

KOCH

GRAND PRIZE™ II SMOKEHOUSE

Owner's Manual



KOCH
EQUIPMENT

Rev. 2005

B

KOCH EQUIPMENT LLC

Owner's Manual



Grand Prize™ II Smokehouse

**WITH
INTERNAL PRODUCT AND HOUSE TEMPERATURE
CONTROLS AND COMPONENTS FOR ELECTRIC
AND GAS HEAT, SINGLE AND 3 PHASE UNITS**

KOCH EQUIPMENT LLC

Grand Prize™ II Smokehouse Owner's Manual

Manufactured by

**Koch Equipment LLC
1414 West 29th Street
Kansas City, MO 64108-3604**

INTRODUCTION

Congratulations on your Koch Grand Prize™ II Smokehouse purchase. The smokehouse was designed to give you years of trouble free operations and to help in the processing and preparation of your quality meat, poultry, fish, and other products.

Built upon a fifty-year history of successful cooking and smoking, today's Grand Prize™ II smokehouse offers you an attractive and economical answer to making your own smoked meats, sausage, jerky, poultry, wild game or seafood with old-fashioned, slow-cooked goodness and aromatic natural smoke flavor.

Please read this owner's manual to gain the maximum benefits of your smokehouse and its different components.

A note about cleaning: Given all the various ways equipment is used in different environments, we recommend the owner consult sanitation experts on how to properly clean each piece of machinery in their plant and to do bacterial testing to insure that the equipment is cleaned properly.

For Sales, Call:

Phone (816) 753-2150 • Fax (816) 753-4976
Toll-Free (800) 777-5624

For Replacement Parts, Call:

Phone (816) 753-2150 • Fax (816) 561-2854
Toll-Free (800) 746-1723

For Technical Support, Call:

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General

This owner's manual contains information pertinent to your Grand Prize™ II Smokehouse. Basic instructions and maintenance information is provided. Please read carefully. Failure to do so could result in bodily injury and/or damage to the equipment.

Receiving Problems: As in all cases, before signing the bill of lading, be sure all items have been received as listed and there is no damage in shipment. If needed, a claim must be made immediately to the local truck line office and noted on the bill of lading **before the driver leaves**.

Model No. _____	Serial No. _____	Owner: _____
Ship Date: _____		Location: _____

Your new smokehouse is based on fifty years of successful cooking and smoking in our original Grand Prize™ Smokehouse. Proper operation, frequent cleaning and normal maintenance by qualified service people will insure a long life from your Grand Prize™ II Smokehouse.

We ask that you contact our Smokehouse Service Department with any questions that you may have on the operation of the house or cooking procedures. Contact our Smokehouse Parts Department for genuine Koch replacement parts.

Electrical service size for your Grand Prize™ II Smokehouse **with electric heat system** (check one) (9.0 kW per hour):

_____ 230 Volt, single phase, **41 amps, 50 amp service**

_____ 230 Volt, 3 phase, **23 amps, 30 amp service**

with 120 Volt service for controls

Gas Heated Grand Prize™ II Smokehouses **require 20 amps, 30 amp electric service** for 120 Volt, single phase.

Gas Requirements:

Gas pressure for natural or propane = 5-in. to 14-in. water column

See STARTUP Page 11 for additional gas specifications/requirements

Smoke Producer: 120 volt, single phase, **20 amps, 30 amp service**

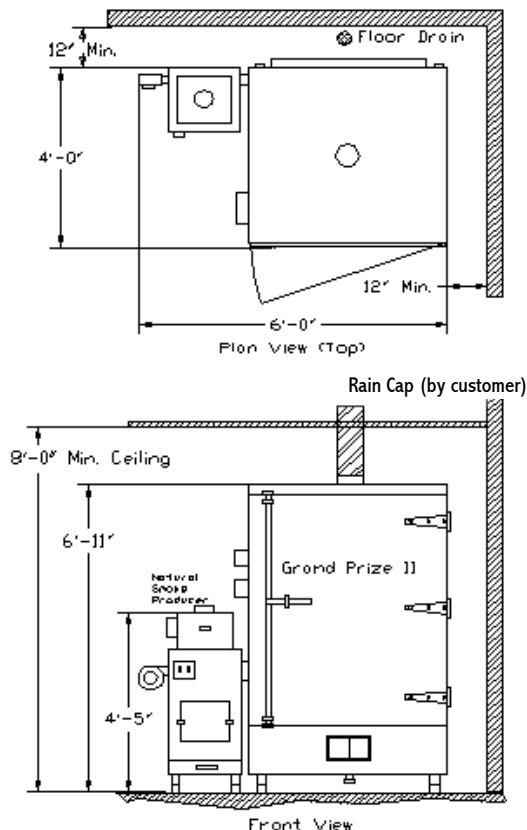




Table of Contents

INTRODUCTION	i
General	ii
 SECTION 1	
SAFETY	1
Warning	2
General Safety Guidelines.....	4
 SECTION 2	
STARTUP	7
 SECTION 3	
OPERATION.....	13
 SECTION 4	
MAINTENANCE.....	29
 SECTION 5	
SCHEMATIC	33
 SECTION 6	
PARTS	39
 SECTION 7	
SERVICE HISTORY	51
 ICONS	
 WARNING	Warning
 DANGER	Danger

Index

A

Added Humidity Option, Part No. 32 04 15....	16
Additional Hookups	10

C

Cleaning.....	i
Cooking Suggestions.....	22

D

Drain Traps.....	14
------------------	----

E

Electric Heat.....	15
Electric Heated Smokehouses.....	4
Electric Heating Elements Schematic.....	35

F

Frequently Ordered Parts	49
--------------------------------	----

G

Gas Burner	6
Gas Connections/Regulations	11
Gas Heat	15
Gas Heated Smokehouses.....	5
General	ii
General Part Identification	40
General Part Identification: Added Humidity Option,	47
General Part Identification: Electric Heat	43
General Part Identification: Gas Heated Smokehouse	41
General Part Identification: Smoke Producer... ..	45
General Safety Guidelines.....	4

H

High Temperature Safety Limit Switch.....	14
---	----

I

Installation.....	8
INTRODUCTION.....	i

L

Liquid Smoke Option	12
Liquid Smoke Product:.....	21

M

MAINTENANCE.....	29
Maintenance and Cleaning	30
Manual Fresh Air Intake and Exhaust Damper	14

N

Natural Smoke Product:	21
------------------------------	----

O

OPERATION.....	13
----------------	----

P

Partlow Temperature Control Wiring Schematic	36
PARTS	39
Procedure to Change Setpoint on Partlow 1400+	18
Procedure to Change Setpoint on Partlow 1401+	19
Product Cook Schedules.....	20
Product Shower.....	15

R

Recommended On-Hand Spare Parts	48
---------------------------------------	----

S

SAFETY	1
Sawdust and Smoke:.....	23
SCHEMATIC	33
Service History	52
Smoke Producer.....	26
Smoke Producer for Grand Prize™ II Smokehouse with Standard Control	37
Smokehouse Connections	9
Smokehouse Electrical Ladder Schematic.....	34
Smoking Bacon:	24
Smoking Hams:	24
Smoking Sausages:	24
STARTUP	7
Startup Assistance Option	12

T

Technical Information.....	17
----------------------------	----

W

WARNING	2
---------------	---

Section

1

SAFETY

Warning	2
General Safety Guidelines	4
Electric-Heated Smokehouses	4
Gas-Heated Smokehouses	5
WHAT TO DO IF YOU SMELL GAS	5
Gas Burner	6



WARNING

The following procedures and guidelines must be followed precisely to avoid problems that can result in property damage, personal injury, or death. If you have any questions related to this information, please contact the Koch Equipment LLC Service Department at (800) 777-5624.

WARNING

A certified, licensed electrician and/or plumber must perform the initial installation and startup of the Grand Prize™ II Smokehouse.

WARNING

The Grand Prize™ II Smokehouse must be installed with a minimum of 12-in. of horizontal clearance from any part of the cabinet, gas burner assembly and natural smoke producer. It is the owner's responsibility to insure that the Grand Prize™ II Smokehouse installation conforms to all local, state, and national codes and regulations.

WARNING

The exhaust flue should be a stainless steel, Class A, triple-wall type or equivalent, installed by a qualified company with proper support, shielding, clearances, flashing, and rain cap. The flue interior must be kept clean. Tar, creosote, etc. (the byproducts of cooking and smoking) can be combustible if allowed to accumulate.

WARNING

For safe operation, the smokehouse must be kept clean. A thorough weekly cleaning schedule is recommended with a basic daily cleanup procedure. Check the ductwork, natural smoke pipe, and your exhaust flue for tar and creosote buildup on a regular, frequent basis. Failure to keep your smokehouse clean and free of grease, tar, and creosote build-ups exposes you to potential severe fire hazards. See the MAINTENANCE Section for additional details on cleaning your house.

WARNING

Gas burner safety concerns: Keep the area around the burner clear and free of combustible materials, gasoline, and other flammable liquids or vapors. Do not obstruct burner air inlet slots or ventilation grills for combustion air.



WARNING (continued)

WARNING

If you detect smoke coming from your house and suspect there may be a fire inside, **do not under any circumstances open the smokehouse door**. Turn off the electric power to the house and close the fresh air and exhaust damper, allowing the fire to remain inside the house and burn out naturally. Immediately contact your local Fire Department for assistance.

WARNING

Should you notice any unusual changes to your normal cook schedule or the operation of the smokehouse, turn off the power and immediately investigate the problem. If necessary, call your local service company or the Koch Equipment LLC Service Department for assistance. Never operate the smokehouse under suspect conditions. Never make any additions or changes to the Grand Prize™ II Smokehouse. This will void the warranty and could adversely affect the safety or operation of your Grand Prize™ II Smokehouse. Contact the Koch Equipment LLC Service Department with any questions that arise.

WARNING

DO NOT attempt to operate your Grand Prize™ II Smokehouse without reading and understanding this entire owner's manual. Any question should be directed to the Koch Equipment LLC Service Department.

General Safety Guidelines

Obvious safety guidelines should be observed.

- ⇒ Be sure to **turn off power to your smokehouse** and close gas supply to your smokehouse before any maintenance work is performed.
- ⇒ Never reach into the bottom of the smokehouse cabinet while power is turned on.
- ⇒ All surfaces inside of smokehouse will be hot to touch after use.



Heating elements below grease rack and deflectors. All metal surfaces will be hot during and some time after smokehouse operations.

Electric Heated Smokehouses:

- ⇒ Remember that the heating elements will remain hot for a period of time after the smokehouse has been turned off.
- ⇒ Care should be taken at all times, especially when there is a need to remove any of the internal sheet metal.
- ⇒ The best safety precaution around a smokehouse is to keep it clean! Always keep a fire extinguisher (Type BC) close to the smokehouse. Tar, grease, and creosote build-up can create a fire hazard. (See more on cleaning in following pages.)



View of electric heating elements seen with grease rack and deflectors removed.

Gas Heated Smokehouses:

⚠ WARNING

Please read the information pertaining to the gas burner and piping thoroughly. If the information is not followed exactly, a fire or explosion may result, causing property damage, personal injury, or death.

⚠ WARNING

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of the gas burner on the back of the smokehouse.

