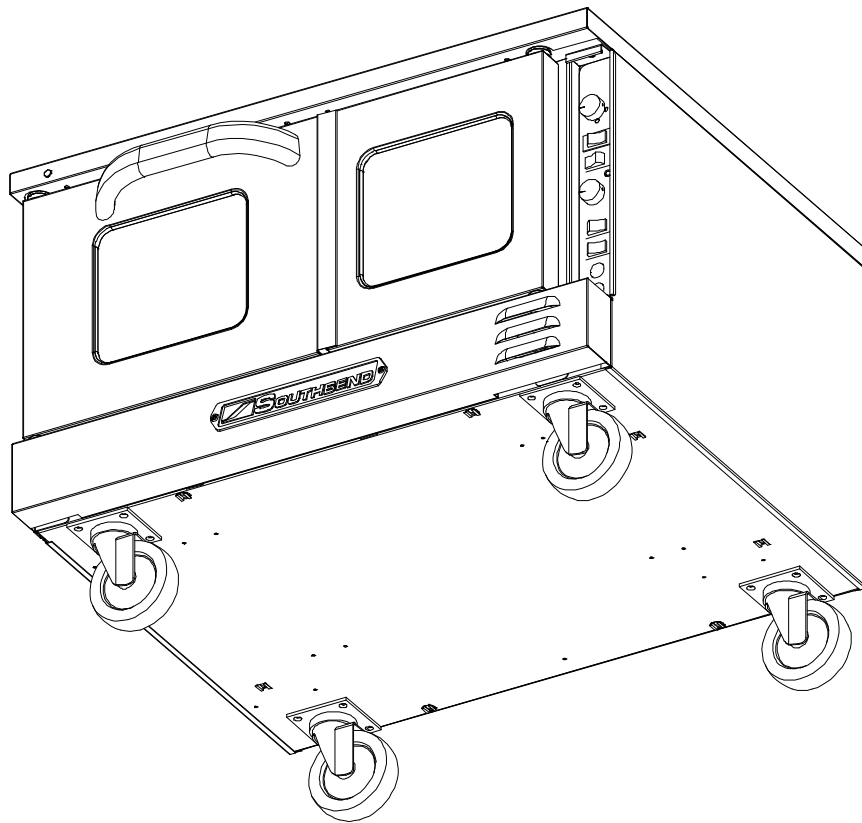


STEP 2B: INSTALLATION OF LEGS ON DOUBLE-DECK OR TRIPLE-DECK OVENS

Double-deck (or triple-deck) ovens can be shipped either already bolted together, or as two (or three) separate ovens to be bolted together after delivery. In either case, the oven that is (or will be) the bottom oven will have leg pads already bolted to the bottom corners of the oven. Do the following:

1. Raise oven sufficiently to allow clearance for the legs to be attached. Use of a lift truck or other mechanical lifting means is recommended. For safety, “shore up” and support the oven with an adequate blocking arrangement strong enough to support the load. (If it is absolutely necessary to rest the oven on its side, rest it on its left side or back side. Take care to protect the finish on the left side, and to prevent the weight from resting on the motor on the back.)
2. Screw into the center of each leg pad either an adjustable leg or a caster (depending on which option was ordered). If attaching casters, the two casters with brakes should be attached to the front leg pads.
3. Lower the oven gently onto a level surface. Never drop or allow the oven to fall.
4. Use a level to make sure that the oven is level. The adjustable legs can be screwed in or out to lower or raise each corner of the oven.
5. If casters were installed, go to Installation Step 3 on page 12, otherwise go to Step 4 on page 13.

FIGURE 5



STEP 3: INSTALLATION OF RESTRAINT (ONLY FOR OVENS WITH CASTERS)

NOTICE

For an appliance equipped with casters, (1) the installation shall be made with a connector that complies with the *Standard for Connectors for Movable Gas Appliances, ANSI Z21.69* or *Connectors for Moveable Gas Appliances, CAN/CGA-6.16*, and a quick-disconnect device that complies with the *Standard for Quick-Disconnect Devices for Use With Gas Fuel, ANSI Z21.41*, or *Quick Disconnect Devices for Use with Gas Fuel, CAN1-6.9*, (2) adequate means must be provided to limit the movement of the appliance without depending on the connector and the quick-disconnect device or its associated piping to limit the appliance movement and (3) the restraining means should be attached to a frame member on the back of the unit.

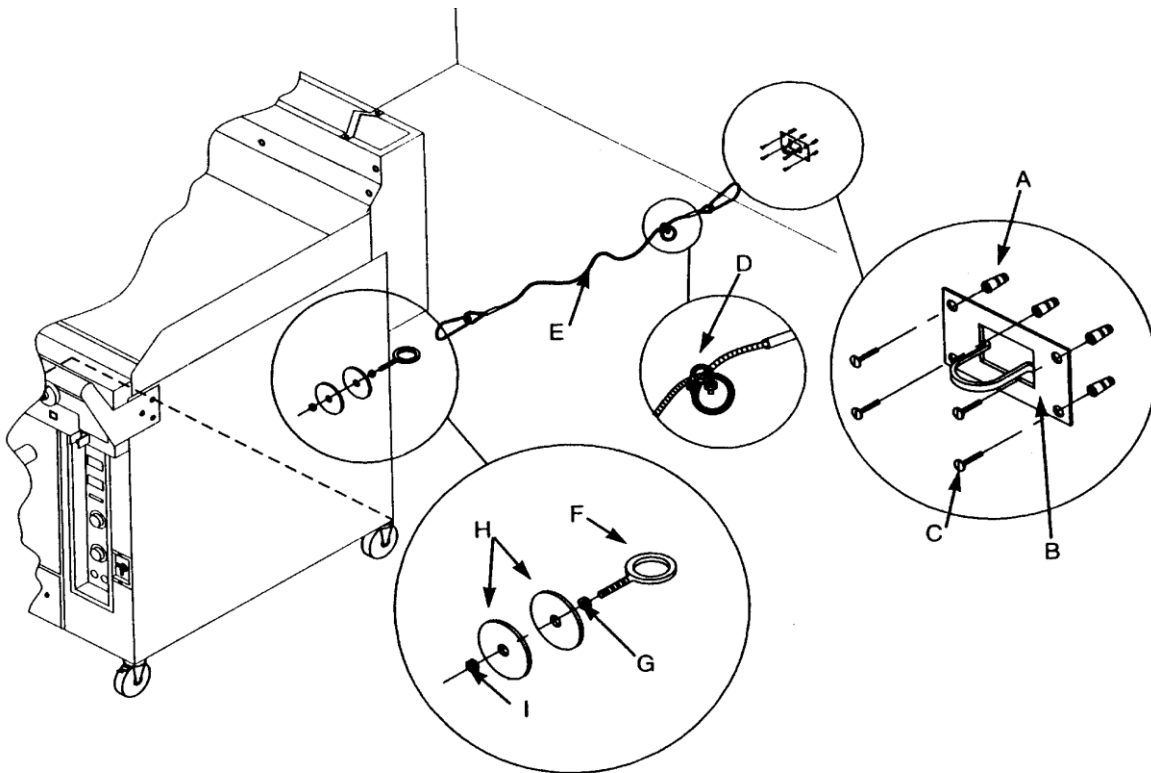
! WARNING

To avoid accidental gas disconnection and potential explosion:

If disconnection of this restraint is necessary to move the appliance for cleaning, etc., reconnect it when the appliance is moved to its originally installed position.

1. Secure the restraining-device bracket (item "B" in the following illustration) to a wall stud located as close as possible to the appliance connector inlet and outlet connections. Use four #12 screws (items "C") and plastic anchors (items "A") if necessary.

FIGURE 6



Note: Kit can be purchased from Southbend (part number 1176867).

2. Install eye-bolt (item “F”) to a frame member on the rear of the equipment. After checking carefully behind the frame member for adequate clearance, drill a 1/4” hole through the frame member.
3. Thread hex nut (item “G”) and slide the washer (item “H”) onto the eye-bolt. Insert the eye-bolt through the 1/4” drilled hole and secure with a washer (item “H”) and nylon lock nut (item “I”).
4. Using the spring-loaded snap hooks, attach the restraining device to the bracket and the eye-bolt.
5. Using the cable clamp (item “D”), adjust the restraining device extended length to prevent over-bending or kinking of the appliance connector.

