

# OWNER'S MANUAL

**Important: Keep in safe, easy-to-find location.**



# MARSHALL

## Autobroil™ Model 713BG

**Marshall Air Systems, Inc.**  
419 Peachtree Drive South  
Charlotte, North Carolina USA 28217  
704-525-6230  
704-525-6229 FAX

Sales and Service  
1-800-722-3474



# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



## INSTRUCTIONS TO PURCHASER:

1. ANSI Z83.11 STANDARDS REQUIRE THAT YOU POST IN A PROMINENT LOCATION THE PROCEDURES TO FOLLOW IN THE EVENT THE USER SMELLS GAS. THIS INFORMATION SHALL BE OBTAINED FROM THE LOCAL GAS SUPPLIER.
2. KEEP THIS MANUAL IN A SAFE PLACE AND RETAIN FOR FUTURE REFERENCE.

### FOR YOUR SAFETY

DO NOT STORE OR USE GASOLINE OR OTHER  
FLAMMABLE VAPORS OR LIQUIDS IN THE  
VICINITY OF THIS OR ANY OTHER APPLIANCE

#### AVERTISSEMENT

**Ne pas entreposer ni utiliser de l'essence ni d'autres vapeurs ou liquids inflammables dans le voisinage de cet appareil, ni de tout autre appareil.**

WARNING: IMPROPER INSTALLATION, ADJUSTMENT, ALTERATION, OR MAINTENANCE CAN CAUSE PROPERTY DAMAGE, INJURY OR DEATH. READ THE INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS THOROUGHLY BEFORE INSTALLING OR SERVICING THIS EQUIPMENT.

**AVERTISSEMENT: Une installation, un ajustement, une alteration, un service ou un entretien non conforme aux norms peut casuer des dommages a la propriete, de blessures ou la mort. Lisez attentivement les directives d'installation et d'operation et d'entretien avant de faire l'installation ou l'entretien de cet e'quipement**

**Broiler area must be kept free of combustibile materials, and the flow of combustion and ventilation air must not be obstructed. Operating personnel must not perform any maintenance or repair functions. Contact your Qualified Service Company.**





## TABLE OF CONTENTS

I.	BROILER SETTINGS (Quick Reference) .....	1
II.	BROILER INSTALLATION .....	2
	Pre-Installation .....	2
	Broiler Location .....	2-3
	Electrical Information.....	3
	Gas Piping To Broiler .....	3-4
	Pre-Operation Check.....	4-5
	Performance Criteria .....	5-6
III.	OPERATING INSTRUCTIONS .....	6
	Broiler Adjustment-Daily .....	6-7
	Operation of 6-Button Control .....	7-14
IV.	SCHEDULED MAINTENANCE .....	14
	Cleaning During Operation.....	14
	Daily Cleaning Procedures.....	14-16
	Weekly Cleaning Procedures .....	16-17
	Monthly Cleaning Procedures .....	17
	Quarterly Cleaning Procedures and Preventive Maintenance .....	17-18
	Biannual Preventive Maintenance.....	18
	Annual Preventive Maintenance.....	18-19
V.	MOTOR SPEED BOARDS .....	19
VI.	TROUBLESHOOTING .....	19-25
VII.	INSTRUCTION SHEET FOR CHARcat™ CATALYTIC CONVERTER.....	25
	Pre-Installation .....	25
	Installation .....	26
	Operation.....	26
	Cleaning .....	26
VIII.	REPLACEMENT PARTS .....	27-30
	Warranty	
	ILLUSTRATIONS	
	Dimensional Drawing .....	Figure 1
	External Removable Parts.....	Figure 2
	Internal Removable Parts.....	Figure 3
	Drive Assembly .....	Figure 4

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



---

Top Burner Assembly.....	Figure 5
Hot Surface Pilot System .....	Figure 6, 7
6-Button Control User Interface.....	Figure 8
Gas Distribution DB9L.....	Figure 9
Loader Assembly .....	Figure 10
Conveyor Re-tension Adjustment.....	Figure 11
Catalyst Equipped Model 2424G (DB9A).....	Figure 12
Gas Distribution DB9R .....	Figure 13
Removal of Drive Shaft Assembly for Cleaning .....	Figure 14
Daily/Weekly Cleaning Instructions.....	Figure 15
Spare Parts Kit .....	Figure 16
Regional Spare Parts Kit.....	Figure 17
Kit, 713BG, CM24 Preventative Maintenance.....	Dwg #149268
Control Panel Quick Guide.....	Dwg # 146269

## **WIRING SCHEMATICS**

Wiring Schematic (713BG, 120V, 1Ph, 60Hz, 6-Button Control)(DB9).....	Dwg #146203
---	-------------



# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



## II. BROILER INSTALLATION

### PRE-INSTALLATION

1. After uncrating the Autobroil™ (broiler), inspect for shipping damage. Check that all control knobs are intact on the electrical cabinet front. Set the broiler in place and leave the plastic wrapping on to protect it from the debris and trash of building construction. DO NOT remove plug from gas inlet pipe. Check that broiler has not been dented or damaged by the carrier. To file a concealed damage claim, follow the instructions attached to the outside of the shipping crate. Warranty does not cover freight damage.
2. Installation must be performed by a Qualified Service Company. The term "Qualified Service Company" means any individual, firm, corporation or company which is either engaged in and is responsible for the installation or replacement of gas piping on the outlet side of the meter, or the service regulator when a meter is not provided, or the connection, installation or repair of gas appliances, who is experienced in such work, familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction.
3. A remote gas shut-off valve must be provided and interlocked to the exhaust fire protection system.
4. This broiler is power fan exhausted, therefore it is necessary to provide adequate make up air equal to the amount removed. In addition, any other exhausts, flues, or air removal systems must be taken into consideration. Examples of this are heat removal fans or hot water heater flues.
5. The broiler must be isolated from the gas supply piping system during any pressure testing of the gas supply piping system at test pressures equal to or less than ½ psig (3.45kPa).

### BROILER LOCATION

**WARNING: IF NOT INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, THIS PRODUCT COULD EXPOSE YOU TO SUBSTANCES IN FUEL OR FROM FUEL COMBUSTION WHICH CAN CAUSE DEATH OR SERIOUS ILLNESS AND WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.**

1. Position broiler to properly align with exhaust hood (refer to equipment plan). Note nameplate clearance. The AutoBroil™ is shipped in either a Left to Right or Right to Left configuration based upon customer designation and if needed can be converted to be opposite configuration. See Figure 8 for details. Attention should be paid to the location of a/c registers and hood makeup air. If air from either blows into broiler area, cooking and broiler performance will be affected.
2. The exhaust hood/ventilator for the broiler should be located in accordance with the National Fire Protection Association Standard #96, "Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment" and any local applicable requirements.
3. For proper installation, the minimum clearance from combustible construction is 0" from sides and 18" from food loading end and food delivery end.
4. Make sure broiler is level. The grease drainage and collection system may not function if broiler is not level.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



5. Adequate clearance should be maintained to allow easy access to loading and unloading areas of the broiler.
6. For servicing, broiler must be moved two feet clear from all surrounding equipment.

**CAUTION: KEEP THE BROILER AREA FREE AND CLEAR FROM COMBUSTIBLES.**

## **ELECTRICAL INFORMATION**

1. The broiler is furnished with a cord and plug. The broiler requires a 120 Volt A.C., 60 Hz, Single Phase, 3 wire (including ground), 20 AMP circuit. Broiler must be electrically grounded in accordance with local codes, or in the absence of local codes, with the National Electrical code ANSI/NFPA No. 70-latest edition.
2. There is a Wiring Diagram located in the Owner's Manual and inside the control cabinet.

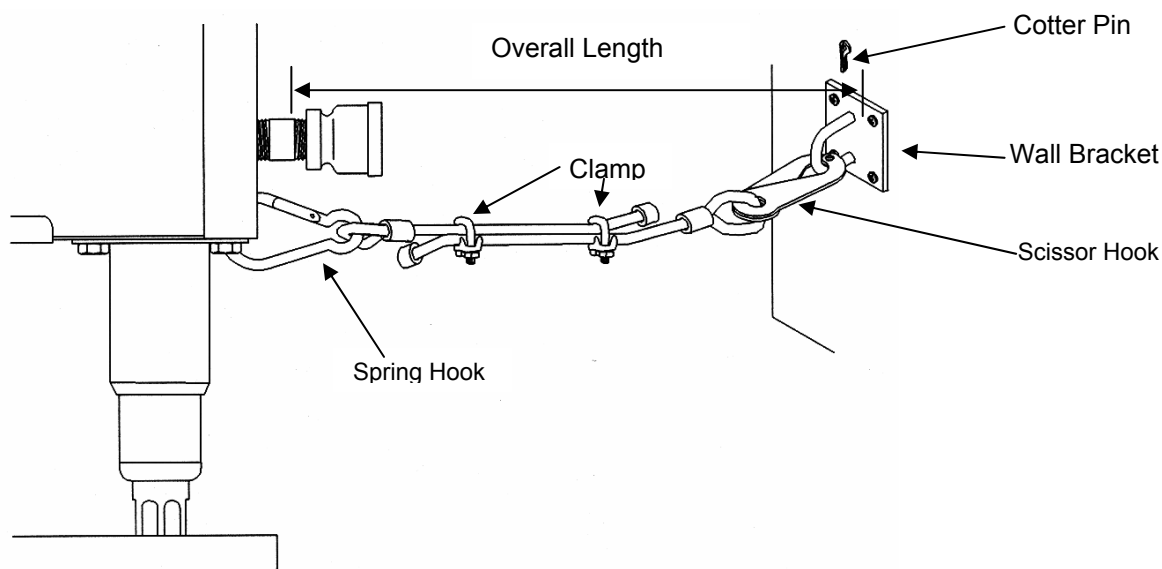
**WARNING: THIS BROILER IS NOT CAPABLE OF BEING SAFELY PLACED INTO OPERATION DURING A POWER FAILURE AND NO ATTEMPT TO OPERATE IT SHOULD BE MADE.**

## **GAS PIPING TO BROILER**

1. Installation of this broiler must conform with local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z-223.1-latest edition.
2. In Canada, this broiler is to be installed in accordance with Standard CGA B149.1 or B149.2 Installation Codes for gas burning appliances and equipment and any local applicable requirements.
3. The broiler is supplied with a 3/4" female pipe thread. The installer must make the pipe connection to the broiler in accordance with the "National Fuel Gas Code," ANSI Z-223.1-latest edition. The gas line connected to the 3/4" female pipe thread cannot be less than a 3/4" pipe. The gas pressure and gas volume required by this broiler is shown on Page 5. Gas piping from source to broiler must be adequate to satisfy these requirements when all other gas appliances in the restaurant are operating at maximum demand.
4. A flexible AGA approved gas line is available (#500174 36" flex gas line with restraint). Instructions are:
  - (1) The installation shall be made with a connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z21.699-latest edition, and Addenda Z21.69a-latest edition, and a quick-disconnect device that complies with the Standard for Quick-Disconnect Devices for Use With Gas Fuel, ANSI Z21.41-latest edition, and Addenda, Z21.41a-latest edition and Z21.41b-latest edition and Z21.41b-latest edition.
  - (2) Adequate means must be provided to limit the movement of the broiler without depending on the connector and the quick-disconnect device or its associated piping to limit the broiler movement.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



Optional restraining device is available.

- (3) The restraining device must always be connected when the broiler is in operation. Disconnect for movement necessary for service and cleaning. Then reconnect the restraint when the broiler has been returned to its normal position.
  - (4) The restraining device is a separate line and should be no less than 6 inches away from the gas connector. It should also be in a parallel position to the floor. Using the adjustable clamps, alter the length of the cable so that the overall length is 3 to 6 inches shorter than the length of the gas connector including the fittings. Attach the wall bracket to an existing wall or other architecturally sound surface. Attach scissor hook to the wall bracket and secure with cotter pin. Finally, attach the spring hook to the gas broiler. Make certain that the overall length of the line is 3 to 6 inches shorter than the gas connector at this point.
5. See Page 2, Pre-Installation Item 5 for instructions on gas supply line pressure testing.

**CAUTION: DO NOT OBSTRUCT THE FLOW OF COMBUSTION AND VENTILATION AIR.**

## **PRE-OPERATION CHECK**

Before lighting and operating your broiler, perform a check of critical items as follows:

1. **Remove both side panels and check to see that all parts are in place and that none are damaged.** Particularly make sure all burners are in place and that the shields are in position on the bottom burners.

**IMPROPER INSTALLATION OF BURNERS CAN CAUSE FLAME / HEAT DAMAGE TO COMPONENTS OR WIRING, FOR EXAMPLE THE PILOT WIRES.**

2. Start conveyor chains and check for binding. The conveyor chains should run free and not be catching on any parts.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



3. The speed of the conveyor chains should be changed from slow to fast, and back again without the chain stopping.
4. Before first use, and after any special cleaning, it is necessary to "season" the broiler chain. This is done by bringing the broiler to operating temperature and then (with burners still lit) applying liquid or solid shortening from a saturated cloth over the full width of the broiler chain while the chain makes 5 or 6 complete revolutions.
5. Check that gas pressure at broiler gauges is correct (see Performance Criteria shown in chart below).
6. Check that broiler grease tray is in place under burners (see Figure 3).

## PERFORMANCE CRITERIA

1. The manifold pressure for each burner and broiler inlet pressure and gas amount is listed below:

TYPE OF GAS:	PRESSURE AT THE BROILER	MANIFOLD PRESSURE
Natural	6.0 - 10.0 IWC	Upper Burners 3.5 IWC Lower Burners 1.0 IWC to High 5.0 IWC
LP	11.0 - 14.0 IWC	Upper Burners 6.4 IWC Lower Burners 5.4 IWC to High 9.0 IWC
<b>Total Gas Amount</b>	146,000 BTUH @ 100 % HIGH FIRE 98,000 BTUH @ IDLE	

Lower burner manifold pressure is measured by a pressure gauge attached to the lower manifold. With the broiler temperature set to 1000°F the high fire pressure is 5.0 IWC for Natural Gas or 9.0 IWC for LP Gas. High pressure is adjusted using the regulator in the top of the lower burners' safety gas valve. Low fire is adjusted using the modulating gas valve. See Figure 9 (DB9L) or Figure 13 (DB9R) for gas system layout. Reset the temperature to 830°F (443°C). Once the broiler reaches 830°F, the gas pressure is varied by the modulating valve to maintain 830°F. (NOTE: Broilers with catalysts the temperature is set at 960°F.)

To check low pressure, set the temperature to 400°F and the modulating gas valve will drop the lower burner gas pressure to 1.0 IWC for Natural Gas or 5.4 IWC for LP Gas in an effort to get down to 400°F. Adjust this pressure using the screw located under the plastic cap on the side of the modulating valve. Figure 9 or 13. With high and low pressures checked and set, reset the temperature to 830°F (443°C) which is the correct cooking temperature.

2. The upper burners in the broiler operate at a fixed pressure and are a special infrared type. All of the air for combustion must be injected through the venturis. This makes orifice design and alignment very critical. The orifice design, in combination with the correct natural or propane gas pressure will result in adequate air aspiration and mixing. There are no air shutters. No air adjustment is needed.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



**CAUTION: DO NOT STACK BOXES OR IN ANY WAY BLOCK AREA IN IMMEDIATE VICINITY OF VENTURIS OR IN ANY OTHER WAY OBSTRUCT FLOW OF COMBUSTION AIR.**

3. The flame rod igniter flame is adjustable with a small screwdriver. The cap screw behind the 1/4" gas line exiting the valve should be removed. The small adjusting screw is under the cap screw. Turning the small adjusting screw inward (clockwise) will reduce the flame to the igniter. The igniter flame should be uniform and just large enough to make a flame envelope around the end of the sensor and igniter.
4. The upper burners will be bright orange when burning properly. If a dull red is observed after 30 minutes of warm-up with a blue flame below the burner face, the orifice may be dirty, damaged, or misaligned. "Popping," or burning back at the orifice of the burner, is a result of the burner screen being loose or a faulty gasket under the burner screen. LP broilers may exhibit a light "popping" sound when the broiler is turned off; this is normal. The lower burners are of a conventional blue flame type.

**NOTE: IF BURNER SCREEN IS TORN OR HAS A HOLE, OR IF A GASKET IS LEAKING, THE BURNER MUST BE REPAIRED (See Figure 5).**

## III. OPERATING INSTRUCTIONS

### BROILER ADJUSTMENT - DAILY

#### LIGHTING INSTRUCTIONS FOR ELECTRONIC IGNITION SYSTEM

1. Turn exhaust system on. (Some hoods are so powerful that the broiler must be lit before the exhaust is turned on).
2. Make sure filters are in place in the hood.
3. Turn broiler on by pressing the On/Off button.
4. The upper burners light first followed by the lower burners 3 minutes later.
5. Verify all of the burners have ignited. Ignition is electronic.
6. If pilot flame or burners fail to light, press the On/Off button for 3 seconds and wait five minutes before attempting to relight.
7. Allow the broiler burners and conveyor chain to warm up until the control displays "Ready" (with the chain at approximately the correct speed).
8. Place one meat patty on the broiler chain. Based on the appearance of the broiled patty, reset the cook time for the desired broiling quality. (Note: this single patty should be cooked to the maximum degree of the Minimum/Maximum doneness tolerance.)

#### MANUAL LIGHTING INSTRUCTIONS

1. Remove manifold side cover.
2. Press the On/Off button and hold a flame up to the upper burner igniter.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



3. Once upper pilot has lit, wait 3 minutes and hold a flame to the lower burner igniter.

This procedure is in case the ignition surface part of the igniter (See Figures 9 & 13) were to break.

If the flame sensor part of the igniter (see Figures 9 & 13) were to break, the igniter must be replaced immediately.

## SHUT-OFF INSTRUCTIONS

1. Press the On/Off button for 3 seconds.
2. The control will display Hot and the conveyors will stop running in approximately 10 minutes.

**WARNING: If the cool down waiting period is not observed, the conveyor chain may warp.**

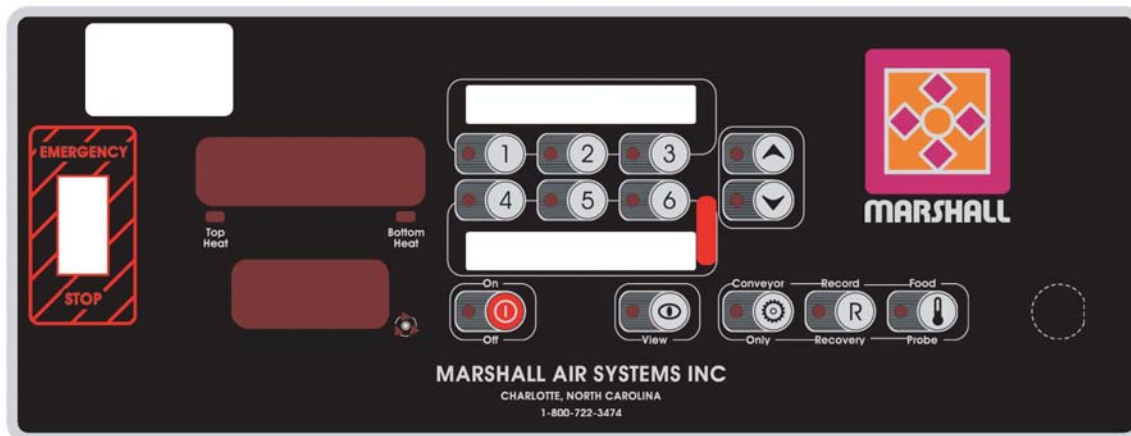
3. Turn exhaust system off.

**NOTE:** Note the gas control knob/slide switch on top of each safety gas valve is "ON". All safety gas valves with a slide switch will have a clear sealant over the switch and connectors. The sealant is to help keep water out of the valve. The switch will always be sealed in the "on" position.

## OPERATION OF 6-BUTTON CONTROL

### 1. USER INTERFACE

The following is the user interface layout.



The Control Panel illustration above shows a typical control interface layout. See Figure 8 for a description of the buttons. You can also refer to the Control Panel Quick Guide at the end of this manual.

### TIME AND DATE SETUP

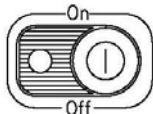
# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



When the controller is in Off mode, the system Time and Date can be adjusted by pressing the Off Button for 10 seconds. The time is displayed on the 1<sup>st</sup> line, and the HH is blinking. Using the Up and Down Buttons, the hours are changed. Pressing the View Button moves the “focus” to the MM. Use the Up/Down Buttons to adjust. By pressing View Button again, HH:MM are replaced by DD/MM (or MM/DD, depending on setting of temperature units) (1<sup>st</sup> line) and YY (2<sup>nd</sup> line). Use the View Button to travel from one setting to another, and use the Up/Down Buttons to modify. The View Button will return to HH:MM. Pressing the Off Button again stores the new Time and Date, and returns to Off mode.