WHAT TO DO IF YOU SMELL GAS

⚠ WARNING

Do not try to light any appliance.

⚠ WARNING

Do not touch any electrical switch. Do not use any telephone in your building.

⚠ WARNING

Immediately call your gas supplier from a telephone outside the building. Follow the gas supplier's instructions.

⚠ WARNING

If you cannot reach your gas supplier, call the fire department.

A qualified installer, service agency, or the gas supplier must perform installation and service.

Please read additional gas burner safety concerns on following pages associated with the burner/piping installation.

Gas Burner:

Keep the area around the burner clear and free of combustible materials, gasoline and other flammable liquids or vapors. Do not obstruct burner air inlet in front of cabinet or adjustable side ventilation openings in cabinet.

Note: The side openings are adjustable to even air temperature in cabinet from side to side.

WARNING

Warning: If Propane gas is used and the burner is located in a basement, crawl space or confining space, contact your gas supplier about installing a GAS LEAK warning device. Propane gas is heavier than air and can settle in low areas or confined spaces. This would create a danger of explosion or fire.

DANGER

Danger (Service): Be sure that the Main Manual Shut-off Valve and Burner Power Switch are turned off before removing any parts for service.

Section

2

STARTUP

Installation	8
Smokehouse Connections	9
Additional Hookups	10
Gas Connections/Regulations.....	11
Liquid Smoke Option	12
Startup Assistance Option	12

Installation

The Grand Prize™ II Smokehouse must be installed with a minimum 12-in. clearance surrounding the cabinet and must conform to all local, state, and national codes and regulations (this is the owner's responsibility).

Take time to **properly level** your Grand Prize™ II Smokehouse after it is put in place. This will aid in proper floor drainage and help minimize undue stress in the structure during operations.

When planning your installation, consider:

1. The Grand Prize™ II Smokehouse drains from the front, center base of the house.
2. Open door swing/floor relationships.
3. Floor drain for dripping product outside of house.
4. Convenient access to grease P-traps at back of cabinet.
5. Maneuvering of product in and out of the house.
6. A rectangular drain trough may be preferred to 4-in. diameter floor drains.
7. Installing a ball valve below the main drain for convenience.
8. Access to the back of the smokehouse for wiring and heating element maintenance.

Additional Notes:

1. The Grand Prize™ II Smokehouse is hand loaded and unloaded with product to be smoked or cooked. The exact capacity of the house depends upon the product and how it is loaded in (or on shelves) that determine house capacity.
2. The Grand Prize™ II Smokehouse must only be equipped with genuine Koch options, accessories, and parts for proper operation and warranty coverage. Any variation without express written Koch approval voids the limited warranty on the equipment.
3. The Grand Prize™ II Smokehouse may be used with liquid smoke or no smoke at all. In this event, the natural smoke inlet must be capped to prevent the intake of uncontrolled fresh air.

Smokehouse Connections

Power: Your smokehouse was ordered with one of several voltage options. See the identification tag (INTRODUCTION General on Page ii) as a reminder. Owner should supply a main power disconnect switch at the smokehouse location for insuring that power is off for all maintenance and cleaning operations. Owner is also responsible for circuit breaker and/or fuse protection.

Plumbing:

Floor Drain:

1 1/4-in. pipe

Two rear wall grease/shower drains: 1 1/4-in. pipe

Exhaust Flue:

6-in. diameter

Maximum straight flue length: 18-ft.

Product Shower:

3/8-in. cold water line

Added Humidity (optional):

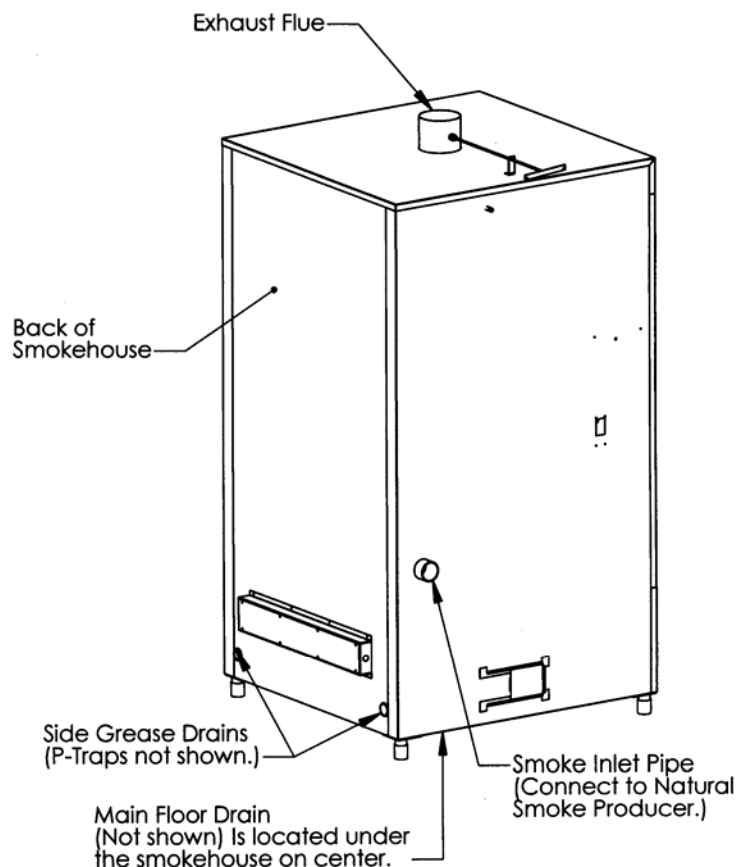
1/4-in. hot water line (180° F.)

Natural or L.P. Gas:

1/2-in. gas supply line (installed per local, state, and national codes)

Additional Hookups

1. **Exhaust Flue:** The exhaust flue should be stainless steel "Class A," triple wall, type or equivalent, installed by a qualified company with proper support, shielding, clearances, flashing, and rain cap. The flue interior must be kept clean. Tar, creosote, etc. (the byproducts of cooking and smoking) can be combustible if allowed to accumulate. The damper is manually operated by pulling the handles (on chains) located on the left side of the smokehouse.
2. **Connection to Natural Smoke Producer:** The Grand Prize™ II Smokehouse is equipped with an opening on the left side to accept the smoke discharge pipe from the natural smoke producer. A snug fit permits the pipe to be easily removed for cleaning.
3. **Floor Drain:** A main drain (1¼-in. NPT pipe with cap) is located toward the front center of the smokehouse floor. The cap keeps the hot air and smoke inside the cabinet. Remove the drain cap before using product shower or cleaning the smokehouse interior. Replace cap afterward.
4. **Grease Drains:** A 1¼-in. grease drain with P-trap is located on each side of the back exterior smokehouse wall. Before smokehouse use each day, each trap must be filled with warm water to prevent hot air and smoke from leaving the cabinet. During cooking, hot grease will replace the water and discharge into the customer's grease trap or onward to a floor drain. The amount of grease depends on the type of product cooked and the cooking time. At the end of the last cooking cycle, each P-trap should be flushed out with hot water from inside the smokehouse. This will prevent any residual grease from solidifying and clogging the P-trap(s).



Note: Smokehouse shower and cleaning water may also use these two P-traps. Be prepared to manage outflow.

Gas Connections/Regulations

Ventilation: Open utility areas of normal construction without storm windows or tight doors will normally allow sufficient make-up air infiltration. However, if the smokehouse is located in a tight or separate room, ventilation to an open room may be required. In some cases, provision for an outside air supply near the gas burner may also be necessary.

Gas Piping: Gas pressure required for natural or propane gas should be between 5-in. and 14-in. water column. If the supply pressure exceeds the 14-in. water column, a suitable intermediate main regulator must be installed ahead of the main manual shut-off valve.

Important: The burner adjustments are factory set for proper operation. **Do not attempt to make any adjustments to the burner settings.** If adjustments are required, contact the Koch Equipment LLC Service Department.

The burner gas supply piping should branch off from the main line as close to the gas meter as possible. Do not connect to the bottom of a horizontal section. Use new black pipe and malleable fittings free of cutting and threading burrs or defects.

Provide a sediment trap, union, and 1/8-in. pressure tap in piping close to burner. Use pipe joint compound resistant to liquid petroleum gases.

All piping must comply with local codes.

Water Service:

Koch recommends the use of a water filter system to minimize mineral deposits, etc. in the water lines, valves, and nozzles. This especially applies to some areas of the country where the water supply is a known cause of maintenance problems.

Owner should provide the following according to local, state, and national codes and regulations.

Hot Water:

The humidity system requires very hot water (+180° F) for best results. The owner must supply a 3/8-in. insulated line direct to the solenoid valve located at the left side of the house (as shown in previous drawings). The hot water is used on demand by a timer atomizing it into the air to increase the desired humidity level.

Liquid Smoke Option

Specific information on a Koch manual liquid smoke system (Koch 32 00 46) is covered in a separate owner's manual. If used, the owner would need to provide a minimum of 4 c.f.m. at 60 p.s.i. (2 horsepower) clean, compressed air and all necessary piping. A stainless steel tank is normally mounted on the rear of the house at center. Holes would be added at the lower center of the house for necessary plumbing.

Startup Assistance Option

The Grand Prize™ II Smokehouse is designed and built for installation and startup by the owner with their licensed tradesmen and a minimum amount of time and expense; however, startup assistance is available for those owners wishing a Koch technician to check their installation and begin the cooking process. For per diem service rates, contact the Koch processing service manager.

Section

3

OPERATION

Manual Fresh Air Intake and Exhaust Damper	14
Drain Traps	14
High Temperature Safety Limit Switch.....	14
Electric Heat.....	15
Gas Heat	15
Product Shower.....	15
Added Humidity Option, Part No. 320415.....	16
Technical Information.....	17
Procedure to Change Set Point on Partlow 1400+	18
Procedure to Change Set Point on Partlow 1401+	19
Product Cook Schedules.....	20
Natural Smoke Product	21
Liquid Smoke Product.....	21
Cooking Suggestions.....	22
General Remarks	22
Temperature Control.....	22
Smoking	23
Sawdust and Smoke.....	23
Smoking Hams.....	24
Smoking Bacon	24
Smoking Sausages	24
Additional Suggestions.....	25
Smoke Producer.....	26
Set-Up Instructions.....	26
Operation Instructions.....	27

Manual Fresh Air Intake and Exhaust Damper

The Grand Prize™ II Smokehouse is equipped with two adjustable fresh air intake doors (located on the lower side walls of the house) and an adjustable exhaust damper (located on top of the house, chained handles). Fresh air is brought into the house to dry the product surface by exhausting the humid air created by heat and evaporation of the moisture on the product surface itself. Smoke will not be absorbed into most products until its surface is slightly tacky to the touch. Moisture is kept in the house by keeping the dampers closed. Exhaust damper positioning examples are shown on the Suggested Cook Schedules section of this owner's manual.

Drain Traps

Before operation, each rear drain trap requires water to keep the heat and smoke contained within the Grand Prize™ II cabinet (add water from inside). The front floor drain should also be capped or piped with a water filled trap by your nearby floor drain.

High Temperature Safety Limit Switch

Located on the control side of the smokehouse, this switch shuts off the electric power should the air in the smokehouse exceed a preset maximum desired operating temperature. The switch will reset itself after the air temperature is lowered, the cause of the higher temperature is found, and the problem is resolved. (This is a factory setting—do not adjust.)