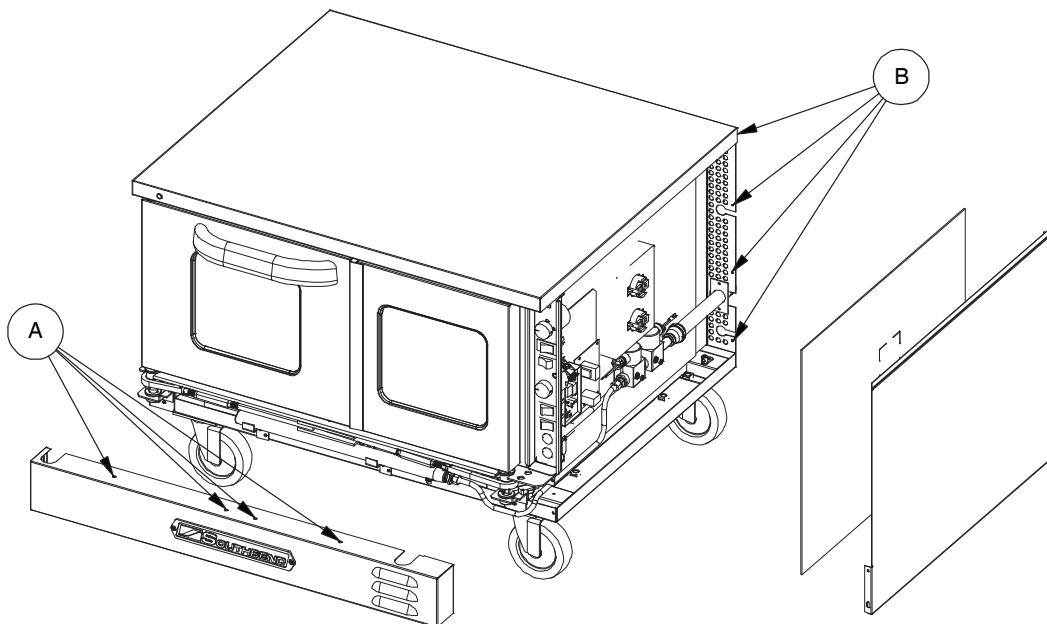
For units not equipped with flame safety devices, be sure all valves are turned off prior to disconnecting. After reconnecting, be sure that the oven is switched OFF.

STEP 4: STACK OVENS (IF NECESSARY)

Double-deck (or triple-deck) ovens can be shipped already assembled, but can instead be shipped as two (or three) single-deck ovens to be stacked in the field. Also, ovens that were originally ordered as single ovens can be stacked in the field (additional parts are required). This installation step describes the procedure for stacking two single-deck ovens to form a double-deck oven. For a triple-deck oven, repeat this step.

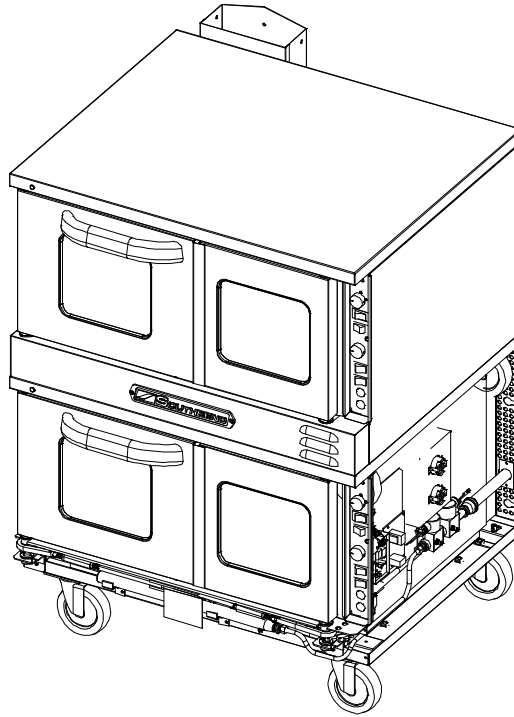
1. Uncrate the ovens. Identify the oven that will be the bottom oven (it will be the oven with leg pads attached to the bottom corners). Attach the legs (or casters) to the lower oven as described in Step 2b on page 11.
2. If the oven that will be the top oven was NOT ordered as part of a double-deck or triple-deck oven, remove the four leg pads from the bottom of the top oven.
3. Locate and remove the four screws that secure the lower front panel (items “A” in the drawing below). Lift up the panel and pull it forward to remove it, then set it aside.
4. Locate and remove the five screws that secure the right side panel to the oven (items “B” in the drawing below). Remove the right side panel and insulation and set them aside.

FIGURE 7



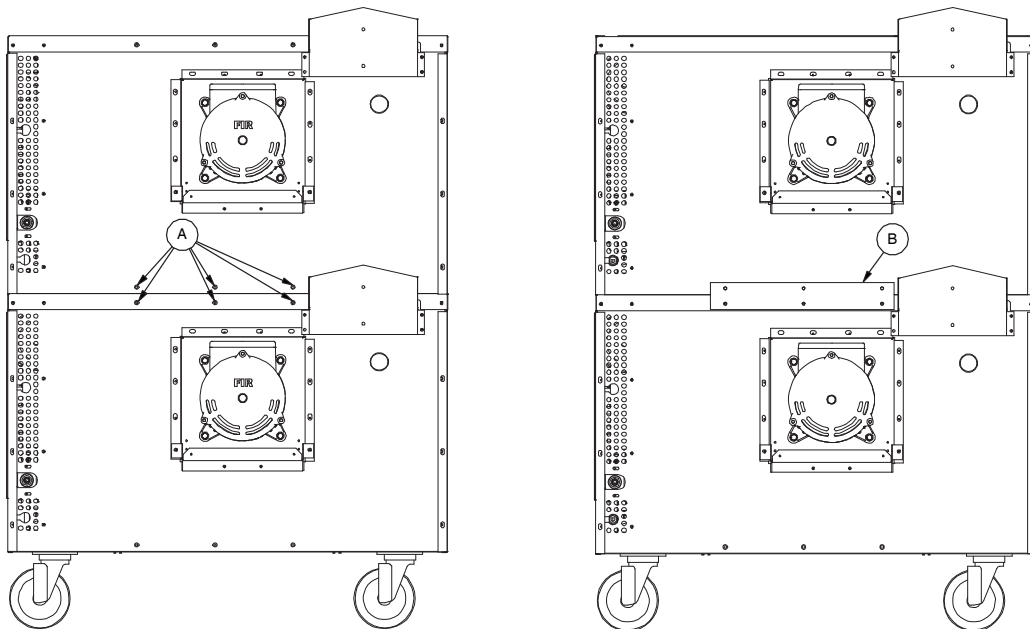
5. Lift the top oven and position it on top of the lower oven, as shown in the drawing below.

FIGURE 8



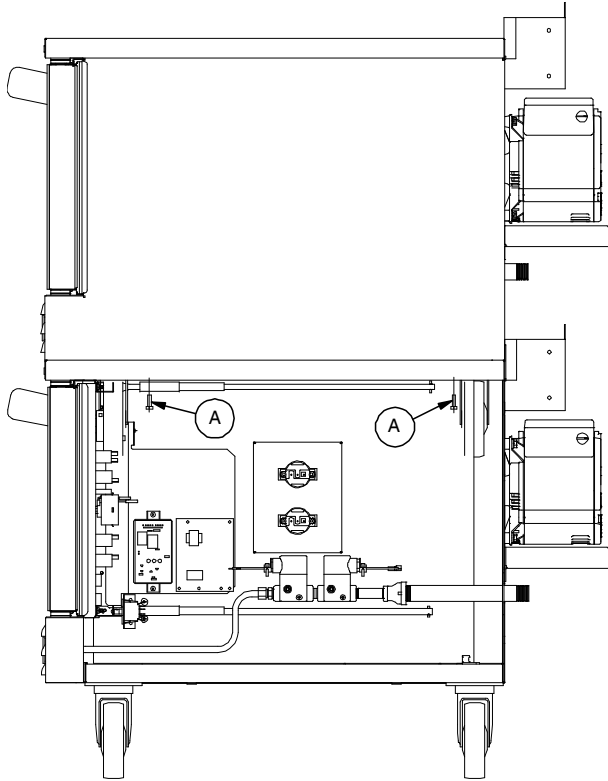
6. Move to the rear of the ovens and remove the six screws shown as items "A" in the left-hand drawing below. Position the tie bracket (item "B") as shown in the right-hand drawing below. Re-insert the screws that you just removed through the holes in the tie bracket, but do not tighten them yet.