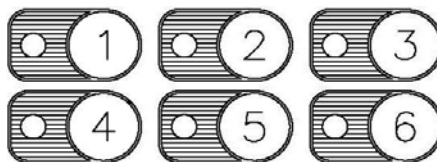
## ON/OFF BUTTONS



A normal press of this button turns on the controller. This causes the broiler to start running the motors at the slowest recipe speed found (overcooked food is safer than undercooked food). This button also starts the gas ignition system and the burners should light. This recipe is selected (its corresponding LED lights up) and the temperature set point is the one defined by this same recipe. At any time in On mode, the user can change the selected recipe. When just turned On, the broiler will scroll **PREHEAT** on the 1<sup>st</sup> line until the Soak Time has elapsed. After this time, broiler will display either **READY**, **LOW** or **HIGH**, depending on the current temperature readings.

A 3-second long press of the On/Off button turns off the broiler. The 1st line will then blink **HOT** for the Cool Down period (burners off, but the motors are still running, one at the fastest speed supported by the broiler, one at the slowest speed supported by the broiler). At that point, the broiler will then simply display **OFF**, and all outputs will be disabled.

## RECIPE BUTTONS



Recipes, there are 6 of them, are defined by a time and a temperature. The time basically sets the conveyor speed. All 6 recipes control the conveyor speed. The top three (3) recipe buttons are for the left conveyor belt and the bottom three (3) buttons are for the right conveyor belt.

When the broiler is **READY**, a simple press of the recipe button will activate the selected recipe speed and temperature (**LOW** and **HIGH** conditions may or may not be triggered).

When a specific recipe must be changed, keep its button pressed for 3 seconds, until the 1<sup>st</sup> parameter name scrolls on the 1<sup>st</sup> line **SET COOK TIME**. The recipe as well as the Up/Down LED's will also blink, indicating that they can be used. Pressing either Up or Down the 1<sup>st</sup> time simply makes the display switch to the parameter's value (preceded by an arrow, as in ► **4.25**, to indicate a changeable value). Subsequent presses will then modify the parameter. If Up or Down are not pressed for 5 seconds, the display resumes scrolling the parameter name.

Each recipe has 2 programmable parameters. To switch from one to the next, press the recipe button. After the last parameter is programmed, the broiler resumes normal operation.

- **SET COOK TIME,**
- **SET GAS TEMPERATURE.**

### Model 713BG

Factory Set Cook time: Button 1-3 =3:20,

### Model 2424G

Factory Set: Button 1=3:15,

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



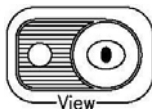
4-6 = 3:40

Factory Set gas temperature: 830°F NAT  
800°F LP

2=3:25,3=3:35,4=4:00,5=4:10,  
6=4:30

Factory set gas temperature: 960°F

## VIEW BUTTON



The View button allows a user to view actual or programmed system parameters. Changes cannot be made just by using this button.

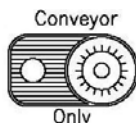
A simple press of the View button allows the user to see the current broiler temperatures and conveyor speeds (when not in **OFF**.) Press the View button to scroll through the available viewable parameters ( **COOKTIME, GAS TEMPERATURE** ) When the wanted parameter is displayed, the Up button is used to toggle between the parameter name and current value. The Down arrow switches between the current top and bottom recipe speeds (corresponding recipe LED lights up) Pressing the View button one more time when the last parameter is displayed resumes normal operation. If the broiler is in **OFF** mode, then cook times are not displayed. When they are displayed, they are shown on the 2<sup>nd</sup> line.

Simply pressing the View button shows the current broiler parameters. However, if the View button is pressed for 3 or more seconds, then the user may view (again, not change) the current recipe programs. After the View button is pressed for 3 seconds, all recipe LEDs start flashing.

The user then selects the recipe they want to view. **COOK TIME** is the 1<sup>st</sup> parameter viewed, followed by **GAS TEMPERATURE**.

Use the selected Recipe button to travel through the parameters. Again, the Up button is used to see the parameter value. Keep in mind that these are actual recipe programs, and not current broiler parameters. The blinking recipe LED indicates this. Also, there are no conveyor speeds displayed on the 2<sup>nd</sup> line in this view mode. As before, once the last parameter is displayed, the broiler resumes normal operation.

## CONVEYOR ONLY BUTTON



The Conveyor Only mode allows the broiler user to run the conveyors without heating. This may be for servicing purposes (such as finding the open link on the conveyor). This mode is accessible only from the **OFF** mode. Upon power on of broiler (initialization), the display flashes the software revision number for example 1.15,1.16 or 1.17. This revision must be known to determine the correct operation of the Conveyor Only button.

**Broilers with release 1.15** - When pressed,**SPEED** is displayed on the 1<sup>st</sup> line. Press the VIEW and the left belt will turn at 1 minute cook speed. Also the LED for recipe 1 will illuminate. Press VIEW button 2 more times the right belt will turn at 1 minute. Cook speed and the LED for recipe 4 will illuminate.

Continuing to press the VIEW button will cycle between the Left and Right belt. The Up/Down buttons are used to change motor speeds. As soon as the Conveyor Only button is pressed again, the conveyors stop and the broiler resumes **OFF** mode

**Broilers with release 1.16** - When pressed,**SPEED** is displayed on the 1<sup>st</sup> line. Both belts turn at 1 minute cook speed. Also the UP/DOWN LED's will flash as well as the VIEW LED.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



Continuing to press the VIEW button will cycle between the Left and Right belt. The Up/Down buttons are used to change motor speeds. As soon as the Conveyor Only button is pressed again, the conveyors stop and the broiler resumes **OFF** mode

**Broilers with release 1.17 & 2.0-** When pressed speed is displayed on the 1<sup>st</sup> line, Both belts turn at 1 minute cook speed. Also the Up/Down & View LED'S will flash.

Pressing the view button once, The LED for Recipe 1 will illuminate. The Left belt motor RPM will be displayed on the 1<sup>st</sup> line and the Left belt PWM in hundreds scale (17.8=1780) will be displayed on the 2<sup>nd</sup> line. Pressing the view button a second time will display the PWM full scale in the 1<sup>st</sup> line and the RPM on the 2<sup>nd</sup> line for the left motor. A third press of the view button and the LED for Recipe 4 will illuminate, The right belt RPM will be displayed on the 1<sup>st</sup> line and the right belt PWM In hundreds scale (17.8=1780) will be displayed on the 2<sup>nd</sup> line. A fourth press of the view button the right belt PWM in full scale will be displayed on the 1<sup>st</sup> line and the motor RPM will be displayed on the 2<sup>nd</sup> line. Pressing the view button a fifth time the speed is again displayed on the 1<sup>st</sup> line and no recipe buttons are illuminated. Any further pressing of the view button will continue this cycle. Pressing the Up/Down buttons while in any of the Four view modes will increase or decrease the motor RPM for that belt.

As soon as the conveyor only button is pressed again the conveyor stops and the broiler resumes **OFF** mode.

## RECORD/RECOVERY BUTTON

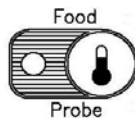


This button is available anytime. When pressed, the controller will list a log of the last 3 recovery times.

A recovery time is the time required for the temperature to go from 200°F to 50°F below factory set gas temp. This is useful for service and HACCP purposes.

When the Recovery Button is pressed, the controller will successively display **GAS1, GAS2 and GAS3** ramp times, "1" being the most recent ramp logged. To actually see logged time, press the Up button.

## FOOD PROBE BUTTON



This button is useable only when the broiler is On . It is accessible in 2 modes: automatic or manual. In manual mode, it is up to the user to press the Food Probe button to initiate a log, whereas, the automatic mode will remind the user (up to 6 times a day) to take a sample. Even in automatic mode, the user still has the capability to log extra samples manually as he/she wishes.

To do a manual log, the user must first make sure the temperature probe is correctly connected, and then press the Food Probe Button.

### Step #1

This step prepares the controller for logging. It determines the equalization time that will be used later on in the process.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



Display: **SELECT RECIPE TO LOG** is scrolled and recipe LED's blink.

Sound: None.

User Action: Select the Recipe corresponding to the sample that will be probed.

## Step #2

This step starts the logging and gives the user time to set up for the sampling.

Display: Shows **INSERT PROBE**. Actual temperature can be seen when up button is pressed. The up button and Record LED's blink.

Sound: None.

User Action: Insert the Food Probe into the sample according to local sanitary codes and normal restaurant procedures. Press up button.

## Step #3

In this step the temperature continues to be shown to the user. Nothing is being logged yet. The user must wait until certain temperature is reached (that depends on the specific restaurant procedures.)

Display: The 1<sup>st</sup> line displays the temperature currently measured by the Food Probe. The Record button LED also blinks.

Sound: None

User Action: Keep Food Probe inserted. When temperature reaches a specific point (known to the user), the user presses the Record button.

## Step #4

In this last step, the actual log is written to memory. The temperature now displayed is logged.

Display: Last temperature read is displayed until Food Probe Button is pressed again. This exits Food Probe.

Sound: None.

User Action: Remove probe, and press Food Probe Button to resume normal operation.

## Data Logged

The following is logged each time a sample is taken (in Step #4):

Date/time stamp (MM/DD/YY if English (degree F), DD/MM/YY if Metric (degree C) as well as HH:MM)

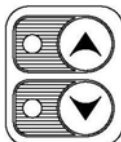
Recipe number (that was selected by user)

Cook chamber temperature

Food "Start temperature" (when user pressed Record)

Food "End temperature" (when temp was recorded)

NOTE: At the end of Step #4 the user can record another sample of same recipe by pressing Record again instead of Food Probe, which clears display of previous samples. Display then shows probe's current temperature and Steps 3. and 4 are repeated.



## UP AND DOWN BUTTONS

These buttons are used to adjust the various system parameters when required. Time is incremented/decremented at 5-second intervals, and temperature at 5°F (2°C) intervals. These buttons have a typematic feature associated with them. Keeping them pressed for more than 2

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



seconds causes the rate of change to accelerate to 25°F/10°C (temperature), or 20 seconds (time) every 500 msec.

### 3. DISPLAY

#### GENERAL

In general, all messages are scrolled on the 1st line (about 2 characters per second), and times are displayed on the 2<sup>nd</sup>.

Some buttons have a LED, which is used to indicate various situations.

- On/Off LED: full on when broiler is On, otherwise Off.
- Up/Down LED's: blink when Up/Down buttons are expected.
- Recipe LED's: on when a recipe is active, blinking when programming or viewing recipes.
- Conveyor Only: blinking when feature is in use.
- Recovery: full on when feature is in use.
- View: full on when feature is in use.
- Conveyor: this is a group of 3 LED's that simulate a rotating motion (about 2 changes per second). This is active whenever the controller is receiving pulses from all installed tachometers.
- Top and Bottom Heater LED's: full on when the corresponding heaters are on, otherwise off.

Also, whenever the arrow symbol (▶) is displayed with the data, this means that this is a parameter being changed/adjusted.

#### TIME DISPLAY

All conveyor speeds are displayed on the 2<sup>nd</sup> line, and are limited to **9.59**. All other times are displayed as **MM.SS**, or **HH:MM**. For example, **9.59** is 9 minutes and 59 seconds, and **1:10** is 1 hour and 10 minutes.

### 3. SYSTEM STATES

There are several states of operation as follows:

#### POWER-UP MODE

When a power-up occurs, there is a lamp test, where all LED's come on for 5 seconds (this includes all LED's in the two displays). Following the lamp test, the software number and revision are displayed. These are useful for troubleshooting purposes when several versions exist in the field. The first line shows the software number and the second line shows the revision in the format **1.15**. Normally, major release versions will be whole numbers (**1.00**, **2.00**, etc.) and if a fraction occurs, these are minor release versions. Following this, the broiler falls automatically into Off mode.

#### OFF STATE

In this state, the heaters are disabled. Nothing is displayed, except for **OFF** on the 1<sup>st</sup> line.

The motors may be used if the Conveyor Only function is used. Also the view and recovery buttons may be used.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



## ON STATE

This is the normal cooking state. Before displaying **READY**, the broiler will go through the **PREHEAT** mode; The pre-heat mode lasts until the pre-heat Soak Time expires.

In the On mode, 2 extra conditions may exist: **LOW** and **HIGH**. Both depend on the current set point, and the current temperature. If the difference between the set point and the current temperature exceeds the programmable thresholds, then either the **LOW** or **HIGH** messages are displayed. This warns the user to wait until the **READY** condition comes back before putting product onto the conveyor. These conditions are likely to occur when a recipe calls for different temperatures.

## HOT STATE

This state is active after the broiler is turned Off (or if an error occurs that causes the broiler to shut-down). This state is a cool down step between the On and Off states. The conveyors continue to turn but the burners are off. The display continuously shows **HOT** until the Cool Down Time has elapsed, at which point the **OFF** message reappears.

## 4. DIAGNOSTICS

This section describes the various diagnostics errors that are available.

### BROILER TEMPERATURE PROBES

All probes are type-K probes. All temperature readings normally associated with a type-K probe are considered valid by the controller. However, if the probes become disconnected or otherwise open, the controller will sound the buzzer and scroll **HOT-PROBE ERROR** on the 1st line of the display. The defective probe number is displayed on the 2nd line: On the broiler controller, there are two thermocouples connected together:

- 2 is temperature probes

Pressing any button shuts the buzzer off, but will not remove the error message. The only way to remove the error message is to resolve the probe and/or connection problem.

When this heater probe errors occurs, the broiler continues operation, at 100% heat. The operator will most likely then have to adjust the recipe times, but at least the broiler can still operate. Due to broiler construction, 100% heat for any amount of time is not a problem as the broiler will not "burn" or otherwise ignite.

### EXTERNAL DC ERROR

The DC I/O connector has a +5VDC supply. This supply is internally protected against over-currents. Should this occur, the broiler will internally disconnect the supply and report **HOT-EXTERNAL DC ERROR**. The broiler goes into shutdown (through **HOT** mode) and the only way to reset this is to resolve the problem (most likely a short). Since the buzzer is powered through the same +5VDC supply as the DC I/O connectors, the buzzer does not sound when this error occurs.

After the Cool Down delay, the error message becomes **OFF-EXTERNAL DC ERROR** instead of **HOT-EXTERNAL DC ERROR**.

## 5. EMERGENCY STOP SWITCH

An emergency stop switch is on the front of the broiler as shown in Figure 8. This switch is for

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



stopping the conveyors and shuts off the gas immediately in case of a conveyor jam or other problem requiring the broiler to shut down.

Do not use this switch for normal shut downs at the end of the day. Use it if the conveyor jams or you need to stop the broiler immediately. This switch stops the conveyors and turns off the burners and turns off power to the control panels. When you turn the Emergency Stop Switch back on, the control panels will cycle through an initialization, then display **OFF**. From here you can start as normal.

## IV. SCHEDULED MAINTENANCE

### CLEANING DURING OPERATION

Grease and Ash removal from Grease Tray.

Use caution when removing the Grease Tray as it will be extremely **HOT**. DO NOT clean the Grease Tray in cold water, as cold water will warp the hot Tray. To avoid cooling the broiler down during cleaning, replace the used Grease Tray with a clean one immediately after removing the used one. One spare Grease Tray is included with the Broiler.

### DAILY CLEANING PROCEDURES

**CAUTION:** Do not touch the broiler section immediately after broiler shut-down. The temperature inside enclosures is in excess of 500°F (260°C), which eliminates the need to clean any parts inside the enclosures for sanitary purposes. Any grease that may build up on the exterior of the enclosures should be cleaned off with a damp cloth and a minimum amount of detergent. **Never use water on the enclosure or allow burner faces to get wet as this could cause premature burner or gasket failure. Disconnect the power supply to the broiler before cleaning or servicing.**

**CAUTION:** **UNDER NO CIRCUMSTANCES SHOULD OVEN CLEANER BE USED ON THIS BROILER. OVEN CLEANER WILL EAT HOLES IN THE ALUMINUM GAS VALVES AND GAS LINES, CAUSTIC FUMES CAUSE ELECTRICAL COMPONENT DAMAGE, AND WILL CAUSE MANY OTHER PROBLEMS IF USED TO CLEAN THIS BROILER.**

**CAUTION:** **DO NOT ALLOW WATER TO CONTACT THE (3) COOLING FANS. DOING SO MAY CAUSE THE BROILER TO TRIP THE GROUND FAULT RECEPTACLES AND NOT OPERATE. PLEASE COVER THE FANS WITH PLASTIC OR OTHER TO PREVENT.**

**CAUTION:** **KEEP THE BROILER AREA FREE AND CLEAR FROM COMBUSTIBLES.**

1. Allow broiler burners and chain to operate until the control goes from **HOT** to **OFF** after cooking last patty to burn off excess grease on broiler components. (This applies every time a meat chain is turned off -- regardless of what time of day meat chain is shut down -- and regardless of how few patties were broiled in the last 30 minutes, last hour, etc.) This will clean some parts of the cooking chamber. Failure to perform this procedure daily will result in poor cooking times.
2. Turn off broiler, wait 30 minutes and disconnect electricity.
3. Remove all exterior panels except those which are attached with screws. **Be careful not to touch any hot internal broiler components.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



4. Remove upper burners and reverberators. To remove burners, lift slightly on burner housing and slide towards the venturi opening in side frame, tilt the burner up and lift out. Shake off all debris. Hold burners with mesh facing the floor. Brush burner mesh with soft brush. Brush off reverberators, making sure all debris is removed from all of the openings. Lightly brush out venturi. **DO NOT WASH UPPER BURNERS AS IT WILL DESTROY THE GASKET.**

**WARNING: THE UPPER BURNER SCREENS (LOCATED UNDER THE TOP BURNERS), ARE MADE FROM INCONEL METAL MESH. THIS MATERIAL DETERIORATES WITH USE. INSPECT THESE SCREENS DAILY AND REPLACE IF SCREEN IS SEVERLY CORRODED. FAILURE TO DO SO CAN RESULT IN METAL PARTICLES BEING SERVED TO YOUR CUSTOMER.**

5. Remove lower burners and shields. To remove burners, lift burner positioning end up off of support and twist burner 90 degrees, tilt burner towards either end of broiler and slide out. Hold burners with ports facing the floor. Brush burner ports with soft brush. Wash burner shields. **Lower** burners can be rinsed.
6. Using a damp cloth, wipe the inside of each burner venturi.
7. Remove the following items and wash with soapy water when they are cool enough to touch with bare hand. All items can be run through a dish washer.

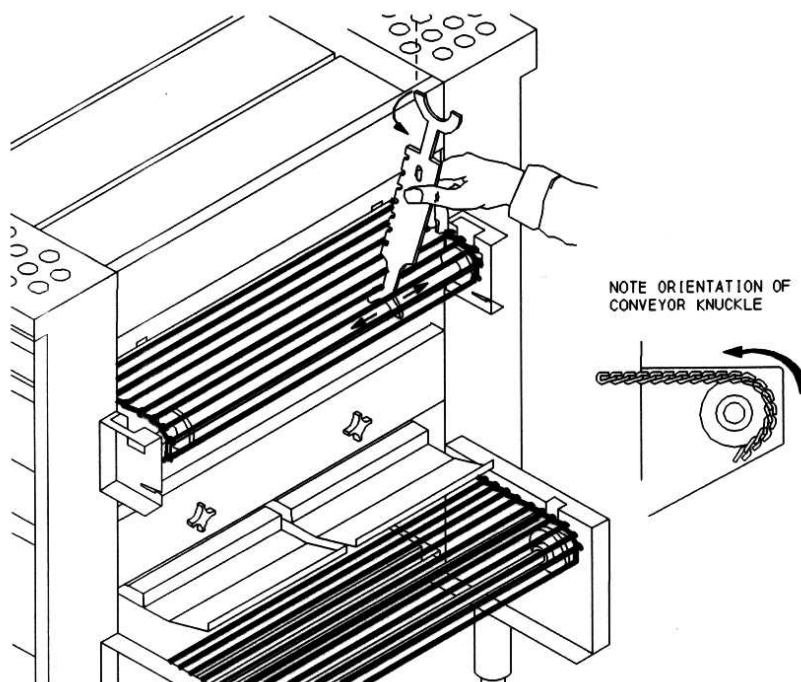
	Cooling Fan Plenum Asby	Figure 3, Item 10
*	Grease Catch Tray Asby	Figure 3, Item 5
	Grease Pan Asby	Figure 2,Item 9
*	Product Catch Pan Asby	Figure 2,Item 7
*	Product Catch Trays	Figure 2, Item 5
*†	Auto Loader Carriage	Figure 2, Item 1
	Entrance Hanging Cover	Figure 2, Item 3
	Hang On Shields (Entrance, Exit)	Figure 3, Items 4,6
	Loader Arm Cover	Figure 2,Item 4
	Lower Burner Shields (3)	Figure 3,Item 7
*	Meat Strippers	Figure 2,Item 6
	Shield Entrance, Lower Burner Asby	Figure 3, Item 8
*	Tunnel Covers (Entrance, Exit)	Figure 2 ,Items 2,8
	Tunnel Fillers (2 each)(1Entrance,1Exit)	Figure 3,Items 3,11
* <b>NOTE:</b> These items may be removed during the 30 minute cooling period.		
† <b>NOTE:</b> Clean items with a green scrub pad.		