Electric Heat

If your smokehouse is heated electrically, you have three 3,000 watt U-shaped heaters mounted in the cabinet back to front. Wiring and maintenance work will be done on the outside back of the smokehouse. Never attempt any work on these heaters until the main power switch is turned off. While these heaters are reliable, we do suggest that you keep one on hand as a spare (Part Nr. 35 00 35).

Gas Heat

Use normal gas appliance precautions and procedures for manually igniting the pilot burner and operating the gas controls equipped with safety features.

Product Shower

An overhead product shower option is available for use in cooling a variety of sausage products. Double handling is eliminated and sausage casing breakage minimized. We suggest a lukewarm or cool shower to an internal product temperature below 100° F. The shower can also reduce casing wrinkling.

Note: Before using the shower:

- A. Be sure your product is finished cooking and the thermostat is turned down completely (heat off).
- B. Be certain your two rear drains are clear and ready to handle the warm shower runoff water to a nearby floor drain.
- C. Open your overhead exhaust damper to dissipate excess heat from the house. Carefully unlatch the main door, but do not open.
- D. Open the smokehouse's front floor drain (if not already fitted with a trap and piped to a nearby floor drain) and close afterwards.

After using the shower, be sure the ball valve is shut off completely as a dripping shower can damage the appearance of the product below. Keep nozzles clean for proper spray pattern. Use of very cold water could shock hot casings causing undesired cracks or breakage.

Added Humidity Option, Part No. 32 04 15

The advantages of cooking with added-humidity (or added moisture in the air surrounding the product) include:

- ⇒ Decreased overall cook time because moist air transmits heat faster than dry air.
- ⇒ Cooking naturally reduces the product by weight. The amount of loss depends upon the moisture content of the product, the air temperature, and the length of time cooked. Other factors are air velocity and pumping the product with a brine solution.
- ⇒ Maximum humidity applied in the final five to fifteen minutes of cooking some sausage products can help plump that item for a particular appearance (hot dogs).
- ⇒ Products such as beef jerky are made by removing moisture from the meat using heat and will never require added-humidity.

The Grand Prize™ II Smokehouse with the added-humidity system has shown to reduce final weight lost by as much as 3% (turkey breast).

A schedule of how much humidity and when to use humidity is determined through actual use of the system and keeping records of settings, length of time, and finished sample product yields. This is due to the wide variety of products such as beef, pork, poultry, fish, wild game, and applications such as fully cooked and/or smoked items to reheating for catering operations. To assist you, we offer the following guidelines:

- ⇒ Naturally smoked product requires the product surface to be dried initially for 15 to 45 minutes depending upon the product surface moisture initially and the actual humidity level in the air. Rainy days take longer than dry summer-like days.
- ⇒ During the actual smoking and cooking stages, the humidity levels should be kept at a minimum to allow the product surface to accept the smoke, color, and flavor. Too much humidity and the product will be cooked, but the dark color and smoke flavor will be weak or non-existent.
- ⇒ On whole muscle product hams and roast beef product requiring many hours to fully cook, the humidity can be raised slightly as the final internal temperature is reached and the color/smoked flavor has been achieved.

Technical Information

- ⇒ Provide the hottest water supply possible (180° F.). You may want to insulate the supply line or add a small electric water heater near the smokehouse. Water that is cooler than the air temperature will tend to cool the air in the smokehouse and lengthen the cook time. It is helpful to supply a shutoff valve just before the solenoid valve for maintenance.
- ⇒ The nozzle assembly clips to the safety wire rack for stability. When cleaning the house, the arm assembly lifts up and hooks on a stainless steel bracket on the left side wall. Use care when handling.
- ⇒ Please refer to PARTS Section, General Part Identification: Added Humidity Option, No. 32 04 15, for additional information and photographs. Contact our smokehouse sales department with any questions you have on this unit.

Procedure to Change Setpoint on Partlow 1400+ (Smokehouse Temperature Control)

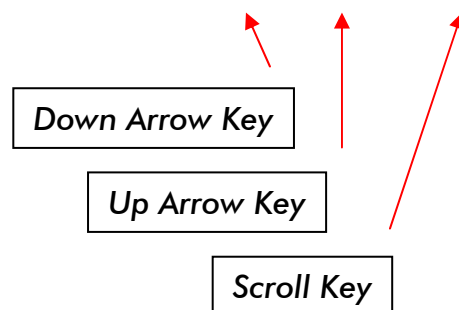
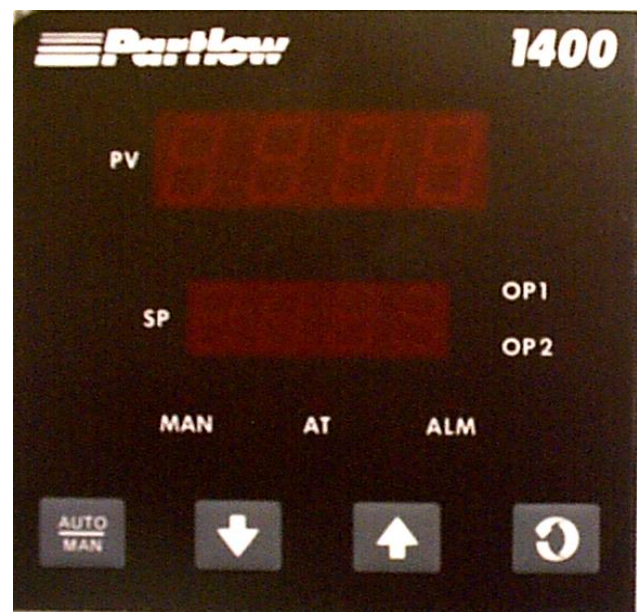
Display: Top = Actual Temperature
Bottom = Setpoint

With power applied to the unit:

- *Press the 'scroll' key one time.
Upper display = setpoint
Lower display = setpoint
- *Press the 'up arrow' key to raise the setpoint.
- *Press the 'down arrow' key to lower the setpoint.
- *Press the 'scroll' key one time.
Display top = actual temperature
Display bottom = setpoint temperature

Notes:

1. The Partlow 1400+ is the thermostat for regulating the air temperature inside the smokehouse. It will cycle on and off to maintain the temperature that it is set at until overridden by the Partlow 1401+ internal product temperature setting.
2. The Partlow 1400+ and 1401+ are identical except on the 1401+ when the internal product temperature is reached the heat shuts off completely. The reset button must be pushed to start cooking another product load.



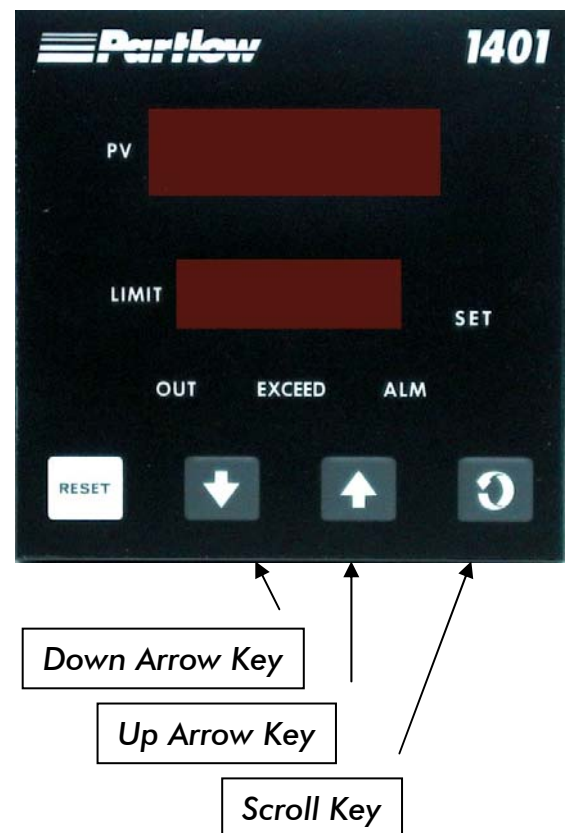
Procedure to Change Setpoint on Partlow 1401 + (Optional Internal Product Temperature Control)

Please read entire procedure before changing setpoint.

Display: **Top = Actual Temperature**
 Bottom = Setpoint

With unit in the control mode (normal operation):

1. Press and hold 'scroll' key.
Display: Top = Open | Bottom = HiHd
2. While holding 'scroll' key, press up arrow key one time then release 'scroll key.'
3. Press down arrow key until Display Top = SETP.
4. Press 'scroll' key one time.
Display Top = Setpoint | Bottom = SP
5. Adjust set point using the up and down arrow keys.
Display: Top = Setpoint | Bottom = SP
6. Repeat steps 1 and 2.
7. Press down arrow key until Display Top = OPEN.
8. Press 'scroll' key one time.
Display Top = Actual Temperature | Bottom = Setpoint Temperature



Product Cook Schedules

(Natural and Liquid Smoke)

Koch Grand Prize™ II Smokehouses are available with an optional internal product temperature control and a variety of accessories, plus hot water humidity. Due to these variations, the suggested product cook schedules* are to be used only as a guideline for developing your own exact schedules. Local customs, tastes, and processing techniques should be considered in developing your particular schedules.

All products must conform to USDA regulations to provide your customers the finest and most wholesome products available. Koch assumes no liability for owner's products resulting from the use of this equipment and/or these product cook schedules.

Factors to consider for your cook schedules are:

- Product age, fat content, moisture level, and condition.
- Product size and weight.
- Product load in the smokehouse.
- Desired finished product color, moisture content, smoke flavor, etc.
- Geographical location of installation, including outside humidity levels and time of the year you are operating.

You may find a shorter/longer cook time preferable for your product or to fit the buying habits in your particular area. Three or four cooking stages are best for the product and for energy savings.

*Please refer to separate booklet for information pertaining to the suggested initial product cook schedules.

Natural Smoke Product

1. Keep the smokehouse and all accessories clean. Do not allow the buildup of tar, creosote, or grease in any part of the equipment.
2. Follow the comments on each product schedule.
3. All products must be just dried or tacky on the surface before natural smoke is introduced into the house.
4. If heavier smoke is desired, extend smoke time such as when the schedule reads "maybe" (or adjust your smoke generator).
5. The manual damper controls the amount of fresh air allowed in the house and, therefore, the amount of air exhausted for drying.

Liquid Smoke Product

1. Keep the smokehouse and all accessories clean. A diligent cleaning schedule must be maintained (including the liquid smoke atomizing nozzle).
2. Follow the comments on each product schedule.
3. All products must be just dried on the surface before liquid smoke is atomized in a fog inside the house.
4. Too heavy of an application of liquid smoke can impart a bitter flavor to the product. Experiment carefully with additional liquid smoke time and different types of liquid smoke. Follow manufacturer's instructions carefully. Handle with care, use only with stainless steel material.
5. When atomizing the liquid smoke, the electric heaters must be turned off. A dwell period follows to allow the smoke to dry on the product.
6. The manually operated fresh air damper should be fully closed during the liquid smoke application(s) and dwell time(s).
7. Owner must provide dry, clean, filtered compressed air, approximately 4 c.f.m. at 60 p.s.i. (2 horsepower compressor required, minimum), plus necessary piping.