FIGURE 9



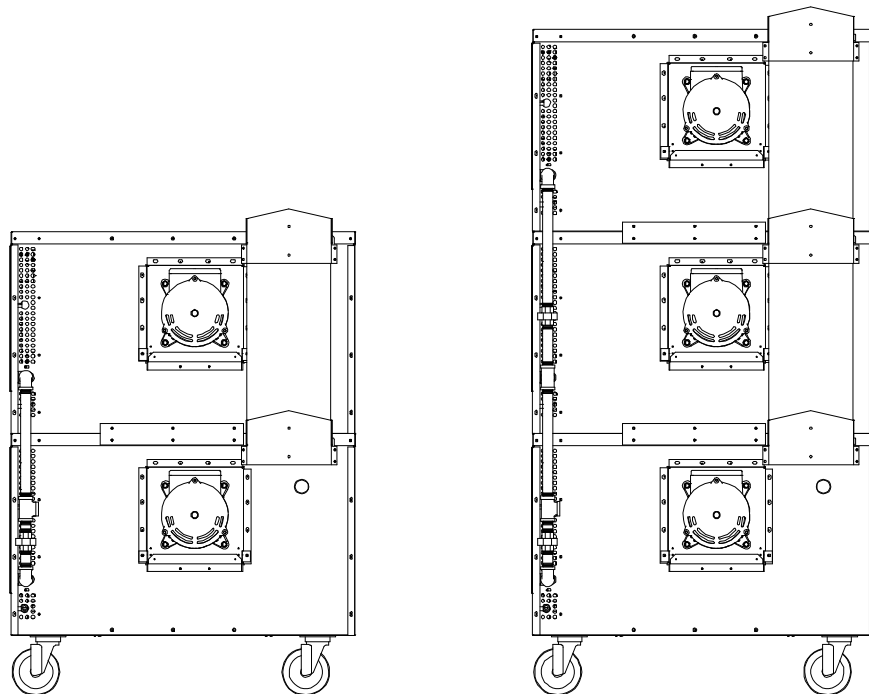
7. Insert two bolts (items “A” in the following diagram) up through the top of the lower oven and screw them into the threaded holes in the bottom of the top oven. Tighten these bolts and the screws that you did not tighten in the previous step.

FIGURE 10



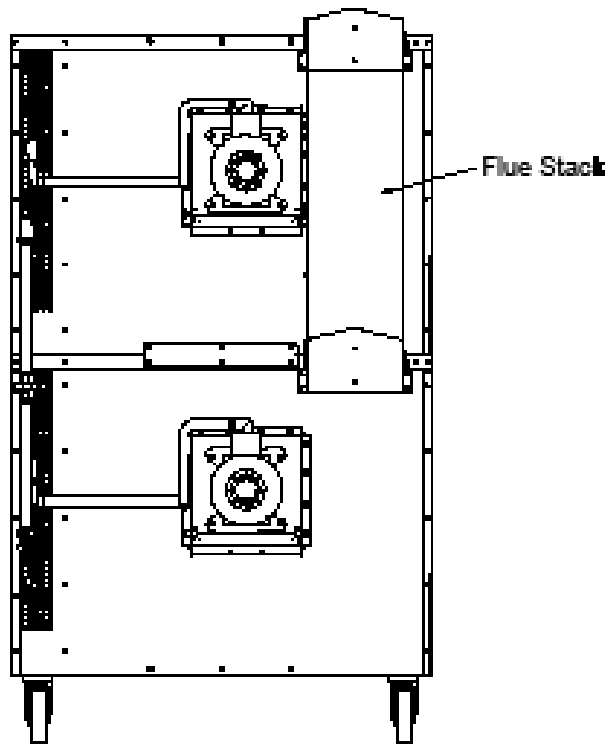
8. Assemble the gas piping shown in the following drawing. Be sure to check all connections for leaks once the oven has been installed.

FIGURE 11



9. Install the flue stack as shown in the following diagram:

FIGURE 12



10. Replace the right side insulation, exterior panel, and lower front panel that you removed in step 4 of this procedure.

STEP 5: INSTALL DOWN DRAFT DIVERTER (IF APPLICABLE)

NOTICE

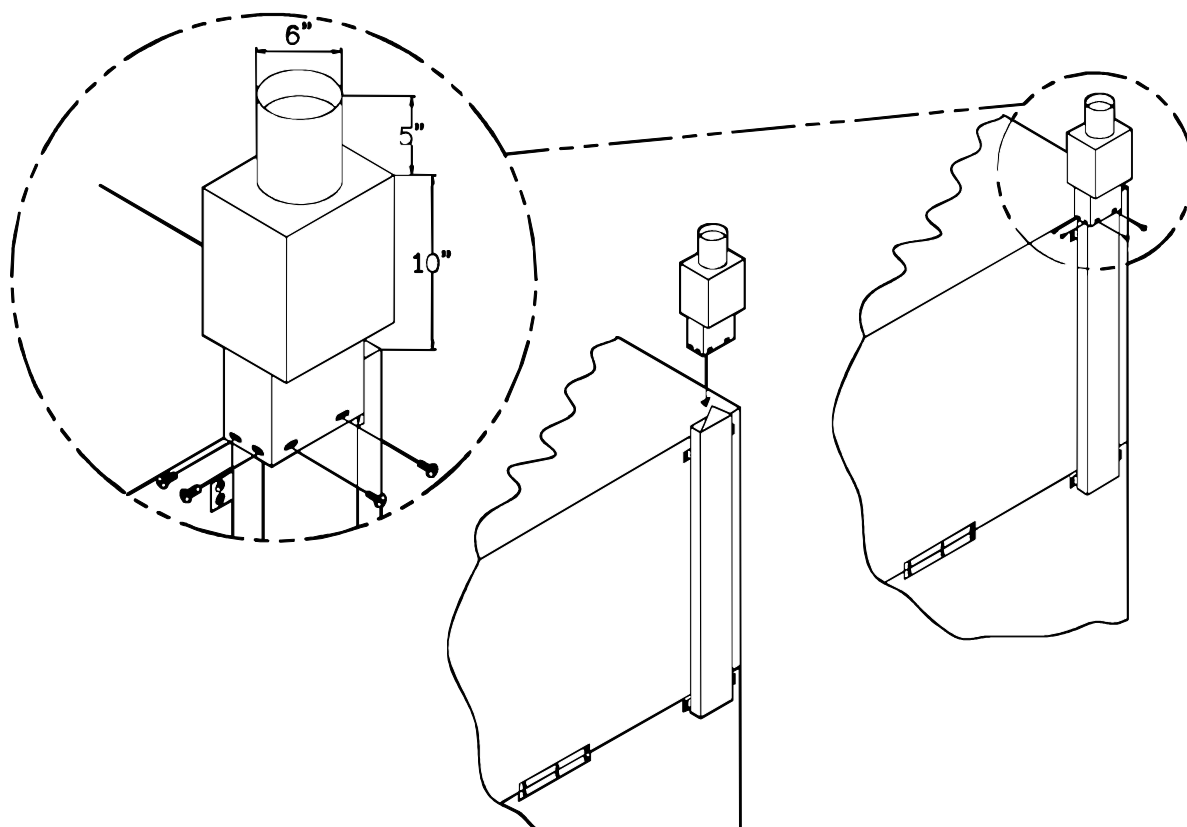
Installation must use approved CSA International down draft diverter supplied by Southbend.