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



- Using the conveyor only button on the control which turns the conveyor **ON** and leaves the heat **OFF**, brush the broiler conveyor and, as it cools, wipe with damp cloth.
- Scrape deposits from the axles with the axle scraping tool, furnished with each machine as shown below. **\*THIS IS IMPORTANT TO PREVENT GREASE FIRES AT REAR OF THE BROILER.**



## **Axle Scraper Part Number 100367**

The axle scraper provided with the broiler is a handy tool for cleaning the dirt and grime off of the axles. To insert, place end of scraper in between conveyor and turn scraper as shown in the illustration. Scrape the axle back and forth. One end of the scraper is made to scrape a  $\frac{3}{4}$ " diameter shaft. The other end of the scraper is made to scrape a 1  $\frac{1}{16}$ " diameter shaft.

- Remove grease and meat residue from any part of remaining broiler structure where visible. Use a damp cloth with detergent and a putty knife for best results.
- After cleaning all removable parts as noted, allow to dry and reassemble.

## **WEEKLY CLEANING PROCEDURES**

- Perform daily cleaning procedures.
- Inspect igniters for ash and debris buildup (Figure 9, Item 5).
- Using a small wire brush or sand paper, lightly clean sensor rod and inside of hood only. Use caution the sensor rod and glow plug will break easily!
- Blow loose debris from igniter area.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



5. If sensor rod or glow plug does break, the igniter must be replaced. Attempt to light manually, then call service agency.
6. Using a small wire brush and some pressure, brush clean the upper and lower flame runners (Figure 9, Items 2 and 3).
7. Make sure that when cleaning the small ports on the flame runners that all are cleared of any debris buildup.
8. Remove any loose debris from flame runner area.
9. Remove conveyor and soak in hot soapy water overnight. To remove conveyor, lift front axle up to produce slack in the conveyor and separate conveyor at the open link. Using the conveyor only button may be required to locate the open link. If necessary open link with chain pliers (part #500033) to separate conveyor. When replacing the conveyor, make certain the conveyor is installed properly. Make reference to the orientation of the conveyor links and the conveyor direction before reassembly. See Figure 11. PLACING CONVEYOR ON BACKWARD WILL CAUSE SEVERE BINDING PROBLEMS. CLOSE all open links with pliers to match other links.
10. Remove the Drive Shaft Assembly and clean. (See Figure 14)
11. Clean gas orifices:
  - a) Orifices are passageways directing gas flow into burners. Uneven gas flow or poor air to gas ratio is caused by dirty or damaged orifices.
  - b) Orifices are made of brass. Use special care in cleaning--don't gouge or make gas holes bigger.
  - c) To reach orifices, remove burners.
  - d) Use a chenille stem (similar to a pipe cleaner) or small orifice brush dipped in rubbing alcohol to clean orifices. Swab until clean; free of carbon build-up. Do not use drill bit; this will damage the orifices. Chenille stems are available in the craft section of your local department store or craft store.

## **MONTHLY CLEANING PROCEDURES**

1. Turn off broiler, wait 30 minutes and disconnect electricity.
2. Perform daily & weekly cleaning procedures.
3. Remove roller (drive) chain covers on each side of broiler at exit end. Clean any grease accumulations.

## **QUARTERLY CLEANING PROCEDURES & PREVENTIVE MAINTENANCE**

1. Perform daily, weekly, and monthly cleaning procedures.
2. Lubricate the roller (drive) chain with a few drops of any grade motor or machine oil.
3. Remove and inspect all motor brushes and replace if less than 1/4" is left.
4. **Do not** remove internal gas lines for cleaning.
5. Blow out all six (6) burners through the venturi opening with a low pressure air source.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



**CAUTION:** Do not drop burners or get wet the upper burners as this may add to premature burner failure.

6. Re-tension Conveyor. Refer to Figure 11 for instructions.
7. **INVENTORY THE SPARE PARTS KIT AND ORDER MISSING PARTS AS NEEDED. KEEP A COMPLETE SET OF PARTS ON HAND AT ALL TIMES.**

## **BIANNUAL PREVENTIVE MAINTENANCE**

1. Perform daily, weekly, monthly, and quarterly cleaning procedures.
2. Replace lower burner shields with new ones (see Figure 3 ) if excessive corrosion is evident or if they are cracked or broken.

## **ANNUAL PREVENTIVE MAINTENANCE**

1. Perform daily, weekly, monthly, quarterly and biannual cleaning procedures.
2. Replace upper burner reverberators (see Figure 3) if existing have burn through.
3. Replace lower burner shields (see Figure 3) if existing are cracked or broken.
4. Replace upper flame runner (see Figure 9). Included in Annual parts kit #149268.
5. Replace lower flame runner (see Figure 9). Included in Annual parts kit #149268.
6. Inspect upper burners and replace or rebuild if necessary.
7. Replace Conveyor Bearings. (see Figure 4). Included in Annual parts kit #149268.
8. Replace overdrive tube assembly (see Figure 4). Included in Annual parts kit #149268.
9. Replace upper and lower pilots (igniters). Included in Annual parts kit #149268.
10. Replace burner orifices and flame runner orifices. Included in Annual parts kit #149268.
11. Replace motor brushes in both motors. Included in Annual parts kit #149268.

## **SPARE PARTS KIT**

<b>PART #</b>	<b>DESCRIPTION</b>	<b>QUANTITY PER KIT</b>
135031	CIRCUIT BOARD (SPEED CONTROL)(713BG)	1
146200	CONVEYOR OPEN LINK 7.437" (713BG)	1
146199	CONVEYOR OPEN LINK 13.375" (713BG)	1
146198	CONVEYOR OPEN LINK 24" (CM24)	1
127359	GAS VALVE (LP)	1
502203	GAS VALVE MODULATING (LP)	1
502868	GAS VALVE (NATURAL)	1

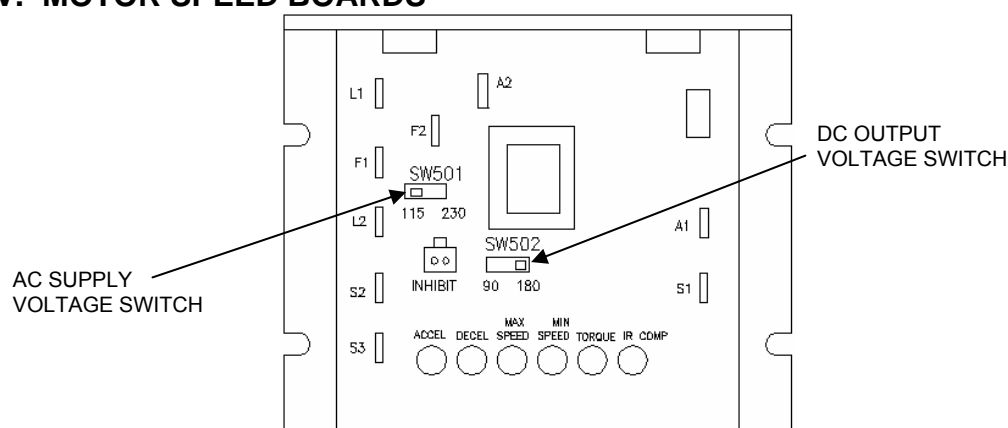
# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



PART #	DESCRIPTION	QUANTITY PER KIT
502193	GAS VALVE, MODULATING (NATURAL)	1
154116	IGNITER/SENSOR PILOT (LP)	1
154115	IGNITER/SENSOR PILOT (NATURAL)	1
500083	LINK – HALF (DRIVE CHAIN)	1
500092	LINK – MASTER (DRIVE CHAIN)	1
500940	MOTOR (DRIVE)	1
500033	PLIERS CHAIN	1
501991	PICK - UP	1
148496	THERMOCOUPLE BROILER W/FITTING	1
500277	TIE PLASTIC CABLE	5

## V. MOTOR SPEED BOARDS



It is necessary when installing replacement circuit boards, to check the settings of the AC input switches.

1. The AC supply voltage switch must be set at 115.
2. The DC output voltage switch must be set at 180.

## VI. TROUBLE SHOOTING

This section contains a list of possible problems with the broiler. **ALL ELECTRICAL TROUBLE SHOOTING INVOLVING ACCESS INTO THE MOTORS OR ELECTRICAL ENCLOSURES MUST BE PERFORMED BY A QUALIFIED ELECTRICIAN. All items marked with asterisks (\*) should be performed by qualified service personnel certified to perform service on gas fired appliances.**

1. **PROBLEM: BURNER BACKFIRES.** Flashback, blue flame at entrance to burner makes motor-boating sound like a blowtorch. **IMPORTANT: If burner backfires, turn it off. Continued operation will cause damage to the entire burner.**

### POSSIBLE CAUSE:

- A) Burner screen failure (hole) or burner gasket. **SOLUTION:** Replace burner.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



- \* B) Burner over-fired; manifold pressure too high. **SOLUTION:** Check and reset gas control regulator to give rating plate/label value for manifold pressure (shown under Performance Criteria on Page 5). Wait 5 minutes & relight. Flashback will not occur immediately unless a large opening in or around the burner screen is evident. Wait an hour after relighting to check that problem is solved. Figure 9 illustrates which regulator sets high and low gas pressures.
- C) Check to ensure all screws holding the burner screen in place are snug, if your burner has removable screens (see Figure 5).

2. **PROBLEM: FLAMES VISIBLE AT EXHAUST STACK OR IN CHAMBER.**  
POSSIBLE CAUSE:

- \* A) Low gas pressure. **SOLUTION:** Check and reset gas control regulator to give rating plate/label value for manifold pressure (shown under Performance Criteria on Page 5). Figure 9 illustrates which regulator sets high and low pressures.

3. **PROBLEM: PILOT FLAME GOES OUT** (STUDY FIGURES 6 AND 7 FOR PILOT OPERATION).  
NOTE: ATTEMPT TO LIGHT MANUALLY, THEN CALL SERVICE AGENCY

POSSIBLE CAUSE:

- A) Wires from pilot assembly loose. **SOLUTION:** Trace wires to where they plug into gas valve and check connection (see Figure 9).
- B) Wires from pilot assembly damaged/ burned. **SOLUTION:** Trace wires. If damaged/ burned, replace pilot. Check lower burners to make sure they are installed fully over orifice.
- \* C) Pilot assembly dirty or bent. **SOLUTION:** Check for bent pilot gas line and/or dislodge debris.
- \* D) Low gas pressure. **SOLUTION:** Increase gas pressure to broiler (see Figure 9).
- \* E) Pilot orifice clogged. **SOLUTION:** Dislodge debris or replace orifice.
- F) Grease Pan, cover and or shield not in place. **SOLUTION:** Make sure all are in place (see Figure 2&3).

4. **PROBLEM: BURNER WILL NOT LIGHT AT ALL.** NOTE: UPPER BURNERS WILL BE BRIGHT ORANGE WHEN BURNING PROPERLY.

POSSIBLE CAUSE: (IN ORDER MOST LIKELY TO LEAST LIKELY)

- A) Check that flame runner is fully lit. **SOLUTION:** If not, clean flame runner orifice or remove and clean flame runner.
- B) Lower burners dirty. **SOLUTION:** Check ports are not plugged, clean with wire brush.
- C) Lower burner shield bent/broken. **SOLUTION:** Replace shield.
- D) Orifice. **SOLUTION:** Check that orifice is not plugged. (If it is necessary to change the orifices, new ones must be ordered from the local parts distributor.)
- \* **INSTRUCTIONS MARKED WITH ASTERISKS SHOULD BE PERFORMED BY AUTHORIZED SERVICE PERSONNEL.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



- E) Hot Surface Ignition, pilot not lit. **SOLUTION:** Cycle On/Off button or replace igniter.
- F) Pilot. **SOLUTION:** Pilot must light and stay lit in order for burner to light. Check pilot problem list.
- \* G) Gas Solenoid. **SOLUTION:** Check that solenoid valve on main gas valve is working.
- \* H) Pilot Jumpers. **SOLUTION:** Check the pilots to make certain they are not plugged.

## 5. **PROBLEM: MAIN GAS VALVE(S) DOES NOT WORK.**

### POSSIBLE CAUSE:

- A) Manual On/off switch on the top of the gas valve is turned off. **SOLUTION:** Turn switch to on position.
- \* B) Failed igniter. **SOLUTION:** Replace igniter.
- \* C) Failed transformer. **SOLUTION:** Check for 120 Volts at the primary side of the transformer and 24 Volts on the secondary output. Replace transformer if necessary.
- D) Loose connection at gas valve wiring harness. **SOLUTION:** Check to be sure connector is securely plugged into the gas valve.
- \* E) Failed gas valve. **SOLUTION:** Replace valve and recaulk connectors and manual On/Off switch in On position.

## 6. **PROBLEM: CONVEYOR CHAIN WILL NOT MOVE.**

### POSSIBLE CAUSE:

- A) Check for object caught in conveyor, causing a jam. **SOLUTION:** Remove object.
- B) Check to see if motor shaft is moving. **SOLUTION:** Sprocket set screw needs to be tightened.
- C) Check 1.5 amp fuse on side of the control cabinet. **SOLUTION:** Turn broiler off, replace fuse, turn broiler on.
- D) Check 5 amp main power fuse. **SOLUTION:** Replace if blown.
- \* E) Connect motor control leads to an operating motor speed control board. **SOLUTION:** If motor runs, replace motor control board. If motor still does not run, replace motor.

## 7. **PROBLEM: CONVEYOR RUNS BUT SPEED IS CONSTANT**

### POSSIBLE CAUSE:

- \* A) Pickup bracket has loosened/Fallen off. **SOLUTION:** Secure brackets check pickup mounting ( See Figure 4.)
- \* **INSTRUCTIONS MARKED WITH ASTERISKS SHOULD BE PERFORMED BY AUTHORIZED SERVICE PERSONNEL.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



- B) Drive tube is binding with shaft. **SOLUTION:** Program Left side belt to 1:00 cook time and Right belt to 6:00 cook time. This may free grease build up.
- \* C) There are three parts to the motor system. They are the pick-up, the speed circuit board, and the motor. The parts are listed in the order in which they are most likely to cause a problem. **SOLUTION:** Using spare parts, replace one part at a time until the trouble spot is identified.

## 8. **PROBLEM: REPEATED MECHANICAL BINDING.**

### POSSIBLE CAUSE:

- A) Tension conveyor- See details in Figure 11.
- B) Check to see that chain is not on backward. **SOLUTION:** See proper chain installation in Figure 11.
- C) Inspect chain closely for bent or warped links that may be snagging and causing a binding condition. Also check that the chain links are not climbing out of the sprockets as the conveyor rotates. **SOLUTION:** Straighten or replace bad links. Adjust sprockets.
- D) Make sure the axle assembly is clean and free of grease and food residue to allow smooth movement of the conveyor. **SOLUTION:** Clean axle with axle scraper (see Page 15). Clean overdrive tube.
- E) Check the axle assembly to make certain all set collars, bearings, etc. are properly positioned and secure. **SOLUTION:** Reposition set collars, bearings, etc. Tighten set collar set screws.
- \* F) Disassemble conveyor axle assembly and check condition of bushings and bearings for excessive wear. **SOLUTION:** Replace if worn or damaged.
- G) Visually inspect the motor drive chain assembly for smooth rotation of chain. **SOLUTION:** Make certain there are no binding or worn components.
- H) Make sure conveyor is not catching on meat stripper. **SOLUTION:** Straighten bent stripper.

## 9. **PROBLEM: HAMBURGERS WILL NOT FALL CORRECTLY.**

### POSSIBLE CAUSE:

- A) Meat stripper is dirty. **SOLUTION:** Clean stripper. (Figure 2)
- \* **INSTRUCTIONS MARKED WITH ASTERISKS SHOULD BE PERFORMED BY AUTHORIZED SERVICE PERSONNEL.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



10. **PROBLEM: GROUND FAULT RECEPTACLES TRIP.**

POSSIBLE CAUSE:

- A) Water has seeped into cooling fans. **SOLUTION:** Turn off cooling fan reset switch located on back of control cabinet on lower right as viewed when facing the broiler load end. See Figure 1. It is a toggle switch with a soft rubber boot over the switch making it easy to feel. This will allow broiler to operate. After one hour, cooling fan reset switch must be turned on.
- B) Water has seeped into control cabinet. **SOLUTION:** Plug broiler into a non-ground fault receptacle using an extension cord. This will allow broiler to operate and dry out.

11. **PROBLEM: EXCESSIVE GREASE PAN FIRES.**

POSSIBLE CAUSE:

- A) Dirty grease pan. **SOLUTION:** Exchange grease pan with spare clean pan. (See Figure 3.)
- B) Cooling fan reset switch turned off. **SOLUTION:** Turn on cooling fan switch underneath broiler.

12. **PROBLEM: CONTINUOUS TICKING SOUND**

POSSIBLE CAUSE:

- A) An object (most likely an order ticket) has been sucked into cooling fan. **SOLUTION:** Shut off the fan reset switch located as described in #10. Reach under broiler and look for paper object. The fan air intake is closest to the back of the electrical cabinet and can be reached from under the broiler.

13. **PROBLEM: COOK TIMES HAVE HAD TO BE CHANGED BECAUSE BROILER TEMPERATURE HAS DECREASED OVER A PERIOD OF DAYS.**

POSSIBLE CAUSE:

- \* A) Low gas pressure. **SOLUTION:** Check gas pressure gauges and correct gas pressures to machine settings.
  - B) Hang on covers and burner shields not in place. **SOLUTION:** Install parts correctly.
  - C) Holes in the upper three (3) burner reverberators are obstructed. **SOLUTION:** Clean holes and reverberators.
  - D) Burner orifices clogged. **SOLUTION:** Clean the burner orifices using a chenille stem dipped in alcohol. Chenille stems are available in the craft section of your local department store or at your local craft store.
  - E) Air blowing into broiler chamber for A/C register or exhaust hood makeup air. **SOLUTION:** Redirect air flow away from broiler chamber.
- \* **INSTRUCTIONS MARKED WITH ASTERISKS SHOULD BE PERFORMED BY AUTHORIZED SERVICE PERSONNEL.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



- F) Lower burner ports are clogged. **SOLUTION:** Remove burners and clean ports using soft brush.
- G) No item above solves situation. **SOLUTION:** Record recovery times using control and contact Marshall Air Customer Service.

## 14. TROUBLE SHOOTING GUIDE FOR 6-RECIPE BUTTON CONTROLS

The following Error Messages are associated with the 6-Recipe Button controls:

### ERROR MESSAGE PROBLEM

### SOLUTION

#### LOW

Indicates temperature is below the set point by the programmed amount.

Parts Not In Place	Install parts correctly
Gas Valve Off	Check Burner Position
	Clean Orifices
	Clean Flame Runner
Low Gas Pressure	Check Gas Pressure
Pilot Burner Not Lit	Recycle Heat Switch
Dirty Orifices	Clean Orifices
Faculty Display Temperature	Check Thermocouples

#### HIGH

Indicates temperature is above the set point by the programmed amount.

Parts Not In Place	Install Parts Correctly
Set Point Set Too Low	Check Set Point
Gas Pressure Set Too High	Check Pressure
Modulating Valve Minimum Pressure Set Too High	Check Modulating Valve and Pressure
Faculty Display Temperature	Check Thermocouples

### TACH ERROR or HOT – TACH ERROR or OFF – TACH ERROR

Note: On the lower display window, the number **1** or **2** or **12** will be shown. **1** indicates a single conveyor problem, or a left conveyor problem on a dual conveyor broiler. **2** indicates a right conveyor problem.

When a problem occurs, the first message displayed is **TACH ERROR**, which almost immediately will cause the broiler to shut down and display **HOT – TACH ERROR**. After the cool down period, the broiler will turn off and display **OFF – TACH ERROR**.

Jammed Conveyor	Remove Items Preventing Conveyor From Moving
Failed Fuse	Replace Fuse
Loose Wire or Connector	Check wire connections
Loose Pick-up	Tighten Pick-Up
Damaged Pick-up	Replace Pick-Up
Failed Speed Control Circuit Board	Replace Circuit Board
Failed Motor	Replace Motor
Failed Speed Module	Replace Speed Module

**NOTE:** If the broiler has two conveyor belts, and you have a TACH ERROR on only one of the conveyors, as a temporary work around to keep the one working conveyor running you can use the following procedure:

Turn on the broiler using the ON/OFF key. The broiler will start, and you will get a TACH ERROR. The broiler

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



will go into the HOT mode. Press the ON/OFF key once and the tach error beep will stop, press the ON/OFF key again and the broiler will start the one conveyor that does not have a TACH ERROR. During this operation, the control will still display the TACH ERROR message, but the broiler will not shut down to the HOT mode.

This procedure will allow the store operator to continue in operation until a service agency technician can get to the store to fix the problem.

---

## HOT – PROBE ERROR or OFF – PROBE ERROR

Note: The number on the second line of the control display indicates the thermocouple number.