Cooking Suggestions

General Remarks

Smoking is a good way to preserve foods for rather short periods of time. It is the oldest method of food preservation. The appetizing flavor of smoked foods is a by-product of the superior keeping qualities. Some smoked and dehydrated foods will keep for a year or longer. The exact time smoked foods can be held depends on the storage temperature, and also on the method of processing. As a general rule, the drier the food, the better it keeps. Lean meats keep better than fat. Fats turn rancid regardless of temperature. Even in a freezer, hams may turn bad. However, fat that has been thoroughly smoked, keeps better than if smoked to a lesser degree. The best storage temperature for smoked meats is around 40° F. in dry air. Moisture in the air promotes the growth of mold. Meat and poultry is usually pickled before smoking. Pickling or corning is a process of chemical preservation with salt and other chemicals.

No two operators are likely to run their smokehouses the same way. Everybody learns from experience. It is possible to produce fine smoked foods with smokehouse cycles that are quite different. Plan to operate a smokehouse not over five days a week. This will allow time for proper cleaning and maintenance. In figuring smokehouse production, allow 18 hours for a batch of hams, 8 hours for bacon, up to 6 hours for bologna and up to 3½ hours for frankfurters. Even though you may not smoke those products for the full time mentioned, it is necessary to allow approximately that long for loading, unloading and cleaning time between batches. These time figures are very general, of course.

Temperature Control

If a smokehouse is too cool, the smoking process takes too long. If it is too warm, product shrinkage is too great. Furthermore, rapid fluctuations of temperature always increase shrinkage. It is important to control the temperature inside the smokehouse as accurately as possible. It is necessary to be able to accomplish rapidly a permanent change in the smokehouse temperature. The time required to change the smokehouse temperature depends on the design. One of the advantages of modern smokehouses is that the insulated, thin walls do not absorb a lot of heat so that rapid heat change is possible.

Today, new digital controls respond to temperature requirements much quicker than the older analog controls with liquid filled temperature probes.

Smoking

The smokehouse should be preheated before the product is hand loaded. If the product to be loaded is very cold, the empty smokehouse should be heated sufficiently to bring the product up to a proper smoking temperature. Leave the exhaust duct fully open while preheating the smokehouse in order to let moisture escape. If necessary, run the smokehouse with gentle heat, but without smoke, until the product surface dries. The time needed will vary greatly on whether you are running hams or a sausage product. The best way to control color is by admitting smoke only after the surface is tacky to the touch. If the product is too dry, the product will not absorb the smoke and remains too light. Therefore, it is prudent to start out with small batches when first producing a new item. The small batch will give you an idea how to proceed, even though the operating cycle for a larger batch will be somewhat different (longer).

Meat products spoil the quickest between 90° F. and 105° F. They should be taken between these two temperatures as quickly as possible. Meats that are thoroughly cured will resist spoilage better than others. It is a good practice to have the temperature of the smokehouse as much as 35° above that of the internal temperature of the product. For example, if it is desired to smoke a batch of hams to an internal of 148° F., the temperature of the smokehouse should be about 183° F. at the end of the cook cycle. By controlling the smokehouse, you can control the finish and the moisture content of the smoke products. The skin texture depends on the smoking cycle. If the sausage heats too fast, the skin formation is faulty and will not peel correctly. If it gets too hot, the casing can become vulcanized to the meat. In some sausages, the color develops in the smokehouse and is fixed there. The smoking cycle must be regulated to allow for this.

Sawdust and Smoke

The smoke itself is the most important ingredient for good smoked meat, poultry, and fish. You do not get good smoke by accident. It is necessary to generate smoke correctly and to use it properly. Many years ago, the wood of fruit trees like apple, cherry, and plum were thought to produce the most appetizing smoked foods. Such woods are so scarce today that they are seldom available. However, there are other hard woods that are probably as equally good. Hickory, walnut, mahogany, maple, birch, oak, sassafras, and pecan all produce a very appetizing smoke. Of these woods, hickory is probably the most economical and it gives a greater quantity of smoke than the others.

Smoking Hams

In order to process hams easily in the smokehouse, each ham should be approximately the same weight (± 2 -lbs.); otherwise, they will all not be smoked to the same extent. Heavier hams take a longer time to smoke. If it is absolutely necessary to load a smokehouse with hams that are not all the same weight, be sure to put the smaller hams closer to the door of the house so that they can be taken out first. Hams should be permitted to dry on the surface before inducting smoke to the smokehouse. The best way to tell when a ham is fully cooked is to check the internal temperature, if it is 148° F., it is done.

Smoking Bacon

One of the important factors in producing good bacon is to use a good bacon hanger. The hangers should be the right size to fit across the top of each slab. Slabs should be attached to the hanger so that the hanger is perpendicular to the smokestick. Bacon should be soaked after curing and then permitted to dry in the open air. Bacon should be started at 125° F. temperature, always allow for drying time before beginning the smoke. After drying, the smokehouse can be raised to 136° F. Bacon is done when proper color is achieved. After the bacon comes out of the smokehouse, it should be allowed to cool at room temperature for at least one hour. The consumer completes this process by pan frying the bacon.

Smoking Sausages

Sausages should be dried without smoke until all the surfaces are tacky to the touch. After this, apply dense smoke and raise the temperature. The center temperature is what counts in sausage. Naturally thick sausages will stay in the smokehouse longer than smaller ones. In order to get uniform results, the temperature in the smokehouse and the smoke generation must be closely controlled. Each variety of sausage must be smoked separately. The links should be draped loosely on smokesticks and arranged so that they do not touch. Natural casings are preferred in the Grand Prize™ II Smokehouse. Most sausage is fully cooked at 152° F. Shower down below 100° F. to solidify the emulsion and reduce any possible casing breakage.

Additional Suggestions

- Do not start cooking a new product with more than a small load. Become familiar with the house operations and the product first.
- Do not overload the smokehouse with product. Allow sufficient space between each piece of product for good air flow and smoke penetration.
- Keep your cook schedule consistent from day to day.
- Maintain a clean house and check your exhaust flue at least every two weeks. Clean often. Do not forget this flue area or the damper. Inspect flue from the room with rain cap removed.
- Mixed-size loads may work if the smaller items are monitored and removed as soon as they are fully cooked. Then spread larger items out and finish to proper internal product temperature. Do not mix different products.
- **Noise:** Due to normal thermal expansion and contraction of the stainless steel floor, you may hear an occasional 'popping' sound. This is normal and will not adversely affect the house or your cooking process.
- If you are having concerns of operation or are having trouble in any way, please do not hesitate to call Koch service technicians or our in-house cook specialist to discuss. Again, our Smokehouse Service Department can be reached at (816) 753-2150.

Smoke Producer

Set-Up Instructions

1. Place the smoke producer in position on the control side of the Grand Prize™ II Smokehouse. The smoke outlet pipe must be inserted well into the 3-in. opening in the side wall of the smokehouse.
2. Provide 120 volt electric current to the switch box on the smoke producer.
3. The smoke producer is equipped with a cycle timer that operates the auger drive motor intermittently. The timer is preset at the factory for approximately 30% on and 70% off. This percentage can be adjusted to increase or decrease smoke production. (Refer to Cycle Timer for Grand Prize™ II Smokehouse Smoke Producer.)
4. The small blower mounted on the side of the smoke producer has an air inlet cover plate. This cover plate must be opened approximately half way when the producer is in operation. If the cover plate is kept closed, there will be a poor circulation of smoke within the cabinet, and there will be excessive leakage around the seams of the smoke producer itself.
5. The safety switch adjustment is factory set at 225° F. **DO NOT ADJUST.** If this point is exceeded, power is cut off to the burner plate until the temperature drops below 200° F. in the cabinet. Power is then restored.

Smoke Producer (continued)

Operation Instructions

1. Load the hopper about two-thirds with sawdust and turn the burner switch "on." Allow approximately 15 minutes for the burner plate to fully heat. Turn the feeder switch "on" (blower, timer and auger motor).
2. Smoke production begins. If not, check to see if scraper blade is turning on top of the burner plate. The burner plate can be adjusted up or down. Be sure that the blade is not jammed tightly against the burner plate. If sawdust "flare-up" becomes a problem, the burner plate should be moved down between 1/8-in. and 1/4-in. below the scraper blade. This will allow a build up of ash on the burner plate which in turn keeps the fresh sawdust away from the hot burner plate.
3. Screening of sawdust is strongly recommended. The use of wood chips or strips of wood is not recommended as they tend to clog the auger feeder.
4. Remove the ashes from the lower tray daily!
5. The hopper section should be removed for cleaning at the end of each day. Use Koch Supplies Inc.'s "Hi-Voltage" cleaner. Use a wire brush to clean the burner plate. While the hopper plate is removed, check that the tube that directs air from the blower out of the smoke producer is in position. This is important for proper operation.

Smoke Producer (continued)

Timer has been factory preset. You should not need to make any adjustments!

CYCLE TIMER FOR GRAND PRIZE SMOKE PRODUCER

WIRING CAN BE TO EITHER SWITCH (1 OR 2)

USE COMMON AND OPEN CONTACT POINTS

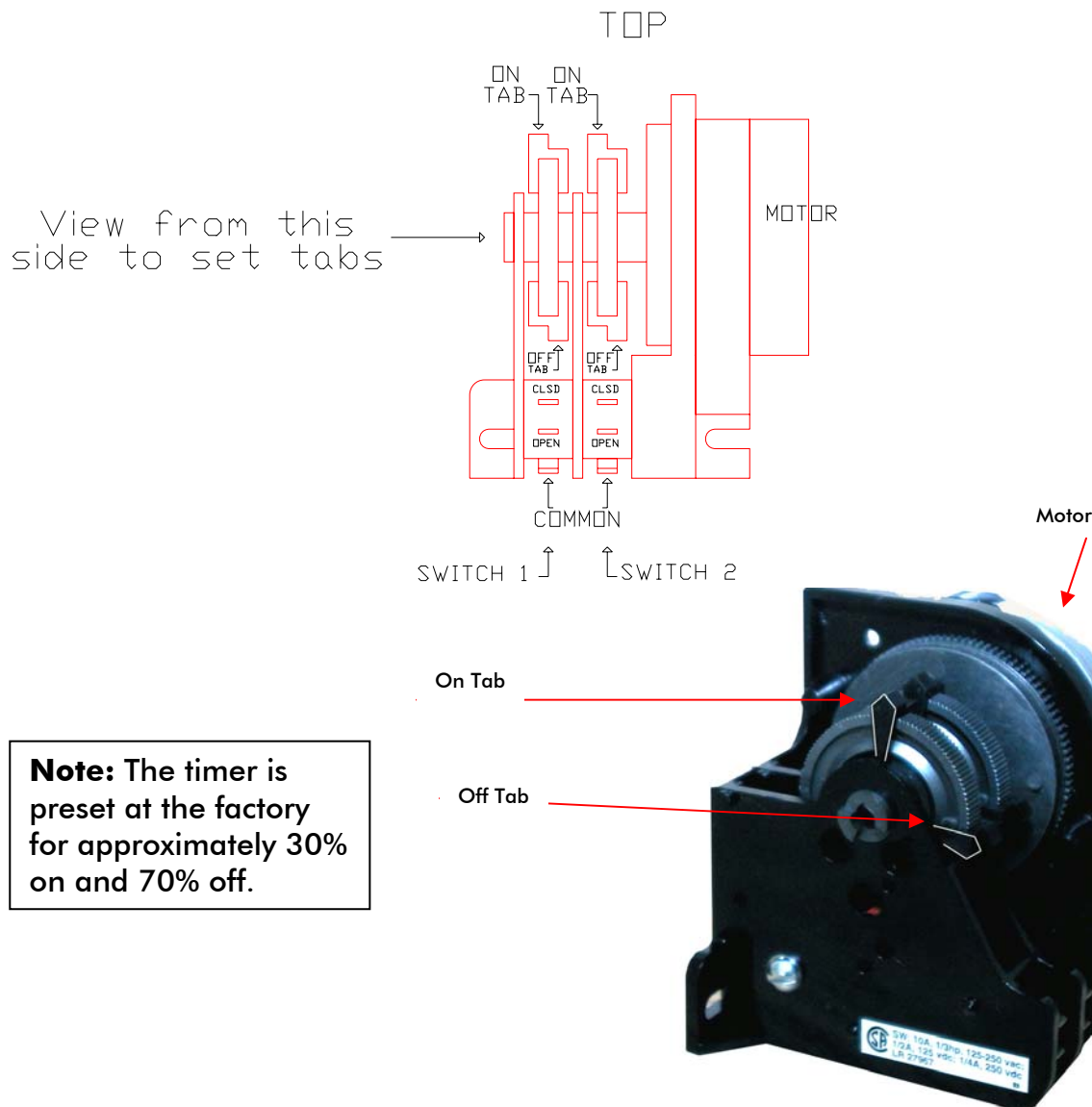
TO ADJUST TIMER:

ROTATE WHEELS COUNTER CLOCKWISE UNTIL "ON" TAB IS IN THE 12:00 (TOP) POSITION

FOR 25% ON AND 75% OFF: MOVE "OFF" TAB TO THE 3:00 POSITION

FOR 50% ON AND 50% OFF: MOVE "OFF" TAB TO THE 6:00 POSITION

FOR 75% ON AND 25% OFF: MOVE "OFF" TAB TO THE 9:00 POSITION



On/Off Percent Time, No: 35 05 17

Section

4

MAINTENANCE

Maintenance and Cleaning	30
Cleaning Procedures	31
Frequency	31
Notes.....	32

Maintenance and Cleaning

A thorough preventive maintenance program is an owner's best insurance against unexpected downtime with your Grand Prize™ II Smokehouse.

Set up a schedule to check all moving parts for wear and/or misalignment on a monthly basis.

Before any maintenance or cleaning operation:

Be sure to disconnect all electrical power and shut off the gas supply valve (if so equipped) to your Grand Prize™ II Smokehouse before any maintenance or cleaning operations.

Given all of the various ways equipment is used in different environments, Koch recommends the owner consult sanitation experts on how to properly clean each piece of machinery in their plant and to do bacterial testing to insure that the equipment is cleaned properly.

Check the ductwork, natural smoke pipe, and your exhaust flue for tar and creosote buildup frequently. **KEEP IT CLEAN.**

Cleaning Procedures

- A. Always use eye and hand protection, along with proper clothing and/or heavy apron, when cleaning and using the smokehouse.
- B. In preparation for cleaning the smokehouse, remove heavy deposits of grease and fat from the floor of the smokehouse to keep the drain from clogging. Be sure the drain valve or traps are open.
- C. Set the smokehouse control to +140° F. temperature and allow the smokehouse to remain at this temperature for ten to fifteen minutes. Set the humidity to maximum (wet heat softens deposits, dry heat hardens).
- D. Turn off smokehouse heat and humidity
- E. Apply smokehouse cleaner to inside surfaces of smokehouse and allow to work for a period of time per cleaning chemical instructions. A brush or scraper may be used on heavily soiled areas of the smokehouse.
- F. Repeat to Step E if additional cleaning is needed.

Frequency

Cleaning frequency and intensity depends upon a number of factors including type of smoke used, smoke concentration, type of product, frequency of usage, desired sanitation level, type of cleaner, and cleaner concentration. For normal operation, a thorough weekly cleaning schedule is recommended with a basic daily cleanup procedure.

Initially, after thirty hours of smokehouse operation, follow the steps outlined below and then check the effectiveness on the interior of the smokehouse, inside the grease troughs and the damper area. If any traces of tar, etc. are detected, the concentration or application time of the cleaner should be increased or a cleaner specifically designed for tar removal should be used. Manual cleaning with a stiff bristled brush is usually required.

The type of cleaner used must be compatible with Type 304 stainless steel and silicone rubber gasket and seals.

Notes

- The optional natural smoke producer should be cleaned at least as frequently as the smokehouse and more frequently in some cases (including the smoke transfer pipe).
- Always sanitize your house in accordance with the cleaning materials purchased or supplied locally. Use only USDA accepted products. If you have questions, ask your inspector or your supplier.
- To facilitate easier cleaning, all new Grand Prize™ II Smokehouses have a stainless steel floor sloped to a front center drain (with cap). This floor is also insulated to reflect heat back toward the product. For proper cleaning, we suggest the safety grate, tiered rack, and two grease troughs be removed for cleaning outside the cabinet weekly.
- During the cooking/smoking process, various by-products may drop to the bottom of the cooking area. This includes natural juices, grease, water, pickle solution, etc. The tiered rack with overlapping steps direct these by-products to a single collection trough with drain on the left and right side of the smokehouse. Each drain is sloped down and out the back wall to a drain trap. These drains and traps should be kept clean and in working condition at all times. Use caution when cleaning after a cooking process as the piping, etc. will remain hot for a period of time. Plan to handle discharge from house.
- Remember that keeping you smokehouse clean inside and outside will help insure a longer life for your smokehouse and reduce the presence of any combustible materials.
- Also, as a part of standard maintenance, keep a functioning fire extinguisher (Type BC) by the smokehouse. Be sure your personnel are instructed on its proper use.

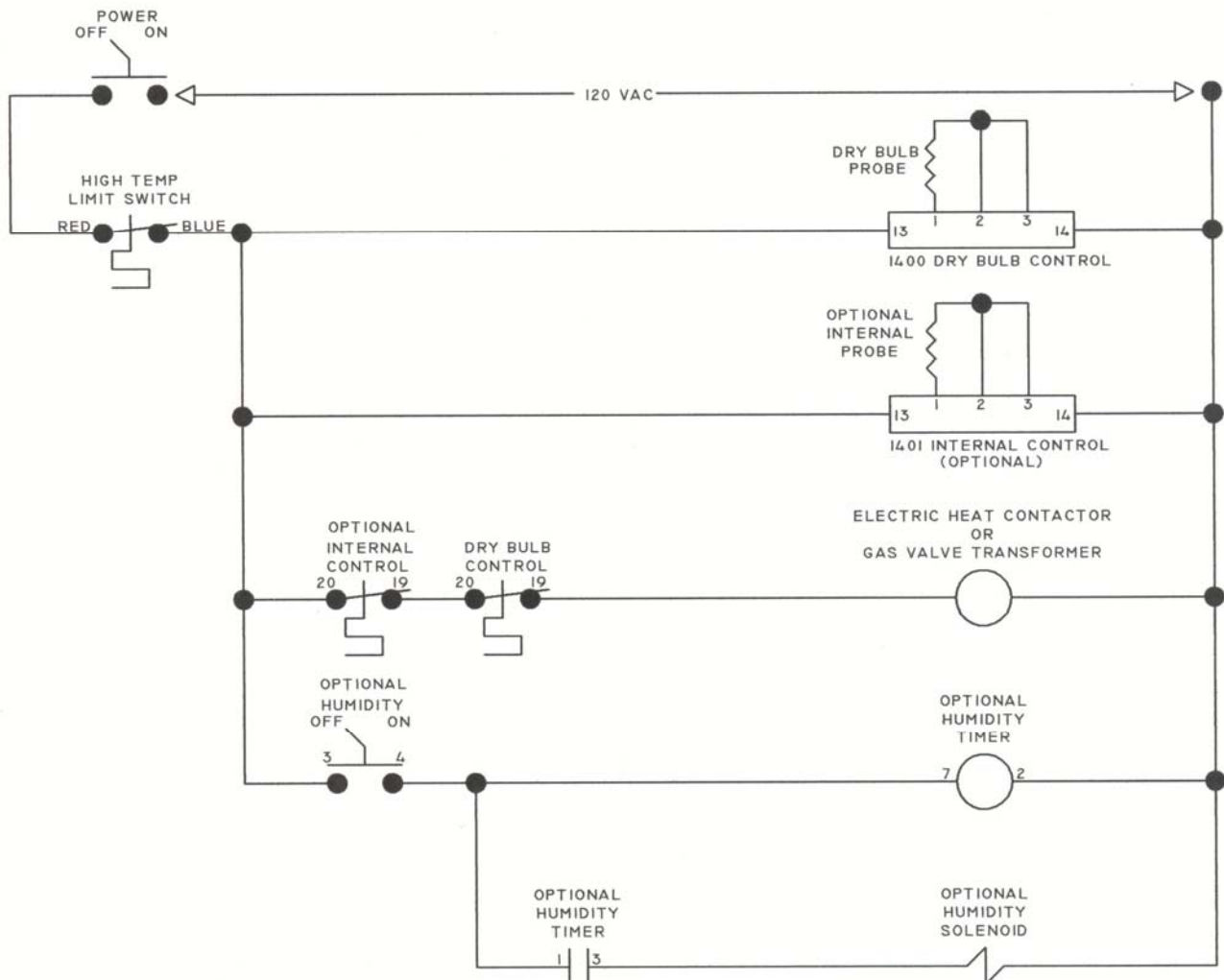
Section

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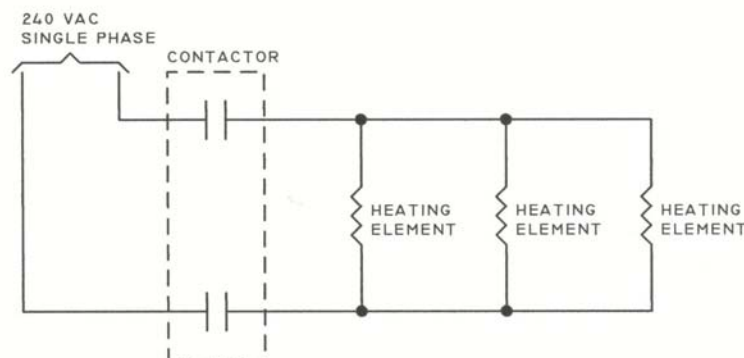
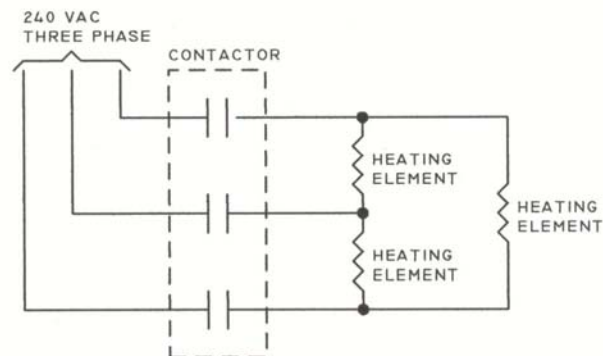
SCHEMATIC