If the oven flue is to be connected directly to an external vent, a down draft diverter must be installed. The installation of ventilation pipes through walls and roofs must conform to all local codes. To install the down draft diverter, do the following:

1. Slip the down draft diverter over the top of the flue located at the top left rear corner of the oven (see drawing below). Allow the diverter to slide down as far as it will go.
2. Using a 9/64" or 5/32" drill bit, drill eight holes through the flue box using the pre-drilled holes in the diverter as a guide.
3. Secure the diverter to the flue box using the #10 x 1/2 sheet metal screws shipped with the diverter.

FIGURE 13

Installation of Down Draft Diverter



STEP 6: CONNECT ELECTRICITY

WARNING

ELECTRICAL GROUNDING INSTRUCTIONS

This appliance (120V ovens only) is equipped with a three-prong (grounding) plug 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 this plug.

NOTICE

This appliance, when installed, must be electrically grounded in accordance with local codes, or in the absence of local codes, with the *National Electrical Code*, *ANSI/NFPA 70* or the *Canadian Electrical Code*, *CSA C22.2*, as applicable.

Wiring diagrams are located on the side of the control panel assembly, as well as in this manual (beginning on page 34). Be sure that the input voltage and phase match the requirements shown on the serial plate, which is located inside the lower front panel.

Ovens ordered to operate on 120V power have a three-wire cord. (Double-deck ovens have two power cords, and triple-deck ovens have three cords; one for each oven.) Each cord has a three-prong plug that fits any standard three-prong grounded receptacle. Single-deck units require a 15 ampere supply, while double-deck units require a 20 ampere supply, and triple-deck ovens require a 30 ampere supply. (120V ovens shipped to Canada do NOT have factory installed power cords, and must be wired as described below.)

Ovens without a power cord have a terminal block. The electric supply must be brought through the service panel in the rear of the oven and connected to the terminal block. See the wiring diagrams in this manual (beginning on page 34). The unit must be adequately grounded. Use 167°F (75°C) or better wire for all supply lines.

Ovens are factory-equipped with a two-pole terminal block, located behind a cover plate located on the rear of the oven. To connect the supply wires, remove the cover plate, then 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.

STEP 7: CONNECT GAS SUPPLY

NOTICE

The installation must conform 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, including:

1. The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.45 kPa).
2. The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.45 kPa).

A 1" NPT female line is provided at the rear for the 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 inside the front lower panel. 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.

These models are design-certified for operation on natural or propane gases. For natural gas, the regulator is set to deliver a 6" W.C. pressure to the manifold. For propane gas, it is set to deliver 10" W.C.

This appliance should be connected **ONLY** to the type of gas for which it is equipped. The inlet pressure before the regulator should be 7-10" W.C. for natural gas or 11-14" W.C. for LP gas.

An adequate gas supply is imperative. Undersized or low pressure lines will restrict the volume of gas required for satisfactory performance.

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.

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 1/2" W.C.

STEP 8: CHECK THE INSTALLATION

1. Check that all screws and bolts are tightened.
2. Move the oven into the position at which it will be operated.
3. Check that the oven is level. If not, adjust the legs.
4. Check that the appropriate clearances are satisfied (see page 8).

OPERATION

DANGER

EXPLOSION HAZARD

In the event a gas odor is detected, shut down equipment at the main shut off valve. Immediately call the emergency phone number of your gas supplier.

CAUTION

To eliminate gas build up which could result in an explosion, in the event of main burner ignition failure a five minute purge period must be observed prior to re-establishing ignition source.

NOTICE

For an appliance equipped with a convection oven, no attempt should be made to operate oven during a power failure.

LIGHTING, RELIGHTING AND SHUTDOWN INSTRUCTIONS

To light the oven, just switch the power switch at the top left corner of the control panel to the “ON” position. (The oven is equipped with a direct hot surface ignition system. There is no pilot to light.)

If the burners fail to ignite within four seconds, the oven will automatically shut off the gas, wait five minutes to allow the gas that was released to dissipate, and try to light the burners again. If the burners still fail to ignite after three such attempts, the oven will stop trying, even though the power switch is in the “ON” position. To continue to attempt to light the burners, turn the power switch “OFF” and then “ON” again.

To shutdown the oven, switch the power switch to the “OFF” position. For a complete shutdown, also open the control panel and turn the manual shut-off valve to the “OFF” position.

OPERATING THE CONTROLS

A convection oven is a different type of oven that offers many features and advantages to the food service operation. The additional capabilities and features of the oven require some learning. However, the operation of the oven is not difficult to understand or control once you have some practice.

TruVection ovens operate much like a standard oven: you turn the oven ON and select a cooking temperature. Two additional controls are used to control the fan (as described below).

The timer is a reminder to you of when to remove food from the oven. The timer does NOT control the temperature of the oven.

To cook, do the following:

1. Turn the oven ON using the Power Switch at the top of the control panel.

2. Select the desired fan speed using the Fan Speed switch. The appropriate fan speed (HI or LOW) depends on the type of food being cooked.
3. Switch the Fan Mode switch to COOK. The fan will run continuously when the oven doors are closed (the fan does not cycle on and off with the burners). (If this switch is set to COOL the only difference is that the fan will continue to run when the oven doors are open.)
4. Set the cooking temperature by turning the Cook Temperature Control until the indicator mark on the knob is pointed to the desired cooking temperature. The Heat On indicator will light when the burners are on, and will remain on while the oven preheats.
5. Wait until the Heat On indicator has come on and gone out three times. At that time the oven will have reached the set cooking temperature.
6. Open the oven doors, load the product into the oven, and close the doors.
7. You can use the Cook Timer as a reminder of when to remove the load from the oven. If so desired, turn the Cook Timer knob until the indicator mark points to the desired cooking time (up to 55 minutes). The timer knob will rotate counterclockwise as the timer runs down, indicating how much time remains. You can turn the knob while cooking to increase or decrease the remaining time. When the timer runs out, a buzzer will sound for a short time, then turn itself off. (To immediately silence the buzzer, turn the Cook Timer knob to the OFF position.) The timer is a reminder to you; the timer does not control the oven.

If you open the oven doors, the burners and fan will shut off until the doors are closed. However, the timer will continue running even if the doors are open.

For ovens that are equipped with an oven interior light, to turn on the light press and hold the switch located at the bottom of the control panel.

8. When the load has finished cooking, you can rapidly cool the load by opening the oven doors (which will shut off the burners) and switching the Fan Mode to COOL (which will cause the fan to run even though the doors are open). For the most rapid cooling, also switch the Fan Speed switch to HI.
9. When you are done cooking, turn the Cook Temperature control to the lowest setting (fully counterclockwise) and switch the Power Switch to OFF.

CONTROL PANEL

FIGURE 14

Cook Timer

Turn knob to set a time duration. An alarm will sound when the timer runs out. The timer is a reminder to the user; **the timer does not control the oven.**

Power Switch

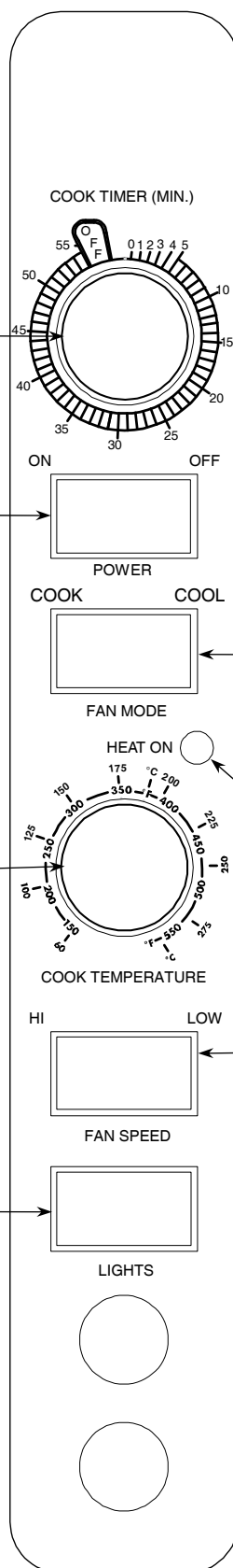
Switch ON to use the oven, switch OFF when done using the oven.