For electric broilers, **1** indicates the top heater thermocouple, and **2** indicates the bottom heater thermocouple.

For gas broilers, which have two thermocouples connected in parallel (which acts as one thermocouple to the control), the display will indicate **2**

When a problem occurs, the first message displayed is **HOT - PROBE ERROR**. After the cool down period, the broiler will turn off and display **OFF – PROBE ERROR**.

Loose Thermocouple  
Failed Thermocouple

Fix wiring connection  
Replace Thermocouple

Depending on the 6-Recipe Button Control factory setting, some electric broilers will default to 100 percent heater output to allow the broiler to continue to operate until the problem is fixed. In this case, the recipe cook time should be temporarily adjusted to achieve the desired cooked product using the 100 percent heat. A **PROBE ERROR** message will be displayed until the problem is fixed.

---

## HOT – EXTERNAL DC ERROR or OFF – EXTERNAL DC ERROR

Check Wiring and Connectors For Short  
Failed Pick-up  
Failed Speed Control Circuit Board  
Failed Speed Module  
Failed Gas Module  
Failed 6-Recipe Button Control

Repair Wiring  
Replace Pick-up  
Replace Circuit Board  
Replace Module  
Replace Module  
Replace 6-Recipe Button Control

---

## FOOD PROBE ERROR

Food Probe Not Connected  
Failed Food Probe

Plug in Food Probe  
Replace Food Probe

## CLEAR LOG

Log File almost full

Clear Food Probe Log File

## LOG FULL

Log File is full

Clear Food Probe Log File

## VII. INSTRUCTION SHEET CHARCat™ CATALYTIC CONVERTER INSTALLATION AND CLEANING

### PRE-INSTALLATION

The catalytic converter (catalyst) is packaged to minimize the risk of shipping damage. Immediately upon receipt, make certain to inspect the broiler for damage. **FILE ALL CLAIMS WITH THE FREIGHT CARRIER.**

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



## INSTALLATION

Prior to installation of a catalyst equipped conveyor broiler in an existing restaurant, your hood duct and fan system should be cleaned by a professional commercial cleaning service. Refer to Figure 12 and make certain that all parts related to the catalyst are properly installed.

## OPERATION

The catalyst is activated by the exhaust heat from the broiler. There are no extra burners to be added or electrical components to be connected in order for the catalyst to work. As long as all parts are properly installed and the broiler calibrated, the catalyst will operate normally. (See broiler owner's manual for broiler calibration.)

**CAUTION: DO NOT TOUCH THE CATALYST IMMEDIATELY AFTER BROILER SHUT DOWN. THE TEMPERATURE OF THE CATALYST IS IN EXCESS OF 500°F (260°C), NEVER PUT WATER ON CATALYST WHILE CATALYST IS HOT. USING WATER ON A HOT CATALYST WILL CAUSE SEVERE WARPING AND MATERIAL DAMAGE.**

**CAUTION: UNDER NO CIRCUMSTANCES SHOULD SOAP, DEGREASER, OVEN CLEANER OR ANY OTHER CLEANING AGENT BE USED ON THE CATALYST. CLEANERS WILL CAUSE SEVERE DAMAGE.**

**CAUTION: DO NOT RUN THE CATALYST THROUGH A DISHWASHER.**

## CLEANING

The catalyst washing procedure is a simple three-step process. The vast majority of the fatty acids deposited on the catalyst are water-soluble. Care must be taken to use only clean hot water. Soaps, detergents, bleaches and antioxidants all contain substances which are considered catalyst poisons. In other words, they will render the catalytic converter inoperable. Clean all foreign matter from the wash basin before starting the catalyst washing process. The process is as follows:

1. Partially fill a clean wash basin with about 4" of clean hot water (100-130°F). Set the converter module in the water so that it is completely covered. Let it soak for 15 minutes
2. Remove the module. Shake out the excess water. Drain and rinse the basin thoroughly; then repeat step 1.
3. Remove the module and rinse through the catalyst with a large volume of hot water. The typical restaurant rinse nozzle is ideal. Work the spray slowly over the entire surface of the catalyst. **DO NOT USE A HIGH PRESSURE HOSE. Shake the remaining water from the converter module and allow to dry as time permits. Reinstall on the broiler. The converter is now ready for normal operation.**
4. Rotating the square catalyst from front to back of the broiler when reinstalling the catalyst will extend the life of the catalyst. This means when it is placed on the broiler, the handles in front should now be on the back side of the broiler.

Frequency for the above procedure should follow your normal restaurant procedure for cleaning and sterilization of your food preparation and cooking surfaces but not less than once per week.

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



## CATALYST WARRANTY

The catalyst will perform perfectly for a minimum of two (2) years provided the cleaning instructions are followed. All warranty claims are the responsibility of Engelhard Corporation and subject to their inspection of the alleged defective catalyst.

### VIII. REPLACEMENT PARTS

When ordering parts, make sure to specify the machine model number, type of gas and serial number as shown by the label attached to the right side cover.

**WARNING: USE OF NON- MARSHALL APPROVED PARTS WILL VOID WARRANTY.**

PART #	DESCRIPTION	QUANTITY PER BROILER	FIGURE
149015	ARM, LOADER ASBY	1	10
150245	BEARING, SLEEVE	1	4
146194	BEARING, TEFLON EXIT	1	4
146193	BEARING,TEFLON EXIT	1	4
503148	BOOT, SWITCH LONG	1	SCHEMATIC
148549	BRUSH, MOTOR KIT (2 BRUSHES)	2	4
115665	BURNER, 24" COMPLETE	OPTIONAL	5
127000	BURNER, 24" DISPOSABLE G5B (COMES WITH NEW BROILERS FOR THE TOP BURNERS ONLY)	3	3
146936	BURNER,LOWER TUBULAR	3	3
152110	BURNER,LOWER TUBULAR LP	3	3
146260	CAP, OVERDRIVE SHAFT	1	4
145530	CARRIAGE, AUTO LOADER ASBY	1	2,10
148022	CATALYST CHARCAT	1	12
500035	CHAIN, ROLLER #35 (3.55 FT)	2	4
135031	CIRCUIT BOARD SET FOR 120V	2	SCHEMATIC
150432	COLLAR, BEARING LOCK	1	4
150433	COLLAR, IDLER 1.750" OD, .755" ID	2	4
500117	COLLAR, SET 0.505"ID X 0.875" OD	2	10
145871	CONTROL, 6 BUTTON HORIZONTAL	1	SCHEMATIC
145690	CONVEYOR, 6" MESH	1	10
145689	CONVEYOR, 12" MESH	1	10
503560	CONV BELT, 13.75 " ROD , 7GA. (6FT)	1	11
503561	CONV BELT, 7.437" ROD, 7GA. (6FT)	1	11
147520	COOLING FAN PLENUM ASBY (DB9L)(DB9)	1	3
149030	COOLING FAN PLENUM ASBY (DB9R)	1	3
502411	COUPLING, BRASS ¼ COMP X 1/8	1	9, 13
146425	COVER, ENTRANCE HANGING	1	2
146432	COVER, LH SIDE ASBY (DB9L)(DB9)	1	2
146908	COVER, LOADER ARM	1	2
145752	(S/N 0605B03427, 0605B03428 ONLY)		
146431	COVER, MANIFOLD SIDE ASBY (DB9L)(DB9)	1	2
149039	COVER MANIFOLD SIDE ASBY (DB9R)	1	2
146136	COVER,TUNNEL	2	2

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



PART #	DESCRIPTION	QUANTITY PER BROILER	FIGURE
149040	COVER RH SIDE ASBY (DB9R)	1	2
116084	CROSS TUBE, .5" DIA X 24.875"	1	10
146650	DIVERTER, AIR ASBY	1	3
150399	DRIVE ASBY, 713BG COMPLETE SHAFT, TUBE, BEARINGS, SPROCKETS	1	NOT SHOWN
502413	ELBOW, BRASS ¼ COMP. X 1/8 FTP	2	9, 13
148013	ENTRANCE TUNNEL COVER ASBY	1	12
148017	EXIT TUNNEL COVER ASBY	1	12
504059	FAN, COOLING	3	SCHEMATIC
146050	FILLER,TUNNEL,ENTRANCE	1	3
146101	FILLER, TUNNEL ,EXIT	1	3
146403	FLAME RUNNER, LOWER BURNER ASBY	1	9, 13
146401	FLAME RUNNER, UPPER BURNERS ASBY	1	9, 13
148006	FRAME ASBY, CATALYST	1	12
501139	FUSE 0.5 A	1	SCHEMATIC
500061	FUSE 1.5A	2	SCHEMATIC
502739	FUSE 5A	1	SCHEMATIC
502631	GAS FLEX- TUBE, 5/8" X 12"	1	9, 13
144321	GEAR, 28 TOOTH 20DP IDLER	2	10
500070	GUAGE, GAS 0-15 IWC ¼" MPT	2	9, 13
146133	GUARD, MOTOR CHAIN	1	2
146134	GUARD, MOTOR CHAIN	1	2
145751	IDLER, ASBY	2	10
145698	IDLER, GEAR/ SPROCKET ASBY	2	10
154116	IGNITER ASBY LP	2	9, 13 SCHEMATIC
154115	IGNITER ASBY NAT	2	9, 13 SCHEMATIC
149268	KIT,ANNUAL PARTS REPLACEMENT	1	Not Shown
124630	KIT, BURNER SCREEN TO REBUILD BURNER	OPTIONAL	5
151071	KIT, GEAR AND WASHER	1	10
151072	KIT, IDLER AND BEARING	1	10
151070	KIT, MESH BELT SPROCKET	1	10
150048	KIT, SPACER 1.250" OD X .750" & .500" ID	1	10
146200	LINK OPEN, CONVEYOR, 7.437"	1	11
146199	LINK OPEN, CONVEYOR, 13.375"	1	11
500083	LINK, HALF	2	4
500092	LINK, MASTER	2	4
148034	LOWER MANIFOLD ASBY- GUAGE PIPING	1	9
146022	MANIFOLD, LOWER BURNER	1	13
146928	MEAT STRIPPER ASBY 7.437"	1	2
146929	MEAT STRIPPER ASBY 13.375"	1	2
503980	MODULE CONTROL INTERFACE(FOR SPEED)	1	SCHEMATIC
503984	MODULE CONTROL INTERFACE, GAS	1	SCHEMATIC
500940	MOTOR, 1/50 HP, 90V DC, 9RPM 40IN-LB	2	4
131398	MOUNT, MOTOR PICK-UP	2	4
504073	ORIFICE, #38 CAP TYPE NAT	3	9, 13

# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™



PART #	DESCRIPTION	QUANTITY PER BROILER	FIGURE
500104	ORIFICE, #53 CAP TYPE LP	3	9, 13
502867	ORIFICE, BURNER #51 BUTTON, PLUG TYPE NAT	3	9, 13
502863	ORIFICE, BURNER #56 BUTTON LP	3	9, 13
146945	ORIFICE, FLAME RUNNER #73 NAT	1	9, 13
502486	ORIFICE, FLAMERUNNER #66 NAT	1	9, 13
500926	ORIFICE, FLAME RUNNER #77 LP	1	9, 13
503972	OVERLAY (SEE SCHEMATIC FOR CONTROL PART)	1	8
145762	PAN, PRODUCT CATCH ASBY	1	2
501991	PICK-UP, MOTOR SPEED CONTROL	2	4, SCHEMATIC
500495	PLUG, BLK1/8	1	9, 13
501503	SCR: 1/4-20X .500"(M) TRS PH S	1	4
501427	SCR: 5/16-18X .750"(M)HEX P	2	10
501506	SCR: 1/4-20 X.500" (M) THB P	4	2
146109	SCREEN, REVERBARATOR Kit of 3	1	3
128489	SET COLLAR ASBY .755" DIA	4	10
145523	SHAFT, BROILER IDLER	1	10
146257	SHAFT, DRIVE .750"X 29.295"	1	4
146253	SHIELD ENTRANCE ,LOWER BURNER ASBY	1	3
146110	SHIELD, ENTRANCE HANGING	1	3
146421	SHIELD, GAS VALVE	1	9
146943	SHIELD, GAS VALVE	1	13
146150	SHIELD, LOWER BURNER KIT OF 3	1	3
146111	SHIELD, EXIT HANGING	1	3
146422	SHIELD, GAS GUAGE	1	9
135474	SPROCKET 3524 X 1.063', 1/4"-20 SET SCR	1	4
134825	SPROCKET ASBY, .755" DIA	1	4
129210	SPROCKET, 3524X .755", 1/4" – 20 SET SCR	1	4
500040	SPROCKET, 3510 X .500'	2	4
501864	SWITCH EMERGENCY STOP	1	SCHEMATIC
500130	SWITCH FAN RESET	1	SCHEMATIC
504130	THERMOCOUPLE LEAD, TYPE K	2	SCHEMATIC
502579	TIMER	1	SCHEMATIC
148496	THERMOCOUPLE, TYPE K-4.5" LG UNGROUNDED W/FITTING (FOR S/N 03495 BEFORE SEND THIS # AND #504130)	2	9, 13 SCHEMATIC
501747	TRANSFORMER , 40VA	4	SCHEMATIC
148028	TRAY, GREASE CATCH ASBY	1	3
145763	TRAY, PRODUCT CATCH 7.437"	1	2
148043	TRAY, PRODUCT CATCH 13.375"	1	2
146259	TUBE, OVER DRIVE ASBY	1	4
127359	VALVE, GAS 1/2" MAIN LP	2	9, 13
502868	VALVE, GAS 1/2" MAIN NAT	2	9, 13
502203	VALVE, GAS 1/2" MODULATING LP	1	9, 13
502193	VALVE, GAS 1/2" MODULATING NAT	1	9, 13

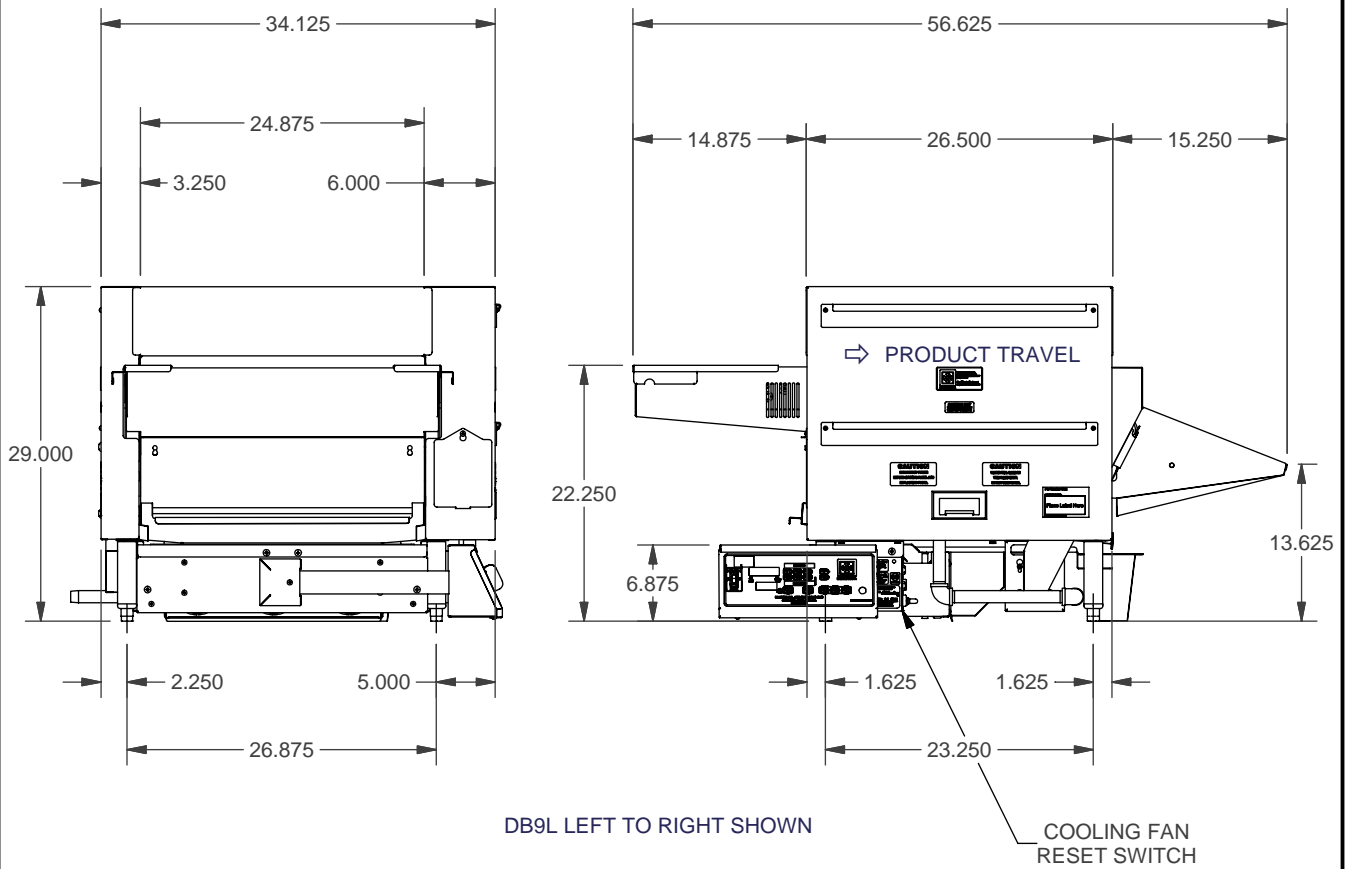
# OWNER'S MANUAL

MODEL 713BG(DB9L,DB9R)/2424G (DB9A) AUTOBROIL™

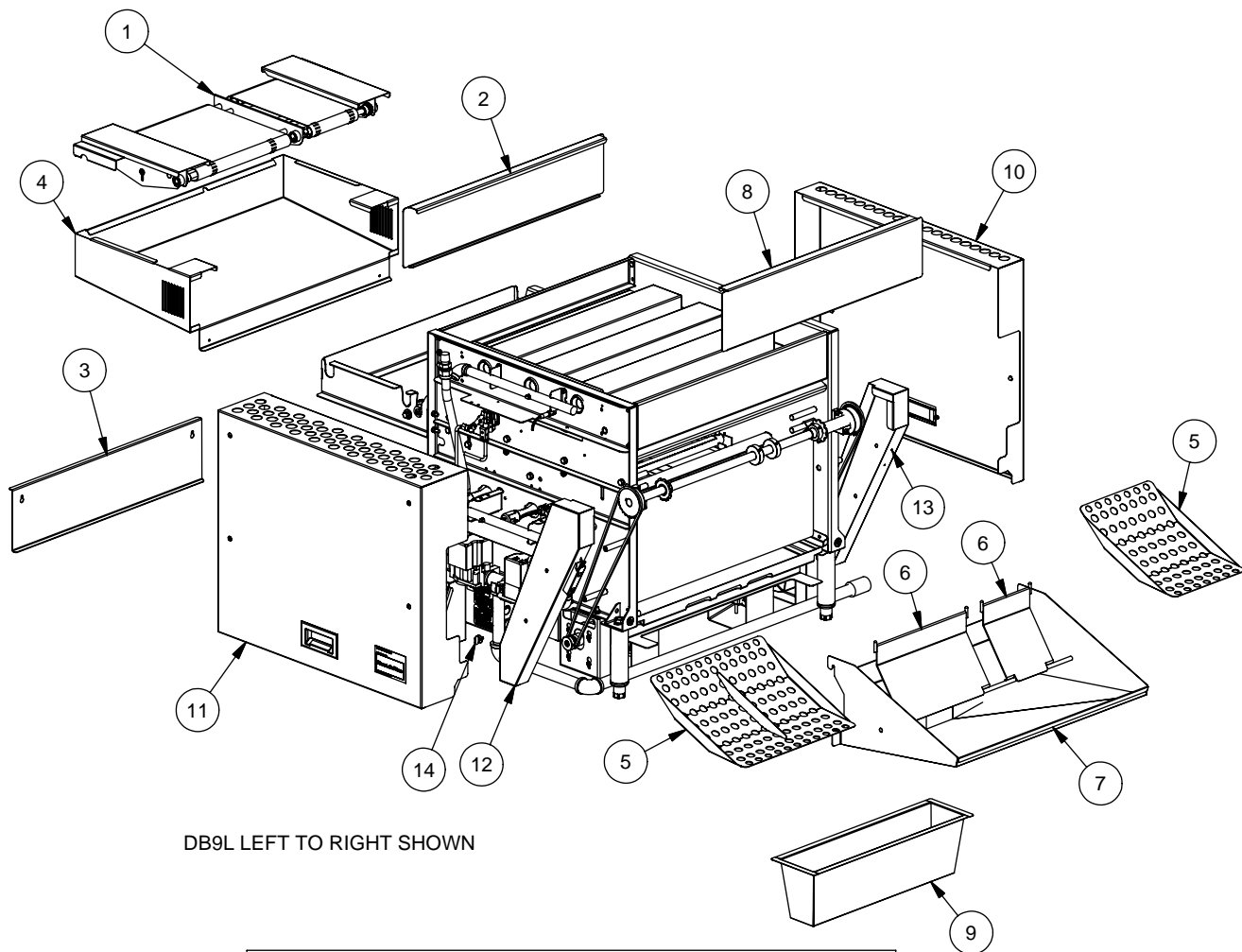


---

<b>PART #</b>	<b>DESCRIPTION</b>	<b>QUANTITY PER BROILER</b>	<b>FIGURE</b>
<a href="#">118537</a>	VENTURI MANIFOLD ASBY	1	9, 13
128320	WASHER, 1.000"OD X 0.765 " ID	1	4
<a href="#">501556</a>	WASHER, LOCK 5/16 PLATED STL	2	10
<a href="#">503770</a>	WASHER, PTFE	1	4
127728	WASHER, 1.25"ODX 1.070" ID	1	4