Smokehouse Electrical Ladder Schematic.....	34
Electric Heating Elements Schematic.....	35
Partlow Temperature Control Wiring Schematic.....	36
Smoke Producer with Standard Control Schematic.....	37

Smokehouse Electrical Ladder Schematic



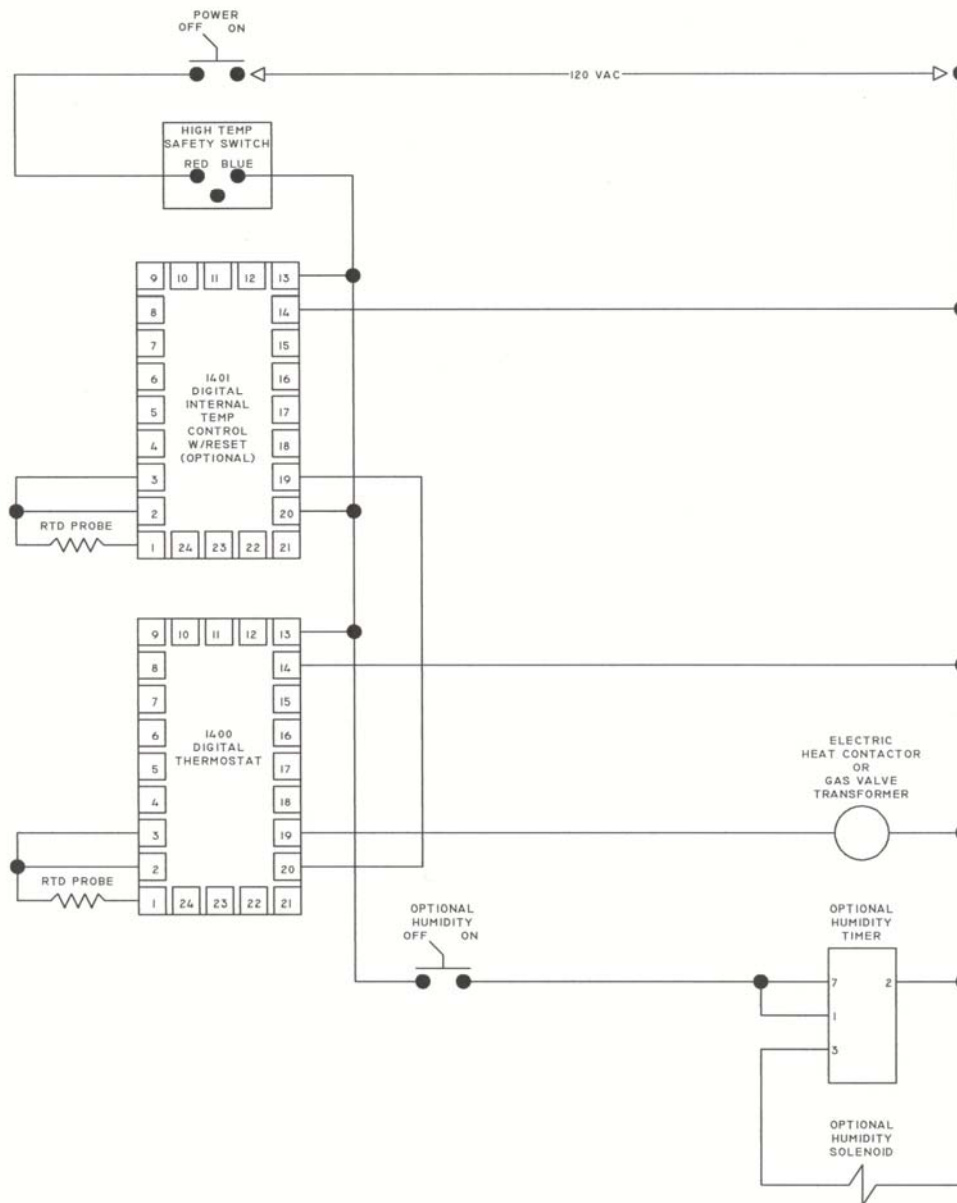
Electric Heating Elements Schematic

**⚠ WARNING**

Turn off all power to the smokehouse before any maintenance is performed. The customer must provide electric service to the smokehouse that is within full compliance of local code. Proper grounding must always be insured.

Partlow Temperature Control Wiring Schematic

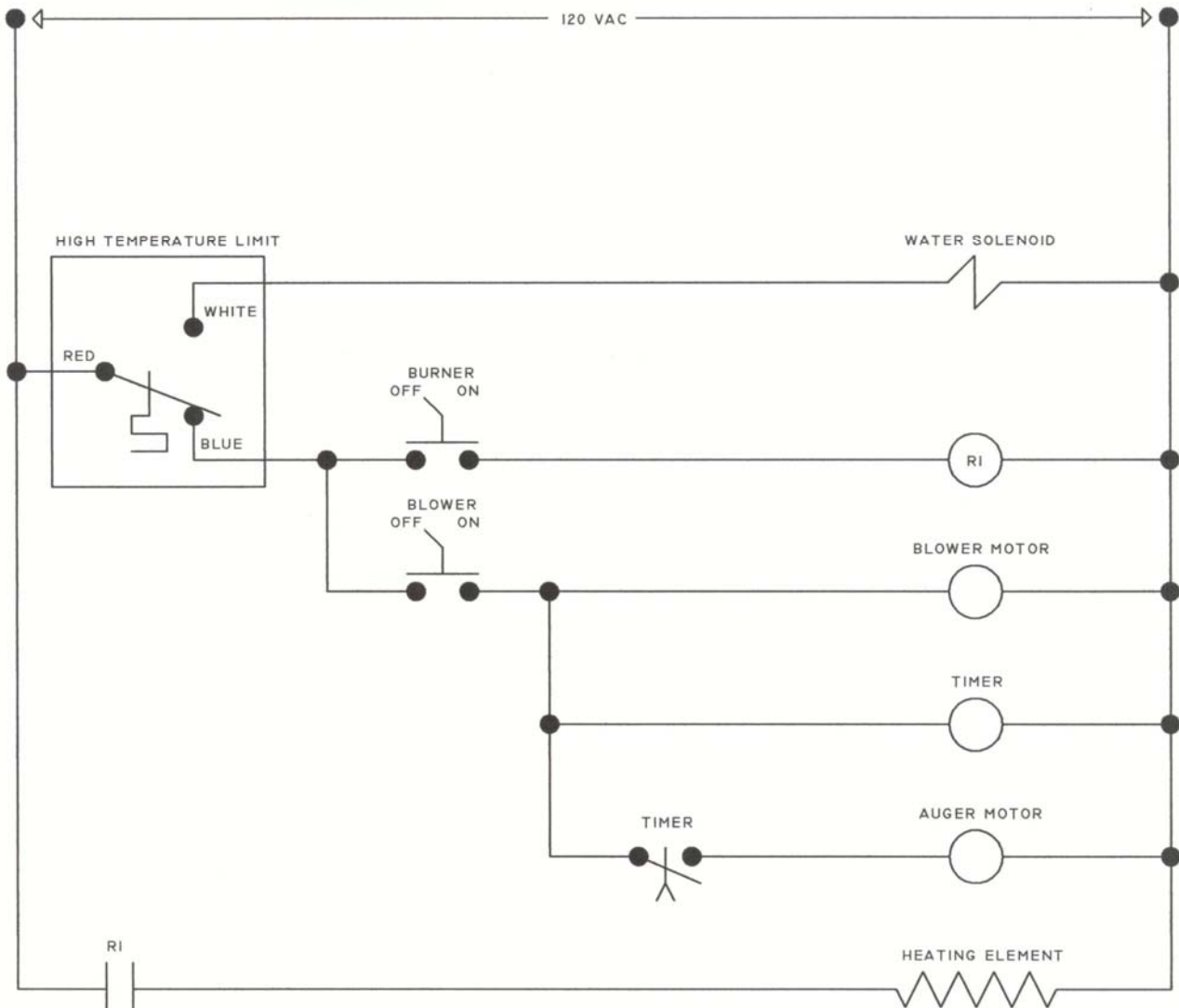
Optional Internal Product Temperature Control (1401)



⚠ WARNING

Turn off all power to the smokehouse before any maintenance is performed.

Smoke Producer for Smokehouse with Standard Control



Note: High temperature limit switch has automatic reset when temperature drops below 200° F. in the smoke producer. **Factory set, do not adjust.**

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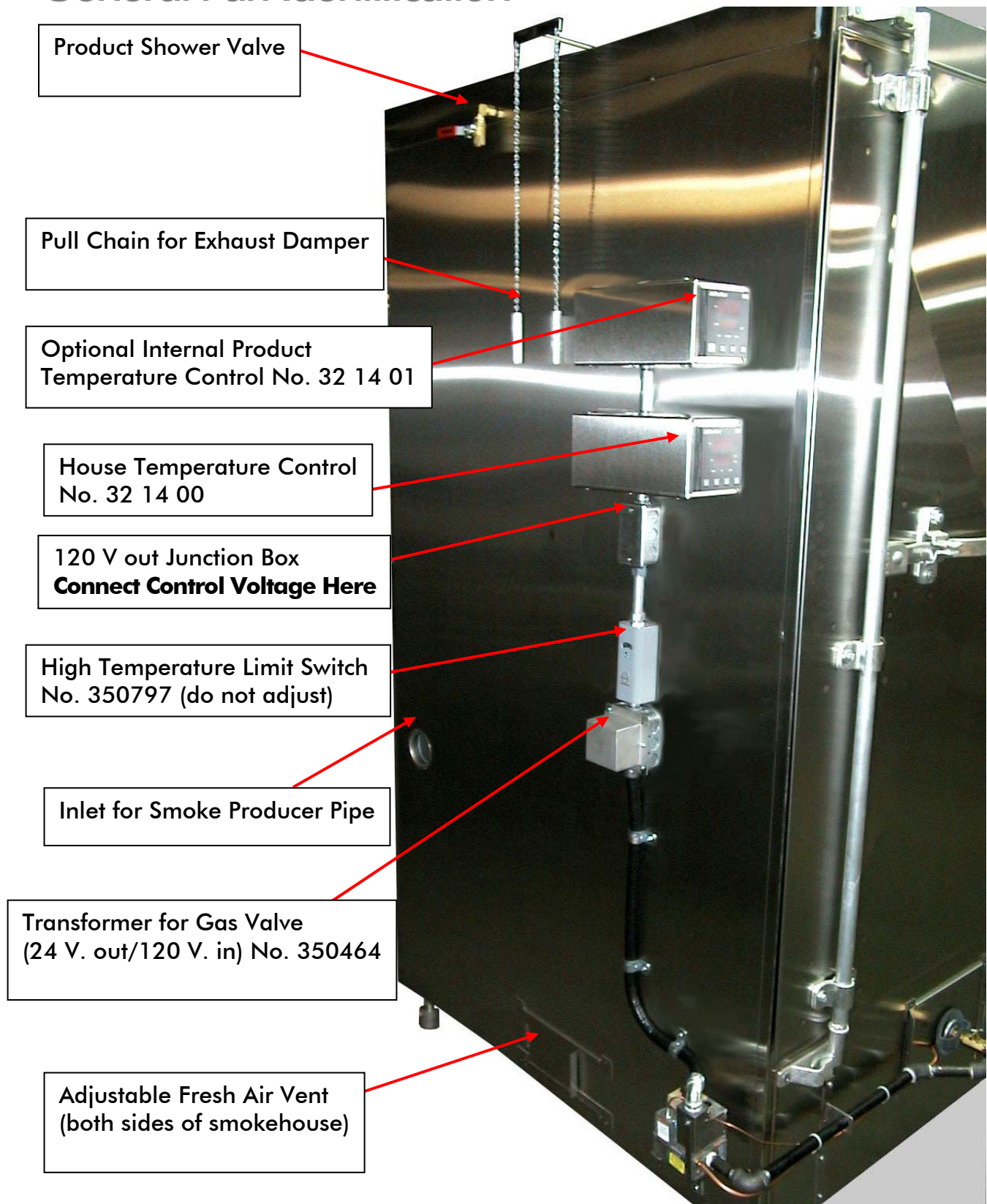
Section