Cook Temperature Control

Turn knob to select desired cooking temperature. The Heat On indicator will go out when the oven reaches the set temperature, and will cycle on and off as the burners operate to maintain the set cooking temperature.

Oven Interior Light Switch

On ovens equipped with an oven interior light, press to turn on the light. The light remains on for as long as the switch is held.

**Fan Mode**

In COOK mode, the fan runs continuously except when the doors are open. The fan does NOT cycle with the operation of the burners. In COOL mode, the fan runs continuously even if the doors are open. Since the burners will not operate if the oven doors are open, to rapidly cool the oven after cooking is completed, open the doors and switch the fan mode to COOL.

Heat-On Indicator

Indicator is lit when the burners are operating.

Fan Speed

Use to select fan speed (HI or LOW). The appropriate speed is determined by the type of food being cooked.

COOKING HINTS

In a standard (non-convection) oven, the air is relatively still and an insulating layer of moisture surrounds the cooking food product. In a convection oven, the fan-blown circulating air strips away this insulating layer allowing the heat to penetrate faster for quicker baking and roasting. Hence, in a convection oven cooking procedures and techniques may require some modification for successful results. As a general rule, the cooking time will be shorter and the cooking temperature will be 25°F to 75°F lower than those called for in recipes for a standard oven.

TIME & TEMPERATURE

Time and temperature are important. The “Guide to Times and Temperatures” later in this section is a starting point. The actual best cooking time and temperature will depend on such factors as size of load and mixture of recipe (particularly moisture). Once an appropriate time and temperature has been established for a particular product and load, you will find the result of succeeding loads to be similar.

OVERLOADING

Do NOT overload the oven. The size of the load that can be cooked satisfactorily depends largely on the particular product. As a rule, five racks can be successfully used for shallow cakes, cookies, pies, etc. For deeper cakes (such as angel food), use only three racks because of the size of the pan and the space required for rising. For hamburger patties, fish sticks, cheese sandwiches, etc., a full complement of racks and pans is usually satisfactory.

HELPFUL SUGGESTIONS

Here are some suggestions that will assist in getting the best possible performance from a convection oven:

- Pre-heat the oven thoroughly before use.
- When re-thermalizing frozen products, pre-heat the oven to 50°F higher than the planned cooking temperature. After loading, reduce the temperature setting to the appropriate cooking temperature.
- Space the racks and pans as evenly as possible to allow air circulation.
- Center the load on the racks to allow for proper air circulation around the sides. Do not cover the racks completely with pans.
- Do not use a deep pan for shallow cakes or cookies, etc. Air circulation across the surface of the product is essential.

WARNING

THE USE OF ALUMINUM FOIL CAN CAUSE HEAT DISTRIBUTION PROBLEMS IN OVENS. EXTREME CARE MUST BE USED WHEN PLACING ALUMINUM FOIL IN THE OVEN TO ENSURE THAT IT DOES NOT BLOCK OR CHANGE THE AIR FLOW. THE USE OF ALUMINUM FOIL MAY VOID THE PRODUCT WARRANTY IF ITS USE IS ASCERTAINED TO BE A PROBLEM.

HOLDING FOOD BEFORE SERVING

Any food item prepared in steam table pans can be held until being served by setting the Hold thermostat to 160°F. Examples include stuffed pork chops, oysters Rockefeller, and any vegetable entree.

COOKING PROBLEMS AND SOLUTIONS

If...	then...
Cakes are dark on the sides and not done in the center...	lower oven temperature.
Cake edges are too brown...	reduce number of pans or lower oven temperature.
Cakes have a light outer color...	raise temperature.
Cakes settle slightly in the center...	bake longer or raise oven temperature slightly. Do not open doors except to load or unload product.
Cakes ripple...	do not overload pans or use batter that is too thin.
Cakes are too coarse...	lower oven temperature.
Pies have uneven color...	reduce number of pies per rack or eliminate use of bake pans.
Brown sugar topping or meringue blows off...	after oven is preheated, turn off oven and put product in oven until topping sets, then turn oven back on.
Rolls have uneven color...	reduce number or size of pans.
Meats are browned and not done in center...	lower oven temperature and roast longer.
Meats are well done and not browned...	raise temperature. Limit amount of moisture.
Meats develop hard crust...	reduce temperature or place pan of water in oven.
Excessive meat shrinkage occurs...	lower oven temperature.

GUIDE TO TIMES AND TEMPERATURES

As a guide, set oven temperatures 25°F to 75°F lower than called for in recipes for non-convection ovens, (i.e., range or deck ovens).

Time and temperature will vary depending upon load, mix, size, portion, initial temperature of food, and other factors. Use the following chart as a starting point to develop your own cooking techniques. Rack loading and position may affect results. Experimentation may be necessary to suit individual requirements.

PRODUCT	COOKING TIME	TEMPERATURE	NUMBER OF RACKS
MEAT AND FISH			
Top Round, 18-20 lbs. (medium)	5 hours	275°F	1
Prime Ribs (rare)	4 hours	225°F	1
Burger Patties, 4 oz.	10 min.	350°F	3
Fish Cakes	10-12 min.	375°F	3
Turkey, 10-12 lbs.	3 hr. 20 min.	225°F	1

PRODUCT	COOKING TIME	TEMPERATURE	NUMBER OF RACKS
BAKED GOODS			
Bread, 2 lb. loaf	35 min.	375°F	2
Biscuits	5-10 min.	400°F	3
Cornbread	18 min.	400°F	3
French Bread	10 min.	375°F	2
Sheet Cake	18-20 min.	300°F	3
Cream Puffs	20 min.	375°F	3
Brown & Serve Rolls	6 min.	400°F	3
Ginger Bread	18 min.	300°F	3
Yeast Rolls, sheet pan	16-18 min.	325°F	2
Pineapple Upside Down Cake	25-30 min.	325°F	2
Apple Turnovers	15-18 min.	350°F	3
Fruit Cobbler	20-25 min.	375°F	2
Brownies	15 min.	350°F	3
Danish Pastry	12 min.	325°F	3
Pie Shells	12 min.	350°F	2
Fresh Fruit Pies	25-30 min.	350°F	2
Pumpkin Pies	25-30 min.	275°F	2
Fresh Apple Pies	35 min.	375°F	2
Frozen Berry Pies	40 min.	375°F	2
Frozen Fruit Pies	45 min.	375°F	2
POTATOES			
Baked Potatoes, 10 oz.	50-55 min.	450°F	2
Baked Potatoes, 6-8 oz.	40-45 min.	450°F	3
Scalloped Potatoes	28 min.	325°F	3
MISCELLANEOUS			
Macaroni and Cheese	30 min.	350°F	2
Stuffed Peppers	18 min.	350°F	3
Toasted Cheese Sandwiches	8 min.	375°F	3

CLEANING

Southbend equipment is sturdily constructed of the best materials and is designed to provide durable service when treated with ordinary care. To expect the best performance, your equipment must be maintained in good condition and cleaned daily. Naturally, the periods for this care and cleaning depend on the amount and degree of usage.

Following daily and periodic maintenance procedures will enhance long life for your equipment. Climatic conditions (such as salt air) may require more thorough and frequent cleaning or the life of the equipment could be adversely affected.

The oven interior is finished with a porcelain enamel coating. "Spillovers" should be cleaned from the interior bottom surface as soon as possible to prevent carbonizing and a burnt-on condition. Grease or any residue should be cleaned from interior surfaces as soon as it accumulates.

WARNING

FOR YOUR SAFETY, DISCONNECT THE POWER SUPPLY TO THE APPLIANCE BEFORE CLEANING.

WHEN CLEANING THE BLOWER WHEEL, BE SURE TO HAVE THE POWER SWITCH IN THE "OFF" POSITION.