DIMENSIONAL DRAWING  
FIGURE 1

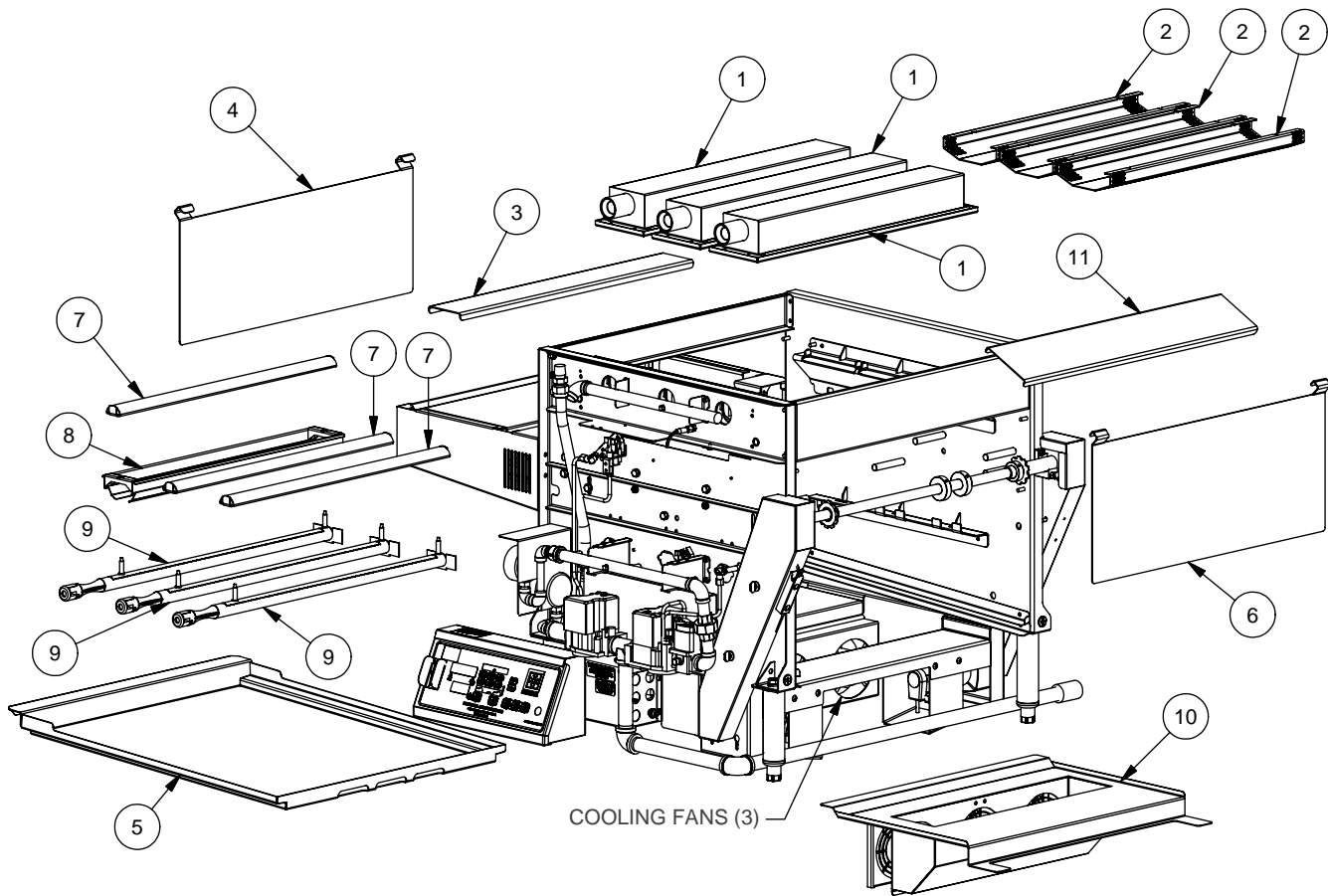


DB9L LEFT TO RIGHT SHOWN

Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	145530	AUTOLOADER CARRIAGE ASBY	1
2	146136	COVER, TUNNEL	1
3	146425	COVER, ENTRANCE HANGING	1
4	146908	COVER, LOADER ARM	1
	145752	(S/N 0605B03427, 0605B03428 ONLY)	
5	145763	TRAY, PRODUCT CATCH 7.437"	1
	148043	TRAY, PRODUCT CATCH 13.375"	1
6	146928	MEAT STRIPPER ASBY 7.437"	1
	146929	MEAT STRIPPER ASBY 13.375"	1
7	145762	PAN, PRODUCT CATCH ASBY	1
8	146136	COVER, TUNNEL	1
9	148041	GREASE PAN ASBY	1
10	146432	COVER, LH SIDE ASBY(DB9/DB9L)	1
	149040	COVER, RH SIDE ASBY(DB9R)	1
11	146431	COVER, MANIFOLD SIDE ASBY(DB9/DB9L)	1
	149039	COVER, MANIFOLD SIDE ASBY(DB9R)	1
12	146133	GUARD, MOTOR CHAIN	1
13	146134	GUARD, MOTOR CHAIN	1
14	501506	SCR:1/4-20 X .500" (M) THB P	4

## EXTERNAL REMOVABLE PARTS

# FIGURE 2

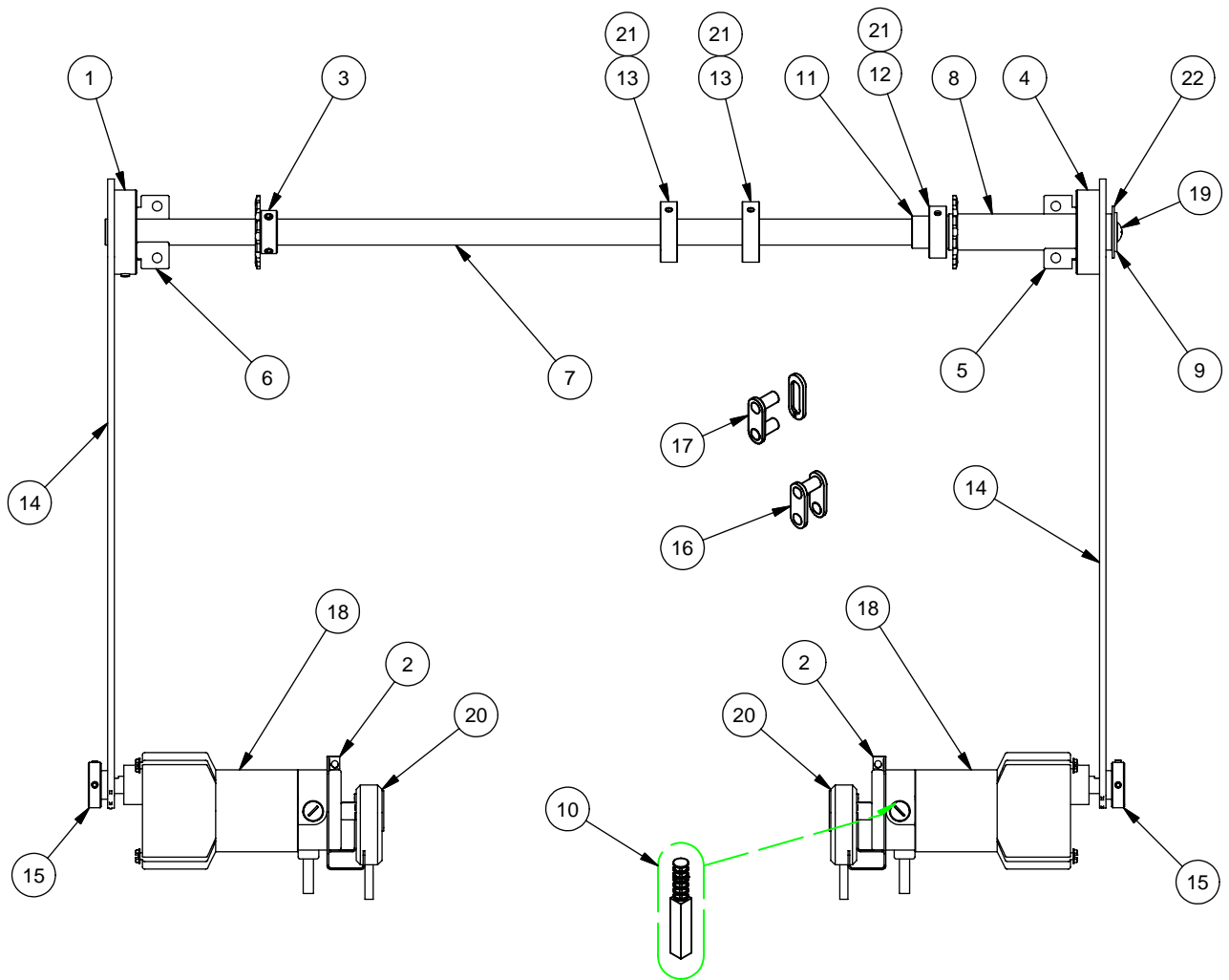


DB9L LEFT TO RIGHT SHOWN

Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	127000	BURNER, 24" DISPOSABLE G5B	3
2	146109	KIT, REVERBERATOR SCREEN	1
3	146050	FILLER, TUNNEL, ENTRANCE	1
4	146110	SHIELD, ENTRANCE HANGING	1
5	148028	TRAY, GREASE CATCH	1
6	146111	SHIELD, EXIT HANGING	1
7	148543	SHIELD, LOWER BURNER KIT OF 3	1
8	146253	SHIELD, ENTRANCE, LOWER BURNER ASBY	1
9	146936	BURNER, LOWER TUBULAR	3
	152110	BURNER, LOWER TUBULAR LP	3
10	147520	COOLING FAN PLENUM ASBY(DB9/DB9L)	1
	149030	COOLING FAN PLENUM ASBY(DB9R)	1
11	146101	FILLER, TUNNEL, EXIT	1

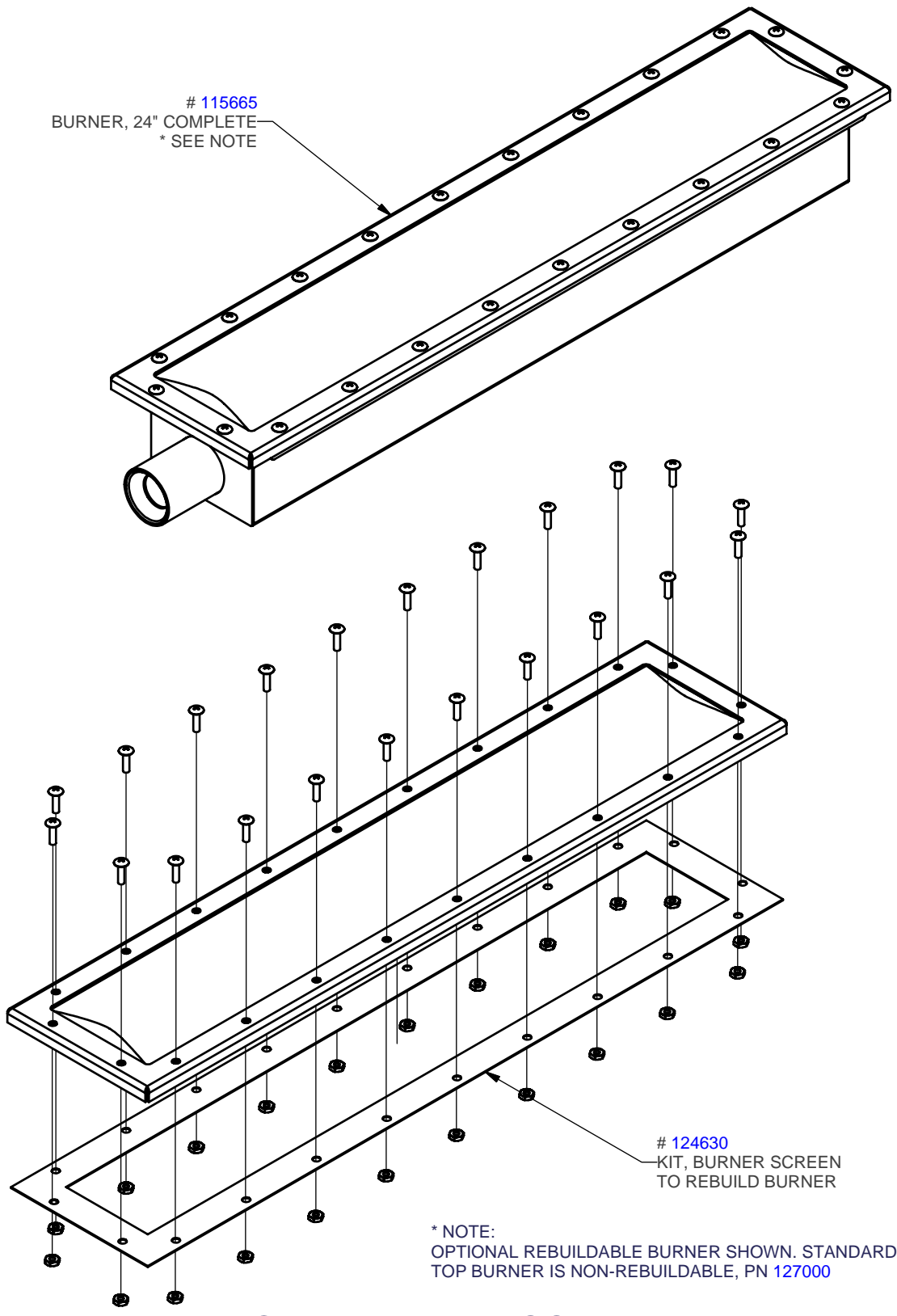
## INTERNAL REMOVABLE PARTS

# FIGURE 3



Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	129210	SPROCKET, 3524 X .750", 1/4"-20 SET SCR	1
2	131398	MOUNT, MOTOR PICK-UP	2
3	134825	SPROCKET ASBY, 0.755" ID	1
4	135474	SPROCKET, 3524 X 1.063", 1/4"-20 SET SCR	1
5	146193	BEARING, TEFLON EXIT	1
6	146194	BEARING, TEFLON EXIT	1
7	146257	SHAFT, DRIVE .750" X 29.295"	1
8	146259	TUBE, OVERDRIVE ASBY	1
9	146260	CAP, OVERDRIVE SHAFT	1
10	148549	BRUSH, MOTOR KIT (2 BRUSHES)	2
11	150245	BEARING, SLEEVE	1
12	150432	COLLAR, BEARING LOCK	1
13	150433	COLLAR, IDLER 1.750 O.D., .755 I.D.	2
14	500035	CHAIN, ROLLER #35 (3.55 FT)	2
15	500040	SPROCKET, 3510 X .500"	2
16	500083	LINK, HALF	2
17	500092	LINK, MASTER	2
18	500940	MOTOR, 1/50 HP, 90V DC, 9RPM 40IN-LB	2
19	501503	SCR: 1/4 -20 X .500"(M)TRS PH S	1
20	501991	PICK-UP, MOTOR SPEED CONTROL	2
21	502995	SCR:1/4 -20 X .375"(C)SET AL	4
22	503770	WASHER, PTFE	1

**DRIVE ASSEMBLY**  
**FIGURE 4**



# 115665  
 BURNER, 24" COMPLETE  
 \* SEE NOTE

# 124630  
 KIT, BURNER SCREEN  
 TO REBUILD BURNER

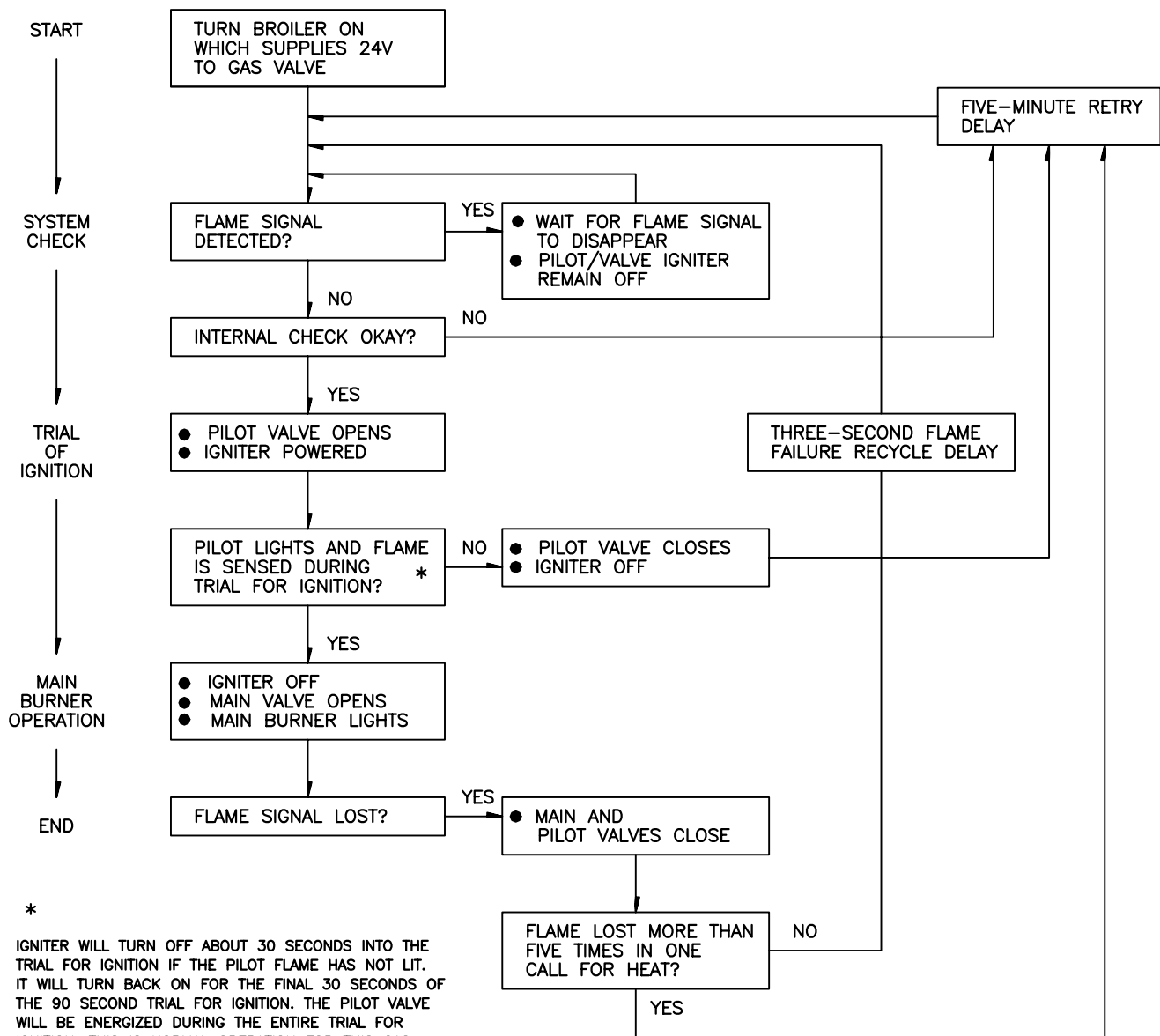
\* NOTE:  
 OPTIONAL REBUILDABLE BURNER SHOWN. STANDARD  
 TOP BURNER IS NON-REBUILDABLE, PN 127000

TOP BURNER ASSEMBLY

FIGURE 5

## SEQUENCE OF OPERATION

THE HOT SURFACE PILOT IGNITION SYSTEM USES BOTH PROVEN HOT SURFACE IGNITION (HSI) TECHNOLOGY AND FLAME RECTIFICATION TECHNOLOGY TO ACHIEVE A NEW LEVEL OF SAFETY IN GAS BURNER CONTROL. THE CONCEPT OF A PROVEN HOT SURFACE IGNITER HAS BEEN USED FOR YEARS IN GAS RANGES AND CLOTHES DRYERS; FLAME RECTIFICATION IS THE STANDARD FLAME PROVING METHOD IN DOMESTIC WARM AIR FURNACES AND BROILERS. IN THE SV9501 SYSTEM, A PROVEN HOT SURFACE IGNITER IS USED TO LIGHT A SMALL PILOT, NOT THE MAIN BURNER AS IN A DOMESTIC OVEN. IF THE HSI IS MISSING OR BROKEN, THE PILOT VALVE WILL STILL OPEN DURING THE 90 SECOND IGNITION TRIAL WHICH ALLOWS LIGHTING THE PILOT WITH A MATCH. WHEN, THROUGH FLAME RECTIFICATION, THE FLAME ROD SENSES PILOT FLAME, THE MAIN VALVE OPENS AND THE PILOT LIGHTS THE MAIN BURNER. IF THE PILOT IS NOT PROVED, THE MAIN GAS VALVE WILL NOT OPEN.