6

PARTS

General Part Identification	40
Gas Heated Smokehouse	41
Electric Heat.....	43
Smoke Producer.....	45
Added Humidity Option	47
Recommended On-Hand Spare Parts	48
Frequently Ordered Parts	49

General Part Identification



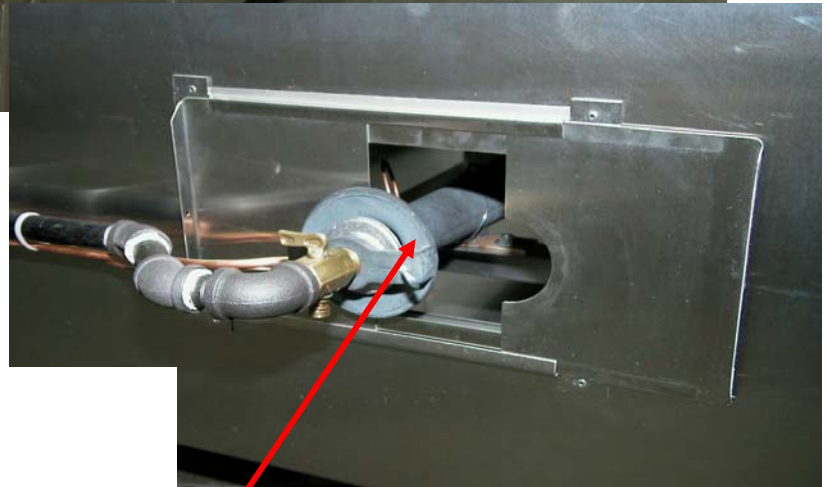
General Part Identification: Gas Heat

Owner's Gas Connection (left side of valve)

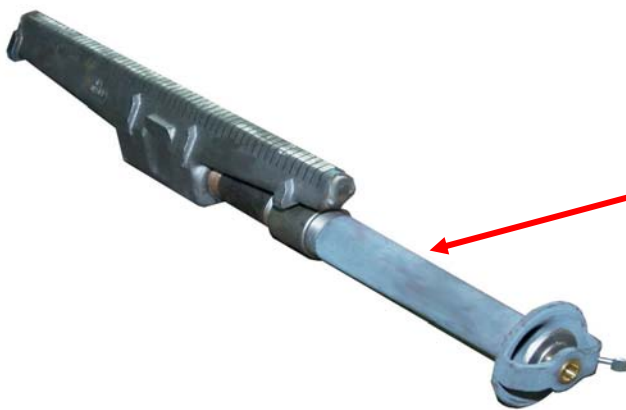
Gas Shut-off Valve No. 35 04 87



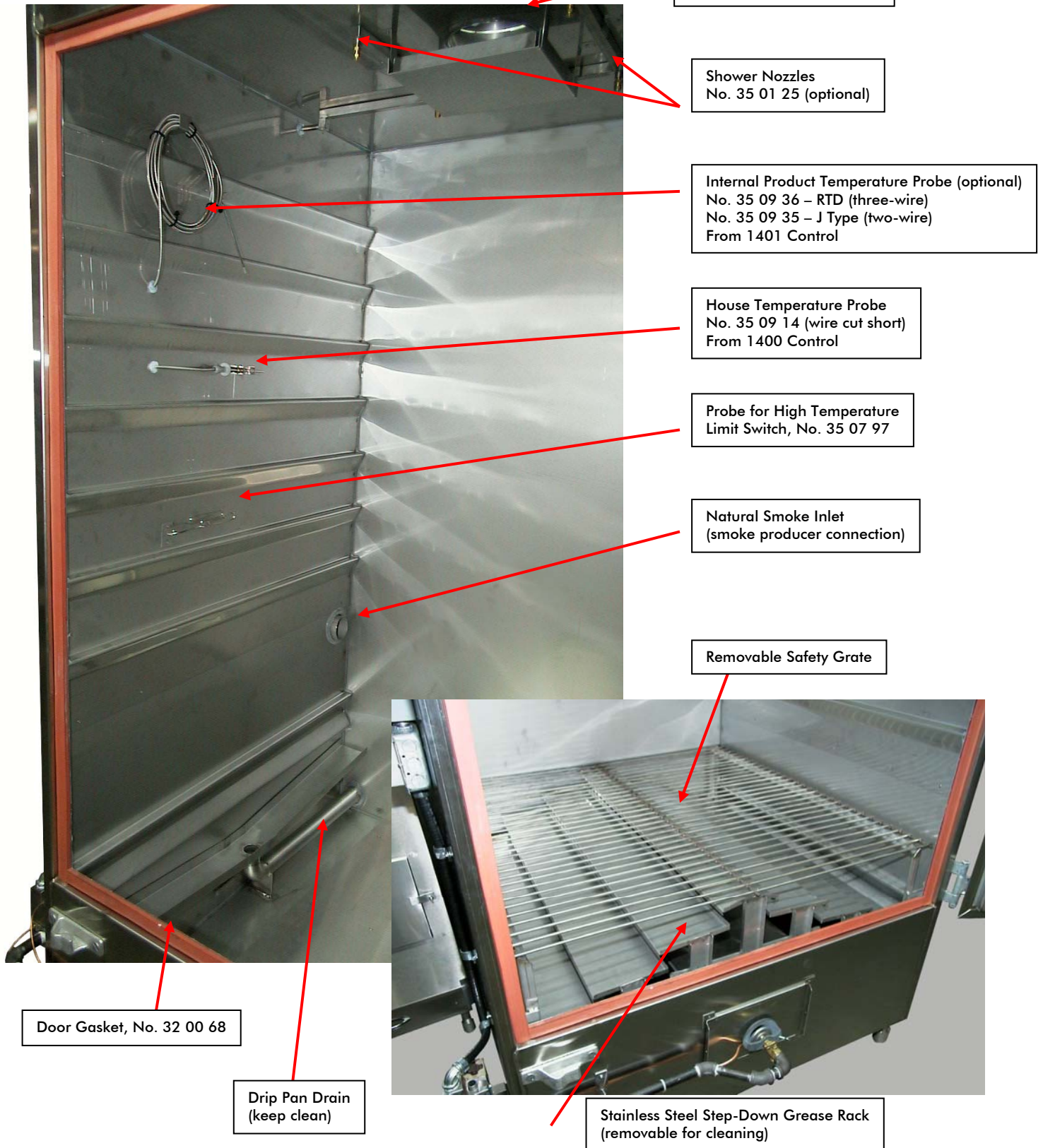
Combination Gas Valve: LP/Natural Gas, 24 V out, No. 35 04 65



Slotted Burner, 50,000 BTU
(specify type of Gas), No. 35 07 78
Pilot Light (not shown), No. 35 04 50



General Part Identification



General Part Identification: Electric Heat

Grand Prize™ II Smokehouse Lower Interior View



Heating Elements (3,000 Watt)
No. 350035, Quantity of 3

Remove clamping brackets to change heating elements. Electric connection for elements is on the back of the smokehouse.

(Shut off electrical service before removing the stainless steel rack above heating elements.)