DAILY CLEANING

1. Turn the power switch to OFF and allow the oven to cool.
2. Remove the oven-interior racks and rack slide frames. (The rack slide frames are readily removable by merely raising to disengage them from their sockets.) Wash the racks and rack slides in a sink with mild detergent and warm water. Dry them thoroughly with a clean cloth.
3. Look to see if any foreign matter has accumulated on the blades of the blower wheel (which will reduce air circulation). If necessary, remove the rear lining of the oven, which is secured by thumbscrews near each corner. Use a stiff brush to remove accumulations from the blower blades, then wash with soap and water.
4. Wash the interior surfaces with mild detergent and warm water. Rinse with clean water, and dry thoroughly with a clean cloth. For stubborn accumulations, a commercial oven cleaner may be used.
5. Clean the control panel with warm water and mild soap. Never use cleaning solvents with a hydrocarbon base.
6. Wipe the other exterior surfaces with a clean damp cloth. If the exterior surfaces require more thorough cleaning, see "Cleaning Stainless Steel Surfaces" on the next page.
7. Return the rack slides and racks to their appropriate locations inside the oven.
8. LEAVE THE DOOR OPEN AT NIGHT AFTER CLEANING. This allows the oven to dry thoroughly after cleaning and also prolongs the life of the door gasket.

MONTHLY CLEANING

Clean around rear of motor (where the vent screen is located), louvered panels, and air holes in the rear of the oven where grease or lint may have accumulated.

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.

At least twice a year the oven's venting system should be examined and cleaned.

CLEANING STAINLESS STEEL SURFACES

To remove normal dirt, grease and product residue from stainless steel that operates at LOW temperature, use ordinary soap and water (with or without detergent) applied with a sponge or cloth. Dry thoroughly with a clean cloth.

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 or STAINLESS 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 BRUSH, STEEL SCOURING PADS (EXCEPT STAINLESS), 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.

To remove heat tint – Darkened areas sometimes appear on stainless steel surfaces where the area has been subjected to excessive heat. These darkened areas are caused by thickening of the protective surface of the stainless steel and are not harmful. Heat tint can normally be removed by the foregoing, but tint which does not respond to this procedure calls for a vigorous scouring in the direction of the polish lines, using SCOTCH-BRITE scouring pads or a STAINLESS scouring pad in combination with a powered cleanser. Heat tint action may be lessened by not applying, or by reducing heat to equipment during slack periods.

Adjustments

WARNING

ADJUSTMENTS AND SERVICE WORK MAY BE PERFORMED ONLY BY A QUALIFIED TECHNICIAN WHO IS EXPERIENCED IN, AND KNOWLEDGEABLE WITH, THE OPERATION OF COMMERCIAL COOKING EQUIPMENT. HOWEVER, TO ASSURE YOUR CONFIDENCE, CONTACT YOUR AUTHORIZED SERVICE AGENCY FOR RELIABLE SERVICE, DEPENDABLE ADVICE OR OTHER ASSISTANCE, AND FOR GENUINE FACTORY PARTS.

NOTICE

Warranty will be void and the manufacturer is relieved of all liability if service work is performed by other than a qualified technician, or if other than genuine Southbend replacement parts are installed.

LUBRICATION

The door chains and sprockets have been lubricated at the factory with high temperature “Never Seeze” lubricant. After each six months of usage, lubricate the door chains and sprockets with the same type of lubricant.

Motor lubrication information can be found on permanent label located on motor.

Casters are provided with a fitting for proper lubrication when required.

ADJUSTING GAS PRESSURE REGULATOR

The pressure regulator is factory set at 6” W.C. for natural gas and 10” W.C. for propane gas. To check the manifold pressure:

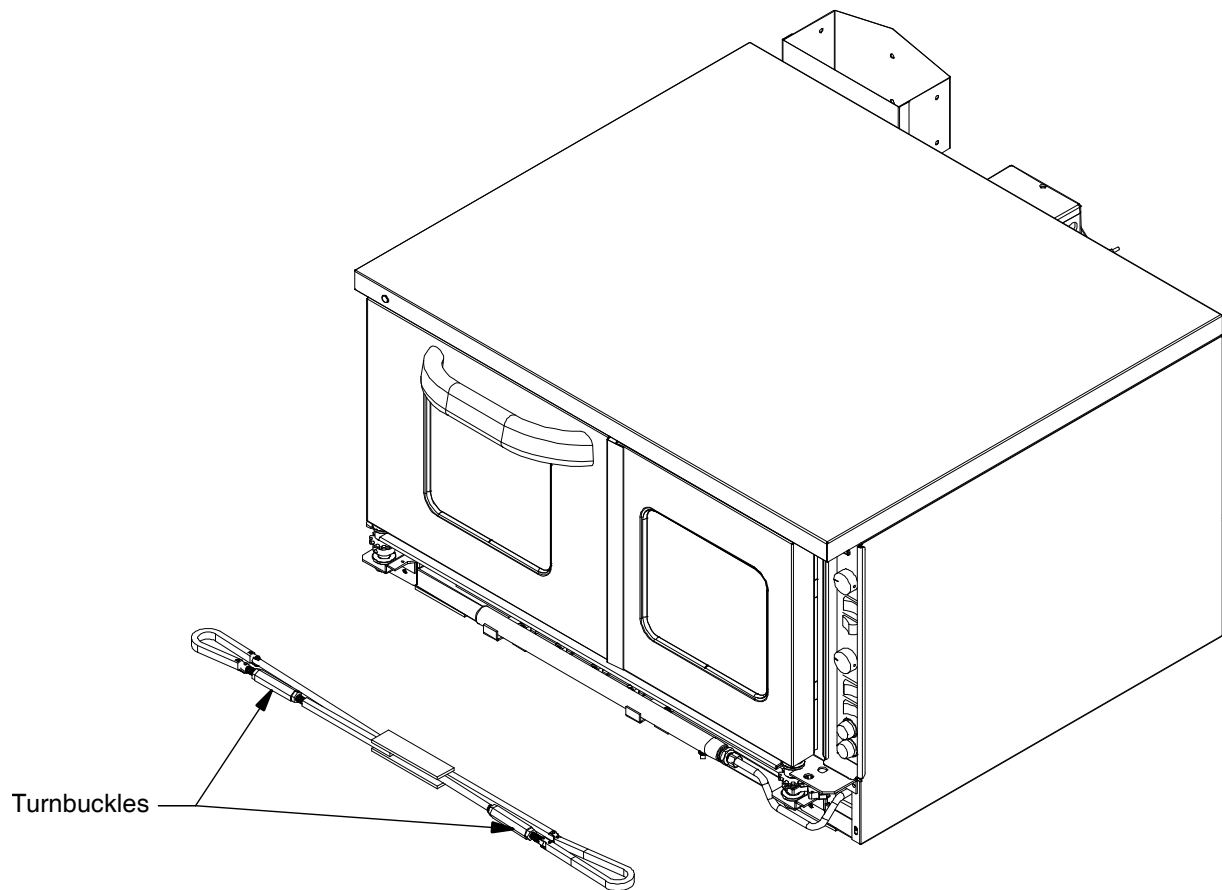
1. Turn the power switch to the “OFF” position.
2. Turn main gas valve to entire unit off.
3. Remove the lower panel and locate 1/8” plug in manifold.
4. Remove plug and install a fitting appropriate to connect a manometer.
5. Turn on main gas to unit and turn on power switch.
6. When the burners light, read manometer.
7. If manometer does not read 6” W.C. for natural gas, or 10” W.C. for propane gas, adjust regulator (if gas pressure is O.K. go to Step 10).
8. Remove cap from top of regulator.
9. With a screwdriver rotate regulator adjustment screw clockwise to increase, or counterclockwise to decrease, pressure until manometer shows correct reading.
10. Repeat steps 1 and 2.
11. Remove manometer fitting and replace plug in manifold.
12. Turn on main gas to unit, turn on power switch, and check that new plug in manifold does not leak.
13. Replace lower panel.

ADJUSTING DOOR CHAIN MECHANISM

The door chain mechanism causes the left and right doors to open and close together. To adjust the door chain mechanism, do the following:

1. Remove lower front panel that covers the door chain mechanism (shown below).
2. Close both doors.
3. Check the positioning of the chain on the sprockets. There should be five regular links and one master link visible on the front side of each chain. If not, open the turnbuckles and reposition the chain over the sprockets.
4. Adjust the turnbuckles so that the right door closes about 1/4" to 1/2" inch ahead of the left door. The left door should be pushed tight over the friction catch so both doors are completely closed against the frame.
5. Secure the turnbuckles by tightening their locknuts.