\*  
IGNITER WILL TURN OFF ABOUT 30 SECONDS INTO THE TRIAL FOR IGNITION IF THE PILOT FLAME HAS NOT LIT. IT WILL TURN BACK ON FOR THE FINAL 30 SECONDS OF THE 90 SECOND TRIAL FOR IGNITION. THE PILOT VALVE WILL BE ENERGIZED DURING THE ENTIRE TRIAL FOR IGNITION. THIS IS NORMAL OPERATION FOR THIS GAS IGNITION SYSTEM. THIS ALLOWS FOR THE PILOT TO BE LIT WITH A MATCH DURING THE IGNITION TRIAL IN THE EVENT THE HSI IS BROKEN.

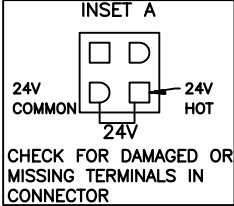
## HOT SURFACE (HSI) PILOT SYSTEM

# FIGURE 6

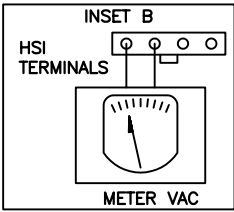
- TURN OFF GAS SUPPLY
- ASSURE SAFETY VALVE SWITCH IS IN ON POSITION
- DISCONNECT SYSTEM CONTROL HARNESS
- TURN THE BROILER ON.

CHECK FOR PROPER VOLTAGE AT CONTROL HARNESS (SEE INSET A). VOLTAGE SHOULD BE 24V BETWEEN 24V COMMON AND 24V HOT.

- NO
- CHECK:
- LINE VOLTAGE POWER
  - LOW VOLTAGE TRANSFORMER
  - WIRING
  - POWER TO HEAT SWITCH



CHECK FOR DAMAGED OR MISSING TERMINALS IN CONNECTOR



METER VAC

YES

PLUG HARNESS INTO SAFETY VALVE CONTROL WAIT FOR INTERNAL CHECK DELAY

IGNITER WARMS UP AND GLOWS RED

NO

UNPLUG PILOT BURNER CABLE, MEASURE VOLTAGE AT HSI ELEMENT OUTPUT (SEE INSERT B) 24V NOMINAL

NO

REPLACE SAFETY VALVE CONTROL

NOTE: IGNITER WILL CYCLE OFF AND BACK ON ONCE DURING THE 90 SECOND IGNITION TRIAL

YES

REPLACE IGNITER/FLAME ROD ASSEMBLY

RECONNECT PILOT BURNER CABLE

YES

\*TURN ON GAS SUPPLY  
\*PILOT BURNER LIGHTS

NO

CHECK THAT PILOT GAS IS FLOWING

NO

REPLACE SAFETY VALVE CONTROL

YES

MEASURE VOLTAGE BETWEEN 24V HOT AND 24V COMMON LEADS TO SAFETY VALVE CONTROL. MUST MEASURE AT LEAST 19.5VAC WITH IGNITER POWERED (SEE INSET A). THIS CHECK MUST BE DONE WITH THE SAFETY VALVE CONTROL CONNECTED AND IGNITER POWERED.

NO

CHECK TRANSFORMER AND LINE VOLT SUPPLY

YES

REPLACE IGNITER/FLAME ROD ASSEMBLY

YES

MAIN VALVE OPENS AND MAIN BURNERS LIGHT

- NO
- CHECK THAT PILOT FLAME MAKES GOOD CONTACT WITH PILOT BURNER FLAME RUNNER
  - CHECK FOR GOOD ELECTRICAL CONNECTION THROUGH THE PILOT TUBING
  - IF BOTH OF THE ABOVE ARE GOOD, REPLACE IGNITER/FLAME ROD ASSEMBLY
  - BURNER ORIFICES ARE PLUGGED

YES

SYSTEM IS OKAY

MAIN BURNERS LIGHT

NO

REPLACE SAFETY VALVE CONTROL

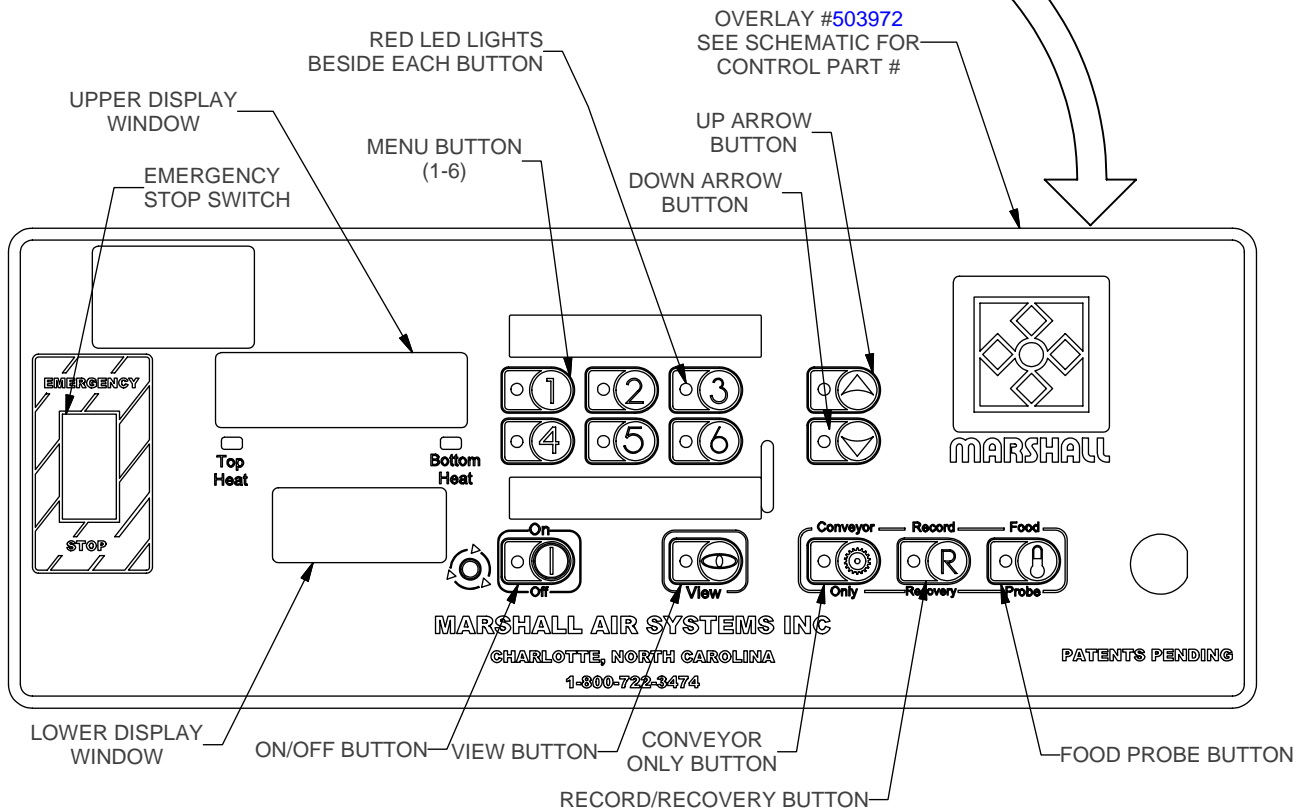
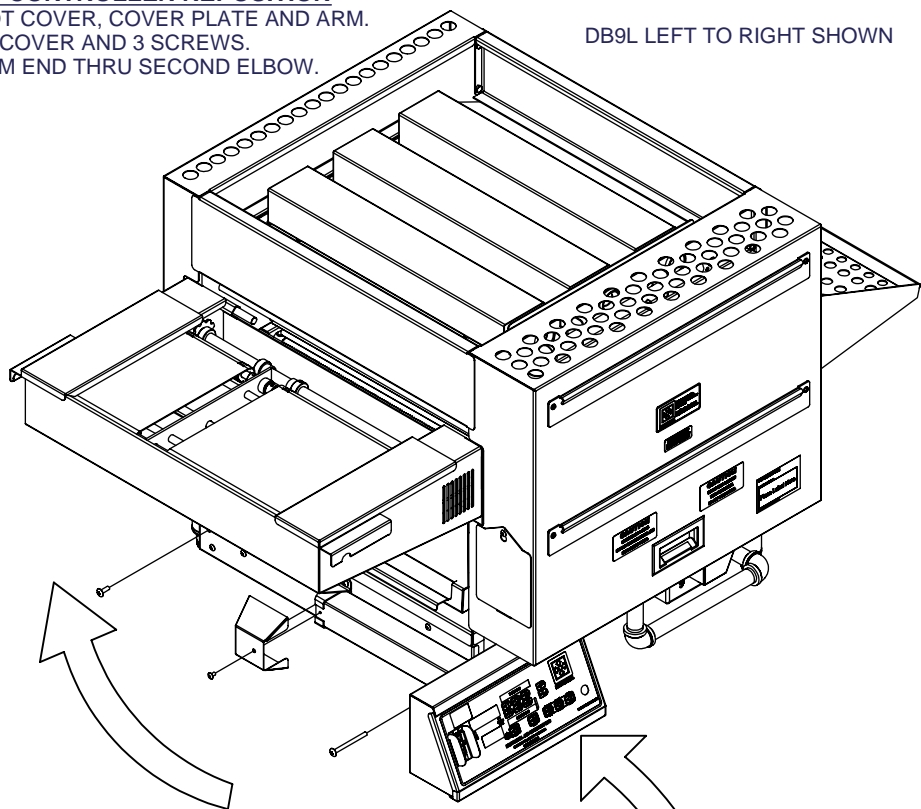
# HOT SURFACE (HSI) PILOT SYSTEM

## FIGURE 7

**DIRECTIONS FOR RIGHT TO LEFT CONTROLLER REPOSITION**

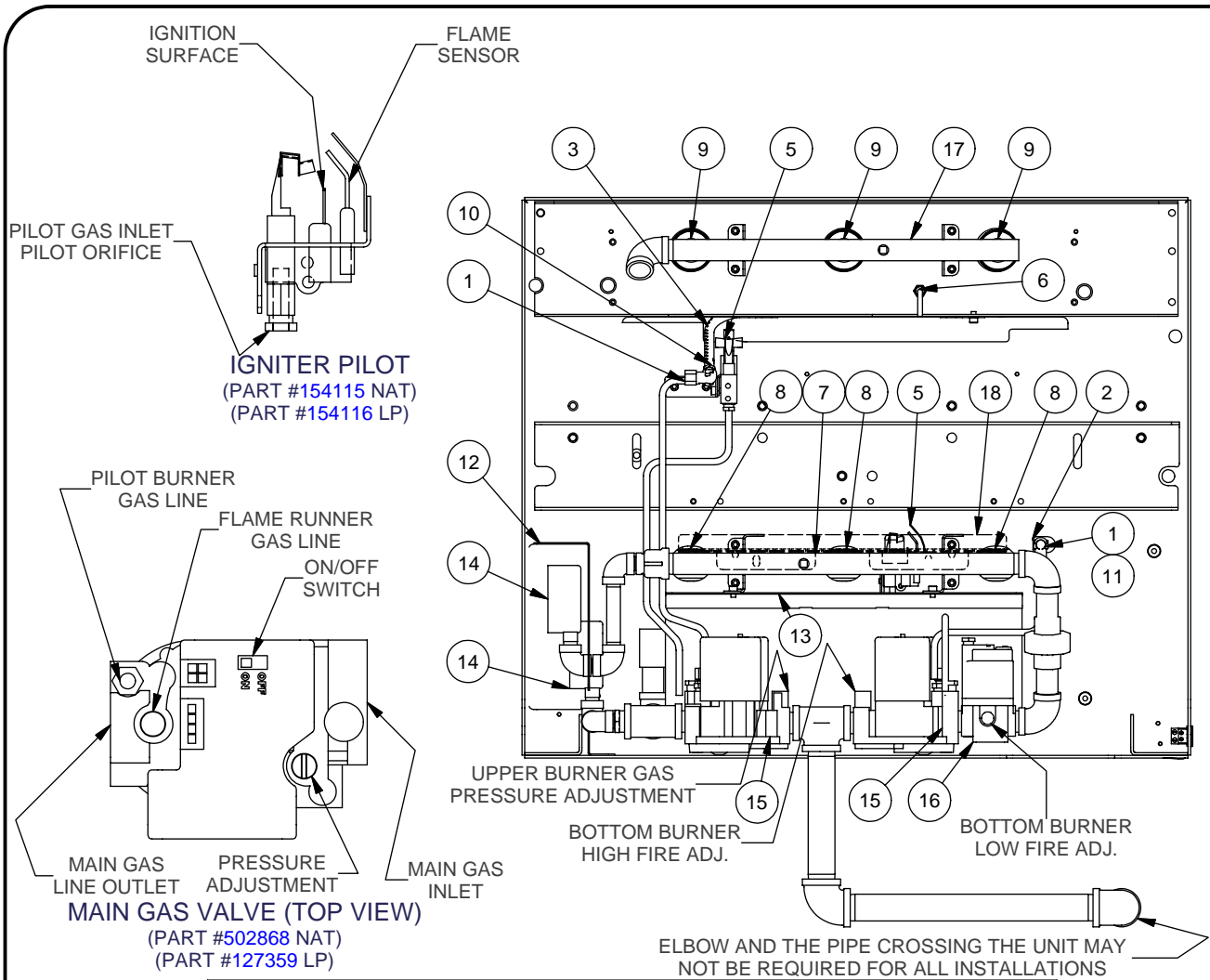
1. REMOVE 3 SCREWS HOLDING PIVOT COVER, COVER PLATE AND ARM.
2. ROTATE ARM TO LEFT, REINSTALL COVER AND 3 SCREWS.
3. REMOVE AND DICARD PIPING FROM END THRU SECOND ELBOW.

DB9L LEFT TO RIGHT SHOWN



**6-BUTTON CONTROL USER INTERFACE**

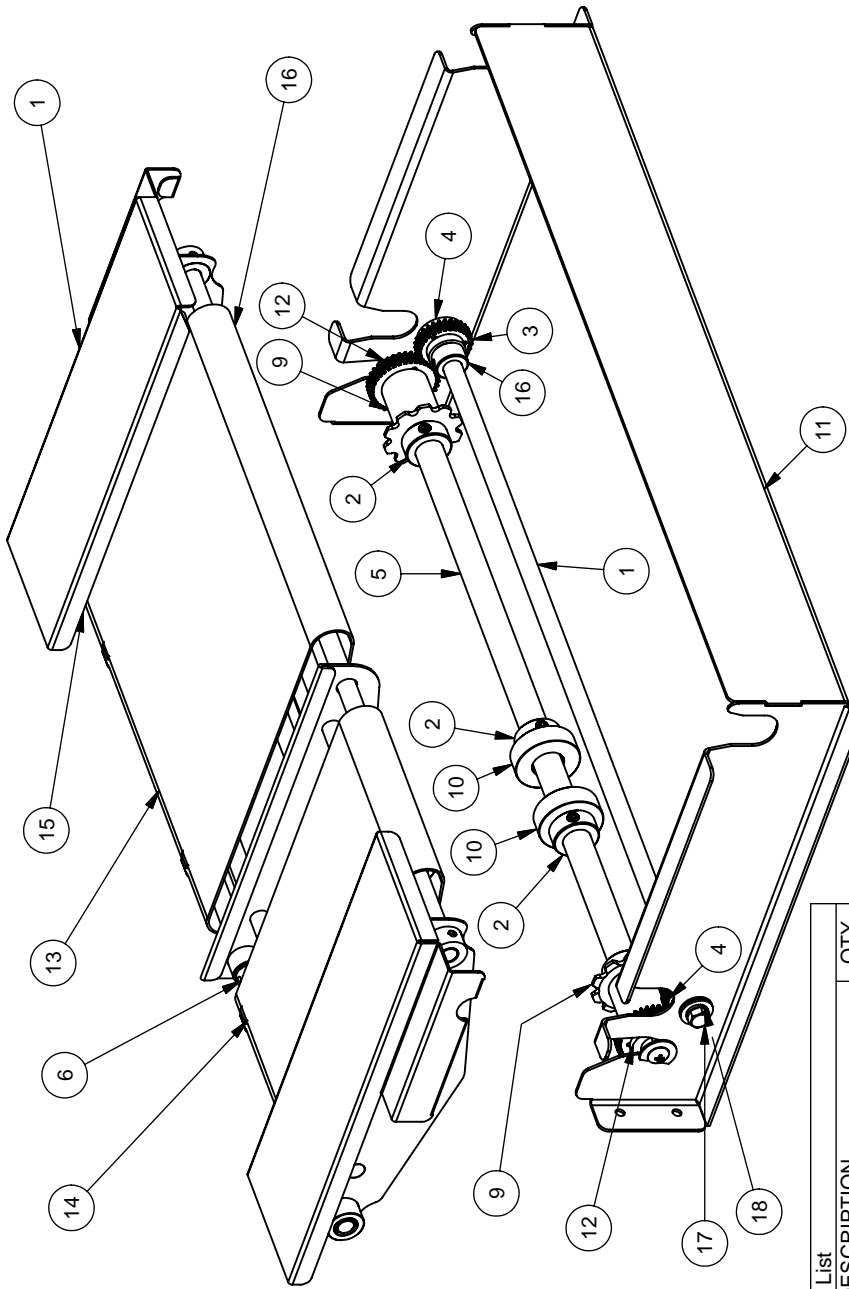
**FIGURE 8**



Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	502413	ELBOW, BRASS 90 DEG 1/4 COMP. X 1/8 FTP	2
2	146403	FLAME RUNNER ASBY, LOWER BURNER	1
3	146401	FLAME RUNNER ASBY, UPPER BURNERS	1
4	502631	GAS FLEX-TUBE, 5/8" X 12"	1
5	154115	IGNITER, ASBY NAT	2
	154116	IGNITER ASBY LP	2
6	148496	KIT, THERMOCOUPLE (SEE REPLACEMENT PARTS LIST FOR IMPORTANT S/N INFORMATION.	2
7	148034	LOWER MANIFOLD ASBY	1
8	504073	ORIFICE, #38 CAP TYPE NAT	3
	500104	ORIFICE, #53 CAP TYPE LP	3
9	502867	ORIFICE, BURNER #51 BUTTON, PLUG TYPE NAT	3
	502863	ORIFICE, BURNER #56 BUTTON PLUG TYPE LP	3
10	502486	ORIFICE, FLAME RUNNER #66 NAT	1
	146945	ORIFICE, FLAME RUNNER #73 LP	1
11	146945	ORIFICE, FLAME RUNNER #73 NAT & LP	1
12	146422	SHIELD, GAS GAUGE	1
13	146421	SHIELD, GAS VALVE	1
14	500070	GUAGE, GAS 0-15 IWC 1/4"MPT	2
15	502868	VALVE, GAS 1/2" MAIN NAT	2
	127359	VALVE, GAS 1/2" MAIN LP	2
16	502193	VALVE, GAS 1/2" MODULATING NAT	1
	502203	VALVE, GAS 1/2" MODULATING LP	1
17	118537	VENTURI MANIFOLD ASBY	1
18	149897	GUARD, FLAME RUNNER	1