Grand Prize™ II with Electric Heat



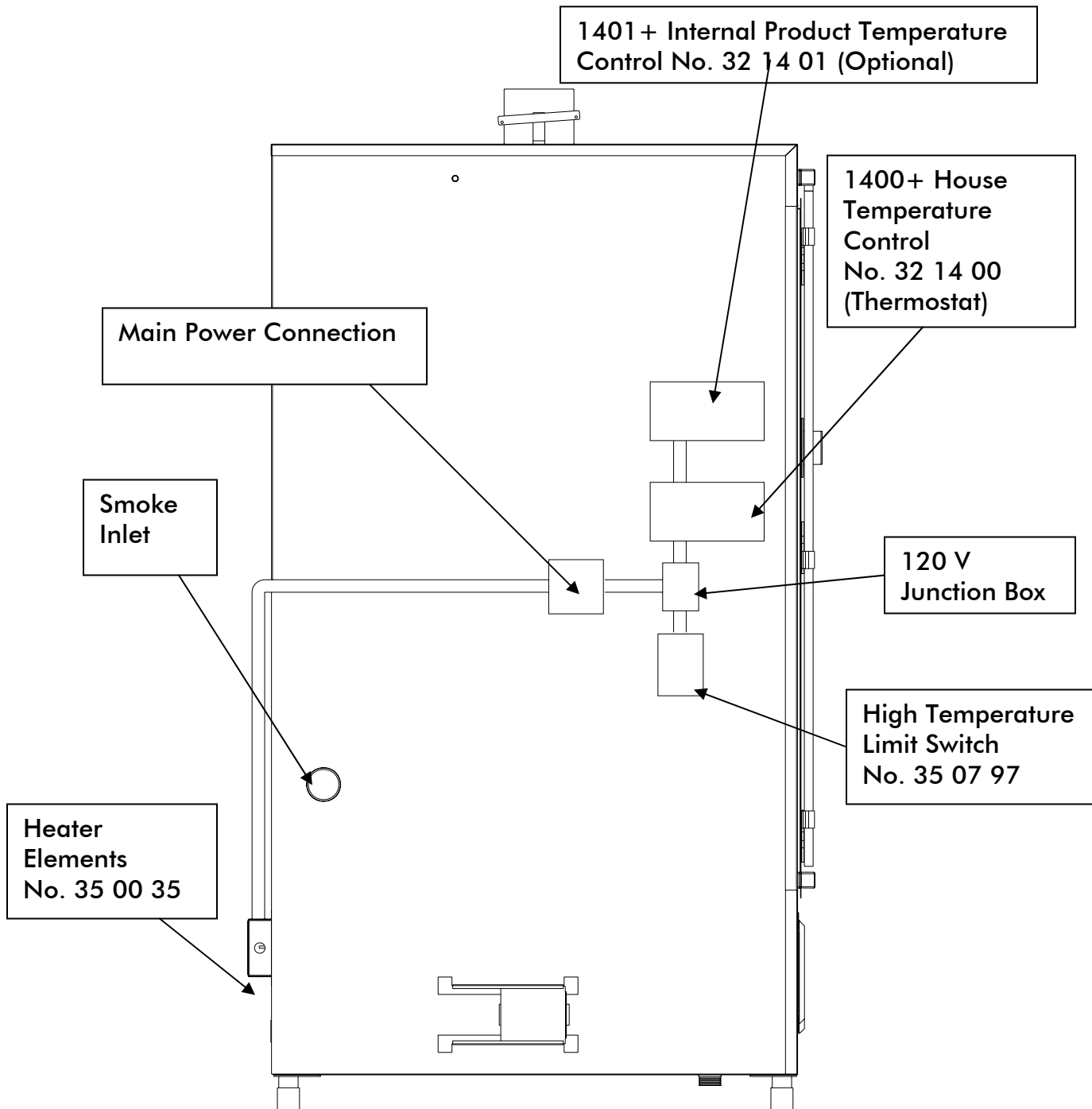
KOCH
EQUIPMENT

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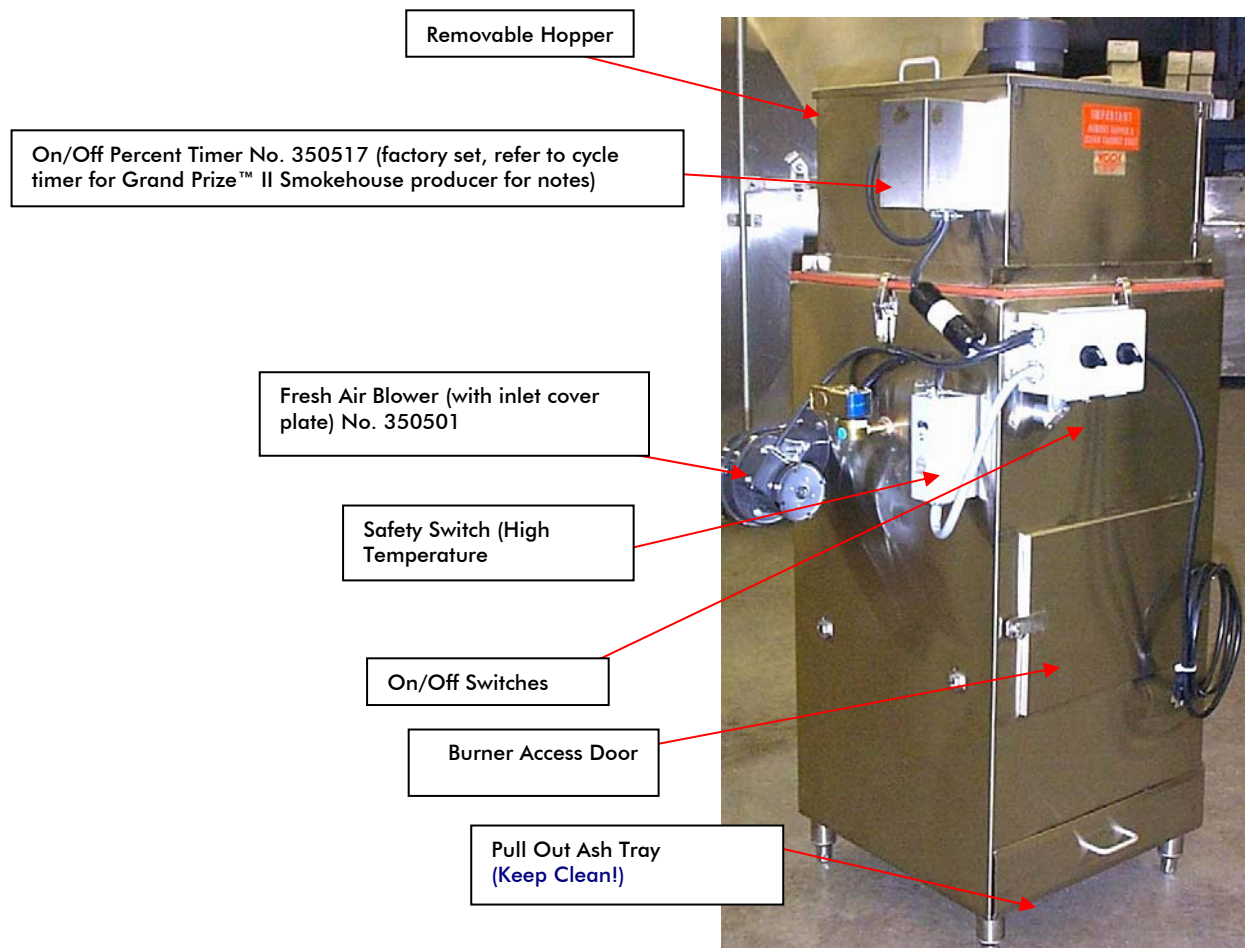
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General Part Identification: Electric Heat

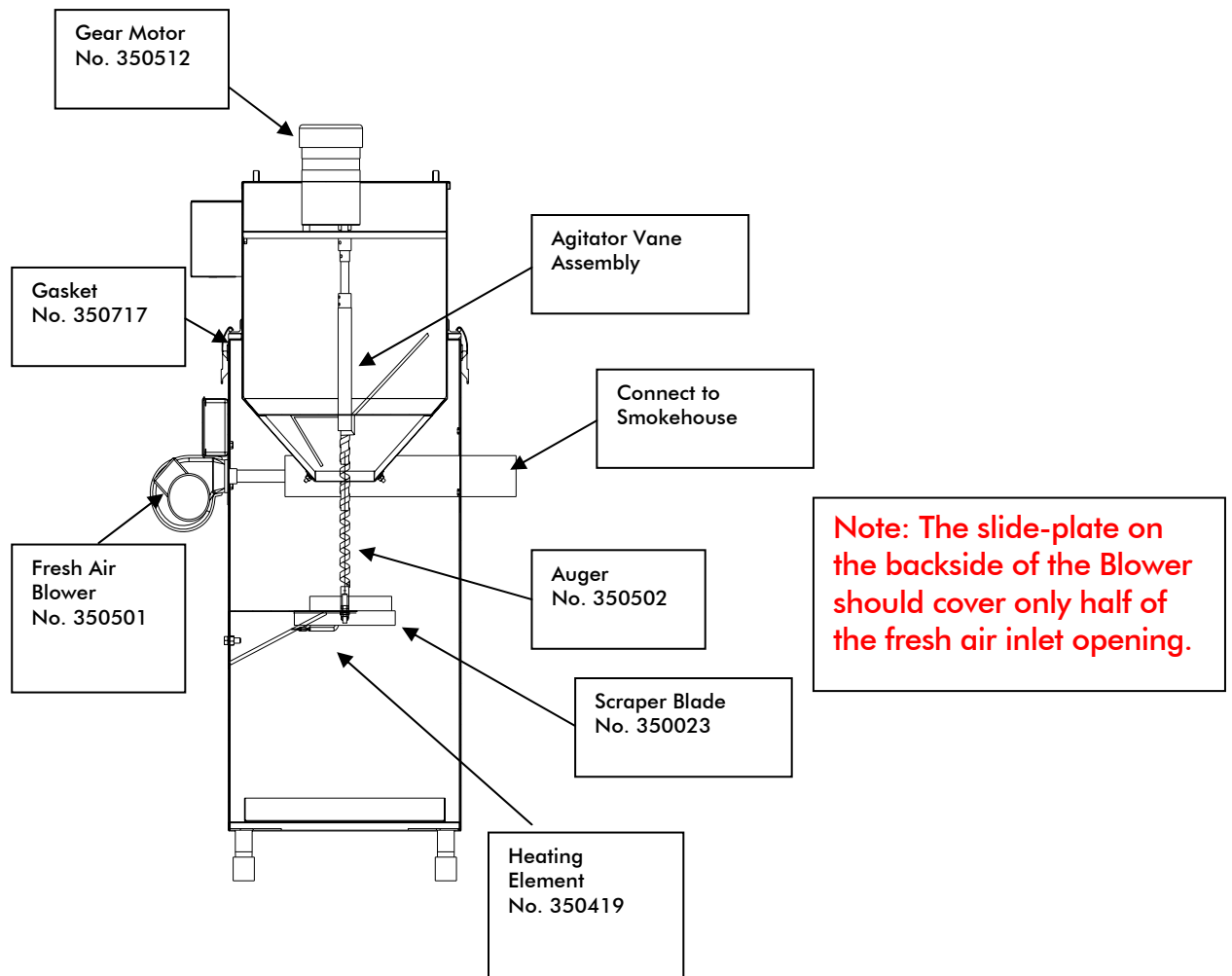


**Control Side View of
Electrically Heated Smokehouse**

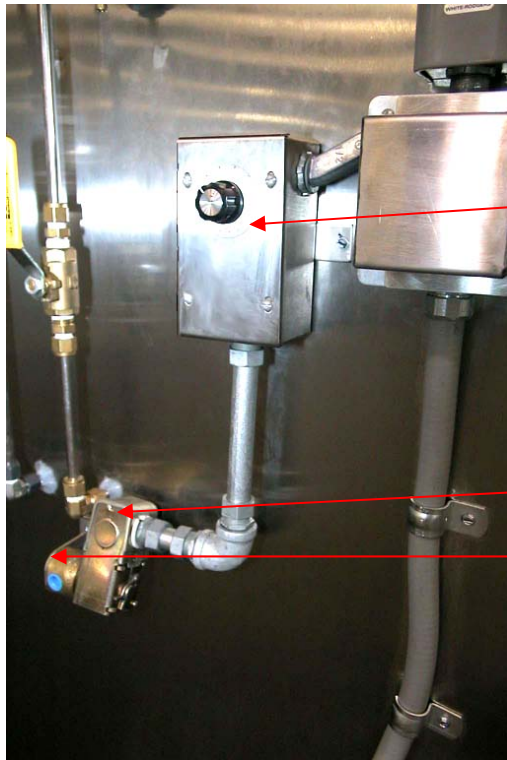
General Part Identification: Smoke Producer No. 32 00 72



General Part Identification: Smoke Producer No. 32 00 72 (continued)



General Part Identification: Added Humidity Option, No. 32 04 15



Adjustable Timer, No. 35 04 13 for the added humidity system: Allows a four-second burst of hot water (should be 180° F.) from the wide angle brass nozzle in the form of mist. The time in between each burst is adjustable from one burst every six minutes to a maximum setting on the dial of a burst every six seconds.

Valve Solenoid, No. 80 01 35

Valve (hot water connection: 1/8 NPT), No. **80 01 34**

Spray Nozzles Assembly, No. 35 04 12



Assembly will unclip from the grill for access to the bottom of the cabinet.

Recommended On-Hand Spare Parts

Koch Nr.	Description	Quantity
All Grand Prize™ II Smokehouses:		
35 09 14	Probe, dry bulb (1400+)	1 each
35 09 36	Probe, internal product temperature (1401+ option)	1 each
Optional Chart Recorder:		
35 09 41	Chart pens, red (five per pack)	1 pack
35 09 42	Chart pens, green (five per pack)	1 pack
35 09 38	Charts, 30/230° F, 24-hour, 10-in. (box of 100)	1 box
Natural Smoke:		
35 04 19	Heating element for smoke producer	1 each
Liquid Smoke:		
35 07 00	Gasket for liquid smoke nozzle	6 each
Electric Smokehouse:		
35 00 35	Heating element, 3,000 Watt	1 each
Gas Smokehouse:		
35 04 65	Thermocouple	1 each

Frequently Ordered Parts

Date	Part Nr.	Qty.	Part Ordered



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Section

7

SERVICE HISTORY

Service History	52
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Service History

Date	Service Provided



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