FIGURE 15



TEMPERATURE CONTROLLER (STANDARD-CONTROL MODELS ONLY)

The calibration of the temperature controller should not be changed until sufficient experience with cooking results has definitely proved that the temperature controller is not maintaining proper oven temperatures. Before any recalibration is attempted, the oven temperature should be checked by the following procedure:

1. Remove all trays and pans from the oven.
2. Place a thermocouple or a reliable mercury oven-type thermometer at the center of the middle rack.
3. Turn the oven ON and set the temperature control knob to 400°F.
4. The amber "heat on" light will go out when the oven temperature is reached.
5. Allow three cycles for the temperature to stabilize.
6. Read the thermocouple or thermometer immediately after the light goes out for the third time, and again immediately after it comes on the next time.
7. If the average of these readings varies by more than 10°F from the dial setting, recalibrate by the following procedure.
Recalibration should be attempted only by a competent service technician.

Use the following procedure to recalibrate the oven:

1. Loosen the two set screws that secure the temperature-control knob to the temperature-control shaft.
2. Remove the knob from the shaft, being careful not to rotate the knob or shaft.
3. Replace the knob on the shaft so that the indicator mark on the knob points directly at the temperature that was measured at the center of the oven.
4. Re-check the oven calibration.

TROUBLESHOOTING

WARNING

ADJUSTMENTS AND SERVICE WORK MAY BE PERFORMED ONLY BY A QUALIFIED TECHNICIAN WHO IS EXPERIENCED IN, AND KNOWLEDGEABLE WITH, THE OPERATION OF COMMERCIAL COOKING EQUIPMENT. HOWEVER, TO ASSURE YOUR CONFIDENCE, CONTACT YOUR AUTHORIZED SERVICE AGENCY FOR RELIABLE SERVICE, DEPENDABLE ADVICE OR OTHER ASSISTANCE, AND FOR GENUINE FACTORY PARTS.

NOTICE

Warranty will be void and the manufacturer is relieved of all liability if service work is performed by other than a qualified technician, or if other than genuine Southbend replacement parts are installed.

When any difficulty arises it is always a good idea to check that the oven has been connected to the type of voltage for which it was manufactured. The serial plate is located on the inside of the lower front panel. It will list the type of voltage for which the unit was manufactured. In addition, a wiring diagram is attached to the side of the slide-out control panel, as well as reproduced in this manual (see page 30).

TROUBLESHOOTING GUIDE

The left column of the following table lists symptoms that indicate a problem, while the center and right columns list the possible causes and appropriate corrective action. Note that the recommendations of this table assume that the wiring connections are good. When checking a component, always check the wiring attached to the component as well.

SYMPTOM	POSSIBLE CAUSE	CHECK OR REPLACE
Oven will not hold correct temperature.	Temperature probe not working.	Resistance across temperature probe leads at room temperature (70°F) should be approximately 1096 ohms.
	Temperature control not calling for heat.	When heat is required, there should be continuity between terminals 6 and 7 on temperature control.
	Undersized gas supply line	Oven requires 1" ID gas line.
	Low gas pressure.	Oven requires 6" manifold water column pressure for natural gas, 10" for propane.
	Inadequate or improper ventilation.	Check ventilation hood. Verify draw and make up air adjustment.
	Out of calibration.	Calibrate according to procedure described on page 30.
Ignitor glows red but burners do not come on when thermostat calls for heat (cooking light is on).	No power to gas valve.	Check for 120V from ignition box to gas valve.
	Faulty main gas solenoid.	Replace gas valve.
	Faulty ignition module.	Replace ignition module.
	Manual shutoff valve closed.	Open all shut-off valve.
	Ignitor not in front of rear end of burner.	Re-position ignitor to be in front of rear end of burner.

Table continues on next page.

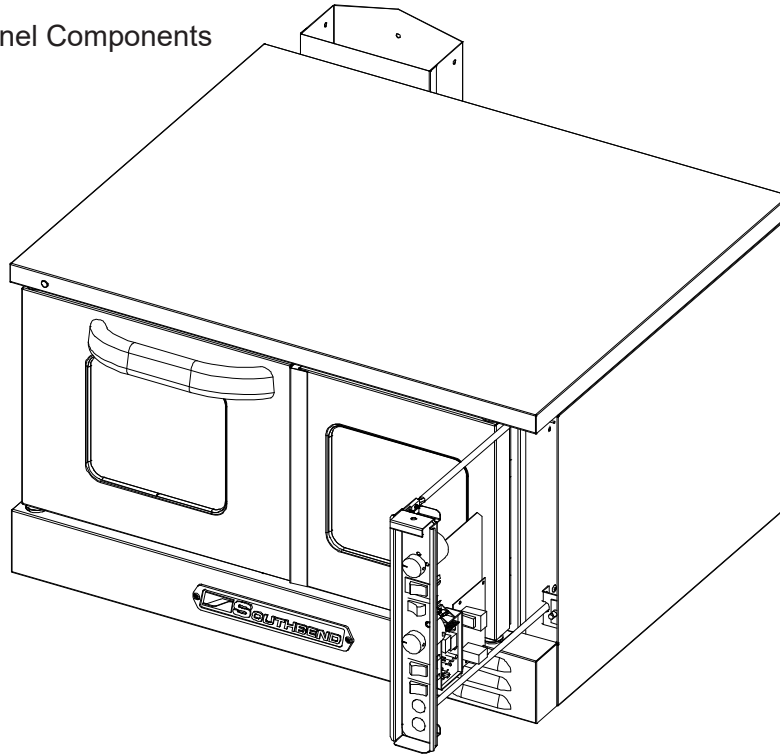
SYMPTOM	POSSIBLE CAUSE	CHECK OR REPLACE
Ignitor does not glow red.	No power to ignitor.	Check that voltage from ignitor module to ignitor is 24V. Ignitor draws approximately 3.35 amps at start as it heats up resistance goes down. Gas valve opens approximately 1.8 amps.
	Ignitor broken or cracked.	Should read continuity between leads on ignitor.
	No power to ignition module.	Should be 120V from temp control to ignition module.
	Check blower motor. Motor should turn when power switch is turned on and temperature control calls for heat.	Motor has centrifugal switch. Motor must be turning before ignition circuit is energized. Power for motor comes through switch. Check switch.
	Temperature control does not call for heat.	Must read continuity between 6 and 7 on temperature control when calling for heat.
	No power out of power switch.	Check that unit power cord is plugged into power supply. Check switch for continuity when switch is closed.
First burner next to ignitor lights, but flame will not carry across to other burners.	Burners not aligned.	Check burner carry over wings for proper mating.
	Burner and orifice out of alignment.	Orifice must inject gas down center of burner.
	Gas pressure too low.	Oven requires 6" manifold water column pressure for natural gas, 10" for propane.
	Burner orifices clogged.	Make sure burner orifices are clear.
Burners light but go out within a few seconds. (Ignitor will glow approximately 4 seconds. If burner does not ignite, ignition module will try 3 times and then lock out.)	Bad flame sensor.	Check in series on micro amps. Minimum is 0.75 amps, no maximum.
	Bad gas valve.	Check gas valve.
Blower motor will not come on.	No incoming electric power.	Check incoming power.
	Loose wire connections.	Check wire connections.
	Bad switch.	Check fan switch.
	Motor bad.	If power is being supplied but motor will not turn, replace motor.
	Shut down switch.	All power comes through shut down switch. Check for continuity.

CONTROL PANEL ACCESS AND SHUT-OFF SWITCH

To access the control panel components, remove the screw at the top of the control panel and pull the control panel out (see drawing below). A wiring diagram for the oven is located on the side of the control panel assembly. When the control panel is pulled out, all power to the control panel is cut off by a shut down switch that is located directly behind and below the control panel. To re-energize the controls for troubleshooting, pull the plunger on the shut down switch out.