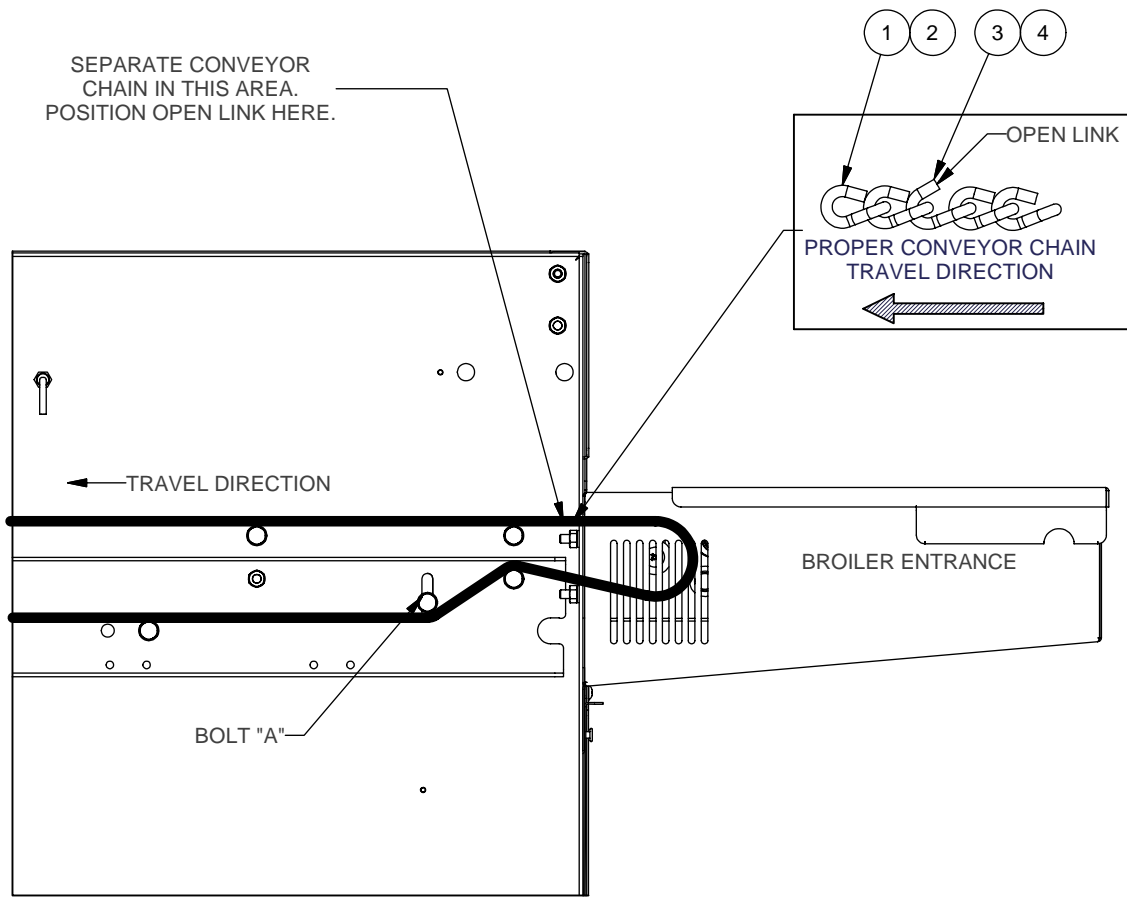
## GAS DISTRIBUTION DB9L (LEFT TO RIGHT)

# FIGURE 9



LOADER ASSEMBLY  
FIGURE 10

Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	116084	CROSSTUBE, .5" DIA. X 24.875"	1
2	128489	SET COLLAR ASBY .755" DIA	4
3	144321	ASBY, 28 TOOTH 20DP GEAR	2
4	144345	SPACER, 1.250 OD X .500 ID X .188 THK	2
5	145523	SHAFT, BROILER IDLER	1
6	145530	CARRIAGE, LOADER ASBY	1
7	145689	CONVEYOR, 12" MESH	1
8	145690	CONVEYOR, 6" MESH	1
9	145698	IDLER GEAR/SPROCKET ASBY	2
10	145751	IDLER ASBY	2
11	149015	ASBY, LOADER ARM	1
12	150048	KIT, SPACER 1.250"OD .750" & .500" ID ( 2 EACH)	1
13	151070	KIT, MESH BELT SPROCKET	1
14	151071	KIT, GEAR AND WASHER	1
15	151072	KIT, IDLER AND BEARING	1
16	500117	COLLAR, SET 0.505" ID X 0.875" OD	2
17	501427	SCR:5/16-18 X .750"(M)HEX P	2
18	501566	WASHER, LOCK 5/16 PLATED STL	2



**EVERY 90 DAYS**  
 LOOSEN BOLT "A" ON BOTH SIDES OF BROILER.  
 MOVE BOLT LOWER IN SLOT TO RETENSION CONVEYOR.  
 WHEN BOLT IS FULLY DOWN TO BOTTOM OF SLOT, A CONVEYOR  
 LINK WILL NEED TO BE REMOVED.

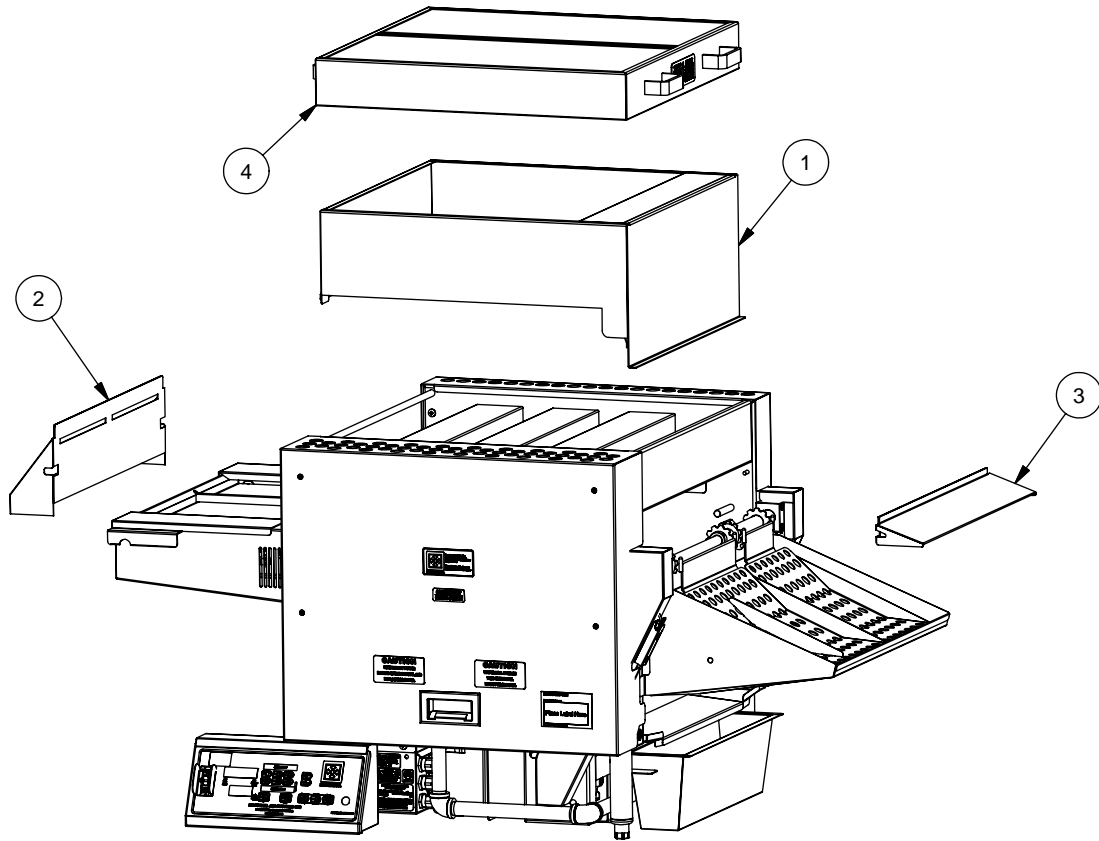
**TO POSITION CONVEYOR CHAIN LINK:**

1. USE "CONVEYOR ONLY" KEY TO GET CHAIN IN POSITION ABOVE.  
 (SEE PAGE 9, "CONVEYOR ONLY KEY")

ITEM	PART NO.	DESCRIPTION	QTY
1	503560	CONV BELT, 13.375" ROD, 7GA. (6FT)	1
2	503561	CONV BELT, 7.437" ROD, 7GA. (6FT)	1
3	146199	LINK OPEN, CONVEYOR, 13.375"	1
4	146200	LINK OPEN, CONVEYOR, 7.437"	1

# CONVEYOR RETENSION ADJUSTMENT

## FIGURE 11



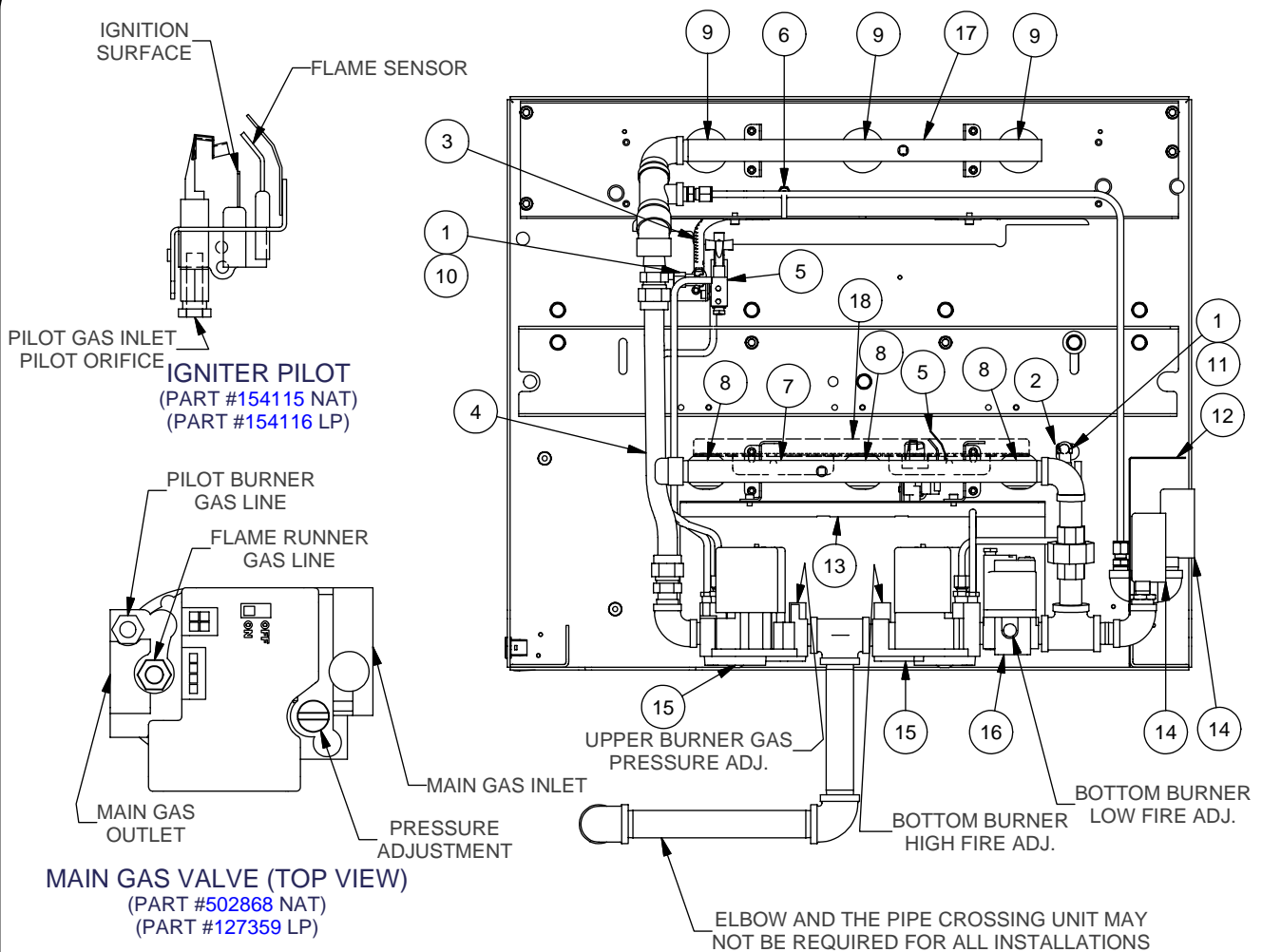
### Catalyst Unit Only

Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	148006	FRAME ASBY, CATALYST	1
2	148013	ENTRANCE TUNNEL COVER ASBY	1
3	148017	EXIT TUNNEL COVER ASBY	1
4	148022	CHARCAT CATALYSY - LABEL ASBY	1

All other parts refer to Fig.2 and Fig.3 except parts 146136 Fig.2 item #10, 146050 Fig.3 item #8, and 146101 Fig.3 item #9 not used.

## CATALYST EQUIPPED MODEL 2424G (DB9A)

# FIGURE 12



MAIN GAS VALVE (TOP VIEW)  
(PART #502868 NAT)  
(PART #127359 LP)

Parts List			
ITEM	PART NO.	DESCRIPTION	QTY
1	502413	ELBOW, BRASS 90 DEG 1/4 COMP. X 1/8 FTP	2
2	146403	FLAME RUNNER ASBY, LOWER BURNER	1
3	146401	FLAME RUNNER ASBY, UPPER BURNERS	1
4	502631	GAS FLEX-TUBE, 5/8" X 12"	1
5	154115	IGNITER ASBY NAT	2
	154116	IGNITER ASBY LP	2
6	148496	KIT, THERMOCOUPLE (SEE REPLACEMENT PARTS LIST FOR IMPORTANT S/N INFORMATION.)	2
7	146022	MANIFOLD, LOWER BURNER	1
8	504073	ORIFICE, #38 CAP TYPE NAT	3
	500104	ORIFICE, #53 CAP TYPE LP	3
9	502867	ORIFICE, BURNER #51 BUTTON, PLUG TYPE NAT	3
	502863	ORIFICE, BURNER #56 BUTTON, PLUG TYPE LP	3
10	502486	ORIFICE, FLAME RUNNER #66 NAT	1
	146945	ORIFICE, FLAME RUNNER #73 LP	1
11	146945	ORIFICE, FLAME RUNNER #73 NAT & LP	1
12	149427	SHIELD, GAGE	1
13	146943	SHIELD, GAS VALVE	1
14	500070	GUAGE, GAS 0-15 IWC 1/4"MPT	2
15	502868	VALVE, GAS 1/2" MAIN NAT	2
	127359	VALVE, GAS 1/2" MAIN LP	2
16	502193	VALVE, GAS 1/2" MODULATING NAT	1
	502203	VALUE, GAS 1/2" MODULATING LP	1
17	118537	VENTURI MANIFOLD ASBY	1
18	149897	GUARD, FLAME RUNNER	1

## GAS DISTRIBUTION DB9R (RIGHT TO LEFT)

# FIGURE 13

## DRIVE SHAFT ASSEMBLY REMOVAL AND CLEANING INSTRUCTIONS:

### STEP 1.

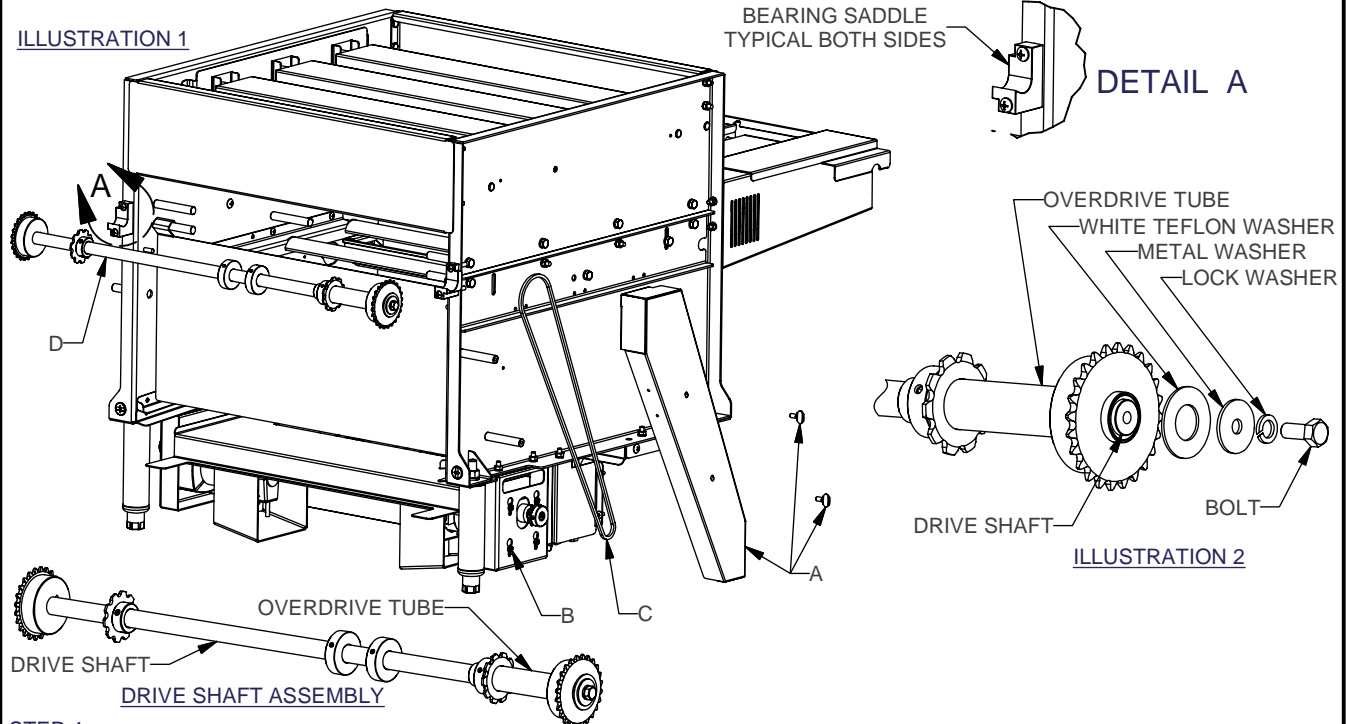
DISCONNECT THE GAS LINE FROM THE UNIT OR TURN OFF THE GAS TO THE UNIT AT THE SHUT OFF VALVE. MOVE THE UNIT INTO A POSITION WHERE BOTH SIDES OF THE UNIT CAN BE ACCESSED AND REMOVE BOTH SIDE COVERS.

### STEP 2.

PERFORM WEEKLY CLEANING DUTIES AS REQUIRED. THE CONVEYOR CHAINS MUST EITHER BE REMOVED OR UNHOOKED AND MOVED AWAY FROM THE DRIVE SHAFT ASSEMBLY. UNPLUG UNIT.

### STEP 3. (SEE ILLUSTRATION 1)

- REMOVE CHAIN COVERS FROM BOTH SIDES USING THUMB SCREWS (ONE SIDE SHOWN)
- LOOSEN (4) MOTOR SCREWS AND RAISE MOTOR ON BOTH SIDES.
- REMOVE BOTH ROLLER CHAINS.
- LIFT COMPLETE DRIVE SHAFT ASSEMBLY OUT OF BEARING SADDLES.



### STEP 4.

TO CLEAN THE DRIVE SHAFT ASSEMBLY, SOAK IN DEGREASER AND SCRAPE OFF GREASE DEPOSITS. ALSO WHILE SOAKING IN DEGREASER, ROTATE THE OVERDRIVE TUBE ON THE SHAFT MAKING SURE IT TURNS FREELY ON THE DRIVE SHAFT. USING A RAG WET WITH DEGREASER, WIPE OFF ANY AND ALL ACCUMULATED GREASE FROM THE BEARING SADDLES.

### STEP 5.

PLACE CLEAN DRIVE SHAFT ASSEMBLY BACK ONTO THE BEARING SADDLES. LUBRICATE THE ROLLER CHAINS WITH AN APPROPRIATE LUBRICANT (SUCH AS MACHINE OIL OR WD-40) AND RE-INSTALL ON THE DRIVE AND MOTOR SPROCKETS (BOTH SIDES). TIGHTEN MOTORS USING MOTOR SCREWS REMOVING ALL SLACK FROM THE ROLLER CHAINS. RECONNECT THE CONVEYOR CHAINS. REASSEMBLE UNIT, TURN BACK TO OPERATING POSITION, PLUG IN AND RECONNECT GAS LINE.

### REMOVAL OF OVERDRIVE TUBE FROM SHAFT:

TO BE PERFORMED **ONCE YEARLY** OR IF OVERDRIVE TUBE DOES NOT TURN FREELY AFTER EXTENDED USE.

### STEP 1. (SEE ILLUSTRATION 2)

REMOVE THE BOLT AND WASHERS FROM THE OVERDRIVE TUBE END OF THE DRIVE SHAFT. THIS WILL ALLOW THE OVERDRIVE TUBE TO SLIDE OFF THE SHAFT.

### STEP 2.

CLEAN THE SHAFT AND NEWLY EXPOSED BEARING WITH DEGREASER. USING A RAG OR BOTTLE BRUSH WET WITH DEGREASER, CLEAN THE INSIDE SURFACES OF THE OVERDRIVE TUBE BEING CAREFUL NOT TO REMOVE THE RED BEARING FROM THE END OF THE TUBE.

### STEP 3.

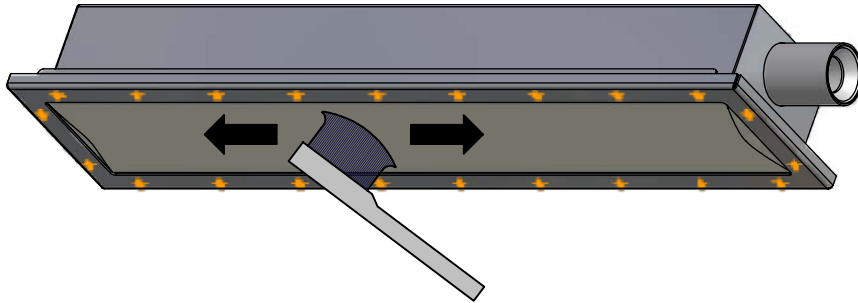
REINSERT THE OVERDRIVE TUBE ONTO THE DRIVE SHAFT AND RESECURE WITH WASHERS AND BOLT AS SHOWN IN ILLUSTRATION 2.

## REMOVAL OF DRIVE SHAFT ASSEMBLY FOR CLEANING FIGURE 14

## DAILY BURNER CLEANING INSTRUCTIONS

### TO CLEAN UPPER BURNERS (3)

1. REMOVE BURNERS AND REVERBERATOR SCREENS (SEE INSTRUCTIONS UNDER DAILY CLEANING).
2. SHAKE OFF LOOSE DEBRIS.
3. HOLDING THE BURNER WITH THE MESH FACING THE FLOOR, BRUSH THE MESH WITH A SOFT BRISTLED BRUSH. **DO NOT WASH / RINSE WITH WATER!**



### TO CLEAN LOWER BURNERS (3)

1. REMOVE BURNERS AND SHIELDS (SEE INSTRUCTIONS UNDER DAILY CLEANING).
2. SOAK TUBULAR BURNERS ONLY IN WATER / DEGREASER SOLUTION FOR 10 MINUTES. NOTHING ELSE SHOULD BE IN WITH THEM.
3. USING A GREEN SCRUB PAD, SCRUB EACH TUBULAR BURNER UNTIL DEBRIS AND GREASE ARE CLEANED AWAY. THEY WILL STAY REDDISH IN COLOR, THEY WILL NOT TURN BACK TO SILVER IN COLOR.
4. RINSE THOROUGHLY. HAVE OPEN END POINTING DOWN SO THAT THE WATER AND DEBRIS CAN EXIT BURNER.
5. ONCE THOROUGHLY RINSED, SET BURNER ASIDE TO DRY WITH OPEN END POINTING DOWN TO FOR DRAINING.
6. BEFORE RE-INSTALLING THE BURNERS, HOLD THE BURNER WITH THE OPEN END POINTING TOWARD THE FLOOR, BLOW AIR THROUGH THE PORTS (LIKE PLAYING A FLUTE) TO HELP REMOVE ANY REMAINING WATER.

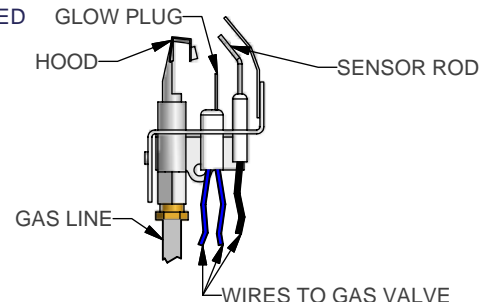


## WEEKLY CLEANING INSTRUCTIONS

### TO CLEAN IGNITERS (2)

1. LOOK FOR DEBRIS / ASH BUILD UP.
2. USING A SMALL WIRE BRUSH OR SAND PAPER, LIGHTLY BRUSH SENSOR ROD AND INSIDE OF HOOD. BE VERY CAREFUL NOT TO BREAK SENSOR ROD.
3. BRUSH ALL SIDES OF ROD TO MAKE SURE IT GETS CLEAN.
4. **DO NOT BRUSH GLOW PLUG, IT WILL BREAK EASILY.**
5. BLOW AIR INTO THE SENSOR ROD AREA TO HELP REMOVE ASH AND DEBRIS FROM CLEANING.

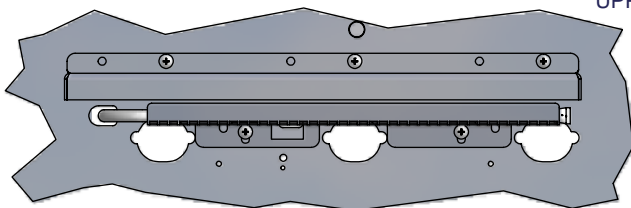
IF SENSOR ROD OR GLOW PLUG DOES BREAK, THE IGNITER **MUST** BE REPLACED



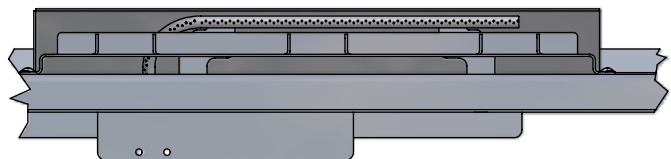
### TO CLEAN FLAME RUNNERS (2)

1. USING A SMALL WIRE BRUSH AND SOME PRESSURE, BRUSH AWAY ANY ASH AND DEBRIS BUILD UP.
2. MAKE SURE WHEN BRUSHING THAT THE SMALL PORTS ON THE FLAME RUNNERS ARE CLEANED OF ANY BLOCKAGE AND OR ANY DEBRIS BUILD UP.

UPPER FLAME RUNNER AS SEEN FROM THE INSIDE OF THE BROILER



LOWER FLAME RUNNER AS SEEN FROM INSIDE THE BROILER  
SHOWN WITH FLAME RUNNER GUARD



## DAILY/ WEEKLY CLEANING INSTRUCTIONS

# FIGURE 15



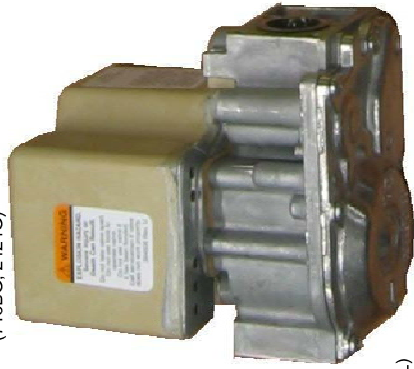
501991 PICK-UP (713BG, 2424G)



500940 MOTOR (ALL)



502193 (NAT) OR 502203 (LP)  
GAS VALVE MODULATING  
(713BG, 2424G)



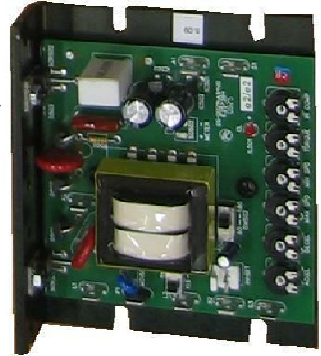
500092 MASTER LINK (ALL)

502898 (NAT) OR 127359 (LP)  
GAS VALVE (713BG, 2424G)

500083 HALF LINK (ALL)



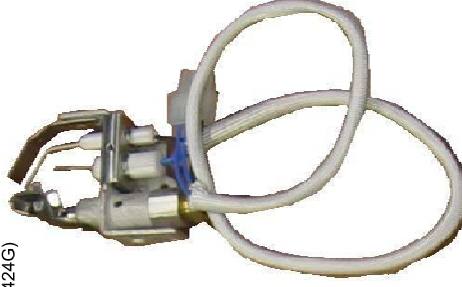
135031 CIRCUIT BOARD (713BG, 2424G)



500033 PLIERS CHAIN



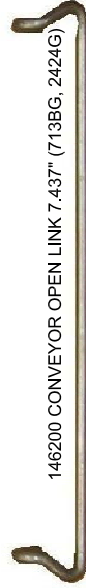
154115 (NAT) OR 154116 (LP)  
IGNITOR/SENSOR PILOT  
(713BG, 2424G)



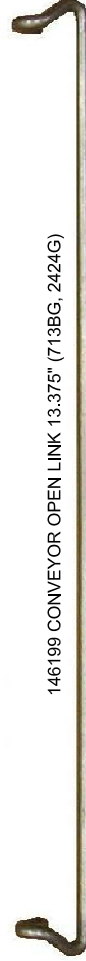
500277 TIE PLASTIC CABLE



148496 THERMOCOUPLE (713BG, 2424G)



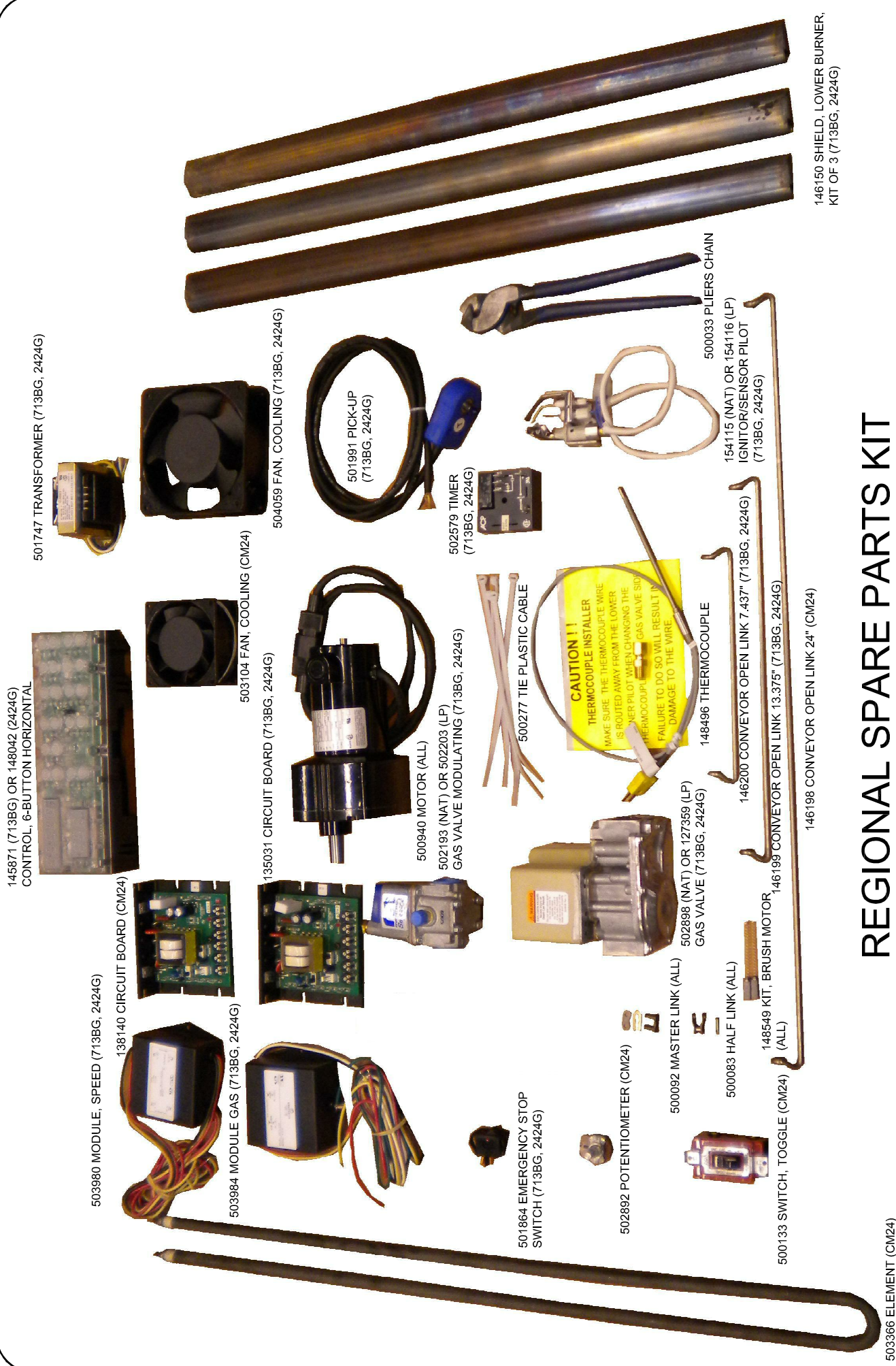
146200 CONVEYOR OPEN LINK 7.437" (713BG, 2424G)



146199 CONVEYOR OPEN LINK 13.375" (713BG, 2424G)

## SPARE PARTS KIT

# FIGURE 16



# REGIONAL SPARE PARTS KIT

## FIGURE 17

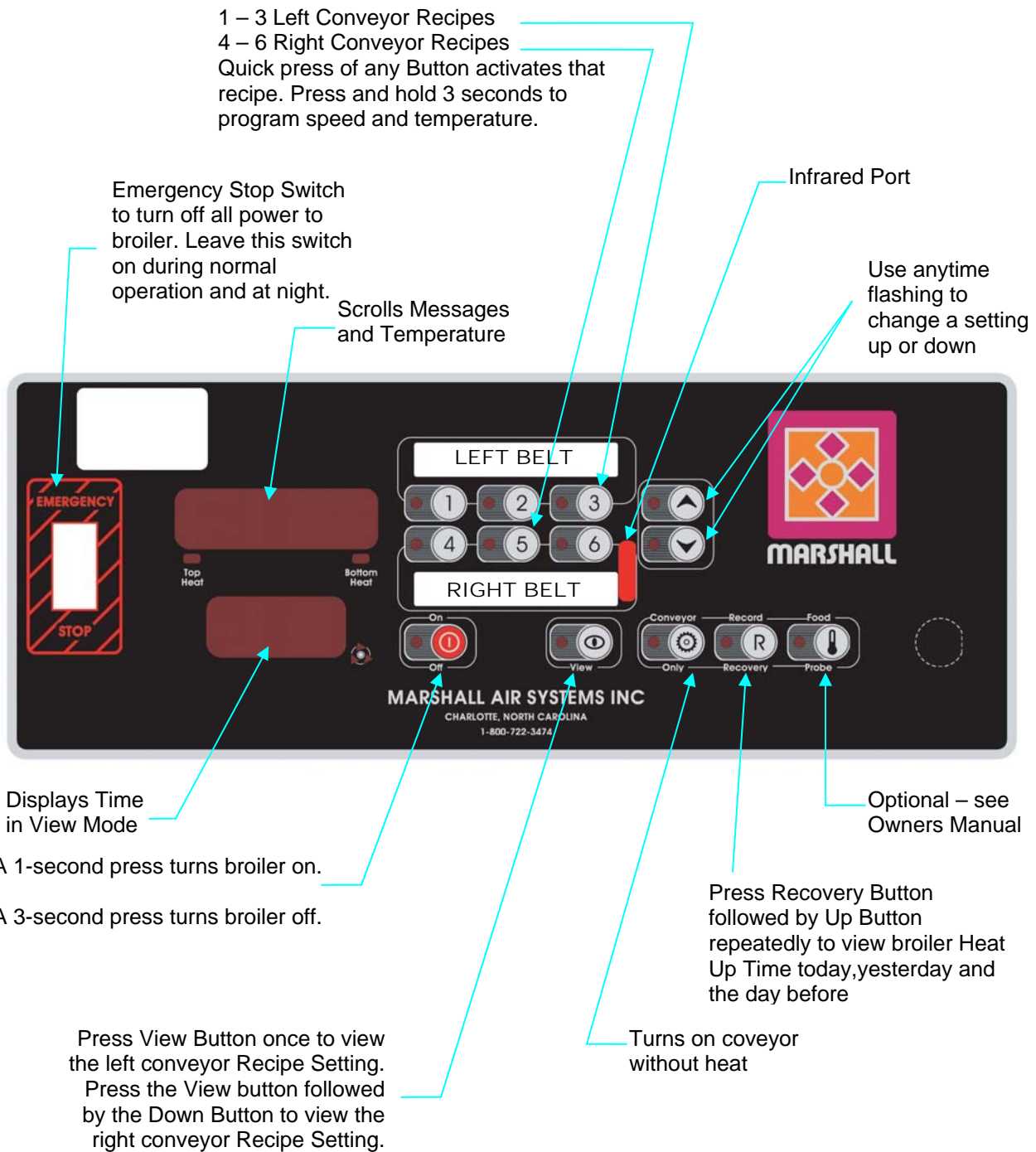
THIS KIT INCLUDES:

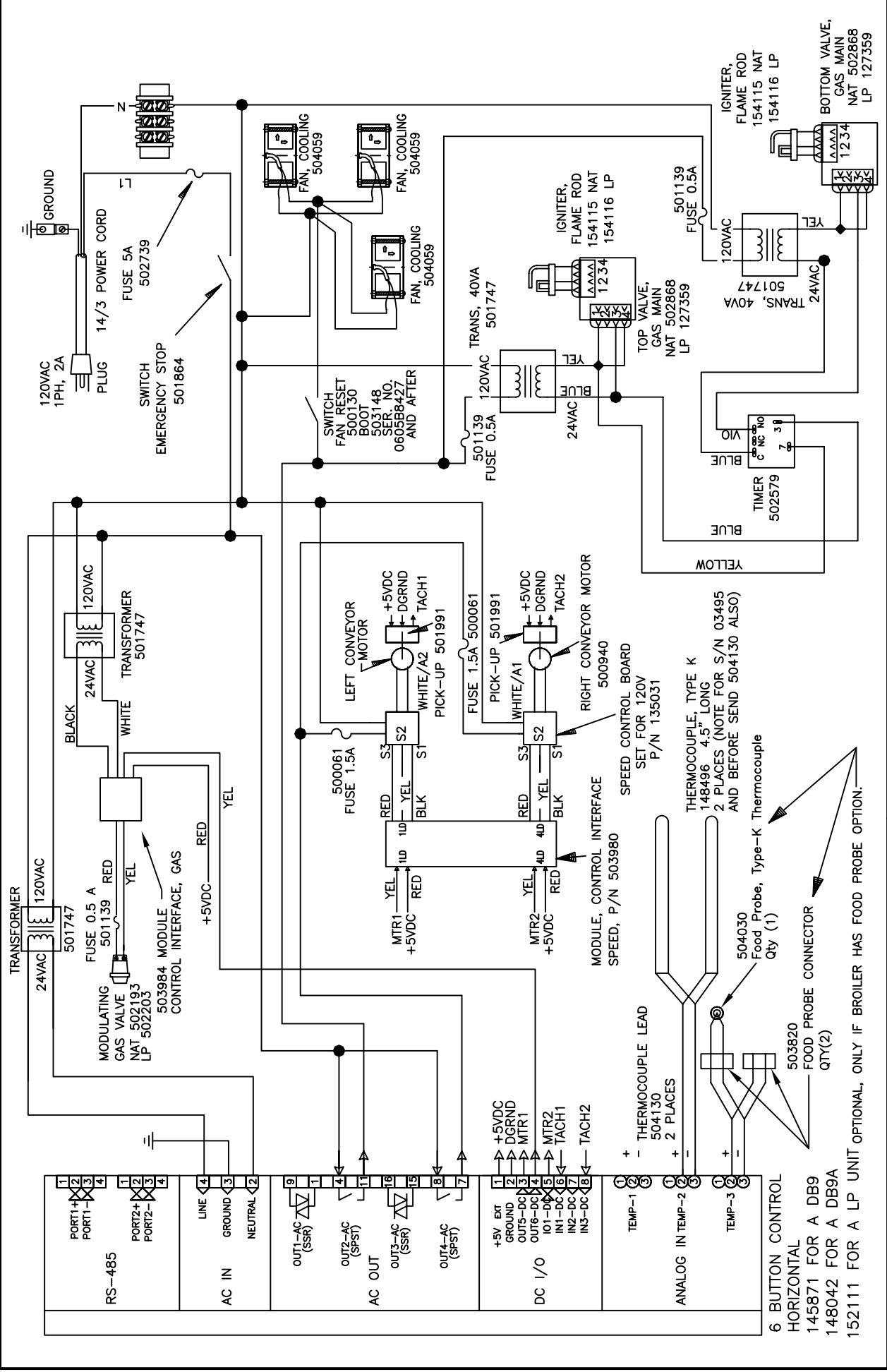


REV	DESCRIPTION	DATE	REV.	BY	DRAWN BY:	DATE:	REV DATE:	MARSHALL AIR SYSTEMS, INC.
1	ADDED 1 MOTOR BRUSH KIT, OVERDRIVE TUBE	26-JAN-2007		PW	D.T.	13-DEC-2006		KIT, 713BG CM24
2	ADDED 2 148496 THERMOCOUPLE	25-NOV-2008		J.L.	GENERIC NAME:			PREVENTATIVE MAINTENANCE
3	CHG IGNITER PN, ADDED LP INFO	28-OCT-2009		J.L.	PRODUCT LINE:	BRL		SIZE: ROUTE: ASBY DWG. NO.: 149268 REV.: 5
4	ADDED PHOTO	09-NOV-2009		J.L.	FAB			SCALE: 1:8 NTS
5	TITLE WAS KIT, 713BG CM24 ANNUAL PARTS REPLACEMENT	05-MAR-2010		J.L.	REFERENCE			IMAGE MAY BE REDUCED CODE: DB9L DB9R

# CONTROL PANEL QUICK GUIDE

AUTOBROIL™





REV	DESCRIPTION	DATE	REV. BY	DRAWN BY:	DATE:	REV DATE:
1.1	ADDED FUSES 0.5A	15-JAN-2007	J.L.	D.M.	20-JAN-2005	
1.2	ADDED LP INFO	12-AUG-2008	J.L.			
1.3	154115 WAS 504048, 154116 WAS 152107	15-OCT-2009	J.L.			

<b>MARSHALL AIR SYSTEMS, INC.</b>	
SCHEMATIC 713BG	
WITH 6-BUTTON CONTROL, 120V 1 PH	
SIZE: ROUTE: MANUF	DWG. NO.: 146203
SCALE: NTS	IMAGE MAY BE REDUCED
CODE: DB9	