FIGURE 16

Accessing Control Panel Components

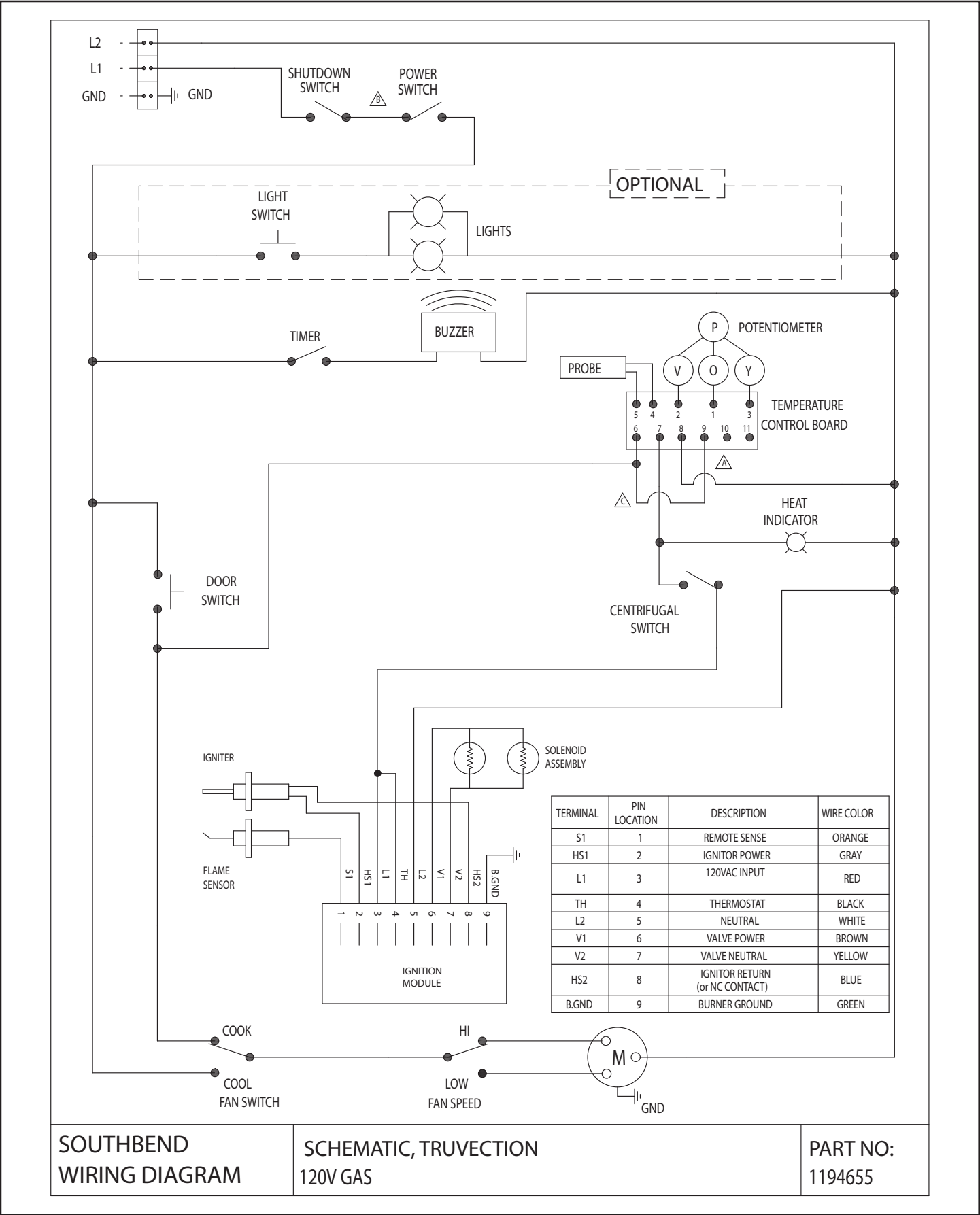


BLOWER WHEEL REPLACEMENT

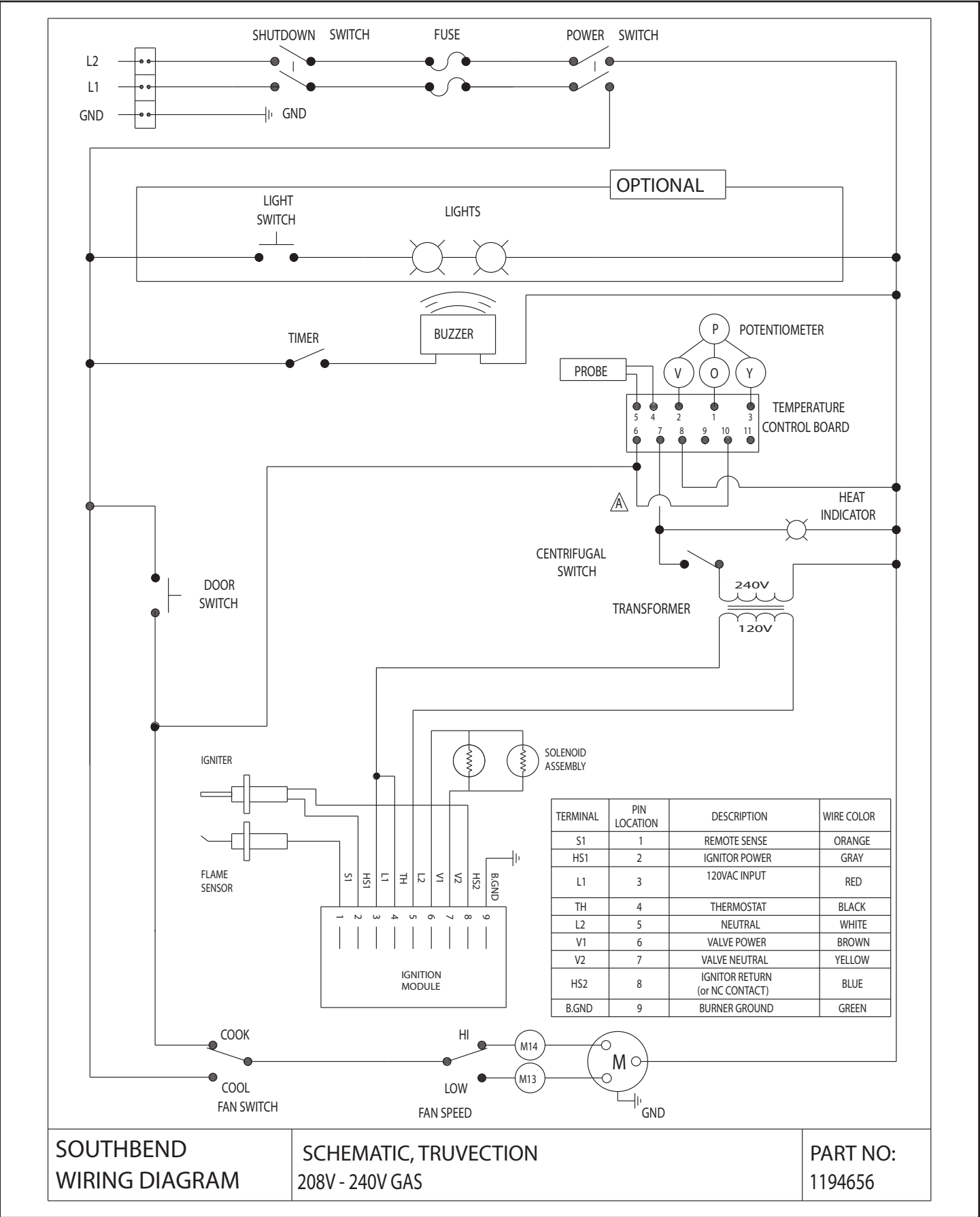
To replace the blower wheel, do the following:

1. Remove racks and rack guides.
2. Remove rear air baffle in front of blower wheel.
3. Loosen the two square heads on blower wheel hub.
4. Pull blower wheel from motor shaft. If blower wheel is difficult to pull off, use puller disk (available from Southbend as part number 1179100).

ELECTRICAL SCHEMATIC FOR 120 VOLT MODELS



ELECTRICAL SCHEMATIC FOR 208-240 VOLT MODELS



TVGS/12SC, TVGS/22SC & TVGS/32SC

TruVection

Gas Convection Ovens



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 appliance. 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 appliance.



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